INITIAL STUDY AND MITIGATED NEGATIVE DECLARATION

Well Permit Application 2017-117
Larry Gillum
Stanislaus County, California

December 21, 2017

Prepared for:

Stanislaus County
Department of Environmental Resources
3800 Cornucopia Road
Modesto, California 95358

Prepared By:

JACOBSON | JAMES
& associates, inc

9083 Foothills Blvd., Suite 370
Roseville, California 95747
(916) 367-5111

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LIST OF ACRONYMS AND ABBREVIATIONS

ADT	Average Daily Trips
AFY	acre-feet per year
APE	Area of Potential Effect
APN	Assessor's Parcel Number
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
BMP	Best Management Practice
BPS	Best Performance Standard
CASGEM	California Statewide Groundwater Elevation Monitoring
CCIC	Central California Information Center
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CH_4	methane
CHRIS	California Historical Records Information System
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CO	Carbon Monoxide
CO_2	carbon dioxide
CO2e	carbon dioxide equivalents
dB	decibels
DER	Stanislaus County Department of Environmental Resources
DOT	Department of Transportation
DWR	California Department of Water Resources
EIR	Environmental Impact Report
FPMP	Fugitive PM_{10} Management Plan
ft	foot
gpm	gallons per minute
GHG	Greenhouse Gas
GSA	Groundwater Sustainability Agency

GSP	Groundwater Sustainability Plan
HFC	hydroflurocarbons
ILRP	Irrigated Lands Regulatory Program
IS	Initial Study
ITP	Incidental Take Permit
MBTA	Migratory Bird Treaty Act
mi^2	square miles
MLD	Most Likely Descendant
MM	Mitigation Measure
MND	Mitigated Negative Declaration
MSDS	Material Safety Data Sheet
msl	mean sea level
No.	number
ND	Negative Declaration
N_2O	nitrous oxide
NO_x	Oxides of Nitrogen
OPR	Office of Planning and Research
Ordinance	Stanislaus County Groundwater Ordinance
PCF	perfluorocarbon
PFYCS	Potential Fossil Yield Classification System
$PM_{2.5}$	airborne particulate matter with a diameter of less than 2.5 microns
PM_{10}	airborne particulate matter with a diameter of less than 10 microns
PPV	peak particle velocity
PRC	Public Resource Code
RMS	root mean square
ROG	Reactive Organic Gas
RWQCB	Regional Water Quality Control Board
SF_6	sulfur hexafluoride
SGMA	Sustainable Groundwater Management Act
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SMARA	Surface Mining and Reclamation Act

SO_2	Sulfur Dioxide
T&E	Threatened and Endangered
WDR	Waste Discharge Requirements

1.0 INTRODUCTION

1.1 Project Title

This document presents an Initial Study in support of a Mitigated Declaration (IS/MND) prepared pursuant to the requirements of the California Environmental Quality Act (CEQA) for Well Permit Application 2017-117, submitted by Larry Gillum for construction of an irrigation well on Assessor's Parcel Number 001-011-031, located in rural northern Stanislaus County, California (Appendix A).

1.2 Lead Agency

The Stanislaus County Department of Environmental Resources is the Lead Agency for this project pursuant to CEQA and implementing regulations.[1] The Lead Agency has the principal responsibility for implementing and approving a project that may have a significant effect on the environment.

1.3 CEQA Overview

1.3.1 Purpose of CEQA

All discretionary projects within California are required to undergo environmental review under CEQA. A project is defined in CEQA Guidelines § 15378 as the whole of the action having the potential to result in a direct physical change or a reasonably foreseeable indirect change to the environment, and is any of the following:

- An activity directly undertaken by any public agency, including, but not limited to, public works construction and related activities, clearing or grading of land, improvements to existing public structures, enactment and amendment of zoning ordinances, and the adoption and amendment of local General Plans or elements. An activity undertaken by a person which is supported in whole or in part through public agency contacts, grants, subsidies, loans, or other forms of assistance from one or more public agencies.
- An activity involving the issuance to a person of a lease, permit, license, certificate, or other entitlement for use by one or more public agencies.

CEQA Guidelines § 15002 list the basic purposes of CEQA as follows:

- To inform governmental decision makers and the public about the potential, significant environmental effects of proposed activities;
- To identify the ways that environmental damage can be avoided or significantly reduced;

[1] *Public Resources Code §§ 21000 - 21177 and California Code of Regulations Title 14, Division 6, Chapter 3.*

- To prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible; and
- To disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

1.3.2 Authority to Mitigate

CEQA establishes a duty for public agencies to avoid or minimize environmental damage where feasible. Under CEQA Guidelines § 15041 a Lead Agency for a project has authority to require feasible changes in any or all activities involved in the project in order to substantially lessen or avoid significant effects on the environment, consistent with applicable constitutional requirements such as the "nexus"[2] and "rough proportionality"[3] standards.

CEQA allows a Lead Agency to approve a project even though the project would cause a significant effect on the environment if the agency makes a fully informed and publicly disclosed decision that there is no feasible way to lessen or avoid the significant effect. In such cases, the Lead Agency must specifically identify expected benefits and other overriding considerations from the project that outweigh the policy of reducing or avoiding significant environmental impacts of the project.

1.4 Purpose of Initial Study

The CEQA process begins with a public agency making a determination as to whether the project is subject to CEQA at all. If the project is exempt, the process does not need to proceed any farther. If the project is not exempt, the Lead Agency takes the second step and conducts an Initial Study to determine whether the project may have a significant effect on the environment.

The purposes of an Initial Study as listed in § 15063(c) of the CEQA Guidelines is to:

- Provide the Lead Agency with information necessary to decide if an Environmental Impact Report (EIR), Negative Declaration (ND), or Mitigated Negative Declaration (MND) should be prepared;
- Enable a Lead Agency to modify a project to mitigate adverse impacts before an EIR is prepared, thereby enabling the project to qualify for a ND or MND;
- Assist in the preparation of an EIR, if required, by focusing the EIR on adverse effects determined to be significant, identifying the adverse effects determined not to be significant, explaining the reasons for determining that potentially significant adverse effects would not be

[2] *A nexus (i.e., connection) must be established between the mitigation measure and a legitimate governmental interest.*
[3] *The mitigation measure must be "roughly proportional" to the impacts of the project*.

significant, and identifying whether a program EIR, or other process, can be used to analyze adverse environmental effects of the project;

- Facilitate an environmental assessment early during project design;
- Provide documentation in the ND or MND that a project would not have a significant effect on the environment;
- Eliminate unnecessary EIRs; and/or
- Determine if a previously prepared EIR could be used for the project.

In cases where no potentially significant impacts are identified, the Lead Agency may issue a ND, and no mitigation measures would be needed. Where potentially significant impacts are identified, the Lead Agency may determine that mitigation measures would adequately reduce these impacts to less than significant levels. The Lead Agency would then prepare a MND for the proposed project. If the Lead Agency determines that individual or cumulative effects of the proposed project would cause a significant adverse environmental effect that cannot be mitigated to less than significant levels, then the Lead Agency would require an EIR to further analyze these impacts.

1.5 Other Agencies

Other public agencies are provided the opportunity to review and comment on the IS/MND. Each of these agencies is described briefly below.

- A Responsible Agency (14 CCR § 15381) is a public agency, other than the Lead Agency, that has discretionary approval power over the project, such as permit issuance or plan approval authority.
- A Trustee Agency[4] (14 CCR § 15386) is a state agency having jurisdiction by law over natural resources affected by a project that are held in trust for the people of the State of California.
- Agencies with Jurisdiction by Law (14 CCR § 15366) are any public agencies who have authority (1) to grant a permit or other entitlement for use; (2) to provide funding for the project in question; or (3) to exercise authority over resources which may be affected by the project. Furthermore, a city or county will have jurisdiction by law with respect to a project when the city or county having primary jurisdiction over the area involved is: (1) the site of the project; (2) the area which the major environmental effects will occur; and/or (3) the area in which reside those citizens most directly concerned by any such environmental effects.

[4] *The four Trustee Agencies in California listed in CEQA Guidelines § 15386 are California Department of Fish and Wildlife, State Lands* Commission*, State Department of Parks and Recreation, and University of California.*

1.6 Organization of Initial Study

This IS/MND is organized to satisfy CEQA Guidelines § 15063(d), and includes the following sections:

- Chapter 1*, Introduction*, which identifies the purpose and scope of the IS/MND.
- Chapter 2, *Environmental Setting*, which describes location, existing site conditions, land uses, zoning designations, topography, and vegetation associated with the Project Site, and surrounding area.
- Chapter 3, *Project Description*, which provides an overview of the project objectives, a description of the proposed development, project phasing during construction, and discretionary actions for the approval of the project.
- Chapter 4, *Environmental Checklist*, which presents checklist responses for each resource topic to identify and assess impacts associated with the proposed project, and proposes mitigation measures, where needed, to render potential environmental impacts less than significant, where feasible.
- Chapter 5, *References*, which includes a list of documents cited in the IS/MND.
- Chapter 6, *List of Preparers*, which identifies the persons who participated in preparing the IS/MND, and shows their technical specialties.

1.7 Incorporation by Reference

As permitted by CEQA Guidelines § 15150, this IS/MND has referenced several technical studies, analyses, and previously certified environmental documentation contained in the currently adopted Stanislaus County General Plan. Information that has been incorporated by reference has been briefly summarized in the appropriate section(s). The relationship between the incorporated part of the referenced document and the IS/MND has also been described.

2.0 PROJECT DESCRIPTION

2.1 Project Overview

Mr. Larry Gillum has submitted Well Permit Application 2017-117 for construction of an irrigation well on Assessor's Parcel No. 001-011-031 (Appendix A), located in northeastern Stanislaus County just northwest of where 26 Mile Road turns into East Sonora Road. Access to the parcel is by a private westward extension of East Sonora Road, which borders this parcel to the south (Figures 2-1 and 2-2). The Project includes construction and operation of the proposed well. The well will be constructed in an open grassland area within a work space of approximately 150 feet by 200 feet, which is designated as the Project Site. The Project Site is located within a larger, approximately 37-acre parcel. The well will be used to provide irrigation water for an orchard to be planted on the following parcels owned by Mr. Gillum:

- The entirety of Assessor's Parcel No. 001-011-031 (approximately 37.3 acres) will be planted as an orchard; and,
- The upland portion of Assessor's Parcel No. 001-011-039 (approximately 30 acres in the northwest portion of the parcel) will be planted as an orchard. Littlejohns Creek and surrounding portions of the Farmington Flood Control Basin occupy the southern portion of the parcel (Figure 2-2).

No project-related activities will occur in the Farmington Flood Control Basin or near Littlejohns Creek.

2.2 Project Background

The Project Site is located in unincorporated Stanislaus County and is not serviced by a water district. A determination was therefore made that the permit application is subject to the requirements of the Stanislaus County Groundwater Ordinance, which is codified in Chapter 9.37 of the County Code (the Ordinance), which was adopted in November 2014 to codify requirements, prohibitions, and exemptions intended to assure sustainable groundwater extraction as a condition for permitting new wells.

The Ordinance is intended to begin aligning the County's groundwater management and well permitting strategy with the Sustainable Groundwater Management Act (SGMA), which is codified in Section 10720 to 10737 of the California Water Code. SGMA requires the formation of Groundwater Sustainability Agencies (GSAs) by 2017 that will implement the requirements of the Act in all groundwater basins designated by the California Department of Water Resources as medium and high priority. This will be accomplished through development and implementation of Groundwater Sustainability Plans (GSPs) by 2020 in critically overdrafted basins and by 2022 in all other basins. Data regarding the groundwater subbasins in Stanislaus County is summarized in Table 2-1, below. The Project Site is in the Eastern San Joaquin Groundwater Subbasin.

Table 2.2.1: Summary of Stanislaus County Groundwater Subbasins

Groundwater Subbasin (DWR Basin Number)	Approximate Area	CASGEM Priority	Critical Overdraft Listing
Eastern San Joaquin Subbasin (5-22.01)	1,105 mi^2 (707,000 acres, including areas outside the county)	High	Listed
Modesto Subbasin (5-22.02)	385 mi^2 (247,00 acres, entirely within the county)	High	No
Turlock Subbasin (5-22.03)	542 mi^2 (347,000 acres, including areas outside the county)	High	No
Delta-Mendota Subbasin (5-22.07)	1,170 mi^2 (747,000 acres, including areas outside county)	High	Listed

Sources:
California Department of Water Resources (DWR), 2003. California's Groundwater, Bulletin 118. Last update for Eastern San Joaquin, Turlock, and Delta-Mendota Subbasins: 2006; Modesto Subbasin: 2004.
California DWR. 2016. Water Management Planning Tool. Website: http://water.ca.gov/groundwater/boundaries.cfm. Accessed on July 12, 2017.

Stanislaus County will retain well permitting authority in unincorporated areas of the county after GSAs are formed. Under the Ordinance, the installation of new wells is prohibited unless the applicant provides substantial evidence that the proposed well will not result in the "Unsustainable Extraction of groundwater," which is defined in the Ordinance of as causing or contributing to one of the "Undesirable Results" listed in the Ordinance. The definition of Undesirable Results in the Ordinance is consistent with that contained in the SGMA, namely: (a) Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply; (b) Significant and unreasonable reduction of groundwater storage; (c) Significant and unreasonable degraded water quality; (d) Significant and unreasonable land subsidence; and (e) Surface water deletions that have significant and unreasonable adverse impacts on beneficial uses of surface water. To implement the requirements of the Ordinance, the County has adopted a well permitting program for non-exempt wells. The program requires the applicant to submit information regarding the proposed well and groundwater extraction to verify that operation of the well will not cause or substantially contribute to Undesirable Results. Under the program, the County may approve or deny an application to construct a new well, depending on whether the information provided by the applicant provides substantial evidence that Unsustainable Extraction of groundwater will not occur. The County may also assign permit conditions as appropriate to assure sustainable groundwater management, including (but not necessarily limited to) water use accounting; special well design and construction requirements; monitoring of groundwater levels, quality or subsidence; action thresholds for specified management actions, and/or submission and implementation of mitigation and monitoring programs.

On March 13, 2017, the applicant's consultant submitted supplemental application information to address the data requirements of the Ordinance, this submittal is included in Appendix B. An evaluation of the permit application relative to the requirements of the Ordinance is included in Appendix C. Due to the regulatory incompatibility of the originally proposed well location in a livestock holding pen with the California Well Standards (DWR, 1991), the applicant selected another location for the well after the original permit application submittal (Appendix C-2).

2.3 Permanent Facilities

The proposed Project consists of the construction and operation of an irrigation well. The well is proposed to be drilled to a depth of approximately 500 feet at the approximate location shown on Figure 2-1. The well will be constructed using approximately 12-inch diameter steel casing and screen, and will be fitted with a turbine pump capable of a peak pumping rate of approximately 1,000 gallons per minute (gpm). The well will be pumped intermittently during the irrigation season (usually March through October) to meet an anticipated water demand of approximately 300 acre-feet per year (AFY). The well and appurtenant wellhead equipment may be enclosed within a small shelter and fenced compound, typically measuring approximately 10 by 20 feet.

A power service line will be extended to the well from the an existing Pacific Gas and Electric Company power service line located along the main access drive into the site (Figure 2-1). It is anticipated that one to two wooden power poles may be needed to facilitate the extension of power service to the well. Access to the well will be provided by an unpaved access drive that will extend approximately 230 feet north from East Sonora Road.

2.4 Construction Activities and Schedule

Area of Disturbance. Well construction activities will take place in an area measuring approximately 150 feet (north –south) by approximately 200 feet (east – west). Access to the Project Site will be unimproved dirt access drive approximately 10 feet wide. Construction of the well will be completed over a 30-day period.

Construction Schedule. Work during drilling and well construction will be conducted in shifts for 24 hours/day, seven days/week until the well is constructed, which is estimated to be two weeks. The remaining work, including well development, pump installation, extension of a power service line, and construction of a pump shed (if desired), will be conducted during daytime working hours between approximately 7:00 AM and 7:00 PM and will occur over a one to two week period. The overall construction period is anticipated to last approximately 30 days.

Construction Equipment. The well will be drilled using the mud rotary method with a conventional, truck-mounted drilling rig. Support equipment will include a flatbed pipe truck, water truck, skip loader, crew truck, generator, and light stand. Equipment used during well development and pump installation will

include a pump truck, crew truck, generator, and pump. Finally, a fenced enclosure and shelter may be constructed around the well using standard construction equipment for small structures.

Construction Materials. NSF Baroid-type products will be used for the drilling mud. No toxic or non-degradable additives will be used. The drilling mud will be circulated through an excavated or portable mud pit. After completion of the work, the mud will be removed from the pit, dried, and spread on the site surface in an area that does not drain to Littlejohns Creek or the Farmington Basin. The well will be constructed using approximately 12-inch diameter steel casing and screen, and the well annular space will be filled with a sand filter pack and grout seal.

Construction Methods. It is anticipated that the well will be drilled using the reverse circulation mud rotary method. After drilling the well boring to the desired depth, electric logs will be obtained and the boring will be reamed to approximately 20 inches diameter. Steel casing and well screen will be installed, and the well annular space will be filled with a sand filter pack and grout seal using the Tremie method. The grout seal will be 100-feet to prevent drawing groundwater from the shallow zone (i.e., sub-surface flow to the creek) and protect water quality. After completion of well construction, the well will be developed to remove any remaining drilling fluids. The well will then be tested and an appropriate pump will be selected and installed.

2.5 Area of Potential Effects[5]

Direct Impact. Approval of the groundwater permit would allow construction and operation of the well, resulting in a direct physical change to the environment (direct impact). The area in which direct Project effects will occur is the construction area shown on Figure 2-1, identified as the Project Site. A wooden power pole will be installed near the proposed well location, and a second pole may be installed between the Project Site and East Sonora Road.

Indirect Impact. The proposed well will be used to irrigate an orchard to be planted in the upland areas of the applicant's ranch, on the northwestern portion of APN 001-011-039 and on APN 001-011-031, on the northern side of East Sonora Road. Operation of the well would make cultivation of the orchard within the Area of Potential Effect (APE) possible, so this is a reasonably foreseeable consequence that is indirectly related to the Project. As such, the approximately 70 acres of land identified on Figure 2-1 as the APE will experience indirect Project effects associated with planting and operation of the orchard.

Preparation of the fields for planting may begin concurrently with well installation or may be delayed. This work will include trenching and irrigation system installation to convey water from the well area to the orchard, followed by preparation of the field for planting by ripping, backhoeing, and/or slip plowing using tractors, and finally by planting of the trees. After planting, the orchard will be maintained and operated

[5] CEQA Guidelines Section 15064(d) requires that a Lead Agency look at both direct as well as indirect impacts of the project, as such, both are considered when defining the Area of Potential Effect.

over an expected life of 20 years using standard agronomic methods. Ground disturbing activities will be limited to the Project Site and APE shown on Figure 2-1.

2.6 Reviewing Agencies

The California Department of Fish and Wildlife is expected to review this IS/MND as the trustee agency for the resources under their jurisdiction. No other agencies are required to review this IS/MND or well permit application; however, it is possible that other agencies may wish to comment on the IS/MND.

2.7 Required Permits and Approvals

2.7.1 Well Construction Permit

Following Lead Agency approval of this IS/MND (see Section 1.0), a Well Construction Permit will be issued by the Stanislaus County Department of Environmental Resources (DER). Based on review of the Supplemental Well Permit Application (Attachment C), the following conditions will be included in the permit to construct the well and are considered as Project design features for purposes of CEQA review:

- **Well Testing.** After construction of the well and before the well is placed into service, a specific capacity or pump test shall be conducted. A report (minimum one page) shall be provided to the DER documenting the methods and results of the test to verify that assumptions used in the applicant's well drawdown analysis are correct.
- **Water Use Accounting.** The maximum average annual volume of groundwater that may be extracted will be specified in the permit as 300 acre-feet/year based on the analysis included in Appendix C. If testing indicates that hydraulic conductivity of the aquifer is greater than assumed in Appendix C, the maximum allowable extraction volume may be increased pursuant to a supplemental analysis. The well owner shall install and maintain a metering device as part of the water supply and distribution system to document groundwater extraction from the well in gallons per month. Proof that the device is installed and operational (a manual and photos) shall be submitted to the DER prior to beginning extraction, and the device shall be maintained for the life of the well. The metering device shall consist of a propeller type (turbine meter) suitable for the range of extraction flows expected, and shall be installed in a straight piping run at least 10 pipe diameters from any valves, bends or fittings, and shall register total gallons and instantaneous flow rate in gallons per minute. By January 31, the well owner shall submit an annual groundwater extraction report to the DER that details the volume of groundwater extracted each month from the well for the prior year in gallons and acre-feet per month.
- **Groundwater Level Monitoring.** Within 30 days after receiving the well construction permit, the applicant shall submit, for DER review and approval, a brief monitoring plan that outlines the procedures to be used to obtain monthly groundwater level measurements at the site. A table presenting the date of each monthly measurement, the depth to groundwater

measured to the nearest 0.1 foot below ground surface, and the length of time in days since the well was last operated, shall be submitted to the County for each year by January 31 of the following year.

- **Special Well Completion Requirements.** The well shall be completed with a grout sanitary seal that extends to a depth of at least 100 feet below ground surface in order to prevent interaction with subsurface groundwater flow to Littlejohns Creek, and to protect water quality.

2.7.2 Other Requirements and Approvals

The following permits and approvals will be needed before the well can be installed and operation of the well can begin.

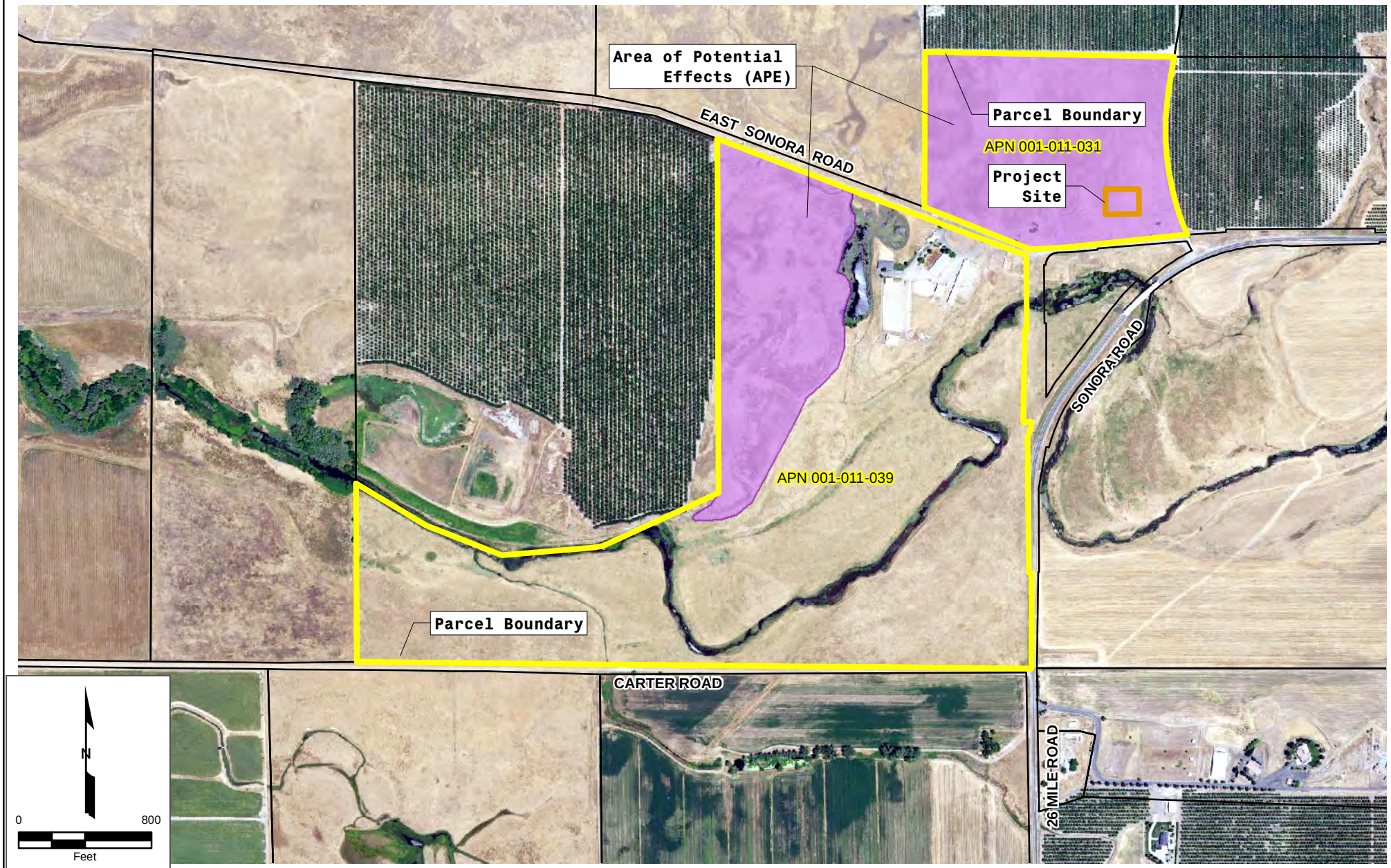
Table 2.7.1: Required Permits and Approvals

Permit	Issuing Agency	Actions and Requirements
Well Construction Permit	Stanislaus County Department of Environmental Resources	A well construction permit will be issued by the DER approximately 30 days after approval and certification of the IS/MND
Application for Service – Agricultural Service	Pacific Gas and Electric Company	An application to extend electrical service to the well must be processed and the appropriate load and design information must be approved by PG&E prior to connecting service.

In addition to the above, the well driller must submit a completed Well Driller's Report (DWR Form 188) detailing the construction of the well to the Department of Water Resources in accordance with Section 13751 of the California Water Code.

Path: J:\GIS\StanislausCounty\ismnd\Figure 2-1 Gillum Site.mxd

AERIAL SOURCE: NAIP 2016



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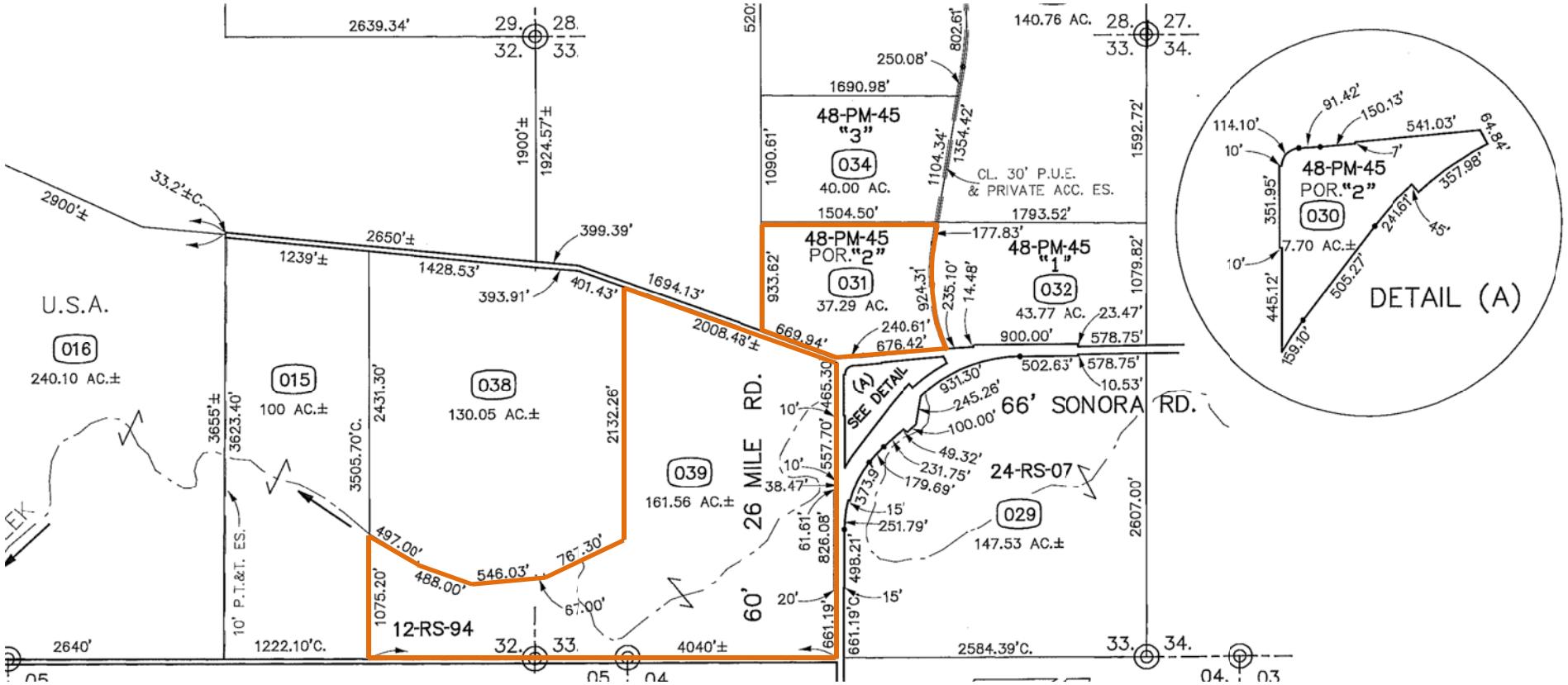
Larry Gillum
Stanislaus County, California

PROJECT NO.	DATE	DRAWN BY	APPR. BY
STANCO.001	8/29/17	DPG	MT

FIGURE 2-1

SITE MAP



Parcel Boundary

Map cropped from Stanislaus County Assessor's Map Book 001 page 011, last revision: 04-09-12. Website: http://sbtapp1.co.stanislaus.ca.us/AssessorWeb/public/MapBooks. Accessed on July 11, 2017.

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STANCO.001	7/11/17	JH	mt

FIGURE 2-2

Parcel Map

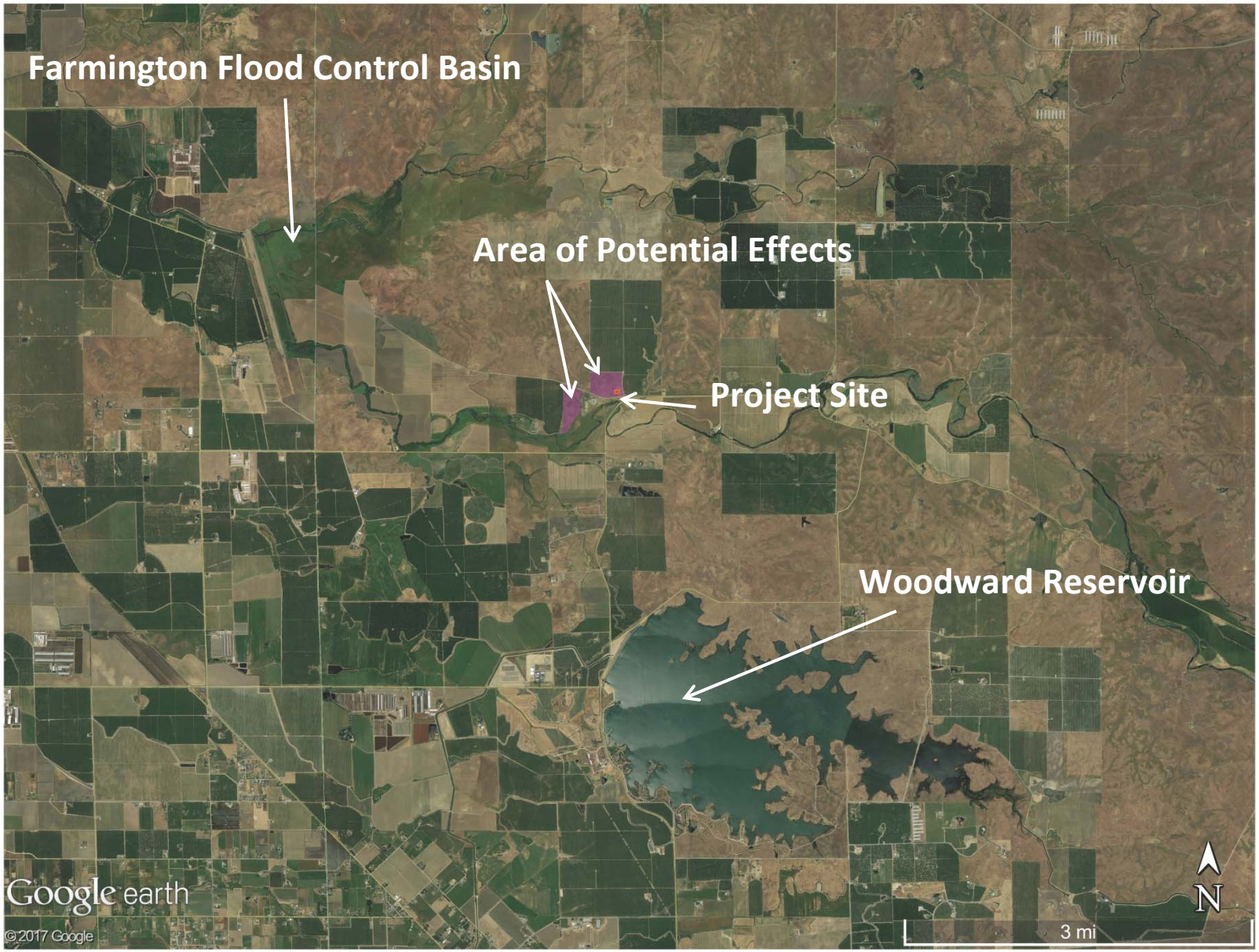

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FIGURE 2-3

Vicinity Map

3.0 ENVIRONMENTAL SETTING

3.1 Project Site

The Project Site is located in the northeastern portion of unincorporated Stanislaus County, north of Woodward Reservoir and northeast of the Farmington Flood Control Basin. Specifically, the Project Site is just northwest of where 26 Mile Road and East Sonora Road intersect. The Project Site consists of an approximately 150 foot by 200 foot well construction area (identified on Figure 2-1) located within an approximately 37-acre parcel and near two other parcels owned by Larry Gillum that lie on the south side of East Sonora Road. Collectively, these three parcels are currently used as a horse ranch. The proposed well will be used to supply water to new orchards to be planted on the 37-acre parcel and a portion of one of the existing parcels located west of the main horse ranch facility.

3.2 Surrounding Land Use and Zoning

Regionally, the area is dominated by rangeland and land used for agricultural purposes. The parcel on which the Project Site is located is bounded to the west by a land used for grazing, by East Sonora Road to the south, and by parcels for agricultural use to the north and east (Figure 2-1). Littlejohns Creek meanders south of the parcel and comes within approximately 300 feet of the southern boundary of the Project Site.

The County of Stanislaus General Plan designates the Project Site "Agriculture" and the Stanislaus County Zoning Ordinance zones the site "General Agriculture – 40 Acre Minimum (A-2-40)."

Table 3.2.1: Summary of Land Use and Zoning

Area	General Plan Land Use Designation	Zoning	Existing Use[6]
Project Site	Agriculture	A-2-40	Agricultural (rangeland, occasional annual hay production and livestock grazing)
North	Agriculture	A-2-40	Agricultural (rangeland and orchards)
East	Agriculture	A-2-40	Agricultural (rangeland and orchards)
West	Agriculture	A-2-40	Agricultural (rangeland and orchards)
South	Agriculture	A-2-40	Agricultural (rangeland), flood control basin and Littlejohns Creek

3.3 Existing Site Conditions and Topography

The Project Site and APE are located on the northeastern flank of the San Joaquin Valley at the base of the foothills (approximately 150 ft msl) of the Sierra Nevada Mountain Range, which rise steeply to

[6] *As of July 2017.*

approximately 1,350 ft msl less than 10 miles to the west. The Project Site is located in what is commonly called the Northern Triangle portion of Stanislaus County, the name based on the shape and location of the county boundaries in the northeast portion. The area around the Project Site is occupied by low rolling hills, utilized as rangeland and farmland. Littlejohns Creek is located south of the Project Site and APE, and runs westward into Farmington Flood Control Basin, which can back up on the low elevation areas located south of the Project Site and APE during wet years. The Project Site and APE are located in upland areas above the flood control basin. A swale passes between the horse ranch and the southwest APE on the southwestern-most of the three parcels owned by Mr. Gillum and drains southward into the flood control basin. A seasonal stock pond is located in this swale. . The high point of elevation on the three parcels owned by Mr. Gillum is a hill on the northwest portion of Parcel APN 001-011-39 (approximately 185 to 218 feet above mean seal level [ft msl]). The rest of the property has a gently sloping topography (approximately 145 to 155 ft msl) (Figure 3-1).

3.4 Climate

The area has a "Mediterranean" climate characterized by long, hot, dry summers (May through October), short, wet winters, and averages over 260 sunny days per year. The average annual precipitation at the Modesto meteorological station is just over 13 inches per year, with 88 percent occurring between November and April.[7,8]

3.5 Geology and Soils

San Joaquin Valley is a deep, north-northwest trending alluvial basin filled with a succession of Recent and Quaternary alluvial sediments underlain by a succession of Tertiary and Mesozoic marine sedimentary formations and crystalline basement rocks. The low foothills, where the Project Site is located, are underlain by alluvium eroded from the Sierra Nevada Mountain Range and deposited at the base of the mountains and out onto the valley floor. The sediments exposed at the ground surface become progressively older from west to east, and in the vicinity of the Project Site, consist of Miocene volcano-fluvial and volcanic mudflow deposits of the Mehrten Formation. Review of geologic maps indicates the area near Littlejohns Creek is underlain by Quaternary alluvium and stream terrace deposits (Pliocene to Holocene) which are unconsolidated to semi-consolidated and deposited on top of the Mehrten Formation. Similar to the review of geologic maps, well logs for the area indicate the lithology near the Project Site is primarily alternating layers of clay and sand, with some gravel and sandstone layers. Black sands, which are indicative of the Mehrten Formation, were noted in some of the well logs.

[7] *Turlock Irrigation District, 2012. 2012 Agricultural Water Management Plan.*

[8] *Sperlings Best Places, 2016. http://www.bestplaces.net/climate/county/california/stanislaus. Accessed April 25, 2016.*

The surface soils on the Project Site and APE consist of the Pentz-Peter series and extend from the surface up to depths of up to approximately 23 inches. These soils consist of shallow, well drained, clayey and loamy soils derived from material weathered from weakly consolidated andesitic tuffaceous sediments; these soils are typically associated with hill slopes (UC Davis, 2017) and are derived from the Mehrten Formation, which underlies these soils at relatively shallow depth. The area of the parcel in the vicinity of Littlejohns Creek has soils which are deep to very deep, well to moderately well drained, and derived from mixed rock sources; these soils are typically associated with stream terraces and occasional flooding.

3.6 Hydrology

Surface water in the Northern Triangle primarily occurs in local creeks, the Stanislaus and Calaveras Rivers, and reservoirs (Farmington Flood Control Basin and Woodward Reservoir). Local creeks are mostly ephemeral and at their highest levels during winter and spring, whereas the highest flows in the rivers occur in late spring/early summer with snow melt from the Sierra Nevada Mountain Range. Local creeks and rivers are at their lowest levels or dry during late summer/fall. The Farmington Flood Control Basin was designed to prevent flooding from the creeks during unusually wet years onto the valley. Four main creeks, Duck Creek, Rock Creek, Hoods Creek, and Littlejohns Creek, enter into the Farmington Flood Control Basin and a dam causes the surface water to back up eastward. Littlejohns Creek runs just south of the APE and review of aerial photography indicates during wet years the creek can back up and and flood the low elevation areas of the Gillum property, south of the APE.

The Project Site and APE are located within the boundaries of the Rock Creek – French Camp Slough watershed. In the low foothills, this watershed drains a rolling upland between the Calaveras River to the north and the Stanislaus River to the south, both of which are relatively deeply incised. The Stanislaus River runs westward and is located approximately 8 miles south of the Project Site.

