Public Review Draft
INITIAL STUDY/
MITIGATED NEGATIVE DECLARATION

for the

KAWAHARA AGRICULTURAL
FACILITY PROJECT

County of San Benito, California

Resource Management Agency

April 2021

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PROJECT DATA

1. **Project Title:** Kawahara Agricultural Facility Project

2. **Lead Agency Name and Address:** San Benito County Resource Management Agency, 2301 Technology Parkway, Hollister CA 95023

3. **Contact Person, Phone Number, and Email:** Arielle Goodspeed, Senior Planner, (831) 902-2547, agoodspeed@cosb.us

4. **Project Location**: The proposed project is located on a 104-acre property near the interchange of San Juan Highway and Chittenden Road/Anzar Road, in an unincorporated area of San Benito County, California. The proposed project is located on the west side of San Juan Highway and just north of Anzar Road. The Project is located on assessor parcel number 012-030-045. U.S. Route 101 is located west of the property, San Juan Highway on the east, Chittenden Road to the north, and Anzar Road to the south.

5. **Project Description**: The proposed project consists of an application for a Conditional Use Permit for the development of the proposed Kawahara Agricultural Facility. The project would include the construction of several buildings and site improvements in support of the agricultural facility project, including a 18,000 square-foot ("sq. ft.") covered shipping/staging area, a 36,000 sq. ft. shipping and handling greenhouse, a 18,000 sq. ft. production greenhouse and a total of 518,400 sq. ft. of growing block greenhouses in three main blocks. Other project improvements would include widening San Juan Highway/Chittenden Road at the project entrance.

6. **Acreage of Project Site**: The project is proposed to be built on the 104-acre site.

7. **Land Use Designations**: The San Benito County 2035 General Plan designates the project area as Agriculture Productive ("AP").

8. **Date Prepared**: April 2021

9. **Prepared By**: Denise Duffy & Associates, Inc. (DD&A)

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CHAPTER 1. INTRODUCTION AND PROJECT DESCRIPTION

1.1 INTRODUCTION

This Initial Study has been prepared to evaluate the potential environmental effects associated with the Kawahara Agricultural Facility Project ("project" or "proposed project"), located in San Benito County, California ("County"). This document has been prepared in accordance with the California Environmental Quality Act ("CEQA"), Public Resources Code §21000 et. seq., and the State CEQA Guidelines, California Code of Regulations ("CCR") §15000 et. seq.

An Initial Study is an informational document prepared by a Lead Agency to determine if a project may have a significant effect on the environment (CEQA Guidelines §15063, subd. (a)). If there is substantial evidence that a project may have a significant effect on the environment, an Environmental Impact Report ("EIR") must be prepared, in accordance with CEQA Guidelines §15064(a). However, if the Lead Agency determines that revisions in the project plans or proposals made by or agreed to by the applicant to mitigate the potentially significant effects to a less than significant level, a Mitigated Negative Declaration ("IS/MND") may be prepared instead of an EIR (CEQA Guidelines §15070, subd. (b)). The Lead Agency prepares a written statement describing the reasons a proposed project would not have a significant effect on the environment and, therefore, why an EIR need not be prepared. This IS/MND conforms to the content requirements under CEQA Guidelines §15071.

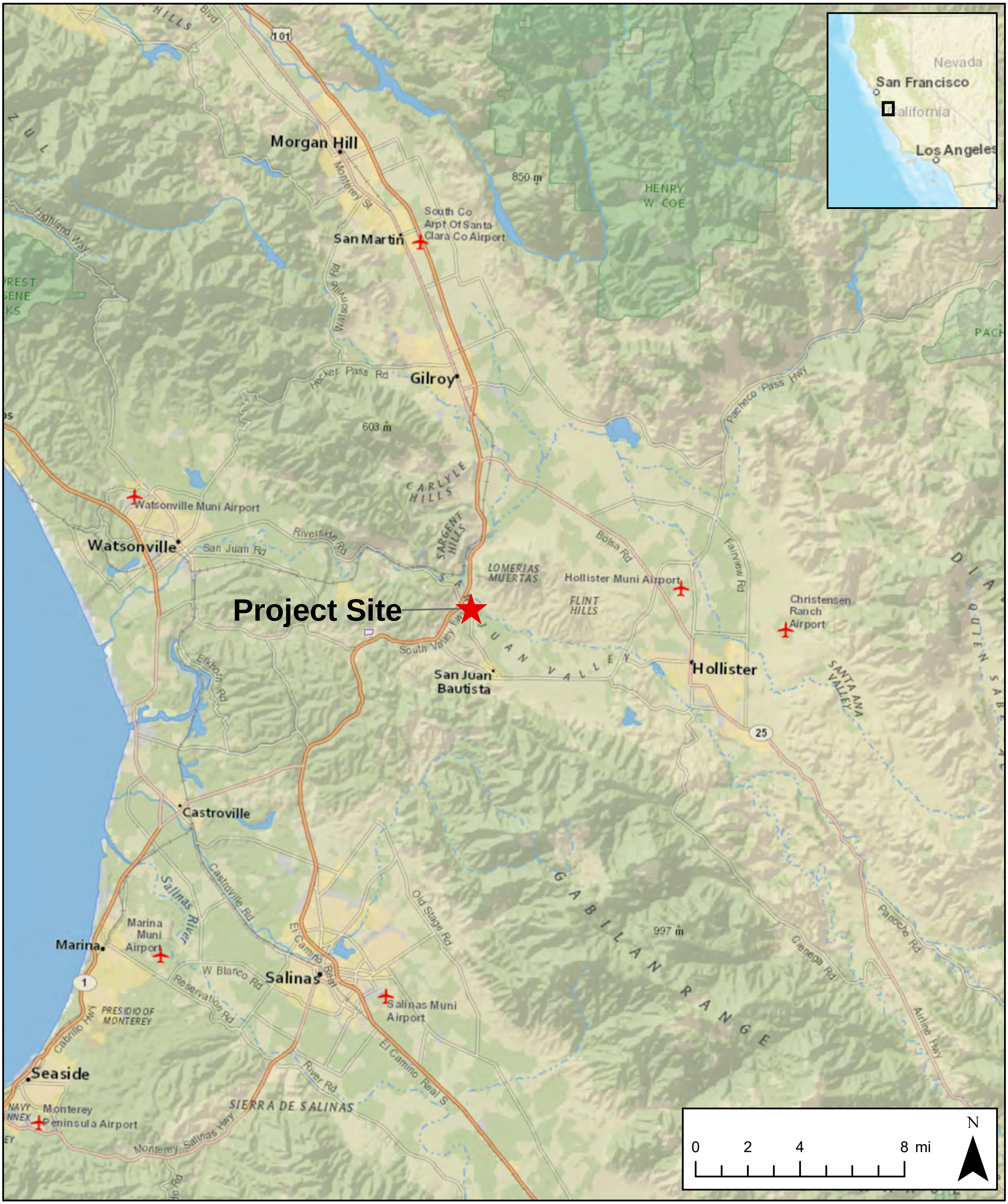
The San Benito County – Resource Management Agency ("County - RMA") is acting as the Lead Agency pursuant to CEQA Guidelines §15050(a). The County - RMA brings together a range of services to promote reasonable and safe development; plan for the future needs of the County; manage infrastructure and County facilities; and protect natural resources. As the Lead Agency, the County - RMA prepared this IS/MND pursuant to CEQA Guidelines §15063, §15070, and §15152. This IS/MND will be circulated for agency and public review during a 30-day public review period pursuant to CEQA Guidelines §15073. Comments received by the County – RMA on this IS/MND will be reviewed and considered as part of the deliberative process in accordance with CEQA Guidelines §15074.

The following section is consistent with the requirements of CEQA Guidelines §15124 to the extent that it is applicable to the project. This section contains a detailed description of the project location, historical background and context, project components and relevant project characteristics, project goals and objectives, and applicable regulatory requirements.

1.2 PROJECT LOCATION

The proposed project, described below, is located near the interchange of San Juan Highway and Chittenden Road in an unincorporated area of San Benito County, California near the City of San Juan Bautista (see **Figures 1. Regional Project Map** and **Figure 2. Project Location**). The project site encompasses 104 acres of agricultural property on assessor's parcel number ("APN") 012-030-045. Anzar High School is located immediately to the northeast of the parcel.

The site is currently undeveloped, as the barn and outbuilding previously located onsite were removed in 2018 (see **Figure 3. Site Photos**).



Title:

Regional Project Map

Date: 12/4/2020

Scale: 1 inch = 5 miles

Project: 2020-42

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Figure 1

D:\GIS\GIS_Projects\2020-42 Kawahara Nursery\Final\Regional Project.mxd

D:\GIS\GIS_Projects\2020-42 Kawahara Nursery\Final\Project Location.mxd

Title:
Project Location

Date: 12/4/2020
Scale: 1 inch = 0.13 miles
Project: 2020-42

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Figure
2

Overview of the project site, looking northwest.

School boundary fence bordering project site, looking west.

View of San Juan Creek bisecting the western portion of the project site, looking south

Overview of the project site, looking northeast.

Associates, Inc., December 2020

Title: **Site Photos**

Date 1/14/2021

Scale N/A

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Figure 3

Regional access to the project site is provided from U.S. Route 101 and State Route ("SR") 129. Access to the project site would be via San Juan Highway. The property is bordered by San Juan Highway to the east, Anzar High School on the northeast, U.S. Route 101 and McAlpine Lake and Park to the west, Chittenden Road to the north, and Anzar Road and agricultural land uses on the south. Surrounding land uses include primarily agricultural uses with minimal residential development and industrial uses in the vicinity. The project site currently consists of row crops that are planted and harvested three to four times per year.

1.3 EXISTING GENERAL PLAN LAND USE DESIGNATION

The 2035 San Benito County General plan designates the project area as Agricultural Productive ("AP"), as shown in **Figure 4. Land Use Designation**. This land use designation in the 2035 General Plan applies to areas that are characterized by agriculturally productive lands of various types, including crop land, vineyards, and grazing lands. The purpose of this land use designation is to maintain the productivity of agricultural land, especially prime farmland, in the County. Other surrounding 2035 General Plan land use designations include Agricultural Rangeland to the northeast and Industrial to the north.

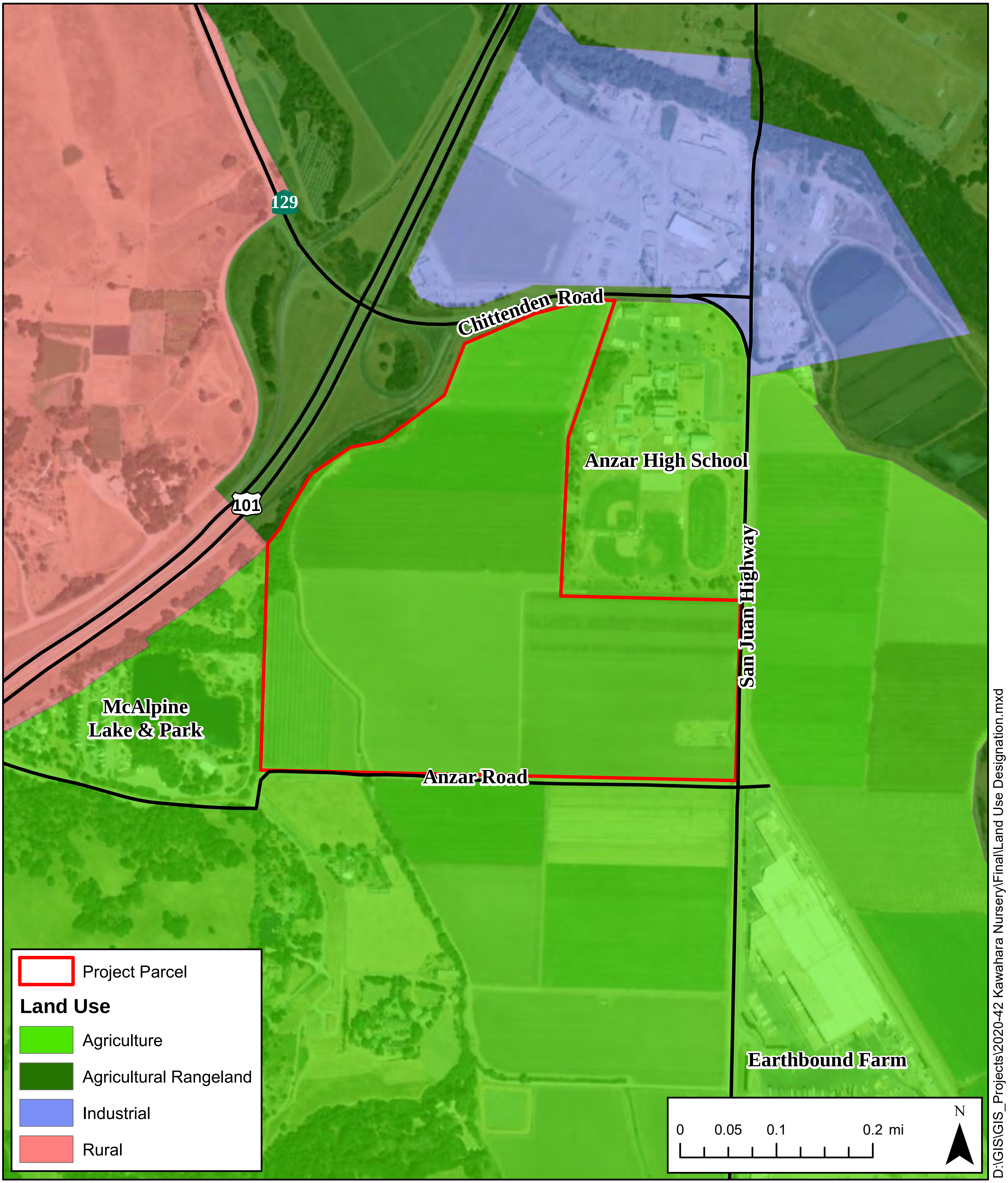
1.4 EXISTING ZONING

The project site is within the AP Zoning District. The purpose of the AP Zoning District is to provide for areas within the County to be used for agricultural production of any types set forth in the 2035 General Plan. The existing zoning districts for the site and surrounding area are shown in **Figure 5. Zoning Map**. Accessory uses buildings for agricultural use, such as barns and other farm outbuildings, are considered allowed uses within the AP Zoning District. Commercial greenhouses are conditional uses within the AP Zoning District; these conditional uses are allowable when a use permit is first obtained. The proposed project includes agricultural land, commercial greenhouses, accessory buildings, and access roads consistent with allowable and condition uses allowed within the AP Zoning District of the San Benito County Zoning Ordinance. Additional detail on allowed and conditional uses within the AP Zoning District can be found in the Land Use Section of this IS/MND.[1]

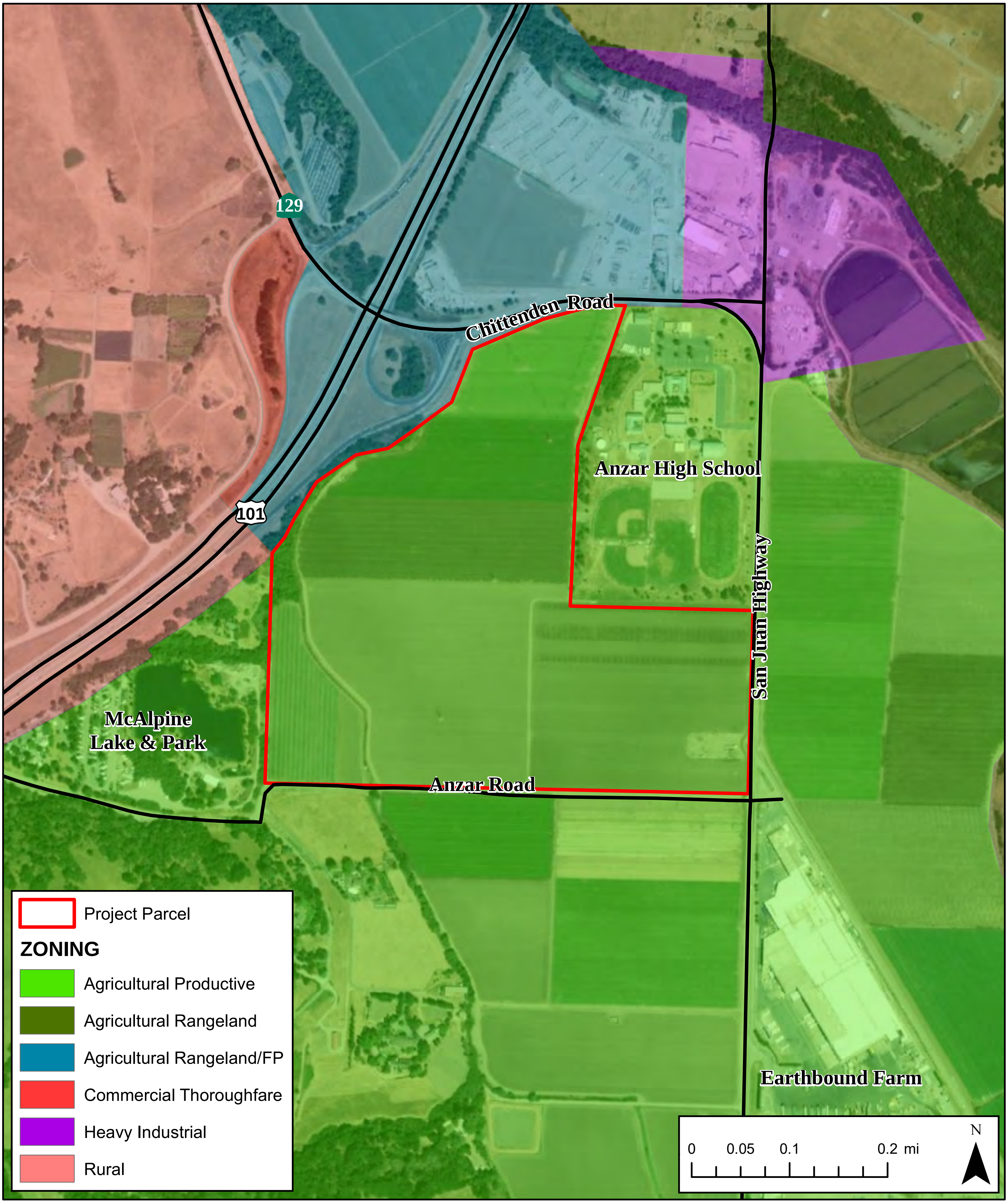
1.5 PROJECT BACKGROUND

Kawahara Nurseries ("Applicant"), the project applicant, is proposing to relocate its nursery operations from Morgan Hill to the proposed project location. The proposed project has been downsized from the project that was previously proposed by the applicant. In addition, the original project included nine (9) greenhouses, one (1) 5,000 sq. ft. office, and one (1) 63,000 sq. ft. production building, which would have a total area of 542,000 sq. ft. Since that time, the applicant has re-evaluated their present operation in Morgan Hill and has reduced the scope of the proposed project.

[1] See the San Benito County Code of Ordinances, Title 25.07, Article II for more information.



Title: Land Use Designation Map	Date: 12/4/2020 Scale: 1 inch = 0.13 miles Project: 2020-42	Monterey | San Jose **Denise Duffy and Associates, Inc.** Environmental Consultants Resource Planners 947 Cass Street, Suite 5 Monterey, CA 93940 (831) 373-4341	Figure 4



D:\GIS\GIS_Projects\2020-42 Kawahara Nursery\Final\Zoning Map.mxd

Title:
Zoning Map

Date: 12/4/2020
Scale: 1 inch = 0.13 miles
Project: 2020-42

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Figure 5

1.6 PROJECT DESCRIPTION

The proposed project consists of an application for a Conditional Use Permit ("CUP") (County Planning File #PLN190056) and construction of an agricultural facility for Kawahara Nurseries, on a 104-acre proposed project site.

Full build out of the project consists of construction of an agricultural facility, which would involve the construction of one (1) 18,000 sq. ft. covered shipping/staging area, one (1) 36,000 sq. ft. shipping and handling greenhouse, one (1) 18,000 sq. ft. production greenhouse, and a total of 518,400 sq. ft. of growing block greenhouses in three main blocks (see **Figure 6. Site Plans**). The block greenhouses will include a gravel bottom and the shipping and handling greenhouse will include a concrete slab. The greenhouses will be 15 feet tall. (see **Figure 7. Building Footprints & Elevations**). Nine (9) outdoor field areas will surround the proposed greenhouses and other buildings. The project site will be graded to drain toward San Juan Creek, with a stormwater channel running parallel to the creek to intercept, detain, and infiltrate runoff water.

In addition to the facilities described above, the proposed project includes several site improvements. These improvements would include a dedicated center turn lane at the project entrance. The new turn lane would be constructed in compliance with California Department of Transportation ("Caltrans") highway design standards. A 24-foot-wide paved driveway from the project entrance to the proposed loading dock, parking areas, and shipping buildings is also proposed. The proposed project will employee 10-15 people.

The following discussion provides a more detailed description of key elements of the proposed project, including grading requirements, construction activities, water, wastewater, drainage, electrical & gas utilities, operation, and schedule.

GRADING

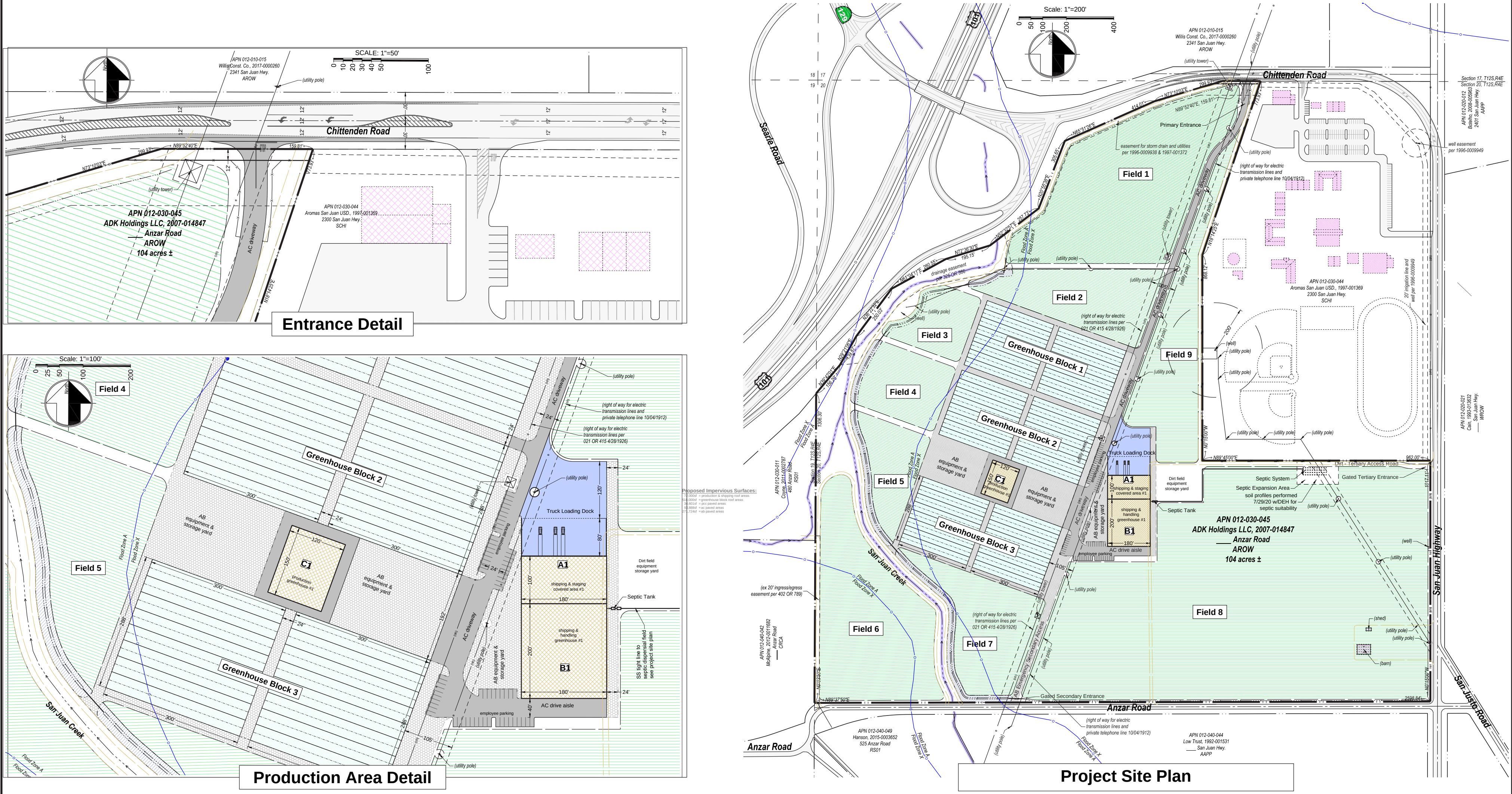
The project site is generally flat and consists of existing agricultural uses. The proposed project includes rough grading and general site preparation of 89.11 acres. During the rough grading phase, areas of higher elevation would be excavated to a maximum depth of 2.52 feet below the surface and areas of lower elevation would be supplemented to a maximum height of 4.33 feet above the surface, resulting in a roughly level surface throughout the proposed project site. Grading activities are anticipated to be completed within 60 days. The proposed project involves approximately 74,457 cubic yards ("CY") of cut and 63,288 CY of fill and would not require any import or export of cut and fill materials, as the site grading would balance the existing site materials. These figures assume a 15 percent soil shrinkage factor, which accounts for the imbalance in the cut and fill values. No trees or vegetation are proposed for removal.

WATER SUPPLY

Water for the proposed project would come from an existing well onsite. In addition, the project site is within the service area of the San Benito County Water District ("SBCWD"). The current agricultural use, consisting of row crops, uses a maximum of 625,000 gallons of water per day and does not utilize water from SBCWD however, this source would be available to the proposed project as a supplement for irrigation and fire protection. It is anticipated that the proposed project will use approximately 507,305 gallons of water per day, this estimate includes 10,000 gallons per day for use in the greenhouses and 497,304 gallons per day to be used to irrigate the surrounding row crops (MH Engineering Co., 2021).

WASTEWATER

A septic system is proposed to serve the employee bathrooms in the shipping and handling greenhouse building. The septic system would be designed and constructed in accordance with County Environmental Health requirements.



Source: MH Engineering Co., September 2020

Title: **Site Plans**

Date	1/14/2021
Scale	N/A
Project	2020-42

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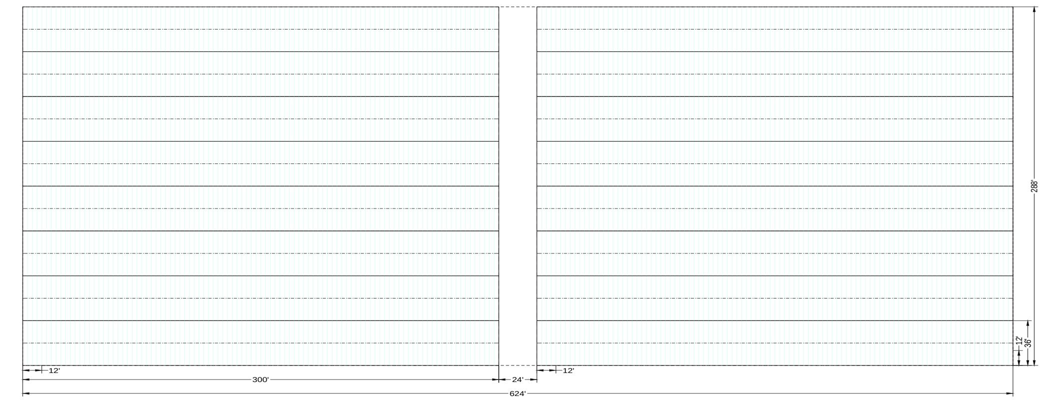
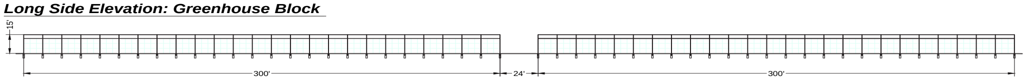
Figure
6

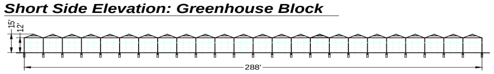
Floor Plan: Greenhouse Block



Long Side Elevation: Greenhouse Block

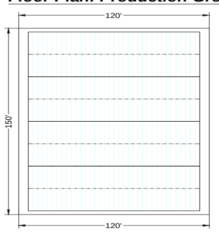


Short Side Elevation: Greenhouse Block

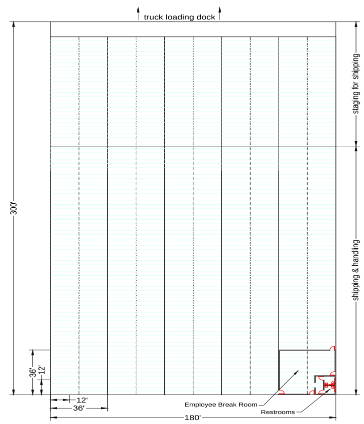


Perspective View: Greenhouse type buildings

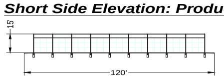
Floor Plan: Production Greenhouse



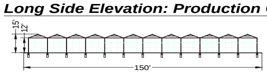
Floor Plan: Shipping, Handling, & Staging Greenhouse



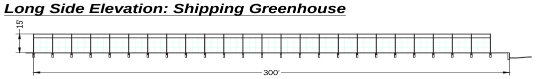
Short Side Elevation: Production Greenhouse



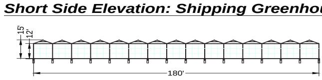
Long Side Elevation: Production Greenhouse



Long Side Elevation: Shipping Greenhouse



Short Side Elevation: Shipping Greenhouse



Greenhouse Interior

Shipping & Handling Greenhouse Interior

Typical Field Growing Area

Shipping Doors to Truck Loading

Greenhouse Interior

Truck Loading Dock & PCC Staging Area

Source: MH Engineering Co., September 2020

Title: **Building Footprints & Elevations**

Date 1/14/2021
Scale N/A
Project 2020-42

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Figure 7

DRAINAGE

The proposed project would introduce a total of 718,489 sq. ft. of impervious surface. The entire developed site would be graded to drain toward San Juan Creek, which is consistent with the natural drainage pattern of the site. Runoff would be directed to a storm water mitigation channel which would run parallel to San Juan Creek. The storm water mitigation channel would be vegetated in enable a low level of filtration and would discharge to the creek only during periods of extended wet weather (see **Figure 8. Grading and Drainage Plan**). Runoff would be passively treated as it progresses from the impervious areas over the fields and in the ditches along the roads as it will run through vegetation, be absorbed into the ground, and evaporate along the entire course. The ditches and stormwater mitigation channel would meet the retention and treatment requirements of Central Coast Region Water Quality Control Board ("CCRWQCB") 2013-0032 and County Ordinance Chapter 19.17 to effectively limit discharge from the site to San Juan Creek.

The project site lies mostly within Federal Emergency Management Agency ("FEMA") Flood Zone X, and the area along San Juan Creek is within FEMA Flood Zone A (see **Figure 9. FEMA Flood Zone Map).** FEMA defines Zone X as areas determined to be outside the 0.2% annual-chance flood event and Zone A as areas subject to inundation by a 1% annual-chance flood event (or 100-year flood).

UTILITIES

Electricity and natural gas are provided to the property by the Pacific Gas and Electric Company ("PG&E"). Telephone services would be provided by AT&T.