The Project Site is located in the Eastern San Joaquin Subbasin (ESJS) of the San Joaquin Valley Groundwater Basin. The ESJS includes a number of significant groundwater bearing formations: Recent Alluvium and Quaternary Alluvium of the Modesto/Riverbank Formations, Flood Basin Deposits, the Pliocene Laguna Formation, and the Mehrten Formation (DWR, 2006). In the area of the Project Site, the main water bearing sediments are the volcano-fluvial sands of the Mehrten Formation, which comprise a regionally significant aquifer found in the easternmost part of the subbasin. The Merhten Formation is late Miocene to Pliocene in age and is comprised of moderately well to well indurated andesitic sand to sandstone which is interbedded with conglomerate, tuffaceous siltstone, and claystone. Vertical groundwater movement within the Mehrten Formation is impeded by lower permeability deposits, such as volcanic mudflows, and well developed paleosols (ancient soils). In the vicinity of the Project Site, the Mehrten Formation is over 500 feet thick (the greatest depth to which wells in the area have been drilled), and it is up to over 600 feet thick in the subsurface near Stockton. The Mehrten Formation sands can commonly yield 1,000 gallons per minute from wells.

While Stanislaus County participates in an integrated regional water management plan, the Northern Triangle is not incorporated into the plan and is also not part of a groundwater management plan. There are two water districts (Oakdale Irrigation District and Rock Creek Water District) within the Northern Triangle, but neither provides service to the area of the Project Site. Source water for farmers and residents outside of these water districts is primarily from domestic and irrigation wells. Review of hydrographs obtained from the California Statewide Groundwater Elevation Monitoring (CASGEM) Program in the area of the Project Site indicate a decline in groundwater levels until the late 1970's and then varied but relatively stable groundwater levels afterwards (Figure 3-2). Groundwater flows primarily northwest towards Stockton, with groundwater elevation typically in the range of 70 to 80 ft msl. With the hilly surface elevation typically in the range of 140 to 200 ft msl, groundwater is approximately 60 to 120 ft below ground surface.

Additional information regarding local hydrogeologic conditions is included in Appendixes B and C.

3.7 Biological Resources

The Project Site is located in a primarily agricultural area (Figures 2-2 and 2-3), bounded by Carter Road to the south; 26 Mile Road to the east; north and east of the site is agricultural land with California Highway 4 and Henry Road beyond, respectively. Littlejohns Creek runs through the southern portion of the project site and flows into the Farmington Flood Control Basin. The upland portions of the site are occupied by highly disturbed agricultural land that is vegetated by grasses, weeds, and occasional shrubs. Analysis of historical aerial photographs of the site does not reveal much variation in these conditions over the past 14 years. Portions of the site have been used occasionally for growing annual hay.

A desktop review was conducted to assess species habitat potential, and a California Natural Diversity Database (CNDDB) review was initiated to identify documented Threatened and Endangered (T&E) species with potential to occur on site (Appendix D). The search area included the USGS 7.5' Farmington quadrangle (which the Project Site is within), and a review of the surrounding areas. The only T&E species documented within the Farmington quadrangle are the California tiger salamander (*Ambystoma californiense*) and Swainson's Hawk (*Buteo swainsoni*). T&E species documented within adjacent quadrangles was limited to Colusa grass (*Neostapfia colusana)* and Chinook salmon (*Oncorhynchus tshawytscha)*. Additionally the search identified the following California Department of Fish and Wildlife (CDFW) special status species, provided in Table 3.7.1.

Table 3.7.1 Identified CDFW Special Status Species

Common Name	Species	CDFW Status
western spadefoot	*Spea hammondii*	Species of Special Concern
pallid bat	*Antrozous pallidus*	Species of Special Concern
California tiger salamander	*Ambystoma californiense*	Watch List
western mastiff bat	*Eumops perotis californicus*	Species of Special Concern
northern California legless lizard	*Anniella pulchra*	Species of Special Concern
riffle sculpin	*Cottus gulosus*	Species of Special Concern
Sacramento hitch	*Lavinia exilicauda exilicauda*	Species of Special Concern
hardhead	*Mylopharodon conocephalus*	Species of Special Concern
Pacific lamprey	*Entosphenus tridentatus*	Species of Special Concern
western red bat	*Lasiurus blossevillii*	Species of Special Concern
western pond turtle	*Emys marmorata*	Species of Special Concern
Golden Eagle	*Aquila chrysaetos*	Full Protection/Watch List
Yellow-breasted Chat	*Icteria virens*	Species of Special Concern
Burrowing Owl	*Athene cunicularia*	Species of Special Concern
Prairie Falcon	*Falco mexicanus*	Watch List
Tricolored Blackbird	*Agelaius tricolor*	Endangered Candidate/ Species of Special Concern
western spadefoot	*Spea hammondii*	Species of Special Concern
pallid bat	*Antrozous pallidus*	Species of Special Concern

The CNDDB review (Appendix D) indicates that there have only been two documented observations of Swainson's Hawk within a 5 mile radius of the Site with the most recent observation in 2002. The closest sighting was over 3 miles from the Site. There have been six recorded sightings of Tricolored Blackbirds within the 5 mile search radius, primarily along Littlejohns Creek and Smith Creek. The closest sighting was approximately 2 miles from the Site. Tiger salamander observations were reported at two locations with the most recent recording in 1994. One rare plant was identified within the 5 mile search radius: *Legenere limosa*, at approximately 3.5 miles from the Site.

A reconnaissance survey was conducted at the Project Site and APE on July 25, 2017 to assess and survey the area for habitat suitable to support sensitive species. The field survey verified that the area surrounding the Project Site is disturbed agricultural land comprised of grasses and livestock with an associated stock pond in the western portion and Littlejohns Creek running south of the project area. The grasslands consisted of a variety of grasses and weeds, including several invasive species. Littlejohns Creek provides the highest diversity of vegetation in the project vicinity, with habitat consisting of grasses, sedges and rushes, cattails, and a few willows (*Salix sp*.). The area around the stock pond also included some

hydrophytic type vegetation as well as a small cluster of trees. These areas are located outside of the Project Site and APE.

While sufficient habitat exists in the area to support burrowing wildlife, no burrows were encountered during the reconnaissance. Field observations around the stock pond and Little John's Creek, as well as the more upland areas of the Site, did not reveal any burrows available for use by California tiger salamanders or Burrowing Owls. The small riparian reach of Littlejohns Creek had songbird nests of non-status species. Non-special status species of amphibians were observed in Littlejohns Creek. While there were sightings of several raptor species, including American Kestral, Prairie Falcon, Turkey Vulture, and Red-tailed Hawk, no special status species was observed. Additionally, no vernal pools, Elderberry bush or special status flora were observed within the Project Site or APE, or the surrounding portions of the Gillum property.

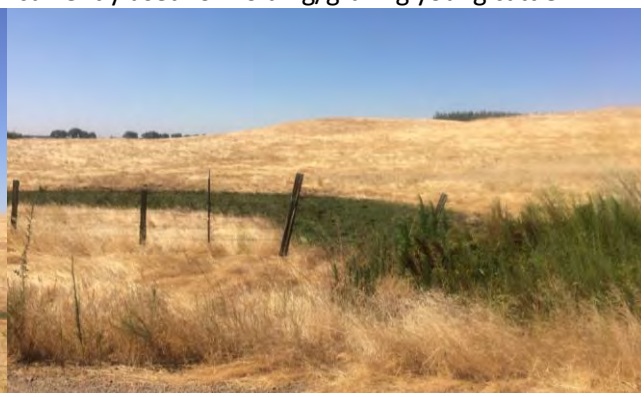
3.8 Photos of Existing Site Conditions

The following photos taking during our reconnaissance site visit on July 25, 2017 are representative of the conditions described in the preceding sections.

View of entrance to property owned by Gillum, from entrance. Road is East Sonora Road and it is private at this portion. Note power lines.

View southward across a pipe corral where the well was originally proposed to be located. The pen is currently used for holding/grazing young cattle.

View south from East Sonora Road of seasonal stock pond area just west of horse ranch facility (APN 001-011-039). Upland APE is on the right in



View south of upland APE (APN 001-011-039) from East Sonora Road.

the photo.

View from East Sonora Road of neighboring parcel to west of Gillum parcel APN 001-011-039. Note irrigation wells and power line extended from road.

View from East Sonora Road of neighboring parcel to west of Gillum parcel APN 001-011-031.

View north of Gillum parcel APN 001-011-031. Cement structure is for stock watering.

View of depression and weathered bricks located on southeastern portion of parcel APN 001-011-031.

View northwest of windmill above well (parcel APN 001-011-031).

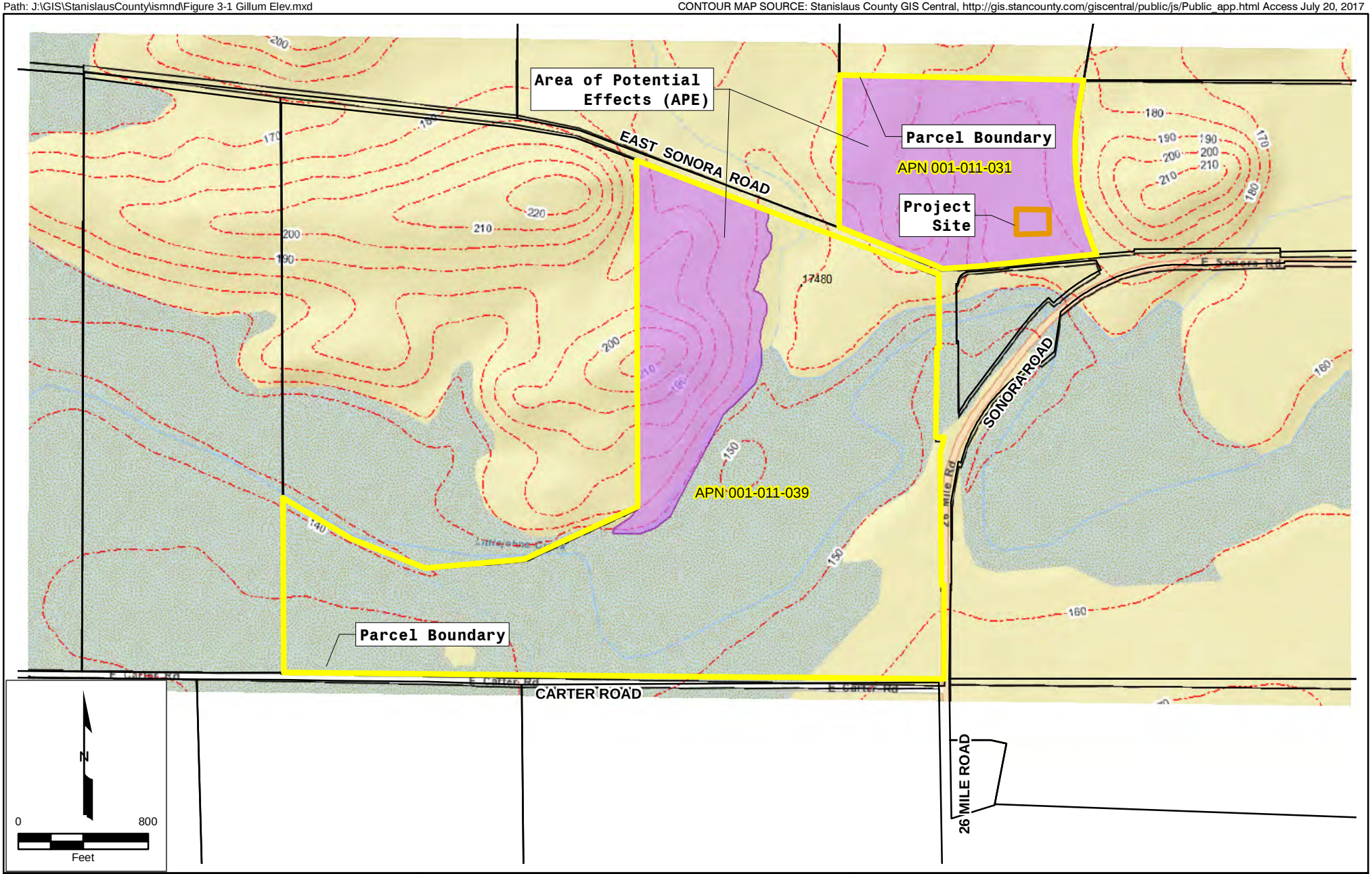
View down hand-dug well (parcel APN 001-011-031).

View of Littlejohns Creek, facing eastward, on Gillum property (APN 001-011-030). Road in distance is 26 Mile Road. Creek is deeper close to the highway, and shallows further west.

View of Littlejohns Creek, facing southwest, on Gillum property (on northeastern portion of parcel APN 001-011-039).

Path: J:\GIS\StanislausCounty\ismnd\Figure 3-1 Gillum Elev.mxd

CONTOUR MAP SOURCE: Stanislaus County GIS Central, http://gis.stancounty.com/giscentral/public/js/Public_app.html Access July 20, 2017



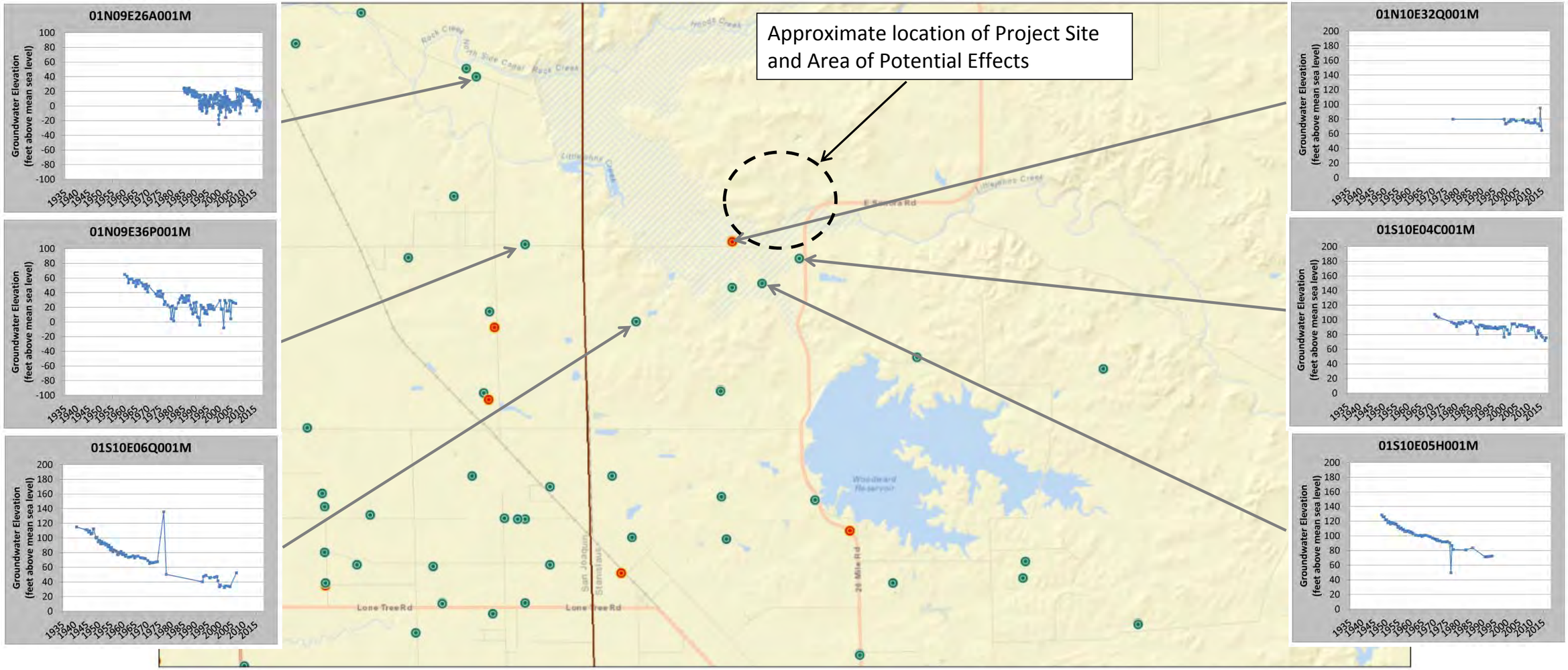
JACOBSON | JAMES & associates, inc

IS/MND for Well Permit Application 2017-117
Larry Gillum
Stanislaus County, California

PROJECT NO.	DATE	DRAWN BY	APPR. BY
STANCO.001	8/29/17	DPG	MT

FIGURE 3-1

ELEVATION CONTOUR MAP



CASGEM information obtained from website:
http://www.water.ca.gov/groundwater/casgem/
Satellite image from Google Earth.

JACOBSON | JAMES
& associates, inc

IS/MND for Well Permit Application No. 2017-117
Larry Gillum
Stanislaus County, California

PROJECT NO.	DATE	DRAWN BY	APPR. BY
StanCo-001	7/12/2017	JH	MT

FIGURE 3-2

Hydrographs for Wells Located Near the Site

4.0 ENVIRONMENTAL CHECKLIST

Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" or as a "Potentially Significant Unless Mitigation Incorporated," as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Greenhouse Gas Emissions	☐ Population and Housing
☐ Agricultural Resources	☐ Hazards and Hazardous Materials	☐ Public Services
☐ Air Quality	☐ Hydrology and Water Quality	☐ Recreation
☒ Biological Resources	☐ Land Use and Planning	☐ Transportation and Traffic
☒ Cultural Resources	☐ Mineral Resources	☐ Utilities and Service Systems
☐ Geology and Soils	☐ Noise	☐ Mandatory Findings of Significance

Determination (To Be Completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature — Date: 1/9/18

Jami Aggers — Printed Name

Stanislaus County DER — For

Evaluation of Environmental Impacts

A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors, as well as general standards (e.g., the project would not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

All answers must take into account the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

Once the lead agency has determined that a particular physical impact may occur then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

"Negative Declaration: Less than Significant with Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less than Significant Impact." The lead agency must describe the mitigation measures and briefly explain how they reduce the effect to less than significant level.

Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an affect has been adequately analyzed in an earlier EIR or negative declaration. (See § 15063(c) (3) (D) of the CEQA Guidelines). In this case, a brief discussion should identify the following:

a. **Earlier Analyses Used.** Identify and state where they are available for review.

b. **Impacts Adequately Addressed.** Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

c. **Mitigation Measures.** For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

The explanation of each issue should identify:

a. The significance criteria or threshold, if any, used to evaluate each question; and

b. The mitigation measure identified, if any, to reduce the impact to less than significant.

4.1 Aesthetics

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?			**X**	
b) Substantially damage scenic resources, including, but not limited to, trees, outcroppings, and historic buildings within a state scenic highway?			**X**	
c) Substantially degrade the existing visual character or quality of the site and its surroundings?			**X**	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			**X**	

a. Would the project have a substantial adverse effect on a scenic vista?

b. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

The parcel of the Project Site is approximately 3.2 miles from the closest State Highway (California State Route 4) which is not designated as a State Scenic Highway in that area (part of the highway over the Sierra Nevada Mountain Range is Ebbetts Pass Scenic Byway). The parcel is bounded to the south by East Sonora Road (private at this portion), and orchards and grazing land. Views from East Sonora Road are primarily agricultural and rangeland. The addition of an orchard adds to the agricultural views from the roads, but doesn't adversely affect the open-space scenic quality of the views in the area.

The location of the proposed well site is not designated as a scenic resource and does not contain rock outcroppings, historic buildings, or mature trees, so construction and operation of the well would not disrupt or block any designated scenic resource. The proposed location for the well is currently used for grazing. Direct impacts of the Project would be less than significant.

Agricultural use supported by operation of the well would represent a continuation of the agricultural lands visible in the region, and would not disrupt views along a scenic highway. For this reason, indirect Project impacts would also be less than significant.

c. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

The visual setting of the site is one of open space, low-lying foothills, and rural agricultural uses. Public infrastructure exists in the form of rural roads, but little else. Construction and operation of a well would be consistent with the current visual setting. Operation of the Project would support a newly planted orchard on presently undeveloped rangeland adjacent to parcels currently used for agricultural uses. For these reasons, the Project would not directly or indirectly degrade the existing visual character.

d. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

The Project is located in a rural area with the closest residence approximately half a mile away to the southeast. Site drilling would continue for 24 hours a day for a portion of the approximately 30-day well construction period. During this time, on-site lighting would be necessary during night-time hours. All light sources would be minimized, directed towards the interior of the construction site. Further, drilling activities would be temporary and thus construction impacts would be less than significant. During operation the well site may include limited night lighting for security purposes, consisting of shielded outdoor lighting. No indirect light or glare impacts are anticipated with cultivation of orchard.

4.2 Agriculture and Forestry Resources

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				**X**

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				**X**
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Codes section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				**X**
d) Result in the loss of forest land or conversion of forest land to non-forest use?				**X**
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				**X**

a. Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

The Project Site and the APE are designated as grazing land.[9] Immediately to the west and south of parcel APN 001-011-039 are lands designated as Unique Farmland and Prime Farmland, respectively.[9] Construction and operation of the proposed groundwater well would support cultivation of farmland in the APE. Therefore the Project would not convert prime farmland, farmland of statewide importance, or unique farmland to non-agricultural uses. No impacts are expected.

b. Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

The proposed Project would support cultivation of up to approximately 70 acres of land, designated as A-2-40 (General Ag-40 acres). Future agricultural uses on the property would include an orchard which is a

[9] California Department of Conservation, 2016. Important Farmland Data Availability. Website: http://www.conservation.ca.gov/dlrp/fmmp/Pages/county_info.aspx. Accessed July 2017.

permitted use in an A-2 District. The parcel is already under a Williamson Act contract, as are the adjacent parcels.[10]

c. Would the project (c) conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code § 12220(g)), timberland (as defined by Public Resources Codes § 4526), or timberland zoned Timberland Production (as defined by Government Code § 51104(g))?

Stanislaus County does not contain land designated as forest land or timberland. No direct or indirect impact would occur. The Project would permit cultivation of currently fallow land devoid of trees within the APE. No impact is anticipated.

d. Would the project result in the loss of forest land or conversion of forest land to non-forest use?

Stanislaus County does not contain designated forest land, but does have a policy in the 2015 General Plan stating that in order to protect oak woodlands and other native hardwood habitats, projects that will or may potentially impact these woodlands must include a management plan for protection or enhancement of oak woodlands and other native hardwood habitats.[11] The Project Site, the APE, and the nearby area are zoned A-2-40 (General Ag-40 acres), for agricultural uses, and there are not any oak trees on the Project Site or APE. The Project would permit land currently designated as grazing land to be converted to farmland. No direct or indirect impact would occur.

e. Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

Construction and operation of the proposed groundwater well would support cultivation of farmland in the APE. The Project Site and the APE are zoned A-2-40 (General Ag-40 acres). The Project would permit cultivation of currently fallow land designated for agricultural purposes. Therefore the Project would not convert farmland to non-agricultural use. No impacts would occur.

4.3 Air Quality

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Conflict with or obstruct implementation of the applicable air quality plan?			**X**	

[10] Stanislaus County, 2017. Stanislaus County GIS Central. Website: http://gis.stancounty.com/giscentral/. Accessed July 24, 2017.
[11] Stanislaus County, 2016. Stanislaus County General Plan. Chapter 3: Conservation/Open Space Element. Adopted August 23.

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?			**X**	
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?			**X**	
d. Expose sensitive receptors to substantial pollutant concentrations?			**X**	
e. Create objectionable odors affecting a substantial number of people?			**X**	

4.3.1 Background

4.3.1.1 San Joaquin Valley Air Basin

The Project is located within the San Joaquin Valley Air Basin (SJVAB), which includes all of Stanislaus County. The San Joaquin Valley Air Basin (SJVAB) includes the counties of San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and the Valley portion of Kern County. Comprising nearly 25,000 square miles, it represents approximately 16 percent of the geographic area of California. The SJVAB has a population of over 3.3 million people, with major urban centers in Bakersfield, Fresno, Modesto, and Stockton. The SJVAB consists of a continuous inter-mountain valley approximately 250 miles long and averaging 80 miles wide. On the western edge is the Coast Mountain range, with peaks reaching 5,020 feet, and to the east of the valley is the Sierra Nevada Range with some peaks exceeding 14,000 feet. The Tehachapi Mountains form the southern boundary of the valley. The region's topographic features act to restrict air movement through and out of the air basin. Airflow in the SJVAB is primarily influenced by marine air that enters through the Carquinez Strait, where the San Joaquin-Sacramento Delta empties into the San Francisco Bay. The SJVAB is highly susceptible to pollutant accumulation over time. Frequent transport of pollutants into the SJVAB from upwind sources contributes to poor air quality.

4.3.1.2 San Joaquin Valley Air Pollution Control District

The San Joaquin Valley Air Pollution Control District (SJVAPCD) is the agency principally responsible for comprehensive air pollution control in the Basin. To that end, the SJVAPCD, a regional agency, works directly with the local Association of Governments, the County Transportation Commission, and local governments, and cooperates actively with all state and federal government agencies. The SJVAPCD develops rules and regulations, establishes permitting requirements, inspects emissions sources, and enforces such measures though educational programs or fines, when necessary.

The SJVAPCD is directly responsible for reducing emissions from stationary (area and point), mobile, and indirect sources. It has responded to this requirement by preparing a series of Air Quality Management Plans (AQMPs) covering Ozone and Particulate Matter. The AQMPs were prepared to comply with the federal and State Clean Air Acts and amendments, to accommodate growth, to reduce the high pollutant levels of pollutants in the Basin, to meet federal and State air quality standards, and to minimize the fiscal impact that pollution control measures have on the local economy. It identifies the control measures that will be implemented to reduce major sources of pollutants.

4.3.1.3 SJVAPCD Regulations

Regulation VI Prohibition. Regulation VI provides rules for emissions from a variety of sources. The following rules pertain to the Project:

Rule 4303 Orchard Heaters. Rule 4303 limits air emissions from gas fired heaters used to protect orchards from frost.

Rule 4550 Conservation Management Practices. Rule 4550 requires preparation and implementation of a Conservation Management Plan outlining practices used to limit fugitive dust emissions from agricultural sites.

Rule 4702 Internal Combustion Engines. Rule 4702 regulates emissions from stationary agricultural equipment by requiring non-emergency certified diesel internal combustion engines greater than 50 horsepower to be replaced by Tier 3 engines or replaced with electrified equipment. As of January 2015, Rule 4702 requires all diesel-fired engines to be replaced with the latest Tier engines or be electrified.

Regulation VIII Fugitive PM_{10} Prohibition. The purpose of Regulation VIII is to reduce ambient concentrations of fine particulate matter by requiring actions to prevent, reduce, or mitigate anthropogenic fugitive dust emissions. Regulation VIII requires property owners, farmers, and public agencies to control fugitive dust emissions from specified outdoor sources including construction sites, paved and unpaved roads, vacant land, bulk material transport, and similar activities.

Rule 8081 Agricultural Sources. Rule 8081 limits fugitive dust emissions from agricultural sources associated with transportation of materials and commodities. Farmer must prepare a Fugitive PM_{10} Management Plan (FPMP) to address use of dust suppressants on unpaved roads and unpaved vehicle traffic areas.

4.3.2 Discussion of Impacts

a. Would the project conflict with or obstruct implementation of the applicable air quality plan?

b. Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Construction. Direct impacts associated with construction of the proposed well would involve exhaust emissions from construction equipment, motor vehicles traveling to and from the site, and fugitive dust generated by traveling on a short unimproved dirt access drive. Table 4.3.1, Estimated Construction Emissions, depicts the estimated emissions of criteria pollutants generated during construction of the well and compares them to the SJVAPCD screening level construction threshold of 100lbs/day.[12] Emission estimates were calculated for Reactive Organic Gas (ROG), Oxides of Nitrogen (NO_x), Carbon Monoxide (CO), Sulfur Dioxide (SO_2), Particulate Matter finer than 10 microns (PM_{10}) and Particulate Matter finer than 2.5 microns ($PM_{2.5}$) using the CalEEMod model, and are provided in Appendix E (Appendix E was created for a typical well drilling project in this region, and the emissions are estimated to be the approximately the same).

Table 4.3.1: Estimated Construction Emissions

	Criteria Pollutants					
	ROG	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
SJVAPCD Construction Threshold (lbs/day)	100	100	100	100	100	100
Estimated* Construction Emissions(lbs/day)	3.9	37.07	27.8	.0417	2.5	2.3
Exceed Threshold?	No	No	No	No	No	No

Given the short term nature of construction-related activity, and assuming compliance with control measures outlined in Regulation VIII, construction emissions would fall below the SJVAPCD threshold of 100 lbs per day of any criteria pollutant. Therefore, the Project would not cause a conflict with air quality plans or contribute to a violation of any air quality standard, and impacts will be less than significant.

Operation. Operational emissions would be minimal since the groundwater well would operate on a limited schedule when irrigation is required (typically March through October), and the pump would be powered by electricity. Since all stationary air pollutant sources would be subject to SJVAPCD permit requirements, they can be presumed to have a less-than-significant impact on local pollutant concentrations. Moreover, few mobile source emissions are associated with the well and would be well below the thresholds of 10 tons per year for both ROG and NO_x.

[12] *San Joaquin Valley Air Pollution Control District, 2015. Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI), Final Draft.*

Indirect air emissions would be generated by agricultural operations in the APE, which may include use of equipment such as pump engines, boilers, vehicles and orchard heaters, and travel on unpaved access drives. The SJVAPCD requires agricultural operations to comply with a variety of regulations designed to limit fugitive dust from crop cultivation and exhaust emissions from agricultural equipment. Future agricultural operations in the APE would be subject to these requirements, which would ensure the proposed Project would not directly or indirectly conflict with or obstruct air quality plans nor contribute to a violation of air quality standards.

c. Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

As discussed in the preceding impact analysis, the proposed Project would generate average daily operational emissions that have been determined not to have a significant impact on air quality. As such, the Project would not directly or indirectly generate a cumulatively considerable net increase of criteria pollutants. This would be a less than significant cumulative impact.

d. Would the project expose sensitive receptors to substantial pollutant concentrations?

As discussed previously, the well facility would be powered by electricity and would not generate emissions on a daily basis. However, the well would be visited periodically for maintenance. Moreover, cultivation of crops in the APE would generate emissions periodically when mobile equipment is used. The emissions generated by the trips would be less than the SJVAPCD's thresholds of significance for air pollutants. Moreover, no sensitive uses are located in the vicinity of the proposed Project. As such, these emissions would not expose sensitive receptors (residences or students) to substantial pollutant concentrations. This would be a less than significant impact.

e. Would the project create objectionable odors affecting a substantial number of people?

A Project-related significant adverse effect could occur if construction or operation of the proposed Project would result in generation of odors that would be perceptible in nearby sensitive areas. Odors are typically associated with industrial projects involving the use of chemicals, solvents, petroleum products, and other strong-smelling elements used in manufacturing processes, as well as sewage treatment facilities and landfills. The proposed Project would not utilize or release chemicals, solvents, or petroleum products during construction or operation. Therefore, no objectionable odors are anticipated with operation of the well and the potential impact would be less than significant.

Indirect impacts associated with cultivation of the APE may result in odors associated with fertilizer, pesticide, or herbicide application. However, there are no sensitive land uses in the immediate vicinity. Also, Stanislaus County maintains a Right to Farm ordinance that protects agricultural operations. Therefore, indirect impacts would be less than significant.

4.4 Biological Resources

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife[13] or U.S. Fish and Wildlife Service?		**X**		
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?			**X**	
c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?			**X**	
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native nursery sites?			**X**	
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree				**X**

[13] *Beginning January 1, 2013, the California Department of Fish and Game (CDFG) officially changed its name to California Department of Fish and Wildlife (CDFW); however, CEQA Guidelines Appendix G: Environmental Checklist Form has not been updated to reflect this name change.*

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
preservation policy or ordinance?				
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				**X**

4.4.1 Discussion of Impacts

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

The Project Site and APE consist of highly disturbed agricultural land that is vegetated by grasses, weeds, and occasional shrubs, and is used for grazing. Portions of the property have been used occasionally for growing annual hay. The Project Site and APE provide limited habitat for the majority of sensitive species. During the reconnaissance survey of the Project Site and APE, no state or federal sensitive, special status or candidate species were observed. While there was sufficient habitat that could support burrowing species, burrows were not observed and therefore the area could not support a species that relies on the presence of existing burrows for survival (e.g., the California tiger salamander).

Swainson's Hawk is listed as threatened under California Endangered Species Act (CESA) and is protected under the Migratory Bird Treaty Act (MBTA). No indication of nesting activity or site use was observed. Nesting habitat within ½ mile of the Project Site was observed to be relatively sparse, with few existing trees of substantial size. While several raptor species were sighted during the survey, Swainson's Hawk was not among them. However, raptors appear to be using the area and nesting activity in the vicinity is a reasonable possibility. If nesting occurred nearby, Swainson's Hawk could be impacted by construction activity or planting of the orchard during the nesting season (March 1 to September 15), which would represent a potentially significant impact. Mitigation Measure (MM) Bio-1 will require the implementation of a nesting survey if well construction or orchard planting activities are conducted during the nesting season, and the establishment of buffer zones around any active nests identified.

An indirect effect of the Project would be the conversion of fallow rangeland to orchards, which will decrease the value of that area as forage habitat for Swainson's Hawk, since fallow fields are one of highest value types of foraging habitat and orchards the lowest; however, this activity is not "urban development"

as specified in the CDFW guidance document for Swainson's Hawk mitigation. In addition, the Project Site is located adjacent to areas with poor forage value (including existing orchards), which can be confirmed by the relatively low number of sightings of Swainson's Hawk in the vicinity. Studies have shown that the Swainson's Hawk is sensitive to fragmented landscapes; use will decline as suitable patch size decreases. Also, foraging ranges of Central Valley Swainson's Hawk can extend out from 830 to over 21,000 acres. The project area is small patch of forage area isolated from much larger areas available for foraging in the general vicinity. In addition, evidence of prey animals was not observed. Finally, the proposed orchard is agricultural in nature and will not include or support urban development.

Based on the above information, the direct impacts of the Project will be less than significant with implementation of MM Bio-1 – Nesting Survey for Swainson's Hawk. The indirect impacts of the Project to habitat or to sensitive, threatened, or endangered species will be less than significant.

b. Could the project have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

No disturbance will occur to Littlejohns Creek or any riparian habitat, and work will be conducted more than 300 feet from the ordinary high water mark. The Project Site is not subject to any regional plans, policies, or specific regulations of the CDFW or U.S. Fish and Wildlife Service. As such, impacts will be less than significant.

c. Have a substantial adverse effect on federally protected wetlands as defined by § 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Some hydrophytic vegetation was observed on the lowland portion of the Gillum property near the Littlejohns Creek. Ground disturbance that results in fill or alters the drainage pattern of a jurisdictional resource would represent a potentially significant indirect impact; however, the Project Site and APE are located well away from Littlejohns Creek and the Farmington Flood Control Basin, and there will be no ground disturbing activities in these areas related to the Project. Therefore, direct and indirect Project impacts to federally protected wetlands will be less than significant.

d. Could the project interfere substantially with the movement of any resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors, or impede the use of wildlife nursery sites?

The Project Site consists of disturbed, agricultural and livestock land that provides limited habitat, migratory, or nursery opportunities for sensitive species. Existing habitat that could support burrowing species is plentiful; however, no burrows were observed. The project proposes to create a new orchard in a currently fallow area. The orchard would be similar to orchards on neighboring properties. The Project Site

lies within a larger agricultural community with large amounts of human disturbances. Based on this information, impacts are anticipated to be less than significant.

e. Could the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Construction and operation of the well would be consistent with land use goals and policies of Stanislaus County that are directed towards supporting agricultural activity on productive lands designated and zoned for such uses. The Project Site is designated General Agriculture – 40 acres. Future agricultural uses on the property would include an orchard. The Project Site is not subject to specific local policies or ordinances protecting biological resources. While there are approximately 21 trees on the Gillum parcels, none are anticipated to be impacted by the project.

f. Could the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The Project Site is not subject to any adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or state habitat conservation plan that would conflict with the proposed Project. No impacts are anticipated.

4.4.2 Mitigation Measures

Bio-1. The applicant shall endeavor to conduct all well construction and orchard development activities during the Swainson's Hawk non-breeding season (October - January); however, if ground disturbing activities must occur during the breeding season (February - September), a qualified biologist shall conduct a survey for active Swainson's Hawk nests no more than 10 days prior to the start of any ground disturbing activity. The surveys shall be conducted in a sufficient area around the work site to identify any nests that are present, and to determine their status. A minimum no-disturbance buffer of ½ mile shall be delineated around any active nests until the breeding season has ended, or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival. If implementation of the ½-mile no-disturbance buffer is not feasible, the property owner shall consult with the CDFW to identify alternative mitigation, including the potential for acquisition of an Incidental Take Permit (ITP).

4.5 Cultural Resources

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5?		**X**		
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?		**X**		
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		**X**		
d. Disturb any human remains, including those interred outside of formal cemeteries?			**X**	

4.5.1 Discussion of Impacts

a. Would the project cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5?

The APE (indirect impact) and the Project Site (direct impact) are currently characterized as grazing land. Part of the APE (APN 001-011-039) is just north of Littlejohns Creek. A site visit conducted by JJ&A non-archaeological staff in July of 2017 identified a windmill, well, and a depression with weathered bricks within the indirect APE (APN 001-011-030). These features are potentially historic based on review of historic UGGS maps and review of the site visit photographs by a qualified archaeologist.

A record search conducted via the Central California Information Center (CCIC) at California State University, Stanislaus on August 8, 2017 focused on the parcel boundary of the APE and a surrounding 1-mile buffer (CCIC File No. 10400N). Four archaeological surveys have been conducted within the search area between 1948 and 1994, one of which overlaps with a small portion of the indirect APE. The majority of the direct and indirect APE has not been surveyed for cultural resources.

The records search also identified four prehistoric archaeological resources (P-50-000106, P-50-000107, P-50-000233, and P-50-000263), one informally recorded prehistoric resource (2393-1), and a segment of an unrecorded historic linear resource (P-55-006935: Stockton to Sonora Stage Road) within the 1-mile study area. The record search results indicate that no prehistoric or historic resources have been recorded in, or immediately adjacent to, the APE. In addition, no National Register of Historic Places or California Register of Historical Resources-eligible or -listed resources were identified within the APE. As such, no known historic resources are recorded within the APE.

Historical areas within Stanislaus County are generally found in and around the gold rush towns of Knights Ferry and La Grange.[14] From the 1860's to the 1890's, the 26 Mile House, a way stop on the Stockton to Sonora Stage Road, was north of Littlejohns Creek, presumably near 26 Mile Road. The way stop was surrounded by a small settlement including a roadhouse, tavern, horse barn, merchandise store, post office, schoolhouse and church, and a cemetery that is still located on the north side of East Sonora Road approximately 1,650 feet east of its intersection with 26 Mile Road.[15] Reportedly, 26 Mile House burned in the 1890's and was abandoned. Combined with the CCIC records search results, the site visit, and a review of historic maps of the APE suggest that there is a potential for unidentified historic resources within the APE.

Destruction or damage to previously unknown historic resources would be a significant impact. Mitigation measure MM CUL-1, outlined below, is recommended and requires that an archaeological survey be conducted by a qualified Archaeologist of the project APE (direct and indirect) prior to any project construction activities. With implementation of MM CUL-1, construction and operation of the well would not result in an adverse change to any historic resources and impacts would be considered less than significant.

b. Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?

As described above, a records search conducted for the Project did not identify any cultural resources within the APE. However, the vast majority of the APE has not been surveyed for cultural resources, including archaeological resources. While no cultural resources are known to exist within the APE, the property is considered to be potentially archaeologically sensitive given its location near the Littlejohns Creek and past historic land use. The Central Valley has been occupied by Native American groups for thousands of years. The APE is located adjacent to Littlejohns Creek, a drainage where prehistoric archaeological resources have been found both north and south of the creek. As noted above, four recorded prehistoric sites and one informally documented prehistoric site have been identified within 1 mile of the Project Site and APE. Several sites recorded along Littlejohns Creek in the region have been associated with the Farmington Complex, a group of early Holocene prehistoric sites. Sites of the Farmington Complex date to approximately 12,000 to 9000 and/or 9000 to 7000 years before present.[16]

[14] Open Space and Conservation Element Supporting Documentation, Stanislaus County General Plan 2015.

[15] Stanislaus Historical Quarterly, Vol. 5 No. 3, Autumn 2012.

[16] Treganza, Adan E. 1952 Reports of the University of California Archaeological Survey No. 14, Archaeological Investigations in the Farmington Reservoir Area, Stanislaus County, California. Department of Anthropology, University of California, Berkeley, and Ritter, Brain W., Hatoff and Louis A. Payen 1976 Chronology of the Farmington Complex. American Antiquity. 41:3(334-341), and Rosenthal, Jeffrey S., Gregory G. White, and Mark Q. Sutton, 2007 The Central Valley: A View from the Catbird's Seat. In California Prehistory, Colonization, Culture, and Complexity. Edited by Terry L. Jones and Kathryn A. Klar, pp. 147–164. AltaMira Press, New York.