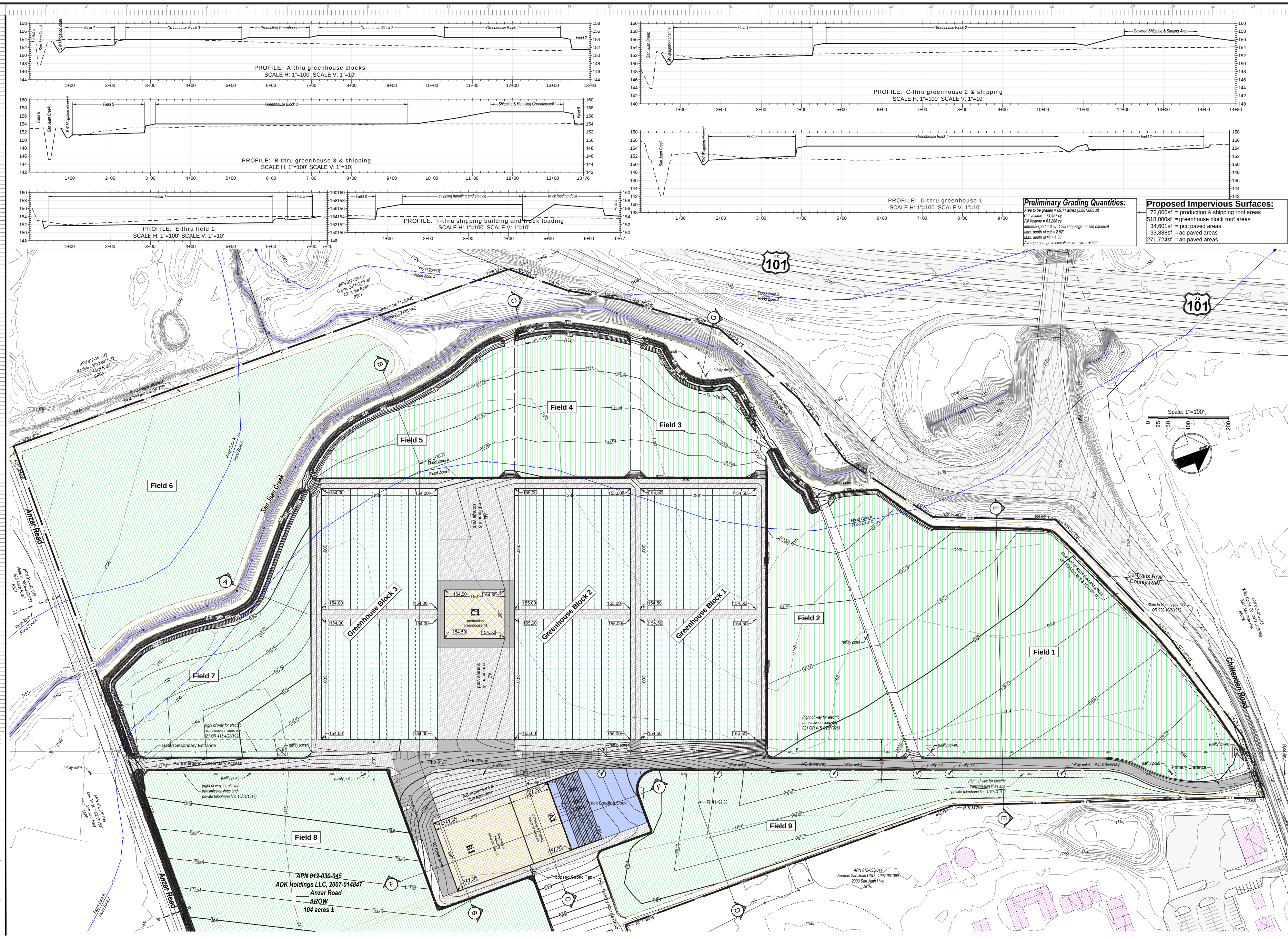
DRIVEWAYS AND ONSITE CIRCULATION

Regional access to the project site is provided from U.S. Route 101 and Highway 156. Access to the project site would be via San Juan Highway. At full buildout, the agricultural operation is expected to employ 10 to 15 people during the weekdays and one to two people on the weekends. According to the project applicant, operations would be from 7:00 AM – 4:00 PM, with truck pickup and delivery extending to 10:00 PM. The project is estimated to generate a net 62 daily trips, with 12 trips (7 in, 5 out) during the AM peak hour and 21 trips (5 in, 16 out) during the PM peak hour (Higgins, 2020).

Aggregate Base will be utilized for the equipment storage yards, paths around the greenhouses, and for the emergency secondary access, which will provide safe year-round access. This secondary emergency access would be closed with a bollard and chain to minimize use. Access to Anzar Road would have a knock box lock to ensure access as appropriate for emergency vehicles only.

OPERATION

Daily operations of the project would include growing plants in the greenhouse blocks and in the fields/ plantings. Additional operations would include research and testing in the production greenhouse/packaging and processing finished products within the shipping and handling greenhouse/staging of product for shipping in the shipping and staging covered area/loading of trucks at the truck loading dock. The nursery will operate all months of the year with the hours of operation from 7:00 AM to 4:00 PM, truck pick-up and delivery will be between 4:00 AM and 4:00 PM. The project is estimated to generate a net 62 daily trips, with 12 trips (7 in, 5 out) during the AM peak hour and 21 trips (5 in, 16 out) during the PM peak hour. At full buildout, the nursery operation is expected to employ 10 to 15 people during the weekdays. Weekend operations would be limited to one or two employees watering and caring for plants.



Source: MH Engineering Co., September 2020

Title:
Grading and Drainage Plan

Date	1/14/2021
Scale	1"=100'
Project	2020-42

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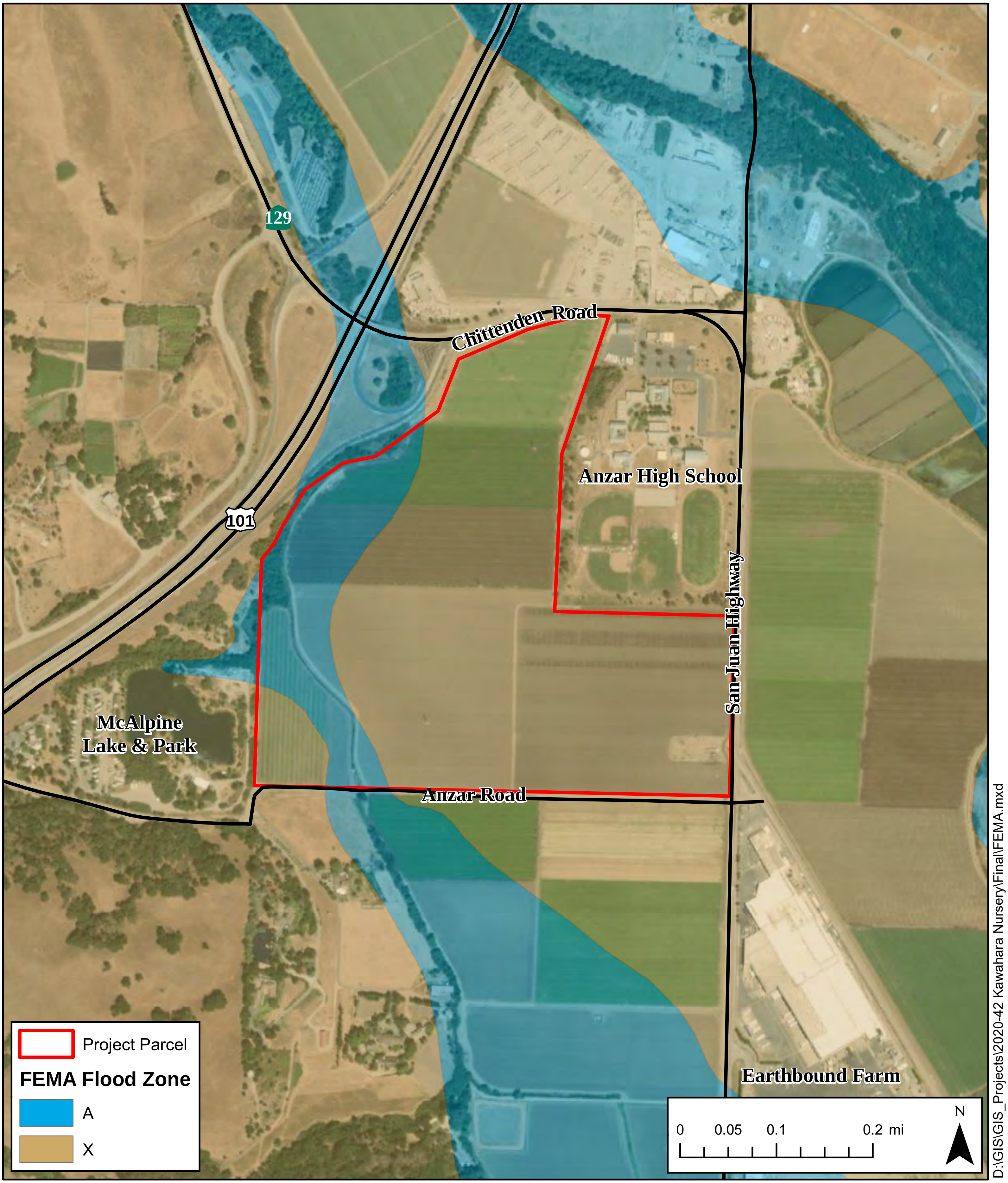
Figure
8



Title:

FEMA Flood Zone Map

Date: 1/14/2021

Scale: 1 inch = 0.13 miles

Project: 2020-42

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Figure 9

POLICE AND FIRE PROTECTION

The proposed project area is served by the San Benito County Sheriff 's Office and the San Benito County Fire District. The proposed buildings are required to include a commercial fire sprinkler system and conform to all fire code requirements.

SCHEDULE

Construction is anticipated to occur over the course of six (6) months. Construction is expected to begin in April 2022, however, the exact date would be contingent upon the CUP approval date. Construction activities would include rough grading, installment of underground utilities, paving, and erection of greenhouse structures. The anticipated schedule of these construction activities is as follows:

1. Rough grading: April 2022-June 2022 (60 days)
2. Complete grading, paving, and baserock: June 2022-July 2022 (30 days)
3. Erection of greenhouse structures: July 2022-September 2022 (60 days)

Underground utilities may occur concurrent with the steps 1-3, as there are no significant utility runs under proposed pavements.

1.7 REQUIRED PERMITS

This IS/MND is an informational document for both agency decision-makers and the public. County – RMA is the Lead Agency responsible for certification of this IS/MND. It is anticipated that the proposed project would require the following permits and approvals.[2]

FEDERAL AGENCIES

- U.S. Army Corps of Engineers – Section 404 Permit*

REGIONAL AND STATE AGENCIES

- California Department of Fish and Wildlife – Lake and Streambed Alternation Agreement*
- Regional Water Resources Control Board – Construction Stormwater General Permit
- Regional Water Resources Control Board – Section 401 Permit*

LOCAL AGENCIES

- San Benito County Resource Management Agency – Conditional Use Permit
- San Benito County Public Works – Encroachment Permit
- San Benito County Department of Environmental Health – Well Permit and Septic Permit

* These permits may be required if the project does not implement Mitigation Measures BIO-1, BIO-2, BIO-3, BIO-4, and BIO-5. See **Section 4.4 Biological Resources** for more information.

[2] This list is not considered exhaustive and additional agencies and/or jurisdictions may have permitting authority.

1.8 PROJECT GOALS AND OBJECTIVES

The primary goal of the proposed project is to construct an agricultural facility. The project's key objectives are as follows:

- Attain approval of a Conditional Use Permit (County Planning File #PLN190056) for Kawahara Nurseries.
- Maintain the productivity of this piece of agricultural land, which is designated Agricultural Productive in the 2035 General Plan.
- Relocate and reduce nursery operations from Morgan Hill to the proposed project location.

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CHAPTER 2. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors identified below are discussed within **Chapter 4. Initial Study Environmental Checklist** Sources used for analysis of environmental effects are cited in parenthesis after each discussion and are listed in **Chapter 5. References.**

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

ENVIRONMENTAL FACTORS NOT AFFECTED

As part of the scoping and environmental analysis conducted for the project, the following environmental resources were considered but no potential adverse impacts to these resources were identified. Consequently, there is no further discussion regarding these resources in this document.

Mineral Resources: The site has not been mapped for mineral resources and current agricultural uses at and around the project site do not support mineral extraction operations. Furthermore, the project site and adjoining lands have been designated by the County 2035 General Plan for agricultural use and would not therefore involve mineral extraction operations. There are no locally important mineral resource recovery sites described in the County 2035 General Plan. The 2035 General Plan does not include the project site as a zone for mineral extraction. As a result, there would be no impact to mineral resources. (1, 2, 3, 4)

Population/Housing: The proposed project would not induce population growth in the area as it consists of an agricultural facility with no residential use proposed. In addition, the proposed project would employee between 10 and 15 workers. Therefore, the proposed project is consistent with the historical use of the property and the surrounding land use. The proposed project would create limited job opportunities. In addition, the proposed project does not propose any off-site improvements that would result in population growth or displace existing housing. Thus, there would be no impact to population/housing. (1, 2)

Recreation: The project would not affect park services since the proposed project would not increase population or otherwise affect these facilities. The proposed project is an agricultural facility and will not induce population growth such that new recreational facilities are required. As a result, the proposed project would not: 1) 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, nor would it, 2) require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. There would be no impact to recreational resources. (1, 2)

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CHAPTER 3. DETERMINATION

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
Arielle Goodspeed, County of San Benito

____

Printed Name

This document has been prepared by Denise Duffy & Associates, Inc. under the direction of the San Benito County – Resource Management Agency.

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CHAPTER 4. INITIAL STUDY ENVIRONMENTAL CHECKLIST

The following chapter assesses the environmental consequences associated with the proposed project. Mitigation measures, where appropriate, are identified to address potential impacts.

EVALUATION OF ENVIRONMENTAL IMPACTS

1. 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 will not expose sensitive receptors to pollutants, based on project-specific screening analysis).
2. All answers must take into account the whole action involved, including offsite as well as onsite, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. 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.
4. "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 a less than significant level.
5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration (Section 15063(c)(3)(D)). In this case, a brief discussion should identify the following:

   a) Earlier Analysis 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.

6. Lead agencies are encouraged to incorporate information sources for potential impacts (e.g., general plans, zoning ordinances) into the checklist references. Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8. 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.
9. 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 significance.

4.1 AESTHETICS

4.1.1 Environmental Setting

The 2035 San Benito County General Plan Update Final Environmental Impact Report ("FEIR") notes that the County's most striking features are the Diablo and Gabilan Mountain Ranges and the San Benito Valley between them. The proposed project is located at the mouth of the San Benito Valley. There are no State designated scenic highways located in the County. However, three highways are County designated scenic highways, including U.S. Route 101, located directly west of the project site; SR 146, located over 78 miles southeast of the project site; and SR 129, located approximately one mile northwest of the project site. SR 25 from SR 198 to Hollister, located approximately seven (7) miles north of the project site, is eligible for designation as a State Scenic Route, but is not a County designated scenic roadway. Additionally, SR 156, located approximately three (3) miles south of the project site, is eligible for designation as a State Scenic Route, but it is not a County designated scenic roadway.

According to the 2035 San Benito County General Plan FEIR, important vistas within San Benito County that define its visual character include agricultural croplands, rangelands, rolling hills, open spaces, historic towns and mining sites, and views of the Diablo and Gabilan ranges to the east and west of the County. These agricultural and rangeland areas constitute more than 75 percent of the County's total land area. Also, the County's topography includes valleys and rolling hills, particularly in the northern portion of the County near the cities of Hollister and San Juan Bautista, where most of the County's population dwells.

The project site is primarily comprised of active agriculture (please refer to **Section 4.4 Biological Resources**). The aesthetic quality of the site has previously been altered by the current use of the site for planting row crops, which are harvested three to four times a year (see **Figure 3. Site Photos**). A barn and outbuilding were previously located on the project site and were demolished in 2018. The proposed use of the site will require development of new buildings, greenhouses, planting areas, an access road, and landscaping.

Construction of the proposed project would not require any nighttime construction, and, therefore, construction activities would not result in any new nighttime lighting or glare. New exterior lighting would be required for operation of the proposed project; however, proposed exterior lighting would be downward facing and consistent with the County lighting ordinances. In addition to agriculture, there are light industrial and rural residential land uses within the vicinity of the site, both of which produce noticeable light sources. Section 19.31.005 of the San Benito County Code establishes three lighting zones, with Zone I having the strictest regulations and Zone III imposing the least restrictive. The project site is located in Zone II. General requirements are applicable to all zones, under Section 19.31.006; the special requirements applicable to Zone II set forth in Section 19.31.009 are listed below.

a) (1) Total outdoor light output (excluding streetlights used for illumination of county roadways or private roadways related to any development project in Zone II) shall not exceed 50,000 initial raw lamp lumens per net acre, averaged over the entire project.

   (2) Furthermore, no more than 5,500 initial raw lamp lumens per net acre may be accounted for by lamps in unshielded fixtures permitted in Table 19.31.006(1) of this chapter.

b) Outdoor recreational facilities in Zone II shall not be illuminated after 11:00 p.m., except to conclude a scheduled recreational or sporting event in progress prior to 11:00 p.m.

c) Outdoor internally illuminated advertising signs shall be constructed with either an opaque background and translucent letters and symbols, or with a colored (not white, cream, off-white or yellow) background and lighter letters and symbols. Lamps used for internal illumination of the signs shall not be included in the lumens per net acre limit set in this division. The signs shall be turned off at 11:00 p.m. or when the business closes, whichever is later.

d) Class 3 lighting must be extinguished at 11:00 PM or when the business closes, whichever is later, except that low-wattage holiday decorations may remain on all night form November 15 to January 15.

4.1.2 Environmental Impacts

Environmental Impacts	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
AESTHETICS. Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

4.1.3 Explanation

a) **Less than Significant Impact.** The project site is within a non-urbanized area within the proximity of two County designated scenic roadways. U.S. Route 101 borders the western boundary of the project site, and SR 129 is located approximately one mile from the project site. The proposed project consists of the construction of an agricultural facility. The San Benito County 2035 General Plan recognizes agricultural croplands and rangelands as important vistas that are essential to the County's aesthetic character. The San Benito Zoning Ordinance for Agricultural Productive Districts sets a building height limit of 35 feet maximum. Buildings associated with the project would be a maximum of 15 feet in height.

A scenic vista is generally characterized as a viewpoint that provides expansive views of a highly valued landscape for the benefit of the general public. The San Benito County General Plan does not identify the project site as having any scenic vistas. The project site and immediate vicinity, as with most of the County as a whole, has a primarily rural character dominated by agricultural lands and an upland grazing area. Immediate views in the project area are limited and include primarily agricultural uses from views along U.S. Route 101 and San Juan Highway. A majority of the project site is not visible from U.S. Route 101, as there is thick vegetation situated between the site and the freeway. Additionally, the project site is at a lower elevation than the freeway, further reducing visibility. Those traveling on San Juan Highway would have views of the project site, however, these views would be predominantly of the proposed greenhouses, which would be approximately 0.25 mile west of the highway, and Anzar High School. The duration of views would be limited due to the length of property bordering San Juan Highway, as well as average speed traveling along the Highway, further reducing views by motorists. The project would not obstruct any distant views of the Diablo and Gabilan ranges. This is considered a less than significant impact. (1, 2, 3, 4)

b) **Less than Significant Impact.** The project site is located along a County designated scenic roadway; there are no designated State Scenic Roadways within the project site vicinity. The proposed project does not include uses immediately adjacent to the U.S. Route 101. Due to the absence of a State designated scenic highway, the proposed project would not substantially damage scenic resources, resulting in less than significant impact. (1, 2, 3)

c) **Less than Significant Impact.** The proposed project is located within a non-urbanized area and would involve agricultural uses within and adjacent to parcels zoned for agriculture. Consistent with General Plan Policy NCR-8.11, the proposed project would appear similar to existing agricultural uses in the vicinity. Since the proposed project would be consistent with the County zoning and regulations governing land use and scenic quality, the proposed project would result in a less than significant impact to the visual character and quality of public views of the project site. (1, 2, 3)

d) **Less than Significant Impact.** Construction would be conducted between the hours of 7:00 AM and 6:00 PM, Monday through Friday. Nighttime construction is not proposed; therefore, the proposed project would not create substantial light or glare during the construction phase. Operation of the proposed project would be conducted between the hours of 7:00 AM and 4:00 PM Monday through Friday. Lighting associated with the proposed project would primarily consist of street lighting and exterior lighting for the greenhouses. Nighttime lighting would be minimal and would only include that which is necessary for safety and vehicular movement and security. The introduction of new lighting into a minimally lit area would increase the extent of lighting as compared to existing conditions. As a result, there would be a corresponding increase in the extent of potential light glow in the nighttime sky. However, the proposed project would be required to conform with applicable provisions of the County "Dark Skies" Ordinance (Chapter 19.31) which requires the use of outdoor lighting systems to incorporate practices designed to reduce light pollution and glare, and to protect the nighttime visual environment by regulating outdoor lighting that interferes with astronomical observations and enjoyment of the night sky. The new sources of light would not create substantial light or glare that would affect day or nighttime views, if the project site is compliant with general requirements set forth in Section 19.31.008 of the San Benito County Code, therefore, the project would have a less than significant impact on day or nighttime views in the area. As a result, potential impacts from lighting and glare would be less than significant. (1, 2, 3, 4)

4.2 AGRICULTURAL AND FOREST RESOURCES

4.2.1 Environmental Setting

The California Department of Conservation Farmland Mapping and Monitoring Program ("FMMP"), established by the State Legislature in 1982, assesses the location, quality, and quantity of agricultural lands and conversion of these lands over time. The FMMP is a non-regulatory program contained in Section 612 of the Public Resources Code. The FMMP contains five farmland categories (Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, and Grazing) with the purpose of providing consistent and impartial analysis of agricultural land use and land use changes throughout California, as called for under Section 65570(b) of the Government Code:

- Prime Farmland (P) comprises the best combination of physical and chemical features able to sustain long-term agricultural production. Irrigated agricultural production is a necessary land use four years prior to the mapping date to qualify as Prime Farmland. The land must be able to store moisture and produce high yields.
- Farmland of Statewide Importance (S) possesses similar characteristics to Prime Farmland with minor shortcomings, such as less ability to hold and store moisture and more pronounced slopes.
- Unique Farmland (U) has a production history of propagating crops with high-economic value.
- Farmland of Local Importance (L) is important to the local agricultural economy. Local advisory committees and a county specific Board of Supervisors determine this status.
- Grazing Land (G) is suitable for browsing or grazing of livestock.

The project site consists of land designated as Prime Farmland in the FMMP, with some of the land on the west side designated as Other Land, however this portion of land is not proposed for development.

In addition, the County's "Right to Farm" ordinances and General Plan Policy LU-3.9: Right to Farm and Ranch, are applicable and encourage the protection of agricultural lands and operations by including provisions such as disclosure requirements and buffers. In so doing, these policies help to minimize land use conflicts in the County by supporting the rights of farming operations, even when established urban uses in the area may result in complaints against agricultural practices.

The Williamson Act, codified in 1965 as the California Land Conservation Act, allows local governments to enter into contracts with private landowners, offering tax incentives in exchange for an agreement that the land will remain as agricultural or related open space use for a period of 10 years. The project site is not under a Williamson Act contract.

According to the California Public Resources Code §4526, the California Board of Forestry and Fire Protection defines "Timberland" as land not owned by the federal government, nor designated as experimental forest land, which is capable and available for growing any commercial tree species. The Board of Forestry and Fire Protection defines commercial trees on a district basis following consultation with district committees and other necessary parties. According to the FEIR prepared for the 2035 San Benito County General Plan, there are no forest lands, timberlands, nor timberland production areas, as zoned by applicable state and local regulations, located within the County.

4.2.2 Environmental Impacts

Environmental Impacts	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
AGRICULTURAL AND FOREST RESOURCES. In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
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?	☐	☐	☒	☐
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
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 Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest uses?	☐	☐	☐	☒
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?	☐	☐	☒	☐

4.2.3 Explanation

a) **Less than Significant Impact.** As noted above, the FMMP of the California Department of Conservation classifies the majority of the project site as Prime Farmland. The proposed development of a plant nursery with associated planting areas, greenhouses and related structures would continue agricultural production on major portions of the site. Since the project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to a non-agricultural use; this is considered a less than significant impact. (1, 2, 3, 6)

b) **No Impact.** As noted above, the project site is not within a Williamson Act contract. There is no impact. (1, 2, 3, 5)

c-d) **No Impact.** As noted above, there are no forest land, timberland, or timberland production areas, as zoned by applicable state and local laws and regulations located within the County, or otherwise present on-site. There is no impact. (1, 2, 3)

e) **Less than Significant Impact.** The proposed project constitutes an agricultural use and would not convert Farmland or involve other changes in the existing environment which would convert Farmland to a non-agricultural use. There is no forest land in the County. This is considered a less than significant impact. (1, 2, 3, 4, 5)

4.3 AIR QUALITY

4.3.1 Environmental Setting

An Air Quality Memorandum was prepared for the proposed project, which is contained in **Appendix A** of this document.

The project lies within the North Central Coast Air Basin ("NCCAB"). The Monterey Bay Air Resources District ("MBARD") is the local agency authorized to regulate stationary air quality sources in the Monterey Bay area. The Federal Clean Air Act and the California Clean Air Act mandate the control and reduction of specific air pollutants. Under these Acts, the U.S. Environmental Protection Agency ("EPA") and the California Air Resources Board have established ambient air quality standards for specific "criteria" pollutants, designed to protect public health and welfare. Primary criteria pollutants include carbon monoxide ("CO"), reactive organic gases ("ROG"), nitrogen oxides ("NO_X"), particulate matter ("PM_{10}"), sulfur dioxide ("SO_2"), and lead ("Pb"). Secondary criteria pollutants include ozone ('O_3"), and fine particulate matter ("$PM_{2.5}$").

Common sources of odors and odor complaints include wastewater treatment plants, transfer stations, coffee roasters, painting/coating operations, and landfills. The project is located in a rural, agricultural area and would not generate significant odors.

The EPA administers National Ambient Air Quality Standards ("NAAQS") under the Federal Clean Air Act. The EPA sets the NAAQS and determines if areas meet those standards. Violations of ambient air quality standards are based on air pollutant monitoring data and evaluated for each air pollutant. Areas that do not violate ambient air quality standards are considered to have attained the standard. The NCCAB is in attainment for all NAAQS and for all California Ambient Air Quality Standards ("CAAQS") except O_3 and PM_{10}. The primary sources of O_3 and PM_{10} in the NCCAB are from automobile engine combustion. The 2005 Particulate Matter Plan, the 2007 Federal Maintenance Plan, and the 2012-2015 Air Quality Management Plan ("AQMP"), address exceedance CAAQS for O_3 and PM_{10}. NCCAB Attainment Status of National and California Ambient Air Quality Standards can be found in **Table 1. North Central Coast Air Basin Attainment Status** below.

Table 1 North Central Coast Air Basin Attainment Status		
Pollutant	**State Designation[1]**	**National Designation[2]**
Ozone (O_3)	Nonattainment - Transitional	Attainment
Inhalable Particulates (PM_{10})	Nonattainment	Attainment
Fine Particulates ($PM_{2.5}$)	Attainment	Attainment
Carbon Monoxide (CO)	Unclassified	Attainment
Nitrogen Dioxide (NO_2)	Attainment	Attainment
Sulfur Dioxide (SO_2)	Attainment	Attainment
Lead	Attainment	Attainment

Notes:
1) The State Designations apply to the entire NCCAB and are based on air quality data from 2017. Source: Monterey Bay Air Resources District Air Quality Management Plan 2012-2015; https://www.mbard.org/files/6632732f5/2012-2015-AQMP_FINAL.pdf
2) The National Designations apply to San Benito County only and are based on air quality data from as recent as January 31, 2021. Source: California Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants; https://www3.epa.gov/airquality/greenbook/anayo_ca.html

Plans to attain these standards already accommodate the future growth projections available at the time these plans were prepared. Any development project capable of generating air pollutant emissions exceeding regionally established criteria is considered significant for purposes of CEQA analysis, whether or not such emissions have been accounted for in regional air planning. Any project that would directly cause or substantially contribute to a localized violation of an air quality standard would generate substantial air pollution impacts. The same is true for a project that generates a substantial increase in health risks from toxic air contaminants or introduces future occupants to a site exposed to substantial health risks associated with such contaminants.

Sensitive receptors are more susceptible to the effects of air pollution than the general population. Land uses that are considered sensitive receptors include residences, schools, and health care facilities. Sensitive receptors in the vicinity of the project consist of Anzar High School, located immediately northeast of the site, and residences located approximately 875 feet west from the project site on the opposite bank of San Juan Creek and U.S. Route 101.

4.3.2 Environmental Impacts

Environmental Impacts	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
AIR QUALITY. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

4.3.3 Explanation

a) **Less Than Significant Impact**. The most recently adopted air quality plan in the NCCAB region is the 2015 AQMP. The control measures outlined in the 2015 AQMP focus on MBARD continuing to use grant funding to reduce both VOC and NO_X emissions, primarily from mobile sources. According to MBARD, mobile source emission reductions have been the most effective in achieving progress toward attainment of the state one-hour and eight-hour ozone standards (MBARD, 2017). Furthermore, the 2015 AQMP provides Emission Reduction Strategies in Section 9.1. These include land use "planning efforts such as the Sustainable Communities and Climate Protection Act of 2008 (Sustainable Communities Act, SB 375) which supports coordinated transportation and land use planning with the goal of developing more sustainable communities" (MBARD, 2017).

A significant impact to air quality would occur if buildout of the proposed project would conflict with or obstruct implementation of the 2015 AQMP. Although any development project would represent an incremental negative impact on air quality in the NCCAB due to increased air pollutant emissions, the primary concern is whether project-related impacts have been properly anticipated in the regional air quality planning process and reduced whenever feasible. MBARD uses growth forecasts provided by the Association of Monterey Bay Area Governments ("AMBAG") to project population-related emissions, which are used in developing the 2015 AQMP.

The proposed project would provide an agricultural facility within the County of San Benito. The proposed project would not result in a significant population increase, nor a significant employment increase. The proposed project would be consistent with the MBARD 2012-2015 AQMP, as the proposed project would not significantly contribute to emissions of criteria pollutants for which the region is in non-attainment of state or federal standards. In addition, as noted in Response b, below, the proposed project would not result in a significant increase in emissions. Therefore, the proposed project is not anticipated to result in a substantial increase in either direct or indirect emissions that would conflict with or obstruct implementation of the AQMP; this impact is considered less than significant (1, 2, 3, 7)

b) **Less than Significant Impact**. Grading and filling during construction, as well as the use of construction equipment could result in impacts to air quality. Site disturbance activities could result in a short-term, localized decrease in air quality due to the generation of particulate emissions (PM_{10}). The MBARD 2016 Guidelines for Implementing CEQA contain standards of significance for evaluating potential air quality effects of projects subject to the requirements of CEQA. According to MBARD, a project would not violate an air quality standard and/or contribute to an existing or projected violation during construction if it would:

- Emit (from all sources, including exhaust and fugitive dust) less than:
  - 137 pounds per day (lb/day) of oxides of nitrogen (NOx);
  - 137 lb/day of reactive organic gases (ROG);
  - 82 lb/day of respirable particulate matter (PM10);
  - 55 lb/day of fine particulate matter (PM2.5); and
  - 550 lb/day carbon monoxide (CO)

A project would not violate an air quality standard and/or contribute to an existing or proposed violation during operation if it would:

- Emit (from all sources, including exhaust and fugitive dust) less than:
  - 137 pounds per day (lb/day) of oxides of nitrogen (NOx);
  - 137 lb/day of reactive organic gases (ROG);
  - 82 lb/day of respirable particulate matter (PM10);
  - 55 lb/day of fine particulate matter (PM2.5); and
  - 550 lb/day carbon monoxide (CO)
- Not cause or contribute to a violation of any California or National Ambient Air Quality Standard;

- Not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment;
- Not exceed the health risk public notification thresholds adopted by the Air District;
- Not create objectionable odors affecting a substantial number of people; and
- Be consistent with the adopted federal and state Air Quality Plans.

Construction

Table 2 shows the estimated maximum daily emissions for construction of the proposed project.

Table 2. Estimated Maximum Daily Construction Emissions					
	Maximum Daily Emissions (lbs/day)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Maximum Emissions (lbs/day)	1.08	9.35	9.10	2.60	1.21
MBARD Threshold	137	137	550	82	55
Threshold Exceeded?	No	No	No	No	No
Source: See Appendix A for CalEEMod calculations and assumptions					

As noted in **Table 2. Estimated Maximum Daily Construction Emissions,** all construction-related emissions would be below the applicable MBARD thresholds of significance for temporary construction emissions. As a result, the proposed project would not exceed the MBARD's thresholds of significance. Temporary construction-related emissions would be less than significant. In addition, the project would also implement standard construction Best Management Practices ("BMPs") related to dust suppression, which would include: 1) watering active construction areas; 2) prohibiting grading activities during periods of high wind (over 15 mph); 3) covering trucks hauling soil; and, 4) covering exposed stockpiles. The implementation of BMPs would further ensure that potential construction-related emissions would be minimized. This represents a less than significant impact.

Operation

Operation of the proposed agricultural facility would not result in substantially more severe significant impacts due to air quality emissions during operations. Energy sources include natural gas for uses such as lighting and other uses related to agricultural activities. Mobile emissions include vehicle trips by employees and delivery truck trips. If a project's construction emissions fall below the MBARD thresholds, the proposed project's impacts to regional air quality are considered individually less than significant and not cumulatively considerable.

Table 3. Estimated Maximum Daily Operational Emissions					
	Maximum Daily Emissions (lbs/day)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Maximum Emissions (lbs/day)	15.26	1.12	2.13	0.43	0.15
MBARD Threshold	137	137	550	82	55
Threshold Exceeded?	No	No	No	No	No
Source: See Appendix A for CalEEMod calculations and assumptions					

Based on the information above, the proposed project would not exceed the MBARD thresholds for criteria pollutants. As provided in **Table 1** the NCCAB is in attainment for all NAAQS and for all CAAQS except O_3 and PM_{10}, because emissions of criteria pollutants fall below the MBARD thresholds, the proposed project would not contribute to a violation of any CAAQS or NAAQS, nor would it result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment. As discussed in response (c), the proposed project would not exceed the health risk public notification thresholds adopted by MBARD. In addition, the project would not create objectionable odors affecting a substantial number of people, which is discussed further in response (d). Lastly, as shown in response (a), the project is consistent with adopted federal and state air quality plans.

Project construction and operation would not result in a significant air quality impact. As stated above, all impacts would be below applicable MBARD thresholds of significance, including thresholds for ozone precursors. As there are no significant impacts, project construction and operation would not result in a cumulatively considerable net increase in any criteria pollutant. This represents a less than significant impact. (1, 2, 3, 7, 8, 9)

c) **Less than Significant Impact**. A "sensitive receptor" is generally defined as: any residence including private homes, condominiums, apartments, or living quarters; education resources such as preschools and kindergarten through grade twelve (k-12) schools; daycare centers; and health care facilities such as hospitals or retirement and nursing homes. Anzar High School is located immediately northeast of the project site and there is a recreational vehicle ("RV") park southwest of the project site at McAlpine Lake and Park. The MBARD's 2008 CEQA Air Quality Guidelines state that a project would have a significant impact to sensitive receptors if it would cause a violation of any CO, PM_{10} or toxic air contaminant standards at an existing or reasonably foreseeable sensitive receptor.

As stated above in Response (b), the proposed project would implement standard air quality BMPs and emissions of CO resulting from construction of the proposed project are below applicable MBARD thresholds of significance. The proposed project would not exceed any MBARD thresholds, including CO and PM_{10}. In addition, Rule 402,[3] which would minimize potential nuisance impacts to occupants of nearby land uses, is applicable to the proposed project. For these reasons, construction activities would be considered to have a less than significant impact to sensitive receptors. Additionally, implementation of the proposed project would not result in the installation of any major stationary or mobile sources of emissions. Operational activities of the project would have a less than significant impact to nearby receptors as emissions are minimal and consistent with the zoning of the property. (1, 2, 3, 7, 8)

d) **Less than Significant Impact**. Pollutants associated with objectionable odors include sulfur compounds and methane. Typical sources of odors include rendering plants, chemical plants, agricultural uses, wastewater treatment plants, and refineries (MBARD, 2008). The proposed project may create objectionable odors due to its agricultural uses. The project site is currently being utilized for agricultural, which generates similar odors. Since the proposed project would generate similar odors currently being generated at the project site and is not anticipated to significantly increase the amount of odors, the impact is considered less than significant. (1, 2, 7)

4.4 BIOLOGICAL RESOURCES

4.4.1 Environmental Setting

DD&A prepared a Biological Resources Report for the proposed project (January 2021), the Biological Resources Report is presented in **Appendix B**. This section summarizes the findings of that report.

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[3] MBARD Rule 402 "Nuisance" states, "A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. The provisions of this rule shall not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals."

Habitat Types

Three habitat types—active agriculture, ruderal/disturbed, and aquatic—occur within and adjacent to the project site, see **Figure 10. Habitat Map**. In addition, riparian habitat occurs adjacent to the project site along the western edge of the parcel, no project related impacts are proposed within this habitat.

Approximately 92.1 acres of active agriculture occur within the project site. Active agriculture areas are subject to an anthropogenic disturbance regime related to the cultivation of row cropping. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent within this habitat type.

Approximately 6.5 acres of ruderal/disturbed habitat occur within the project site, this habitat type is associated with areas which have been developed or have been subject to historic and ongoing disturbance by human activities and are devoid of vegetation or dominated by non-native and/or invasive weed species. Ruderal/disturbed areas within the project site consist of the existing access roads, existing infrastructure, and the maintained banks associated with the San Juan Creek/drainage ditch. All areas associated with this habitat type are largely unvegetated but do support sparse vegetation in marginal areas.

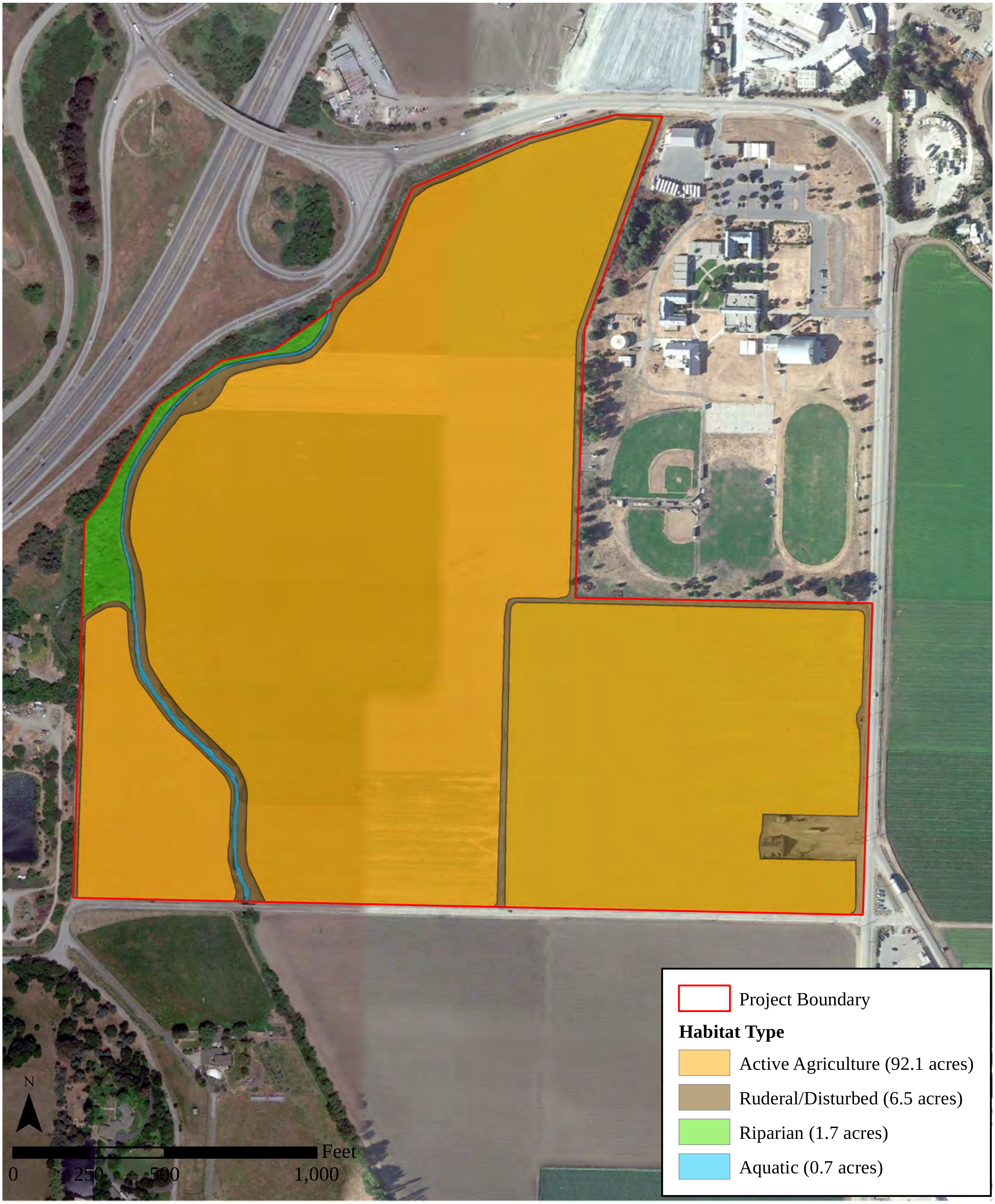
Approximately 0.7 acres of aquatic habitat occur within the project site, this habitat type is associated with the San Juan Creek/drainage ditch that passes through the southwestern quarter of the project, then runs along the western boundary outside of proposed project activities. Sparse vegetation occurs within this habitat type. The San Juan Creek/drainage ditch is a maintained, channelized ditch surrounded along its entire length within the project by development and agriculture. Wetlands may occur within this habitat type; however, this habitat type is not within any areas proposed for project related impacts.

Approximately 1.7 acres of riparian habitat occur within the project site, this habitat type is associated with plant communities supporting woody vegetation found along the San Juan Creek in the north western portion of the project site. The floristic alliance occurring in the Arroyo will thicket areas directly adjacent to the project site is considered sensitive under the California Department of Fish and Wildlife's ("CDFW's") *California Natural Communities List* (CDFW, 2019). Riparian habitat is associated with rivers, creeks, streams, canyon bottom drainages, and seeps. Riparian habitat, or more specifically Arroyo willow thickets at the project site, occur within stream banks and benches, slope seeps, and stringers along drainages (Sawyer et al., 2009). Holland (1986) describes this habitat type as a dense, low, closed-canopy, broadleaved, winter-deciduous riparian forest dominated by Arroyo willow (*Salix lasiolepis*) that occurs on moist to saturated sandy or gravelly soil, especially on bottomlands. Wetlands may occur within this habitat type. Riparian habitat is present along the western boundary of the project.

The riparian habitat along the western boundary of the project is highly disturbed; however, it may provide suitable habitat for the western pond turtle ("WPT"). No special-status plant species were identified within this habitat type during the reconnaissance level survey. Riparian habitat is considered by the CDFW to be a sensitive habitat.

Special Status Species

Published occurrence data within the project and surrounding areas were evaluated to compile a table of special-status species known to occur in the vicinity of the project site. Each of these species was evaluated for their likelihood to occur within and immediately adjacent to the site. The special-status species that are known to or have been determined to have a moderate or high potential to occur within or immediately adjacent the project site is discussed below.



Title: Habitat Map

Date 1/14/2021

Scale N/A

Project 2020-42

Monterey | San Jose

Denise Duffy and Associates, Inc.

Environmental Consultants Resource Planners

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Figure 10

Western Pond Turtle - The WPT is a CDFW species of special concern. The California Natural Diversity Database ("CNDDB") reports 32 occurrences of the WPT within the project and surrounding area, the nearest reported is approximately 1.5 miles southeast from the project site and is located within San Juan Creek. No suitable upland or nesting habitat is present within the project site. No suitable breeding habitat is present within the project site; however, the adjacent riparian habitat does offer suitable breeding habitat. There is potential for WPT to utilize the aquatic habitat within the project site as a basking site due to the adjacent riparian habitat. The project is also located within the historic range for WPT. Therefore, this species may use the aquatic habitat within the project for basking, and adjacent riparian areas that offer suitable cover as upland and nesting habitat.

Raptors and Other Protected Avian Species - Raptors, their nests, and other nesting birds are protected under California Fish and Game Code. Stands of live oak, riparian deciduous, or other forest habitats, as well as open grasslands, are used most frequently for nesting. Breeding occurs February through August, with peak activity May through July. Various species of raptors, such as red-tailed hawk, red-shouldered hawk, American kestrel, great horned owl, and turkey vulture, have a potential to nest within the trees present within and adjacent to the project site. In addition, ground-nesting raptors also have the potential to nest within the open grassland areas of the project site.

No special-status plant species are expected or have the potential to occur within the project site.

4.4.2 Environmental Impacts

Environmental Impacts	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
BIOLOGICAL REOSURCES. Would the project:				
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 Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
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?	☐	☒	☐	☐
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 wildlife nursery sites?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree 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?	☐	☐	☒	☐

4.4.3 Explanation

a) **Less than Significant Impact with Mitigation Incorporated.** Published occurrence data within the site and surrounding U.S. Geological Survey ("USGS") quadrangles were evaluated to compile a table of special-status species known to occur near the project site (see Biological Resources Report, **Appendix B**). Each of these species was evaluated for their likelihood to occur within and immediately adjacent to the project site based on a species-specific reason. All the wildlife species, except for WPT and raptors/nesting birds, that were considered were determined unlikely to occur or have a low potential to occur and are unlikely to be impacted by the project.

Special-status wildlife species including WPT, raptors and other protected avian species have the potential to occur within the project site. Construction activities may result in direct mortality of individuals and/or loss of habitat for these species. This is a potentially significant impact that can be reduced to a less than significant level with implementation of the mitigation measures recommended below. (1, 2, 3, 10)

Mitigation Measures

BIO-1 To avoid or minimize impacts to WPT, a qualified biologist shall conduct a pre-construction survey for WPT and their nests within the project site no more than three days prior to construction. If a WPT nest is found, it will be monitored and avoided until the eggs hatch. All western pond turtles discovered within the project site immediately prior to or during project activities shall be allowed to move out of the area of their own volition. If this is not feasible, they shall be captured by a qualified biologist and relocated out of harm's way to the nearest suitable habitat at least 100 feet upstream or downstream from the project site where the individual was found.

BIO-2 A qualified biologist will conduct an Employee Education Program for the construction crew prior to any construction activities. The qualified biologist will meet with the construction crew at the onset of construction at the project site to educate the construction crew on the following: 1) the appropriate access route(s) in and out of the construction area and review project boundaries; 2) how a biological monitor will examine the area and agree upon a method which will ensure the safety of the monitor during such activities, 3) the identification of special-status species that may be present; 4) the specific mitigation measures that will be incorporated into the construction effort; 5) the general provisions and protections afforded; and 6) the proper procedures if a special-status species is encountered within the project site to avoid impacts.

BIO-3 Construction activities that may affect nesting raptors and other protected avian species can be timed to avoid the avian nesting season (February 1 through September 15). Specifically, vegetation and/or tree removal can be scheduled between September 16 and January 31. If this is not possible, pre-construction surveys for protected avian species shall be conducted by a qualified biologist within 15 days prior to the commencement of construction activities in all areas that may provide suitable nesting habitat that exist in or within 300 feet of the project boundary. If nesting birds are identified during pre-construction surveys, an appropriate buffer shall be imposed within which no construction activities or disturbance will take place (generally 300 feet in all directions). A qualified biologist shall be on-site during work re-initiation in the vicinity of the nest offset to ensure that the buffer is adequate and that the nest is not stressed and/or abandoned. No work shall proceed in the vicinity of an active nest until such time as all young are fledged, as determined by the qualified biologist, or until after September 1 (when young are assumed fledged).

b-c) **Less than Significant Impact with Mitigation Incorporated.** The riparian habitat identified adjacent to the project site is considered a sensitive habitat by the CDFW. Open water within the aquatic habitat and wetlands within the riparian habitat may be afforded protection by the Army Corps of Engineers ("ACOE") and/or the Regional Water Quality Control Board ("RWQCB"). Construction activities are proposed to avoid all riparian and aquatic habitat within and adjacent to the project, however, if construction exceeds the proposed limits, it would be considered a significant impact under CEQA. Mitigation Measures detailed below would reduce potential impacts to a less than significant level. (1, 2, 3, 10)

Mitigation Measures

BIO-4 Riparian and aquatic habitat shall be avoided. Protective fencing shall be placed to keep construction vehicles and personnel from impacting riparian and aquatic habitat. If avoidance of these areas is not possible, the following shall occur:

- For project activities that may impact riparian habitat, requiring a permit from CDFW, the project proponent shall obtain a 1602 Lake or Streambed Alteration Agreement and comply with all permit requirements. Conditions may include but are not limited to; development of revegetation and restoration plans and procedures, environmental awareness training, pre-construction wildlife surveys, and/or biological monitoring.
- To protect water quality during construction, include the following measures on the construction specifications, with construction oversight by a qualified biological monitor:
    - Stationary equipment such as motors, generators, and welders located within 100 feet of the riparian habitat and drainage ditch shall be stored overnight at staging areas and will be positioned over drip pans.
    - Any hazardous or toxic materials deleterious to aquatic life that could be washed into a basin shall be contained in watertight containers or removed from the project site.
    - All construction debris and associated materials stored in staging areas shall be removed from the work site upon completion of the project.
    - Whenever possible, refueling of equipment shall take place within turnouts or staging areas at least 50 feet from the top of bank or other wetland.
    - All refueling shall be conducted over plastic bags filled with sawdust or other highly absorbent material. Clean-up materials for spills will be kept on hand at all times. Any accidental spills of fuel or other contaminants will be cleaned up immediately.

BIO-5 A wetland delineation in accordance with ACOE standards shall be conducted to determine if wetlands observed within the project site are under the jurisdiction of ACOE and/or RWQCB. For project activities that may impact wetlands or other waters, requiring permits from ACOE and/or the RWQCB, the project proponent shall obtain permits and comply with all permit requirements.

BIO-6 The project contractor shall install protective fencing prior to and during construction to keep construction equipment and personnel from impacting riparian vegetation outside of work limits. A qualified biological monitor with the education and experience necessary to delineate riparian vegetation shall supervise the installation of protective fencing. This measure shall be included in the project's plans and specifications.

d) **Less than Significant Impact.** The project site is currently in agricultural use and does not provide valuable migratory wildlife corridors or native wildlife nursery sites for native fish or wildlife species.

The proposed project would not impede the use of any wildlife corridors or interfere with wildlife movement. This is a less than significant impact. (1, 2, 3, 10)

e-f) **Less than Significant Impact.** No trees are present within the project site and the project will not conflict with a tree preservation policy or ordinance. The project site is not located within the plan area for any habitat conservation plans, natural community conservation plans, or other approved local, regional, or state habitat conservation plans. This is a less than significant impact. (1, 2, 3, 10)

4.5 CULTURAL RESOURCES

4.5.1 Environmental Setting

A Cultural Resources Report was prepared by Albion Environmental, Inc.[4] This section is based on the findings of that report.

Albion Environmental, Inc. contacted the Northwest Information Center at Sonoma State University ("NWIC"). A review of records at the NWIC indicated that no cultural resources have been recorded within the proposed project area and that two previously known sites are located within 0.25-mile radius of the proposed project area.

Research indicates that the proposed project area remained relatively undeveloped until the construction of the California Central Railroad in early 1900s. By the mid-1900s, the proposed project area appears to be a fully functioning farm with a house and associated structures in the southeast corner. In a 1956 aerial photograph, small structures are visible running from the southwest to the northeast of the project site. These appear to be electrical transmission towers which are also noted on the 1940 topographic map.

Survey efforts completed by Albion Environmental, Inc. identified two sites (KWH Sites 1 and 2) of cultural material scattered across the southern half of the proposed project area. KWH Site 1 is concentrated in Greenhouse Block 3 and Fields 6, 7, and 8. KWH Site 2 is located in the southeast corner of Field 8 surrounding an unpaved parking lot. Moving north towards Chittenden Road, artifact density decreased dramatically with only one piece of shell found in the northern half of the parcel.

Cultural resources were not identified in Fields 2, 3, and 4, or in the areas where the septic tank will be located. In areas designated for on-site structures and road construction, the only artifacts identified were associated with KWH Site 1 (Greenhouse Block 3 and Shipping and Handling Greenhouse 1).

4.5.2 Environmental Impacts

Environmental Impacts	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in 15064.5?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to 15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

[4] For a copy of the Cultural Resources Report please contact the Lead Agency. The Cultural Resources Report is not attached to this document for privacy.

4.5.3 Explanation

a-b) **Less than Significant Impact with Mitigation.** CEQA Guidelines §15064.5 describes a historical resources as: 1) any resource that is listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources; 2) a resource included in a local register of historical resources; or, 3) any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant based on substantial evidence in light of the whole record. A substantial change includes the physical demolition, destruction, relocation, or alteration of a resource or its immediate surroundings such that the significance would be materially impaired (CEQA Guidelines §15064.5(b)).

As discussed above, a NWIC records search found that no cultural resources have been recorded within the proposed project area and that two previously known sites are located within 0.25-mile radius of the proposed project area.

Survey efforts identified two sites (KWH Sites 1 and 2) of cultural material scattered across the southern half of the proposed project area. In areas designated for on-site structures and road construction, the only artifacts identified were associated with KWH Site 1.

Although few artifacts were found outside of KWH Sites 1 and 2, the topography and geology of the area may be sensitive for buried landforms and archaeological deposits. Moreover, a buried precolonial deposit associated with P-35-00528 was identified within 450 feet of the proposed project area. Materials associated with P-35-00528 are similar to those identified in the proposed project area including bone, shell, and chert debitage.

Based on archival research, tribal outreach, and pedestrian survey, it is likely that archaeological resources exist in the proposed project area and intact subsurface deposits could also exist within the proposed project area. This is considered a potentially significant impact. This impact would be reduced to a less than significant level with the implementation of **Mitigation Measures CR-1, CR-2, CR-3**, and **CR-4** below. (1, 2, 3, 13)

Mitigation Measures

CR-1 Prior to any ground disturbance requiring an encroachment, grading, or building permit, a Phase II study shall be conducted to formally evaluate KWH Sites #1 and #2 and to determine the extent of potential buried resources outside of site boundaries but within the proposed project area. Phase II test excavations aim to (1) determine site integrity; (2) evaluate and recommend significance of the resource against criteria outlined in CEQA; and (3) assess potential project impacts and adverse effects to significant resources.

CR-2 The project applicant shall retain a qualified archaeologist (project archaeologist) to be present on the project site from the start of ground disturbing work for the planned construction. If potentially significant archaeological resources are discovered, the project archaeologist is authorized to halt excavation until any finds are property evaluated. If a find is determined to be significant, work may remain halted near the find to permit development and implementation of the appropriate mitigations (including selective data recovery) with the concurrence of the CEQA Lead Agency (San Benito County). At the discretion qualified archaeologist, monitoring could be discontinued if there is enough information collected from direct observation of the subsurface conditions to conclude that cultural resources do not exist.

CR-3 Prior to construction, the project applicant's project archeologist should conduct a sensitivity training for cultural resources for all onsite personnel involved in ground disturbing activities.

CR-4 If archaeological resources or human remains are accidentally discovered on the project site during construction, work shall be halted by the construction manager within 50 meters (150 feet) of the find until it can be evaluated by a qualified professional archaeologist. If the find is determined to be significant, appropriate mitigation measures shall be formulated and implemented. Materials of particular concern would be concentrations of marine shell, burned animal bones, charcoal and flaked or ground stone fragments. (Ref: Health and Safety Code 7050.5)

c) **Less than Significant Impact with Mitigation Incorporated.** No known human remains, including those interred outsides of formal cemeteries, are known to occur within the project site. In addition, local Native American Groups were consulted during the course of the preparation of the Cultural Resources Report, see **Section 4.15 Tribal Cultural Resources** for more information. The project site is not a Sacred Lands site and the presence of known Native American remains was not identified during the course of consultation. While the likelihood of human remains, including those interred outsides of a formal cemetery, within the project site is low, it is possible that previously unknown human remains may be present. Previously unknown human remains could be impacted during construction. In order to minimize potential impacts to less than significant, mitigation is necessary. The implementation of the following mitigation measure would ensure that potential adverse impacts related to disturbing human remains would be reduced to a less than significant level. (1, 2, 3, 13)

Mitigation Measures

CR-5 If human remains are found at any time on the project site, work must be stopped by the construction manager, and the County Coroner must be notified immediately. If the Coroner determines that the remains are Native American, the Native American Heritage Commission will be notified as required by law. The Commission will designate a Most Likely Descendant who will be authorized to provide recommendations for management of the Native American human remains. (Ref: California Public Resources Code Section 5097.98; and Health and Safety Code Section 7050.5).

Specific County of San Benito provisions and further measures shall be required as follows if human remains are found:

If, at any time in the preparation for or process of excavation or otherwise disturbing the ground, discovery occurs of any human remains of any age, or any significant artifact or other evidence of an archeological site, the applicant or builder shall:

a) Cease and desist from further excavation and disturbances within two hundred feet of the discovery or in any nearby area reasonably suspected to overlie adjacent remains.
b) Arrange for staking completely around the area of discovery by visible stakes no more than ten feet apart, forming a circle having a radius of not less than one hundred feet from the point of discovery; provided, however, that such staking need not take place on adjoining property unless the owner of the adjoining property authorizes such staking. Said staking shall not include flags or other devices which may attract vandals.
c) Notify Resource Management Agency Director shall also be notified within 24 hours if human and/or questionable remains have been discovered. The Sheriff–Coroner shall be notified immediately of the discovery as noted above.
d) Subject to the legal process, grant all duly authorized representatives of the Coroner and the Resource Management Agency Director permission to enter onto the property and to take all actions consistent with Chapter 19.05 of the San Benito County Code and consistent with §7050.5 of the Health and Human Safety Code and

Chapter 10 (commencing with §27460) of Part 3 of Division 2 of Title 3 of the Government Code. [Planning]

4.6 ENERGY

4.6.1 Environmental Setting

Starting in 2018, all PG&E customers within Monterey, San Benito, and Santa Cruz Counties were automatically enrolled in Central Coast Community Energy (3CE), formerly known as Monterey Bay Community Power. 3CE is a locally controlled public agency providing carbon-free electricity to residents and businesses. Formed in February 2017, 3CE is a joint powers authority, and is based on a local energy model called community choice energy. 3CE partners with PG&E, which continues to provide billing, power transmission and distribution, customer service, grid maintenance services and natural gas services to San Benito County. 3CE's standard electricity offering, is carbon free and is classified as 30 percent renewable. Of the electricity provided by 3CE in 2018, 40 percent was hydroelectric, and 30 percent was solar and wind (eligible renewables) (3CE, 2019).

4.6.2 Environmental Impacts

Environmental Impacts	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
ENERGY. Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.	☐	☐	☒	☐
b) Conflict with or obstruct a state plan for renewable energy or energy efficiency	☐	☐	☒	☐

4.6.3 Explanation

a) **Less than Significant Impact**. Energy use consumed by the project is expected to be low due to the nature of the proposed agricultural operations, and because the proposed construction of the project would conform to state and local standards for energy efficiency, as described below.

Construction

The anticipated construction schedule assumes that the project would be built over a period of approximately six (6) months, anticipated to begin in April 2022. The project would require site preparation, grading, paving, and erection of greenhouse structures. The construction phase would require energy for the manufacture and transportation of building materials, preparation of the site (e.g., excavation, and grading), and the actual construction of the buildings. Petroleum-based fuels such as diesel fuel and gasoline would be the primary sources of energy for these tasks. The construction energy use has not been determined at this time.

The overall construction schedule and process is designed to be efficient in order to avoid excess monetary costs. Equipment and fuel are not used wastefully due to the added expense associated with renting, maintaining, and fueling the equipment. Therefore, the opportunities for future efficiency gains during construction are limited. The proposed project would implement construction methods that would improve the efficiency including the implementation of the MBARD BMPs, as detailed in the impact discussion of **Section 4.3 Air Quality** of this IS/MND.

With implementation of the MBARD BMPs, the short-term energy impacts associated with use of fuel or energy related to construction would be less than significant.

Operational

Operation of the proposed project would consume energy in the form of electricity for lighting, and other uses related to agricultural activities. The project would be built to 2019 California Building Code standards and Title 24 energy efficiency standards (or subsequently adopted standards during the six-month construction term), and the CALGreen code, which includes insulation and design provisions to minimize wasteful energy consumption. Compliance with these regulations would improve the efficiency of the overall project. As a result, implementation of the proposed project would not result in substantial operational energy impacts.

Based on the discussion above, the project would not result in a potentially significant environmental impact, during operation or construction, due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation. (1, 2, 3, 4, 7, 8)

b) **Less than Significant Impact.** As mentioned in discussion (a) above, construction and operation of the proposed project would have a less than significant impact due to energy usage and efficiency and, thus, would not conflict with local or state plans for energy efficiency. Furthermore, design of the proposed greenhouses would use minimal energy, primarily for lighting and other agricultural uses. As a result, the project would comply with existing state energy standards and would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. (1, 2, 3, 4, 7, 8)

4.7 GEOLOGY AND SOILS

4.7.1 Environmental Setting

A Geotechnical Preliminary Soils Engineering Report ("Geotech Report") was prepared for the proposed project by Earth Systems Consultants, Inc. (February 2000). The purpose of this this report is to assess geologic and geotechnical issues that could affect the future development of the property. The Geotech Report is based on site reconnaissance, a review of the subsurface conditions revelated in the profile test pits, and soil percolations test performed at the site. The Geotech Report is presented in **Appendix C**.

The project site is in the northwest corner of San Benito County near the Lomerias Muertas, also known as Flint Hills. Topographically, the site is generally flat, currently used for row crops, and comprised of Sorrento silty clay loam with 0 to 2 percent slopes. This soil occurs along drainageways on valley floors. Elevation of the project site is approximately 150 feet above mean sea level.

Geological Hazards

Based on a review of relevant literature, the following assessments can be made about the potential geologic hazards that might be present on the project site:

Surface fault rupture and earthquake ground shaking – There are no active faults cross the project site. The project site is located between the active San Andreas Fault to the southwest, and the Calaveras fault to the east, which have the highest earthquake probability within the County. Surface fault rupture tends to occur along existing fault traces. The California Geological Survey has produced maps showing Alquist-Priolo Earthquake Fault Zones along faults that pose a potential surface faulting hazard. No Alquist-Priolo zones are mapped in the vicinity of the project.

Liquefaction – There are approximately 20 feet of potentially liquefiable soils underlying the site. During a major seismic event in the region, liquefaction induced settlements on the order of 1 to 3 inches could occur at the site. The area adjacent to San Juan Creek may be prone to seismically induced lateral spreading.

Slope stability – Slope instability depends on the steepness of the slope, underlying geology, surface soil strength, and moisture in the soil. Where significant excavation, grading, or fill work to be required during construction, slope stability hazards could be introduced at the site. Because the site is relatively flat, approximately half a mile from any hill of significant size, and no significant excavation is planned during construction, there would be no potential for direct impact from landslides at the project site.

Subsidence – Subsidence can be caused by natural phenomena during tectonic movement, consolidation, hydro-compaction, or rapid sedimentation. Subsidence can also result from human activities, such as withdrawal of water or hydrocarbons in the subsurface soils. No known subsidence problems exist in the project vicinity.

Expansive soils – Expansive soils shrink and swell with wetting and drying. The shrink-swell capacity of expansive soils can result in differential movement beneath foundations. The Sorrento silty clay loam found on the surface of the project site has a moderate expansion potential.

Soil erosion – Although the hazard of erosion of Sorrento silty clay loam is slight to none, construction activities could contribute to erosion of loose soils.

Paleontological Resources

Paleontological resources (fossils) are the remains and/or traces of prehistoric plant and animal life exclusive of human remains or artifacts. Fossil remains such as bones, teeth, shells, and wood are found in the geologic deposits (rock formations) in which they were originally buried. Paleontological resources represent limited, non-renewable, sensitive scientific, and education resources. The potential for fossil remains at a location can be predicted through previous correlations that have been established between the fossil occurrence and the geologic formations within which they are buried. For this reason, knowledge of the geology of a particular area and the paleontological resource sensitivity of particular rock formations, make it possible to predict where fossils will or will not be encountered.

The natural geology of the project site is comprised of Holocene alluvium approximately 10,000 years in age. These deposits primarily consist of unconsolidated lenticular beds of gravel, sand, slit, and clay deposited by streams as floodplain, alluvial fan, slope wash, and terrace deposits.