On August 3, 2017, the California Native American Heritage Commission (NAHC) was contacted to request a Sacred Lands file search. The NAHC responded on September 1, 2017 that no Native American cultural resources were identified by their search as being within the proposed project APE.

Observations from the JJ&A site visit described above, combined with the context of the APE and review of historic maps of the APE suggest there is a potential for unrecorded archaeological resources. Destruction or damage to previously unknown archaeological resources would be a significant impact. This impact would be mitigated to less than significant with implementation of MM CUL-1.

c. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

The surface soils on the Project Site and APE consist of the Pentz-Peter series: silty loam to a silty clay loam derived from weathered andesitic, tuffaceous sediments from the surface up to depths of approximately 23 inches. The soils are underlain by the Mehrten Formation formed of dark sandstones, claystones, and conglomerates with interbedded tuffs and mudflows, all dominantly of andesitic composition, of late Miocene and Pliocene (Tertiary age).;The University of California Museum of Paleontology has recorded 40 fossil locations (primarily vertebrate and plant fossils) in the Mehrten Formation, primarily in Stanislaus and Tuolumne Counties.[17] In addition, a Stanislaus County geologist indicated there was a significant potential for the Mehrten Formation to host unique mammal fossils. However, a study conducted in Madera County and performed by the California Department of Transportation indicated no fossils were found in the Mehrten Formation and the sediments were less conducive to the preservation of fossils, and therefore, gave the Mehrten Formation a low sensitivity for potential to encounter paleontological resources.[17] Also, Stanislaus County has not indicated a potential for significant impact to paleontological resources in the Mehrten Formation in the Final Environmental Impact Report for the most recent General Plan update.[18] Nevertheless, due to the potential for fossils within the Mehrten Formation, mitigation measure MM CUL-2 is recommended and is outlined below. Implementation of mitigation measure MM CUL-2 will preserve paleontological resources and impacts would be considered less than significant.

d. Would the project disturb any human remains, including those interred outside of formal cemeteries?

A records search conducted at the CCIC did not identify any cultural resources within the project APE. It is possible that previously unknown human remains could be uncovered either directly during Project construction or as a result of disturbance within the APE. This would be a significant impact if not properly

[17] State of California Department of Transportation, 2015. *Paleontological Evaluation Report and Preliminary Paleontological Mitigation Plan for the Madera 41 South Expressway Project, Madera County, California.* Submitted to CalTrans. November.

[18] ICF International, 2016. Stanislaus County General Plan and Airport Land Use Compatibility Plan Update Final Program Environmental Impact Report. Prepared for Stanislaus County. July.

treated. However with incorporation of MM CUL-1 and MM CUL-2, and compliance with California Public Resource Code (PRC), this potential impact is anticipated to be less than significant.

Any discovery of human remains would be treated in accordance with Section 5097.98 of the Public Resources Code (PRC) and Section 7050.5 of the Health and Safety Code. Pursuant to State Health and Safety Code § 7050.5, if human remains and/or cultural items defined by the Health and Safety Code, Section §7050.5, are inadvertently discovered during construction activities, all work within a 100-foot radius of the find or an area reasonably suspected to overlie adjacent remains (whichever is larger) will cease, the find will be flagged and protected for avoidance, and the Stanislaus County Coroner will be contacted immediately. If the remains are found to be Native American as defined by Health and Safety Code, Section 7050.5, the coroner will contact the NAHC by telephone within 24 hours. The NAHC shall immediately notify the person it believes to be the Most Likely Descendant (MLD) as stipulated by California PRC Section 5097.98. The MLD(s), with the permission of the landowner and/or authorized representative, shall inspect the site of the discovered remains and recommend treatment regarding the remains and any associated grave goods. The MLD shall complete their inspection and make their recommendations within 48 hours of notification by the NAHC. Construction will not proceed within the 100-foot area (or protected area) around the discovery until the appropriate approvals are obtained. Work may be delayed in the vicinity of the human remains up to 30 days.

4.5.2 Mitigation Measures

MM CUL-1: Cultural Resource Survey: Prior to any project-related ground disturbing construction activities, a qualified Archaeologist shall be retained by the Applicant to conduct a Phase I archaeological survey of the project APE (direct and indirect). The Archaeologist will conduct a no-collection intensive pedestrian field survey of the APE in an effort to determine the absence or presence of cultural resources, including historic resources, archaeological resources, and/or human remains. A pedestrian survey involves walking transects at set intervals based on agency requirement, and professional judgment of ground surface visibility in the field (generally 10 to 15 meters). The survey will be conducted across the entirety of the APE (based on professional judgment) in an effort to identify any cultural resources within the APE. If ground surface visibility is sufficiently diminished to preclude the identification of cultural resources, subsurface probing of the APE may be necessary. The qualified Archaeologist will utilize survey methods and record any identified cultural resources to state standards and provide a report of findings and recommendations to the lead agency.

MM CUL-2: Inadvertent Discoveries of Paleontological Resources— If the construction staff or others observe previously unidentified paleontological resources during ground disturbing activities, they will halt work within a 100-foot radius of the find(s), delineate the area of the find with flagging tape or rope (may also include dirt spoils from the find area), immediately notify the lead agency, and retain a qualified Paleontologist to review the observed paleontological resources. Construction will halt within the flagged or roped-off area. The Paleontologist will assess the resource as soon as possible and determine

appropriate next steps in coordination with the lead agency. Such finds will be formally recorded and evaluated. The resource will be protected from further disturbance or looting pending evaluation.

4.6 Geology and Soils

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. (1) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42.				**X**
ii. Strong seismic ground shaking?			**X**	
iii. Seismic related ground failure, including liquefaction?			**X**	
iv. Landslides?			**X**	
b. Result in substantial soil erosion or the loss of topsoil?			**X**	
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off site landslide, lateral spreading, subsidence, liquefaction or collapse?			**X**	
d. Be located on expansive soil, as defined in Table 18-1 B of the Uniform Building Code (1994), creating substantial risks to life or property?			**X**	
e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal				**X**

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
systems where sewers are not available for the disposal of waste water?				

a. Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

ii. Strong seismic ground shaking?

iii. Seismic-related ground failure, including liquefaction?

iv. Landslides?

The Project Site and APE are not located within an Alquist Priolo Earthquake Fault Zone. No known active, potentially active, or inactive faults underlie the Project area; therefore, there are no impacts associated with the potential rupture of a known fault.

The Project area is located in a region of California associated with generally low seismic shaking potential.[19] No active faults are mapped near the Project Site. The San Joaquin Fault, a blind thrust fault associated with the Great Valley thrust fault system, is inferred to be located beneath or slightly west of Interstate 5 (approximately 32 miles west of the Project Site), and is reported as showing evidence of Late Quaternary activity (i.e., within the last 700,000 years).[20] This fault has been classified as potentially active. The Foothills Fault System lies in the foothills of the Sierra Nevada Mountain Range, and the Green Springs Run Fault, the southern portion of the Foothills Fault System, is approximately 14 miles to the east of the project site. The Green Springs Run Fault is Late Quaternary in age and has no known historic activity.[21] As such, the Project Site and APE may be expected to experience moderate ground shaking during its operational life in the event of an earthquake on one of the nearby active or potentially active faults (such as the San Joaquin Fault) or from a major earthquake centered on the more distant San Andreas Fault

[19] *Branum, D., Chen, R., Petersen, M., and Wills, C. 2016. Earthquake Shaking Potential for California, California Geological Survey Map Sheet 48 (Revised 2016).*

[20] *State of California Department of Conservation California Geological Survey (CGS). 2010. Fault Activity Map of California (2010)*

[21] United States Geological Survey, 2017. Earthquake Hazard Program, Faults. Quaternary Fault and Fold Database of the United States. Website: https://earthquake.usgs.gov/hazards/qfaults/. Accessed: September 20, 2017.

system. The Project includes construction of a well and a small wellhead and pump and wellhead enclosure, and will not include construction of any habitable structures. Wells generally are not very susceptible to damage from earthquake shaking; therefore, impacts are expected to be less than significant.

Sediments considered most susceptible to earthquake-induced liquefaction are saturated, uniformly graded, loose sands that occur within about 50 feet of the ground surface. Data provided by the applicant indicate that the Project Site and APE is underlain by well consolidated volcano-fluvial sediments and mudflows of the Miocene Mehrten Formation, and that the depth to groundwater is over 80 feet. These sediments would have a low susceptibility to seismic-related ground failure and liquefaction, and impacts are therefore judged to be less than significant.

The Project Site and APE are located on gently rolling hills but are not located in a landslide hazard zone designated by the California Department of Conservation or Stanislaus County. The Project Site and APE is located near a creek (Littlejohns Creek) with shallow banks, and no evidence of slope instability was observed at the time of our site visit. The Project and the planting and operation of the orchard it will support in the APE will not disturb the creek or nearby embankments. As such, no impacts are anticipated.

b. Would the project result in substantial soil erosion or the loss of topsoil?

The Project consists of the construction and operation of a groundwater well, and will provide irrigation water for an orchard to be planted in the APE. The soils in the APE and Project Site are silty loams and clays, shallow in depth, and can be prone to erosion on hillslopes. Soil disturbing activities associated with the Project include drilling of the well, and excavation and closure of a mud pit. Indirect Project effects include soil preparation and planting of the orchard, and installation of the irrigation system. This work will not result in substantial changes to the surface topography, construction of slopes, or concentration of flow. During these activities, typical drilling industry and agricultural industry methods will be employed to minimize soil erosion. The slopes in the area of the Project Site and APE are relatively gentle, and no evidence of soil erosion was observed during our reconnaissance. For these reasons, impacts related to soil erosion and loss of topsoil are anticipated to be less than significant.

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

Land subsidence induced by groundwater extraction is considered a medium to high potential hazard for the Eastern San Joaquin Subbasin; however, no subsidence has been reported near the Project Site, and it is underlain by the Mehrten Formation, which is not considered to susceptible to pumping-induced subsidence. The Mehrten Formation consists of volcano-fluvial sandstones, volcanic mudflows (lahars) and ancient soils (paleosols). These deposits are of Miocene age and are well consolidated. Although groundwater levels are currently near historical lows in this area, subsidence is unlikely to occur in these deposits, even if groundwater levels were to decline further. The APE consists of gently rolling terrain

eroded on stable surfaces of the Mehrten Formation. No landslides or slope instability have been reported or mapped in this area, and no evidence of slope instability was observed during our reconnaissance. As such, the Project Site and APE are not located on geologic unit that is unstable or would become unstable as a result of the Project, and impacts will be less than significant.

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

The soils on the Project Site and APE are upland from Littlejohns Creek and the stream terrace soils. The soils in the APE and Project Site are silty loams and clays, shallow in depth. However, the proposed well and well enclosure, and the orchard that it will supply with irrigation water, would not be susceptible to damage from expansive soils. As such, less than significant impacts are anticipated.

e. Would the Project Site have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

The Project includes the construction and operation of a groundwater well, and will indirectly support an orchard to be planted in the APE. These activities would not result in the generation of wastewater requiring alternative treatment or disposal. No impacts are anticipated.

4.7 Greenhouse Gas Emissions

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			**X**	
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			**X**	

4.7.1 GHG Constituents

Greenhouse gas (GHG) emissions refer to a group of emissions that are believed to affect global climate conditions. These gases trap heat in the atmosphere and the major concern is that increases in GHG emissions are causing global climate change. Global climate change is a change in the average weather on earth that can be measured by wind patterns, storms, precipitation, and temperature. Although there is disagreement as to the speed of global warming and the extent of the impacts attributable to human

activities, most agree that there is a direct link between increased emission of GHGs and long-term global temperature. What GHGs have in common is that they allow sunlight to enter the atmosphere, but trap a portion of the outward-bound infrared radiation and warm up the air. The process is similar to the effect a greenhouse has in raising the internal temperature, hence the name greenhouse gases. Both natural processes and human activities emit GHGs. The accumulation of greenhouse gases in the atmosphere regulates the earth's temperature; however, it is the scientific consensus that emissions from human activities such as electricity generation and motor vehicle operations have elevated the concentration of GHGs in the atmosphere. This accumulation of GHGs has contributed to an increase in the temperature of the earth's atmosphere and contributed to global climate change.

The principal GHGs are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), and water vapor (H2O). CO_2 is the reference gas for climate change because it is the predominant greenhouse gas emitted. To account for the varying warming potential of different GHGs, GHG emissions are often quantified and reported as CO_2 equivalents (CO2e).

4.7.2 Regulatory Setting

4.7.2.1 State of California

In 2005, in recognition of California's vulnerability to the effects of climate change, Governor Schwarzenegger established Executive Order S-3-05, which sets forth a series of target dates by which statewide emissions of GHG would be progressively reduced, as follows:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

In 2006, California passed the California Global Warming Solutions Act of 2006 (Assembly Bill No. 32; California Health and Safety Code Division 25.5, Sections 38500, et seq., or AB 32), which requires the California Air Resources Board (ARB) to design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide GHG emissions are reduced to 1990 levels by 2020.

In August 2007, the Legislature adopted Senate Bill 97 (SB 97), which required the Governor's Office of Planning and Research (OPR) to prepare and transmit new CEQA guidelines for the mitigation of GHG emissions or the effects of GHG emissions to the Natural Resources Agency by July 1, 2009.

The adopted amendments to the CEQA Guidelines became effective on March 18, 2010. In the CEQA Guideline Amendments, a threshold of significance for greenhouse gas emissions was not specified, nor does it prescribe assessment methodologies or specific mitigation measures. Instead, the amendments encourage lead agencies to consider many factors in performing a CEQA analysis and rely on the lead agencies to make their own significance threshold determinations based upon substantial evidence.

4.7.2.2 San Joaquin Valley Air Pollution Control District

To assist Lead Agencies, project proponents, permit applicants, and interested parties in assessing and reducing the impacts of project specific GHG on global climate change, the SJVAPCD has adopted guidance for use when serving as the Lead Agency that can also be used by local agencies.[22] The policy relies on the use of performance-based standards, otherwise known as Best Performance Standards (BPSs) to assess significance of project specific GHG emissions on global climate change during the environmental review process, as required by CEQA. For traditional stationary source projects, BPS includes equipment type, equipment design, and operational and maintenance practices for the identified service, operation, or emissions unit class and category.

Use of BPSs is a method of streamlining the CEQA process of determining significance and is not a required emission reduction measure. Projects implementing BPSs would be determined to have a less than cumulatively significant impact. Otherwise, demonstration of a 29 percent reduction in GHG emissions, from business-as-usual, is required to determine that a project would have a less than cumulatively significant impact. The SJVAPCD has developed BPSs for the following stationary sources: boilers; steam generators; gasoline dispensing facilities; dry cleaners; oil and gas extraction, storage, transportation, and refining operations; and co-generation.

4.7.3 Discussion of Impacts

a. Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

The maximum GHG emissions that Project construction would generate would be approximately 50 metric tons per year of carbon dioxide equivalent (CO2e - see Appendix E for CalEEMod output). Project operations would be limited to indirect emissions from the use of electricity and infrequent motor vehicle emissions associated with periodic maintenance at the well site. Project best management practices (BMPs) will include a turbine pump with a high efficiency motor (such as, for example, variable frequency drive. The primary means of achieving operational efficiency is by properly matching the pump to the well conditions and water demand, thus minimizing the horsepower required by a pump in order to reduce energy use. The pump selected for the Project will be one that provides enough total head to lift groundwater to pressurize an irrigation system while operating at a low brake horsepower rating. While the SJAVPCD has not yet adopted BPS for well operation, it can be concluded that inclusion of such energy efficient features into the Project would be consistent with the SJVAPCD's approach of implementing BPSs.

[22] *San Joaquin Valley Air Pollution Control District, 2009. District Policy – Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency*

Construction and operational emissions would be much lower than the 25,000 metric tons/year of CO2e annual limit that represent major facilities required to report GHG emissions to the state. Activities of smaller projects are assumed not to conflict with the State's ability to reach AB 32 overall goals, since the Air Resources Board will focus upon the largest emitters of GHG emissions to achieve maximum reductions. For these reasons, the Project would not conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs, and impacts would be less than significant.

b. Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The Proposed Project would not conflict with the State's goals in AB 32 nor the SJVAPCD's guidance and policy for addressing GHG emissions; therefore, this impact would be less than significant.

4.8 Hazards and Hazardous Materials

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			**X**	
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			**X**	
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one quarter mile of an existing or proposed school?				**X**

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 or a list of hazardous substance release sites identified by the state Department of Health Services pursuant to § 25356 of the Health & Safety Code and, as a result, would it create a significant hazard to the public or the environment? [PRC § 21151.8(a)(1)(B)]				**X**
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				**X**
f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				**X**
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			**X**	
h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?			**X**	

a. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Construction of the proposed well at the Project Site will involve the use of hazardous materials such as liquid cement grout, vehicle fuels, and hydraulic fluid, and operation of the well will also involve the use of solvents, lubricants, and well rehabilitation chemicals for well maintenance. Planting and operation of the

orchard made possible by the well will involve the use of fuels and agrichemicals. When not in use, any hazardous material will be stored in designated staging areas in compliance with local, state, and federal requirements, and consistent with their labeling and Material Safety Data Sheets (MSDS). Personnel handling hazardous substances are required by law to be properly and regularly trained in their proper handling and disposal. Transportation of hazardous materials to be used during construction will be conducted in compliance with Department of Transportation (DOT) requirements. All hazardous materials and wastes will be removed from the site for reuse, recycling, or disposal at a properly licensed facility in accordance with state and federal regulations and requirements. For these reasons, impacts are considered to be less than significant.

b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

There is a small potential for an accidental spill or release of hazardous materials as a result of the Project during construction and operation of the well. In addition, an accidental spill or release of hazardous substances could occur or during planting and operation of the orchard that the Project will support. Hazardous materials will be present in the Project area and APE in limited quantities, and personnel performing work in these areas will follow the safety procedures contained in their Injury and Illness Prevention Programs (if applicable), specified on Material Safety Data Sheets (MSDS), and/or outlined in the material labeling.

Review of the state Geotracker and Envirostor databases indicates the Project Site and APE are not near any identified hazardous substance releases. Based on the above information, hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment will be less than significant.

c. Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No existing or proposed schools are located within ¼ mile of the Project Site or APE. No impact is anticipated.

d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 or a list of hazardous substance release sites identified by the state Department of Health Services pursuant to § 25356 of the Health & Safety Code and, as a result, would it create a significant hazard to the public or the environment?

Based on review of the state Geotracker and Envirostor databases and information provided by the applicant (Appendix B), the Project Site and APE are not included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 or a list of hazardous substance release sites identified by the state Department of Health Services pursuant to § 25356 of the Health & Safety Code. No impacts are anticipated.

e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

The Project Site and APE are not located within the boundaries of an airport land use plan or within 2 miles of an airport.[23] No impact is anticipated.

f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

The closest private airstrip to the site is the J-B Airport (grass strip) for private use only and is approximately 7 miles from the Project Site and APE. The next closest airport is open to the public (for private pilots) and is the Oakdale Airport (paved airstrip) located in southern Oakdale, approximately 10 miles southeast of the Project Site and APE.[24] No impact is anticipated.

g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The Project represents the construction and operation of a groundwater well and does not include or support the construction of any facilities outside of the Project Site or APE. Road closures are not anticipated to be required during construction or operation activities associated with the Project. The Project will not impair the implementation of or physically interfere with an adopted emergency response or evacuation plan; therefore, no impact will occur.

h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

The Project Site and APE are located in a State Responsibility Area for wildland fire fighting that is designated as a Moderate Fire Hazard Severity Zone.[25] During construction of the well, the drilling contractor will maintain fire extinguishers within the construction area. The Project will support the cultivation of an irrigated and maintained orchard in the APE, which would be expected to result in a decrease in the fire hazard severity in this area. For these reasons, impacts are anticipated to be less than significant.

[23] *Stanislaus County Planning and Community Development Department, 2014. Draft Stanislaus County Airport Land Use Compatibility Plan, May.*

[24] *Airnav.com, 2017. Airnav.com, Airport Information. Website:* http://www.airnav.com/airports/. *Accessed August 8.*

[25] *CalFire FRAP, 2007. Fire Hazard Severity Zones in SRA, Stanislaus County. Adopted by CalFire on November 7.*

4.9 Hydrology and Water Quality

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Violate any water quality standards or waste discharge requirements?			**X**	
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			**X**	
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?			**X**	
d. Substantially alter the existing drainage pattern of the site or area, including through the alternation of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?			**X**	
e. Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?			**X**	
f. Otherwise substantially degrade water quality?			**X**	
g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				**X**

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
h. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				**X**
i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam, or dam inundation?				**X**
j. Cause inundation by seiche, tsunami, or mudflow?			**X**	

a. Would the project violate any water quality standards or waste discharge requirements?

The Project includes the construction and operation of a groundwater well and does not include the construction of any facilities that would generate wastewater or other waste requiring disposal. Mud rotary drilling operations would utilize relatively inert NSF Baroid-type products and biodegradable additives. Drilling mud would be handled in a temporary mud pit and would be dried out and mixed into surface soils after the completion of drilling operations. Therefore, Project impacts would be less than significant.

The Project would provide irrigation water to an orchard planted in the APE, and the orchard's operator must obtain regulatory coverage under the RWQCB's Irrigated Lands Regulatory Program (ILRP), either by joining a coalition, obtaining coverage as an individual grower under general Waste Discharge Requirements (WDRs), or obtaining an Individual Permit. Compliance with the ILRP would assure that water quality standards and waste discharge requirements are not exceeded. Therefore, indirect impacts would be less than significant.

b. Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

A detailed analysis of the effect of groundwater extraction from the proposed well on groundwater levels and supplies in the area is included in Appendixes B and C. The proposed well will be limited to an average annual extraction rate of approximately 300 AFY. An analysis on estimated transmissivity and storage coefficient indicates that the anticipated drawdown induced by pumping this well will be less than 5 feet at the nearest off-site domestic well, located approximately 3,200 feet to the south, and the distance at which 20 feet of drawdown would be induced would not occur. After the well is installed, the permit conditions

required as part of the project will include verification that drawdown during testing of the well is consistent with these predictions.

Based on the analysis in Appendixes B and C, drawdown would be experienced by existing nearby wells as a result of groundwater extraction from the proposed well. In general, the effect of less than 20 feet of drawdown on irrigation and municipal wells would not be considered significant. Domestic wells may be shallower and more sensitive potential drawdown interference; however, a drawdown of less than 5 feet will not usually result in a measurable adverse effect on a domestic well. Domestic water service is not provided in the area, so dwellings in the area may be assumed to be supplied by domestic wells. The nearest off-site dwellings are located to the southeast of the Project Site, at a distance of approximately 3,200 feet and these domestic wells are expected to experience less than 5 feet of interference drawdown associated with the Project. Based on this analysis, the Project would not be expected to result in a significant lowering of the local groundwater table or depletion of supply, and impacts will be less than significant.

Reported groundwater levels in the area have declined overall by up to 30 feet in the past 40 years (Figure 3-1). Despite this trend, undesirable results as defined under SGMA and the Groundwater Ordinance (e.g., wells going dry, chronic and unreasonable groundwater level decline, or subsidence) have not been reported near the Project Site. Based on an analysis of well hydrographs in the area, the County has determined that if existing groundwater level trends continue in the area, undesirable results are not likely to occur over a 50-year planning and implementation horizon.[26] In general, undesirable results in the Eastern San Joaquin Subbasin are occurring further to the west. As such, it is reasonable to assume that continued groundwater extraction in the area prior to implementation of a GSP under SGMA in 2020, including the additional pumping added by the Project, will not result in undesirable results. The GSP is expected to result in the management of groundwater recharge and extraction in a way that assures long term sustainability. The requirement of groundwater level monitoring as a permit condition for the proposed well will further decrease the likelihood that the Project will contribute to an undesirable result. Impacts are expected to be less than significant.

c. Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

The Project includes construction and operation of a well and will not substantially change the drainage patterns that currently exist in the area. The well will provide irrigation water to an orchard to be planted in the APE. Development of the orchard would follow the existing contours of the land, and would not alter existing drainage patterns that currently exist. The cultivation of an orchard will tend to increase the storm

[26] Jacobson James & Associates, Inc. 2017. Evaluation of Groundwater Level Trends in Northern Triangle Area, Stanislaus County, California. October 27.

water retention capacity of the site cover, which may result in a decrease in the runoff volume and intensity. Concentrated flows and silt generated at the site generally would not enter Littlejohns Creek except during large precipitation events, when water is retained in the Farmington Flood Control Basin. No significant impacts are anticipated.

d. Would the project substantially alter the existing drainage pattern of the site or area, including through the alternation of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

The Project Site and APE are to be developed in a manner that would follow the existing contours of the land and would therefore not alter the existing drainage patterns that currently exist. No impervious surfaces would be created by the project. As such, there would not be a substantial increase rate or amount of surface runoff which would result in flooding on or off site. No disturbance within the flood basin for Littlejohns Creek will occur. No significant impacts are anticipated.

e. Would the project create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?

The Project Site and APE are not tributary to any existing or planned storm water drainage systems. No impact will occur.

f. Would the project otherwise substantially degrade water quality?

The Project is not located near any areas identified as having hazardous groundwater plumes. Future groundwater quality effects resulting from agri-chemical use in the APE will be regulated under the ILRP. Use of the groundwater for irrigation purposes for approximately 70 acres over 20 years would not degrade the quality of the groundwater. For these reasons, the likelihood that the Project will result in degradation of water quality is less than significant.

g. Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

h. Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?

i. Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam, or dam inundation?

The Project Site and APE are not located in an area designated as having flood risk,[27] and are not located in designated floodway or identified dam inundation hazard area.[28] The Project represents the construction

[27] Federal Emergency Management Association, 2009. *Flood Insurance Rate Map (FIRM) Panel Nos. 06099C0075E (effective 9/26/2008) and 06099C0100E (effective 10/16/2009).*

[28] *Stanislaus County General Plan, Chapter 5 - Safety Element*

and operation of a groundwater well, and no habitable structures are planned. Littlejohns Creek lies south of the Project Site and APE, but will not be altered or disturbed by the Project. Littlejohns Creek may flood occasionally, but the APEs are upland from the flood basin. For these reasons, no impacts are expected.

j. Would the project cause inundation by seiche, tsunami, or mudflow?

The Project Site is and APE are not located near the ocean or a large open body of water, so no impacts related to seiche or tsunami are expected. The gently rolling hills of the area are not designated as landslide hazard areas and are not prone to mudflows. The flood basin of Littlejohns Creek is relatively shallow and topographically located at lower elevations than the Project Site and APE. The Project and the planting and operation of an orchard in the APE made possible by its implementation will not disturb this flood basin. For these reasons, the potential for impacts related to mudflows is less than significant.

4.10 Land Use and Planning

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Physically divide an established community?				**X**
b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				**X**
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?				**X**

a. Would the project physically divide an established community?

The Project Site and APE are in an area designated for agricultural use and zoning. There are rural residences in the local area but the Project is not located in an established community. Therefore, construction and operation of the well would not directly or indirectly divide an established community and no impact would occur.

b. Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

Construction and operation of the well would be consistent with land use goals and policies of Stanislaus County that are directed towards supporting agricultural activity on productive lands designated and zoned for such uses. The Project Site and APE are designated General Agriculture – 40 acres. Future agricultural uses on the property made possible by the Project would include an orchard which is a permitted use in an A-2 District. Operation of the proposed well would take place consistent with the conditions placed on the well permit to be issued under the Stanislaus County Groundwater Ordinance. The Ordinance was enacted as a means to assure sustainable groundwater extraction as a condition for permitting new wells. For these reasons, the Project would not directly or indirectly conflict with land use plans or policies, and no impact would occur.

c. Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?

The Project Site and APE are not covered by a habitat conservation plan or natural community conservation plan. Project construction and operation would not conflict with such plans, so no impacts would occur.

4.11 Mineral Resources

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?			**X**	
b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				**X**

a. Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?

The Project Site and APE lie on foothills underlain by volcano-fluvial sediments and volcanic mudflows of the Mehrten Formation. Investigations completed by the California Department of Conservation under the

Surface Mining and Reclamation Act (SMARA) do not identify this area as having potential for containing economic quantities of concrete-grade aggregate.[29] The Project Site and the APE are zoned A-2-40 (General Ag-40 acres), and therefore, aggregate mining activities would not be consistent with the current zoning. No aggregate mining activities exist or are planned in this area. The proposed Project and planting of an orchard in the APE would not preclude the potential for future mining of aggregate in the area, should future studies confirm the economic viability of mineral resources in the area. As such, impacts are less than significant.

b. Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

The Project Site and APE are not within a mineral resource recovery area designated in the General Plan, or in any Specific Plan or other local planning document. As such, there would be no impact.

4.12 Noise

Would the project result in:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Exposure of persons to or generation of noise level in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			**X**	
b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?			**X**	
c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			**X**	
d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			**X**	

[29] *California Department of Conservation, Division of Mines and Geology, 1993. Mineral Land Classification of Stanislaus County, Special Report 173.*

Would the project result in:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				**X**
f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				**X**

4.12.1 Noise Fundamentals[30]

Noise is defined as unwanted sound. Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) which is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain.

The human ear does not respond uniformly to sounds at all frequencies; being less sensitive to low and high frequencies than to medium frequencies that correspond to human speech. In response, the "A-weighted" noise scale was developed because it corresponds better with people's subjective judgment of sound levels. This A-weighted scale is called the "noise level", referenced in units of dB(A). Because noise is measured on a logarithmic scale, a doubling of sound energy results in a 3 dB(A) increase in noise levels. However, changes in a community noise level of less than 3 dB(A) are not typically noticed by the human ear.

Noise sources are classified in two forms: (1) Point sources, such as stationary equipment, or individual vehicles; and (2) line sources, such as a roadway with large number of cars. Sound generated by a point source typically attenuates at a rate of 7.5 dB(A) for each doubling of distance from the source to the receptor at acoustically soft sites such as vacant land. Sound levels can also be attenuated by placement of barriers such as solid walls or berms placed between the source and receptor.

[30] US Department of Transportation, Federal Highway Administration, 1981. Highway Noise Fundamentals, September

When assessing community reaction to noise, there is a need for a scale that averages varying noise exposures over time and quantifies the results in terms of a single value. Several scales have been developed to address community noise levels. The scale applicable to this analysis is the Community Noise Equivalent Level (CNEL). This is an average A-weighted scale measured over a 24-hour period and is adjusted to account for individual's increased sensitivity to noise levels during evening and night time hours. A CNEL noise measurement is obtained after adding 5 decibels to sound levels occurring during the evening from 7:00 PM to 10:00 PM, and 10 decibels to sound occurring during the nighttime from 10:00 PM to 7:00 AM.

4.12.2 Noise Regulations

General Plan Element. The county has adopted land use compatibility guidelines for noise exposure (see Figure IV-2 of the General Plan Noise Element). For example, exterior noise levels in the range of 50-60 CNEL are generally considered acceptable for residential land uses, since these levels will usually allow normal outdoor and indoor activities such as sleep and communications to occur without interruption. Industrial facilities, on the other hand, can be relatively insensitive to noise and may generally be located in a noise environment of up to 75 CNEL without significant adverse effects. Hotels and motels fall in between with a conditionally acceptable noise level of up to 65 CNEL.

Noise Ordinance. The Stanislaus County Noise Control Ordinance is codified in Chapter 10.46 of the Municipal Code. This ordinance restricts creation of noise which causes the exterior noise level when measured at any property situated in either the incorporated or unincorporated area of the county to exceed adopted noise levels. Agricultural activity is exempt under the ordinance, meaning that the Project is not subject to these requirements.

Table 4.12.1: Designated Noise Zones

Designated Noise Zone	Max A-Weighted Sound (Lmax)[31]	
	7:00 AM – 9:59 PM	10:00 PM – 6:59 AM
Noise Sensitive	45	45
Residential	50	45
Commercial	60	55
Industrial	75	75

[31] *Lmax = maximum A-weighted noise level recorded during a noise event*

4.12.3 Discussion of Impacts

a. Would the project expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

The Project Site and APE are located in a rural area of the County. Ambient noise on the site is influenced by nearby agricultural activity, vehicle trips along rural roads, and human presence and activity at the nearby residences.

Construction of the Project would occur over an approximately 30-day period and would involve use of heavy equipment including drilling rigs, portable generators, and power tools. During approximately the first two weeks of construction, drilling activities would be conducted continuously around the clock. The ordinance limits noise generated by use of construction equipment to 75 dB(A) between 7:00 PM and 7:00 AM at the property line. A study of drilling rig noise levels conducted for the oil and gas well industry reported maximum noise levels during drill rig braking of approximately 102 dB(A) at a distance of approximately 10 feet from the drill rig engine, and average noise levels of 71 to 79 dB(A) at a distance of 200 feet from the drilling rig.[32] As such, construction activity is not anticipated to directly expose persons to noise levels in excess of established standards.

Operation of the proposed Project would result in long-term noise increases. As a general category, pumps are rated at a noise level of 76 dB(A) at a distance of 50 feet without controls or enclosures.[33] Operation of the proposed pump equipment would not cause noise levels to exceed the normally acceptable range for any land use category. Further, the well would not operate around the clock, but would only be required when irrigation is taking place during daytime hours when uses are least sensitive to noise exposure. Given the above, operation of the well would not directly expose persons to noise levels in excess of standards.

Agricultural cultivation within the APE conducted consistent with proper and accepted practices are not subject to the Noise Ordinance. Operation of agricultural equipment would occur during daytime hours when people are least sensitive to noise and would generate noise levels consistent with the agricultural nature of the site.

b. Would the project expose persons to or generate excessive groundborne vibration or groundborne noise levels?

Vibration is sound radiated through the ground. Vibration can result from a source (e.g., train operations, motor vehicles, machinery equipment, etc.) causing the adjacent ground to move, thereby, creating vibration waves that propagate through the soil to the foundations of nearby buildings. This effect is

[32] *Behrens And Associates, Inc., 2006. Gas Well Drilling Noise Impact and Mitigation Study*

[33] *U.S. Environmental Protection Agency, 1971. Noise from Construction Equipment and Building Operations, Building Equipment, and Home Appliances, December*

referred to as ground-borne vibration. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration from traffic is rarely perceptible.

Use of heavy equipment during construction of the well would generate vibration levels of up to 0.089 peak particle velocity (PPV) or 87 root mean square (RMS) vibration amplitude[34] (caisson drilling) at a distance of 25 feet.[35] Structures can typically be exposed to ground-borne vibration levels of 0.2 PPV without experiencing damage.[36] Aside from the residences on the property itself (approximately 1,000 feet west-southwest), the nearest habituated structure to the well site are residences approximately 3,200 feet southeast of the Project Site, so the Project would not directly or indirectly expose structures to ground bourn vibration that exceed the building damage threshold of 0.2 PPV.

c. Would the project cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

d. Would the project cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

A community noise survey conducted as part of the General Plan Noise Element found that the quietest areas of unincorporated Stanislaus County are those removed from major transportation-related noise sources and local industrial or other stationary noise sources. Good examples of these quiet areas are rural areas such as Hickman, Valley Home, and La Grange. The noisier areas surveyed were those located near state highways, major county roadways, or railroads. The Project Site and APE are located in a rural part of Stanislaus County with noise sources consistent with agricultural practices and rural vehicular travel. Operation of the orchard would not cause permanent increase in ambient noise levels other than those anticipated by agricultural activities in a designated agricultural land use area.

As described above under the response to checklist questions (A), operation of the well would generate noise levels that are attenuated by distance and would not be audible at nearby residences off of the Gillum property.

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

f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

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[34] *The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The RMS amplitude is defined as the average of the squared amplitude of the signal.*

[35] *Federal Transit Administration,2006. Transit Noise and Vibration Impact Assessment, May.*

[36] *Ibid.*

As discussed in Section VII Hazards and Hazardous Materials above, the Project Site is not located within an airport land use plan or within the vicinity of a public airport or private airstrip. Therefore, no impact related to an airport land use would occur.

4.13 Population and Housing

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				**X**
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				**X**
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				**X**

a. Would the project induce substantial growth in an area either directly (for example, by proposing new homes and business) or indirectly (for example, through extension of roads or other infrastructure)?

b. Would the project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

c. Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

The Project represents the construction and operation of a groundwater well on land designated and zoned for agricultural use. The Project would not directly increase the permanent resident population of the County or remove existing housing stock, as no habitable structures are planned and the site is currently vacant. The parcel on which the Project Site and APE are located is zoned A-2-40 (General Ag-40 acres), which permits a maximum of two, single-family residence per 20 acre parcel. It is reasonably foreseeable that future uses within the APE would occur consistent with the zoning requirements for the agricultural designation. For these reasons, construction and operation of the Project would not induce substantial population growth or displace people such that replacement housing must be constructed elsewhere.

4.14 Public Services

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the need for new or physically altered governmental facilities, construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
a. Fire protection?				**X**
b. Police protection?				**X**
c. Schools?				**X**
d. Parks?				**X**
e. Other public facilities?				**X**
f. Does the site promote the joint use of parks, libraries, museums, and other public services?				**X**

a. Fire protection?

b. Police protection?

c. Schools?

d. Parks?

e. Other public facilities?

f. Does the site promote the joint use of parks, libraries, museums, and other public services?

The Project represents the construction and operation of a groundwater well on land designated and zoned for agricultural use. The Project would not directly increase the permanent resident population of the County, as no habitable structures are planned. The parcels on which the Project Site and APE are located is zoned A-2-40 (General Ag-40 acres), which permits a maximum of two, single-family residence per 20 acre parcel. It is reasonably foreseeable that future uses within the APE would occur consistent with the zoning requirements for the agricultural designation. For these reasons, construction and operation of the Project would not substantially increase demand for public services such that new or expanded facilities are needed. No direct or indirect impacts are expected as a result of Project construction and operation.

4.15 Recreation

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				**X**
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				**X**

a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

The Project represents the construction and operation of a groundwater well on land designated and zoned for agricultural use. The Project would not directly increase the permanent resident population of the County as no habitable structures are planned. The parcels on which the Project Site and APE are located is zoned A-2-40 (General Ag-40 acres), which permits a maximum of two, single-family residence per 20 acre parcel. It is reasonably foreseeable that future uses within the APE would occur consistent with the zoning requirements for the agricultural designation. For these reasons, construction and operation of the Project would not increase demand for recreational facilities that could result in a physical environmental effect and no impacts are expected.

4.16 Transportation and Traffic

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the			**X**	

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?				
b. Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?			**X**	
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location, which results in substantial safety risks?				**X**
d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				**X**
e. Result in inadequate emergency access?			**X**	
f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?				**X**

a. Would the project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

b. Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

The Project does not represent a land use type that generates or attracts vehicle trips on a daily basis, and would not be expected to directly impact the performance of the circulation system. Access to the well site would occur via a private maintenance road that is accessible from private East Sonora Road. A limited number of vehicle trips would be generated during construction of the well. The large pieces of equipment would be delivered to the site at the beginning of each construction stage and removed when they are no longer needed. Likewise, construction materials would be delivered to the Project Site within a limited timeframe when needed, and waste would be removed from the site on an as-needed basis. Delivery trucks would arrive at and depart from the site during off-peak hours and would not be of sufficient number to degrade the operating condition of the local roadway network.

Similarly, operation of the well would require periodic maintenance and inspection. Assuming a worker visits the site on a weekly schedule, operation and maintenance would be expected to add eight Average Daily Trips (ADT) per month onto the roadway network. This is a nominal increase in trips that would not significantly impact the operating condition of any roadway segment or intersection.

Operation of the Project would support cultivation of approximately 70 acres that is currently grazing land, which could indirectly increase vehicle trips traveling on local roads. Agricultural activity would require workers to travel to and from the APE in order to tend to the crops, harvest, and ensure the security of field and equipment. Assuming a trip generation factor of two ADT/acre[37], operation of the Project could indirectly result in generation of 212 vehicle trips on daily basis assuming all 106 acres are cultivated. This is a nominal number of trips that would occur during non-peak hours on a road serving highway commercial uses along Interstate 5, which accommodated 41,000 ADT in 2014.[38] For these reasons, the Project is not anticipated to result in significant indirect impacts to the operation condition of roadways and intersections.

c. Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location, which results in substantial safety risks?