4.7.2 Environmental Impacts

Environmental Impacts	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
GEOLOGY AND SOILS. Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☒	☐	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☒	☐	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☒	☐	☐

Environmental Impacts	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
GEOLOGY AND SOILS. Would the project:				
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☒	☐
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

4.7.3 Explanation

a.i) **Less than Significant Impact**. Surface rupture occurs along lines of previous faulting. According to the California Geologic Survey, the site is not located within an Alquist-Priolo Earthquake Fault Zone. According to the Geotech Report, no faults are thought to directly cross the project site, however, the site is in an active or potentially active fault zone of which there are relatively minor hazards for the purpose of site development. As described above, the nearest active fault to the project site is located 0.5 miles to the southwest of the San Andreas Fault. As such, surface rupture from fault activity across the site is considered improbable and considered less than significant. (1, 2, 3, 4, 5, 14)

a.ii) **Less than Significant Impact with Mitigation Incorporated**. Due to its location in a seismically active region, the proposed project may be subject to strong seismic ground shaking during its design life in the event of a major earthquake on any of the region's active faults. Seismic impacts would be minimized by using standard engineering and construction techniques in compliance with the requirements of the California Building Code, relevant San Benito County ordinances and policies contained in the General Plan, and recommendations found in the Geotech Report. This is considered a significant impact that can be reduced to a less than significant level with the implementation of **Mitigation Measure GEO-1** provided below. (1, 2, 3, 4, 14)

Mitigation Measure

GEO-1 A note shall be placed on Final Grading and Building Plans that the project applicant shall be required to implement all of the recommendations from the Geotech Report prepared for the project and incorporate the recommendations into final plans and specifications, as required by the County, prior to the start of project construction.

a.iii) **Less than Significant Impact with Mitigation Incorporated**. As described above, the proposed project may be subject to strong ground shaking in the event of a major earthquake. The Geotech Report determined that site soils the San Andreas Fault would most likely cause liquefaction at the project site. There are approximately 20 feet of potentially liquefiable soils underlying the site. During a major seismic event in the region, liquefaction induced settlements on the order of 1 to 3 inches could occur at the site. This is considered a significant impact that can be reduced to a less than significant level with the implementation of **Mitigation Measure GEO-1** provided above. (1, 2, 3, 4, 5, 14)

a.iv) **Less than Significant Impact**. The proposed project site is located on flat agricultural land, would not involve significant excavation or grading, and would not be exposed to potential landslide related hazards, resulting in less than significant impact. (1, 2, 3, 4, 5, 14)

b) **Less than Significant Impact**. Preparation and construction activities associated with the proposed project would disturb soil and increase its susceptibility to erosion. Construction contractors would be required to conform to all legal requirements for avoiding erosion and sedimentation to protect water quality.

The proposed project would be subject to the requirements of the National Pollution Discharge Elimination System ("NPDES") Program General Storm Water Permit, which includes the preparation of a Stormwater Pollution Prevention Plan ("SWPPP") for construction activities disturbing one acre or more. Any temporary erosion related to construction would be minimized through the implementation of standard construction phase BMPs related to erosion. Erosion control measures and associated BMPs would be consistent with the recommended measures contained in the California Stormwater Best Management Practices Handbooks. Applicable measures would include the following:

- Stockpiling and disposing of demolition debris, concrete, and soil.
- Protecting existing storm drain inlets and stabilizing disturbed areas.
- Hydroseeding/re-vegetating disturbed areas.
- Minimizing areas of impervious surfaces.
- Implementing runoff controls (e.g., percolation basins and drainage facilities).
- Properly managing construction materials.
- Managing waste, aggressively controlling litter, and implementing sediment controls.
- Limiting grading to the minimum area necessary for construction and operation of the project.

Compliance with the State requirements and implementation of BMPs would ensure that construction activities associated with the proposed project would not cause substantial soil erosion or the loss of topsoil. This results in less than significant impact. (1, 2, 3, 4, 14)

c) **Less than Significant Impact**. As described in aiii) and aiv) above, although there may be some potential for liquefaction on the project site, the potential for the project to result in on- or off-site landslides, lateral spreading, subsidence, or collapse are low. The geologic unit on which the project is located would not become unstable because of the project. As such, this impact would be less than significant. (1, 2, 3, 4, 14)

d) **Less than Significant Impact with Mitigation Incorporated**. According to the Geotech Report, the soils at the site have moderate expansion potential. These soils are typical to the area. Expansivity has not been influential to the site characteristics. The implementation of the **Mitigation Measure GEO-1** would reduce potential impacts to the site to less than significant impact (1, 2, 3, 4, 14):

e) **Less than Significant Impact.** The proposed project would include a septic system to serve bathrooms for the employees during operational activities. The septic system would be designed and constructed in accordance with County Environmental Health requirements. (1, 2, 3, 4)

f) **Less than Significant Impact.** The project is underlain by Holocene alluvium. Paleontological resources have not previously been recorded within the project site. However, previously unknown or buried resources could be present. As discussed above in **Section 4.5 Cultural Resources**, ground disturbing activities on the site could impact unknown paleontological resources. Potential impacts would be reduced to less than significant level with the implementation of **Mitigation Measures CR-1** and **CR-2**. (1, 2, 3, 4, 14)

4.8 GREENHOUSE GAS EMISSIONS

4.8.1 Environmental Setting

Various gases in the earth's atmosphere, when exceeding naturally occurring or 'background' levels due to human activity, create a warming or greenhouse effect, and are classified as atmospheric greenhouse gases

("GHGs"). These gases play a critical role in determining the earth's surface temperature. Solar radiation enters the atmosphere from space and a portion of the radiation is absorbed by the earth's surface. The earth emits this radiation back toward space, but the properties of the radiation change from high-frequency solar radiation to lower-frequency infrared radiation. Greenhouse gases, which are transparent to solar radiation, are effective in absorbing infrared radiation. As a result, the radiation that otherwise would have escaped back into space is retained, resulting in a warming of the atmosphere known as the greenhouse effect. Among the prominent GHGs contributing to the greenhouse effect, or climate change, are carbon dioxide ("CO_2"), methane ("CH_4"), ozone ("O_3"), water vapor, nitrous oxide ("N_2O"), and chlorofluorocarbons ("CFCs"). Human-caused emissions of these GHGs in excess of natural ambient concentrations are responsible for the greenhouse effect. In California, the transportation sector is the largest emitter of GHGs.

4.8.2 Environmental Impacts

Environmental Impacts	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
GREENHOUSE GAS EMISSIONS. Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

4.8.3 Explanation

a) **Less than Significant Impact**. As previously stated, the project is located in the NCCAB, where air quality is regulated by MBARD. Neither MBARD, nor San Benito County have adopted GHG emissions thresholds or a GHG emissions reduction plan that would apply to the project. However, it is important to note that other air districts within the State of California have recently adopted recommended CEQA significance thresholds for GHG emissions. For instance, on March 28, 2012 the San Luis Obispo Air Pollution Control District ("SLOAPCD") Board approved thresholds of significance for the evaluation of project-related increases of GHG emissions. The SLOAPCD's significance thresholds include both qualitative and quantitative threshold options, which include a bright-line threshold of 1,150 metric tons of carbon dioxide equivalent ("$MTCO_2e$")/year. On October 23, 2014, the Sacramento Metropolitan Air Quality Management District ("SMAQMD") adopted a similar significance threshold of 1,100 $MTCO_2e$/year. The GHG significance thresholds are based on AB 32 GHG emission reduction goals, which take into consideration the emission reduction strategies outlined in the California Air Resources Board's Scoping Plan. Development projects located within these jurisdictions that would exceed these thresholds would be considered to have a potentially significant impact on the environment which could conflict with applicable GHG-reduction plans, policies and regulations. Projects with GHG emissions that do not exceed the applicable threshold would be considered to have a less than significant impact on the environment and would not be anticipated to conflict with AB 32 GHG emission reduction goals. Given that the MBARD has not yet adopted recommended GHG significance thresholds, the above thresholds were relied upon for evaluation of the proposed project. For purposes of this analysis, project-generated emissions in excess of 1,100 $MTCO_2e$/year would be considered to have a potentially significant impact.

GHG emissions from the project were estimated as part of the air quality analysis and are summarized below in **Table 4. GHG Emissions from the Proposed Project.**

Table 4 GHG Emissions from the Proposed Project	
Operational Emission	
Annual Emissions	1,051.9 $MTCO_2e$/yr
Threshold	1,100 $MTCO_2e$/yr
Exceeds Threshold?	No
Construction Emissions	
On-Time Construction Emissions	380.8 $MTCO_2e$/yr
Threshold	1,100 $MTCO_2e$/yr
Exceeds Threshold?	No
Source: Kawahara Agricultural Facility Project, CalEEMod Annual Emissions	

The project is anticipated to generate temporary construction-related GHG emissions, with most of the emissions generated by construction equipment, materials hauling, and daily construction worker trips. The long- term operation of the project, would be consistent with current zoning and surrounding uses. As such, the project is not anticipated to generate substantial new or altered sources of GHGs emissions. Any impacts from GHG generation during construction would be short-term and temporary. As shown in **Table 4,** above, construction and operation of the proposed project would not exceed established thresholds for GHG emissions. As a result, the project is not anticipated to generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. (1, 2, 3, 7, 8)

b) **Less than Significant Impact**. As previously stated, the project is located in the NCCAB, where air quality is regulated by MBARD. Neither the State, MBARD, nor San Benito County have adopted GHG emissions thresholds or a GHG emissions reduction plan that would apply to the project. But as shown above, the project would not exceed acceptable thresholds. Also, consistent with the San Benito County General Plan Goals and Policies, the project would include energy and water-efficient appliances, fixtures, lighting, and windows that meet applicable State energy performance standards. The proposed project would not conflict with any applicable plans, policies, or regulations adopted for the purpose of reducing the emissions of greenhouse gases as described above. This represents a less than significant impact. (1, 2, 3, 7, 8)

4.9 HAZARDS AND HAZARDOUS MATERIALS

4.9.1 Environmental Setting

Hazardous materials, as defined by the California Code of Regulations, are substances with certain physical properties that could pose a substantial present or future hazard to human health or the environment when improperly handled, disposed, or otherwise managed. A hazardous waste is any hazardous material that is discarded, abandoned, or slated to be recycled. Hazardous materials and waste can result in public health hazards if improperly handled, released into the soil or groundwater, or through airborne releases in vapors, fumes, or dust. Soil and groundwater having concentrations of hazardous constituents higher than specific regulatory levels must be handled and disposed of as hazardous waste when excavated or pumped from an aquifer.

To comply with Government Code §65962.5 (known as the "Cortese List"), the following databases/lists were checked in February 2021 for potential hazardous waste or substances occurring at the project site:

- List of Hazardous Waste and Substances sites from the Department of Toxic Substances Control ("DTSC") EnviroStor database;
- List of Leaking Underground Storage Tank Sites by County and Fiscal Year from the State Water Resources Control Board ("SWRCB") GeoTracker database;

- List of solid waste disposal sites identified by the State Water Resources Board with waste constituents above hazardous waste levels outside the waste management unit;
- List of "active" Cease and Desist Orders ("CDO") and Cleanup and Abatement Orders ("CAO") from the State Water Resources Control Board; and
- List of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code, identified by DTSC.

The database review concluded that the project site is not located in an area of known hazardous material contamination.

The State of California uses databases such as EnviroStor and GeoTracker to map the location of hazardous waste sites including sites that have been remediated, sites currently undergoing remediation, and sites that require cleanup. Based on a search of the above databases, no hazardous materials contamination has been documented within the project site. The GeoTracker database found multiple listings directly adjacent to the project site that were either enrolled or terminated from the Irrigated Lands Regulatory Program.

Nearby Schools – The closest school to the proposed project site is Anzar High School, which is located immediately northeast of the project site.

Nearby Airports – To address airport safety hazards, San Benito County created an Airport Land Use Commission to provide orderly growth of San Benito's two public airports. The Commission ensures compatible land uses around the Hollister Municipal Airport and the Frazier Lake Airpark through the implementation of their respective Land Use Compatibility and Comprehensive Land Use Plans. The nearest airport to the project site is the Hollister Municipal Airport, located about 3.75 miles north of the project site. The project site is not located in an airport influence zone of any airport.

Emergency Planning – The San Benito County Office of Emergency Services ("OES") provides the needed foundation for the management of emergencies and disasters and addresses the integration and coordination with other governmental level when required.

Wildfire Risk – The California Department of Forestry and Fire Protection ("CalFire") prepares maps of Very High Fire Hazard Severity Zones ("VHFHS"), which are used to develop recommendations for local land use agencies and for general planning purposes. CalFire categorizes parcels into VHFHS and Non-VHFHS zones. The project site is not located in any fire hazard severity zones as delineated by CalFire.

4.9.2 Environmental Impacts

Environmental Impacts	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
HAZARDS AND HAZARDOUS MATERIALS. Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
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?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐

Environmental Impacts	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
HAZARDS AND HAZARDOUS MATERIALS. Would the project:				
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
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 or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☒	☐

4.9.3 Explanation

a) **Less than Significant Impact**. The proposed project consists of an agricultural facility. Construction and operation of the project would not create a significant impact due to routine transport, use, or disposal of hazardous materials. Construction activities would, however, require the temporary use of hazardous substances, such as fuel for construction equipment, oil, solvents, or paints. Removal and disposal of hazardous materials from the project site would be conducted by an appropriately licensed contractor. Any handling, transporting, use, or disposal would comply with applicable laws, regulations, policies, and programs set forth by various federal, state, and local agencies. Required compliance with applicable hazardous material laws and regulations would ensure that construction-related hazardous material use would not result in significant impacts. These impacts would be temporary in nature and would be considered less than significant.

In addition, because of the nature of the project, hazardous materials used on-site may vary, but would likely be limited to fertilizers, herbicides, pesticides, solvents, cleaning agents, and similar materials used for daily growing operations and maintenance activities. These types of materials are common for agricultural facilities such as the proposed project and represent a low risk to people and the environment when used as intended. Therefore, long-term operational impacts associated with hazardous materials would be less than significant with incorporation of standard County regulations and conditions of approval. (1, 2, 3, 4)

b) **Less than Significant Impact**. Implementation of the proposed project is not anticipated to create a significant hazard to the public or environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Construction and operation of the project could result in the accidental release of a hazardous material resulting in a potential hazard to the public. Construction activities would require the use of hazardous materials (e.g., fuel for construction equipment, oil, solvents, or paints). Hazardous materials impacts could also occur during operation due to growing operations or maintenance activities. Hazardous materials used during construction and operation would be stored properly within the staging area, in accordance with BMPs and applicable regulations, and the staging area would be secured from public access and identified per County requirements. Runoff controls would be implemented to prevent water quality impacts, and a spill plan would be developed to address any accidental spills. Any waste products resulting from construction and operations would be stored, handled, and recycled or disposed of in accordance with federal, state, and local laws. For these reasons, this is considered a less than significant impact. (1, 2, 3)

c) **Less than Significant Impact**. Anzar High School is the nearest school and is located immediately northeast of the project site. Although the proposed project would involve hazardous materials typical of a construction project, it is expected that the proposed project would be operated in compliance with federal, state, and local regulations. During construction, any potential construction-related hazardous releases or emissions would be from commonly used materials such as fossil fuels, solvents, and paints that are not considered acutely hazardous materials. Hazardous materials would be immediately contained and cleaned in the event of a spill. Once the proposed project is operational, small amounts of hazardous materials would be stored and used and would be typical hazardous materials used in homes, such as solvents and cleaners. Additionally, the storage area of such chemicals would be located approximately 500 feet away from the school boundary. Furthermore, the proposed project is anticipated to utilize similar hazardous materials that are currently being utilized for the existing agricultural uses at the project site. Therefore, construction and operational activities would not have a significant impact to existing or proposed schools within 0.25 miles on the project site. (1, 2, 3, 4)

d) **No Impact**. The project is not located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5. There would be no impact in connection with the proposed project. (1, 2, 3, 15)

e) **No Impact**. There are two airports within the project vicinity, Hollister Municipal Airport and Frazier Lake Airpark. In addition, the closest private airstrip is the Christensen Ranch Airport. The project site is not located within two miles of any of these airports or the private airstrip and would not create a safety hazard for people residing in the project area. As a result, there would be no impact in connection with the proposed project. (1, 2, 3)

f) **No Impact**. San Benito County has prepared the San Benito County Operational Area Emergency Operations Plan ("Emergency Plan") in coordination with the cities of Hollister and San Juan Bautista, and two water agencies. The Emergency Plan designates certain roadways in the County for primary evacuation routes. Panoche Road is the primary evacuation roadway for the County. The project site, located on San Juan Highway, would not impair implementation of or physically interfere with designated evacuation routes or otherwise conflict with an adopted emergency response plan or emergency evacuation plan. The project would not interfere with any emergency response or evacuation plans. There would be no impact in connection with the proposed project. (1, 2, 3, 4, 16)

g) **Less than Significant Impact**. CalFire prepares maps of VHFHS, which are used to develop recommendations for local land use agencies and for general planning purposes. The project site is not located in any fire hazard severity zone as delineated by CalFire. While the project is located in a semi-rural area, it is not adjacent to wildlands. While wildfire could occur on-site or on adjacent properties, the proposed project would comply with the applicable fire safety provisions of the California Building Code as well as standard conditions of approval, thereby reducing the risk of damage from fire to the maximum extent practicable. This is a less than significant impact. (1, 2, 3, 17)

4.10 HYDROLOGY AND WATER QUALITY

4.10.1 Environmental Setting

A Preliminary Drainage Analysis and Storm Water Management Calculations Report ("Drainage Report") was prepared for the proposed project by MH Engineering, Co. (September 16, 2020). The purpose of this this report is to substantiate the proposed project's compliance with the Central Coast Regional Water Quality

Control Board's post construction requirements, Low Impact Development ("LID") requirements, and County storm water management requirements. The drainage impacts of the proposed project on the property are effectively mitigated by the incorporation of the project storm water control measures that retains, infiltrates and details stormwater runoff from the developed site. The Drainage Report is presented in **Appendix D.**

The western portion of the project site is bisected by San Juan Creek. The current operations include dirt roads around the fields and along the banks of San Juan Creek. The project site drains as sheet flow toward San Juan Creek at minimal slopes with the runoff from storms or irrigation typically being prevented from migrating to the creek by small roadside ditches that contain runoff from the fields.

Areas around the greenhouses and the parking would be surfaced with aggregate base rock. These new impervious areas would decrease the natural pervious areas on site and to create an increase in runoff from the site.

San Benito County has a moderate California coastal climate with a hot and dry summer season lasting May through October. Average annual rainfall ranges from seven inches in the drier eastern portion of the County, to 27 inches per year in high elevations to the south. Most of the annual rainfall occurs in the fall, winter, and to a lesser extent, spring, generally between November and April.

SBCWD is responsible for water management throughout the county, including monitoring of basin water levels and water quality, management of salts and nutrients in the water, recharge into the basins, and annual reporting on the status of groundwater. Groundwater is the major source of water supply in the County. Groundwater is generally available throughout the County. The project is located in the northern San Juan Bautista subbasin which is part of the Gilroy-Hollister Valley Groundwater Basin. The Gilroy-Hollister Valley Groundwater Basin lies between the Diablo Range on the east and the Gabilan Range and the Santa Cruz Mountains to the west. The northern portion is drained toward Monterey Bay by the Pajaro River and its tributaries. Groundwater quality in this basin is characterized as highly mineralized in some areas, and of marginal quality for drinking and agricultural purposes. The mineralized water quality is typical of other relatively small Coast range groundwater basins but has also been impacted by decades of human-related activities, both agricultural and urban. (San Benito County, 2015)

The northern San Juan Bautista subbasin lies within the western portion of the Gilroy-Hollister Valley Groundwater Basin, bordering Bolsa Area subbasin to the north and Hollister Area subbasin to the east. These subbasin boundaries are primarily derived from geologic and hydrologic conditions. Groundwater occurs in the alluvium of Holocene age, an older alluvium. Most recharge to the subbasin is derived from rainfall and streamflow from creeks entering the basin. Based on the most recent Annual Groundwater Report (December 2018) the recovery of the Gilroy-Hollister basin between 2017 to 2018 increased a total of 119,741 acre-feet. More specifically, the estimated water balance for year 2018 shows an increase in water level at the San Juan subbasin by 41,538 acre-feet. In addition, the San Juan Bautista subbasin has been designated by the Department of Water Resources ("DWR") as medium priority, recognizing that they are important sources of water supply, have been well-managed, and are not critically over-drafted.

SBCWD is continuing with long term water resource management planning, including compliance with the Sustainable Groundwater Management Act ("SGMA") of 2014, which established a framework for sustainable, local groundwater management. In May 2017, the SBCWD became the Groundwater Sustainability Agency ("GSA") for the San Juan Bautista, Hollister, and Bolsa subbasins within San Benito County (and is cooperating with Santa Clara Valley Water District, which is the GSA for small portions of the Hollister and San Juan Bautista basins within Santa Clara County). SBCWD has initiated preparation of a Groundwater Sustainability Plan ("GSP") for these subbasins. The Final GSP is anticipated to be drafted in 2021 and shall be presented for adoption before January 31, 2022. SBCWD has also requested to consolidate of the four (4) subbasins into a single groundwater basin, termed the North San Benito Groundwater Basin.

Site design and runoff reduction measures will be reviewed by San Benito County to confirm the drainage plan is in accordance with the San Benito County Code of Ordinances, Article III Storm Drain Design Standards; and the RWQCB performance requirements.

San Juan Creek bisects the western portion of the site. Per the FEMA Flood Insurance Rate Map Community-Panel Number 06069C0045D, dated April 16, 2009, the site is located in Flood Zone X, and the area along San Juan Creek is within Flood Zone A (see **Figure 9. FEMA Flood Zone Map**). FEMA defines Zone X as areas that are considered low risk and outside the 100-year floodplain and Zone A as areas subject to inundation by a one percent annual-chance flood event (or 100-year flood).

Tsunamis or "tidal waves" are seismic waves created when displacement of a large volume of seawater occurs as a result of movement on seafloor faults. The project site has an elevation of approximately 150-feet above mean sea level ("msl"), approximately 14 miles east of the ocean, and would not be affected by a tsunami.

The Federal Clean Water Act regulates discharges into U.S. waters through a NPDES permit, administered through the SWRCB and the RWQCB in California. The SWRCB and Central Coast RWQCB oversee a statewide General Permit regarding management of stormwater runoff from construction sites over one acre in size. Provisions of the Statewide Permit indicate that discharges of material other than stormwater into waters of the U.S. are prohibited; that stormwater discharges shall not cause or threaten to cause pollution, contamination, or nuisance; and that storm water discharges do not contain hazardous substances. The Statewide Permit also requires implementation of BMPs to achieve compliance with water quality standards. In this instance, a BMP is defined as any program, technology, process, siting criteria, operating method, measure or device which controls, prevents, removes or reduces discharge of pollutants into bodies of water.

Any project that will disturb over one acre (including the proposed project) is required to file a "Notice of Intent" with the RWQCB with submittal of a SWPPP prior to project construction. The SWPPP is the foundation of the required documentation for a NPDES General Storm Water Permit for construction activities. In addition to regulations administered by the RWQCB, the project will be required to adhere to stormwater control measure sizing calculations set by the San Benito County Code of Ordinances, Article III, Storm Drain Design Standards.

Chapter 19.17 of the San Benito County Code regulates excavation, grading, drainage and erosion control measures and activities. The purpose of these regulations is to minimize erosion, protect fish and wildlife, and to otherwise protect public health, property, and the environment. A grading permit is required for all activities that would exceed 50 CY of grading.

Grading activity is also prohibited within 50-feet of top of the bank of a stream, creek, or river, or within 50-feet of a wetland or body of water to protect riparian areas. All proposed developments are required to submit an erosion control plan and drainage plan prior to issuance of a grading permit, per Chapter 19.17 of the San Benito County Code.

4.10.2 Environmental Impacts

Environmental Impacts	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
HYDROLOGY AND WATER QUALITY. Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i) Result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	☒	☐
iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
iv) Impede or redirect flood flows?	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

4.10.3 Explanation

a) **Less than Significant Impact**. Temporary soil disturbance would occur during construction of the proposed project as a result of earth-moving activities, such as excavation and trenching for foundations and utilities, soil compaction and moving, cut and fill activities, and grading. If not managed properly, disturbed soils would be susceptible to high rates of erosion from wind and rain, resulting in sediment transport via stormwater runoff from the project site. The types of pollutants contained in runoff from construction sites would be typical of agricultural areas, and may include sediments and contaminants such as oils, fuels, paints, and solvents. Additionally, other pollutants, such as nutrients, trace metals, and hydrocarbons, can attach to sediment and be transported to downstream drainages and ultimately into collecting waterways, contributing to degradation of water quality.

The proposed project would disturb more than one acre of soil, and as stated above, is required to obtain coverage under the RWQCB NPDES General Storm Water Permit. The Permit would require a SWPPP which contains BMPs for construction and post construction runoff. BMPs that are typically specified within the SWPPP may include, but would not be limited to the following:

- The use of sandbags, straw bales, and temporary de-silting basins during project grading and construction during the rainy season to prevent discharge of sediment-laden runoff into storm water facilities.
- Revegetation as soon as practicable after completion of grading to reduce sediment transport during storms.

- Installation of straw bales, wattles, or silt fencing at the base of bare slopes before the onset of the rainy season (October 15th through April 15th).
- Installation of straw bales, wattles, or silt fencing at the project perimeter and in front of storm drains before the onset of the rainy season (October 15th through April 15th).

In addition, Chapter 19.17 of the San Benito County Code regulates grading, drainage, and erosion and contains requirements regarding discharge and construction site stormwater runoff control. Compliance with existing laws and regulations would limit erosion, which would reduce temporary impacts to surface water quality.

As such, with implementation of all applicable laws and regulations, the proposed project would not violate water quality standards or contribute additional sources of polluted runoff. Construction impacts to water quality would be less than significant. Please refer to discussion (c) below for more information. (1, 2, 4, 18)

b) **Less than Significant Impact**. One water supply well is located on the property. The existing well would be used for irrigation and fire suppression water. Existing agricultural operations on the proposed project site use a maximum of 625,000 gallons of water per day . The new agricultural facility is anticipated to require up to 507,305 gallons of water per day at full buildout and during high growing season. The project site is within the San Juan Bautista subbasin which, as explained above, is designated by DWR as medium priority, and has a designated GSA which is developing a GSP for the area.

The project could potentially affect groundwater recharge by increasing impervious surface. However, this increase would not substantially affect groundwater recharge as most recharge to the subbasin is derived from rainfall and streamflow from creeks entering the basin. The project includes drainage improvements to control runoff. Most of the site would be left open for growing areas. Impervious areas are limited to select building and pavement locations.

The proposed project would not significantly deplete groundwater, as groundwater is shown to be well-managed in this area. The SBCWD Annual Groundwater Report identifies available groundwater and recharge. The most recent Annual Groundwater Report (December 2018) identifies that the water balance of the San Juan Bautista subbasin over the past three years has increased. The proposed project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge. Impacts would be less than significant. (1, 2, 3, 4, 19)

ci) **Less than Significant Impact.** The proposed project would not substantially alter the existing drainage pattern of the site or area that would result in substantial erosion or siltation on- or off-site. As described in Responses a) and b) above, the proposed project would include stormwater improvements and retain stormwater runoff in accordance with applicable standards and requirements of County ordinances and permit requirements. No construction or operational activities are proposed within San Juan Creek. The project would be required to comply with standard BMPs, including standard County requirements related to erosion control. More specifically, the applicant would be required to submit detailed grading plans to the County prior to issuance of any grading permit, demonstrating compliance with applicable County requirements to manage on-site drainage and erosion. As a result, the project would have a less than significant impact resulting from erosion or siltation. (1, 2, 3)

cii) **Less than Significant Impact**. The proposed project would not require alteration of a stream or river; however, the proposed project would require modification of the existing drainage pattern at the site. As described in impact c) above, the proposed project would comply with NPDES permit standards, BMPs, and County ordinances. For these reasons, this is considered a less than significant impact. (1, 2, 3) ciii) **Less than Significant Impact.** The proposed project would not create or contribute to runoff that would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff. The proposed project was designed to limit the site's post-project peak runoff rates to the pre-project runoff rates, during 100-year storm events. The proposed project grading plan will provide measures to reduce erosion and maintain sediment control and will propose new SCM to mitigate impacts in conformance with regulatory requirements. This is considered a less than significant impact. (1, 2, 4, 9)

civ) **Less than Significant Impact**. According to FEMA, the majority of the proposed project site is located within an area of minimal flood hazard ("Zone X"), and the area along San Juan Creek is within the 100-year floodplain ("Zone A"). As discussed above, the site would be graded to drain toward San Juan Creek, which is consistent with the natural drainage pattern of the site. Runoff would be directed to a storm water mitigation channel which would run parallel to San Juan Creek. The storm water mitigation channel would discharge to the creek only during periods of extended wet weather. For these reasons, the proposed project would not substantially impede or redirect flows. Therefore, this is a less than significant impact. (1, 2, 3, 20)

d) **No Impact**. The proposed project site is not located in an area subject to significant seiche, tsunami, or mudflow risk. There would be no impact in connection with the proposed project. (1, 2)

e) **Less than Significant Impact.** The project site is not subject to any current water quality control plans or sustainable groundwater management plan. As discussed above, the SBCWD has initiated preparation of a GSP which is anticipated to be drafted in 2021. The project is located on the San Juan Batista subbasin, which is not critically over-drafted as defined by the SGMA and has been marked as medium priority. (1, 2, 3, 4)

4.11 LAND USE AND PLANNING

4.11.1 Environmental Setting

The project site is located in a rural area of unincorporated San Benito County, California, near the City of San Juan Bautista. Surrounding land uses are primarily agricultural, with some rural residential and industrial uses in the vicinity.

The San Benito County 2035 General Plan is the planning document that guides development within the County. The proposed project site is bounded on the north by industrial and agricultural land uses, to the east and south by undeveloped agricultural land, and by U.S. Route 101 to the west. The proposed project site is within General Plan Agriculture land use designation and zoned Agriculture Productive, as shown in **Figure 4. Land Use Designation Map** and **Figure 5. Zoning Map**. For more information, see https://codelibrary.amlegal.com/codes/sanbenitocounty/latest/sanbenito_ca/0-0-0-11735.

4.11.2 Environmental Impacts

Environmental Impacts	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
LAND USE AND PLANNING. Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐

4.11.3 Explanation

a) **No Impact**. The proposed project consists of the construction of a nursery facility on existing agricultural land and would not physically divide an established community. There would be no impact in connection with the proposed project. (1, 2, 3)

b) **Less than Significant Impact**. Accessory uses buildings for agricultural use, such as barns and other farm outbuildings, are considered allowed uses within the AP Zoning District. Commercial greenhouses are conditional uses within the AP Zoning District; these conditional uses are allowable when a use permit is first obtained. The proposed project includes agricultural land, commercial greenhouses, accessory buildings, and access roads consistent with allowable and condition uses allowed within the AP Zoning District of the San Benito County Zoning Ordinance. The project site is zoned AP and would be in compliance with the zoning ordinance. The project would not conflict with applicable land use plans and regulations, and associated impacts would be less than significant (1, 2, 3)

4.12 NOISE

4.12.1 Environmental Setting

The policies in the San Benito County 2035 General Plan identify noise standards to avoid conflicts between noise-sensitive uses and noise source contributors. The project site is located in an agricultural area; there are a few residences located approximately 875 feet west of the project site on the opposite bank of San Juan Creek and U.S. Route 101. The primary source of noise in the project vicinity is traffic noise associated with U.S. Route 101.

Health and Safety Policy number 8.11 of the San Benito County 2035 General Plan identifies noise and land use compatibility guidelines. The noise guidelines generally utilize an exterior noise limit of 70 decibels Ldn (day/night level)[5] at residential properties. Existing noise levels on the site were not measured, but given the site's location in a rural area, they are expected to be low, in the range of 45 – 55 Ldn.

4.12.2 Environmental Impacts

Environmental Impacts	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
NOISE. Would the project:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

[5] The Ldn represents the average sound level over a 24-hour period, accounting for greater noise sensitivity during night hours by adding five (5) decibels to noise between 7-10 p.m. and 10 decibels to noise between 10 p.m.-7 a.m.