The use proposed by the Project is not associated with a substantial increase in air traffic. The Project Site is not located within an airport safety zone nor does the Project propose any structure that would conflict with air traffic patterns. No impact would occur and no further analysis is needed.

d. Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

[37] *San Diego Association of Governments (SANDAG), 2003. Trip Generation Manual: "Traffic Generators," San Diego, California, December 1996, and July 1998*

[38] *California Department of Transportation 2016b. Traffic Census Program: http://www.dot.ca.gov/trafficops/census/2014all/Route5-6.html, Accessed May*

Workers and staff visiting the Project Site and APE would utilize the existing network of regional and local roadways that serve the Project area. No changes to the design or configuration of roadways surrounding the Project Site and APE are planned. The Project Site and the APE are zoned A-2-40 (General Ag-40 acres). Access for farm equipment would occur consistent with the zoning requirements for the agricultural use. The Project therefore would not create new hazards due to design features or incompatible uses. No impact would occur.

e. Would the project result in inadequate emergency access?

Workers and staff visiting the Project Site and APE would utilize the existing network of regional and local roadways that serve the Project area. No changes to the design or configuration of roadways surrounding the Project Site and APE are planned, and no road closures are anticipated. Therefore, the Project construction or operation would not impede emergency access. Impacts would be less than significant and no additional analysis would be required.

f. Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

The Project represents the construction and operation of a groundwater well on land designated and zoned for agricultural use. No changes to the surrounding transportation system (including alternative transportation system) would be made and therefore no impacts would occur. No further analysis is required.

4.17 Utilities and Service Systems

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board (RWQCB)?				**X**
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				**X**
c. Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				**X**

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?			**X**	
e. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				**X**
f. Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?				**X**
g. Would the project comply with federal, state, and local statutes and regulations related to solid waste?				**X**

a. Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board (RWQCB)?

b. Would the project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

The Project represents the construction and operation of a groundwater well on land designated and zoned for agricultural use. The Project would not directly increase the permanent resident population of the County as no habitable structures are planned. The parcels on which the Project Site and APE are located is zoned A-2-40 (General Ag-40 acres), which permits a maximum of two, single-family residence per 20 acre parcel. It is reasonably foreseeable that future uses within the APE would occur consistent with the zoning requirements for the agricultural designation. For these reasons, construction and operation of the Project would not increase demand for water or wastewater treatment facilities that could result in a physical environmental effect and no impacts are expected.

c. Would the project require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

The Project includes the construction and operation of a groundwater well, and would not increase the amount of stormwater runoff or alter drainage patterns in the Project Site or APE. Irrigation in the APE will occur using a micro-jet sprinkler system, such that the water application rate would be near the consumptive capacity of the orchard during the irrigation season (generally March through October), and significant changes in runoff are not expected. The construction of new storm drainage facilities is therefore not needed or included as part of the Project, and no impacts are expected.

d. Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

The Project includes the construction and operation of a groundwater well. Limited, temporary water supplies will be needed during well construction, and will be obtained from local municipal sources by the well drilling contractor and trucked to the site. Operation of the well will occur under the property owner's existing overlying water right to pump groundwater from beneath the property for beneficial consumptive use on the property. Based on information provided by the applicant (Appendix B), the proposed groundwater extraction rate is judged to be sustainable under the Stanislaus County Groundwater Ordinance and the SGMA (Appendix C). As such, no new or expanded entitlements are anticipated to be required, and impacts will be less than significant.

e. Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

The Project represents the construction and operation of a groundwater well on land designated and zoned for agricultural use. The Project would not directly increase the permanent resident population of the County as no habitable structures are planned. The parcels on which the Project Site and APE are located is zoned A-2-40 (General Ag-40 acres), which permits a maximum of two, single-family residence per 20 acre parcel. It is reasonably foreseeable that future uses within the APE would occur consistent with the zoning requirements for the agricultural designation. For these reasons, construction and operation of the Project would not result in increased demand for wastewater disposal and treatment facilities that could result in a physical environmental effect. Therefore, no impacts are expected.

f. Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

g. Would the project comply with federal, state, and local statutes and regulations related to solid waste?

The Project includes the construction and operation of a groundwater well on land designated and zoned for agricultural use. The Project would not directly increase the permanent resident population of the County, as no habitable structures are planned. The parcels on which the Project Site and APE are located is zoned A-2-40 (General Ag-40 acres), which permits a maximum of two, single-family residence per

20 acre parcel. It is reasonably foreseeable that future uses within the APE would occur consistent with the zoning requirements for the agricultural designation. For these reasons, construction and operation of the Project would not result in an increased demand for solid waste collection and disposal facilities that could result in a physical environmental effect. Therefore, no impacts are expected.

4.18 Mandatory Findings of Significance

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a. The potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		**X**		
b. Impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?			**X**	
c. Environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			**X**	

a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

The project does not have the potential to degrade the quality of the environment, substantially reduce the habitat of any fish or wildlife species, or threaten any wildlife population to drop below self-sustaining levels. Potential impacts to nesting birds during construction would be mitigated by implementation of MM-Bio-1. No direct or indirect Project impacts to sensitive, threatened or endangered species, or sensitive habitat would occur as a result of the project.

No known historic or cultural resources have been recorded within the Project Site or APE; however, the CCIC records search results, the site visit, and a review of historic maps of the APE suggest that there is a potential for unidentified historic resources. If other historical or cultural resources were to be encountered and disturbed, a significant impact would occur. However, with the implementation of MM Cul-1 and MM Cul-2, impacts will be less than significant.

b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

The project consists of the construction and operation of a groundwater well, and will support the planting of an orchard on grazing land intended for agricultural use and in an area subject to the Stanislaus County Right to Farm Ordinance. Review of the effects of groundwater extraction from the proposed well indicates that the proposed extraction would be sustainable as defined under Stanislaus County Groundwater Ordinance and SGMA (Appendix C), and would not cause or contribute to adverse "Undesirable Results" as defined in these laws. An analysis of well hydrographs in the region indicates that currently anticipated groundwater level trends in the vicinity of the Project will not result in significant adverse impacts or undesirable results over a 50-year planning and implementation horizon. Since the Groundwater Ordinance is a policy adopted by the County to avoid or lessen potential environmental effects associated with long term groundwater extraction, and the project is consistent with the policy outlined by this Ordinance, groundwater extraction under the project would not represent a considerable contribution to a cumulatively significant impact.[39]

Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

[39] *CEQA Guidelines 15064(h)(3) indicates that: "A lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program (including, but not limited to, water quality control plan, air quality attainment or maintenance plan, integrated waste management plan, habitat conservation plan, natural community conservation plan, plans or regulations for the reduction of greenhouse gas emissions) that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located. "*

The project consists of the construction and operation of a groundwater well, and will support the planting of an orchard on grazing land intended for agricultural use and in an area subject to the Stanislaus County Right to Farm Ordinance. Operation of the proposed well will not deplete local groundwater resources or cause nearby wells to go dry. Direct and indirect adverse effects on human beings will be less than significant.

5.0 REFERENCES

Airnav.com, 2017. Airnav.com, Airport Information. Website: http://www.airnav.com/airports/. Accessed August 8.

Behrens And Associates, Inc., 2006. Gas Well Drilling Noise Impact and Mitigation Study.

Branum, D., Chen, R., Petersen, M., and Wills, C. 2016. Earthquake Shaking Potential for California, California Geological Survey Map Sheet 48 (Revised 2016).

California Department of Conservation, 2016. Important Farmland Data Availability. Website: http://www.conservation.ca.gov/dlrp/fmmp/Pages/county_info.aspx. Accessed July 2017.

California Department of Conservation, California Geological Survey, 2010. *California Geological Survey Fault Activity Map of California (2010): http://maps.conservation.ca.gov/cgs/fam/.*

California Department of Conservation, Division of Mines and Geology, 1993. *Mineral Land Classification of Stanislaus County, Special Report 173.*

California Department of Forestry and Fire Protection, 2007. *Draft Fire Hazard Severity Zones in LRA, Stanislaus County.* October 3

California Department of Industrial Relations, 2017. *California Code of Regulations* Title 14, Division 6, Chapter 3. Public Resources Code §§ 21000 – 21177. Website: http://www.dir.ca.gov/dlse/CCR.htm. Accessed September 20, 2017.

California Department of Transportation, 2015. *Paleontological Evaluation Report and Preliminary Paleontological Mitigation Plan for the Madera 41 South Expressway Project, Madera County, California.* Submitted to CalTrans. November.

California Department of Transportation, *2016a*. California Scenic Highway Mapping System: *http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm.* Accessed May 17.

_____, *2016b. Traffic Census Program: http://www.dot.ca.gov/trafficops/census/2014all/Route5-6.html, Accessed May.*

California Department of Water Resources (DWR), 1981. Depth to the Top of Corcoran Clay.

_____, 1991. California's Well Standards, Bulletin 74-90.

_____, 2003. California's Groundwater Update 2003. October.

_____, 2013. California's Groundwater Update 2013, A Compilation of Enhanced Content for California Water Plan Update 2013, Chapter 8 – San Joaquin River Hydrologic Region. April.

_____, 2015a. Groundwater Information Center Interactive Mapping Application. Online: https://gis.water.ca.gov/app/gicima/. Accessed May 20.

_____, 2015b. Critically Overdrafted Basins. Online: *http://www.water.ca.gov/groundwater/sgm/cod.cfm*. Accessed May 20, 2016.

CalFire FRAP, 2007. Fire Hazard Severity Zones in SRA, Stanislaus County. Adopted by CalFire on November 7.

Central California Information Center, 2016. California Historic Resources Information System Records Search (File No. 9795N), June.

Federal Emergency Management Association, 2009. Flood Insurance Rate Map (FIRM) Panel Nos. 06099C0500E (effective 9/26/2008) and 06077C0925F (effective 10/16/2009).

Federal Transit Administration,2006. *Transit Noise and Vibration Impact Assessment*. May.

ICF International, 2016. *Stanislaus County General Plan and Airport Land Use Compatibility Plan Update Final Program Environmental Impact Report.* Prepared for Stanislaus County. July.

Jacobson James & Associates, Inc. 2017. *Evaluation of Groundwater Level Trends in Northern Triangle Area, Stanislaus County, California.* September 27.

National Park Service, 2016a. *National Register of Historic Places*: http://www.nps.gov/nr/research/, accessed May.

_____, 2016b, Office of Historic Preservation: http://ohp.parks.ca.gov/ accessed May 2016

San Diego Association of Governments (SANDAG), 2003. *Trip Generation Manual:* "Traffic Generators," San Diego, California, December 1996, and July 1998.

San Joaquin Valley Air Pollution Control District, 2009. *District Policy – Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency.*

_____, 2015. *Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI), Final Draft*. February 19.

San Luis & Delta Mendota Water Use Authority (SLDMWUA), 2011. *Groundwater Management Plan for the Northern Agencies in the Delta Mendota Canal Service Area.* November.

Sperlings Best Places, 2016. *http://www.bestplaces.net/climate/county/california/stanislaus*. Accessed April 25, 2016.

Stanislaus County, 2017. Stanislaus County GIS Central. Website: http://gis.stancounty.com/giscentral/. Accessed July 24, 2017.

Stanislaus County, 2016. Stanislaus County General Plan. Chapter 3: Conservation/Open Space Element and Chapter 5: Safety Element. Adopted August 23.

Stanislaus County Planning and Community Development Department, 2014. *Draft Stanislaus County Airport Land Use Compatibility Plan*. May.

Stanislaus Historical Quarterly, Vol. 5 No. 3, Autumn 2012.

Treganza, Adan E. 1952 Reports of the University of California Archaeological Survey No. 14, Archaeological Investigations in the Farmington Reservoir Area, Stanislaus County, California. Department of Anthropology, University of California, Berkeley, and Ritter, Brain W., Hatoff and Louis A. Payen 1976 Chronology of the Farmington Complex. American Antiquity. 41:3(334-341), and Rosenthal, Jeffrey S., Gregory G. White, and Mark Q. Sutton, 2007 The Central Valley: A View from the Catbird's Seat. In California Prehistory, Colonization, Culture, and Complexity. Edited by Terry L. Jones and Kathryn A. Klar, pp. 147–164. AltaMira Press, New York.

Turlock Groundwater Basin Association (TGBA), 2008. *Turlock Groundwater Basin Groundwater Management Plan.* March.

Turlock Irrigation District, 2012. 2012 Agricultural Water Management Plan. December.

United States Department of Transportation, Federal Highway Administration, 1981. Highway Noise Fundamentals, September.

United States Environmental Protection Agency, 1971. *Noise from Construction Equipment and Building Operations, Building Equipment, and Home Appliances*. December.

United States Geological Survey (USGS), 2004. *Hydrogeologic Characterization of the Modesto Area, San Joaquin Valley, California*. Scientific Investigations Report 2004-5232.

_____, 2015. *Hydrologic Model of the Modesto Region, California, 1960 – 2004*. Scientific Investigations Report 22015-5045.

University of California, Davis, 2017. California Soil Resource Lab SoilWeb Apps. Website: https://casoilresource.lawr.ucdavis.edu/soilweb-apps. Accessed July 19, 2017.

6.0 LIST OF PREPARERS

6.1 Lead Agency

Walter Ward, Water Resources Manager, reviewed the IS/MND, provided input to the Hydrology and Water Quality Section, and provided input regarding compliance of the project with the Stanislaus County Groundwater Ordinance and SGMA.

Kristin Doud, Senior Planner, reviewed the IS/MND on behalf of the County Planning Department.

Horacio Ferriz, Ph.D., County Geologist, reviewed Hydrology, Soils and Geology, and Cultural Resources (Paleontology) sections of the IS/MND.

6.2 Consultants

Mike Tietze, PG, CHG, CEG, Principal Engineering Geology with JJ&A, reviewed all sections of the IS/MND.

Juliet Hutchins, Staff Geologist with JJ&A, prepared all sections of the IS/MND, with the exception of the Biological and Cultural sections where she provided review.

Kerry Hosken, Biologist with Tetra Tech, conducted a site reconnaissance and prepared the Biology section of the IS/MND.

Jenna Farrell, Archaeologist with Tetra Tech, conducted a historical records review and prepared the Cultural section of the IS/MND.

APPENDIX A

WELL PERMIT APPLICATION 2017-117

RECEIVED

JUN 19 2017

STANISLAUS COUNTY
ENVIRONMENTAL RESOURCES

DEPARTMENT OF ENVIRONMENTAL RESOURCES
3800 Cornucopia Way, Suite C, Modesto, CA 95358-9492
Phone: 209.525.6700 • Fax: 209.525.6774
www.stancounty.com

Permit No. 20 17 - 117

APPLICATION FOR WELL CONSTRUCTION OR DESTRUCTION

THIS PERMIT EXPIRES 1 YEAR FROM DATE ISSUED

Application is hereby made to the Stanislaus County Department of Environmental Resources (D.E.R.) for a permit to construct and/or destroy the work herein described. PLEASE NOTIFY THIS DEPARTMENT (USING PERMIT # AND D.W.R. WELL DRILLERS REPORT) WHEN WELL WORK IS COMPLETED.

Job Address/Location: East Sonara Road and 26 Mile Road City: Farmington

Distance & Direction from the Nearest Cross Streets: About 0.3 miles

Property Owner's Name: Larry Gillium Phone: (209) 840-1577

Mailing Address: 21303 W Restin Road City/State: Wittman, AZ 85361

Water Agency: ☐ Yes ☒ No Water Agency Name:

Contractor's Name: Castle Construction Well Drilling License #: 996768 Phone: 209.918.3576

Type of Work: ☒ New Well ☐ Destruction ☐ Other
If a new well, give number of new wells to be installed on property or in close proximity now or within 6 months: One

Intended Use: ☒ Agricultural ☐ Irrigation ☐ Industrial ☐ Domestic/Private ☐ Domestic/Public
☐ Cathodic Protection ☐ Geothermal ☐ Dewatering ☐ Other

Conveyance: Will water from this well be relocated from parcel of origin? ☐ Yes ☒ No
Will water from this well be relocated to out-of-county? ☐ Yes* ☒ No
*Provide water agency authorization

Existing Well Present: ☒ Yes (Domestic) ☐ No **Status:** ☒ Active ☐ To be destroyed ☐ Inactive

Community Service District: ☐ N/A ☐ Within C.S.D. of

Distance to Nearest: Septic tank ~ 1,000 feet Disposal Field Seepage Pit Dry Well
Pit Privy Animal Enclosure Other Well ~ 850 feet (Domestic)
Dairy Lagoons ~ 400 feet Dwellings ~ 850 feet Property Lines ~ 1,000 feet

Construction Specifications: ☒ Drilled ☐ Cable Tool ☐ Gravel Pack ☐ Rotary ☐ Other
Diameter of Excavation 20 Diameter of Well Casing 12 Gauge of Casing SDR 21
Estimated GPM ~ 1,000 Estimated Finished Well Depth ~ 500 feet
Sealing Material Bentonite Grout Manufacturer Grout well PF Grout name
Proposed Depth of Grout Seal 20 feet Proposed # of bags
Seal Method: ☐ Free Fall ☒ Tremie Hose (Force) ☐ Tremie Hose (Gravity)

Destruction Specifications: Diameter of Well Casing Proposed Depth of Grouting
Sealing Material Grout Manufacturer Grout name
Seal Method: ☐ Free Fall ☐ Tremie Hose (Force) ☐ Tremie Hose (Gravity)
Describe method if different than minimum state standards:

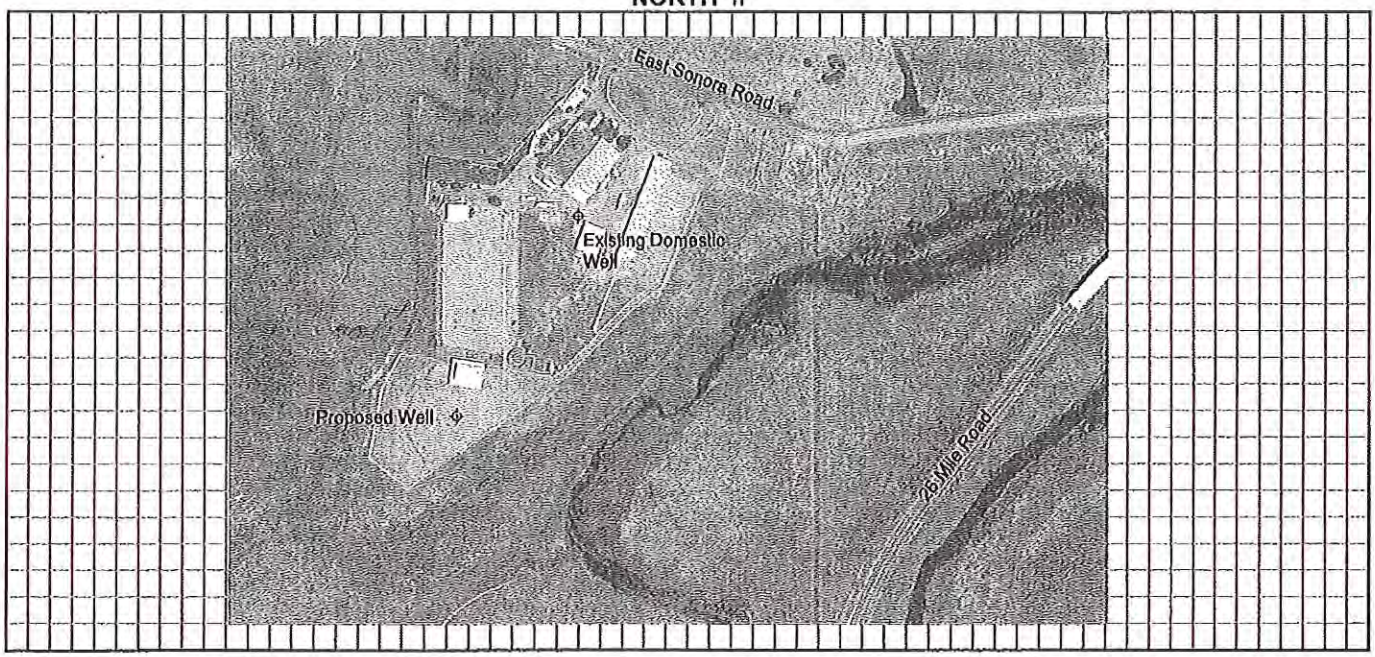
ENTERED

PLOT PLAN

(Indicate Distances in Feet)

1. Name of street and distance from nearest cross roads to well site.
2. Outline of the property, easements.
3. Outlines and locations of all existing and proposed structures, including covered areas such as patios, driveways, and walks.
4. Location of house sewer outlet, public sewer, sewage disposal system, or proposed sewage disposal system, proposed expansion of sewage disposal system, industrial waste pond, or any other possible source of contamination.
5. Location of other wells within radius of 300 feet on the property or adjoining property.
6. Location of sewage disposal system on adjoining property or within a radius of 100 ft. (private well) 150 ft. (public well).

NORTH ⇑



Written description of well location (if not visible from road): _____

_____

I HEREBY CERTIFY THAT I HAVE PREPARED THIS APPLICATION AND THAT THE WORK WILL BE DONE IN ACCORDANCE WITH THE PROVISIONS OF THE LAWS OF THE STATE OF CALIFORNIA, THE ORDINANCES OF THE COUNTY OF STANISLAUS AND THE RULES AND REGULATIONS OF THE STANISLAUS COUNTY DEPARTMENT OF ENVIRONMENTAL RESOURCES (DER). DER WILL BE CONTACTED FOR INSPECTION OF ANNULAR SEAL INSTALLATION, AND AFTER WELL WORK HAS BEEN COMPLETED.

1. All existing wells within a 300 foot radius of the proposed new well(s) on the property or adjoining property have been located and so indicated.
2. Proposed well(s) will be located at least 50-150 feet from any sewage disposal system on property or adjoining property.
3. Submit well completion report on all wells drilled, as notice of well work completion.

SIGNED: _____ DATE: 6-13-17

(C57 CONTRACTOR AS AUTHORIZED REPRESENTATIVE)

D.E.R. USE ONLY

Latitude: _____ Longitude: _____ T. ____ R. ____ Sec. ____ A.P.N: 001-011-039

Plot Card Available: ☐ Yes ☑ No G.I.S. Information Available: ☐ Yes ☑ No

Actual Grout Seal Depth: _____ Actual Sealing Material Used: _____

Claimed Clay Layer Depth at: _____ Conditions of Approval: ☐ None ☐ Description: _____

_____

_____

HAZMAT Mitigation Review: _____ Date: _____

Resource Management Review: _____ Date: _____

Permit Approval by: _____ Date: _____

Grout Seal Inspected by: _____ Date: _____

Final Inspection by: _____ Date: _____

APPENDIX B

SUPPLEMENTAL WELL PERMIT APPLICATION INFORMATION

SUBMITTED BY THE APPLICANT

DEPARTMENT OF ENVIRONMENTAL RESOURCES

3800 Cornucopia Way, Suite C, Modesto, CA 95358-9592
Phone: 209.525.6770 Fax: 209.525.6773

SUPPLEMENTAL APPLICATION FOR NON-EXEMPT WELLS

The following supplemental information is required for all wells that are determined not to be exempt from the prohibitions and requirements of the County Groundwater Ordinance effective November 25, 2014.

Applicant Information

Name of Applicant: **Larry Gillium**		Firm (if applicable): NA	
Address: **East Sonara Road and 26 Mile Road**	City: **Farmington**	State: **California**	Zip Code: **95230**
Daytime Phone Number: **(209) 840-1577**	Fax Number NA	Email: **jwgillum@aol.com**	
Name of Owner (if different from Applicant): NA		Firm (if applicable): NA	
Address: NA	City: NA	State: NA	Zip Code: NA
Daytime Phone Number: NA	Fax Number NA	Email: NA	

Licensed Professional Information (Professional Engineer or Geologist)

Name of Licensed Professional: **Joeseph Turner**		Firm: **Kleinfelder**	
Address: **2882 Prospect Park Drive**	City: **Rancho Cordova**	State: **California**	Zip Code: **95670**
Daytime Phone Number: **(916) 366-2339**	Fax Number **(916) 366-7013**	Email: **JBTurner@kleinfelder.com**	
License Type and Number: **Professional Geologist #5125** **Certified Hydrologist #454**	Sections of Application Completed: **All**		
Name of Licensed Professional: NA		Firm: NA	
Address: NA	City: NA	State: NA	Zip Code: NA
Daytime Phone Number: NA	Fax Number NA	Email: NA	
License Type and Number: NA	Sections of Application Completed: NA		

For County Use Only

I. Location Map

Applicable
See Section 1.0 of the permit report for maps and additional information.

Provide a map or maps showing the following:

A. Well location

B. Outline of property to be served by the well, and APN number(s)

C. Outline of contiguous owned property surrounding the well location, and APN number(s)

D. Streams and lakes within 2 miles

E. Springs, seeps, wetlands and other Groundwater-Dependent Ecosystems (GDEs) within 3 miles. (Use USGS topographic maps, aerial photo imagery available from the internet or other sources, state databases, studies, DER resources, or knowledge of the area to identify any areas where groundwater may be discharging to surface water either perennially or seasonally.)

F. Existing sewer lines, cisterns and septic disposal systems within 250 feet

G. Concentrated Animal Feeding Operations (CAFOs) within 1 mile

H. Reported hazardous materials and hazardous waste sites or release incidents within 1 mile (from Section VI.A.)

I. Existing wells on the property, keyed to a table that provides well use, depth, diameter, screen interval, and pumping rate. If available, attach information regarding any specific capacity or other pumping tests completed.

J. Predicted area of drawdown exceeding 5 feet (from Section III, below).

K. For proposed wells within 2 miles of areas underlain by the Corcoran Clay and completed below the depth of the Corcoran Clay, the location of any infrastructure within 2 miles that is potentially sensitive to subsidence. This includes, but is not necessarily limited to, canals, ditches, pipelines, utility corridors, and roads.

For County Use Only

Data Adequate? ☐ Yes ☐ No

Comments:

II. Pumping and Water Use Data

Applicable
See Section 2.0 of the permit report for additional information.

Provide the following information regarding groundwater extraction from the proposed well.

A. For irrigation wells, use the following table to calculate the water demand to be served by the proposed well.

Crop Type	Irrigated Acres	Irrigation System Type	Irrigation Season Length (days)	Average Annual Demand (AFY)	Maximum Monthly Demand (MGM)	Peak Daily Demand (GPM)
Walnuts	100	Microjet	240	350	76.2 AF	1,000
NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA

B. Estimated pumping rate of proposed well: About 1,000 gpm

C. Anticipated pumping schedule for proposed well (hours per day, days per week, approximate annual start date and stop date for seasonal pumping):

Irrigation schedule will ultimately depend on well production and seasonal irrigation demand. This assessment assumes a well production of about 1,000 gallons per minute (GPM). Based on UC Davis irrigation data, it appears that this will require about 4 days of irrigation per week during peak irrigation demand. Outside peak irrigation demand, required irrigation would usually range from less than 1 day per week to 3 days per week. Additional detail are providing in the accompanying report.

Maximum Monthly Demand is based on assumption of 1,000 GPM applied 4 days weekly for 4 weeks.

D. Estimated annual extraction volume: 114,047,850 gal

E. Estimated cumulative extraction volume prior to January 1, 2022: 543,994,885 gal

F. Estimated cumulative extraction volume in 20 years: 2,280,957,000 gal

G. Planned water use: ☒ Irrigation ☐ Stock ☐ Domestic ☐ Municipal ☐ Industrial ☐ Other (describe): _____

H. Size of area to be served by the well: 100 acres

I. Size of contiguous owned property on which the well is located: 206.7 acres

For County Use Only

Data Adequate? ☐ Yes ☐ No

Comments:

III. Water Export

Not Applicable.
See Section 3.0 of the permit report for additional information.

A. Will groundwater extracted from the well be exported from the County, or substituted for surface water that will be exported form the County,

B. If the attach a Groundwater Export Proposal that includes, at a minimum, the following:

1. List the exemptions from Section 9.37.050 of the Groundwater Ordinance that apply and provide any substantiating evidence.
2. Provide specific timeframes and conveyance mechanisms by which the groundwater will be conveyed out of the County.
3. Indicate the purpose and use of such water at the terminal point of delivery.
4. Indicate the methods used to monitor and report the volume of water to be exported.
5. Explain whether the project involves exporting water during periods of emergency. (An emergency includes (1) states of emergency as described in the California Government Code, section 8558; (2) states of water shortage emergency as determined by the California Department of Water Resources; or (3) determination by the Stanislaus County Board of Supervisors that groundwater within the County can assist areas outside the County.)
6. Groundwater extraction for the purpose of emergency relief shall be monitored so that the volume of water exported can be determined.
7. The duration of groundwater extraction for the purpose of emergency relief shall not exceed the time frame of the emergency.
8. Groundwater extraction for the purpose of emergency relief does not set precedents or entitles the exporter to future exports.

For County Use Only

Data Adequate? ☐ Yes ☐ No

Comments:

IV. Local Groundwater Level Decline

Applicable
See Section 4.0 of the permit report for additional information.

Provide distance-drawdown calculations for groundwater extraction from the proposed well. The approach taken may include calculations, spreadsheets, analytical computer models or numerical computer models, at the discretion of the Applicant. The DER can provide additional guidance if needed. Evaluation may consist of a simple one dimensional distance-drawdown calculation using the Theiss Equation, or more complex two and three dimensional approaches may be taken when the applicant feels that doing so presents a more realistic assessment of potential impacts. Input parameters for aquifer properties (Transmissivity and Storativity) may be derived from local pump and aquifer tests, other site investigation data, the County's well database, literature, or professional judgment based on the materials in which the well is completed. A description of the conceptual approach taken to the analysis must be provided, and justification must be provided for all inputs and assumptions to assure that impacts are not underestimated.

A. Method used: ☒Calculations ☒Spreadsheet ☐Computer Model

B. Describe Approach (attach additional sheets, calculations and results):

A USGS Theis Drawdown spreadsheet calculator was used for these estimates.

C. Provide drawdown estimates for January 1, 2022 and after 20 years of pumping:

1. Distance to 5 feet drawdown: 0.02 miles (2022) 0.03 miles (20 years) feet
2. Distance to 20 feet drawdown: NA (2022 and 20 years) feet
3. Drawdown at the nearest property line: 3.0 feet (2022) 3.5 feet (20 years) feet
4. If the well is in a Subsidence Study Zone (within 2 miles of an area underlain by the Corcoran Clay) and completed in a confined aquifer system, maximum drawdown at the nearest ditch, canal, utility easement or other sensitive infrastructure: NA (feature); NA feet
5. Maximum drawdown at each GDE within 3 miles or less of the proposed well: NA feet

For County Use Only

Data Adequate? ☐ Yes ☐ No

Comments:

V. Wells in a Groundwater Level Management Zone

Not Applicable: See Section 5.0 of the permit report for additional information.

If the proposed well is in a County-designated Groundwater Level Management Zone, the Applicant shall provide the following:

A. A Groundwater Extraction Offset Plan that demonstrates that the proposed groundwater extraction will be 100% offset. The scope of the Groundwater Extraction Offset Plan must be discussed with the DER and agreed to prior to implementation. The Plan shall include, at a minimum, the following:

1. The proposed method and location of offset;
2. The proposed timing and duration of offset;
3. Supporting calculations to demonstrate offset volume; and
4. Any assurances and/or agreements with other parties that verify their agreement to support the proposed offset.

OR B. A Groundwater Resources Investigation that demonstrates the proposed groundwater extraction will not cause or contribute to Undesirable Results in the Groundwater Level Management Zone. The scope of the Groundwater Resources investigation must be discussed with the DER and agreed to prior to implementation and, at a minimum, shall include the following:

1. A summary of previous studies and reports;
2. A summary of available information regarding undesirable results observed in the area;
3. Analysis of local and regional groundwater level trends based on available well hydrographs within no less than 5 miles of the proposed well;
4. Any additional site specific hydrogeologic investigation performed;
5. An analysis of the local groundwater balance;
6. A prediction of future groundwater level drawdown and trends in the area with and without the proposed well;
7. Evaluation and conclusions whether the proposed groundwater extraction will cause, or contribute to, undesirable results; and
8. Signature by a Registered Professional Geologist or Registered Professional Engineer in California.

AND C. A Groundwater Level Monitoring Plan that includes, at a minimum, the following:

1. A description of the aquifers to be monitored;
2. A description of any existing or new wells to be used, their locations, construction specifications and completion depths; and
3. Water level measurement methods and frequency (minimum spring and fall).

For County Use Only

Data Adequate? ☐ Yes ☐ No

Comments:

VI. Regional Groundwater Level Decline and Storage Reduction

Applicable: See Section 6.0 of the permit report.

For all proposed well not located within a County-designated Groundwater Level Management Zone, the Applicant shall provide the following:

A. Calculate available aquifer storage beneath the contiguous property owned by the Applicant on which the proposed well is located: _____24,805_____ acre-feet

Parameter	**Value**	**Source/Justification** (attach additional information as needed)
Size of Property (acres)	206.7	Calculated from project GIS
Aquifer Thickness (feet)	400	Well completion logs and literature review
Specific Yield (assume 0.25 or provide justification for alternate value)	0.0000598 (specific storage) 0.3 (porosity)	This is a semi-confined aquifer, so Specific Storage and porosity are used instead of Specific Yield. Specific Storage was calculated from storativity and aquifer thickness.

B. Divide the cumulative groundwater extraction volume prior to January 1, 2022 by the available aquifer storage calculated above: _____7_____ %

C. Divide the cumulative groundwater extraction volume for the first 20 years of well operation by the available aquifer storage calculated above: _____28_____ %

D. If the cumulative extraction volume exceeds 10% of available aquifer storage, submit a Groundwater Level Monitoring Plan that includes, at a minimum, the following:

   a. A description of the aquifers to be monitored;

   b. A description of any existing or new wells to be used, their locations, construction specifications and completion depths; and

   c. Water level measurement methods and frequency (minimum spring and fall).

For County Use Only

Data Adequate? ☐ Yes ☐ No

Comments:

VII. Water Quality Degradation

Applicable
See Section 7.0 of the permit report for additional information.

A. Provide a database search for reported hazardous materials and waste sites and release incidents near the proposed well with search radii that comply with ASTM Standard 1527. (Commercial database search services provide this service.)
B. Provide water quality data available within 1 mile of the proposed well for small water supply systems regulated by the County or the State, and from the State Geotracker website (http://geotracker.waterboards.ca.gov/) and from the USGS NWIS Database (http://maps.waterdata.usgs.gov/mapper/index.html).
C. If the well is located in a County-designated Groundwater Quality Protection Zone (in an area underlain by the Corcoran Clay), the Applicant shall provide data regarding the well seals and construction methods used to prevent communication between the unconfined aquifer system overlying the Corcoran Clay with the confined aquifer system underlying the Corcoran Clay.
D. If the well is located in a County-designated Groundwater Quality Study Zone (within 1 mile of a well that produces water with solute concentrations that exceed primary or secondary MCLs or other applicable Water Quality Objectives), or within 1 mile of a reported contamination incident identified by the database search, the Applicant shall submit a Groundwater Quality Investigation. The scope of the Groundwater Quality investigation must be discussed with the DER and agreed to prior to implementation. At a minimum, the Groundwater Quality Investigation shall include the following:
    1. A summary of relevant data, studies and/or reports regarding the local aquifer system, groundwater quality and contaminant transport;
    2. Analysis of local and regional groundwater quality trends based on available data in the area;
    3. The methods and results of any additional site-specific hydrogeologic and groundwater quality investigation;
    4. Evaluation of the potential effect of the proposed well on future groundwater quality trends and contaminant migration;
    5. Evaluation of whether the proposed groundwater extraction will cause, or contribute to, groundwater quality degradation in excess of applicable standards for beneficial uses, or will interfere with groundwater quality management or remediation efforts overseen by State or Federal agencies; and
    6. Signature by a Registered Professional Geologist or Registered Professional Engineer in California.

For County Use Only

Data Adequate? ☐ Yes ☐ No

Comments:

VIII. Land Subsidence

Not Applicable
See Section 8.0 of the permit report for additional information.

A. If the well is in a Subsidence Study Zone (i.e., it is within 2 miles of an area underlain by the Corcoran Clay) and is proposed to be completed in the confined aquifer system, the Applicant shall provide the following:

1. The estimated maximum drawdown on January 1, 2022 and after 20 years of pumping at the nearest property line, ditch, canal, utility easement other sensitive infrastructure: _____NA_____ ft on January 1, 2022 and _____NA_____ feet after 20 years.
2. Attach hydrographs for nearby wells showing lowest historical groundwater levels. (Hydrographs are available from https://www.casgem.water.ca.gov and http://maps.waterdata.usgs.gov/mapper/index.html.)

Well ID	Distance and Direction from Proposed Well	Date Range of Data	Lowest Groundwater Level and Date
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA

3. Attach data relevant to subsidence from the Groundwater Information Center Interactive Map Application (https://gis.water.ca.gov/app/gicima/)
4. If the above information indicates the predicted drawdown is lower than the historical low groundwater level, or inelastic subsidence has been measured in the vicinity of the proposed well, the Applicant shall submit a Geotechnical Subsidence Investigation. The scope of the Geotechnical Subsidence Investigation must be discussed with the County Geologist and agreed to prior to implementation. At a minimum, the Geotechnical Subsidence Investigation shall include the following:
   a. A description of available information regarding the local geology and hydrogeology, especially as it relates to potential compression of fine grained aquitards in confined aquifer systems;
   b. A summary of data, studies and/or reports regarding subsidence in the area;
   c. Analysis of historical and current local and regional groundwater level trends based on available well hydrographs;
   d. Prediction of future groundwater level drawdown and trends;
   e. Any additional site specific investigation performed by the Applicant of conditions related to subsidence;
   f. Evaluation of whether, and to what extent, the proposed groundwater extraction will cause, or contribute to, subsidence; and
   g. Signature by a Registered Professional Civil or Geotechnical Engineer in California.

For County Use Only

Data Adequate? ☐ Yes ☐ No

Comments:

IX. Surface Water Depletion

Not Applicable
See Section 9.0 of the permit report for additional information.

If the well is in a Surface Water Protection Zone (within 1 mile of groundwater-connected streams, tributaries or reservoirs associated with the Calaveras, Stanislaus or Tuolumne Rivers if the well screen and gravel pack are completed within 200 feet of the streambed elevation, and within 2,500 feet if the well screen and gravel pack are completed at least 200 feet below the streambed elevation) the Applicant shall submit a Surface-Groundwater Interaction Study. The scope of the Surface-Groundwater Interaction Study must be discussed with the DER and agreed to prior to implementation. At a minimum, the Surface-Groundwater Interaction Study shall include the following:

A. A summary of previous data, reports and/or studies relevant to hydrostratigraphy and surface-groundwater interaction;
B. Additional site-specific investigation of conditions related to surface-groundwater interaction as may be required by the County, including but not necessarily limited to well-log interpretation or pumping tests;
C. Evaluation of the predicted surface water depletion by the proposed groundwater extraction using on-line analytical models available from the USGS (http://mi.water.usgs.gov/software/groundwater/strmdepl08/) or other methods approved by the County; and
D. Signature by a Registered Professional Geologist or Engineer in California.

For County Use Only

Data Adequate? ☐ Yes ☐ No

Comments:

X. Impacts to Groundwater Dependent Ecosystems (GDEs)

Not Applicable: See Section 10.0 of the permit report.

If drawdown at any GDE is projected to exceed 1 foot in Section IV.C.5, the Applicant shall submit a GDE Impact Study. The scope of the GDE Impact Study must be discussed with the DER and agreed to prior to implementation. At a minimum, the GDE Impact Study shall include the following:

A. A summary of previous groundwater resources and GDE studies and reports in the area;
B. A description of the groundwater flow regime and aquifer system in the area and the nature of the groundwater discharge at the GDE;
C. Analysis of local and regional groundwater level trends based on available well hydrographs within no less than 5 miles of the proposed well;
D. Any additional site specific hydrogeologic investigation performed;
E. An analysis of the local groundwater balance and the impact of the proposed groundwater extraction on surface water discharge, including evapo-transpiration, if applicable;
F. A prediction of future groundwater level drawdown and trends in the area with and without the proposed well;
G. Evaluation of the GDE for the presence of habitat and for the potential presence of any sensitive, threatened, or endangered species or rare plants;
H. Evaluation and conclusions regarding the impact of the proposed groundwater extraction on the GDE; and
I. Signature by a Registered Professional Geologist or Engineer in California, and a qualified biologist or environmental scientist.

For County Use Only

Data Adequate? ☐ Yes ☐ No

Comments:

INDEMNIFICATION

In consideration of the County's processing and consideration of this application for approval of the groundwater project being applied for (the "Project"), and the related CEQA consideration by the County, the Owner and Applicant, jointly and severally, agree to indemnify the County of Stanislaus ("County") from liability or loss connected with the Project approvals as follows:

1. The Owner and Applicant shall defend, indemnify and hold harmless the County and its agents, officers and employees from any claim, action, or proceeding against the County or its agents, officers or employees to attack, set aside, void, or annul the Project or any prior or subsequent development approvals regarding the Project or Project condition imposed by the County or any of its agencies, departments, commissions, agents, officers or employees concerning the said Project, or to impose personal liability against such agents, officers or employees resulting from their involvement in the Project, including any claim for private attorney general fees claimed by or awarded to any party from County. The obligations of the Owner and Applicant under this Indemnification shall apply regardless of whether any permits or entitlements are issued.
2. The County will promptly notify Owner and Applicant of any such claim, action, or proceeding, that is or may be subject to this Indemnification and, will cooperate fully in the defense.
3. The County may, within its unlimited discretion, participate in the defense of any such claim, action, or proceeding if the County defends the claim, actions, or proceeding in good faith. To the extent that County uses any of its resources responding to such claim, action, or proceeding, Owner and Applicant will reimburse County upon demand. Such resources include, but are not limited to, staff time, court costs, County Counsel's time at their regular rate for external or non-County agencies, and any other direct or indirect cost associated with responding to the claim, action, or proceedings.
4. The Owner and Applicant shall not be required to pay or perform any settlement by the County of such claim, action or proceeding unless the settlement is approved in writing by Owner and Applicant, which approval shall not be unreasonably withheld.
5. The Owner and Applicant shall pay all court ordered costs and attorney fees.
6. This Indemnification represents the complete understanding between the Owner and Applicant and the County with respect to matters set forth herein.

The Stanislaus County Department of Environmental Resources (DER) will notify the applicant of the date in which the completed information has been received. This date will trigger the 30-day review period to determine whether the application is complete. If

additional information is needed or requested, this will trigger another 30-day review period.

IN WITNESS WHEREOF, by their signature below, the Owner and Applicant hereby acknowledge that they have read, understand and agree to perform their obligations under this Indemnification.

Signature of Applicant/Date 3-13-2017

Signature of Owner(s)/Power of Attorney/Legal Representative/Date •

Note: Applications are not valid without the property owner's signature.

NOTICE TO ALL APPLICANTS

Pursuant to California Fish and Game Code §711.4, the County of Stanislaus is required to collect filing fees for the California Department of Fish and Wildlife for all projects subject to the California Environmental Quality Act (CEQA) unless a fee exemption is provided in writing from the California Department of Fish and Wildlife. Pursuant to California Fish & Game Code §711.4(d), all applicable fees are required to be paid within 5 DAYS of approval of any project subject to CEQA. These fees are subject to change without County approval required and are expected to increase yearly. Please contact the Department of Environmental Resources or refer to the current fee schedule for information on current fee amounts.

If a required filing fee is not paid for a project, the project will not be operative, vested or final and any local permits issued for the project will be invalid. (Section 711.4(c)(3) of the Fish and Game Code.)

Under the revised statute, a lead agency may no longer exempt a project from the filing fee requirement by determining that the project will have a de minimis effect on fish and wildlife. Instead, a filing fee will have to be paid unless the project will have no effect on fish and wildlife. (Section 711.4 (c)(2) of the Fish and Game Code). If the project will have any effect on fish and wildlife resources, even a minimal or de minimis effect, the fee is required.

A project proponent who believes the project will have no effect on fish and wildlife should contact the California Department of Fish and Wildlife. If the California Department of Fish and Wildlife concurs the project will have no such effect, the Department will provide the project proponent with a form that will exempt the project from the filing fee requirement. Project proponents may contact the Department by phone at (916) 651-0603 or through the Department's website at www.dfg.ca.gov.

Pursuant to California Fish and Game Code §711.4(e)(3) , the department (CDFW) shall assess a penalty of 10 percent of the amount of fees due for any failure to remit the amount payable when due. The department may pursue collection of delinquent fees through the Controller's office pursuant to Section 12419.5 of the Government Code.

Additionally California Fish and Game Code §711.4(f) states the following: Notwithstanding Section 12000, failure to pay the fee under subdivision (d) is not a misdemeanor. All unpaid fees are a statutory assessment subject to collection under procedures as provided in the Revenue and Taxation Code.

Failure to pay the necessary fee will also extend the statute of limitations for challenging the environmental determination made by the County, thus increasing exposure to legal challenge. The type of environmental determination to be made by the County may be discussed with the project reviewer following the environmental review stage of the project and will be outlined in a Board of Supervisor's staff report.

REQUIRED ADDITIONAL FEE: STANISLAUS COUNTY RECORDER

Upon approval of the proposed project, Stanislaus County will record either a “Notice of Exemption” or a “Notice of Determination” pursuant to CEQA Guidelines. The Clerk Recorder charges an additional fee of $57.00 for recording these documents. A separate check made payable to “Stanislaus County” is due and payable within 5 DAYS of approval of the project.

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Section **Page**

1.0 LOCATION MAPS

Kleifleder prepared two maps depicting Site location and required features. The maps are included in this section, and features are listed below, along with additional detail or comments where appropriate. Features not applicable or not identified during Kleinfelder's assessment are depicted with gray font.

A. Well location (Figure 1.0.B)

B. Property and APN boundaries (Figure 1.0.B)

C. Surrounding property and APN boundaries (Figure 1.0.B)

D. Streams and lakes within 2 miles (Figure 1.0.A)
   Kleinfelder assessed the following sources to map streams and lakes:
   1. US Fish and Wildlife Service National Wetlands Inventory Mapper
   2. USGS National Hydrography Database Mapper

E. Springs, seeps, wetlands and potential Groundwater-Dependent Ecosystems (GDEs) within 3 miles (Figure 1.0.A).
   In addition to the sources listed for mapping streams and lakes, Kleinfelder assessed the following sources to map GDEs:
   1. Current and historical Google Earth aerial imagery.

   This assessment did not indicate GDEs. Figure 1.0.A therefore depicts wetlands features but does not depict GDEs. See section 10 for more detail.

F. Existing sewer lines, cisterns and septic disposal systems within 250 feet (No features to depict)
   Kleinfelder assessed the following sources to map these features:
   1. Site Reconnaissance Notes
   2. Client interview Notes
   3. Current and historical Google Earth Aerial Imagery

   A house is located on the property just south of East Sonora Road. This assessment indicates that a septic tank and associated leech lines are located within about 20 feet of the house; however, exact locations are unknown. The proposed well is located about 1,300 feet from the house. Figures 1.0.A and 1.0.B therefore do not depict these septic-related features.

G. Concentrated Animal Feeding Operations (CAFOs) within 1 mile (No features to map)
Kleinfelder assessed the following sources to map these features:

1. Current and historical Google Earth aerial imagery
2. USGS and World Topographic Maps
3. Site Reconnaissance Notes

This assessment does not indicate CAFOs within 1 mile of the proposed well. Figures 1.0.A and 1.0.B therefore do not depict CAFO locations.

H. Reported hazardous materials and hazardous waste sites or release incidents within 1 mile of the proposed well (No features to depict).
Kleinfelder assessed the following sources to map these features:

1. DWR Water Data Library
2. Geotracker
3. Geotracker GAMA

This assessment did not indicate hazardous materials, hazardous waste sites, or release incidents within 1 mile of the proposed well. Figures 1.0.A and 1.0.B therefore do not depict these features. See section 7 for more detail.

I. Existing wells on the property and associated table (Figure 1.0.B)
Kleinfelder reviewed well completion logs obtained from the Stanislaus County and contacted property owners and representatives but was unable to identify onsite well details.

J. Predicted area of drawdown exceeding 5 feet (Figure 1.0.B)
Kleinfelder used the Theis Equation Excel tool provided by the USGS to calculate drawdown radius. Equation details and parameter assumptions are detailed in Section 3.

K. Subsidence-vulnerable infrastructure if within 2 miles of Corcoran Clay (Not Applicable).
This assessment indicates the proposed well is not located within two miles of the Corcoran Clay. Figures 1.0.A and 1.0.B therefore do not depict subsidence-vulnerable infrastructure. See Section 8 for more detail.

Legend

Wetlands Features

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond, Lake, or Riverine

No Groundwater Dependent Ecosystems indicated by available data. No water quality projects/issues indicated by GeoTracker/NWIS/Water Data Library

Groundwater Well Features

Wells with Groundwater Elevation Mapped from DWR Water Data Library

- Station 378874N1208954W001
- Station 378846N1208816W001
- Station 378805N1208893W001
- Station 378743N1209154W001

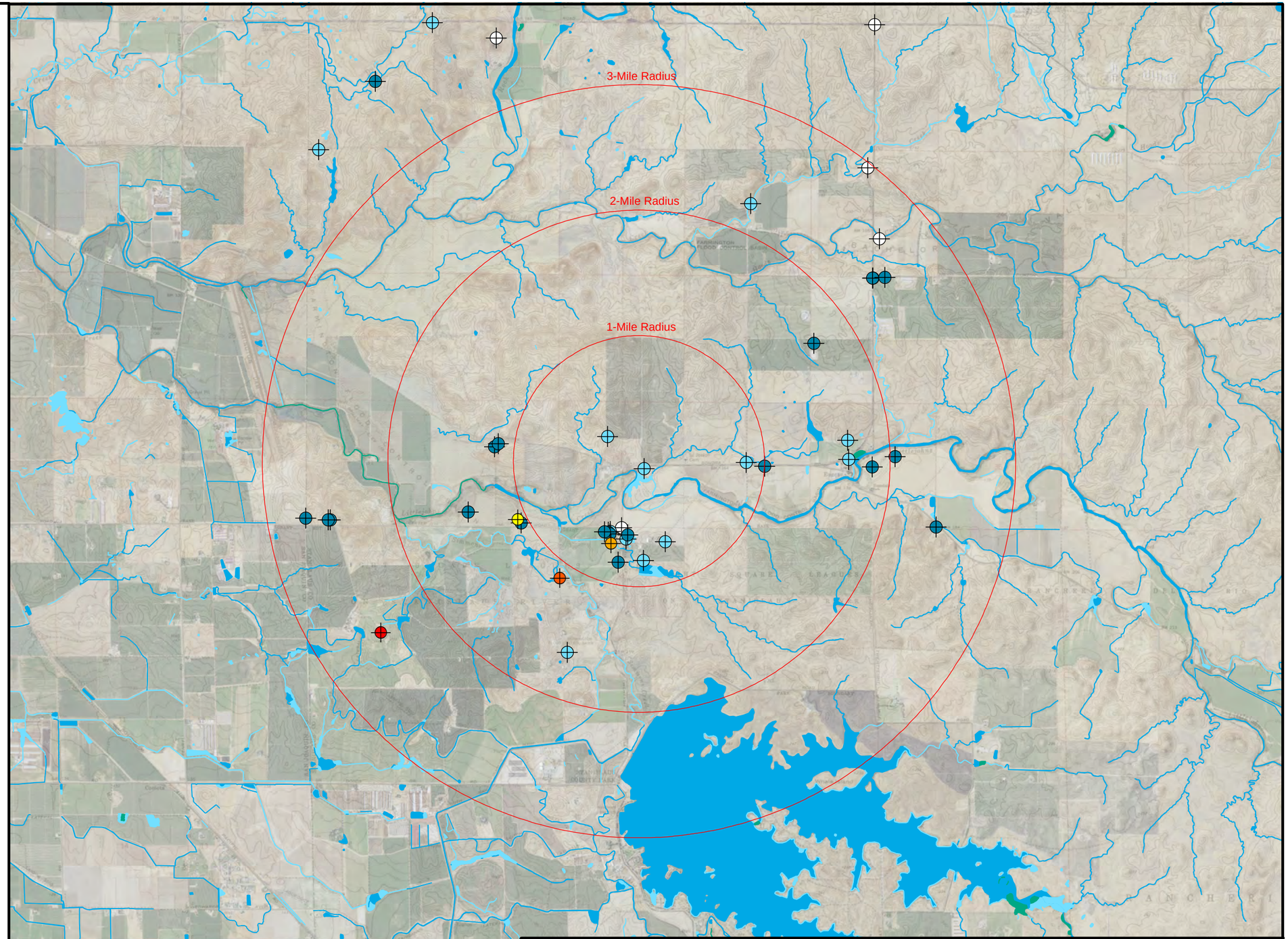
Wells mapped from Well Completion Reports

- Domestic Well
- Agricultural Well
- Unspecified Well

N

0 0.35 0.7 1.4 Miles

1 inch = 4,309 feet



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PROJECT NO.	20172846
DRAWN:	2017-02-08
DRAWN BY:	AW
CHECKED BY:	JT
FILE NAME:	Figure 1.0.A.MXD

Location Map
Groundwater Well Permit

Parcels 001011030, 001011031,and 001011039
East Sonara Road and 26 Mile Road
Farmington, CA 95230

FIGURE
1.0.A

Legend

Wetlands Features

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond, Lake, or Riverine

No Groundwater Dependent Ecosystems indicated by available data. No water quality projects/issues indicated by GeoTracker/NWIS/Water Data Library

Onsite Groundwater Well Features

- Proposed Well
- Existing onsite Well Details unknown

Hydrogeologic Cross Section Features

- Hydrogeologic Cross Section Well
- Cross Section

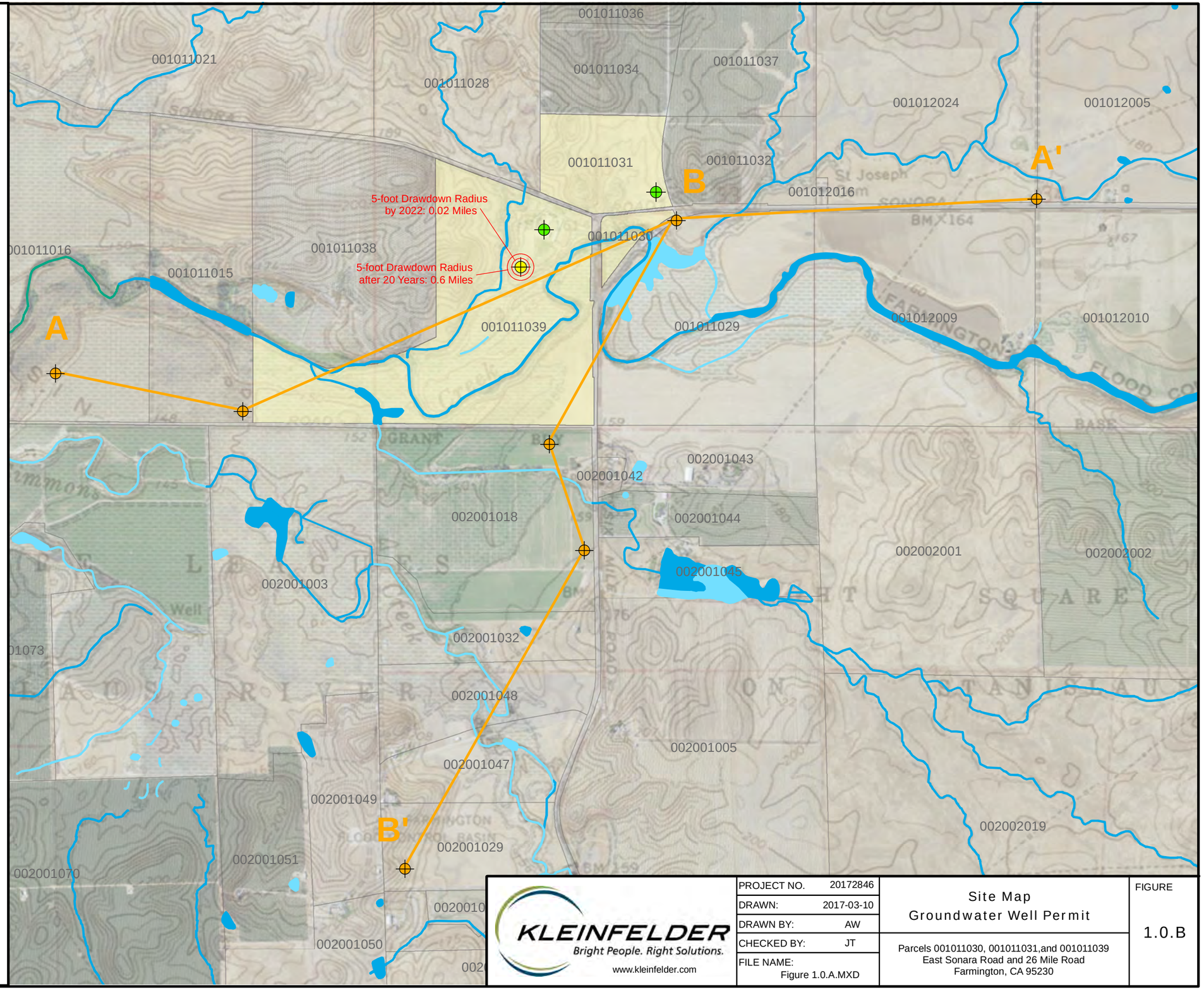
Parcel Features

- Site Parcel
- Surrounding Area Parcels

N

0 0.075 0.15 0.3 Miles

1 inch = 1,141 feet



PROJECT NO.	20172846
DRAWN:	2017-03-10
DRAWN BY:	AW
CHECKED BY:	JT
FILE NAME:	Figure 1.0.A.MXD

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Site Map
Groundwater Well Permit

Parcels 001011030, 001011031,and 001011039
East Sonara Road and 26 Mile Road
Farmington, CA 95230

FIGURE
1.0.B

2.0 PUMPING AND WATER USE DATA

Essential permit data are included in the permit in Section II A through I. Additional supporting data are included below in Table 2.0.A.

Table 2.0.A: Pumping Data

Crop	Walnuts
Irrigated Acres	100 Acres
Estimated Peak Irrigation Period	July 1st through July 15th
Estimated Peak Irrigation Required	About 4.6 Inches
Estimated Peak Well Capability	About 1,000 Gallons per Minute
Irrigation Hours per Week	48 Hours

	Acre-Feet	Gallons
Annual Volume of Irrigation per Acre	3.5	1,140,479
Annual Volume of Irrigation	350	114,047,850
Extracted Volume of Groundwater per Day	0.96	312,460
Extracted Volume of Groundwater per Hour	0.04	13,019
Extracted Volume of Groundwater per Minute	0.0007	217

Peak irrigation pumping rates will depend on overall well production and seasonal irrigational demand. This assessment assumes a production rate of about 1,000 gallons per minute (GPM). Based on walnut irrigation demand data from UC Davis, it appears peak irrigation demand occurs during the 1st half of July, during which optimal irrigation requires about 4.6 inches per acre (http://ucmanagedrought.ucdavis.edu/Agriculture/Crop_Irrigation_Strategies/Walnuts/).

This assessment conservatively assumes an irrigated area of about 100 acres and a peak daily well production of about 1,000 GPM. These assumptions would require irrigating about 4 days a week during seasonal peak irrigation demand. Higher peak daily well production, decreasing irrigated acreage, or applying less than optimal irrigation during seasonal peak demand would reduce the required irrigation frequency.

3.0 WATER EXPORT

Groundwater extracted from the well will not be exported from the county. Extracted groundwater will be used for onsite irrigation of a Walnut orchard.

Groundwater extracted from the well will not be substituted for surface water that will be exported from the county. No surface water conveyance infrastructure was noted during Kleinfelder's site reconnaissance, during additional assessment of aerial photography and topographic maps, or during interviews with Site owners or representatives.

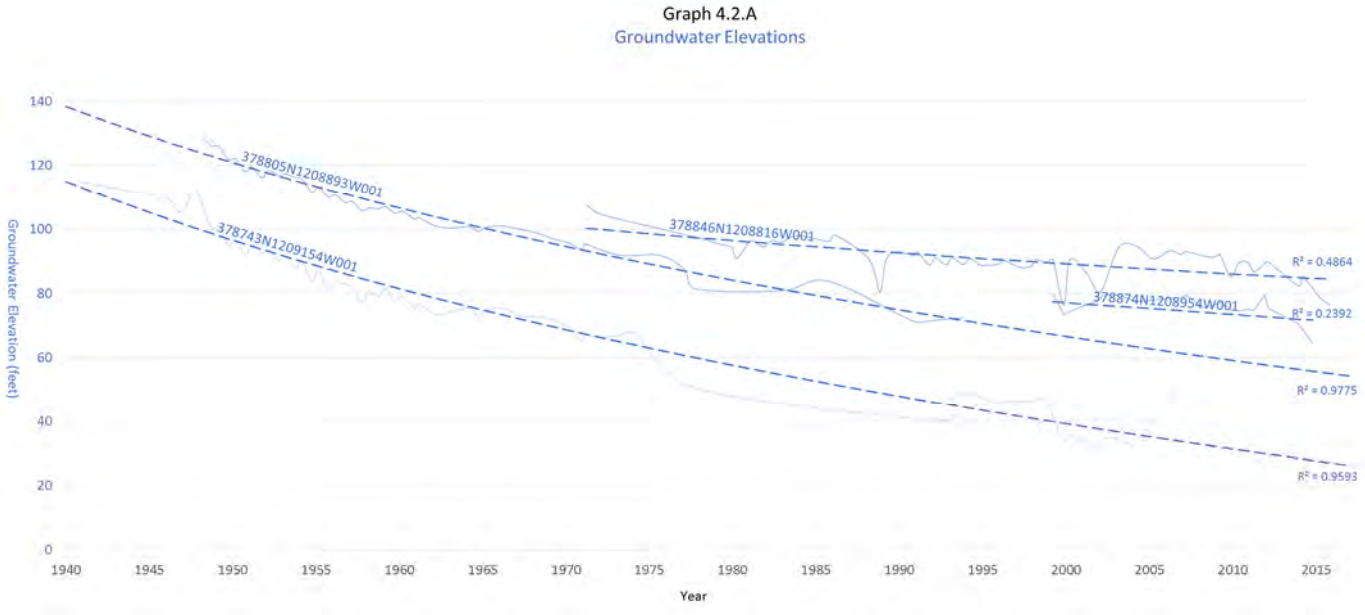
4.0 LOCAL GROUNDWATER LEVEL DECLINE

Essential permit data are included in the permit in Section 4 A through C. Additional supporting calculations and explanations are included in Table 4.1 and Kleinfelder's conceptual models are explained below.

4.1. Methods and Data Sources

Kleinfelder obtained and assessed groundwater surface elevation (GWSE) data from the DWR Water Data Library (http://www.water.ca.gov/waterdatalibrary/). Kleinfelder identified, mapped, and downloaded data from wells located within about 3 miles of the proposed well. This assessment resulted in the mapping and assessment of 11 wells. Of these 11 wells, adequate GWSE data for assessment were available from 4. Graph 4.1 depicts these GWSE data and associated trends.

4.2. Overall Regional Trends



Each well indicates declining GWSEs over associated monitoring periods. As depicted in Graph 4.2.A, two wells (Stations 378805N1208893W001 and 378743N1209154W001) provide data between around 1940 through around 1995 and 2010. These timeseries data depict logarithmic trends with R^2 values of about 0.96 and 0.98. Logarithmic trends indicate that while GWSEs are decreasing, the rate at which they are decreasing is itself decreasing. The R^2 values of 0.96 and 0.98 indicate that these logarithmic trends explain about 96 to 99% of variation in GWSEs over the monitoring period. While these two wells provide robust timeseries data to indicate strong decadal trends in GWSE, these wells do not provide

data post-2005. GWSEs post-2005 are important to understanding GWSE response to recent drought that that California has experienced since about 2011.

The two remaining wells (Stations 378846N1208816W001 and 378874N1208954W001) do provide GWSE data post-2005. These wells, however, do not provide as long an observation period as the wells described above. One provides GWSEs from about 1975 to around 2015 and the other from about 2000 to 2015. Both indicate stronger GWSE declines post-2011 than pre-2011; however, these post-2011 declines do not significantly exceed historical variance. The well providing data from about 1975 to about 2015 is best modeled as a logarithmic trend, which indicates that post-2011 declines are not yet significant enough to statistically indicate that the overall decrease in GWSE is not itself decreasing over time. The second well providing data from around 2000 to 2015 is best modeled as a linear trend; however, this is very likely due to the short observational period, as logarithmic geometry is not apparent over shorter observational periods.

4.3. Hydrogeological Context

Kleinfelder obtained Well Completion Reports from wells within up to about 5 miles of the proposed well. Kleinfelder mapped well locations in the project GIS and assessed well logs to develop a hydrogeologic conceptual model. This model was used to inform GWSE interpretation and aide in parameter selection for drawdown and extraction equations. Model cross sections are depicted in Figures 4.3.A and 4.3.B and plan view locations on Figure 1.0.B.

Well Completion Reports typically indicate a general subsurface composed of finer grained materials (e.g., clay) with interbedded coarser grained materials (e.g., sand). Well Completion Reports frequently describe sands as “black” or “volcanic” and clays as “blue.” These descriptions are consistent with the Mehrten Formation, which hydrogeology publications indicate in the area (e.g., Burow et. al., 2004; DWR, 1967).

In some areas, wells were drilled in Quaternary Alluvium associated with the upper reach of Little John Creek, which runs the proposed-well property. Wells drilled within this historical creek meander zone indicate nearly 250 feet of coarse grained material (e.g., sand) deposited atop materials similar to those noted elsewhere.

Kleinfelder’s conceptual hydrogeological model interprets these data as indicating a region typically underlain by Mehrten Formation (hereafter lower aquifer) or deposits from channels that have eroded and replaced up to about 250 vertical feet of Mehrten Formation with coarser grained material (hereafter upper aquifers). The degree to which these upper and lower aquifers are hydraulically connected is

unknown; however, based on available well completion logs, Kleinfelder expects that the upper portions of the lower aquifer are likely at least partially hydraulically connected with the upper aquifers. Aquifers may therefore vary from mostly unconfined in the upper aquifer to semi-confined in the upper portion of the lower aquifer to mostly confined in lower portions of the lower aquifer. Well performance, construction, and associated GWSEs therefore strongly depend on the general hydrogeological environment selected for extraction or monitoring.

It is not certain if GWSE data obtained and assessed by Kleinfelder reflect conditions in the upper to lower aquifers. It is possible that GWSEs reflect conditions in either or even both. Groundwater elevations depicted on Figures 4.3.A and 4.3.B reflect the elevation at which groundwater was first encountered during drilling, and therefore provide relevant aquifer information for wells screened within the first-encountered aquifer. Historical groundwater data provide decadal trends; however, well completion logs for these wells are not available, so the aquifer from which these wells draw is therefore unknown. No matter, the trends in each well appear relatively similar and so are useful in understanding regional GWSE trends.

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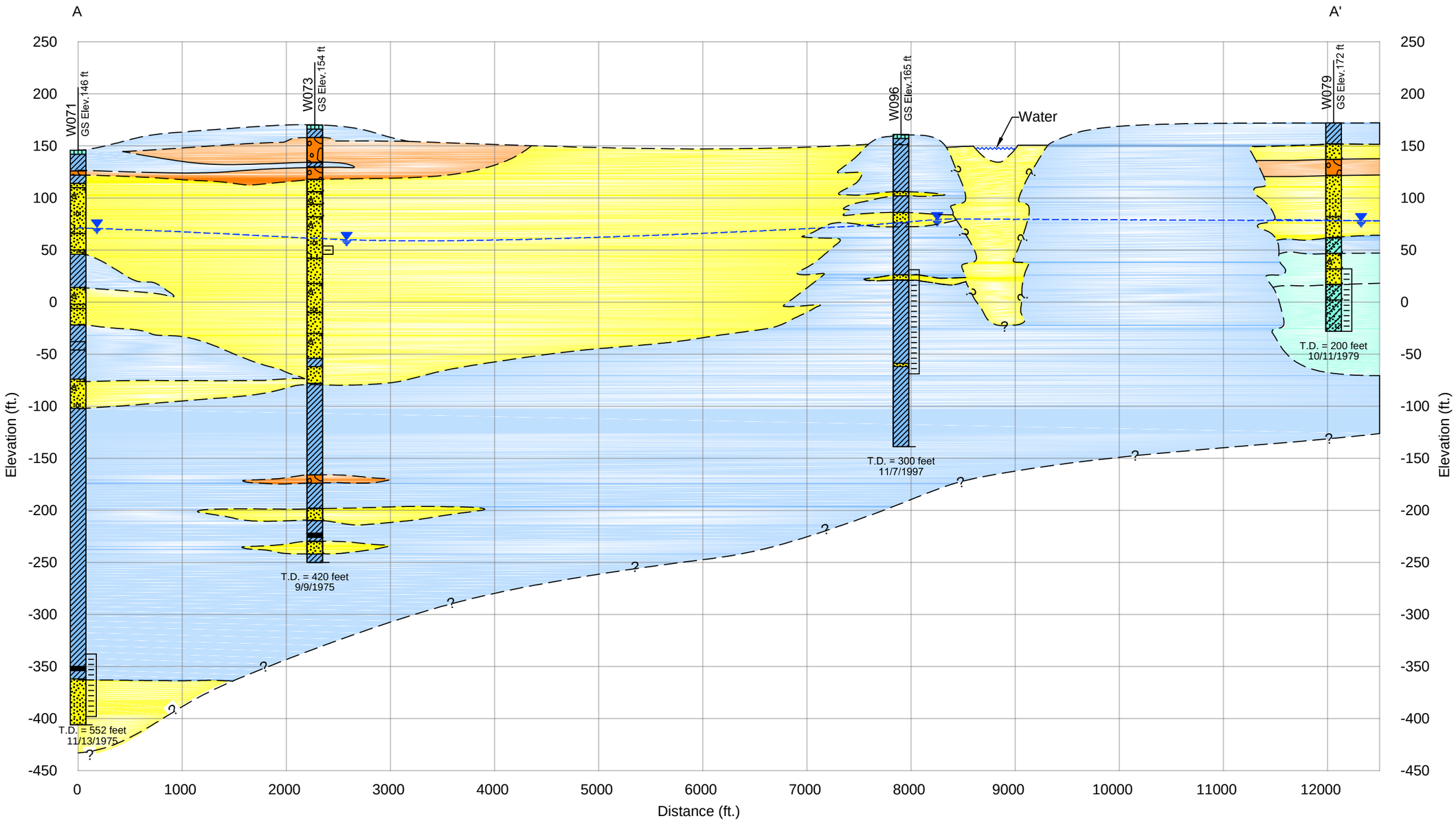

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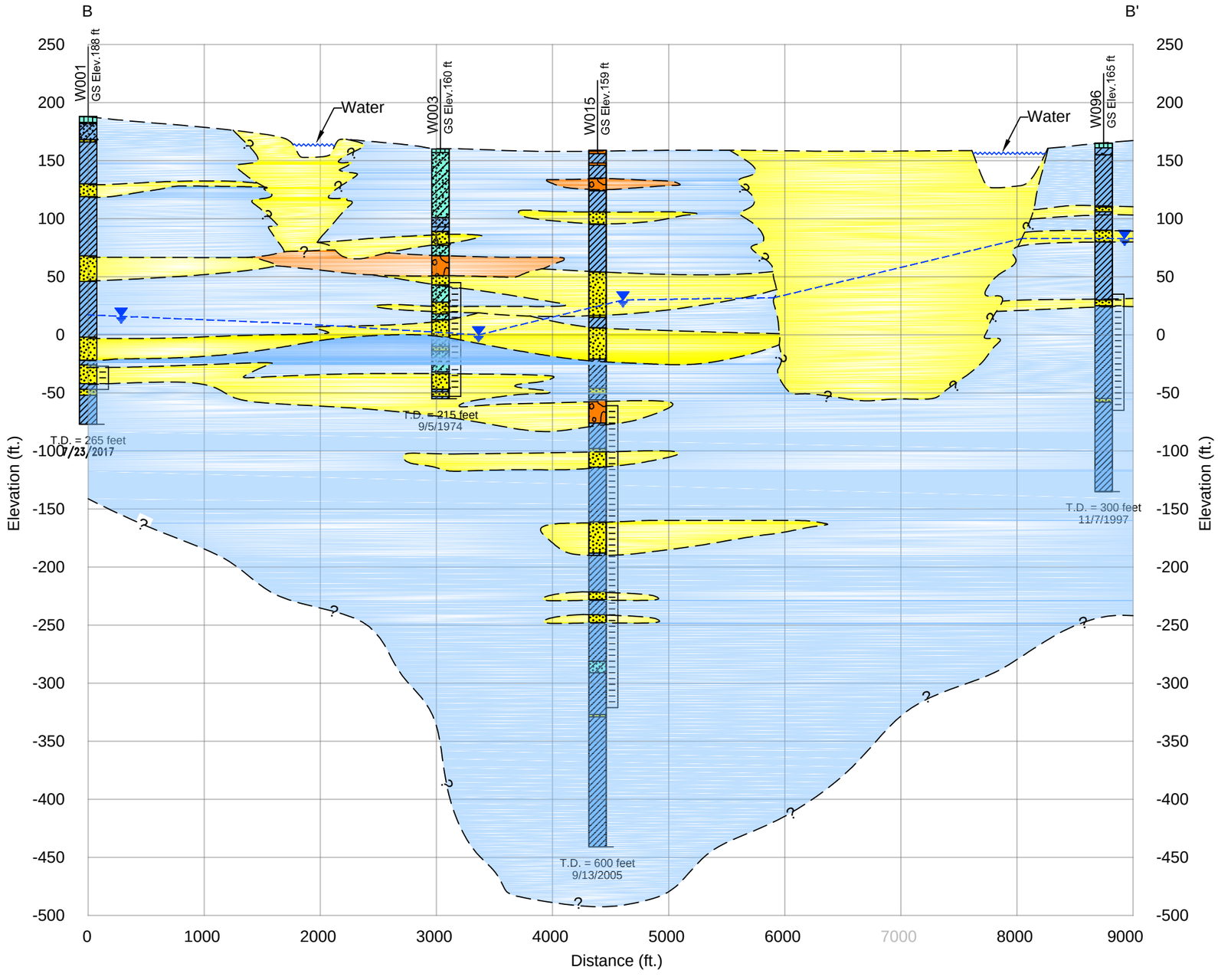
FILE NAME:	FIGURE 4.3.dwg

Cross Section A-A'
Groundwater Well Permit

Parcels 001011030, 001011031, and 001911039
East Sonora Road and 26 Mile Road
Farmington, CA 95230

FIGURE
4.3.A

CAD FILE: K:\2016_PROJECTS\20172846.001A\cad\ LAYOUT: 4.3.A



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DRAWN BY:	D. Ross
CHECKED BY:	AW
FILE NAME:	FIGURE 4.3.dwg

Cross Section B-B'
Groundwater Well Permit

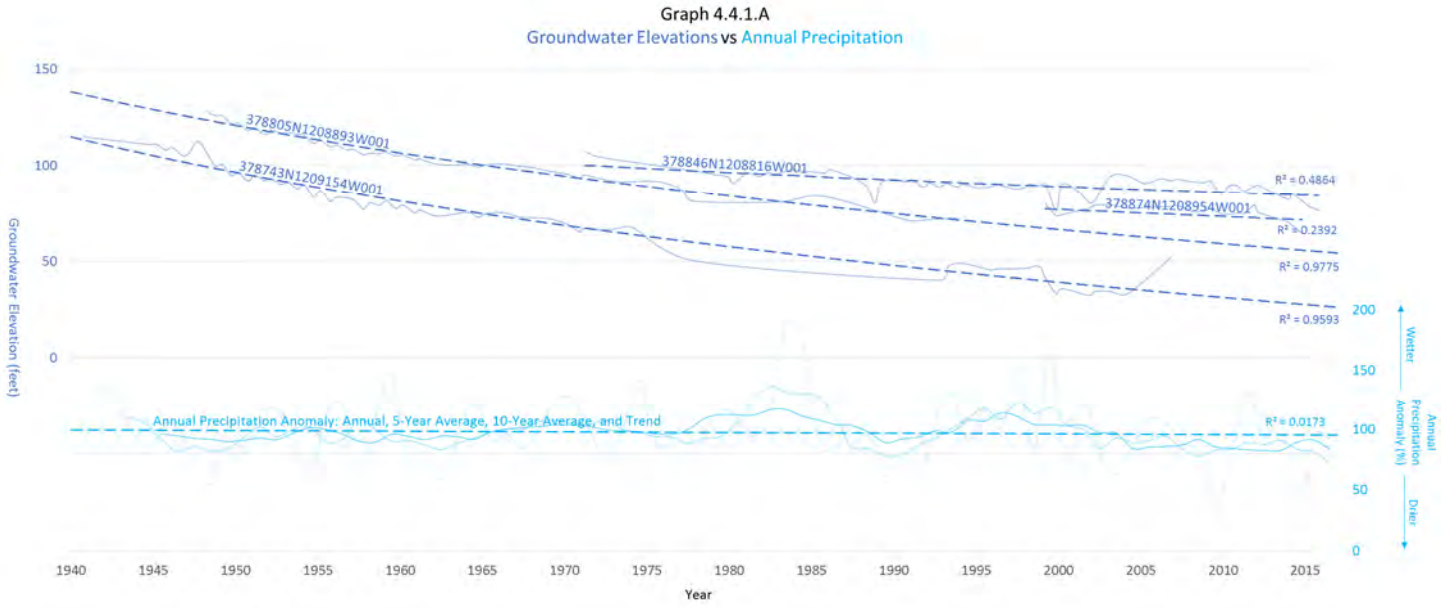
Parcels 001011030, 001011031, and 001911039
East Sonora Road and 26 Mile Road
Farmington, CA 95230

FIGURE
4.3.B

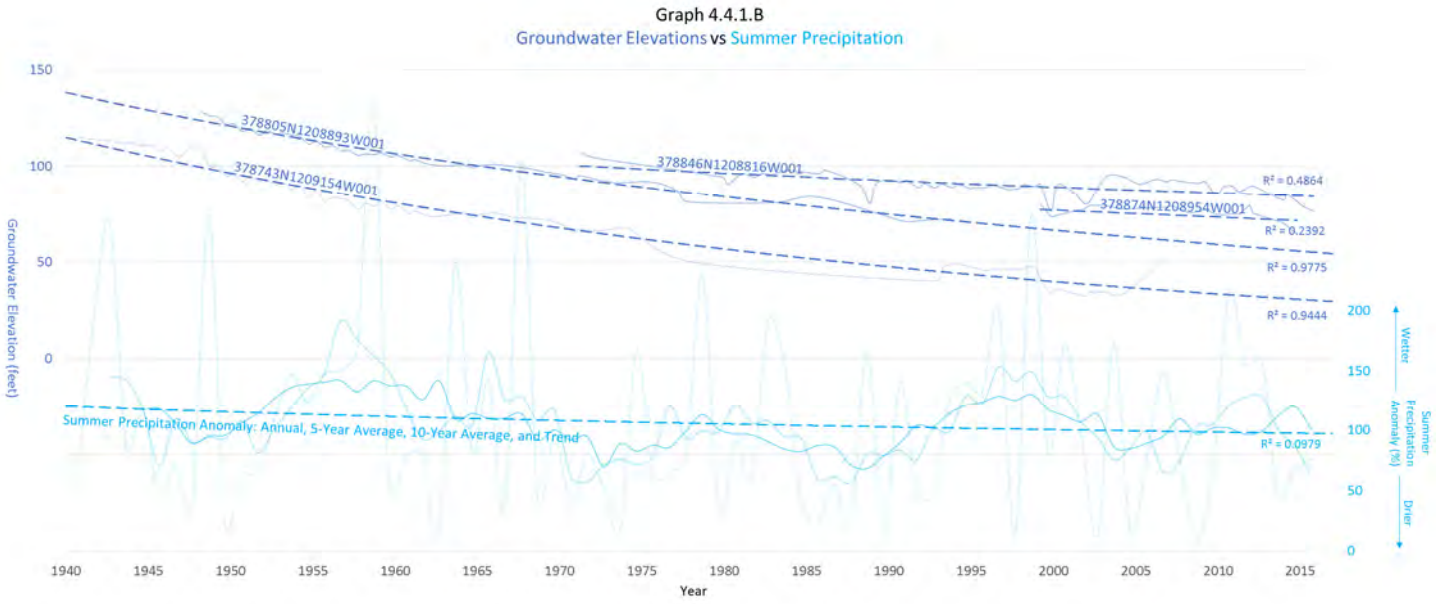
4.4. Climatological Context

Existing GWSE data indicate a regional, decreasing GWSE logarithmic trend. To better understand this trend, Kleinfelder compared GWSE data against climatological data that may indicate potential recharge conditions.