4.12.3 Explanation

a) **Less than Significant Impact.**

Construction Activities

Construction of the project would result in short-term noise increases in the project vicinity. Noise impacts from construction activities depend on the type of construction equipment used, the timing and length of activities, the distance between the noise generating construction activities and receptors, and shielding. Construction activities would occur over six (6) months . Construction equipment would include, but would not be limited to, graders, tractors/loaders/backhoes, cement and mortar mixers, pavers, rollers, saws, dozers, cranes, forklifts, and air compressors. According to the San Benito County 2035 General Plan, typical hourly average construction noise levels could be as loud as 75 - 80 decibels at a distance of ±100-feet from the construction area during active construction periods. The nearest sensitive receptors are residences located approximately 875-feet to the west and Anzar High School located immediately northeast of the site. Construction of the project would be temporary and intermittent.

Construction activities would be limited to weekdays between the hours of 7:00 AM and 8:00 PM; no night-time construction is required, which would limit noise impacts to neighboring residences. The project proponent shall prepare and implement a Construction Noise Control Plan consistent with the County's Health and Safety Policy #8.12 Construction Noise Control Plan (County of San Benito, 2015). This policy requires all construction projects within 500 feet of sensitive receptors to develop and implement construction noise control plans that consider available abatement measures to reduce construction noise levels as low as practical. Applicable measures to be considered would include (at a minimum) the following:

- Utilize 'quiet' models of air compressors and other stationary noise sources where technology exists;
- Equip all internal combustion engine-driven equipment with mufflers, which are in good condition and appropriate for the equipment;
- Locate all stationary noise-generating equipment, such as air compressors and portable power generators, as far away as possible from adjacent land uses;
- Locate staging areas and construction material areas as far away as possible from adjacent land uses;
- Prohibit all unnecessary idling of internal combustion engines;
- Notify all abutting land uses of the construction schedule in writing; and
- Designate a "disturbance coordinator" (e.g., contractor foreman or authorized representative) who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and would require that reasonable measures warranted to correct the problem be implemented. Conspicuously post a telephone number for the disturbance coordinator at the construction site and include it in the notice sent to neighbors regarding the construction schedule.

Operational Activities

The proposed development is located in a rural agricultural setting and is consistent with the previous use of project site as well as surrounding agricultural uses. The proposed project would operate between the hours of 7:00 AM and 4:00 PM and noise generated by project operation would be minimal. Therefore, long term operational impacts would be less than significant. (1, 2, 3, 4)

b) **Less than Significant Impact.** Construction of the project would generate temporary groundborne vibration. A vibration impact could occur where noise-sensitive land uses are exposed to excessive vibration levels. Residences and schools, which are considered sensitive receptors, are located within close proximity of the site. People residing in these areas could potentially be exposed to temporary groundborne vibration or groundborne noise levels.

Vibratory compactors or rollers and pavement breakers can generate perceptible vibration. Heavy trucks can also generate groundborne vibration, which varies depending on vehicle type, weight, and pavement conditions. The Federal Transit Authority has published standard vibration levels and peak particle velocities for construction equipment. Construction vibration impacts on building structures are generally assessed in terms of peak particle velocity or root mean square velocity. The root mean square velocity level and peak particle velocities for typical construction equipment are listed in **Table 5** below. **Table 5** also identifies anticipated Peak Particle Velocities for each type of equipment at a distance of 25-feet, 50-feet and 400-feet.[6]

Table 5
Vibration Velocities for Construction Equipment

Equipment	Approximate Velocity Level at 25 FT (VdB)	Approximate Peak Particle Velocity at 25 FT (inches/second)	Approximate Peak Particle Velocity at 50 FT (inches/second)	Approximate Peak Particle Velocity at 400 FT (inches/second)
Pile Driving (sonic)	104	0.644	N/A[1]	0.006
Pile Driver (impact)	112	1.518	N/A[1]	0.015
Large Bulldozers	87	0.089	0.031	0.001
Small Bulldozer	58	0.003	0.001	0.000
Loaded Trucks	86	0.076	0.027	0.001
Jackhammer	79	0.035	N/A[1]	0.000
Note: Data reflects typical vibration level. Source: (U.S. Department of Transportation, May 2006)				

For purposes of this analysis, excessive groundborne vibration would be considered significant if the vibration level exceeded 0.2 inches per second (as derived from the U.S. Department of Transportation, Earthborne Vibrations Technical Advisory equation for attenuation of vibration) which is the level at which vibration would cause damage to masonry and wood timber buildings. Vibration levels from construction equipment attenuate as they radiate from the source. Sensitive receptors in the area could be exposed to groundborne vibrations of varying magnitudes depending on the type of equipment and proximity to construction activities, as shown in **Table 5**. Ground disturbing activities associated with project grading could involve the operation of large and small bulldozers and loaded trucks. These activities could impact sensitive receptors in the area. The vibration level associated with these types of equipment would attenuate to a maximum of approximately 0.003 inches per second at 25 feet, which would be well under the threshold of 0.2 inches per second. Vibration associated with the construction of the proposed project would be below levels that could cause damage to structures, would not result in prolonged interference for sensitive receptors, and would barely be perceptible. For these reasons, this represents a less than significant impact. (1, 2, 3, 4)

c) **No Impact.** The proposed project is not within two miles of an airport, and, therefore, the proposed project would not result in the exposure of people residing or working in the project area to excessive noise level. Therefore, no impact would occur. (1, 2, 3)

[6] Vibration amplitudes are usually expressed as peak particle velocity or the velocity of a parcel (real or imaged) in a medium as it transmits a wave.

4.13 PUBLIC SERVICES

4.13.1 Environmental Setting

Fire protection services at the project site are provided to the project site by the City of Hollister Fire Department, which was absorbed by the San Benito County Fire Department in 2013. Hollister Fire Station 4 is the nearest fire station, located at 24 Polk Street, San Juan Bautista, CA 95045, approximately 2.5 miles south of the project site. Police protection services are provided to the project site by the San Benito Sheriff's Office. The County operates one Sheriff's Office, which is located at 2301 Technology Parkway, Hollister, CA, approximately 14 miles east from the project site.

The proposed project is located within the Aromas – San Juan Unified School District ("ASJUSD"). The schools in the ASJUSD are San Juan School and Anzar High School. Anzar High School is located immediately northeast of the project site, and San Juan School is located approximately three miles south of the project site.

The nearest park to the project site is Mc Alpine Lake Park, located approximately 0.15 miles southwest of the project site.

4.13.2 Environmental Impacts

Environmental Impacts	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
PUBLIC SERVICES. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
a) Fire protection?	☐	☐	☒	☐
b) Police protection?	☐	☐	☒	☐
c) Schools?	☐	☐	☐	☒
d) Parks?	☐	☐	☐	☒
e) Other public facilities?	☐	☐	☐	☒

4.13.3 Explanation

a-b) **Less than Significant Impact.** Construction and implementation of the proposed project would require fire and police protection services. This increase in service population would not require additional police staff and vehicles such that new or expanded police facilities would need to be constructed, as the project anticipates only between 10 and 15 employees during the weekdays. The City of Hollister Fire Department and San Benito County Sheriff already serve adjacent properties, demonstrating that based on distance between the project site and existing stations the proposed project would not trigger the need to construct new stations or expand existing services. This represents a less than significant impact. (1, 2, 3)

c-e) **No Impact.** The proposed project would not require any additional public services, such as schools, parks, or other public services. The project does not include any new or physically altered schools, parks or other public services or facilities, as it is an agricultural facility consistent with the zoning for the surrounding area. There would be no impact to schools, parks, or other public services. (1, 2, 3)

4.14 TRANSPORTATION

4.14.1 Environmental Setting

The following discussion is based on a Traffic Impact Analysis ("TIA") prepared by Keith Higgins, Traffic Engineer (August 25, 2020). This report is presented in **Appendix E**. The report summarizes the potential transportation impacts associated with the proposed project. Vehicular, pedestrian, bicycle and transit circulation issues were evaluated at the project site and the immediately surrounding street network. The locations of the project site and study area are indicated on **Figure 11. Project Trip Distribution**.

The project site is located off Chittenden Road and San Juan Highway, just east of U.S. Route 101. Regional access to the project site is provided by U.S. Route 101, SR 129 and San Juan Highway. Other roadways in the study area include driveways to Anzar High School and a private construction company. There are no sidewalks or marked crosswalks within the project area. There are no bicycle facilities in the project area, although Class II bike lanes are present on San Juan Highway south of Anzar High School. The nearest bus stop is located at Anzar High School, located adjacent to the project site. This stop is only serviced roughly every two hours during the school year.

Due to the COVID-19 pandemic, traffic activity throughout the county was significantly reduced from typical conditions, precluding the usual collection of peak period traffic volumes at intersection surrounding the proposed project. The traffic report utilized historic traffic counts and traffic counts collected in July 2020 to estimate the existing AM and PM traffic volumes. This information is provided in **Table 6. Existing Level of Service at Nearby Intersections**.

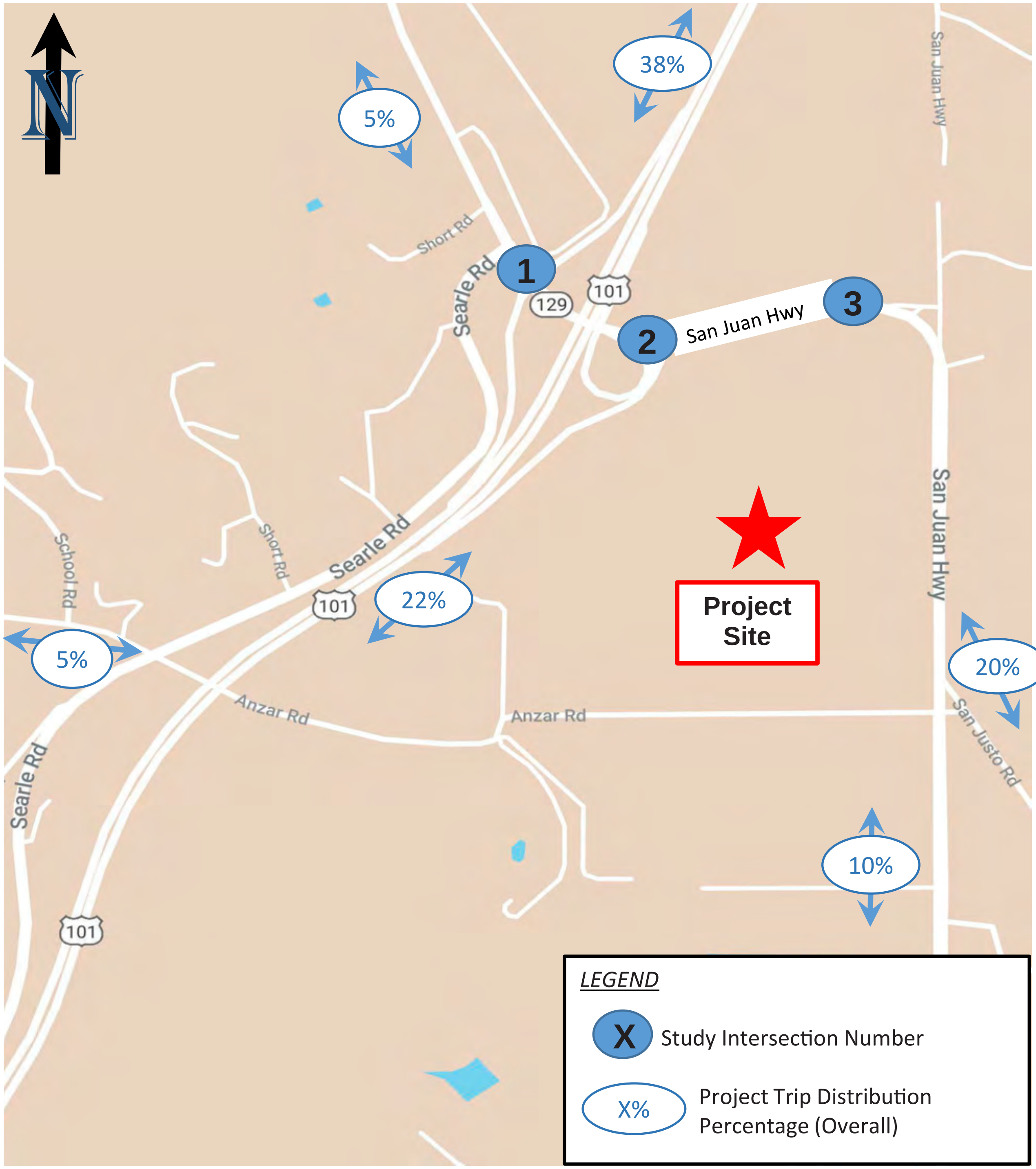
Table 6
Existing Level of Service at Nearby Intersections

Nearby Intersections	Existing Level of Service
Southbound U.S. Route 101 Ramps / State Route 129	AM Peak Hour – B PM Peak Hour – C
Northbound U.S. Route 101 Ramps / State Route 129 – San Juan Highway	AM Peak Hour – B PM Peak Hour – C
Anzar High School Driveway (North) – Willis Construction Driveway / San Juan Highway	AM Peak Hour – B/B PM Peak Hour – A/B

All of the project site will be accessible from the project's primary driveway on San Juan Highway. The majority of the project site will be either outdoor fields or greenhouse buildings, the latter being located at the center of the project site. All shipping, handling and truck loading areas will be located immediately east of the greenhouses, surrounded by 67 parking spaces for employees and guests. The equipment and storage yard will be located in the middle of the cluster of greenhouses. The consolidation of the project buildings near the center of the project site will minimize the on-site vehicle circulation once vehicles have parked. The proposed project access road would be 24-feet in width. This will be adequate for the anticipated traffic demand on the roadway, including the unlikely occurrence of two trucks passing by one another. This width will also operate acceptably opposite the various parking stalls adjacent to the greenhouses, as 24-feet is a standard aisle width within typical parking lots.

The traffic report used two different methodologies to measure the traffic impacts of the proposed project: 1) Vehicle Miles Traveled ("VMT"), and 2) Level of Service ("LOS"). These different methodologies are discussed below.

Senate Bill 743 requires that transportation impacts for a proposed project be based on VMT, rather than LOS. The publication *Technical Advisory on Evaluating Transportation Impacts in CEQA*, prepared by the Governor's Office of Planning and Research ("OPR"), dated December 2018, suggests that a significant impact would result from commercial or retail projects if the current level of VMT for the region is exceeded, although agencies are allowed to adopt their own customized thresholds. Currently, San Benito County has not established either a VMT standard or significance threshold for VMT analysis. Therefore, the traffic report included a qualitative VMT analysis and significance evaluation for the study project. As discussed below, the *Technical Advisory on Evaluating Transportation Impacts in CEQA* states that projects generating 110 or fewer daily trips could be considered to not result in a significant impact on transportation.



Source: Keith Higgins, August 2020

Title: Project Trip Distribution	Date 1/14/2021 Scale N/A Project 2020-42	Monterey | San Jose Denise Duffy and Associates, Inc. Environmental Consultants Resource Planners 947 Cass Street, Suite 5 Monterey, CA 93940 (831) 373-4341	Figure 11

SB 743 also allows local jurisdictions to assess local adverse impacts associated with their own adopted LOS standards. In accordance with the 2035 General Plan, a local adverse effect would occur if:

At an all-way stop-controlled intersection:

- A local adverse effect would occur if an intersection operating at LOS A, B, C or D degrades to LOS E or F due to the addition of project trips; or
- For intersections already operating at LOS E or F, a local adverse effect would occur if the addition of project trips causes the intersection delay to increase by more than 4.0 seconds.

At a one-way or two-way stop-controlled intersection is defined to occur under the following conditions:

- A local adverse effect would occur if side-street operations at an intersection operating at LOS A, B, C or D degrades to LOS E or F due to the addition of project trips and the traffic volumes with the addition of project trips are sufficiently high enough to satisfy the peak hour traffic signal warrant adopted by Caltrans in its Manual of Uniform Traffic Control Devices.
- For intersections with side-street operations already at E or F, a local adverse effect would occur if the project added at least one trip to the intersection and the traffic volumes with the addition of project trips are sufficiently high enough to satisfy the peak hour traffic signal warrant adopted by Caltrans in its Manual of Uniform Traffic Control Devices.

The traffic report evaluates transportation impacts after project implementation (referred to in the TIA as "Existing Plus Project Conditions") and estimated transportation impacts in 2035, the assumed buildout of the Genal Plan (referred to in the TIA as, "Cumulative Plus Project Conditions").

4.14.2 Environmental Impacts

Environmental Impacts	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
TRANSPORTATION. Would the project:				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☒	☐	☐
b) Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☒	☐	☐
d) Result in inadequate emergency access?	☐	☐	☒	☐

4.14.3 Explanation

a) **Less than Significant with Mitigation Incorporated.** Beginning in 2020 CEQA Guidelines have included thresholds for evaluating traffic impacts using VMT, instead of LOS. This change was made primarily to promote the reduction of greenhouse gas emissions as required by Senate Bill 32 and Executive Order B-16-12. In addition, VMT thresholds have become the preferred method of evaluating traffic impacts in recent years because they encourage the development of multimodal transportation networks as well as a diversity of land uses. Traffic impacts related to the VMT generated by the proposed project are discussed in b) below. The Circulation element of the 2035 General Plan includes goals and policies which require proposed projects to be evaluated under the LOS framework. For this reason, a discussion of LOS impacts generated by the proposed project is included below. (See Section b for a discussion of VMT).

The Circulation element of the 2035 General Plan includes policies directing the development of the County transportation network. The 2035 General Plan (Policy C-1.12) states:

The County shall endeavor to maintain a General Plan target goal on LOS D at all locations. If a transportation facility is already operating at an LOS D or E, the existing LOS should be maintained. Exceptions should be considered where achievement of these levels of service would cause unacceptable impacts to other modes of transportation, the environment, or private property.

The existing LOS for intersections near the proposed project is provided in **Table 6,** above.

The proposed project is estimated to generate a net 62 daily trips, with 12 trips (7 in, 5 out) during the AM peak hour and 21 trips (5 in, 16 out) during the PM. peak hour. Employees would be encouraged to carpool when possible. This amount of traffic is not anticipated to affect current level of service in the area. There are only minimal truck trips associated with operations of the proposed project, with two to five daily delivery trips. **Table 7**. **Changes to LOS Resulting from the Proposed Project** shows how the traffic counts associated with the proposed project would impact LOS at nearby intersections.

Table 7
Changes to LOS Resulting from the Proposed Project

Intersection	Current LOS	LOS After Project Implementation	LOS at General Plan Buildout (2035)
Southbound U.S. Route 101 Ramps / State Route 129	AM Peak Hour – B PM Peak Hour – C	AM Peak Hour – B PM Peak Hour – C	AM Peak Hour – E PM Peak Hour – E
Northbound U.S. Route 101 Ramps / State Route 129 – San Juan Highway	AM Peak Hour – B PM Peak Hour – C	AM Peak Hour – B PM Peak Hour – C	AM Peak Hour – D PM Peak Hour – D
Anzar High School Driveway (North) – Willis Construction Driveway / San Juan Highway	AM Peak Hour – B/B PM Peak Hour – A/B	AM Peak Hour – B/B PM Peak Hour – A/B	AM Peak Hour – B/B PM Peak Hour – A/B

As shown in **Table 7** above, all of the nearby intersections would operate at the same LOS standards as the current condition after project implementation. However, under the General Plan Buildout condition, the LOS at Southbound U.S. Route 101 Ramps and Northbound U.S. Route 101 Ramps would worsen. In particular, the intersection at Southbound U.S. Route 101 would operate at a deficient LOS E during the AM and PM peak hour. For this reason, the proposed project would have potentially significant impacts conflicting with applicable plans, ordinances or polices establishing measures of effectiveness for the performance of the circulation system. The implementation of **Mitigation Measures TRA-1** and **TRA-2** would ensure that these potential impacts would be reduced to a less than-significant level.

Mitigation Measures

TRA-1 Pay the San Benito County Regional Transportation Impact Mitigation Fee ("TIMF"). San Benito County will determine the Project's TIMF fee. The project will not impact any locations that will be funded by the TIMF. Also, the Southbound U.S. Route 101 Ramps / State Route 129 intersection is the intersection of two state highways and serves regional traffic between U.S. Route 101 and western San Benito County as well as southern Santa Cruz County. This intersection should be included in the TIMF program. The project's fair share contribution to the improvements at the Southbound U.S. Route 101 Ramps / State Route 129 intersection described in Item 2 below should be credited toward the project's TIMF.

TRA-2 The project will be responsible for 1.3% of the cost to convert the U.S. Route 101 Southbound Ramps / State Route 129 intersection into either a traffic signal or a roundabout. An Intersection Control Evaluation ("ICE") analysis will be required prior to any conversion, per Caltrans policy.

b) **Less than Significant Impact**. Section 15064.3 (b)(1) of the CEQA Guidelines identifies that VMT exceeding an applicable threshold of significance may indicate that a project has a significant transportation related effect. Currently, the County of San Benito does not have adopted VMT thresholds. As a result, the analysis completed for the proposed project used state published guidance to determine the threshold for significance. *Technical Advisory on Evaluating Transportation Impacts in CEQA* (Page 12) provides "screening thresholds" for the project description that indicate whether a project may have a significant impact. It states that "Screening thresholds such as project size, maps, transit availability, and provision of affordable housing, quickly identify when a project is expected to cause a less-than-significant impact without conducting a detailed study. Absent substantial evidence indicating that a project would generate a potentially significant level of VMT, or inconsistency with a Sustainable Communities Strategy ("SCS") or general plan, projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant transportation impact." As described above, project trip generation was estimated using trip rates for the number of employees, trucks, and deliveries. Based on the number of employees, the project would generate only 62 daily trips. Therefore, the proposed project would not conflict with or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)(2). This is a less-than-significant transportation impact under CEQA. (1, 2, 3, 21)

c) **Less than Significant Impact with Mitigation Incorporated.** The proposed project access road is 24-feet in width. This will be adequate for the anticipated traffic demand on the roadway, including the unlikely occurrence of two trucks passing by one another. This width will also operate acceptably opposite the various parking stalls adjacent to the greenhouses, as 24 feet is a standard aisle width within typical parking lots.

Sight distance standards for intersections and driveways in California are taken from the Caltrans Highway Design Manual. Private driveways, such as the proposed project primary access road, must only meet the stopping sight distance standards. For a design speed of 60 mph, which is the design speed of San Juan Highway, sight distance standards require a minimum stopping sight distance of 580 feet. Looking west along San Juan Highway from the proposed access road, the available sight distance is 760 feet, which exceeds the sight distance standard. This hazard is considered a significant impact that could be reduced to a less than significant level with the implementation of **Mitigation Measure TRA-3.**

Due to their size and turning radius, it is unclear if the large trucks that frequent the site will be able to maneuver the reverse curves south of San Juan Highway and an existing utility pole within the proposed driveway. These potential hazards are considered significant impacts resulting from geometric design features. This impact can be reduced to a less than significant level with the implementation of **Mitigation Measure TRA-4.**

The project proposes to add a westbound left turn lane on San Juan Highway at the project driveway. This left turn lane will extend eastward approximately 90 feet to the adjacent Anzar High School Driveway. The proposed new turn lane could create a potentially significant impact due to its geometric design. However, the implementation of **Mitigation Measure TRA-5** would reduce this impact to a less than significant level.

Mitigation Measures

TRA-3 Any fencing added along the project's San Juan Highway frontage should be located outside the 580-foot sight line.

TRA-4 Prepare truck turning templates to evaluate if trucks can adequately maneuver around the following on-site locations:

- Reverse curves on project access road south of San Juan Highway. If trucks cannot maneuver adequately through the curves, it is recommended that the project access road be modified as necessary.
- Utility pole located north of the shipping and staging area. If trucks cannot maneuver around it, it is recommended that the utility pole be relocated or the driveway modified as necessary.

TRA-5 Instead of a standard westbound San Juan Highway left turn lane (as proposed on the project site plan), construct a two-way left turn lane between the project driveway and Anzar High School Driveway (north).

d) **Less than Significant Impact.** As discussed above in **Section 4.9 Hazards and Hazardous Materials**, the County has prepared an Emergency Plan with the cities of Hollister and San Juan Bautista, and with two water agencies. The Emergency Plan designates Panoche Road as the primary evacuation roadway for the County. The project site, located on off San Juan Highway, would not impair implementation of or physically interfere with designated evacuation routes or otherwise conflict with an adopted emergency response plan or emergency evacuation plan. The proposed project would comply with the Municipal Code and Fire Department standards for emergency vehicle access and would not conflict with the approved Emergency Plan. The project would not interfere with any emergency response or evacuation plans. In addition, the proposed project would include an emergency driveway on Anzar Road and would only be used for emergency access or site evaluations, resulting in a less than significant impact. (1, 2)

4.15 TRIBAL CULTURAL RESOURCES

4.15.1 Environmental Setting

The Native American Heritage Commission ("NAHC") provided the results of a Sacred Lands File Search on January 27, 2021. According to the NAHC, the Sacred Lands File search was negative for tribal resources.

Additionally, the NAHC provided a list of five Native American stakeholders who may possess information about cultural resources located within the proposed project area. All NAHC identified Native American stakeholders were sent a letter via certified mail containing information about the proposed project on January 29, 2021. The parties contacted were asked to consider the letter and project information as notification of a proposed project as required under CEQA, specifically Public Resources Code 21080.3.1 and Chapter 532 Statutes of 2014 (AB 52). Between February 1 and February 10, 2021, Albion conducted follow-up outreach via emails and phone calls with the NAHC-identified Native American stakeholders. Through Native American outreach, Albion confirmed that some Tribes viewed the proposed project area as their ancestral territory.

A record of the consultation process is attached to the cultural resources report[7]. There has been no formal request for consultation under AB 52 to this point in the consultation process.

[7] For a copy of the Cultural Resources Report please contact the Lead Agency, the Cultural Resources Report is not attached to the document for privacy.

4.15.2 Environmental Impacts

Environmental Impacts	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
TRIBAL CULTURAL RESOURCES. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☒	☐	☐
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section5024.1, the lead agency shall consider the significance of the resource to a California Native America Tribe.	☐	☒	☐	☐

4.15.3 Explanation

a) **Less than Significant Impact with Mitigation Incorporated.** CEQA requires lead agencies to consider the effects of projects on cultural resources that may be eligible for listing or are listed in the CRHR. To determine whether a project could affect CRHR-eligible properties (i.e., historical resources), cultural resources must be inventoried and evaluated for listing in the CRHR.

Although few artifacts were found outside of KWH Sites 1 and 2, the topography and geology of the area may be sensitive for buried landforms and archaeological deposits. Moreover, a buried precolonial deposit associated with P-35-00528 was identified 415 feet northwest of the proposed project area and is located 11 to 12 feet below the modern surface associated with a buried late Holocene land surface. Materials associated with P-35-00528 are similar to those identified in the proposed project area including bone, shell, and chert debitage (Meyer, 2007).

Based on archival research, tribal outreach, and pedestrian survey, Albion's believes that archaeological resources exist in the proposed project area and intact subsurface deposits could also exist within the proposed project area. This is considered a significant impact. This impact would be reduced to a less than significant level with the implementation of **Mitigation Measure CR-1.**

b) **Less than Significant Impact with Mitigation Incorporated.** The AB 52 consultation process suggest the project area should be treated as very sensitive for prehistoric archaeological resources. Through Native American outreach, Albion confirmed that some Tribes view the proposed project area as their ancestral territory and consider the proposed project area a sensitive. This is considered a significant impact. This impact would be reduced to a less than significant level with the implementation of **Mitigation Measures CR-2** through **CR-4.**

4.16 UTILITIES AND SERVICE SYSTEMS

4.16.1 Environmental Setting

Utilities and services are furnished to the project site by the following providers:

- Wastewater Treatment: Septic System
- Water Service: San Benito County Water District ("SBCWD")
- Storm Drainage: San Benito County Public Works
- Solid Waste: Recology, Inc.
- Natural Gas & Electricity: PG&E

Wastewater Treatment

Most of the unincorporated areas of San Benito County lack public sewer infrastructure and instead are serviced by either community septic systems or individual septic systems and leachfield disposal. The incorporated areas, including Hollister and San Juan Bautista, are serviced by each city's wastewater and sewer services. A new septic system to serve the employee bathrooms will be located in the shipping and handling greenhouse building. The septic system will be designed and constructed in accordance with County Environmental Health requirements.

Water Service

The primary sources of water supply in the County include water purchased and imported from the Central Valley Project ("CVP") by the SBCWD. While the SBCWD is the CVP wholesaler for municipal and industrial use and has jurisdiction over water management throughout the County, much of the population is served by other water purveyors, including the City of Hollister, Sunnyslope County Water District ("SSCWD"), and other small local purveyors. Some communities within the County are not served by water districts or do not have water systems that provide water service. These communities and rural residents rely on private wells and groundwater, including the project site.

Storm Drainage

According to the San Benito County 2035 General Plan the San Benito River, Pajaro River, and the Santa Ana Creek tributary are the three natural channels that receive storm water from the County. Stormwater drainage systems serve very few areas of the county and are operated by five service providers that also provide water and/or wastewater service. Most residents and businesses in the unincorporated county rely on individual drainage solutions or small-scale drainage systems. Stormwater quality measures are advocated for and required by the County as part of the development review process. Because of the low intensity of development in unincorporated areas, the construction of large stormwater drainage systems is not necessary. A preferred method to decrease stormwater runoff volumes water and quality is the use of LID techniques. The purpose of LID is to reduce impervious surfaces and provide more opportunities for runoff to soak into the ground onsite or to unlined ditches and swales or to be used for irrigation and other uses.

The proposed project would introduce a total of 718,489 sq. ft. of impervious surface. The entire developed site would be graded to drain toward San Juan Creek consistent with the natural drainage pattern. Runoff would be directed to a storm water mitigation channel which would run parallel to San Juan Creek The storm water mitigation channel would be vegetated in enable a low level of filtration and would discharge to the creek only during periods of extended wet weather (see **Figure 8. Grading and Drainage Plan**). Runoff would be continually treated as it progresses from the impervious areas over the fields and in the ditches along the roads as it will run through vegetation, be absorbed into the ground, and evaporate along the entire course. The ditches and stormwater mitigation channel would meet the retention and treatment requirements of Central

Coast RWQCB 2013-0032 and County Ordinance Chapter 19.17 to effectively limit discharge from the site to San Juan Creek.

As the disturbed area exceeds one (1) acre, the project applicant will also be responsible for obtaining Construction Activities Storm Water General Permit, file a complete Notice of Intent ("NOI") package, and develop a SWPPP per SWRCB requirements. The project will be conditioned to require a Waste Discharger identification ("WDID") number or Erosivity Waiver to be provided to County Public Works prior to start of any construction activities as part of this project. Additionally, project conditions will require compliance with County Drainage Standards, provision of final drainage and erosion control details for the project, and that all drainage improvements be installed prior to issuance of a permit.

Solid Waste

The current solid waste disposal and recycling service provider for the City of Hollister, the City of San Juan Bautista, and most parts of unincorporated San Benito County is Recology. Recology transports solid waste to the John Smith Road Landfill ("JSRL"), which is owned by the San Benito County Integrated Waste Management Department ("IWMD") and operated by Waste Connections, Inc. The JSRL is the only operating active solid waste landfill in San Benito County.

The JSRL is located at 2650 John Smith Road, approximately five miles southeast of downtown Hollister, in the unincorporated County. It has a maximum permitted throughput of 1,000 tons per day and, as of March 31, 2018 has a remaining capacity of approximately 3,499,000 CY. According to available information from the Central Coast RWQCB regarding the JSRL, based on current waste disposal rates, the estimated closure date (when capacity is expected to be reached) is 2032 (CalRecycle, 2021).

Electricity, Natural Gas, and Telecommunications

Gas and electric service for the proposed project would be provided by PG&E. Starting in 2018, all PG&E customers within Monterey, San Benito, and Santa Cruz Counties were automatically enrolled in MBCP. MBCP is a locally-controlled public agency providing carbon-free electricity to residents and businesses. MBCP partners with PG&E, which continues to provide billing, power transmission and distribution, customer service, grid maintenance services and natural gas services to San Benito County. MBCP's standard electricity offering, is carbon free and is classified as 30 percent renewable. Of the electricity provided by MBCP in 2018, 40 percent was hydroelectric, and 30 percent was solar and wind (eligible renewables) (MBCP, 2019).