4.4.1. Precipitation

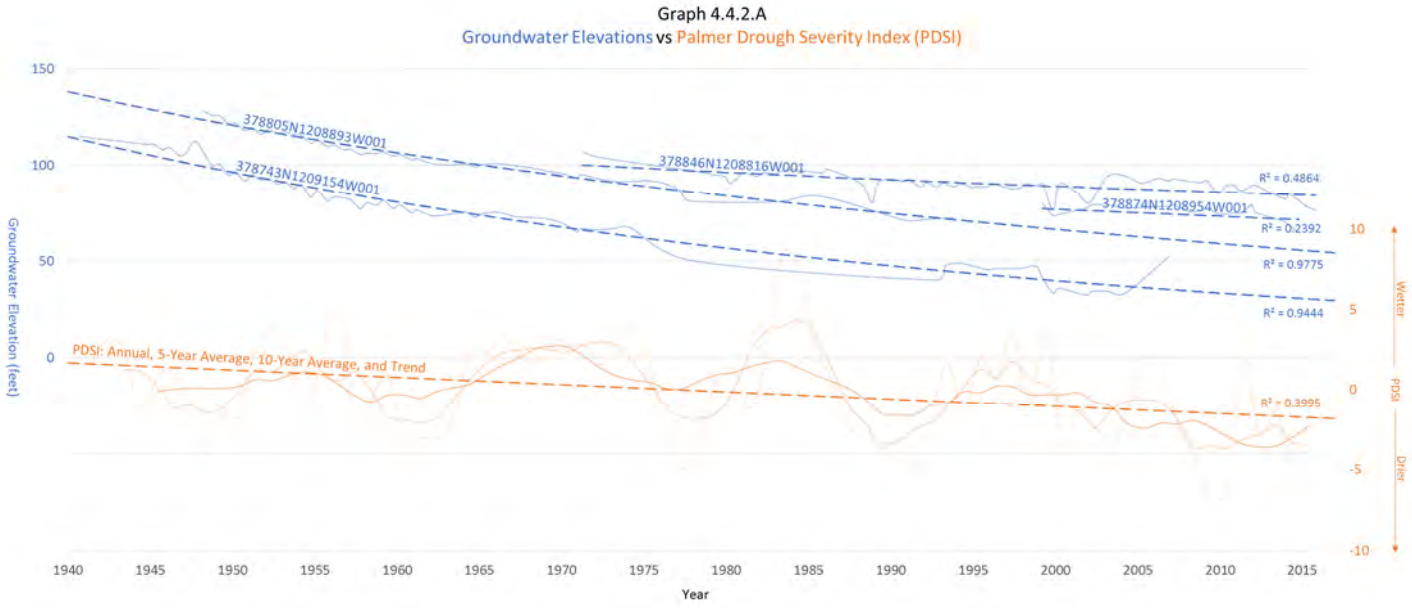


Graph 4.4.1.A depicts GWSE data and annual precipitation. Annual precipitation is presented as precipitation anomaly (the percentage above or below average annual precipitation), and is also depicted as 5- and 10-year running averages. The average trend over the monitoring period is also depicted. As Graph 4.2 indicates, there is little evidence of substantial changes in annual precipitation over the monitoring period. Annual precipitation appears to be decreasing since about 2000, but annual precipitation was above average around 2000, so subsequent decreases appear larger than they are. No matter, annual precipitation has typically been below average since around 2003. Annual precipitation therefore cannot explain the long-term, decadal logarithmic decline in GWSE over the monitoring period; however, the recent decline in annual precipitation may help explain the most recent declines in in GWSE after around 2012.



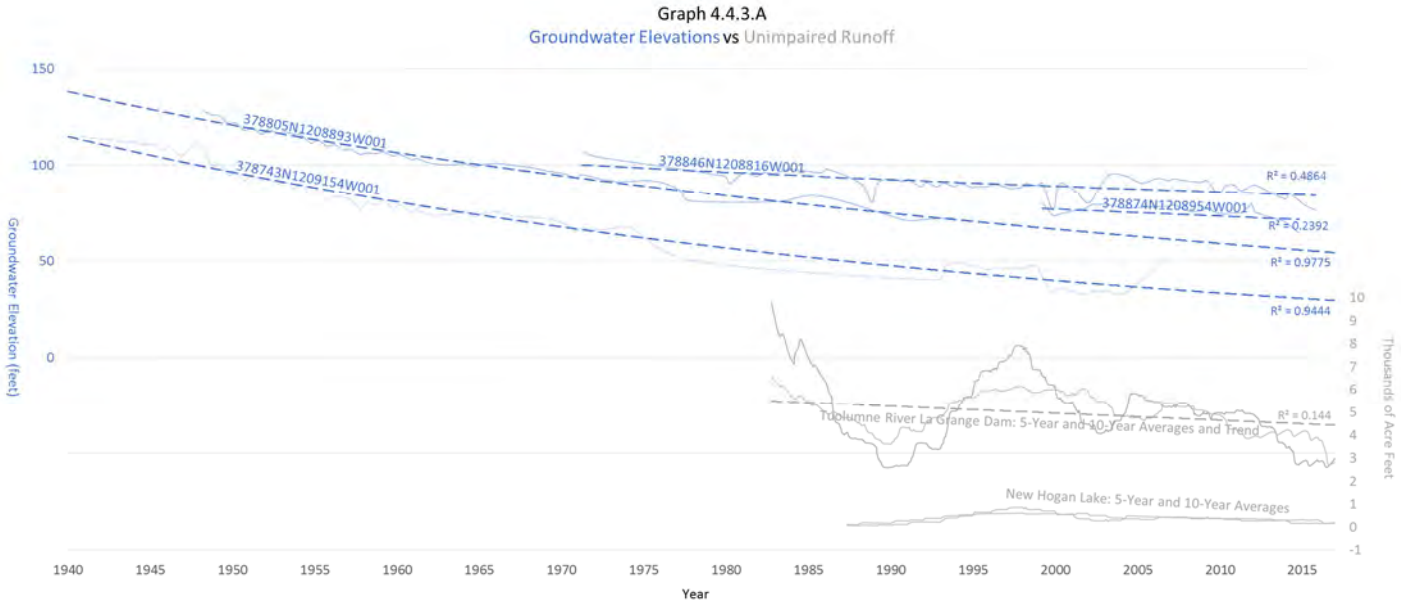
Graph 4.4.1.B depicts GWSE data and dry-season (July through October) precipitation. Dry-season precipitation is assessed to investigate the potential for GWSE to be more dependent on dry-season precipitation, which may be anticipated if most wet-season precipitation runs off into creeks before percolating through the subsurface and recharging the aquifer. In this scenario, local wet-season precipitation would have to decrease considerably before GWSE would be impacted; however, modest changes in dry-season precipitation may impact GWSE. Graph 4.3 indicates a long-term, decadal decline in dry-season precipitation over the monitoring period. If dry-season precipitation is important to local GWSEs, this decadal decrease in dry-season precipitation would be expected to result in declining GWSEs.

4.4.2. Palmer Drought Severity Index (PDSI)



Graph 4.4.2.A depicts GWSE data and the annual Palmer Drought Severity Index (PDSI). PDSI considers both precipitation and temperature to better represent likely soil moisture condition. As with precipitation, 5-year and 10-year running averages are also depicted, along with the overall trend over the monitoring period. These data indicate a long-term, decadal drying trend. This drying trend is steeper than the decline in dry-season precipitation. This steeper decline would be expected assuming area-temperatures have generally risen during the monitoring period. Moreover, this decline in PDSI appears to have steepened since about 1985, which is around the time that the current increasing trend in mean global temperature also steepened. These precipitation and PDSI data indicate that increasing temperature and declining dry-season precipitation have decreased area soil-moisture, potentially impacting aquifer recharge and therefore GWSE.

4.4.3. Unimpacted Runoff



Graph 4.4.3.A depicts GWSE data and unimpacted runoff from two nearby reservoirs (Tuolumne River La Grange Dam and Calaveras River New Hogan Lake). Unimpacted runoff represents runoff conditions that would have occurred absent human intervention in watersheds. These data can be used better understand upstream conditions that may impact recharge from the upper reaches of Little John Creek and other water bodies that run through the area. These date are used for proxies of local water body flow because no gages are available for local water bodies. The monitoring period of these data begins around 1980, so it's difficult to assess their potential impact on the longer-term, post-1940 GWSE trends in the area; however, the overall trend since around 1980 has been a decline in runoff. This is consistent with and an expected consequence of the general decline in Sierran snowpack over recent years.

4.4.4. Overall Climatological Assessment

Together, these climatological data indicate conditions that would be expected to cause declines in GWSE through reduced aquifer recharge. Decreasing dry-season precipitation, increasing temperatures and subsequent drying of soil, and decreasing unimpacted runoff should all be expected to result in declining GWSEs. These trends are all consistent with the typical predicted and observed regional response to increasing global mean temperature. These data indicate that not all the observed decline in GWSEs over the monitoring period can be attributed to groundwater extraction, and that the potential stronger decline in GWSE since around 2011 is likely mostly attributable to climatological conditions rather than groundwater extraction. Without further data, however, readily available data are insufficient for quantifying the impact of climate and groundwater extraction on GWSE.

4.5. Drawdown Analysis

Graph 4.5.A depicts the drawdown analysis and Table 4.5.A presents the results of and parameters used in the drawdown analysis. The 5-foot drawdown radii after 6 and 20 years are depicted on Figure 1.0.B. These radii are calculated with the TheisDistance spreadsheet tool provided by the USGS (https://nevada.usgs.gov/tech/excelforhydrology/AquiferTestTools/TheisDistance.xls). Selected parameters are explained below.

Table 4.5.A: Drawdown Analysis Results and Parameters

	Estimated for this analysis	Estimated in reviewed literature
Hydraulic Conductivity	20 feet/day	0.01 to 67 feet/day (Burro et. al., 2004) 0.02 Up to about 67 feet/day (DWR, 1967)
Aquifer Thickness	400 feet	"Quite thick," wells often 800 feet deep (DWR, 2003) 200 to 700 feet (Burro et. al., 2004) Up to 800 to 1,300 feet (DWR, 1967)
Transmissivity	8,000 feet^2/day	8,000 feet^2/day (Burro et. al., 2004)
Storativity	0.0239 (semi-confined)	Unconfined to semi-confined (Burro et. al., 2004) Semi-confined (DWR, 1967)

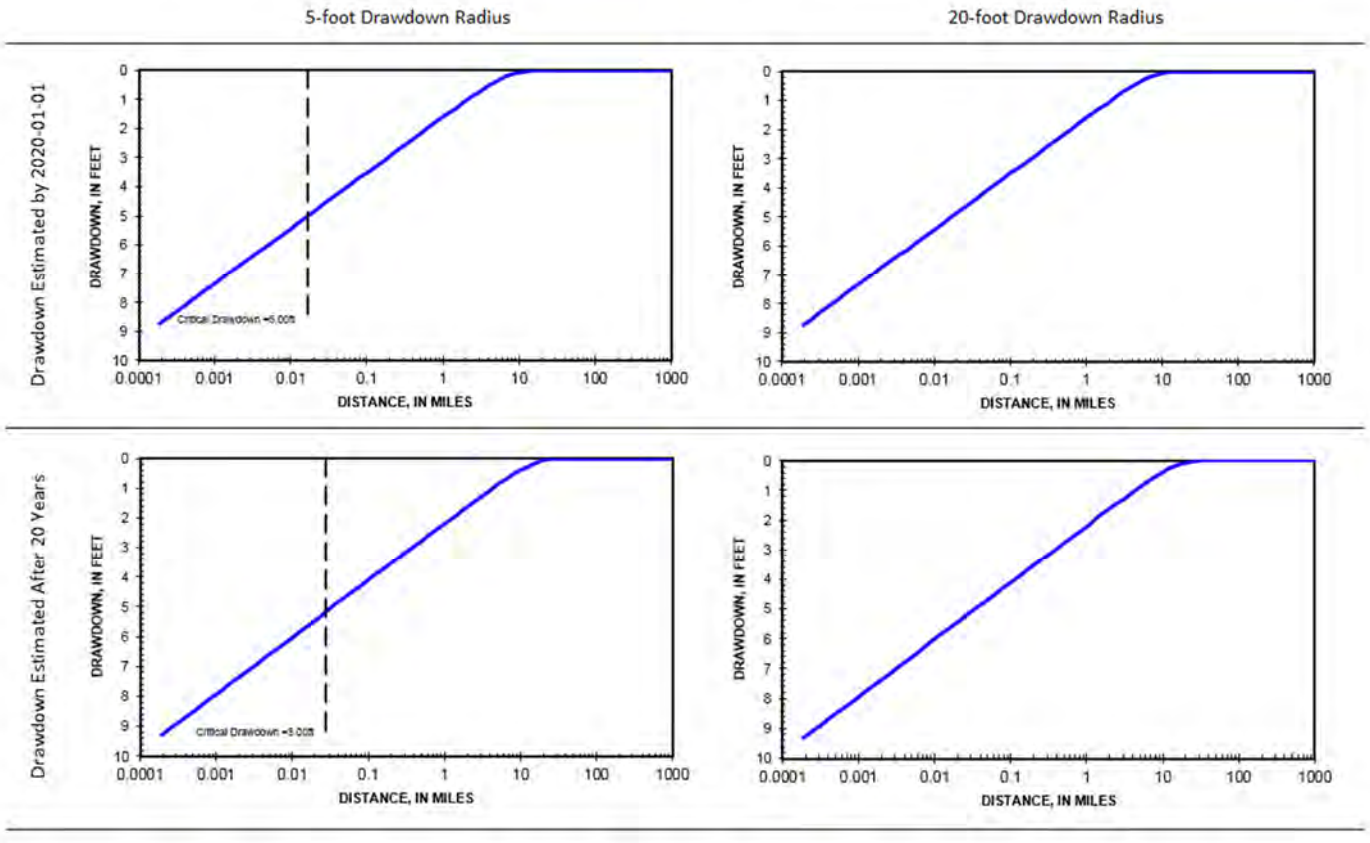
	5-foot Drawdown Radius	20-foot Drawdown Radius
Estimated Drawdown by 2020-01-01	0.02 miles	NA
Estimated Drawdown After 20 Years	0.03 Miles	NA

Hydraulic conductivity was estimated based on engineering judgment gained from hydraulic modeling in similar Great Valley soils (Kleinfelder, 2015); general hydraulic conductivity guidance in available literature (e.g., Bear, 1972), literature review of conditions in similar, nearby aquifers (Burro et. al., 2004; DWR, 2003); and sensitivity analyses of resulting transmissivity to ensure consistency with existing-literature transmissivity estimates for similar, nearby aquifers (Burro et. al., 2004). Based on these data, Kleinfelder estimates a hydraulic conductivity of 20 feet/day.

Aquifer thickness was estimated based on hydrogeological models that Kleinfelder developed from available well completion logs (Figures 4.3.A and 4.3.B); literature review of conditions in similar, nearby aquifers (Burro et. al., 2004; DWR, 2003); and sensitivity analyses of resulting transmissivity to ensure consistency with existing-literature transmissivity estimates for similar, nearby aquifers (Burro et. al., 2004). Based on these data, Kleinfelder estimates an aquifer thickness of 400 feet.

Transmissivity was calculated based on the estimated depth of 400 feet and estimated average permeability of 20 feet/day. The resulting transmissivity of 8,000 feet^2/day is consistent with estimates of similar, nearby aquifers (Burro et. al., 2004).

Storativity was estimated based on hydrogeological models that Kleinfelder developed (Figures 4.3.A and 4.3.B) and review of existing literature for nearby, similar aquifers. Kleinfelder anticipates the proposed well will be screened near the top of the bottom aquifer, where Kleinfelder-developed models indicate semi-confined conditions. This assumption appears consistent with existing literature, which indicates area aquifers range from unconfined to semi-confined (Burro et. al., 2004). Semi-confined storativity was estimated based on qualitatively assessing the range of unconfined to confined storativity. This range includes the County-provided unconfined specific yield of 0.25 (in unconfined aquifers, storativity is approximately equal to specific yield) and a confined storativity of 0.000366 calculated from the aquifer thickness of 400 feet (Todd, 1980). Because Kleinfelder anticipates the proposed well to be screened in the upper portion of the lower aquifer, Kleinfelder expects storativity to be closer to unconfined conditions than confined conditions. This approach and the conceptual hydrological models are consistent with previous work Kleinfelder conducted for a similar Stanislaus County permit application (Kleinfelder, 2016). Kleinfelder therefore selected a storativity of 0.0239, consistent with the storativity selected for previous permit work, which was already reviewed by the County and found adequate for similar conditions. This is a conservative estimate relative to the Count-provided unconfined value of 0.25, as it increases drawdown radii considerably.



Graph 4.5.A: Drawdown Analysis Results

5.0 WELLS IN GROUNDWATER LEVEL MANAGEMENT ZONE

This assessment does not indicate the proposed well is in a Groundwater Level Management Zone; therefore, this section is not applicable to this application.

6.0 REGIONAL GROUNDWATER LEVEL DECLINE AND STORAGE REDUCTION

Table 6.0.A presents the extracted volume calculation results and associated parameters. The extracted volume of water over 20 years was calculated following permit guidance. It should be noted that permit guidance specifies total aquifer volume to be calculated as it currently exists, without considering ongoing recharge or transport. This calculation indicates potential for the extracted volume of groundwater over 20 years to exceed 10% of currently existing storage. A Groundwater Level Monitoring Plan will therefore developed and provided as part of this permit application. Parameters used for calculating extracted water volume are explained below.

Table 6.0.A: Extracted Groundwater Volume Results and Parameters

	Estimated for this analysis	Estimated in reviewed literature
Property Area	9,004,153 feet^2	NA. Calculated from GIS.
Hydraulic Conductivity	20 feet/day	Up to 67 feet/day (Burro et. al., 2004)
Aquifer Thickness	400 feet	"Quite thick," wells often 800 feet deep (DWR, 2003) 200 to 700 feet (Burro et. al., 2004)
Transmissivity	8,000 feet^2/day	8,000 feet^2/day (Burro et. al., 2004)
Storativity	0.0239 (semi-confined)	Unconfined to semi-confined (Burro et. al., 2004)
Specific Storage	0.00006	NA. Calculated from Storativity and aquifer thickness.
Hydraulic Head	0	NA. Site specific.
Storativity	0.0239 (semi-confined)	Unconfined to semi-confined (Burro et. al., 2004)

	Acre-feet^3	Percent of Aquifer Volume
Aquifer Volume Without Considering Hydraulic Head	24,805	100%
Aquifer Volume Available From Hydraulic Head	0	0%
Total Aquifer Volume	24,805	100%
Estimated Extraction by 2020-01-01	1,683	7%
Estimated Extraction After 20 Years	7,000	28%

Hydraulic conductivity, aquifer thickness, transmissivity, and storativity are all based on values selected for the drawdown analysis (Section 4.5). Additional detail regarding these parameter selections is therefore included in Section 4.5.

Hydraulic head was estimated based on review of well completion logs and historical groundwater elevation trends. Based on this review it does not appear likely that groundwater elevations exceed screened intervals. Where first-encountered groundwater elevations are available for wells screened in first-encountered aquifers, first-encountered groundwater elevations are typically between 5 to 70 feet above screened intervals. These wells, however, were generally completed around 40 to 50 years ago. Given decadal trends noted in Section 4.2, in appears groundwater elevations have generally declined by 75 to 100 feet since these wells were installed. This assessment therefore assumes a hydraulic head of 0 feet. This is a conservative estimate for the extraction calculation, as it reduces the total volume of aquifer available for extraction.

7.0 WATER QUALITY DEGRADATION

Kleinfelder assessed readily available data for evidence of water quality issues within one mile of the proposed well. This assessment did not indicate water quality issues. Kleinfelder did not identify evidence of current or past environmental-related mitigation within one mile of the site, and available groundwater analytical data gathered and assessed by Kleinfelder did not indicate constituent concentrations exceeding applicable groundwater limits. Water quality data identified in this assessment are detailed in Tables 7.0.A, 7.0.B, and 7.0.C below, and data sources and assessment details are noted in Sections 7.1, 7.2, and 7.3.

Table 7.0.A: Inorganic Chemistry Water Quality Data 1

	Conductance (EC) (µS/cm)	Dissolved Boron (mg/L)	Dissolved Calcium (mg/L)	Dissolved Chloride (mg/L)	Dissolved Fluoride (mg/L)	Dissolved Magnesium (mg/L)
EPA MCL					4	
California MCL					2	
EPA Secondary MCL				250	2	
California Secondary MCL	900			250		
California Notification Level		1				

Sampling Date	Well						
1959-10-20	01N10E33G001M	306	0.01	21	21	0.3	9.8
1960-08-17	01N10E35L001M	311			9		
1964-12-23	01N10E33G001M	270			17		
1964-12-23	01N10E35L001M	362			10		

Table 7.0.B: Inorganic Chemistry Water Quality Data 2

	Dissolved Nitrate (mg/L)	Dissolved Potassium (mg/L)	Dissolved Silica (SiO2) (mg/L)	Dissolved Sodium (mg/L)	Dissolved Sulfate (mg/L)	pH (pH units)	Total Alkalinity (mg/L as CaCO3)	Total Hardness (mg/L as CaCO3)
EPA MCL								
California MCL	45							
EPA Secondary MCL					250	6.5 < pH < 8.5		
California Secondary MCL					250			
California Notification Level								

Sampling Date	Well								
1959-10-20	01N10E33G001M	10	4.1	60	22	10	8.1	96	93
1960-08-17	01N10E35L001M				20		8.2	132	121
1964-12-23	01N10E33G001M						8.2	79	94
1964-12-23	01N10E35L001M						7.7	146	133

Table 7.0.C: Herbicide-related Water Quality Data

	Thiobencarb (mg/L)	Thiobencarb Sulfoxide (mg/L)	Monlinate Sulfoxide (mg/L)	Molinate (mg/L)	Bentazon, Sodium Salt (mg/L)
EPA MCL					
California MCL	0.07			0.018	
EPA Secondary MCL					
California Secondary MCL	0.001				
California Notification Level					

Sampling Date	Well					
1985-09-10	50M01N10E35	Not Detected	Not Detected	Not Detected	Not Detected	
1989-02-23	50M01S10E09					Not Detected
1989-02-23	50M01S10E09					Not Detected

7.1. Department of Water Resources (DWR) Water Data Library

Kleinfelder downloaded and assessed available water data from the DWR Water Data Library within about or just under 3 miles of the proposed well. The permit requires assessment of water quality issues within 1 mile of the proposed well. This 1-mile assessment revealed very little available data, so Kleinfelder voluntarily expanded the search radius to help the County better understand local water quality conditions. This expanded search resulted in data from two wells. One well is located within 1 mile of the proposed well. The second well is located about 2 miles east of the proposed well. Data are limited to four sampling events conducted between around 1959 and 1964. These data were compared against EPA Maximum Contaminant Levels (MCLs), EPA Secondary MCLs, California MCLs, California

Secondary MCLs, and California Notification Limits. This comparison did not indicate constituent concentrations exceeding comparison limits.

7.2. Geotracker

Kleinfelder assessed Geotracker for environmental-related sites or data within 1 mile of the proposed well. This assessment indicated that the nearest sites/data are located about 5 miles from the proposed well.

7.3. Geotracker GAMA

Kleinfelder assessed Geotracker GAMA for wells for which analytical data are available. This assessment indicated that the nearest wells providing additional analytical data not already obtained through the DWR Water Quality Library are located around 2 to 3 miles from the proposed well. No additional data are indicated within 1 mile of the proposed well. Kleinfelder therefore voluntarily expanded the search radius to within about 3 miles of the proposed well. This expanded search identified analytical data related to two additional domestic wells. These additional data are related to one sampling event in 1989 for the first well and a separate sampling event in 1985 for the second. Sampling data for both additional wells are related to herbicides. These data were compared against EPA Maximum Contaminant Levels (MCLs), EPA Secondary MCLs, California MCLs, California Secondary MCLs, and California Notification Limits. This comparison did not indicate constituent concentrations exceeding comparison limits.

8.0 LAND SUBSIDENCE

This assessment indicates the proposed well is not in a Subsidence Study Zone (i.e., it is not within 2 miles of an area underlain by the Corcoran Clay); therefore, this section is not applicable to this application. To assess the proposed well in relation to the Corcoran Clay, Kleinfelder imported and georeferenced the “Depth to the top of Corcoran Clay” map (DWR, 1981) into the Project GIS.

9.0 SURFACE WATER DEPLETION

The proposed well does not appear to be located near a groundwater-connected stream, tributary, or reservoir associated with the Calaveras, Stanislaus, or Tuolumne Rivers. The proposed well is located about 8 miles northwest of the Stanislaus River, which is the closest of the above listed major Sierran Tributaries. The well, however, is located within about 1,500 feet of the upper reaches of Little John Creek. Inspection of topographic maps and aerial photography indicates that while some of Little John Creek's headwaters originate just north of Stanislaus River, the two waterbodies do not meet. This section therefore does not appear applicable to this permit application. No matter, in building its conceptual models of local and regional groundwater decline and hydrogeology, Kleinfelder gathered and assessed readily available data that would be included in a surface-groundwater interaction study along Little John Creek.

Subsurface data indicate potential for surface and groundwater interaction within the immediate Little John Creek channel, where available subsurface data indicate a nearly 200-foot-deep sand deposit within little to no aquitard (upper aquifer, as so described in Section 4.3). Beyond the channel and beneath the nearly 200-foot-deep sand deposits, the subsurface is mostly finer grained materials (e.g., clay) with interbedded sand and gravel deposits (lower aquifer, as described in Section 4.3). These subsurface data indicate that sand in the upper aquifer directly beneath the Little John Creek channel may be strongly hydraulically connected to Little John Creek flow, while isolated, interbedded lower-aquifer sand and gravel deposits may not be as strongly hydraulically connected.

Available historical groundwater elevation and stream gaging data are inadequate to demonstrate or evaluate hydraulic connections in this area. Groundwater data are limited and are associated with wells that were drilled near the visually apparent current Little John Creek channel; however, without associated boring logs for these groundwater monitoring wells, it is not possible to determine if these wells were drilled and screened within the lower or upper aquifers. Moreover, there are no gaging data for Little John Creek or its nearby tributaries and reservoirs. Due to the fact that existing groundwater elevation data cannot be distinguished as within the lower or upper aquifers, and given the fact that there are no historical gaging data for Little John Creek or nearby waterbodies that may act as proxies for Little John Creek, it is impossible to compare groundwater elevations and gaging data to determine if upper aquifers are differently correlated with Little John Creek flows than lower aquifers.

10.0 IMPACTS TO GROUNDWATER DEPENDENT ECOSYSTEMS (GDES)

This assessment does not indicate GDEs within 3 miles of the proposed well. Kleinfelder assessed data from the US Fish and Wildlife Service National Wetlands Inventory Mapper and the USGS National Hydrography Database Mapper and studied current and historical Google Earth aerial imagery for evidence of seasonal seeps, springs, wetlands, and other potential GDEs. These assessments do not indicate GDEs. This finding is generally consistent with groundwater elevation data, which indicate that groundwater is generally located at least about 70 feet below ground surface.

11.0 REFERENCES CITED

Bear, 1972, Dynamics of Fluids in Porous Materials, Dover Publications

Burro et. al., 2004, Hydrogeologic Characterization of the Modesto Area, San Joaquin Valley, California, USGS

DWR, 1967, San Joaquin County Groundwater Investigation - Bulletin 146, DWR

DWR 1981, Depth to the top of Corcoran Clay Map, DWR

DWR, 2003, DWR Bulletin 118, Interim Update 2003, DWR

Kleinfelder, 2015, Geotechnical Evaluation Report, DWR

Todd, 1980, Groundwater Hydrology, 2nd Edition, John Wiley & Sons Inc.

APPENDIX C

TECHNICAL REVIEW OF WELL PERMIT APPLICATION FOR COMPLIANCE

WITH THE

STANISLAUS COUNTY GROUNDWATER ORDINANCE

DEPARTMENT OF ENVIRONMENTAL RESOURCES

3800 Cornucopia Way, Suite C, Modesto, CA 95358-9592
Phone: 209.525.6770 Fax: 209.525.6773

WELL CONSTRUCTION PERMIT APPLICATION REVIEW FORM

Purpose: To determine if a well permit application that is not exempt from the Groundwater Ordinance (effective date November 26, 2014) is compliant with the prohibition against unsustainable extraction in Section 9.37.040 (A). This form documents the review of the permit application to determine if the applicant has provided substantial evidence as required by Section 9.37.045 (A) that extraction of groundwater from the proposed well will not constitute unsustainable extraction. The review sections below correspond with the Undesirable Results defined in Section 9.37.030.9, and identify whether the applicant has (1) provided substantial evidence that an undesirable result will not occur; (2) the evidence provided by the applicant is substantial when considered in light of required permit conditions; or (3) the applicant has not provided substantial evidence.

Permit Application Data

Application/Permit No. 2017-117 Assessor's Parcel No. 001-011-031

Latitude: 37.891457 Longitude -120.883761

Property Owner: Larry Gillum Phone No: (209) 840-1577

Mailing Address: 21303 W Restin Road, Wittmann, Arizona 85361

I. Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon (Interference Drawdown)	☒Substantial Evidence provided ☐Evidence Substantial if recommended permit conditions are implemented ☐Substantial Evidence not provided

Will groundwater extraction from the proposed well potentially cause interference drawdown in excess of the following:

Does analysis indicate interference drawdown of > 5 feet at an existing off-site domestic well is possible? ☐ Yes ☒ No

Does analysis indicate interference drawdown of > 20 feet at an existing off-site irrigation, municipal, or industrial is possible? ☐ Yes ☒ No

Basis of Conclusion:

The proposed Project will have an average annual water demand of approximately 300 acre-feet per year (AFY) based on distance to five feet of drawdown to the nearest residence. The nearest residence is approximately 3,200 feet southeast of the Project. This equates to a long-term extraction rate of 190 gallons per minute over the duration of 20 years.

The drawdown associated with the proposed extraction was estimated using a spreadsheet developed by the USGS. The data used and results of the analysis are attached. Transmissivity was estimated from

specific capacity test data for 103 wells in eastern Stanislaus County with a depth to first screen starting 200 feet below ground surface (ft bgs) or deeper. Using the specific capacity data for these wells and a conversion factor for semi-confined aquifer conditions, the regional transmissivity was estimated to range from a mean value (high) of 8,400 square feet per day (ft2/day) (geometric mean multiplied by the aquifer thickness of 400 feet), to a low of 4,800 ft2/day (25th percentile multiplied by the aquifer thickness of 400 feet). The storage coefficient was estimated to range between a high value of 0.02 (taken from information provided by Kleinfelder in an attachment to the Supplemental Application for Non-Exempt Wells), to a low of 0.002 selected as a reasonable low value for semi-confined aquifer conditions. Based on these hydrologic properties, resulting calculations indicate the distance to 5 feet of drawdown can be as close to the proposed well as 51 feet (based on the high transmissivity and high storage coefficient) and as far away as 3,200 feet (based on a low transmissivity and low storage coefficient). Maximum drawdown is estimated to be less than 20 feet for each scenario, based on these calculations. Based on these results, the proposed well may create a drawdown of 5 feet up to 3,200 feet of the proposed well, if the low transmissivity and the low storage coefficient applies. Based on review of satellite images, the nearest residential well is approximately 3,200 feet to the southeast of the Project, and therefore, domestic wells should not be impacted by 5 feet of drawdown due to operations from the proposed well.

Recommended Permit Conditions and Rationale:

- The projected drawdown from pumping 300 AFY at an average of 190 gallons per minute in the proposed well is not anticipated to cause five feet or more of drawdown to nearby residences, therefore, no permit conditions are recommended.

Additional Comments and Attachments:

See attachment tables summarizing Calculation of Transmissivity and Hydraulic Conductivity from Well Specific Capacity Tests in Eastern Stanislaus County and drawdown calculations.

II.	**Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon; Significant and unreasonable reduction of groundwater storage. (Regional Effects)**	☐Substantial Evidence provided ☒ Evidence Substantial if recommended permit conditions are implemented ☐Substantial Evidence not provided

Is the information provided sufficient to reasonably conclude that the proposed groundwater extraction will not cause or contribute to chronic, significant and unreasonable drawdown or reduction in storage? ☒ Yes ☐ No

Basis of Conclusion:

Review of nearby hydrographs (see Figure 1, attached) indicate the groundwater levels within approximately 1 mile of the proposed well location declined from the 1940's until the 1980's, suggesting historical overdraft, but the trend stabilized from the 1980's until 2012. This is approximately coincident with the increasing implementation of conjunctive use of surface and groundwater by Stockton East Water District (SEWD) in the area west of the site in San Joaquin County. From approximately 2012 the impact of the 2011-2015 drought in California is apparent in the decreasing groundwater levels, but one of the hydrographs has a measurement from March of 2017 that indicates a slight recovery at the time of the wet winter/spring of 2016/2017. Regional analysis performed by the County of the Northern Triangle area of the County indicates that the site is not located in an area where drawdown trends are indicative of chronic, significant and unreasonable drawdown or groundwater storage depletion. As such, the site is not

located in a Groundwater Level Management Zone.

There is potential for the extracted volume to exceed 10% of the current groundwater storage over the duration of 20 years (static storage, without considering ongoing recharge or underflow). Taking into consideration the above along with California's history of drought, submittal of a Groundwater Level Monitoring Plan is required and groundwater level monitoring must be implemented. These actions should be adequate to assure that management activities can be implemented that prevent undesirable results as defined in SGMA and the Groundwater Ordinance.

Recommended Permit Conditions:

1. Groundwater Level Monitoring. Within 30 days after receiving the well construction permit, the applicant shall submit, for DER review and approval, a concise monitoring plan that outlines the procedures to be used to obtain monthly groundwater level measurements at the site. A table presenting the date of each monthly measurement, the depth to groundwater measured to the nearest 0.1 foot below ground surface, and the length of time in days since the well was last operated, shall be submitted to the County for each year by January 31 of the following year.

Additional Comments and Attachments:

The regional drawdown analysis provided by the applicant was supplemented, and interpreted in light of, a review of long term hydrographs for nearby wells available from the CASGEM database, as well as a regional hydrograph evaluation for the Northern Triangle portion of the County performed to determine whether any portions of this area should be designated as a Groundwater Level Management Zone.

Is the proposed well located in a Groundwater Level Management Zone identified by the county, were undesirable results as a result of groundwater overdraft are occurring, imminent, or reasonably anticipated?	☐ Yes ☒ No ☐N/A
If yes, has the Applicant submitted a Groundwater Extraction Offset Plan?	☐ Yes ☐ No ☒N/A
If yes, has the Applicant submitted a Groundwater Resources Investigation?	☐ Yes ☐ No ☒N/A
Is the Groundwater Extraction Offset Plan or Groundwater Resources Investigation submitted by the applicant sufficient to reasonably conclude that there will be no net change to the local groundwater balance?	☐ Yes ☐ No ☒N/A

Basis of Conclusion:

N/A

Recommended Permit Conditions:

N/A

Additional Comments and Attachments:

N/A

III. Significant and unreasonable degraded water quality	☒Substantial Evidence provided ☐ Evidence Substantial if recommended permit conditions are implemented ☐Substantial Evidence not provided

Is the information provided by the applicant sufficient to reasonably conclude that the proposed groundwater extraction will not cause or contribute to any of the following:

Groundwater quality degradation as defined in the ordinance?	☐ Yes ☒ No
Capture of a contamination plume?	☐ Yes ☒ No
Interference with remediation that addresses an existing contamination incident?	☐ Yes ☒ No
Interference with an existing groundwater quality management program?	☐ Yes ☒ No

Basis of Conclusion:

Review of California's Groundwater Ambient Monitoring and Assessment Program (GAMA) Geotracker and DTSC's Envirostor websites indicate there are no identified sites of contaminated groundwater, hazardous materials, or waste sites within 1 mile of the location of the proposed well. Therefore, the pumping from the proposed well will not capture or interfere with a known contamination plume, incident, or groundwater quality management program and will not contribute to water quality degradation.

Recommended Permit Conditions:

None

Additional Comments and Attachments:

None

If the proposed well is located in a Groundwater Quality Protection Zone, are the proposed well design and construction procedures adequate to protect groundwater quality? ☐ Yes ☐ No ☒ N/A

Basis of Conclusion:

N/A

Recommended Permit Conditions:

N/A

Additional Comments and Attachments:

None.

IV. Significant and unreasonable land subsidence that substantially interferes with surface land uses	☒Substantial Evidence provided ☐ Evidence Substantial if recommended permit conditions are implemented ☐Substantial Evidence not provided

Is the proposed well located in a Subsidence Study Zone, within 2 miles of the Corcoran Clay subcrop boundary? ☐ Yes ☒ No

If yes, is the information provided sufficient to reasonably conclude that the ☐ Yes ☐ No ☒ N/A

proposed groundwater extraction will not cause or contribute to subsidence that would be significantly damage infrastructure?

Basis of Conclusion:

The location of the proposed well does not lie within a Subsidence Study Zone (i.e., it's not within 2 miles of the Corcoran Clay subcrop boundary). Well completion reports obtained for wells within 1 mile of the proposed well location by Kleinfelder indicate the lithology is generally consolidated and consists of hard sandstones, packed sand, and consolidated clays. Well logs also identify black sands that are indicative of the Mehrten Formation, which is of Miocene age and well consolidated. Review of California's DWR Groundwater Information Center Interactive Map Application (https://gis.water.ca.gov/app/gicima/) indicates the location of the proposed well is not near any areas of large or reported subsidence, although the groundwater basin as a whole is identified as medium to high potential for subsidence and at or near historical lows for the region. Based on the distance from the Corcoran Clay and the consolidated stratigraphy in the subsurface, there is no reason to conclude that the proposed groundwater extraction activities will cause or contribute to significant and unreasonable land subsidence that would substantially interfere with surface land uses in the area.

Recommended Permit Conditions:

None

Additional Comments and Attachments:

V. Significant and Unreasonable Surface Water Depletion	☒Substantial Evidence provided ☐ Evidence Substantial if recommended permit conditions are implemented ☐Substantial Evidence not provided

Is the information provided sufficient to reasonably conclude that the proposed groundwater extraction will not cause depletion of surface water that unreasonably affects beneficial surface water uses? ☒ Yes ☐ No ☐ N/A

Basis of Conclusion:

Littlejohns Creek is located near the proposed well location. In an attempt to determine if this creek is connected to the regional groundwater aquifer, available groundwater level measurements and trends, and satellite images were reviewed. Review of satellite images indicates Littlejohns Creek remains green with areas of ponded water during the dry season when the surrounding area has turned brown, indicating the creek is groundwater connected. Review of hydrographs on the CASGEM website in addition to static water levels measurements reported on the available well completion reports indicate groundwater levels within 1 mile of the location of the proposed well range from approximately 60 to 88 ft bgs. Regional groundwater levels were decreasing until the 1990's, indicating that current groundwater levels may be lower. In order for water in Littlejohns Creek to be connected to the regional aquifer, very steep groundwater gradients would need to be maintained, which is not consistent with the presence of stranded pools during the dry season. Nearby lithologic logs indicate clay is common from approximately 8 to 56 ft bgs, and beginning as shallow as 3 ft bgs, which would inhibit near surface water from percolating to the water table below. Based on the available data, the portion of Littlejohns Creek that lies near the site appears to be ephemeral and locally connected to shallow perched water that is not hydraulically

connected to the regional aquifer. Based on this review, it seems unlikely that pumping from the proposed well would cause surface water depletion. .

Recommended Permit Conditions:

None

Additional Comments and Attachments:

None

VI. Significant and Unreasonable Impacts to GDEs	☒Substantial Evidence provided ☐ Evidence Substantial if recommended permit conditions are implemented ☐Substantial Evidence not provided

Is the information provided sufficient to reasonably conclude that the proposed groundwater extraction will not cause significant impacts to a GDE? ☒ Yes ☐ No ☐ N/A

Basis of Conclusion:

The proposed well location lies near identified emergent freshwater and riverine wetlands located along Littlejohns Creek. Based on the information discussed under Section V., these appear to be dependent on a shallow perched groundwater source and surface water for survival. Therefore, groundwater extraction from the proposed well will not result in a significant or unreasonable impact to groundwater dependent ecosystems.

Recommended Permit Conditions:

None

Additional Comments and Attachments:

None

Conclusions

Based on the above review, the well permit application:

☐ Provides substantial evidence that Undesirable Results are not likely

☒ Provides substantial evidence that Undesirable Results are not likely if the recommended permit conditions are implemented

☐ Provides insufficient data to conclude that Undesirable Results will not occur

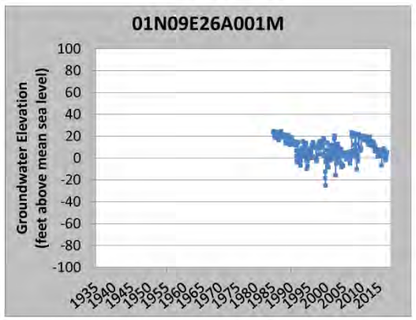
Recommended Permit Conditions:

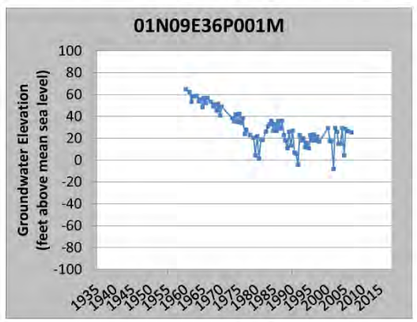
Additional Comments:

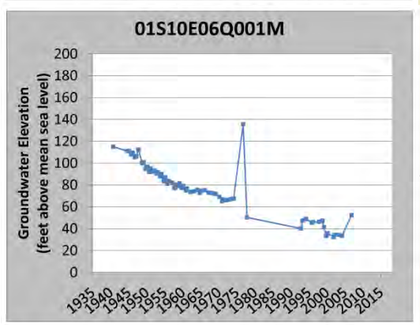
If desired, the applicant may submit substantial evidence justifying the reason why any of the above permit conditions should be changed or removed.

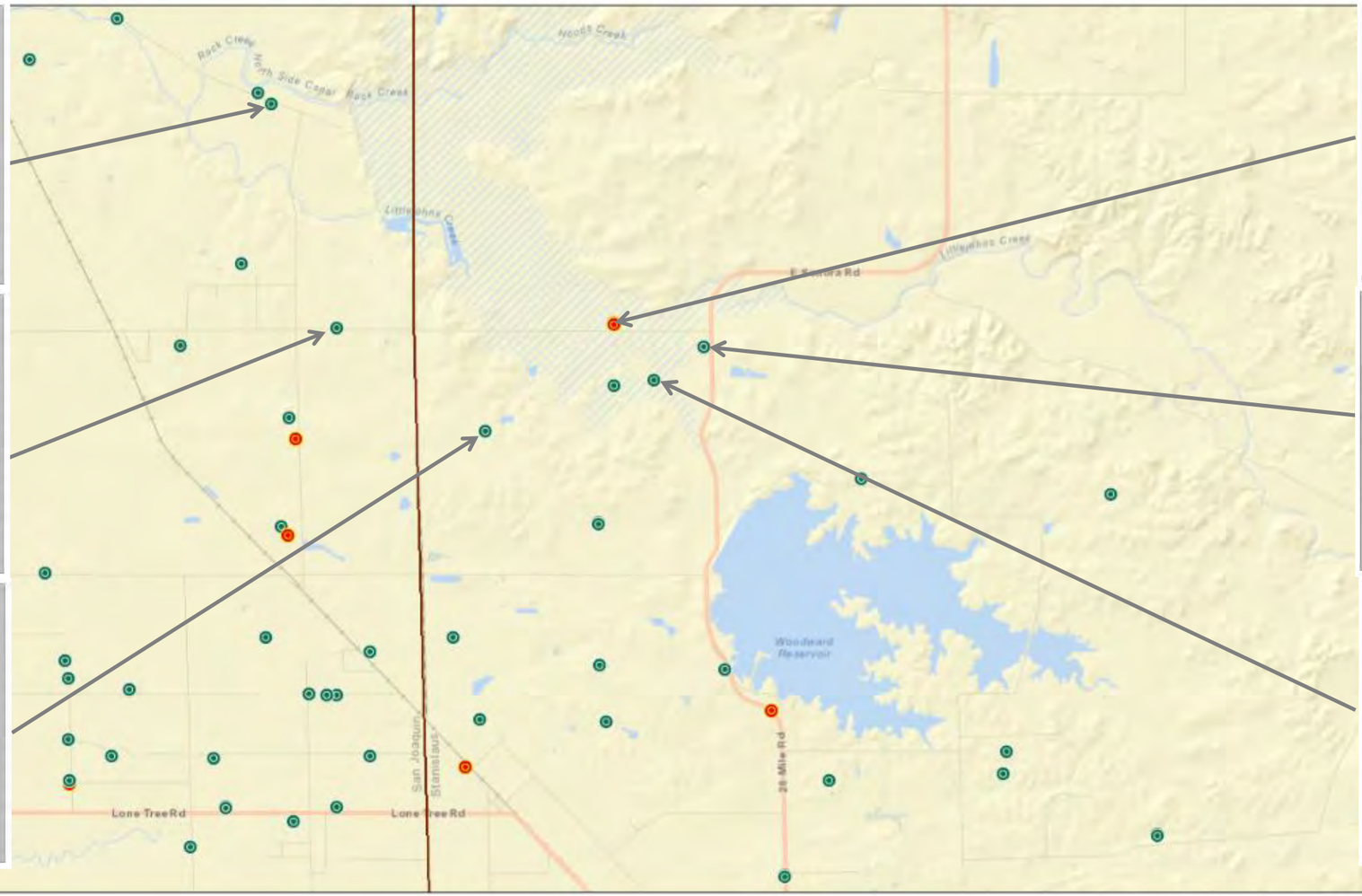
WELL CONSTRUCTION PERMIT APPLICATION REVIEW FORM

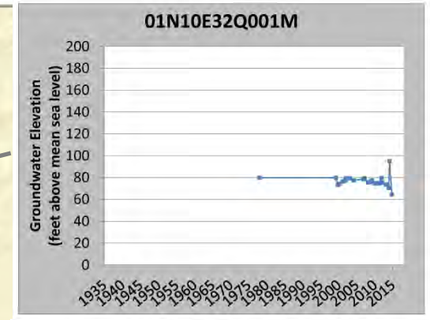
Reviewer		
Mike Tietze, CHG 63		10/03/2017
Print Name	*Signature*	*Date*

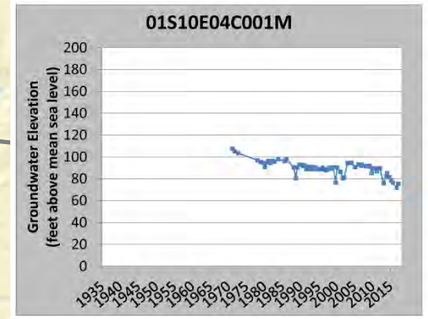


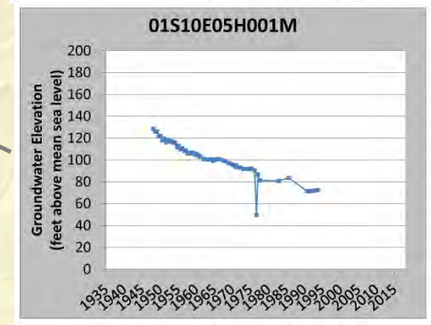












July 11, 2017

Well

- CASGEM Well
- Voluntary Well
- County

1:72,224

0 0.75 1.5 3 mi

0 1.25 2.5 5 km

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

@CASGEM - California Dept. of Water Resource

CASGEM information obtained from website:
http://www.water.ca.gov/groundwater/casgem/
Satellite image from Google Earth.

JACOBSON | JAMES
& associates, inc

IS/MND for Well Permit Application No. 2017-117
Larry Gillum
Stanislaus County, California

PROJECT NO.	DATE	DRAWN BY	APPR. BY
StanCo-001	7/12/2017	JH	mt

FIGURE 1

Hydrographs for Wells Located Near the Site

TABLE C-1a
SUMMARY OF DISTANCE DRAWDOWN EVALUATION - GILLUM WELL APPLICATION
Initial Study and Mitigated Negative Declaration, Well Permit Application 2017-117
Larry Gillum
Stanislaus County, California

Scenario	Modeled Pumping Rate (gpm)	Duration (years)	Transmissivity (ft^2/day)	Storage Coefficient	Drawdown at Well (ft)	Distance to 20 ft Drawdown (ft)	Distance to 5 ft Drawdown (ft)
Low T; High S	190	20	4,800	0.02	13.40	NA	917
Low T; Low S	190	20	4,800	0.002	14.79	NA	3,200
High T; High S	190	20	8,400	0.02	7.85	NA	51
High T; Low S	190	20	8,400	0.002	8.65	NA	190

Notes:
gpm = gallons per minute
ft = foot
ft^2/day = square foot per day
NA = not applicable

TABLE C-1b
CALCULATION OF TRANSMISSIVITY AND HYDRAULIC CONDUCTIVITY FROM WELL SPECIFIC CAPACITY
Larry Gillum
Stanislaus County, California

Well ID (State Well No., TRS, or Owner's Well Name)	Screened Aquifer	Depth to First Screen	Total Depth or Depth to Screen Bottom	Assumed Pumped Aquifer Thickness (ft)[a]	Reported Specific Capacity (gpm/ft)	Transmissivity Conversion Factor[b]	Estimated Transmissivity (gpd/ft^2)	Estimated Transmissivity (ft^{2}day)	Estimated K of Pumped Aquifer (ft/day)
01S10E16	Upper 200 ft	130	175	45	32	1,700	54,167	7,242	161
03S11E14	Upper 200 ft	157	187	30	2	1,700	2,615	350	12
03S11E27	Upper 200 ft	110	200	90	23	1,700	38,636	5,165	57
03S11E32	Upper 200 ft	72	162	90	29	1,700	48,669	6,507	72
03S11E36	Upper 200 ft	112	150	38	4	1,700	6,892	921	24
03S12E36	Upper 200 ft	100	200	100	2	1,700	2,833	379	4
03S14E20	Upper 200 ft	52	100	48	1	1,700	2,125	284	6
04S12E2	Upper 200 ft	132	155	23	11	1,700	18,889	2,525	110
01N10E25	Below 200 ft	200	380	180	3	1,700	4,802	642	4
01N10E26	Below 200 ft	200	380	180	3	1,700	4,722	631	4
01N10E36	Below 200 ft	100	395	295	10	1,700	17,105	2,287	8
01S10E19	Below 200 ft	215	275	60	15	1,700	26,261	3,511	59
01S10E9	Below 200 ft	176	368	192	9	1,700	14,790	1,977	10
02S11E11	Below 200 ft	217	370	153	20	1,700	34,773	4,649	30
02S11E11	Below 200 ft	104	340	236	25	1,700	42,500	5,682	24
02S11E12	Below 200 ft	240	510	270	49	1,700	84,114	11,245	42
02S11E18	Below 200 ft	330	685	355	13	1,700	22,667	3,030	9
02S11E28	Below 200 ft	200	388	188	22	1,700	36,559	4,888	26
02S11E33	Below 200 ft	315	560	245	22	1,700	37,568	5,022	20
02S11E34	Below 200 ft	320	705	385	40	1,700	68,000	9,091	24
02S12E25	Below 200 ft	50	300	250	1	1,700	977	131	1
02S12E27	Below 200 ft	4	468	464	10	1,700	16,190	2,165	5
02S12E31	Below 200 ft	250	301	51	17	1,700	29,379	3,928	77
02S12E32	Below 200 ft	206	450	244	9	1,700	15,632	2,090	9
02S12E34	Below 200 ft	8	478	470	18	1,700	30,909	4,132	9
02S12E35	Below 200 ft	18	300	282	21	1,700	35,789	4,785	17
02S12E36	Below 200 ft	60	218	158	3	1,700	5,231	699	4
03S11E1	Below 200 ft	128	300	172	3	1,700	4,344	581	3
03S11E1	Below 200 ft	128	335	207	5	1,700	7,727	1,033	5
03S11E10	Below 200 ft	440	650	210	32	1,700	54,839	7,331	35
03S11E11	Below 200 ft	380	590	210	20	1,700	34,694	4,638	22
03S11E13	Below 200 ft	222	526	304	57	1,700	96,806	12,942	43
03S11E14	Below 200 ft	197	204	7	2	1,700	2,656	355	51
03S11E16	Below 200 ft	142	336	194	33	1,700	55,435	7,411	38
03S11E17	Below 200 ft	221	350	129	29	1,700	49,300	6,591	51

TABLE C-1b
CALCULATION OF TRANSMISSIVITY AND HYDRAULIC CONDUCTIVITY FROM WELL SPECIFIC CAPACITY
Larry Gillum
Stanislaus County, California

Well ID (State Well No., TRS, or Owner's Well Name)	Screened Aquifer	Depth to First Screen	Total Depth or Depth to Screen Bottom	Assumed Pumped Aquifer Thickness (ft)[a]	Reported Specific Capacity (gpm/ft)	Transmissivity Conversion Factor[b]	Estimated Transmissivity (gpd/ft^2)	Estimated Transmissivity (ft^{2}day)	Estimated K of Pumped Aquifer (ft/day)
03S11E18	Below 200 ft	91	228	137	26	1,700	44,156	5,903	43
03S11E20	Below 200 ft	142	340	198	45	1,700	77,113	10,309	52
03S11E20	Below 200 ft	136	466	330	44	1,700	74,375	9,943	30
03S11E22	Below 200 ft	300	570	270	40	1,700	68,838	9,203	34
03S11E23	Below 200 ft	171	256	85	39	1,700	66,522	8,893	105
03S11E23	Below 200 ft	190	370	180	53	1,700	90,538	12,104	67
03S11E25	Below 200 ft	290	530	240	27	1,700	46,217	6,179	26
03S11E27	Below 200 ft	188	332	144	37	1,700	62,385	8,340	58
03S11E27	Below 200 ft	240	510	270	113	1,700	191,747	25,635	95
03S11E27	Below 200 ft	186	410	224	27	1,700	45,156	6,037	27
03S11E28	Below 200 ft	103	220	117	22	1,700	36,559	4,888	42
03S11E28	Below 200 ft	102	296	194	29	1,700	48,875	6,534	34
03S11E28	Below 200 ft	188	324	136	25	1,700	42,149	5,635	41
03S11E4	Below 200 ft	210	480	270	45	1,700	76,411	10,215	38
03S12E18	Below 200 ft	100	462	362	22	1,700	37,558	5,021	14
03S12E19	Below 200 ft	168	380	212	16	1,700	28,022	3,746	18
03S12E20	Below 200 ft	82	365	283	20	1,700	33,553	4,486	16
03S12E21	Below 200 ft	300	358	58	9	1,700	15,631	2,090	36
03S12E30	Below 200 ft	132	415	283	34	1,700	58,253	7,788	28
03S12E30	Below 200 ft	196	484	288	20	1,700	34,000	4,545	16
03S12E31	Below 200 ft	164	488	324	36	1,700	61,261	8,190	25
03S12E32	Below 200 ft	152	294	142	13	1,700	21,983	2,939	21
03S12E34	Below 200 ft	140	560	420	7	1,700	11,333	1,515	4
03S12E35	Below 200 ft	64	316	252	18	1,700	30,197	4,037	16
03S12E36	Below 200 ft	104	425	321	5	1,700	8,976	1,200	4
03S13E18	Below 200 ft	280	400	120	10	1,700	17,523	2,343	20
03S13E21	Below 200 ft	400	510	110	13	1,700	21,250	2,841	26
03S13E29	Below 200 ft	200	440	240	32	1,700	54,761	7,321	31
03S13E30	Below 200 ft	36	247	211	4	1,700	7,500	1,003	5
03S13E33	Below 200 ft	156	229	73	8	1,700	14,087	1,883	26
03S13E9	Below 200 ft	277	487	210	27	1,700	46,298	6,190	29
04S12E1	Below 200 ft	210	510	300	26	1,700	43,517	5,818	19
04S12E15	Below 200 ft	310	640	330	28	1,700	47,084	6,295	19
04S12E16	Below 200 ft	390	820	430	35	1,700	59,130	7,905	18
04S12E17	Below 200 ft	176	360	184	14	1,700	24,122	3,225	18

TABLE C-1b
CALCULATION OF TRANSMISSIVITY AND HYDRAULIC CONDUCTIVITY FROM WELL SPECIFIC CAPACITY
Larry Gillum
Stanislaus County, California

Well ID (State Well No., TRS, or Owner's Well Name)	Screened Aquifer	Depth to First Screen	Total Depth or Depth to Screen Bottom	Assumed Pumped Aquifer Thickness (ft)[a]	Reported Specific Capacity (gpm/ft)	Transmissivity Conversion Factor[b]	Estimated Transmissivity (gpd/ft^2)	Estimated Transmissivity (ft^2day)	Estimated K of Pumped Aquifer (ft/day)
04S12E2	Below 200 ft	128	310	182	5	1,700	8,886	1,188	7
04S12E21	Below 200 ft	270	600	330	77	1,700	130,258	17,414	53
04S12E21	Below 200 ft	250	550	300	73	1,700	123,614	16,526	55
04S12E21	Below 200 ft	390	660	270	35	1,700	59,017	7,890	29
04S12E21	Below 200 ft	335	615	280	65	1,700	110,685	14,798	53
04S12E22	Below 200 ft	270	450	180	155	1,700	262,727	35,124	195
04S12E23	Below 200 ft	250	460	210	5	1,700	8,062	1,078	5
04S12E23	Below 200 ft	210	532	322	208	1,700	354,167	47,348	147
04S12E26	Below 200 ft	189	516	327	17	1,700	28,523	3,813	12
04S12E26	Below 200 ft	185	480	295	19	1,700	31,628	4,228	14
04S12E26	Below 200 ft	178	658	480	17	1,700	29,110	3,892	8
04S12E27	Below 200 ft	604	690	86	18	1,700	30,547	4,084	47
04S12E27	Below 200 ft	160	572	412	17	1,700	28,333	3,788	9
04S12E27	Below 200 ft	308	568	260	15	1,700	24,933	3,333	13
04S12E27	Below 200 ft	300	660	360	31	1,700	52,243	6,984	19
04S12E29	Below 200 ft	169	457	288	59	1,700	100,890	13,488	47
04S12E29	Below 200 ft	380	630	250	40	1,700	68,000	9,091	36
04S12E3	Below 200 ft	108	290	182	20	1,700	33,345	4,458	24
04S12E3	Below 200 ft	176	318	142	4	1,700	7,184	960	7
04S12E3	Below 200 ft	260	440	180	19	1,700	31,918	4,267	24
04S12E30	Below 200 ft	175	390	215	121	1,700	205,417	27,462	128
04S12E32	Below 200 ft	378	438	60	24	1,700	40,000	5,348	89
04S12E33	Below 200 ft	164	552	388	23	1,700	38,435	5,138	13
04S12E34	Below 200 ft	250	700	450	80	1,700	136,166	18,204	40
04S12E35	Below 200 ft	390	590	200	1	1,700	1,904	255	1
04S12E6	Below 200 ft	104	256	152	20	1,700	34,000	4,545	30
04S12E6	Below 200 ft	120	375	255	24	1,700	41,034	5,486	22
04S13E10	Below 200 ft	220	340	120	30	1,700	51,515	6,887	57
04S13E12	Below 200 ft	340	490	150	8	1,700	13,492	1,804	12
04S13E14	Below 200 ft	250	390	140	15	1,700	25,000	3,342	24
04S13E14	Below 200 ft	320	450	130	33	1,700	56,667	7,576	58
04S13E20	Below 200 ft	180	334	154	6	1,700	10,968	1,466	10
04S13E3	Below 200 ft	100	315	215	4	1,700	6,330	846	4
04S13E30	Below 200 ft	207	732	525	50	1,700	85,000	11,364	22
Ardis 763 No. 4	Below 200 ft	275	476	201	32	1,700	54,400	7,273	36

TABLE C-1b
CALCULATION OF TRANSMISSIVITY AND HYDRAULIC CONDUCTIVITY FROM WELL SPECIFIC CAPACITY
Larry Gillum
Stanislaus County, California

Well ID (State Well No., TRS, or Owner's Well Name)	Screened Aquifer	Depth to First Screen	Total Depth or Depth to Screen Bottom	Assumed Pumped Aquifer Thickness (ft)[a]	Reported Specific Capacity (gpm/ft)	Transmissivity Conversion Factor[b]	Estimated Transmissivity (gpd/ft^2)	Estimated Transmissivity (ft^{2}day)	Estimated K of Pumped Aquifer (ft/day)
Ardis Well #1	Below 200 ft	240	500	260	8	1,700	13,600	1,818	7
Crabtree Well No. 4	Below 200 ft	213	450	237	28	1,700	47,636	6,368	27
Olive Well No. 2	Below 200 ft	292	557	265	59	1,700	100,394	13,422	51
Rodden Block 1 Well	Below 200 ft	249	490	241	24	1,700	40,316	5,390	22
Rodden Block 4 Well	Below 200 ft	259	480	221	25	1,700	42,655	5,703	26
Rodden Block 5 Well	Below 200 ft	279	460	181	82	1,700	138,776	18,553	103
Rodden Block 7 Well	Below 200 ft	191	351	160	17	1,700	28,906	3,864	24

Summary Statistics for All Wells	
Arithmetric Mean K (ft/day)	34
Geometric Mean K (ft/day)	22
Harmonic Mean K (ft/day)	11
25th Percentile K (ft/day)	12

Summary Statistics for Shallow Wells	
Arithmetric Mean K (ft/day)	56
Geometric Mean K (ft/day)	29
Harmonic Mean K (ft/day)	13
25th Percentile K (ft/day)	7

Summary Statistics for Deeper Wells	
Arithmetric Mean K (ft/day)	32
Geometric Mean K (ft/day)	21
Harmonic Mean K (ft/day)	11
25th Percentile K (ft/day)	12

Notes:

a. Assumed screen interval thickness based on top of upper and bottom of lower screen or total well depth in order to summary average conditions for the overall aquifer interval.

b. Basis for transmissivity conversion factor: Driscoll (1986) reports 1,500 for unconfined and 2,000 for confined aquifers. KDSA (1997) found a correlation of 1,800-4,700 for the local unconfined/composite aquifer, with an average of 2,850. Selected 1,700 as a reasonable value for the assumed semi-confined aquifer.

ft = foot
ft^2 = square foot
gpd = pallon per day
ID = identification
K = hydraulic conductivity

SUMMARY OF DISTANCE DRAWDOWN EVALUATION

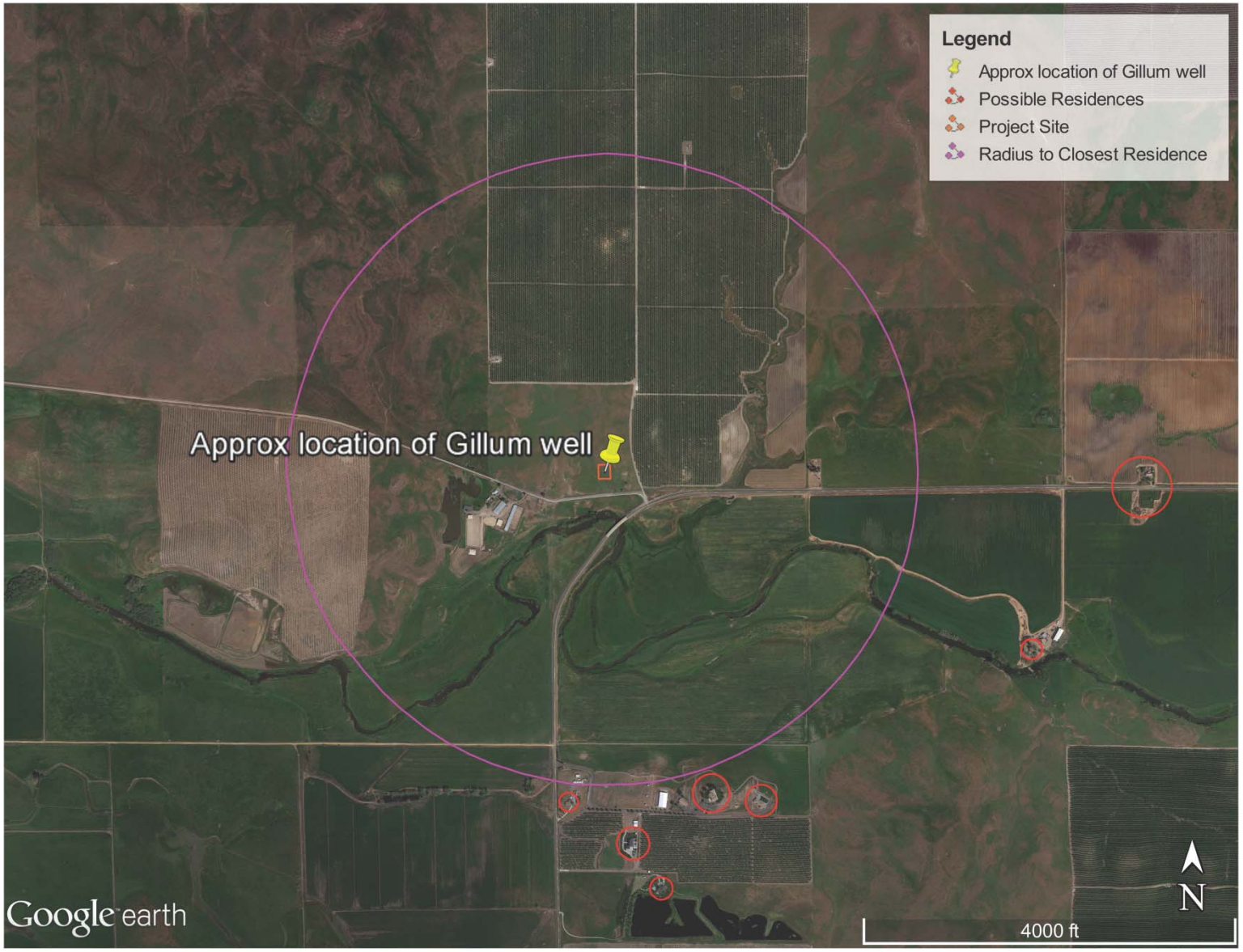
Due to the proximity of residences and an animal enclosure to the applicant's originally proposed well location, the applicant chose to revise their proposed well location and adjust their proposed maximum annual groundwater extraction to a rate that will not produce more than 5 feet of drawdown at the nearest domestic well. This attachment presents a calculation of the distance-drawdown effects of groundwater extraction from the well at its new proposed location and extraction rate. The revised maximum annual groundwater extraction will be 300 acre-feet/year (approximately 190 gallons per minute annualized average extraction rate). The revised well, which is approximately 3,200 feet to the south of the new well location.

The drawdown associated with the proposed extraction was estimated using a spreadsheet developed by the USGS. The data used and results of the analysis are attached. Transmissivity was estimated from specific capacity test data for 103 wells in eastern Stanislaus County with a depth to first screen starting 200 feet below ground surface (ft bgs) or deeper. Using the specific capacity data for these wells and a conversion factor for semi-confined aquifer conditions, the regional transmissivity was estimated to range from a mean value (high) of 8,400 square feet per day (ft^2/day) (geometric mean multiplied by the aquifer thickness of 400 feet), to a low of 4,800 ft^2/day (25^{th} percentile multiplied by the aquifer thickness of 400 feet). The storage coefficient was estimated to range between a high value of 0.02 (taken from information provided by Kleinfelder in an attachment to the Supplemental Application for Non-Exempt Wells), to a low of 0.002 selected as a reasonable low value for semi-confined aquifer conditions. Based on these hydrologic properties, resulting calculations indicate the distance to 5 feet of drawdown can be as close to the proposed well as 51 feet (based on the high transmissivity and high storage coefficient) and as far away as 3,200 feet (based on a low transmissivity and low storage coefficient). Maximum drawdown is estimated to be less than 20 feet for each scenario, based on these calculations. Based on these results, the proposed well may create a drawdown of 5 feet up to 3,200 feet of the proposed well, if the low transmissivity and the low storage coefficient applies. Based on these results, the proposed well may create a drawdown of 5 feet up to 3,200 feet of the proposed well, if the low transmissivity and the low storage coefficient applies. Based on review of satellite images, the nearest residential well is approximately 3,200 feet to the southeast of the Project, and therefore, domestic wells should not be impacted by 5 feet of drawdown due to operations from the proposed well. Table C-2 provides a summary of the evaluation and Figure C-2 illustrates the approximate radius to five feet of drawdown from the well.

TABLE C-2
SUMMARY OF DISTANCE DRAWDOWN EVALUATION - GILLUM WELL APPLICATION
Initial Study and Mitigated Negative Declaration, Well Permit Application 2017-117
Larry Gillum
Stanislaus County, California

Scenario	Modeled Pumping Rate (gpm)	Duration (years)	Transmissivity (ft^2/day)	Storage Coefficient	Drawdown at Well (ft)	Distance to 20 ft Drawdown (ft)	Distance to 5 ft Drawdown (ft)
Low T; High S	190	20	4,800	0.02	13.40	NA	917
Low T; Low S	190	20	4,800	0.002	14.79	NA	3,200
High T; High S	190	20	8,400	0.02	7.85	NA	51
High T; Low S	190	20	8,400	0.002	8.65	NA	190

Notes:
gpm = gallons per minute
ft = foot
ft^2/day = square foot per day
NA = not applicable



JACOBSON | JAMES
& associates, inc

IS/MND for Well Permit Application No. 2017-117
Larry Gillum
Stanislaus County, California

PROJECT NO.	DATE	DRAWN BY	APPR. BY
STANCO.001	8/28/17	JH	MT

FIGURE C-2
Distance to Five Feet of Drawdown for Proposed Gillum Well
(Pumping Rate 190 Gallon per Minute)

APPENDIX D

KEY INFORMATION FROM CNDDB REVIEW

Occurrence Report

California Department of Fish and Wildlife

California Natural Diversity Database

Map Index Number: 33070
EO Index: 3704
Key Quad: Farmington (3712088)
Element Code: AAAAA01180
Occurrence Number: 318
Occurrence Last Updated: 1995-03-21

Scientific Name: *Ambystoma californiense*
Common Name: California tiger salamander

Listing Status: **Federal:** Threatened
State: Threatened
Rare Plant Rank:
Other Lists: CDFW_WL-Watch List
IUCN_VU-Vulnerable

CNDDB Element Ranks: **Global:** G2G3
State: S2S3

General Habitat:

CENTRAL VALLEY DPS FEDERALLY LISTED AS THREATENED. SANTA BARBARA AND SONOMA COUNTIES DPS FEDERALLY LISTED AS ENDANGERED.

Micro Habitat:

NEED UNDERGROUND REFUGES, ESPECIALLY GROUND SQUIRREL BURROWS, AND VERNAL POOLS OR OTHER SEASONAL WATER SOURCES FOR BREEDING.

Last Date Observed: 1994-04-11
Occurrence Type: Natural/Native occurrence
Last Survey Date: 1994-04-11
Occurrence Rank: Unknown
Owner/Manager: UNKNOWN
Trend: Unknown
Presence: Presumed Extant

Location:

EAST SIDE OF WAVERLY ROAD, 0.6 MILE SOUTH OF FUNCK ROAD, 3 MILES EAST OF FARMINGTON.

Detailed Location:

Ecological:

Threats:

General:

COLLECTION #MW-NC-2, CAPTURED AND RELEASED ON-SITE.

PLSS: T01N, R09E, Sec. 13, SW (M)
Accuracy: 80 meters
Area (acres): 0
UTM: Zone-10 N4200706 E680712
Latitude/Longitude: 37.93598 / -120.94360
Elevation (feet): 130

County Summary:

San Joaquin

Quad Summary:

Farmington (3712088)

Sources:

WES94S0001 WESTPHAL, M. (COYOTE CREEK RIPARIAN STATION) - REPORT OF SPECIMENS CAPTURED BY WESTPHAL AND DEPOSITED AT DFG, UCD, AND CCRS. 1994-XX-XX

Occurrence Report

California Department of Fish and Wildlife

California Natural Diversity Database

Map Index Number: 46417
EO Index: 46417
Key Quad: Bachelor Valley (3712087)
Element Code: AAAAA01180
Occurrence Number: 608
Occurrence Last Updated: 2008-11-25

Scientific Name: *Ambystoma californiense*
Common Name: California tiger salamander

Listing Status: **Federal:** Threatened
State: Threatened
Rare Plant Rank:
Other Lists: CDFW_WL-Watch List
IUCN_VU-Vulnerable

CNDDB Element Ranks: **Global:** G2G3
State: S2S3

General Habitat:

CENTRAL VALLEY DPS FEDERALLY LISTED AS THREATENED. SANTA BARBARA AND SONOMA COUNTIES DPS FEDERALLY LISTED AS ENDANGERED.

Micro Habitat:

NEED UNDERGROUND REFUGES, ESPECIALLY GROUND SQUIRREL BURROWS, AND VERNAL POOLS OR OTHER SEASONAL WATER SOURCES FOR BREEDING.

Last Date Observed: 1988-XX-XX
Occurrence Type: Natural/Native occurrence
Last Survey Date: 1988-XX-XX
Occurrence Rank: Unknown
Owner/Manager: UNKNOWN
Trend: Unknown
Presence: Presumed Extant

Location:

ALONG DUNTON ROAD, BACHELOR VALLEY, NORTH OF WOODWARD RESERVOIR, NORTH OF OAKDALE.

Detailed Location:

SOURCE DOCUMENT GIVES ROAD NAME AS "DENTON" ROAD.

Ecological:

Threats:

ROAD MORTALITY.

General:

DURING A 1973 TO 1988 FOOD HABITS STUDY MANY AOR AND DOR SALAMANDERS WERE OBSERVED.

PLSS: T01N, R11E, Sec. 30 (M)
Accuracy: nonspecific area
Area (acres): 225
UTM: Zone-10 N4198684 E692378
Latitude/Longitude: 37.91538 / -120.81148
Elevation (feet): 200

County Summary:

Stanislaus

Quad Summary:

Bachelor Valley (3712087)

Sources:

JEN94U0001 JENNINGS, M. & M. HAYES - COMPUTER PRINT-OUT OF ALL OF THE POINT DATA FOR TIGER SALAMANDER USED IN THE REPORT "REPTILE AND AMPHIBIAN SPECIES OF SPECIAL CONCERN IN CALIFORNIA" 1994-XX-XX

Occurrence Report

California Department of Fish and Wildlife

California Natural Diversity Database

Map Index Number: 33404
EO Index: 22450
Key Quad: Farmington (3712088)
Element Code: ABNKC19070
Occurrence Number: 682
Occurrence Last Updated: 2013-05-31

Scientific Name: *Buteo swainsoni*
Common Name: Swainson's hawk

Listing Status: **Federal:** None
State: Threatened
Rare Plant Rank:
Other Lists: BLM_S-Sensitive
IUCN_LC-Least Concern
USFWS_BCC-Birds of Conservation Concern

CNDDB Element Ranks: **Global:** G5
State: S3

General Habitat:

BREEDS IN GRASSLANDS WITH SCATTERED TREES, JUNIPER-SAGE FLATS, RIPARIAN AREAS, SAVANNAHS, & AGRICULTURAL OR RANCH LANDS WITH GROVES OR LINES OF TREES.

Micro Habitat:

REQUIRES ADJACENT SUITABLE FORAGING AREAS SUCH AS GRASSLANDS, OR ALFALFA OR GRAIN FIELDS SUPPORTING RODENT POPULATIONS.

Last Date Observed: 1996-04-02
Occurrence Type: Natural/Native occurrence
Last Survey Date: 2001-07-01
Occurrence Rank: Excellent
Owner/Manager: PVT
Trend: Unknown
Presence: Presumed Extant

Location:

ALONG ROCK CREEK ABOUT 0.8 MILE ENE OF THE HIGHWAY 4 CROSSING, 6.5 MILES EAST OF FARMINGTON.

Detailed Location:

NEST TREE WAS LOCATED ON THE NORTH SIDE OF HIGHWAY 4, GROWING ALONG ROCK CREEK.

Ecological:

1996 NEST TREE WAS A LARGE COTTONWOOD; SURROUNDED BY OPEN GRASSLAND AND SOME AGRICULTURAL FIELDS. AREA ALONG ROCK CREEK DESCRIBED AS AN IMPORTANT FORAGING AND ROOSTING SITE BY SURVEYOR IN 2002.

Threats:

General:

NEST AND 2 ADULTS OBSERVED ON 2 APRIL 1996. GROUPS OF OVER 100 FORAGING SWAINSON'S HAWKS OBSERVED IN THE VICINITY IN SEP 1998 & MAY-JUL 2002. HISTORIC NEST SITE HAS ALSO BEEN USED BY RED-TAILED HAWKS.

PLSS: T01N, R10E, Sec. 09, SW (M)
Accuracy: 80 meters
Area (acres): 0
UTM: Zone-10 N4202038 E686169
Latitude/Longitude: 37.94688 / -120.88120
Elevation (feet): 160

County Summary:	Quad Summary:
Stanislaus	Farmington (3712088)

Sources:

LAW96F0002	LAWRENCE, M. (CALIFORNIA DEPARTMENT OF TRANSPORTATION) - FIELD SURVEY FORM FOR BUTEO SWAINSONI (NEST SITE) 1996-04-02
LEE02F0010	LEE, R. (CALIFORNIA DEPARTMENT OF TRANSPORTATION) - FIELD SURVEY FORM FOR BUTEO SWAINSONI 2002-07-01

Occurrence Report

California Department of Fish and Wildlife

California Natural Diversity Database

Map Index Number: 89083
EO Index: 90087
Key Quad: Farmington (3712088)
Element Code: ABNKC19070
Occurrence Number: 2355
Occurrence Last Updated: 2013-04-29

Scientific Name: *Buteo swainsoni*
Common Name: Swainson's hawk

Listing Status: **Federal:** None
State: Threatened
Rare Plant Rank:

CNDDB Element Ranks: **Global:** G5
State: S3
Other Lists: BLM_S-Sensitive
IUCN_LC-Least Concern
USFWS_BCC-Birds of Conservation Concern

General Habitat:

BREEDS IN GRASSLANDS WITH SCATTERED TREES, JUNIPER-SAGE FLATS, RIPARIAN AREAS, SAVANNAHS, & AGRICULTURAL OR RANCH LANDS WITH GROVES OR LINES OF TREES.

Micro Habitat:

REQUIRES ADJACENT SUITABLE FORAGING AREAS SUCH AS GRASSLANDS, OR ALFALFA OR GRAIN FIELDS SUPPORTING RODENT POPULATIONS.

Last Date Observed: 1994-07-19
Occurrence Type: Natural/Native occurrence
Last Survey Date: 1994-07-19
Occurrence Rank: Unknown
Owner/Manager: PVT
Trend: Unknown
Presence: Presumed Extant

Location:

ALONG LITTLEJOHNS CREEK AT THE HENRY RD CROSSING, ABOUT 1 MI N OF CARTER RD & 3.5 MILES SE OF FARMINGTON.

Detailed Location:

TERRITORY #SJ109 FROM CDFW SWAINSON'S HAWK OBSERVATIONS DATABASE.

Ecological:

NEST IN 50' VALLEY OAK IN REMNANT RIPARIAN VEGETATION ALONG LITTLEJOHNS CREEK.

Threats:

General:

NEST WITH PAIR AND ONE YOUNG OBSERVED ON 19 JUL 1994.

PLSS: T01N, R09E, Sec. 26, SE (M)
Accuracy: 1/5 mile
Area (acres): 0
UTM: Zone-10 N4196988 E680709
Latitude/Longitude: 37.90249 / -120.94457
Elevation (feet): 130

County Summary:

San Joaquin

Quad Summary:

Farmington (3712088)

Sources:

DFG94U0003 DFG - NONGAME BIRDS & MAMMALS - TABLE OF SWAINSON'S HAWK NEST RECORDS THROUGH 1994. 1994-XX-XX

Occurrence Report

California Department of Fish and Wildlife

California Natural Diversity Database

Map Index Number: 12632
Key Quad: Oakdale (3712077)
Occurrence Number: 53
EO Index: 24874
Element Code: ABPBX24010
Occurrence Last Updated: 1989-08-10

Scientific Name: *Icteria virens*
Common Name: yellow-breasted chat

Listing Status: **Federal:** None
State: None
CNDDB Element Ranks: **Global:** G5
State: S3
Rare Plant Rank:
Other Lists: CDFW_SSC-Species of Special Concern
IUCN_LC-Least Concern

General Habitat:

SUMMER RESIDENT; INHABITS RIPARIAN THICKETS OF WILLOW AND OTHER BRUSHY TANGLES NEAR WATERCOURSES.