4.16.2 Environmental Impacts

Environmental Impacts	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
UTILITIES AND SERVICE SYSTEMS. Would the project:				
a) Require or result in the relocation or construction of new or expanded water, or wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c) 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?	☐	☐	☒	☐

Environmental Impacts	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
UTILITIES AND SERVICE SYSTEMS. Would the project:				
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

4.16.3 Explanation

a-c) **Less than Significant Impact**. The proposed project would result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, however, the construction or relocation of these facilities is not anticipated to result in significant environmental effects. Brief discussions of the wastewater, stormwater drainage, water, electrical, natural gas, and telecommunications that would serve the proposed project are provided below.

Wastewater Treatment

Wastewater treatment would be through a septic system on-site. Final design of the septic system would be coordinated directly with the County's Environmental Health and approved prior to any building permit issuance. As the proposed project would be through a septic system, the project would not affect existing treatment capacity. This represents a less-than-significant impact. (1, 2)

Water Service

One water supply well is located on the property. The existing well would be used for irrigation and fire suppression water. Existing agricultural operations on the proposed project site use a maximum of 625,000 gallons of water per day. The new agricultural facility is anticipated to require up to 507,305 gallons of water per day at full buildout and during high growing season. County correspondence related to project materials stated requirements for water test analysis must be completed and verified for the project and pump tests for quality and fire suppression (sprinklers and hydrants) must be performed.

The project site has a history of agricultural well use on the site and this demonstrates sufficient water supplies available to serve the project; however, the County requirements noted above for well pump testing and fire suppression sufficiency must also be met. The proposed project would not involve a substantial increase in water supply. This represents a less-than-significant impact. (1, 2)

Storm Drainage

Runoff from the proposed project would be routed towards San Juan Creek. The site would be graded such that new impervious areas are situated at higher elevations in order to create a slope leading towards San Juan Creek. This runoff would be continually treated as it progresses from the impervious areas over the fields and in the ditches along the roads as it would run through vegetation, be absorbed into the ground and evaporate along the entire course. The ditches shall comply with the requirements of Central Coast RWQCB 2013-0032 and County ordinance to effectively limit any discharge from this site to San Juan Creek. Thus, the proposed project would not involve the expansion of the County's existing stormwater drainage facilities. This represents a less-than-significant impact. (1, 2)

Electricity, Natural Gas, and Telecommunications

Electricity and telecommunications for the proposed project would be provided by PG&E by way of existing electrical infrastructure in the project vicinity. The proposed project would not require natural gas service. The proposed project would require additional electricity compared to what is currently used on-site due to the required security lighting proposed along the perimeter of the site. While additional lighting would be installed, the use would be consistent with what would be expected from an agricultural operation. Thus, impacts to electricity, natural gas, and telecommunications infrastructure would be less than significant.

Conclusion

Based on the above, the proposed project would include the necessary installation or improvements to infrastructure in order to supply water, wastewater treatment, stormwater treatment, and electrical power to the project site. As noted above, the construction of these facilities would result in a less-than-significant impact in these service areas. Additional testing in compliance per County of San Benito Health Department and County RMA conditions must also be met as noted above. (1, 2, 3,4)

d-e) **Less than Significant Impact**. During construction of the proposed project, solid waste is not anticipated to be generated as demolition would not occur. Should any construction waste be generated, the waste would be disposed of appropriately in compliance with all applicable regulations related to solid waste, including Section 5.409 of the 2016 CalGreen, which requires that at least 65 percent of non-hazardous construction waste (not including soil and land-clearing debris) is recycled or salvaged for reuse. Waste materials generated during operation would be hauled to JSRL in the City of Hollister. It is anticipated that the landfill would have sufficient capacity to accommodate solid waste generated during operational activities of the proposed project.

Considering the remaining capacity at the JSRL, the proposed project would be served by a landfill with sufficient permitted capacity to accommodate the proposed project's solid waste disposal needs, and would comply with federal, State, and local statues and regulations related to solid waste. Therefore, a less than significant impact would occur. (1, 2, 3, 4)

4.17 WILDFIRE

4.17.1 Environmental Setting

The project site is surrounded by rural agricultural development and is not located within a VHFHSZ for wildland fires, as designated by Cal Fire.

4.17.2 Environmental Impacts

Environmental Impacts	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
WILDFIRE. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☒	☐

Environmental Impacts	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
WILDFIRE. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☒	☐
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☒	☐

4.17.3 Explanation

a) **Less than Significant Impact**. The project would not substantially impair an adopted emergency response plan or emergency evacuation plan. As described above in **Section 4.9 Hazards and Hazardous Materials**, the project would not create any barriers to emergency or other vehicle movement in the area and final design would comply with all Fire and Building Code requirements. (1, 2, 3, 17)

b) **Less than Significant Impact**. The project would not exacerbate wildfire risks due to slope, prevailing winds, and other factors due to the project's agricultural location away from natural areas susceptible to wildfire. The project site is not located within an area of moderate, high, or very high fire hazard severity for the local responsibility area nor does it contain any areas of moderate, high, or very high Fire Hazard Severity for the State responsibility area. (1, 2, 3, 17)

c) **Less Than Significant Impact**. Due to the project's agricultural location and lack of interface with any natural areas susceptible to wildfire, the project would not require the installation or maintenance of associated fire suppression or related infrastructure. (1, 2, 3, 17)

d) **Less Than Significant Impact**. See above discussion. The project would not expose people or structures to significant wildfire risks given its agricultural location away from natural areas susceptible to wildfire. (1, 2, 3, 17)

4.18 MANDATORY FINDINGS OF SIGNIFICANCE

4.18.1 Environmental Impacts

Environmental Impacts	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Does the project:				
a) 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?	☐	☒	☐	☐
b) 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)?	☐	☐	☒	☐
c) Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

4.18.2 Explanation

a) **Less than Significant Impact with Mitigation Incorporated.** The proposed project would involve the development of an agricultural facility. The proposed project would not 1) degrade the quality of environment, 2) substantially reduce the habitat of a fish or wildlife species, 3) cause a fish or wildlife population to drop below self-sustaining levels, 4) threaten to eliminate a plant or animal community, 5) reduce the number or restrict the range of a rare or endangered plant or animal, or 6) eliminate important examples of major periods of California history or prehistory.

The area proposed for development is currently used for agriculture no special status plant species were observed or considered likely to be found on the project site. Special-status wildlife species including WPT, raptors and other protected avian species have the potential to occur within the project site. Mitigation for biological resources such as pre-construction surveys and construction activities avoiding nesting season are proposed to reduce impacts related to sensitive species to less than significant (**Mitigation Measures BIO-1** through **BIO-6**).

The proposed project would not adversely impact a cultural or historic resource that is an important example of a major period in California history with mitigation proposed in this IS/MND. Mitigation would reduce potential impacts to cultural resources resulting from ground disturbing construction activity (**Mitigation Measures CR-1** through **CR-5**) to less than significant. With implementation of these measures, as described in this IS/MND, the project would not have the potential to degrade the quality of the environment and, overall, impacts would be less than significant impact. No additional mitigation is necessary beyond mitigation identified in each of the respective topical CEQA sections contained in this IS/MND. (1, 2, 3, 8, 9, 10, 13, 14, 15, 20, 23, 25).

b) **Less than Significant Impact.** The proposed project would not result in a cumulatively considerable adverse environmental effect. This IS/MND contains mitigation to ensure that all impacts would be minimized to a less than significant level. These mitigations are summarized in **Table 8** below. The proposed project would result in temporary construction-related impacts that would be mitigated to a less than significant level through the incorporated of mitigation measures identified in this IS/MND (**Mitigation Measures BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, CR-1, CR-2, CR-3, CR-4, CR-5**). All operational impacts associated with the project would also be reduced to a less than significant level through the incorporation of mitigation (**Mitigation Measures GEO-1, TRA-1, TRA-2, TRA-3, TRA-4, TRA-5**). Compliance with the mitigation measures contained in this document would ensure that all impacts are less than significant. The project would have temporary air quality impacts, and GHG emissions that would contribute to the overall regional and global GHG emissions. However, air quality impacts and GHG emissions would not exceed the MBARD's thresholds of significance. In addition, the proposed project would not induce potential population growth beyond existing levels. As a result, the project would not conflict with and/or obstruct the implementation of the MBARD 2012-2015 AQMP, or any other plans to address exceedance of State air quality standards. For these reasons, the project would have a less than significant cumulative impact on the air quality and GHG. Overall, based on the analysis provided in this IS/MND, the proposed project would not significantly contribute to cumulative impacts.

Additionally, the EIR prepared for the County's 2035 General Plan identified several significant unavoidable impacts that would potentially occur with buildout of the General Plan, including loss of prime farmland, light and glare, effects to sensitive species and habitats, exposure to flood hazards, noise, population growth, and transportation level of service impacts. This project is consistent with the General Plan land use designation; thus, the effects of the project were already considered programmatically as part of the General Plan EIR. As stated in topical sections of this IS/MND, in many cases, this project would have no effect on impacts cited. Overall, the project would not result in impacts that are individually limited, but cumulatively considerable. (1, 2, 3, 8, 9, 10, 11, 12, 13, 14, 15, 20, 23, 25)

c) **Less than Significant Impact**. The proposed project would not cause any adverse effects on human beings. Construction impacts would be temporary in nature and mitigated to a less than significant level. In addition, temporary construction impacts would be limited since potential construction-related air quality impacts and GHG emissions would not exceed the MBARD's significance thresholds and compliance with applicable MBARD regulations would minimize potential nuisance impacts to occupants of nearby land uses. The project would not result in environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly as documented in this IS/MND. (1, 2, 3, 8, 9, 10, 13, 14, 15, 20, 23)

A summary of the required mitigation measures for the proposed project is provided in **Table 8** below.

Table 8 Summary of Mitigation Measures	
Mitigation Name	**Mitigation Requirements**
BIO-1	To avoid or minimize impacts to WPT, a qualified biologist shall conduct a pre-construction survey for WPT and their nests within the project site no more than three days prior to construction. If a WPT nest is found, it will be monitored and avoided until the eggs hatch. All western pond turtles discovered within the project site immediately prior to or during project activities shall be allowed to move out of the area of their own volition. If this is not feasible, they shall be captured by a qualified biologist and relocated out of harm's way to the nearest suitable habitat at least 100 feet upstream or downstream from the project site where the individual was found.
BIO-2	A qualified biologist will conduct an Employee Education Program for the construction crew prior to any construction activities. The qualified biologist will meet with the construction crew at the onset of construction at the project site to educate the construction crew on the following: 1) the appropriate access route(s) in and out of the construction area and review project boundaries; 2) how a biological monitor will examine the area and agree upon a method which will ensure the safety of the monitor during such activities, 3) the identification of special-status species that may be present; 4) the specific mitigation measures that will be incorporated into the construction effort; 5) the general provisions and protections afforded; and 6) the proper procedures if a special-status species is encountered within the project site to avoid impacts.
BIO-3	Construction activities that may affect nesting raptors and other protected avian species can be timed to avoid the avian nesting season (February 1 through September 15). Specifically, vegetation and/or tree removal can be scheduled between September 16 and January 31. If this is not possible, pre-construction surveys for protected avian species shall be conducted by a qualified biologist within 15 days prior to the commencement of construction activities in all areas that may provide suitable nesting habitat that exist in or within 300 feet of the project boundary. If nesting birds are identified during pre-construction surveys, an appropriate buffer shall be imposed within which no construction activities or disturbance will take place (generally 300 feet in all directions). A qualified biologist shall be on-site during work re-initiation in the vicinity of the nest offset to ensure that the buffer is adequate and that the nest is not stressed and/or abandoned. No work shall proceed in the vicinity of an active nest until such time as all young are fledged, as determined by the qualified biologist, or until after September 1 (when young are assumed fledged).
BIO-4	Riparian and aquatic habitat shall be avoided. Protective fencing shall be placed to keep construction vehicles and personnel from impacting riparian and aquatic habitat. If avoidance of these areas is not possible, the following shall occur: • For project activities that may impact riparian habitat, requiring a permit from CDFW, the project proponent shall obtain a 1602 Lake or Streambed Alteration Agreement and comply with all permit requirements. Conditions may include but are not limited to; development of revegetation and restoration plans and procedures, environmental awareness training, pre-construction wildlife surveys, and/or biological monitoring. • To protect water quality during construction, include the following measures on the construction specifications, with construction oversight by a qualified biological monitor: o Stationary equipment such as motors, generators, and welders located within 100 feet of the riparian habitat and drainage ditch shall be stored overnight at staging areas and will be positioned over drip pans. o Any hazardous or toxic materials deleterious to aquatic life that could be washed into a basin shall be contained in watertight containers or removed from the project site.

Table 8 Summary of Mitigation Measures	
Mitigation Name	**Mitigation Requirements**
	o All construction debris and associated materials stored in staging areas shall be removed from the work site upon completion of the project. o Whenever possible, refueling of equipment shall take place within turnouts or staging areas at least 50 feet from the top of bank or other wetland. o All refueling shall be conducted over plastic bags filled with sawdust or other highly absorbent material. Clean-up materials for spills will be kept on hand at all times. Any accidental spills of fuel or other contaminants will be cleaned up immediately.
BIO-5	A wetland delineation in accordance with ACOE standards shall be conducted to determine if wetlands observed within the project site are under the jurisdiction of ACOE and/or RWQCB. For project activities that may impact wetlands or other waters, requiring permits from ACOE and/or the RWQCB, the project proponent shall obtain permits and comply with all permit requirements.
BIO-6	The project contractor shall install protective fencing prior to and during construction to keep construction equipment and personnel from impacting riparian vegetation outside of work limits. A qualified biological monitor with the education and experience necessary to delineate riparian vegetation shall supervise the installation of protective fencing. This measure shall be included in the project's plans and specifications.
CR-1	Prior to any ground disturbance requiring an encroachment, grading, or building permit, a Phase II study shall be conducted to formally evaluate KWH Sites #1 and #2 and to determine the extent of potential buried resources outside of site boundaries but within the proposed project area. Phase II test excavations aim to (1) determine site integrity; (2) evaluate and recommend significance of the resource against criteria outlined in CEQA; and (3) assess potential project impacts and adverse effects to significant resources.
CR-2	The project applicant shall retain a qualified archaeologist (project archaeologist) to be present on the project site from the start of ground disturbing work for the planned construction. If potentially significant archaeological resources are discovered, the project archaeologist is authorized to halt excavation until any finds are property evaluated. If a find is determined to be significant, work may remain halted near the find to permit development and implementation of the appropriate mitigations (including selective data recovery) with the concurrence of the CEQA Lead Agency (San Benito County). At the discretion qualified archaeologist, monitoring could be discontinued if there is enough information collected from direct observation of the subsurface conditions to conclude that cultural resources do not exist.
CR-3	Prior to construction, the project applicant's project archeologist should conduct a sensitivity training for cultural resources for all onsite personnel involved in ground disturbing activities.
CR-4	If archaeological resources or human remains are accidentally discovered on the project site during construction, work shall be halted by the construction manager within 50 meters (150 feet) of the find until it can be evaluated by a qualified professional archaeologist. If the find is determined to be significant, appropriate mitigation measures shall be formulated and implemented. Materials of particular concern would be concentrations of marine shell, burned animal bones, charcoal and flaked or ground stone fragments. (Ref: Health and Safety Code 7050.5)

Table 8 Summary of Mitigation Measures	
Mitigation Name	**Mitigation Requirements**
CR-5	If human remains are found at any time on the project site, work must be stopped by the construction manager, and the County Coroner must be notified immediately. If the Coroner determines that the remains are Native American, the Native American Heritage Commission will be notified as required by law. The Commission will designate a Most Likely Descendant who will be authorized to provide recommendations for management of the Native American human remains. (Ref: California Public Resources Code Section 5097.98; and Health and Safety Code Section 7050.5). Specific County of San Benito provisions and further measures shall be required as follows if human remains are found: If, at any time in the preparation for or process of excavation or otherwise disturbing the ground, discovery occurs of any human remains of any age, or any significant artifact or other evidence of an archeological site, the applicant or builder shall: 1) Cease and desist from further excavation and disturbances within two hundred feet of the discovery or in any nearby area reasonably suspected to overlie adjacent remains. 2) Arrange for staking completely around the area of discovery by visible stakes no more than ten feet apart, forming a circle having a radius of not less than one hundred feet from the point of discovery; provided, however, that such staking need not take place on adjoining property unless the owner of the adjoining property authorizes such staking. Said staking shall not include flags or other devices which may attract vandals. 3) Notify Resource Management Agency Director shall also be notified within 24 hours if human and/or questionable remains have been discovered. The Sheriff–Coroner shall be notified immediately of the discovery as noted above. 4) Subject to the legal process, grant all duly authorized representatives of the Coroner and the Resource Management Agency Director permission to enter onto the property and to take all actions consistent with Chapter 19.05 of the San Benito County Code and consistent with §7050.5 of the Health and Human Safety Code and Chapter 10 (commencing with §27460) of Part 3 of Division 2 of Title 3 of the Government Code. [Planning]
GEO-1	A note shall be placed on Final Grading and Building Plans that the project applicant shall be required to implement all of the recommendations from the Geotech Report prepared for the project and incorporate the recommendations into final plans and specifications, as required by the County, prior to the start of project construction.
TRA-1	Pay the San Benito County Regional Transportation Impact Mitigation Fee ("TIMF"). San Benito County will determine the Project's TIMF fee. The project will not impact any locations that will be funded by the TIMF. Also, the Southbound U.S. Route 101 Ramps / State Route 129 intersection is the intersection of two state highways and serves regional traffic between U.S. Route 101 and western San Benito County as well as southern Santa Cruz County. This intersection should be included in the TIMF program. The project's fair share contribution to the improvements at the Southbound U.S. Route 101 Ramps / State Route 129 intersection described in Item 2 below should be credited toward the project's TIMF.
TRA-2	The project will be responsible for 1.3% of the cost to convert the U.S. Route 101 Southbound Ramps / State Route 129 intersection into either a traffic signal or a roundabout. An Intersection Control Evaluation ("ICE") analysis will be required prior to any conversion, per Caltrans policy.

Table 8 Summary of Mitigation Measures	
Mitigation Name	**Mitigation Requirements**
TRA-3	Any fencing added along the project's San Juan Highway frontage should be located outside the 580-foot sight line.
TRA-4	Prepare truck turning templates to evaluate if trucks can adequately maneuver around the following on-site locations: • Reverse curves on project access road south of San Juan Highway. If trucks cannot maneuver adequately through the curves, it is recommended that the project access road be modified as necessary. • Utility pole located north of the shipping and staging area. If trucks cannot maneuver around it, it is recommended that the utility pole be relocated or the driveway modified as necessary.
TRA-5	Instead of a standard westbound San Juan Highway left turn lane (as proposed on the project site plan), construct a two-way left turn lane between the project driveway and Anzar High School Driveway (north).

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CHAPTER 5. REFERENCES

LEAD AGENCY

San Benito County – Resource Management Agency

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INITIAL STUDY/ MITIGATION NEGATIVE DECLARATION PREPARATION

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APPENDIX A
AIR QUALITY MEMO AND CALEEMOD RESULTS

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Denise Duffy & Associates, Inc.

PLANNING AND ENVIRONMENTAL CONSULTING

SUMMARY OF AIR QUALITY MODELING FOR KAWAHARA USE PERMIT

To: Karen Hernandez, Assistant Environmental Planner, Denise Duffy and Associates
Date: January 20, 2021

The purpose of this memorandum is to document and summarize the results of the air quality modeling that has been completed on behalf of the San Benito County Resource Management Agency (RMA) by Denise Duffy and Associates (DD&A) for the Kawahara Use Permit Project (Project).

1. AIR QUALITY MODELING METHODOLOGY

This memorandum provides an estimate of the Project's criteria air pollutant and greenhouse gas emissions using the California Emissions Estimator Model (CalEEMod) Version 2016.3.1 software, a modeling platform recommended by the California Air Resources Board and accepted by the Monterey Bay Air Resources District (MBARD). Model outputs are included as **Attachment 1** to this memorandum.

The following sources were utilized to inform the model:

- The Initial Study Project Description, dated January 19, 2021, prepared by DD&A;
- Email correspondence with Arielle Goodspeed on January 17, 2021;
- Site Plans for the Kawahara Use Permit Project, dated September 16, 2020; and
- CalEEMod User's Guide, dated November, prepared by BREEZE Software.

Diana Staines, Deputy Project Manager at DD&A, ran the air quality model for the Project on January 19, 2021. When project-specific details were not available to input into the model, default values were used. An Annual Report was generated for the Project. For a detailed description of what information was entered into the model, see **Section 3. Model Inputs**, below.

2. PROJECT INFORMATION

The Project consists of a wholesale nursery with 10 to 15 employees and 2-5 truck deliveries per day. The hours of operation would be 7:00 am to 4:00 pm, Monday through Friday, with 1 to 2 employees working the weekends to water plants. The Project would include widening of San Juan/Chittenden Road at the project entrance to add a center turn lane similar to what is at the entrance to Anzar High and a paved 24-foot wide driveway leading to the concrete truck loading dock and vehicular parking areas around the shipping buildings. The vertical structures on-site would consist of an 18,000 square-foot covered shipping and staging area, a 36,000 square-foot shipping and handling greenhouse, an 18,000 square-foot production greenhouse, and

518,400 square-feet of growing block greenhouses. An employee restroom would be incorporated into the shipping and handling greenhouse with a septic system designed in accordance with County Environmental Health requirements. Daily operations would include growing plants in the greenhouse blocks and fields, plantings, research and testing in the production greenhouse, packaging and processing finished products in the within the shipping and handling greenhouse, staging of product for shipping in the shipping and staging covered area, and loading of trucks at the truck loading dock. Sufficient paved areas would be provided for all vehicles and trucks to arrive and depart the site. Aggregate base equipment storage yards and paths around the greenhouses and for emergency secondary access would be provided to ensure safe year-round operations. The entire developed site would be graded.

3. Model Inputs

The following information was input into the air quality model.

Construction

Table 1. Project Characteristics	
Project Location	Monterey County
Windspeed (m/s)	3.6
Precipitation Frequency (day)	55
CEC Forecasting Climate Zone	4
Land Use Setting	Rural
Start Date of Construction	April 1, 2022
Operational Year	2022
Utility Company	Pacific Gas & Electric
Intensity Factors	CO_2 – 307 pounds/megawatt hour CH_4 – 0.029 pounds/megawatt hour N_2O – 0.006 pounds/megawatt hour

Table 1. Project Characteristics, shows the basic project information that was input into CalEEMod. The *State Date of Construction* provided is an estimate and is dependent on the land use permit approval date. The date provided assumes that the land use permit would be approved in June 2021, that it would take approximately six months to get construction documents and permits in place, and that ground disturbance would not start during the rainy season. Based on the information above, the anticipated *State Date of Construction* was calculated to be April 1, 2022.

The model's default CO_2 intensity factor[1] of 641 pounds/megawatt hour was reduced to 307 pounds/megawatt hour to reflect Pacific Gas & Electric's (PG&E's) more recent energy projections; this reflects the PG&E intensity factor for 2019, which is the most up to date estimate available for the Project's operational year of 2022. The intensity factor has been falling, in significant part due to the increasing percentage of PG&E's energy portfolio obtained from renewable energy. Emissions intensity data is from Pacific Gas & Electric's Greenhouse Gas Factors: Guidance for PG&E Customers, dated November 2015.

[1] Energy Intensity is measured by the quantity of energy required per unit output or activity, so that using less energy to produce a product reduces the intensity.

Table 2. Land Use		
Proposed Impervious Surfaces	**CalEEMod Land Use**	**Area (square feet)**
Covered Shipping and Staging Area	Unrefrigerated Warehouse – No Rail	18,000
Shipping and Handling Greenhouse	Unrefrigerated Warehouse – No Rail	36,000
Production Greenhouse	Unrefrigerated Warehouse – No Rail	18,000
Greenhouse Block Roof Areas	Unrefrigerated Warehouse – No Rail	518,400
PCC Paved Areas	Other Asphalt Surfaces	34,601
AC Paved Areas	Other Asphalt Surfaces	93,888
AB Paved Areas	Other Non-Asphalt Surfaces	271,724

Table 2. Land Use lists multiple facilities that are proposed on the Project Site. The information in the Proposed Impervious Surfaces column was obtained from the Site Plans for the Project, specifically, Sheet 2 and Sheet 4. CalEEMod does not include a specific land use category for agricultural production greenhouses. The *Unrefrigerated Warehouse – No Rail* land use category was used for this model because it most closely reflects the characteristics of a greenhouse. The land use types and areas input into the model provide the basis for much of the calculations.

Table 3. Construction Phase				
Project Schedule Phases Provided by San Benito County RMA	**CalEEMod Phase Type**	**Start Date**	**End Date**	**Days/Week**
1. Rough grading	Site Preparation	4-1-2022	6-22-2022	5
2. Finish grading	Grading	6-1-2022	6-15-2022	5
3. Paving and Baserock	Paving	6-16-2022	7-1-2022	5
4. Erection of greenhouse structures	Building Construction	7-1-2022	9-1-2022	5
Underground Utilities	Trenching	4-1-2022	9-1-2022	5

Table 3. Construction Phase shows the schedule provided by San Benitio County RMA via email on January 17, 2021. The table reflects the quickest anticipated construction schedule for the project. The *Underground Utilities* phase will occur concurrent with phases one through four.

Table 4. Construction Equipment		
Type of Equipment	**Quantity**	**Hours/Day**
Rough Grading Phase		
Tractors/Loaders/Backhoes	2	8
Rollers	2	4
Graders	2	4
Excavators	2	4
Rubber Tired Dozers	2	4
Underground Utilities		
Trenchers	1	4
Excavators	1	4
Finish Grading		
Tractors/Loaders/Backhoes	2	8
Rollers	2	4
Graders	2	4
Excavators	2	4

Rubber Tired Dozers	2	4
Paving and Baserock		
Cement and Mortar Mixers	1	8
Paving Equipment	1	8
Pavers	1	8
Erection of Greenhouse Structures		
Cranes	1	4
Forklifts	1	4
Welders	1	4
Air Compressors	1	4

Table 4. Construction Equipment is a list of equipment that DD&A assumes will be used during construction. A project-specific equipment list was not provided by San Benito County RMA. The list above was compiled by DD&A based on our experience with previous projects of similar scope and size. Default values provided by CalEEMod (not shown in the table above) were used for the horsepower and load factor of each piece of equipment.

Table 5. Grading	
Imported Material	0
Exported Material	0
Total Graded Acres	89.11

Table 5. Grading shows the grading details that were input into the model. The values above were obtained from Sheet 4 of the Site Plans for the Project. Default values provided by CalEEMod (not shown in the table above) were used for speed of vehicles onsite, material moisture content percentage, and material silt content percentage.

Operation

Table 6. Vehicle Trips		
Type of Trip	**Provided by Applicant**	**CalEEMod Input**
Weekday Estimated Trips	64	0.11181 trips/1000sf/day
Weekend Estimated Trips	4	0.006988 trips/1000sf/day

Table 6. Vehicle Trips shows the estimated vehicle trips that were provided by the applicant. The model uses the unit of trips/1,000sf of space/day. The CalEEMod input was calculated using the total square footage of the Unrefrigerated Warehouse – No Rail land use, which is 590,400sf.

Default values provided by CalEEMod were used for all of the Operation inputs with the exception of vehicle trips, which is described above. Many of these values are generated by CalEEMod based on the land uses provided earlier in the model. These include:

- Mobile emissions during project operation, including vehicle trips, fleet mix, vehicle emissions, and road dust. The values are used by CalEEMod to calculate the emissions associated with operational on-road vehicles;
- Emissions generated hearths and woodstoves, consumer products, architectural coatings, and landscape equipment. In many instances these inputs may not be applicable to the project;

- Energy use during project operation. The energy use inputs generated by CalEEMod are used to estimate the emissions associated with building electricity and natural gas usage;
- Water and wastewater use during project operation. These inputs are used by CalEEMod to estimate the land uses contribution of greenhouse gas emissions associated with supplying and treating water and wastewater;
- Solid waste generated during project operation. This data enables the model to estimate greenhouse gas emissions associated with disposal of solid waste into landfills;
- Off-Road Equipment used during project operation. These inputs allow the model to calculate the emissions associated with operational off-road vehicles; and
- Emissions from permitted stationary sources including emergency generators, fire pumps, and boilers. In many instances, this is not applicable to the project.

Mitigation

This model was run without mitigation incorporated. DD&A assumes that standard Best Management Practices (BMPs), will be incorporated into the Project.

4. MODEL OUTPUTS

Table 7. Criteria Pollutant and Greenhouse Gas Emissions Model Results						
Criteria Pollutant Emissions (tons/year)						
	ROG	NOX	CO	SO2	Total PM10	Total PM2.5
Construction	0.1974	1.7070	1.6615	4.2100e-003	0.4740	0.2211
Operation	2.7851	0.2049	0.3883	1.4800e-003	0.0785	0.0273
Greenhouse Gas Emissions (metric tons/year)						
	Total CO2	CH4	N2O	CO2e		
Construction	379.3319	0.0598	0.0000	380.8257		
Operation	738.9724	11.1498	0.1147	1051.9073		

Table 7. Criteria Pollutant and Greenhouse Gas Emissions Model Results shows the model results that are to be used to determine if the Project as a significant impact on Air Quality and Greenhouse Gas Emissions.

Table 8. Other Model Results	
Annual VMT	186,724 miles
Natural Gas Use	2.04869e +006 kBTU per year
Electricity Use	2.08411e +006 kWh per year
Water Use	136.53 Mgal per year
Waste Disposal	554.98 tons per year

Table 8. Other Model Results provides additional outputs generated by CalEEMod, including estimates for vehicle trips, energy use, solid waste, and water use. These values are based on the information entered into the model, which is summarized above. They are estimates and may not accurately reflect site-specific project conditions. See **Attachment 1** to this memo for more details about the above values.

5. Conclusions

Air Quality

The MBARD 2016 CEQA Air Quality Guidelines contain standards of significance for evaluating potential air quality effects of projects subject to the requirements of CEQA. A proposed project will not have a significant air quality effect on the environment, due to a cumulatively considerable net increase in criteria pollutants. These emission thresholds are based on the offset requirements in Air District Rule 207 Review of New or Modified Sources.

Construction of the project will:

- Emit (from all sources, including exhaust and fugitive dust) less than;
  - 137 pounds per day of oxides of nitrogen (NOx)
  - 137 pounds per day of reactive organic gases (ROG)
  - 82 pounds per day of respirable particulate matter (PM10)
  - 55 pounds per day of fine particulate matter (PM2.5)
  - 550 pounds per day carbon monoxide (CO)

Operation of the project will:

- Emit (from all project sources, mobile, area, and stationary) less than;
  - 137 pounds per day of oxides of nitrogen (NOx)
  - 137 pounds per day of reactive organic gases (ROG)
  - 82 pounds per day of PM10
  - 55 pounds per day of PM2.5
  - 550 pounds per day carbon monoxide (CO)

For the purposes of comparison to the MBARD Standards, the values in **Table 7** above have been converted from tons/year to pounds/day in the table below.

Table 9. Comparison to MBARD Thresholds

Criteria Pollutant	Construction (pounds/day)	Operation (pounds/day)	Exceed MBARD Threshold?
NOX	9.35	1.12	No
ROG	1.08	15.26	No
PM10	2.60	0.43	No
PM2.5	1.21	0.15	No
CO	9.10	2.13	No

Table 9. Comparison to MBARB Thresholds shows that emissions of NOX, ROG, PM10, PM2.5, and CO during construction and operation of the Project would not exceed MBARD thresholds. ***Based on the above results, the Project would have a less than significant impact resulting from a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.*** This conclusion is intended to inform the

discussion of CEQA Air Quality threshold (b) in the Project Initial Study.

Greenhouse Gas

Neither the State of California, MBARD, nor San Benito County have adopted greenhouse gas emissions thresholds or a greenhouse gas emissions reduction plan that would apply to the Project. However, it is important to note that other air districts within the State of California have recently adopted recommended CEQA significance thresholds for greenhouse gas emissions. For instance, on March 28, 2012 the San Luis Obispo Air Pollution Control District (SLOAPCD) Board approved thresholds of significance for the evaluation of project-related increases of greenhouse gas emissions. The SLOAPCD's significance thresholds include both qualitative and quantitative threshold options, which include a bright-line threshold of 1,150 MTCO2e/year. On October 23, 2014, the Sacramento Metropolitan Air Quality Management District (SMAQMD) adopted a similar significance threshold of 1,100 MTCO_2e/year. Development projects located within these jurisdictions that would exceed these thresholds would be considered to have a potentially significant impact on the environment which could conflict with applicable greenhouse gas reduction plans, policies and regulations. Projects with greenhouse gas emissions that do not exceed the applicable threshold would be considered to have a less than significant impact on the environment and would not be anticipated to conflict with Assembly Bill 32 greenhouse gas emission reduction goals. Given that the MBARD has not yet adopted recommended greenhouse gas significance thresholds, the above thresholds were relied upon for evaluation of the Project. For purposes of this analysis, project-generated emissions in excess of 1,100 MTCO2e/year would be considered to have a potentially significant impact.

As noted in **Table 7** above, the Project estimated CO2e emissions during construction is 380.8 MT/yr and during operation is 1051.9 MT/yr. Construction and operation of the Project would not exceed established thresholds for greenhouse gas emissions. ***The Project would have a less than significant impact resulting from the generation of greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.*** This conclusion is intended to inform the discussion of CEQA Greenhouse Gas threshold (a) in the Project Initial Study.

Kawahara Use Permit Project
Monterey County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	590.40	1000sqft	13.55	590,400.00	0
Other Asphalt Surfaces	128.49	1000sqft	2.95	128,500.00	0
Other Non-Asphalt Surfaces	271.72	1000sqft	6.24	271,724.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.6	**Precipitation Freq (Days)**	55
Climate Zone	4			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	307	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See cover memo for rationale of changing CO2 intensity factor.

Land Use - See cover memo for explanation of land use and interpretation of provided Site Plans.

Construction Phase - See cover memo for more detailed description of phasing.

Off-road Equipment - See cover memo for details about assumptions.

Off-road Equipment - See cover memo for details about assumptions.

Off-road Equipment - See cover memo for details about assumptions.

Off-road Equipment - See cover memo for more details about assumptions.

Off-road Equipment - See cover memo for details about assumptions.

Grading - See cover memo for grading details.

Energy Use -

Fleet Mix -

Vehicle Trips - Applicant provided vehicle trips - 64 trips/day

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	370.00	45.00
tblConstructionPhase	NumDays	35.00	11.00
tblConstructionPhase	NumDays	20.00	12.00
tblConstructionPhase	NumDays	10.00	59.00
tblConstructionPhase	PhaseEndDate	11/2/2023	9/1/2022
tblConstructionPhase	PhaseEndDate	6/2/2022	6/15/2022
tblConstructionPhase	PhaseEndDate	11/30/2023	7/1/2022
tblConstructionPhase	PhaseEndDate	4/14/2022	6/22/2022
tblConstructionPhase	PhaseStartDate	6/3/2022	7/1/2022
tblConstructionPhase	PhaseStartDate	4/15/2022	6/1/2022

tblConstructionPhase	PhaseStartDate	11/3/2023	6/16/2022
tblGrading	AcresOfGrading	27.50	89.11
tblGrading	AcresOfGrading	29.50	0.00
tblLandUse	LandUseSquareFeet	128,490.00	128,500.00
tblLandUse	LandUseSquareFeet	271,720.00	271,724.00
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Cement and Mortar Mixers
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00

tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	307
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	WorkerTripNumber	30.00	25.00
tblTripsAndVMT	WorkerTripNumber	13.00	8.00
tblVehicleTrips	ST_TR	1.68	6.9880e-003
tblVehicleTrips	SU_TR	1.68	6.9880e-003
tblVehicleTrips	WD_TR	1.68	0.11

2.0 Emissions Summary

2.1 Overall Construction

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	tons/yr										MT/yr					
2022	0.1974	1.7070	1.6615	4.2100e-003	0.4102	0.0639	0.4740	0.1619	0.0592	0.2211	0.0000	379.3319	379.3319	0.0598	0.0000	380.8257
Maximum	**0.1974**	**1.7070**	**1.6615**	**4.2100e-003**	**0.4102**	**0.0639**	**0.4740**	**0.1619**	**0.0592**	**0.2211**	**0.0000**	**379.3319**	**379.3319**	**0.0598**	**0.0000**	**380.8257**

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	tons/yr										MT/yr					
2022	0.1974	1.7070	1.6615	4.2100e-003	0.4102	0.0639	0.4740	0.1619	0.0592	0.2211	0.0000	379.3317	379.3317	0.0598	0.0000	380.8255
Maximum	**0.1974**	**1.7070**	**1.6615**	**4.2100e-003**	**0.4102**	**0.0639**	**0.4740**	**0.1619**	**0.0592**	**0.2211**	**0.0000**	**379.3317**	**379.3317**	**0.0598**	**0.0000**	**380.8255**

	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	**0.01**	**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**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**4-1-2022**	**6-30-2022**	1.0567	1.0567
2	**7-1-2022**	**9-30-2022**	0.8316	0.8316
		Highest	1.0567	1.0567

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	tons/yr										MT/yr					
Area	2.7517	1.2000e-004	0.0127	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0246	0.0246	6.0000e-005	0.0000	0.0262
Energy	0.0111	0.1004	0.0844	6.0000e-004		7.6300e-003	7.6300e-003		7.6300e-003	7.6300e-003	0.0000	399.5444	399.5444	0.0295	7.6800e-003	402.5697
Mobile	0.0224	0.1044	0.2912	8.8000e-004	0.0700	8.3000e-004	0.0709	0.0188	7.8000e-004	0.0196	0.0000	80.5580	80.5580	3.8700e-003	0.0000	80.6547
Waste						0.0000	0.0000		0.0000	0.0000	112.6559	0.0000	112.6559	6.6578	0.0000	279.1003
Water						0.0000	0.0000		0.0000	0.0000	43.3147	102.8750	146.1896	4.4586	0.1071	289.5564
Total	**2.7851**	**0.2049**	**0.3883**	**1.4800e-003**	**0.0700**	**8.5100e-003**	**0.0785**	**0.0188**	**8.4600e-003**	**0.0273**	**155.9706**	**583.0019**	**738.9724**	**11.1498**	**0.1147**	**1,051.9073**

2.2 Overall Operational

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	tons/yr										MT/yr					
Area	2.7517	1.2000e-004	0.0127	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0246	0.0246	6.0000e-005	0.0000	0.0262
Energy	0.0111	0.1004	0.0844	6.0000e-004		7.6300e-003	7.6300e-003		7.6300e-003	7.6300e-003	0.0000	399.5444	399.5444	0.0295	7.6800e-003	402.5697
Mobile	0.0224	0.1044	0.2912	8.8000e-004	0.0700	8.3000e-004	0.0709	0.0188	7.8000e-004	0.0196	0.0000	80.5580	80.5580	3.8700e-003	0.0000	80.6547
Waste						0.0000	0.0000		0.0000	0.0000	112.6559	0.0000	112.6559	6.6578	0.0000	279.1003
Water						0.0000	0.0000		0.0000	0.0000	43.3147	102.8750	146.1896	4.4586	0.1071	289.5564
Total	**2.7851**	**0.2049**	**0.3883**	**1.4800e-003**	**0.0700**	**8.5100e-003**	**0.0785**	**0.0188**	**8.4600e-003**	**0.0273**	**155.9706**	**583.0019**	**738.9724**	**11.1498**	**0.1147**	**1,051.9073**

	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	Rough Grading	Site Preparation	4/1/2022	6/22/2022	5	59	
2	Finish Grading	Grading	6/1/2022	6/15/2022	5	11	
3	Erection of Greenhouse Structures	Building Construction	7/1/2022	9/1/2022	5	45	
4	Paving and Baserock	Paving	6/16/2022	7/1/2022	5	12	
5	Underground Utilities	Trenching	4/1/2022	9/1/2022	5	110	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 9.19

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Rough Grading	Rollers	2	4.00	80	0.38
Rough Grading	Graders	2	4.00	187	0.41
Rough Grading	Excavators	2	4.00	158	0.38
Rough Grading	Rubber Tired Dozers	2	4.00	247	0.40
Rough Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Finish Grading	Rollers	2	4.00	80	0.38
Erection of Greenhouse Structures	Air Compressors	1	4.00	78	0.48
Finish Grading	Excavators	2	4.00	158	0.38
Finish Grading	Graders	2	4.00	187	0.41
Paving and Baserock	Cement and Mortar Mixers	1	8.00	9	0.56
Finish Grading	Rubber Tired Dozers	2	4.00	247	0.40
Finish Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Underground Utilities	Trenchers	1	4.00	78	0.50
Paving and Baserock	Pavers	1	8.00	130	0.42
Paving and Baserock	Paving Equipment	1	8.00	132	0.36
Underground Utilities	Excavators	1	4.00	158	0.38
Erection of Greenhouse Structures	Cranes	1	4.00	231	0.29
Erection of Greenhouse Structures	Forklifts	1	4.00	89	0.20
Erection of Greenhouse Structures	Welders	1	4.00	46	0.45
Erection of Greenhouse Structures	Generator Sets	1	8.00	84	0.74
Paving and Baserock	Rollers	2	8.00	80	0.38
Finish Grading	Scrapers	2	8.00	367	0.48
Erection of Greenhouse Structures	Tractors/Loaders/Backhoes	3	7.00	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
Rough Grading	10	25.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Underground Utilities	2	5.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Finish Grading	12	25.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving and Baserock	5	8.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Erection of Greenhouse Structure	8	416.00	162.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Rough Grading - 2022

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	tons/yr										MT/yr					
Fugitive Dust					0.1777	0.0000	0.1777	0.0977	0.0000	0.0977	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0575	0.6167	0.4394	8.6000e-004		0.0280	0.0280		0.0258	0.0258	0.0000	75.6001	75.6001	0.0245	0.0000	76.2114
Total	**0.0575**	**0.6167**	**0.4394**	**8.6000e-004**	**0.1777**	**0.0280**	**0.2057**	**0.0977**	**0.0258**	**0.1234**	**0.0000**	**75.6001**	**75.6001**	**0.0245**	**0.0000**	**76.2114**

3.2 Rough Grading - 2022

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	tons/yr										MT/yr					
Hauling	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	0.0000	0.0000	0.0000
Vendor	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	0.0000	0.0000	0.0000
Worker	3.8700e-003	3.5600e-003	0.0323	9.0000e-005	9.1100e-003	7.0000e-005	9.1800e-003	2.4200e-003	7.0000e-005	2.4900e-003	0.0000	8.0042	8.0042	2.9000e-004	0.0000	8.0114
Total	**3.8700e-003**	**3.5600e-003**	**0.0323**	**9.0000e-005**	**9.1100e-003**	**7.0000e-005**	**9.1800e-003**	**2.4200e-003**	**7.0000e-005**	**2.4900e-003**	**0.0000**	**8.0042**	**8.0042**	**2.9000e-004**	**0.0000**	**8.0114**

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	tons/yr										MT/yr					
Fugitive Dust					0.1777	0.0000	0.1777	0.0977	0.0000	0.0977	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0575	0.6167	0.4394	8.6000e-004		0.0280	0.0280		0.0258	0.0258	0.0000	75.6000	75.6000	0.0245	0.0000	76.2113
Total	**0.0575**	**0.6167**	**0.4394**	**8.6000e-004**	**0.1777**	**0.0280**	**0.2057**	**0.0977**	**0.0258**	**0.1234**	**0.0000**	**75.6000**	**75.6000**	**0.0245**	**0.0000**	**76.2113**

3.2 Rough Grading - 2022

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	tons/yr										MT/yr					
Hauling	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	0.0000	0.0000	0.0000
Vendor	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	0.0000	0.0000	0.0000
Worker	3.8700e-003	3.5600e-003	0.0323	9.0000e-005	9.1100e-003	7.0000e-005	9.1800e-003	2.4200e-003	7.0000e-005	2.4900e-003	0.0000	8.0042	8.0042	2.9000e-004	0.0000	8.0114
Total	**3.8700e-003**	**3.5600e-003**	**0.0323**	**9.0000e-005**	**9.1100e-003**	**7.0000e-005**	**9.1800e-003**	**2.4200e-003**	**7.0000e-005**	**2.4900e-003**	**0.0000**	**8.0042**	**8.0042**	**2.9000e-004**	**0.0000**	**8.0114**

3.3 Finish Grading - 2022

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	tons/yr										MT/yr					
Fugitive Dust					0.0804	0.0000	0.0804	0.0233	0.0000	0.0233	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0197	0.2132	0.1519	3.3000e-004		9.0600e-003	9.0600e-003		8.3300e-003	8.3300e-003	0.0000	28.7510	28.7510	9.3000e-003	0.0000	28.9835
Total	**0.0197**	**0.2132**	**0.1519**	**3.3000e-004**	**0.0804**	**9.0600e-003**	**0.0894**	**0.0233**	**8.3300e-003**	**0.0316**	**0.0000**	**28.7510**	**28.7510**	**9.3000e-003**	**0.0000**	**28.9835**

3.3 Finish Grading - 2022

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	tons/yr										MT/yr					
Hauling	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	0.0000	0.0000	0.0000
Vendor	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	0.0000	0.0000	0.0000
Worker	7.2000e-004	6.6000e-004	6.0200e-003	2.0000e-005	1.7000e-003	1.0000e-005	1.7100e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.4923	1.4923	5.0000e-005	0.0000	1.4937
Total	**7.2000e-004**	**6.6000e-004**	**6.0200e-003**	**2.0000e-005**	**1.7000e-003**	**1.0000e-005**	**1.7100e-003**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**	**0.0000**	**1.4923**	**1.4923**	**5.0000e-005**	**0.0000**	**1.4937**

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	tons/yr										MT/yr					
Fugitive Dust					0.0804	0.0000	0.0804	0.0233	0.0000	0.0233	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0197	0.2132	0.1519	3.3000e-004		9.0600e-003	9.0600e-003		8.3300e-003	8.3300e-003	0.0000	28.7510	28.7510	9.3000e-003	0.0000	28.9835
Total	**0.0197**	**0.2132**	**0.1519**	**3.3000e-004**	**0.0804**	**9.0600e-003**	**0.0894**	**0.0233**	**8.3300e-003**	**0.0316**	**0.0000**	**28.7510**	**28.7510**	**9.3000e-003**	**0.0000**	**28.9835**

3.3 Finish Grading - 2022

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	tons/yr										MT/yr					
Hauling	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	0.0000	0.0000	0.0000
Vendor	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	0.0000	0.0000	0.0000
Worker	7.2000e-004	6.6000e-004	6.0200e-003	2.0000e-005	1.7000e-003	1.0000e-005	1.7100e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.4923	1.4923	5.0000e-005	0.0000	1.4937
Total	**7.2000e-004**	**6.6000e-004**	**6.0200e-003**	**2.0000e-005**	**1.7000e-003**	**1.0000e-005**	**1.7100e-003**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**	**0.0000**	**1.4923**	**1.4923**	**5.0000e-005**	**0.0000**	**1.4937**

3.4 Erection of Greenhouse Structures - 2022

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	tons/yr										MT/yr					
Off-Road	0.0288	0.2614	0.2954	4.9000e-004		0.0133	0.0133		0.0127	0.0127	0.0000	42.0192	42.0192	8.6600e-003	0.0000	42.2357
Total	**0.0288**	**0.2614**	**0.2954**	**4.9000e-004**		**0.0133**	**0.0133**		**0.0127**	**0.0127**	**0.0000**	**42.0192**	**42.0192**	**8.6600e-003**	**0.0000**	**42.2357**

3.4 Erection of Greenhouse Structures - 2022

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	tons/yr										MT/yr					
Hauling	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	0.0000	0.0000	0.0000
Vendor	0.0117	0.3763	0.0943	9.4000e-004	0.0217	1.0200e-003	0.0227	6.2700e-003	9.7000e-004	7.2500e-003	0.0000	89.9732	89.9732	4.1300e-003	0.0000	90.0763
Worker	0.0492	0.0451	0.4096	1.1200e-003	0.1156	9.3000e-004	0.1166	0.0307	8.6000e-004	0.0316	0.0000	101.5860	101.5860	3.6300e-003	0.0000	101.6766
Total	**0.0609**	**0.4214**	**0.5038**	**2.0600e-003**	**0.1373**	**1.9500e-003**	**0.1393**	**0.0370**	**1.8300e-003**	**0.0389**	**0.0000**	**191.5592**	**191.5592**	**7.7600e-003**	**0.0000**	**191.7530**

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	tons/yr										MT/yr					
Off-Road	0.0288	0.2614	0.2954	4.9000e-004		0.0133	0.0133		0.0127	0.0127	0.0000	42.0192	42.0192	8.6600e-003	0.0000	42.2357
Total	**0.0288**	**0.2614**	**0.2954**	**4.9000e-004**		**0.0133**	**0.0133**		**0.0127**	**0.0127**	**0.0000**	**42.0192**	**42.0192**	**8.6600e-003**	**0.0000**	**42.2357**

3.4 Erection of Greenhouse Structures - 2022

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	tons/yr										MT/yr					
Hauling	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	0.0000	0.0000	0.0000
Vendor	0.0117	0.3763	0.0943	9.4000e-004	0.0217	1.0200e-003	0.0227	6.2700e-003	9.7000e-004	7.2500e-003	0.0000	89.9732	89.9732	4.1300e-003	0.0000	90.0763
Worker	0.0492	0.0451	0.4096	1.1200e-003	0.1156	9.3000e-004	0.1166	0.0307	8.6000e-004	0.0316	0.0000	101.5860	101.5860	3.6300e-003	0.0000	101.6766
Total	**0.0609**	**0.4214**	**0.5038**	**2.0600e-003**	**0.1373**	**1.9500e-003**	**0.1393**	**0.0370**	**1.8300e-003**	**0.0389**	**0.0000**	**191.5592**	**191.5592**	**7.7600e-003**	**0.0000**	**191.7530**

3.5 Paving and Baserock - 2022

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	tons/yr										MT/yr					
Off-Road	4.6600e-003	0.0459	0.0568	9.0000e-005		2.3900e-003	2.3900e-003		2.2000e-003	2.2000e-003	0.0000	7.6664	7.6664	2.4200e-003	0.0000	7.7268
Paving	3.8600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.5200e-003**	**0.0459**	**0.0568**	**9.0000e-005**		**2.3900e-003**	**2.3900e-003**		**2.2000e-003**	**2.2000e-003**	**0.0000**	**7.6664**	**7.6664**	**2.4200e-003**	**0.0000**	**7.7268**

3.5 Paving and Baserock - 2022

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	tons/yr										MT/yr					
Hauling	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	0.0000	0.0000	0.0000
Vendor	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	0.0000	0.0000	0.0000
Worker	2.5000e-004	2.3000e-004	2.1000e-003	1.0000e-005	5.9000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5210	0.5210	2.0000e-005	0.0000	0.5214
Total	**2.5000e-004**	**2.3000e-004**	**2.1000e-003**	**1.0000e-005**	**5.9000e-004**	**0.0000**	**6.0000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5210**	**0.5210**	**2.0000e-005**	**0.0000**	**0.5214**

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	tons/yr										MT/yr					
Off-Road	4.6600e-003	0.0459	0.0568	9.0000e-005		2.3900e-003	2.3900e-003		2.2000e-003	2.2000e-003	0.0000	7.6663	7.6663	2.4200e-003	0.0000	7.7268
Paving	3.8600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.5200e-003**	**0.0459**	**0.0568**	**9.0000e-005**		**2.3900e-003**	**2.3900e-003**		**2.2000e-003**	**2.2000e-003**	**0.0000**	**7.6663**	**7.6663**	**2.4200e-003**	**0.0000**	**7.7268**

3.5 Paving and Baserock - 2022

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	tons/yr										MT/yr					
Hauling	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	0.0000	0.0000	0.0000
Vendor	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	0.0000	0.0000	0.0000
Worker	2.5000e-004	2.3000e-004	2.1000e-003	1.0000e-005	5.9000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5210	0.5210	2.0000e-005	0.0000	0.5214
Total	**2.5000e-004**	**2.3000e-004**	**2.1000e-003**	**1.0000e-005**	**5.9000e-004**	**0.0000**	**6.0000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5210**	**0.5210**	**2.0000e-005**	**0.0000**	**0.5214**

3.6 Underground Utilities - 2022

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	tons/yr										MT/yr					
Off-Road	0.0157	0.1425	0.1618	2.4000e-004		8.9900e-003	8.9900e-003		8.2700e-003	8.2700e-003	0.0000	20.7339	20.7339	6.7100e-003	0.0000	20.9016
Total	**0.0157**	**0.1425**	**0.1618**	**2.4000e-004**		**8.9900e-003**	**8.9900e-003**		**8.2700e-003**	**8.2700e-003**	**0.0000**	**20.7339**	**20.7339**	**6.7100e-003**	**0.0000**	**20.9016**

3.6 Underground Utilities - 2022

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	tons/yr										MT/yr					
Hauling	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	0.0000	0.0000	0.0000
Vendor	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	0.0000	0.0000	0.0000
Worker	1.4400e-003	1.3300e-003	0.0120	3.0000e-005	3.4000e-003	3.0000e-005	3.4200e-003	9.0000e-004	3.0000e-005	9.3000e-004	0.0000	2.9846	2.9846	1.1000e-004	0.0000	2.9873
Total	**1.4400e-003**	**1.3300e-003**	**0.0120**	**3.0000e-005**	**3.4000e-003**	**3.0000e-005**	**3.4200e-003**	**9.0000e-004**	**3.0000e-005**	**9.3000e-004**	**0.0000**	**2.9846**	**2.9846**	**1.1000e-004**	**0.0000**	**2.9873**

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	tons/yr										MT/yr					
Off-Road	0.0157	0.1425	0.1618	2.4000e-004		8.9900e-003	8.9900e-003		8.2700e-003	8.2700e-003	0.0000	20.7339	20.7339	6.7100e-003	0.0000	20.9015
Total	**0.0157**	**0.1425**	**0.1618**	**2.4000e-004**		**8.9900e-003**	**8.9900e-003**		**8.2700e-003**	**8.2700e-003**	**0.0000**	**20.7339**	**20.7339**	**6.7100e-003**	**0.0000**	**20.9015**

3.6 Underground Utilities - 2022

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	tons/yr										MT/yr					
Hauling	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	0.0000	0.0000	0.0000
Vendor	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	0.0000	0.0000	0.0000
Worker	1.4400e-003	1.3300e-003	0.0120	3.0000e-005	3.4000e-003	3.0000e-005	3.4200e-003	9.0000e-004	3.0000e-005	9.3000e-004	0.0000	2.9846	2.9846	1.1000e-004	0.0000	2.9873
Total	**1.4400e-003**	**1.3300e-003**	**0.0120**	**3.0000e-005**	**3.4000e-003**	**3.0000e-005**	**3.4200e-003**	**9.0000e-004**	**3.0000e-005**	**9.3000e-004**	**0.0000**	**2.9846**	**2.9846**	**1.1000e-004**	**0.0000**	**2.9873**

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	tons/yr										MT/yr					
Mitigated	0.0224	0.1044	0.2912	8.8000e-004	0.0700	8.3000e-004	0.0709	0.0188	7.8000e-004	0.0196	0.0000	80.5580	80.5580	3.8700e-003	0.0000	80.6547
Unmitigated	0.0224	0.1044	0.2912	8.8000e-004	0.0700	8.3000e-004	0.0709	0.0188	7.8000e-004	0.0196	0.0000	80.5580	80.5580	3.8700e-003	0.0000	80.6547

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	66.01	4.13	4.13	186,724	186,724
Total	66.01	4.13	4.13	186,724	186,724

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
Other Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	14.70	6.60	6.60	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.543895	0.028716	0.205211	0.131753	0.021859	0.005504	0.019097	0.027308	0.004155	0.002738	0.007724	0.001236	0.000805
Other Non-Asphalt Surfaces	0.543895	0.028716	0.205211	0.131753	0.021859	0.005504	0.019097	0.027308	0.004155	0.002738	0.007724	0.001236	0.000805
Unrefrigerated Warehouse-No Rail	0.543895	0.028716	0.205211	0.131753	0.021859	0.005504	0.019097	0.027308	0.004155	0.002738	0.007724	0.001236	0.000805

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	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	290.2186	290.2186	0.0274	5.6700e-003	292.5942
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	290.2186	290.2186	0.0274	5.6700e-003	292.5942
NaturalGas Mitigated	0.0111	0.1004	0.0844	6.0000e-004		7.6300e-003	7.6300e-003		7.6300e-003	7.6300e-003	0.0000	109.3258	109.3258	2.1000e-003	2.0000e-003	109.9755
NaturalGas Unmitigated	0.0111	0.1004	0.0844	6.0000e-004		7.6300e-003	7.6300e-003		7.6300e-003	7.6300e-003	0.0000	109.3258	109.3258	2.1000e-003	2.0000e-003	109.9755

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	tons/yr										MT/yr					
Other Asphalt Surfaces	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	0.0000	0.0000
Other Non-Asphalt Surfaces	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	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	2.04869e+006	0.0111	0.1004	0.0844	6.0000e-004		7.6300e-003	7.6300e-003		7.6300e-003	7.6300e-003	0.0000	109.3258	109.3258	2.1000e-003	2.0000e-003	109.9755
Total		**0.0111**	**0.1004**	**0.0844**	**6.0000e-004**		**7.6300e-003**	**7.6300e-003**		**7.6300e-003**	**7.6300e-003**	**0.0000**	**109.3258**	**109.3258**	**2.1000e-003**	**2.0000e-003**	**109.9755**

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	tons/yr										MT/yr					
Other Asphalt Surfaces	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	0.0000	0.0000
Other Non-Asphalt Surfaces	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	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	2.04869e+006	0.0111	0.1004	0.0844	6.0000e-004		7.6300e-003	7.6300e-003		7.6300e-003	7.6300e-003	0.0000	109.3258	109.3258	2.1000e-003	2.0000e-003	109.9755
Total		**0.0111**	**0.1004**	**0.0844**	**6.0000e-004**		**7.6300e-003**	**7.6300e-003**		**7.6300e-003**	**7.6300e-003**	**0.0000**	**109.3258**	**109.3258**	**2.1000e-003**	**2.0000e-003**	**109.9755**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	2.08411e +006	290.2186	0.0274	5.6700e-003	292.5942
Total		**290.2186**	**0.0274**	**5.6700e-003**	**292.5942**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	2.08411e +006	290.2186	0.0274	5.6700e-003	292.5942
Total		**290.2186**	**0.0274**	**5.6700e-003**	**292.5942**

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	tons/yr										MT/yr					
Mitigated	2.7517	1.2000e-004	0.0127	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0246	0.0246	6.0000e-005	0.0000	0.0262
Unmitigated	2.7517	1.2000e-004	0.0127	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0246	0.0246	6.0000e-005	0.0000	0.0262

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	tons/yr										MT/yr					
Architectural Coating	0.4188					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.3317					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1800e-003	1.2000e-004	0.0127	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0246	0.0246	6.0000e-005	0.0000	0.0262
Total	**2.7517**	**1.2000e-004**	**0.0127**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0246**	**0.0246**	**6.0000e-005**	**0.0000**	**0.0262**

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	tons/yr										MT/yr					
Architectural Coating	0.4188					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.3317					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1800e-003	1.2000e-004	0.0127	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0246	0.0246	6.0000e-005	0.0000	0.0262
Total	**2.7517**	**1.2000e-004**	**0.0127**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0246**	**0.0246**	**6.0000e-005**	**0.0000**	**0.0262**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	146.1896	4.4586	0.1071	289.5564
Unmitigated	146.1896	4.4586	0.1071	289.5564

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	136.53 / 0	146.1896	4.4586	0.1071	289.5564
Total		**146.1896**	**4.4586**	**0.1071**	**289.5564**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	136.53 / 0	146.1896	4.4586	0.1071	289.5564
Total		**146.1896**	**4.4586**	**0.1071**	**289.5564**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	112.6559	6.6578	0.0000	279.1003
Unmitigated	112.6559	6.6578	0.0000	279.1003

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	554.98	112.6559	6.6578	0.0000	279.1003
Total		**112.6559**	**6.6578**	**0.0000**	**279.1003**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	554.98	112.6559	6.6578	0.0000	279.1003
Total		**112.6559**	**6.6578**	**0.0000**	**279.1003**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX B
BIOLOGICAL REPORT

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Kawahara Agricultural Facility Project Biological Resources Report

March 2021

Prepared for

San Benito County Resource Management Agency

Prepared by

Denise Duffy & Associates, Inc.

947 Cass Street, Suite 5

Monterey, California 93940

Contact: Matthew Johnson

(831) 373–4341

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Figures

Appendices

1. INTRODUCTION

Denise Duffy & Associates, Inc. (DD&A) was contracted by the San Benito County (County) Resource Management Agency (RMA) to prepare a Biological Resources Report for the Kawahara Agricultural Facility Project (project). The project encompasses 104 acres of agricultural land near the interchange of San Juan Highway and Chittenden Road/Anzar Road located on County Assessor Parcel Number (APN) 012-030-045 in an unincorporated area of the County, near the City of San Juan Bautista, California (**Figure 1** and **2**). The project consists of the construction of several buildings and site improvements including a 18,000 square foot (ft^2) covered shipping/staging area, a 36,000 ft^2 shipping and handling greenhouse, an 18,000ft^2 production greenhouse, and a total of 518,400 ft^2 of growing block greenhouses. Project improvements would also include widening San Juan Road/Chittenden Road at the project entrance. (**Appendix A**).

This report identifies sensitive biological resources which may occur within and adjacent to the site, analyzes what types of impacts to those resources could result from the project, and provides recommended avoidance, minimization, and mitigation measures to reduce impacts to a less than significant level under the California Environmental Quality Act (CEQA). This report also includes an overview of regulatory permits and authorizations that may be required for the project.

1.1 Project Description

The proposed project consists of an application for a Conditional Use Permit ("CUP") (County Planning File #PLN190056) and construction of vegetable and flower nursery greenhouses and related facilities for Kawahara Nurseries, on a 104-acre proposed project site.

Full build out of the project consists of construction of a vegetable and flower nursery, which would involve the construction of one (1) 18,000 ft^2 covered shipping/staging area, one (1) 36,000 ft^2 shipping and handling greenhouse, one (1) 18,000 ft^2 production greenhouse, and a total of 518,400 ft^2 of growing block greenhouses in three main blocks (**Appendix A**). Both the production greenhouses and shipping greenhouses will be 15 feet (ft) high. Nine (9) outdoor field areas will surround the proposed greenhouses. The project site will be graded to drain toward San Juan Creek, with a stormwater channel running parallel to the creek to intercept, retail, detain, and infiltrate runoff water.

The proposed project includes several roadway improvements, including the widening of San Juan Road/Chittenden Road. These improvements would include a dedicated center turn lane to be incorporated at the project entrance, with a westerly taper in compliance with Caltrans Highway design manual, a 24 ft wide paved driveway west of the utility poles leading to a concrete loading dock, and vehicular parking areas around the shipping buildings. The proposed project involves approximately 74,457 cubic yards (yd^3) of cut and 63,288 yd^3 of fill and will not require any import or export of cut and fill materials. No trees or vegetation are proposed for removal during the construction of any phase of the project.

Kawahara Nursery Project Vicinity Map	Date: 2/24/2021 Scale: 1 inch = 4 miles Project: 2020-42	Monterey | San Jose **Denise Duffy and Associates, Inc.** Environmental Consultants Resource Planners 947 Cass Street, Suite 5 Monterey, CA 93940 (831) 373-4341	Figure 1

Kawahara Nursery
Project Location Map

Date: 2/24/2021
Scale: 1 inch = 400 feet
Project: 2020-42

Monterey | San Jose
Denise Duffy and Associates, Inc.
Environmental Consultants Resource Planners
947 Cass Street, Suite 5
Monterey, CA 93940
(831) 373-4341

Figure
2

2. METHODS

2.1 Personnel and Survey Methods

DD&A biologists conducted a reconnaissance level survey of the project site on December 11, 2020 to characterize habitats present within the project site and to identify any special-status plant or wildlife species or suitable habitat for these species within the site. Survey methods included walking the project site and using aerial maps and GPS to identify general habitat types and potential sensitive habitat types, conducting focused surveys for perennial special-status plant species, and conducting reconnaissance-level wildlife habitat survey to identify any special-status wildlife species occurring within the site or suitable habitat for species with the potential to occur. The project site was surveyed for perennial botanical resources following the applicable guidelines outlined in the U.S. Fish and Wildlife Service (Service) *Guidelines for Conducting and Reporting Botanical Inventories for Federally listed, Proposed and Candidate Plants* (Service, 2000), the California Department of Fish and Wildlife (CDFW) *Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities* (CDFW, 2018), and the California Native Plant Society (CNPS) *Botanical Survey Guidelines* (CNPS, 2001). General and sensitive habitat types were mapped during the survey effort using a combination of GPS and hand drawing on aerial maps, which were later digitized using ESRI™ software.

Data collected during the surveys were used to assess the environmental conditions of the project site and its surroundings, evaluate environmental constraints at the site and within the local vicinity, and provide a basis for recommendations to minimize and avoid impacts to biological resources.

2.2 Data Sources

The primary literature and data sources reviewed to determine the presence or potential presence of special-status species and biological resources at the project site include:

- Current agency status information from the Service and CDFW for species listed, proposed for listing, or candidates for listing as threatened or endangered under the federal Endangered Species Act (ESA) or the California Endangered Species Act (CESA), and those considered CDFW "species of special concern", including:
    - California Natural Diversity Database (CNDDB) occurrences reports from the Mt. Madonna, Gilroy, Gilroy Hot Springs, Watsonville East, Chittenden, San Felipe, Prunedale, San Juan Bautista, and Hollister quadrangles (**Appendix B**; CDFW, 2020); and
    - The Service's Information for Planning and Consultation (IPaC) Resource List for the project site (**Appendix C**; Service, 2020).
- The CNPS Inventory of Rare and Endangered Vascular Plants of California (CNPS, 2020).

From these resources, a list of special-status plant and wildlife species known or with the potential to occur in the vicinity of the project site was created (**Appendix D**). This list presents these species along with their legal status, habitat requirements, and a brief statement of the likelihood to occur within the site.

2.2.1 <u>Botany</u>

Vegetation alliances identified in *A Manual of California Vegetation* (Sawyer et.al., 2009) were utilized to determine if habitat types identified as sensitive on CDFW's *California Natural Communities List* (CDFW, 2019) are present within the project site. Information regarding the distribution and habitats of local and state vascular plants was also reviewed (Howitt and Howell, 1964 and 1973; Munz and Keck, 1973; Baldwin et al., 2012; Matthews and Mitchell, 2015; Jepson Flora Project, 2019). All perennial and winter blooming plant species observed within the project site during the surveys were identified to species or intraspecific taxon necessary to eliminate them as being special-status species using keys and descriptions in *The Jepson Manual: Vascular Plants of California, Edition 2* (Baldwin et al., 2012) and *The Plants of Monterey County an Illustrated Field Key* (Matthews and Mitchell, 2015). Scientific nomenclature for plant species identified within this document follows Baldwin, et. al, (2012); common names follow Matthews and Mitchell (2015). A full botanical inventory was not recorded for the project site, but the dominant species within each habitat type were noted. Dominant plant species are those which are more numerous than their competitors in an ecological community or make up more of the biomass; generally, the species that are most abundant. Most ecological communities are defined by their dominant species.

The California Invasive Plant Council (Cal-IPC) Inventory (Cal-IPC, 2020) was reviewed to determine if any invasive plant species are present within the project site.

2.2.2 Wildlife

The following literature and data sources were reviewed: CDFW reports on special-status wildlife (Remsen, 1978; Williams, 1986; Jennings and Hayes, 1994; Thelander, 1994; Thomson et. al, 2016); California Wildlife Habitat Relationships Program species-habitat models (Zeiner et al., 1988 and 1990); and general wildlife references (Stebbins, 1972, 1985, and 2003).

2.3 Sensitive Habitats

Sensitive habitats include riparian corridors, wetlands, habitats for legally protected species, areas of high biological diversity, areas supporting rare or special-status wildlife habitat, and unusual or regionally restricted habitat types. Vegetation communities considered sensitive include those listed on CDFW's *California Natural Communities List* (i.e., those habitats that are rare or endangered within the borders of California) (CDFW, 2019), those that are occupied by species listed under the ESA or are critical habitat in accordance with ESA, and those that are defined as Environmentally Sensitive Habitat Areas (ESHA) under the California Coastal Act (CCA). Specific habitats may also be identified as sensitive in city or county general plans or ordinances. Sensitive habitats are regulated under federal regulations (such as the Clean Water Act [CWA] and Executive Order [EO] 11990 – Protection of Wetlands), state regulations (such as CEQA and the CDFW Streambed Alteration Program), or local ordinances or policies (such as city or county tree ordinances and general plan policies).

2.4 Special-Status Species

Special-status species are those plants and animals that have been formally listed or proposed for listing as endangered or threatened or are candidates for such listing under ESA or CESA. Listed species are afforded legal protection under the ESA and CESA. Species that meet the definition of rare or endangered under the CEQA Guidelines Section 15380 are also considered special-status species. Animals on the CDFW's list of "species of special concern" (most of which are species whose breeding populations in California may face extirpation if current population trends continue) meet this definition and are typically provided management consideration through the CEQA process, although they are not legally protected under the ESA or CESA. CDFW also includes some animal species that are not assigned any of the other status designations in the CNDDB "Special Animals" list; however, these species have no legal or protection status and are not analyzed in this document.

Plants listed as rare under the California Native Plant Protection Act (CNPPA) or included in CNPS California Rare Plant Ranks (CRPR; formerly known as CNPS Lists) 1A, 1B, 2A, and 2B are also treated as special-status species as they meet the definitions of Sections 2062 and 2067 of the CESA and in accordance with CEQA Guidelines Section 15380.[1] In general, the CDFW requires that plant species on CRPR 1A (Plants presumed extirpated in California and Either Rare or Extinct Elsewhere), CRPR 1B (Plants rare, threatened, or endangered in California and elsewhere), CRPR 2A (Plants presumed extirpated in California, but more common elsewhere); and CRPR 2B (Plants rare, threatened, or endangered in California, but more common elsewhere) of the CNPS *Inventory of Rare and Endangered Vascular Plants of California* (CNPS, 2019) be fully considered during the preparation of environmental documents relating

[1] CNPS initially created five CRPR to categorize degrees of concern; however, to better define and categorize rarity in California's flora, the CNPS Rare Plant Program and Rare Plant Program Committee have developed the new CRPR 2A and CRPR 2B.

to CEQA. CNPS CRPR 4 species (plants of limited distribution) may, but generally do not, meet the definitions of Sections 2062 and 2067 of CESA, and are not typically considered in environmental documents relating to CEQA. While other species (i.e., CRPR 3 or 4 species) are sometimes found in database searches or within the literature, these do not meet the definitions of Section 2062 and 2067 of CESA and are not analyzed in this document.

Raptors (e.g., eagles, hawks, and owls) and their nests are protected in California under Fish and Game Code Section 3503.5. Section 3503.5 states that it is “unlawful to take, possess, or destroy the nest or eggs of any such bird except otherwise provided by this code or any regulation adopted pursuant thereto.” In addition, protected species under Fish and Game Code Section 3511 (birds), Section 4700 (mammals), Section 5515 (fish), and Section 5050 (reptiles and amphibians) are also considered special-status animal species. Species with no formal special-status designation but thought by experts to be rare or in serious decline may also be considered special-status animal species in some cases, depending on project-specific analysis and relevant, localized conservation needs or precedence.

2.5 Regulatory Setting

The following regulatory discussion describes the major federal, state, and local laws that may be applicable to the project.

2.5.1 Federal Regulations

Clean Water Act

The U.S. Army Corps of Engineers (ACOE) and U.S. Environmental Protection Agency (EPA) regulate discharge of dredged and fill material into “Waters of the United States” (waters of the U.S.) under Section 404 of the Clean Water Act (CWA). In 2020, the ACOE and EPA published the Navigable Waters Protection Rule, which became effective on June 22, 2020 and revised the definition of Waters of the U.S. to include four categories of waters: territorial seas and navigable waters; perennial and intermittent tributaries to those waters; certain lakes, ponds, and impoundments; and wetlands adjacent to jurisdictional waters. The rule also details 12 categories of exclusions (i.e., features that are not waters of the U.S.), such as features that only contain water in direct response to rainfall (e.g., ephemeral features), groundwater, many ditches, prior converted cropland, and waste treatment systems. Discharge into waters of the U.S. requires a Section 404 permit from the ACOE.

Under Section 401 of the CWA, any applicant receiving a Section 404 permit from the ACOE must also obtain a Section 401 Water Quality Certification from the Regional Water Quality Control Board (RWQCB). A Section 401 Water Quality Certification is issued when a project is demonstrated to comply with state water quality standards and other aquatic resource protection requirements.

2.5.2 State Regulations

California Endangered Species Act

The CESA was enacted in 1984. The California Code of Regulations (Title 14, §670.5) lists animal species considered endangered or threatened by the state. Section 2090 of CESA requires state agencies to comply with endangered species protection and recovery and to promote conservation of these species. Section 2080 of the Fish and Game Code prohibits "take" of any species that the commission determines to be an endangered species or a threatened species. “Take” is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." A Section 2081 Incidental Take Permit from the CDFW may be obtained to authorize “take” of any state listed species.

California Native Plant Protection Act

The CNPPA of 1977 directed CDFW to carry out the legislature’s intent to “preserve, protect and enhance rare and Endangered plants in the State.” The CNPPA prohibits importing rare and Endangered plants into California, taking rare and Endangered plants, and selling rare and Endangered plants. The CESA and

CNPPA authorized the Fish and Game Commission to designate endangered, threatened, and rare species and to regulate the taking of these species (§2050-2098, Fish and Game Code). Plants listed as rare under the CNPPA are not protected under CESA; however, these plants may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research.

California Fish and Game Code

Birds. Section 3503 of the Fish and Game Code states that it is “unlawful to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.” Section 3503.5 prohibits the killing, possession, or destruction of any birds in the orders Falconiformes or Strigiformes (birds-of-prey). Section 3511 prohibits take or possession of fully protected birds. Section 3513 prohibits the take or possession of any migratory nongame birds designated under the federal Migratory Bird Treaty Act. Section 3800 prohibits take of nongame birds.

Fully Protected Species. The classification of fully protected was the state's initial effort in the 1960's to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish (§5515), mammals (§4700), amphibians and reptiles (§5050), and birds (§3511). Most fully protected species have also been listed as threatened or endangered species under the more recent endangered species laws and regulations. Fully protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

Species of Special Concern. As noted above, the CDFW also maintains a list of wildlife “species of special concern.” Although these species have no legal status, the CDFW recommends considering these species during analysis of project impacts to protect declining populations and avoid the need to list them as endangered in the future.

Lake or Streambed Alteration. Sections 1600-1607 of the Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify CDFW before beginning construction. If CDFW determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFW’s jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act of 1969 (Porter-Cologne) is California’s statutory authority for the protection of water quality and applies to surface waters, wetlands, and groundwater, and to both point and nonpoint sources. Under the Porter-Cologne, the State Water Resources Control Board (State Board) has the ultimate authority over State water rights and water quality policy. However, Porter-Cologne also establishes nine RWQCBs to oversee water quality on a day-to-day basis at the local/regional level. The API is located within Region 3 – Central Coast RWQCB. Porter-Cologne incorporates many provisions of the federal CWA, such as delegation to the State Board and RWQCBs of the National Pollutant Discharge Elimination System (NPDES) permitting program.

Under Porter-Cologne, the state must adopt water quality policies, plans, and objectives that protect the state’s waters for the use and enjoyment of the people. Regional authority for planning, permitting, and enforcement is delegate to the nine RWQCBs. The regional boards are required to formulate and adopt water quality control plans for all areas in the region and establish water quality objectives in the plans. The Porter-Cologne sets forth the obligations of the State Board and RWQCBs to adopt and periodically update water quality control plans (basin plans). The act also requires waste dischargers to notify the RWQCBs of such activities through filing of Reports of Waste Discharge (RWD) and authorizes the State Board and RWQCBs to issue and enforce waste discharge requirements (WDRs), NPDES permits, Section 401 water quality certifications, or other approvals. The RWQCBs also have authority to issue waivers to RWD requirements and WDRs for broad categories of "low threat" discharge activities that have minimal potential for adverse water quality effects, when implemented according to prescribed terms and conditions.

The term "Waters of the State" is defined by Porter-Cologne as "any surface water or groundwater, including saline waters, within the boundaries of the state." The RWQCB protects all waters in its regulatory scope but has special responsibility for wetlands, riparian areas, and headwaters, including isolated wetlands, and waters that may not be regulated by the ACOE under Section 404 of the CWA. Waters of the State are regulated by the RWQCB under the State Water Quality Certification Program, which regulates discharges of fill and dredged material under Section 401 of the CWA and the Porter-Cologne.

2.5.3 Local Regulations

Habitat Conservation Plans or NCCP

There are no adopted Habitat Conservation Plans (HCPs) or Natural Community Conservation Plans (NCCPs) associated with the evaluation area.

Tree Preservation

Title 19, Chapter 19.33 of the San Benito County Code provides for the preservation of woodlands within the unincorporated areas of the County. As defined in Chapter 19.33.005, removal of protected trees requires a discretionary permit issued by the San Benito County Planning Director. This regulation applies to parcels covered by at least 10% woodland vegetation as determined by the baseline retention canopy survey which is on file with the county's Planning Division, and parcels that currently support or historically supported native trees or other woody vegetation but were farmed to agricultural crops at the time of the baseline survey.

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3. RESULTS

3.1 Habitat Types

Three habitat types—active agriculture, ruderal/disturbed, and aquatic—occur within and adjacent to the project site (**Figure 3**). In addition, riparian habitat occurs adjacent to the project site along the western edge of the parcel, no project related impacts are proposed within this habitat. Descriptions for each habitat type are included below. Although no project related activities are proposed within the riparian habitat and no impacts are expected to occur, a description of this habitat is included below due to its sensitive classification.

3.1.1 Active Agriculture

- *A Manual of California Vegetation* classification(s): None
- *CDFW California Natural Communities List*: Not sensitive

Approximately 92.1 acres of active agriculture occur within the project site, this habitat type is associated with all proposed project components (**Figure 3**). Active agriculture areas are subject to anthropogenic disturbance regime related to the cultivation of row crops. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent within this habitat type.

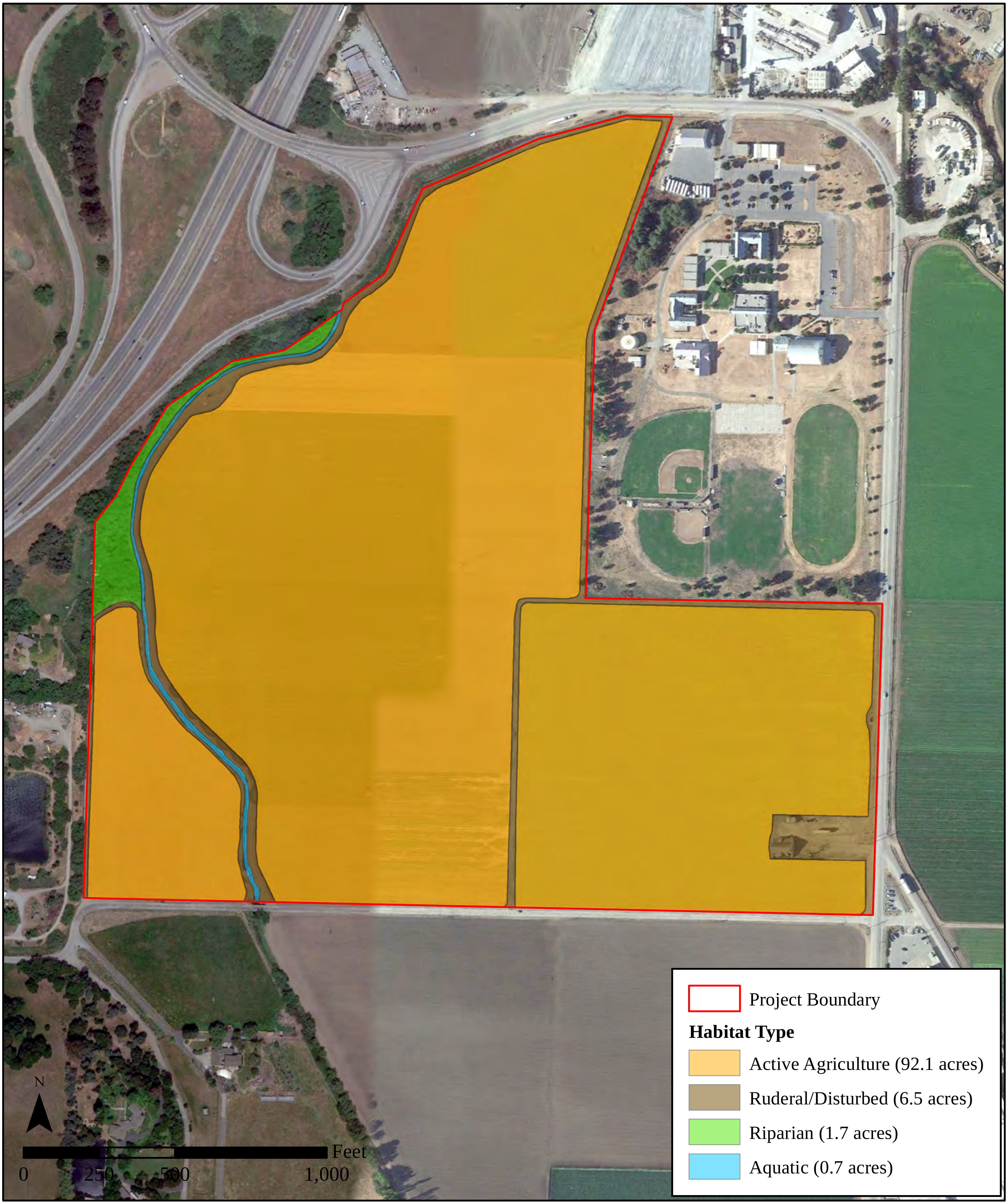
Active agriculture provides cover and food for a number of wildlife species including, American crow (*Corvus brachyrhynchos*), killdeer (*Charadrius vociferus*), California ground squirrel (*Otospermophilus beecheyi*), raccoon (*Procyon lotor*), striped skunk (Mephitis mephitis), western scrub jay (*Aphelocoma californica*), European starling (*Sturnus vulgaris*), coast range fence lizard (*Sceloporus occidentalis bocourtii*), and rock pigeon (*Columba livia*). This habitat type is considered to have low biological value, as it is generally a monoculture of a row crop species and consists of relatively low-quality habitat from a wildlife perspective.

3.1.2 Ruderal/Disturbed

- *A Manual of California Vegetation* classification(s): None
- CDFW *California Natural Communities List*: Not Sensitive

Approximately 6.5 acres of ruderal/disturbed habitat occur within the project site, this habitat type is associated with areas which have been developed or have been subject to historic and ongoing disturbance by human activities and are devoid of vegetation or dominated by non-native and/or invasive weed species (**Figure 3**). Ruderal/disturbed areas within the project site consist of the existing access roads, existing infrastructure, and the maintained banks associated with the San Juan Creek/drainage ditch. All areas associated with this habitat type are largely unvegetated but do support sparse vegetation in marginal areas. Dominant plant species include soft chess, ripgut brome, Spanish brome (*B. madritensis*), slender oat (*Avena barbata*), English plantain (*Plantago lanceolata*), and cut leaved plantain (*Plantago coronopus*).

Active agriculture provides cover and food for a number of wildlife species including, California ground squirrel (*Otospermophilus beecheyi*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), California scrub-jay (*Aphelocoma californica*), European starling (*Sturnus vulgaris*), fence lizard (*Sceloporus undulatus*), and great egret (*Ardea alba*). This habitat type is considered to have low biological value, as it is generally nonnative "weedy" plant species; however, mammal burrows did exist during the reconnaissance survey along the edges of the San Juan Creek/drainage ditch, although it is assumed these burrows are not perpetual due to the regular maintenance regime associated with the active agriculture.



Kawahara Nursery Habitat Map	Date: 2/24/2021 Scale: 1 inch = 400 feet Project: 2020-42	Monterey | San Jose **Denise Duffy and Associates, Inc.** Environmental Consultants Resource Planners 947 Cass Street, Suite 5 Monterey, CA 93940 (831) 373-4341	Figure 3

3.1.3 Aquatic

- *A Manual of California Vegetation* classification(s): None
- *CDFW California Natural Communities List*: Not sensitive

Approximately 0.7 acres of ruderal/disturbed habitat occur within the project site, this habitat type is associated with the San Juan Creek/drainage ditch that passes through the southwestern quarter of the project, then runs along the western boundary outside of proposed project activities (**Figure 4**). Sparse vegetation occurs within this habitat type scattered throughout and consists of annual beard grass (*Polypogon monspeliensis*), Italian thistle (*Carduus pycnocephalus*), and curly dock (*Rumex crispus*). Within the project site the San Juan Creek/drainage ditch is a maintained, channelized ditch surrounded by development and agriculture.

Common wildlife using these aquatic habitats include waterfowl such as Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), American coot (*Fulica americana*), and great egret. No special-status plant species were identified within the aquatic habitat areas; however, this habitat has the potential to support western pond turtle (*Emys marmorata,* WPT).

3.1.4 Riparian

- *A Manual of California Vegetation* classification: Arroyo willow thickets (*Salix lasiolepis* shrubland Alliance)
- *CDFW California Natural Communities List*: Sensitive

Approximately 1.7 acres of riparian habitat occur adjacent to the project site, this habitat type is associated with plant communities supporting woody vegetation found along the San Juan Creek in the northwestern portion of the project site. Riparian habitat is associated with rivers, creeks, streams, canyon bottom drainages, and seeps. Riparian habitat, consisting of Arroyo willow thickets at the, occur within stream banks and benches, slope seeps, and stringers along drainages (Sawyer et al., 2009). Holland (1986) describes this habitat type as a dense, low, closed-canopy, broadleaved, winter-deciduous riparian forest dominated by Arroyo willow (*Salix lasiolepis*) that occurs on moist to saturated sandy or gravelly soil, especially on bottomlands. Wetlands may occur within this habitat type. Riparian habitat is present adjacent to the project along the western boundary.

Riparian areas provide habitat for many wildlife species, particularly birds and herpetofauna (the reptiles and amphibians of a particular region or habitat). Common species that may be found within the riparian habitat adjacent to the project site include Sierran treefrog (*Pseudacris sierra*), tree swallow (*Tachycineta bicolor*), song sparrow (*Melospiza melodia*), and Pacific-slope flycatcher (*Empidonax difficilis*).

The riparian habitat along the western boundary of the project is highly disturbed; however, it may provide suitable habitat for the WPT. No special-status plant species were identified within this habitat type during the reconnaissance level survey. Riparian habitat is considered by the CDFW to be a sensitive habitat.

3.2 Sensitive Habitats

3.2.1 Riparian

The floristic alliance occurring in the Arroyo willow thicket areas directly adjacent to the project site is considered sensitive under CDFW's *California Natural Communities List* (CDFW, 2019).

3.3 Special-Status Species

Published occurrence data within the project area and surrounding U.S. Geological Survey quadrangles were evaluated to compile a table of special-status species known to occur in the vicinity of the project site (see *Methods* and **Appendix D**). Each of these species was evaluated for their likelihood to occur within and immediately adjacent to the site. The special-status species that are known to or have been determined to have a moderate or high potential to occur within or immediately adjacent the project site are discussed below. All other species are assumed unlikely to occur or have a low potential to occur within the project site based on the species-specific reasons presented in **Appendix D**, are therefore unlikely to be impacted by the project, and are not discussed further.

3.3.1 Special-Status Wildlife

Western Pond Turtle

The WPT is a CDFW species of special concern. This species is uncommon to common in permanent or nearly permanent aquatic resources in a wide variety of habitats throughout California, and requires basking sites such as partially submerged logs, rocks, mats of floating vegetation, or open mud banks. The home range of western pond turtles is typically quite restricted; however, ongoing research indicates that in many areas, turtles may leave the watercourse in late fall and move into upland habitats where they burrow into duff and/or soil and overwinter (Holland, 1994). In spring or early summer, females move overland for up to 100 meters to find suitable nesting sites. Nests are typically excavated in compact, dry soils in areas characterized by sparse vegetation, usually short grasses or forbs (Holland, 1994). Three to 11 eggs are laid from March to August depending on local conditions (Ernst and Barbour, 1972). Food sources include aquatic plant material, beetles, and a wide variety of aquatic invertebrates. Fishes, frogs, and carrion have also been reported among their food sources (Stebbins, 1972).

The CNDDB reports 32 occurrences of the WPT within the quadrangles reviewed, the nearest reported occurrence is approximately 1.5 miles southeast from the project site, within San Juan Creek. Due to the disturbance regime associated with active agriculture, no suitable upland or nesting habitat is present within the project site. No suitable breeding habitat is present within the project site; however, the adjacent riparian habitat does offer suitable breeding habitat. There is potential for WPT to utilize the aquatic habitat within the project site as a basking site due to the adjacent riparian habitat. The project is also located within the historic range for WPT. Given that this species may use the aquatic habitat within the project for basking, and adjacent riparian areas that offer suitable cover as upland and nesting habitat, there is a moderate chance that WPT will occur within the project site.

Raptors and Other Protected Avian Species

Raptors, their nests, and other nesting birds are protected under California Fish and Game Code. While the life histories of these species vary, overlapping nesting (approximately February through August) and foraging similarities allow for their concurrent discussion. Most raptors are breeding residents throughout most of the wooded portions of the state. Stands of live oak, riparian deciduous, or other forest habitats, as well as open grasslands, are used most frequently for nesting. Breeding occurs February through August, with peak activity May through July. Prey for these species includes small birds, small mammals, and some reptiles and amphibians. Many raptor species hunt in open woodland and habitat edges.

Various species of raptors, such as red-tailed hawk, red-shouldered hawk, American kestrel, great horned owl, and turkey vulture, have a potential to nest within the trees present within and adjacent to the project site. In addition, ground-nesting raptors also have the potential to nest within the open grassland areas of the project site.

3.3.2 Special-Status Plant Species

No special-status plant species are expected or have the potential to occur within the project site.

3.3.3 Protected Trees

Title 19, Chapter 19.33 of the San Benito County Code provides for the preservation of woodlands within the unincorporated areas of the County. As defined in Chapter 19.33.005, removal of protected trees requires a discretionary permit issued by the San Benito County Planning Director. No trees are proposed for removal, nor is the project proposing to work within the driplines of all adjacent trees.

4. IMPACTS AND MITIGATION

The following section describes potential impacts that may result from the project. Mitigation measures (MMs) are recommended for each potential impact to avoid, minimize, or mitigate impacts to sensitive biological resources.

4.1 Impacts to Sensitive Habitats

***Potential Impact 1*:** The riparian habitat identified adjacent to the project site is considered a sensitive habitat by the CDFW. Open water within the aquatic habitat and wetlands within the riparian habitat may be afforded protection by the ACOE and/or RWQCB. Construction activities are proposed to avoid all riparian and aquatic habitat within and adjacent to the project, however, if construction exceeds the proposed limits it would be considered a significant impact under CEQA. Mitigation Measures detailed belowwould reduce potential impacts to a less-than-significant level.

MM 1a: Riparian and aquatic habitat shall be avoided. Protective fencing shall be placed to keep construction vehicles and personnel from impacting riparian and aquatic habitat. If avoidance of these areas is not possible, the following shall occur:

- For project activities that may impact riparian habitat, requiring a permit from CDFW, the project proponent shall obtain a 1602 Lake or Streambed Alteration Agreement and comply with all permit requirements. Conditions may include but are not limited to; development of revegetation and restoration plans and procedures, environmental awareness training, pre-construction wildlife surveys, and/or biological monitoring.
- To protect water quality during construction, include the following measures on the construction specifications, with construction oversight by a qualified biological monitor:
    - Stationary equipment such as motors, generators, and welders located within 100 feet of the riparian habitat and drainage ditch shall be stored overnight at staging areas and will be positioned over drip pans.
    - Any hazardous or toxic materials deleterious to aquatic life that could be washed into a basin shall be contained in watertight containers or removed from the project site.
    - All construction debris and associated materials stored in staging areas shall be removed from the work site upon completion of the project.
    - Whenever possible, refueling of equipment shall take place within turnouts or staging areas at least 50 feet from the top of bank or other wetland.
    - All refueling shall be conducted over plastic bags filled with sawdust or other highly absorbent material. Clean-up materials for spills will be kept on hand at all times. Any accidental spills of fuel or other contaminants will be cleaned up immediately.

MM 1b: A wetland delineation in accordance with ACOE standards shall be conducted to determine if wetlands observed within the project site are under the jurisdiction of ACOE and/or RWQCB. For project activities that may impact wetlands or other waters, requiring permits from ACOE and/or the RWQCB, the project proponent shall obtain permits and comply with all permit requirements.

MM 1c: The project contractor shall install protective fencing prior to and during construction to keep construction equipment and personnel from impacting riparian vegetation outside of work limits. A qualified biological monitor with the education and experience necessary to delineate riparian vegetation shall supervise the installation of protective fencing. This measure shall be included in the project's plans and specifications.

4.2 Impacts to Special-Status Wildlife Species

Potential Impact 2: Special-status wildlife species including western pond turtle, raptors and other protected avian species have the potential to occur within the project site. Construction activities may result in direct mortality of individuals and/or loss of habitat for these species. This is a potentially significant impact that can be reduced to a less than significant level with implementation of the mitigation measures recommended below.

MM 2a: A qualified biologist will conduct an Employee Education Program for the construction crew prior to any construction activities. The qualified biologist will meet with the construction crew at the onset of construction at the project site to educate the construction crew on the following: 1) the appropriate access route(s) in and out of the construction area and review project boundaries; 2) how a biological monitor will examine the area and agree upon a method which will ensure the safety of the monitor during such activities, 3) the identification of special-status species that may be present; 4) the specific mitigation measures that will be incorporated into the construction effort; 5) the general provisions and protections afforded; and 6) the proper procedures if a special-status species is encountered within the project site to avoid impacts.

MM 2b: To avoid or minimize impacts to WPT, a qualified biologist shall conduct a pre-construction survey for western pond turtles and their nests within the project site no more than three days prior to construction. If a WPT nest is found, it will be monitored and avoided until the eggs hatch. All western pond turtles discovered within the project site immediately prior to or during project activities shall be allowed to move out of the area of their own volition. If this is not feasible, they shall be captured by a qualified biologist and relocated out of harm's way to the nearest suitable habitat at least 100 feet upstream or downstream from the project site where the individual was found.

MM 2c: Construction activities that may affect nesting raptors and other protected avian species can be timed to avoid the avian nesting season (February 1 through September 15). Specifically, vegetation and/or tree removal can be scheduled between September 16 and January 31. If this is not possible, pre-construction surveys for protected avian species shall be conducted by a qualified biologist within 15 days prior to the commencement of construction activities in all areas that may provide suitable nesting habitat that exist in or within 300 feet of the project boundary. If nesting birds are identified during pre-construction surveys, an appropriate buffer shall be imposed within which no construction activities or disturbance will take place (generally 300 feet in all directions). A qualified biologist shall be on-site during work re-initiation in the vicinity of the nest offset to ensure that the buffer is adequate and that the nest is not stressed and/or abandoned. No work shall proceed in the vicinity of an active nest until such time as all young are fledged, as determined by the qualified biologist, or until after September 1 (when young are assumed fledged).

5. REGULATORY PERMITS

As described in the *Impacts and Mitigation* discussion above, all impacts may be reduced to a less than significant level with the implementation of MM 1a-1c and 2a-2c. A number of federal and state regulatory agencies may take jurisdiction if the project does not implement MM 1a-1c and 2a-2c and may require the project proponent to obtain the following regulatory permits prior to construction:

- U.S. Army Corps of Engineers – Section 404, placement of fill within Waters of the U.S.
- Central Coast Regional Water Quality Control Board – Section 401, placement of fill within Waters of the State.
- California Department of Fish and Wildlife – Lake and Streambed Alteration Agreement, alteration of a streambed.

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