Micro Habitat:

NESTS IN LOW, DENSE RIPARIAN, CONSISTING OF WILLOW, BLACKBERRY, WILD GRAPE; FORAGES AND NESTS WITHIN 10 FT OF GROUND.

Last Date Observed: 1987-06-24
Last Survey Date: 1987-06-24
Owner/Manager: PVT
Presence: Presumed Extant
Occurrence Type: Natural/Native occurrence
Occurrence Rank: Unknown
Trend: Unknown

Location:

NE OF JUNCTION OF LITTLEJOHN CREEK AND SONORA RD, APPROX 7.6MI NNE OF OAKDALE.

Detailed Location:

ONE HEARD.

Ecological:

WILLOW BOG 2-5 ACRES IN SIZE. CREEK AND COUNTY RD BORDERED BY DENSE BLACKBERRY AND SPARSE CANOPY OF LARGE WILLOWS, COTTONWOODS, AND BLACK WALNUT. SITE IS AN OASIS IN GRAZED ANNUAL GRASSLAND.

Threats:

General:

PLSS: T01S, R11E, Sec. 06 (M)
UTM: Zone-10 N4193851 E693654
Accuracy: 1/5 mile
Latitude/Longitude: 37.87158 / -120.79827
Area (acres): 0
Elevation (feet): 200

County Summary:

Stanislaus

Quad Summary:

Oakdale (3712077)

Sources:

WAL87F0002 WALTERS, S.M. - FIELD SURVEY FORM FOR ICTERIA VIRENS 1987-06-24

Occurrence Report

California Department of Fish and Wildlife

California Natural Diversity Database

Map Index Number:	12632	**EO Index:**	24718
Key Quad:	Oakdale (3712077)	**Element Code:**	ABPBXB0020
Occurrence Number:	110	**Occurrence Last Updated:**	2016-08-25

Scientific Name: *Agelaius tricolor*

Common Name: tricolored blackbird

Listing Status:
Federal: None
State: Candidate Endangered

Rare Plant Rank:

CNDDB Element Ranks:
Global: G2G3
State: S1S2

Other Lists: BLM_S-Sensitive
CDFW_SSC-Species of Special Concern
IUCN_EN-Endangered
NABCI_RWL-Red Watch List
USFWS_BCC-Birds of Conservation Concern

General Habitat:

HIGHLY COLONIAL SPECIES, MOST NUMEROUS IN CENTRAL VALLEY & VICINITY. LARGELY ENDEMIC TO CALIFORNIA.

Micro Habitat:

REQUIRES OPEN WATER, PROTECTED NESTING SUBSTRATE, AND FORAGING AREA WITH INSECT PREY WITHIN A FEW KM OF THE COLONY.

Last Date Observed:	1987-06-09	**Occurrence Type:**	Natural/Native occurrence
Last Survey Date:	2011-04-17	**Occurrence Rank:**	Unknown
Owner/Manager:	PVT	**Trend:**	Unknown
Presence:	Presumed Extant		

Location:

NE OF JUNCTION OF LITTLEJOHN CREEK AND SONORA RD, APPROX 7.6 MI NNE OF OAKDALE.

Detailed Location:

MAPPED TO PROVIDED LOCATION DESCRIPTIONS OF "NE JUNCTION OF LITTLEJOHN CK AND SONORA RD" AND " SONORA RD, 1.4-1.7 MI W OF FRANKENHEIMER RD." COLONY DATA PARTIALLY STORED IN THE UC DAVIS TRBL PORTAL; SITE NAME WAS "SONORA ROAD #2."

Ecological:

WILLOW BOG 2-5 ACRES IN SIZE. CREEK & COUNTY RD BORDERED BY DENSE BLACKBERRY & SPARSE CANOPY OF LARGE WILLOWS, COTTONWOODS, & BLACK WALNUT. SITE IS AN OASIS IN GRAZED ANNUAL GRASSLAND WITH UNDULATED TERRAIN.

Threats:

NEST SITE IS ADJACENT TO COUNTY BRIDGE SCHEDULED FOR REPLACEMENT AND WIDENING BY 9 FT (1987).

General:

APPROXIMATELY 250 BIRDS OBSERVED NESTING ON 9 JUN 1987; ADULTS CARRYING FOOD, FLEDGED YOUNG CONFIRMED. NO BIRDS OBSERVED ON 24 JUN 1987. 70-800 BIRDS OBSERVED ON 23-24 APR 1994; FORAGING. 0 OBSERVED ON 17 APR 2011.

PLSS:	T01S, R11E, Sec. 06 (M)	**Accuracy:**	1/5 mile	**Area (acres):**	0
UTM:	Zone-10 N4193851 E693654	**Latitude/Longitude:**	37.87158 / -120.79827	**Elevation (feet):**	200

County Summary:	**Quad Summary:**
Stanislaus	Oakdale (3712077)

Sources:

BEE91R0001	BEEDY, E.C., S.D. SANDERS & D. BLOOM - BREEDING STATUS, DISTRIBURTION, AND HABITAT ASSOCIATIONS OF THE TRICOLORED BLACKBIRD (AGELAIUS TRICOLOR), 1850-1989. 1991-06-XX
DFG04U0002	CALIFORNIA DEPARTMENT OF FISH & GAME - TRICOLORED BLACKBIRD BREEDING OBSERVATIONS 1980-2000, BIOS DS20. 2004-XX-XX
REE94F0013	REEVE, H. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR 1994-04-23
REE94F0014	REEVE, H. & S. REEVE - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR 1994-04-24
TRI14D0001	TRICOLORED BLACKBIRD PORTAL - ICE (UNIVERSITY OF CALIFORNIA, DAVIS) - 1907-2014 TRICOLORED BLACKBIRD RECORDS FROM UC DAVIS TRICOLORED BLACKBIRD PORTAL, INFORMATION CENTER FOR THE ENVIRONMENT (ICE) 2014-XX-XX
WAL87F0001	WALTERS, S.M. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR (NESTING COLONY) 1987-06-09

Occurrence Report

California Department of Fish and Wildlife

California Natural Diversity Database

Map Index Number: 12552
Key Quad: Bachelor Valley (3712087)
Occurrence Number: 150
EO Index: 24686
Element Code: ABPBXB0020
Occurrence Last Updated: 1989-08-10

Scientific Name: *Agelaius tricolor*
Common Name: tricolored blackbird

Listing Status:
Federal: None
State: Candidate Endangered

CNDDB Element Ranks:
Global: G2G3
State: S1S2

Rare Plant Rank:

Other Lists: BLM_S-Sensitive
CDFW_SSC-Species of Special Concern
IUCN_EN-Endangered
NABCI_RWL-Red Watch List
USFWS_BCC-Birds of Conservation Concern

General Habitat:

HIGHLY COLONIAL SPECIES, MOST NUMEROUS IN CENTRAL VALLEY & VICINITY. LARGELY ENDEMIC TO CALIFORNIA.

Micro Habitat:

REQUIRES OPEN WATER, PROTECTED NESTING SUBSTRATE, AND FORAGING AREA WITH INSECT PREY WITHIN A FEW KM OF THE COLONY.

Last Date Observed: 1987-08-XX
Last Survey Date: 1987-08-XX
Owner/Manager: UNKNOWN
Presence: Presumed Extant

Occurrence Type: Natural/Native occurrence
Occurrence Rank: Unknown
Trend: Unknown

Location:

LITTLEJOHNS CREEK, AT SONORA ROAD CROSSING, APPROX 9 MI ESE OF FARMINGTON.

Detailed Location:

Ecological:

MARSH AREA SUPPORTING APPROX 125 NESTING PAIRS.

Threats:

General:

PLSS: T01N, R10E, Sec. 35, SW (M)
UTM: Zone-10 N4196033 E689349

Accuracy: 1/5 mile
Latitude/Longitude: 37.89214 / -120.84661

Area (acres): 0
Elevation (feet): 170

County Summary:

Stanislaus

Quad Summary:

Bachelor Valley (3712087)

Sources:

MUL87F0001 MULLEN, D.A. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR (TRICOLORED BLACKBIRD) 1987-08-XX

Occurrence Report

California Department of Fish and Wildlife

California Natural Diversity Database

Map Index Number:	21583	**EO Index:**	12243
Key Quad:	Bachelor Valley (3712087)	**Element Code:**	ABPBXB0020
Occurrence Number:	197	**Occurrence Last Updated:**	2016-09-28

Scientific Name: *Agelaius tricolor*

Common Name: tricolored blackbird

Listing Status:
Federal: None
State: Candidate Endangered

Rare Plant Rank:

Other Lists: BLM_S-Sensitive
CDFW_SSC-Species of Special Concern
IUCN_EN-Endangered
NABCI_RWL-Red Watch List
USFWS_BCC-Birds of Conservation Concern

CNDDB Element Ranks:
Global: G2G3
State: S1S2

General Habitat:

HIGHLY COLONIAL SPECIES, MOST NUMEROUS IN CENTRAL VALLEY & VICINITY. LARGELY ENDEMIC TO CALIFORNIA.

Micro Habitat:

REQUIRES OPEN WATER, PROTECTED NESTING SUBSTRATE, AND FORAGING AREA WITH INSECT PREY WITHIN A FEW KM OF THE COLONY.

Last Date Observed:	2005-04-24	**Occurrence Type:**	Natural/Native occurrence
Last Survey Date:	2015-05-23	**Occurrence Rank:**	Good
Owner/Manager:	PVT	**Trend:**	Unknown
Presence:	Presumed Extant		

Location:

VICINITY OF HWY 4 & DUNTON RD INTERSECTION, 2 MI ESE OF HWY 4 & MILTON RD INTERSECTION, W OF TELEGRAPH CITY.

Detailed Location:

BIRDS FOUND IN BOTH SMITH CREEK AND HOODS CREEK. APPEARED THAT HOODS CREEK SERVED AS THE PREDOMINANT NESTING SITE. COLONY DATA STORED IN THE UC DAVIS TRICOLORED BLACKBIRD PORTAL; SITE NAMES WERE "ORVIS RANCH" & "DUNTON ROAD/HOODS CREEK."

Ecological:

HABITAT CONSISTED OF COTTONWOOD/WILLOW RIPARIAN. CATTLE/TURKEY RANCH AND GRASSLANDS IN THE VICINITY. COLONY WAS NOT ACTIVE IN 1993. MAPPED ACCORDING TO PROVIDED MAPS AND LOCATION DESCRIPTIONS.

Threats:

General:

500-1K OBS NESTING IN 1992. 1-3K LIKELY NESTING IN 1994. 3K FORAGING IN 1995. NOT SURVEYED IN 1996. 150 OBS IN 1997; ID NOT CONFIRMED. 500-3K POSSIBLY NESTING IN 1999. 1.5K LIKELY NESTING IN 2005. 300-1.3K FORAGING IN 2011. 0 IN 2014-15.

PLSS:	T01N, R11E, Sec. 18, SW (M)	**Accuracy:**	2/5 mile	**Area (acres):**	280
UTM:	Zone-10 N4200774 E692363	**Latitude/Longitude:**	37.9342 / -120.8111	**Elevation (feet):**	223

County Summary:	**Quad Summary:**
Stanislaus	Bachelor Valley (3712087)

Sources:

AIR95F0005	AIROLA, D. (JONES AND STOKES ASSOCIATES) - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR 1995-04-30
AIR97F0004	AIROLA, D. & A. RAYGANI - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR 1997-05-03
AUG94F0009	AUGUSTINE, A. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR 1994-04-06
DFG04U0002	CALIFORNIA DEPARTMENT OF FISH & GAME - TRICOLORED BLACKBIRD BREEDING OBSERVATIONS 1980-2000, BIOS DS20. 2004-XX-XX
GIL99F0013	GILES, T. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR 1999-04-24
GIL99F0014	GILES, T. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR 1999-04-24
TRI14D0001	TRICOLORED BLACKBIRD PORTAL - ICE (UNIVERSITY OF CALIFORNIA, DAVIS) - 1907-2014 TRICOLORED BLACKBIRD RECORDS FROM UC DAVIS TRICOLORED BLACKBIRD PORTAL, INFORMATION CENTER FOR THE ENVIRONMENT (ICE) 2014-XX-XX
TRI15D0001	TRICOLORED BLACKBIRD PORTAL - ICE (UNIVERSITY OF CALIFORNIA, DAVIS) - 2015 TRICOLORED BLACKBIRD RECORDS FROM UC DAVIS TRICOLORED BLACKBIRD PORTAL, INFORMATION CENTER FOR THE ENVIRONMENT (ICE) 2015-XX-XX
WIN92F0001	WINTER, J. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR 1992-06-18
WIN92F0006	WINTER, J. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR 1992-06-18
WIN94F0001	WINTER, J. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR (NESTING COLONY) 1994-05-28
WIN94F0008	WINTER, J. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR 1994-05-28
WIN95U0001	WINTER, J. - LETTER FROM J. WINTER TO L. COMRACK REGARDING A TRICOLORED BLACKBIRD SURVEY IN STANISLAUS COUNTY 1995-04-11

Occurrence Report

California Department of Fish and Wildlife

California Natural Diversity Database

Map Index Number: 26028
EO Index: 5042
Key Quad: Farmington (3712088)
Element Code: ABPBXB0020
Occurrence Number: 292
Occurrence Last Updated: 2016-12-06

Scientific Name: *Agelaius tricolor*
Common Name: tricolored blackbird

Listing Status: **Federal:** None
State: Candidate Endangered
Rare Plant Rank:

CNDDB Element Ranks: **Global:** G2G3
State: S1S2
Other Lists: BLM_S-Sensitive
CDFW_SSC-Species of Special Concern
IUCN_EN-Endangered
NABCI_RWL-Red Watch List
USFWS_BCC-Birds of Conservation Concern

General Habitat:

HIGHLY COLONIAL SPECIES, MOST NUMEROUS IN CENTRAL VALLEY & VICINITY. LARGELY ENDEMIC TO CALIFORNIA.

Micro Habitat:

REQUIRES OPEN WATER, PROTECTED NESTING SUBSTRATE, AND FORAGING AREA WITH INSECT PREY WITHIN A FEW KM OF THE COLONY.

Last Date Observed: 1994-05-28
Occurrence Type: Natural/Native occurrence
Last Survey Date: 1994-05-28
Occurrence Rank: Good
Owner/Manager: PVT-LAZY "G" RANCH
Trend: Unknown
Presence: Presumed Extant

Location:

NORTH SIDE OF HWY 4, WHERE IT CROSSES ROCK CREEK, 6 MILES EAST OF FARMINGTON.

Detailed Location:

MAPPED ACCORDING TO PROVIDED MAP. PROVIDED LOCATION DESCRIPTION WAS "NORTH SIDE OF HWY 4 WHERE IT CROSSES ROCK CREEK." COLONY BEST SEEN FROM HILL OVERLOOKING ROCK CREEK 0.25 MILE EAST OF BRIDGE ACROSS ROCK CREEK.

Ecological:

HABITAT CONSISTS OF WILLOW RIPARIAN ALONG ROCK CREEK. AREA GRAZED, NOT SIGNIFICANT. COLONY DATA STORED IN THE UC DAVIS TRICOLORED BLACKBIRD PORTAL; SITE NAME WAS "ROCK CREEK AT HIGHWAY 4."

Threats:

General:

ABOUT 2,000-4,000 BIRDS OBSERVED ON 28 MAY 1994; ADULTS OBSERVED FEEDING YOUNG.

PLSS: T01N, R10E, Sec. 08, SE (M)
Accuracy: nonspecific area
Area (acres): 117
UTM: Zone-10 N4202119 E685292
Latitude/Longitude: 37.94779 / -120.89116
Elevation (feet): 150

County Summary:	Quad Summary:
Stanislaus	Farmington (3712088)

Sources:

TRI14D0001	TRICOLORED BLACKBIRD PORTAL - ICE (UNIVERSITY OF CALIFORNIA, DAVIS) - 1907-2014 TRICOLORED BLACKBIRD RECORDS FROM UC DAVIS TRICOLORED BLACKBIRD PORTAL, INFORMATION CENTER FOR THE ENVIRONMENT (ICE) 2014-XX-XX
WIN94F0002	WINTER, J. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR (NESTING COLONY) 1994-05-28

Occurrence Report

California Department of Fish and Wildlife

California Natural Diversity Database

Map Index Number: A1442
Key Quad: Bachelor Valley (3712087)
Occurrence Number: 922

EO Index: 103029
Element Code: ABPBXB0020
Occurrence Last Updated: 2016-08-12

Scientific Name: *Agelaius tricolor*
Common Name: tricolored blackbird

Listing Status:
Federal: None
State: Candidate Endangered

CNDDB Element Ranks:
Global: G2G3
State: S1S2

Rare Plant Rank:

Other Lists: BLM_S-Sensitive
CDFW_SSC-Species of Special Concern
IUCN_EN-Endangered
NABCI_RWL-Red Watch List
USFWS_BCC-Birds of Conservation Concern

General Habitat:

HIGHLY COLONIAL SPECIES, MOST NUMEROUS IN CENTRAL VALLEY & VICINITY. LARGELY ENDEMIC TO CALIFORNIA.

Micro Habitat:

REQUIRES OPEN WATER, PROTECTED NESTING SUBSTRATE, AND FORAGING AREA WITH INSECT PREY WITHIN A FEW KM OF THE COLONY.

Last Date Observed: 2014-05-04
Last Survey Date: 2015-05-23
Owner/Manager: PVT
Presence: Presumed Extant

Occurrence Type: Natural/Native occurrence
Occurrence Rank: Unknown
Trend: Unknown

Location:

AREA JUST E OF MILTON RD BRIDGE OVER HOODS CREEK, 1.7 MI S OF HWY 4, 1.9 MI N OF EUGENE.

Detailed Location:

COLONY DATA STORED IN THE UC DAVIS TRICOLORED BLACKBIRD PORTAL; SITE NAMES WERE "S MILTON RD" AND "MILTON RD 1.6 MI SOUTH HWY 4." MAPPED ACCORDING TO PROVIDED LOCATIONS IN THE PORTAL.

Ecological:

HABITAT COMPOSED OF HIMALAYAN BLACKBERRY. BLACKBERRIES ALONG THE BANK OF HOODS CREEK.

Threats:

General:

TWO SUBCOLONIES OF 120 & 140 BIRDS OBSERVED FORAGING ON 21 APR 2014, 2.5K OBSERVED CARRYING NEST MATERIAL ON 27 APR. 2K+ OBS CARRYING MUD FOR NEST BUILDING ON 4 MAY 2014. 4 OBS FORAGING ON 19 APR 2015, 0 OBS BY 23 MAY.

PLSS: T01N, R10E, Sec. 23, SE (M)
Accuracy: specific area
Area (acres): 18

UTM: Zone-10 N4199195 E689670
Latitude/Longitude: 37.92054 / -120.84214
Elevation (feet): 183

County Summary:

Stanislaus

Quad Summary:

Bachelor Valley (3712087)

Sources:

TRI14D0001	TRICOLORED BLACKBIRD PORTAL - ICE (UNIVERSITY OF CALIFORNIA, DAVIS) - 1907-2014 TRICOLORED BLACKBIRD RECORDS FROM UC DAVIS TRICOLORED BLACKBIRD PORTAL, INFORMATION CENTER FOR THE ENVIRONMENT (ICE) 2014-XX-XX
TRI15D0001	TRICOLORED BLACKBIRD PORTAL - ICE (UNIVERSITY OF CALIFORNIA, DAVIS) - 2015 TRICOLORED BLACKBIRD RECORDS FROM UC DAVIS TRICOLORED BLACKBIRD PORTAL, INFORMATION CENTER FOR THE ENVIRONMENT (ICE) 2015-XX-XX

Occurrence Report

California Department of Fish and Wildlife

California Natural Diversity Database

Map Index Number: A1444
Key Quad: Bachelor Valley (3712087)
Occurrence Number: 923

EO Index: 103031
Element Code: ABPBXB0020
Occurrence Last Updated: 2016-08-12

Scientific Name: *Agelaius tricolor*
Common Name: tricolored blackbird

Listing Status:
Federal: None
State: Candidate Endangered

CNDDB Element Ranks:
Global: G2G3
State: S1S2

Rare Plant Rank:

Other Lists: BLM_S-Sensitive
CDFW_SSC-Species of Special Concern
IUCN_EN-Endangered
NABCI_RWL-Red Watch List
USFWS_BCC-Birds of Conservation Concern

General Habitat:

HIGHLY COLONIAL SPECIES, MOST NUMEROUS IN CENTRAL VALLEY & VICINITY. LARGELY ENDEMIC TO CALIFORNIA.

Micro Habitat:

REQUIRES OPEN WATER, PROTECTED NESTING SUBSTRATE, AND FORAGING AREA WITH INSECT PREY WITHIN A FEW KM OF THE COLONY.

Last Date Observed: 2015-05-24
Last Survey Date: 2015-05-24
Owner/Manager: PVT
Presence: Presumed Extant

Occurrence Type: Natural/Native occurrence
Occurrence Rank: Unknown
Trend: Unknown

Location:

ON N SIDE OF SONARA RD, ABOUT 1.3 MI SE OF INTERSECTION WITH MILTON RD, NE OF WOODWARD RESERVOIR.

Detailed Location:

COLONY DATA STORED IN THE UC DAVIS TRICOLORED BLACKBIRD PORTAL; SITE NAME WAS "SONORA ROAD #3." MAPPED ACCORDING TO PROVIDED COORDINATES IN THE PORTAL. SEVERAL BRAMBLES (AT LEAST 6) OF BLACKBERRY OCCUPIED BY BIRDS IN 2014.

Ecological:

PREDOMINANT NESTING SUBSTRATE COMPOSED OF HIMALAYAN BLACKBERRY. ABOUT HALF THE COLONY WAS DESTROYED BY REMOVAL OF BLACKBERRIES ON 24 MAY 2015. 154 DISRUPTED NESTS, 62 DEAD YOUNG, AND 2 DEAD ADULTS CONFIRMED.

Threats:

POTENTIAL THREAT DUE TO DESTRUCTION OF NESTING HABITAT.

General:

2014: 12KBIRDS OBSERVED ON 21 APR; SOME CARRYING NEST MATERIAL. 12K STILL PRESENT BY 27 APR; COLONY VERY ACTIVE/NOISY. 8K ESTIMATED BY 4 MAY; FEEDING YOUNG. 2015: 500-600 OBS ON 18-19 APR. 7K OBS ON 28 APR. 400 OBS ON 24 MAY (NESTING).

PLSS: T01S, R10E, Sec. 1, NW (M)
Accuracy: 1/10 mile
Area (acres): 18
UTM: Zone-10 N4195276 E690873
Latitude/Longitude: 37.885 / -120.8295
Elevation (feet): 195

County Summary:

Stanislaus

Quad Summary:

Bachelor Valley (3712087)

Sources:

TRI14D0001	TRICOLORED BLACKBIRD PORTAL - ICE (UNIVERSITY OF CALIFORNIA, DAVIS) - 1907-2014 TRICOLORED BLACKBIRD RECORDS FROM UC DAVIS TRICOLORED BLACKBIRD PORTAL, INFORMATION CENTER FOR THE ENVIRONMENT (ICE) 2014-XX-XX
TRI15D0001	TRICOLORED BLACKBIRD PORTAL - ICE (UNIVERSITY OF CALIFORNIA, DAVIS) - 2015 TRICOLORED BLACKBIRD RECORDS FROM UC DAVIS TRICOLORED BLACKBIRD PORTAL, INFORMATION CENTER FOR THE ENVIRONMENT (ICE) 2015-XX-XX

Occurrence Report

California Department of Fish and Wildlife

California Natural Diversity Database

Map Index Number: 24284
EO Index: 7192
Key Quad: Escalon (3712078)
Element Code: PDCAM0C010
Occurrence Number: 4
Occurrence Last Updated: 1993-10-13

Scientific Name: *Legenere limosa*
Common Name: legenere

Listing Status: **Federal:** None
State: None
Rare Plant Rank: 1B.1
Other Lists: BLM_S-Sensitive

CNDDB Element Ranks: **Global:** G2
State: S2

General Habitat:
VERNAL POOLS.

Micro Habitat:
IN BEDS OF VERNAL POOLS. 1-880 M.

Last Date Observed: 1936-05-27
Occurrence Type: Natural/Native occurrence
Last Survey Date: 1983-05-19
Occurrence Rank: None
Owner/Manager: PVT
Trend: Unknown
Presence: Extirpated

Location:
VALLEY HOME.

Detailed Location:

Ecological:

Threats:
AGRICULTURE. ENTIRE AREA HAS BEEN LEVELED FOR IRRIGATION OF RICE AND DAIRY PASTURE.

General:
SPECIES COLLECTED HERE BY R.F. HOOVER IN 1936 (#1225 JEPS). OTHER COLLECTIONS MADE BETWEEN 1935 AND 1937. SEARCHED FOR IN 1983 BUT NOT FOUND. NO VERNAL POOLS REMAINING IN THIS AREA ACCORDING TO HOLLAND (AFTER SEARCHING 5 MI RADIUS).

PLSS: T01S, R10E, Sec. 19 (M)
Accuracy: 1 mile
Area (acres): 0
UTM: Zone-10 N4188830 E683623
Latitude/Longitude: 37.82843 / -120.91352
Elevation (feet): 150

County Summary:
San Joaquin, Stanislaus

Quad Summary:
Escalon (3712078)

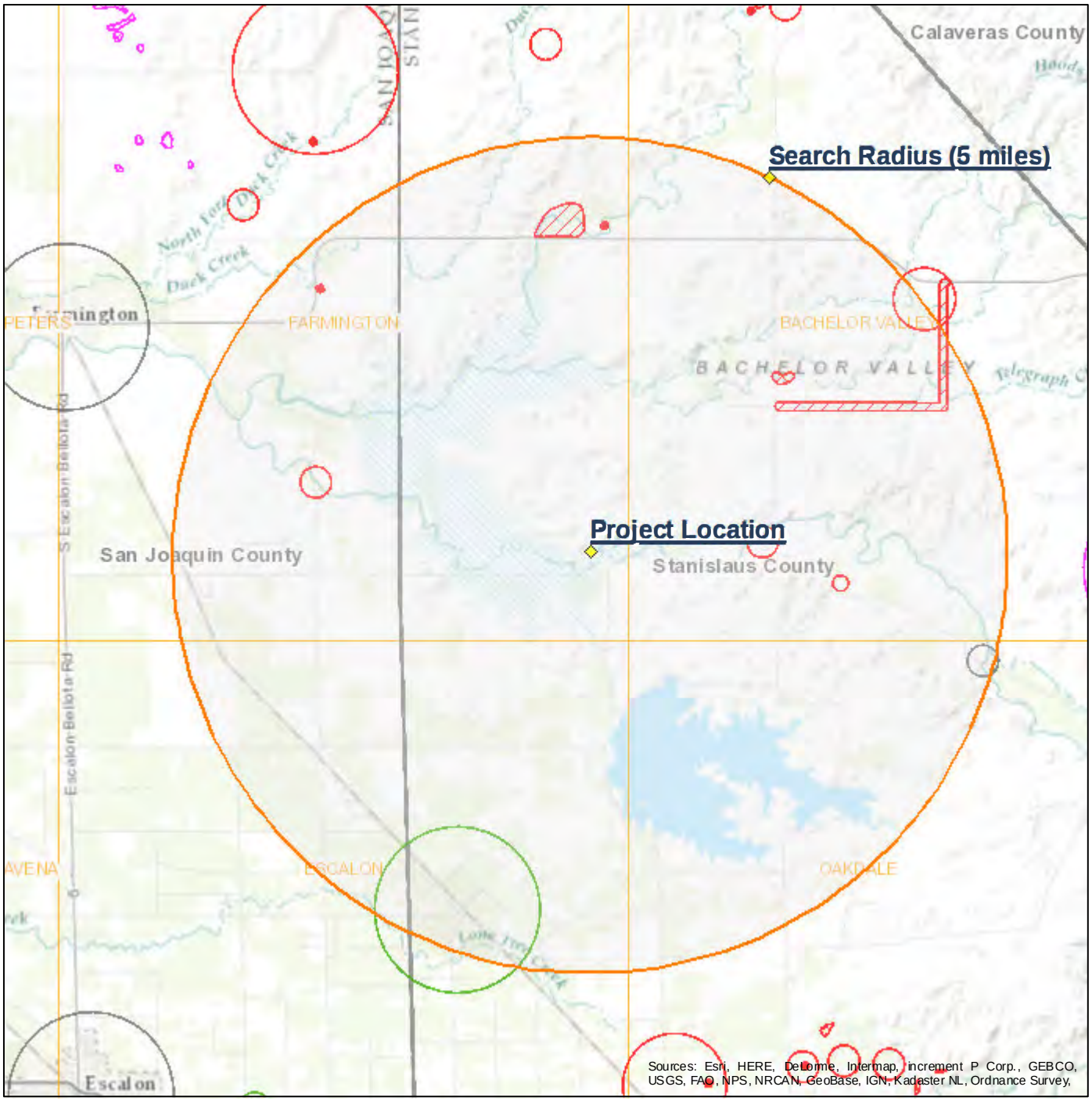
Sources:

HOL83F0006	HOLLAND, R. - FIELD SURVEY FORM FOR LEGENERE LIMOSA 1983-05-19
HOL83U0002	HOLLAND, R. - ENDANGERMENT STATUS OF LEGENERE LIMOSA IN CALIFORNIA 1983-06-30
HOO35S0018	HOOVER, R. - HOOVER #655 UC #766323, CAS #232200, DS #241065 1935-06-12
HOO36S0009	HOOVER, R. - HOOVER #1225 JEPS #5276, UC #766389, GH #385619, DS #329267, LA #204515 1936-05-27
HOO37S0056	HOOVER, R. - HOOVER #2355 UC #766388 1937-06-03
RUB75A0001	RUBTZOFF, P. & L. HECKARD - NEW DISTRIBUTION RECORDS FOR CALIFORNIA FLOWERING PLANTS OF AQUATIC AND MOIST HABITATS. THE WASMANN JOURNAL OF BIOLOGY. VOL. 33. NO'S 1 & 2. 1975-XX-XX

Map of Project Area

California Natural Diversity Database (CNDDB) Commercial [ds85]

- Plant (80m)
- Plant (specific)
- Plant (non-specific)
- Plant (circular)
- Animal (80m)
- Animal (specific)
- Animal (non-specific)
- Animal (circular)
- Terrestrial Comm. (80m)
- Terrestrial Comm. (specific)
- Terrestrial Comm. (non-specific)
- Terrestrial Comm. (circular)
- Aquatic Comm. (80m)
- Aquatic Comm. (specific)
- Aquatic Comm. (non-specific)
- Aquatic Comm. (circular)
- Multiple (80m)
- Multiple (specific)
- Multiple (non-specific)
- Multiple (circular)
- Sensitive EO's (Commercial only)



1:144,448

0 1.25 2.5 5 mi

0 2 4 8 km

N

August 14, 2017

Author: cnddb_com

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APPENDIX E

CALEEMOD EMISSIONS MODEL RESULTS

KGS Groundwater Well

Stanislaus County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.15	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	46
Climate Zone	4			**Operational Year**	2016
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Disturbance footprint

Construction Phase - Applicant Supplied construction schedule

Off-road Equipment - Construction contractor

Off-road Equipment - Construction contractor

Trips and VMT - Construction contractor

Vehicle Trips - Only occasional trips required to maintain equipment. not daily trip generator

Mobile Land Use Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	15.00

tblConstructionPhase	NumDays	100.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	PhaseStartDate	7/16/2016	7/18/2016
tblLandUse	LotAcreage	0.00	0.15
tblOffRoadEquipment	HorsePower	205.00	81.00
tblOffRoadEquipment	HorsePower	78.00	174.00
tblOffRoadEquipment	HorsePower	84.00	100.00
tblOffRoadEquipment	HorsePower	84.00	100.00
tblOffRoadEquipment	HorsePower	78.00	89.00
tblOffRoadEquipment	HorsePower	84.00	89.00
tblOffRoadEquipment	LoadFactor	0.50	0.73
tblOffRoadEquipment	LoadFactor	0.48	0.41
tblOffRoadEquipment	LoadFactor	0.74	0.29
tblOffRoadEquipment	LoadFactor	0.74	0.29
tblOffRoadEquipment	LoadFactor	0.48	0.20
tblOffRoadEquipment	LoadFactor	0.74	0.20
tblOffRoadEquipment	OffRoadEquipmentType	Concrete/Industrial Saws	Bore/Drill Rigs
tblOffRoadEquipment	OffRoadEquipmentType	Graders	Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType	Cranes	Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType	Cranes	Pumps
tblOffRoadEquipment	OffRoadEquipmentType	Forklifts	Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType	Forklifts	Generator Sets
tblProjectCharacteristics	OperationalYear	2014	2016
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00

tblTripsAndVMT	WorkerTripNumber	0.00	2.00
tblTripsAndVMT	WorkerTripNumber	0.00	1.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	3.9607	37.0721	27.8037	0.0417	0.0339	2.4828	2.5167	9.1300e-003	2.3520	2.3611			4,182.4841	0.9639	0.0000	4,202.7256
Total	**3.9607**	**37.0721**	**27.8037**	**0.0417**	**0.0339**	**2.4828**	**2.5167**	**9.1300e-003**	**2.3520**	**2.3611**			**4,182.4841**	**0.9639**	**0.0000**	**4,202.7256**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	3.9607	37.0721	27.8037	0.0417	0.0339	2.4828	2.5167	9.1300e-003	2.3520	2.3611			4,182.4841	0.9639	0.0000	4,202.7256
Total	**3.9607**	**37.0721**	**27.8037**	**0.0417**	**0.0339**	**2.4828**	**2.5167**	**9.1300e-003**	**2.3520**	**2.3611**			**4,182.4841**	**0.9639**	**0.0000**	**4,202.7256**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Soil Boring	Building Construction	7/1/2016	7/15/2016	7	15	
2	Well Construction	Building Construction	7/18/2016	7/25/2016	5	6	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Soil Boring	Generator Sets	1	24.00	100	0.29
Well Construction	Pumps	1	8.00	100	0.29
Soil Boring	Bore/Drill Rigs	1	24.00	81	0.73
Soil Boring	Air Compressors	1	24.00	89	0.20
Well Construction	Generator Sets	1	8.00	89	0.20
Soil Boring	Cranes	1	4.00	226	0.29
Well Construction	Air Compressors	1	8.00	174	0.41
Well Construction	Cranes	1	4.00	226	0.29
Soil Boring	Forklifts	2	6.00	89	0.20
Well Construction	Forklifts	2	6.00	89	0.20
Soil Boring	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Well Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Soil Boring	8	2.00	1.00	2.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Well Construction	8	1.00	1.00	1.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Soil Boring - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.9374	36.9380	27.5250	0.0410		2.4804	2.4804		2.3498	2.3498			4,123.9981	0.9624		4,144.2077
Total	**3.9374**	**36.9380**	**27.5250**	**0.0410**		**2.4804**	**2.4804**		**2.3498**	**2.3498**			**4,123.9981**	**0.9624**		**4,144.2077**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.5300e-003	0.0339	0.0249	1.0000e-004	2.3300e-003	5.5000e-004	2.8800e-003	6.4000e-004	5.0000e-004	1.1400e-003			10.0294	7.0000e-005		10.0309
Vendor	0.0105	0.0883	0.1048	2.2000e-004	6.0200e-003	1.5800e-003	7.6000e-003	1.7200e-003	1.4500e-003	3.1700e-003			21.7535	1.9000e-004		21.7575
Worker	0.0102	0.0119	0.1491	3.3000e-004	0.0256	1.9000e-004	0.0257	6.7700e-003	1.7000e-004	6.9500e-003			26.7031	1.2600e-003		26.7295
Total	**0.0232**	**0.1341**	**0.2787**	**6.5000e-004**	**0.0339**	**2.3200e-003**	**0.0362**	**9.1300e-003**	**2.1200e-003**	**0.0113**			**58.4860**	**1.5200e-003**		**58.5179**

3.2 Soil Boring - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.9374	36.9380	27.5250	0.0410		2.4804	2.4804		2.3498	2.3498			4,123.9981	0.9624		4,144.2077
Total	**3.9374**	**36.9380**	**27.5250**	**0.0410**		**2.4804**	**2.4804**		**2.3498**	**2.3498**			**4,123.9981**	**0.9624**		**4,144.2077**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.5300e-003	0.0339	0.0249	1.0000e-004	2.3300e-003	5.5000e-004	2.8800e-003	6.4000e-004	5.0000e-004	1.1400e-003			10.0294	7.0000e-005		10.0309
Vendor	0.0105	0.0883	0.1048	2.2000e-004	6.0200e-003	1.5800e-003	7.6000e-003	1.7200e-003	1.4500e-003	3.1700e-003			21.7535	1.9000e-004		21.7575
Worker	0.0102	0.0119	0.1491	3.3000e-004	0.0256	1.9000e-004	0.0257	6.7700e-003	1.7000e-004	6.9500e-003			26.7031	1.2600e-003		26.7295
Total	**0.0232**	**0.1341**	**0.2787**	**6.5000e-004**	**0.0339**	**2.3200e-003**	**0.0362**	**9.1300e-003**	**2.1200e-003**	**0.0113**			**58.4860**	**1.5200e-003**		**58.5179**

3.3 Well Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5334	22.4790	15.1433	0.0238		1.4786	1.4786		1.4034	1.4034			2,362.6814	0.4591		2,372.3222
Total	**2.5334**	**22.4790**	**15.1433**	**0.0238**		**1.4786**	**1.4786**		**1.4034**	**1.4034**			**2,362.6814**	**0.4591**		**2,372.3222**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.1700e-003	0.0423	0.0311	1.2000e-004	2.9200e-003	6.8000e-004	3.6000e-003	8.0000e-004	6.3000e-004	1.4300e-003			12.5367	9.0000e-005		12.5387
Vendor	0.0105	0.0883	0.1048	2.2000e-004	6.0200e-003	1.5800e-003	7.6000e-003	1.7200e-003	1.4500e-003	3.1700e-003			21.7535	1.9000e-004		21.7575
Worker	5.1000e-003	5.9400e-003	0.0745	1.6000e-004	0.0128	1.0000e-004	0.0129	3.3900e-003	9.0000e-005	3.4700e-003			13.3516	6.3000e-004		13.3647
Total	**0.0187**	**0.1366**	**0.2104**	**5.0000e-004**	**0.0217**	**2.3600e-003**	**0.0241**	**5.9100e-003**	**2.1700e-003**	**8.0700e-003**			**47.6417**	**9.1000e-004**		**47.6609**

3.3 Well Construction - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5334	22.4790	15.1433	0.0238		1.4786	1.4786		1.4034	1.4034			2,362.6814	0.4591		2,372.3222
Total	**2.5334**	**22.4790**	**15.1433**	**0.0238**		**1.4786**	**1.4786**		**1.4034**	**1.4034**			**2,362.6814**	**0.4591**		**2,372.3222**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.1700e-003	0.0423	0.0311	1.2000e-004	2.9200e-003	6.8000e-004	3.6000e-003	8.0000e-004	6.3000e-004	1.4300e-003			12.5367	9.0000e-005		12.5387
Vendor	0.0105	0.0883	0.1048	2.2000e-004	6.0200e-003	1.5800e-003	7.6000e-003	1.7200e-003	1.4500e-003	3.1700e-003			21.7535	1.9000e-004		21.7575
Worker	5.1000e-003	5.9400e-003	0.0745	1.6000e-004	0.0128	1.0000e-004	0.0129	3.3900e-003	9.0000e-005	3.4700e-003			13.3516	6.3000e-004		13.3647
Total	**0.0187**	**0.1366**	**0.2104**	**5.0000e-004**	**0.0217**	**2.3600e-003**	**0.0241**	**5.9100e-003**	**2.1700e-003**	**8.0700e-003**			**47.6417**	**9.1000e-004**		**47.6609**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.437050	0.065508	0.158240	0.182207	0.055035	0.007893	0.018726	0.062660	0.001794	0.001177	0.006242	0.000671	0.002796

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**2.2000e-004**	**0.0000**		**2.3000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation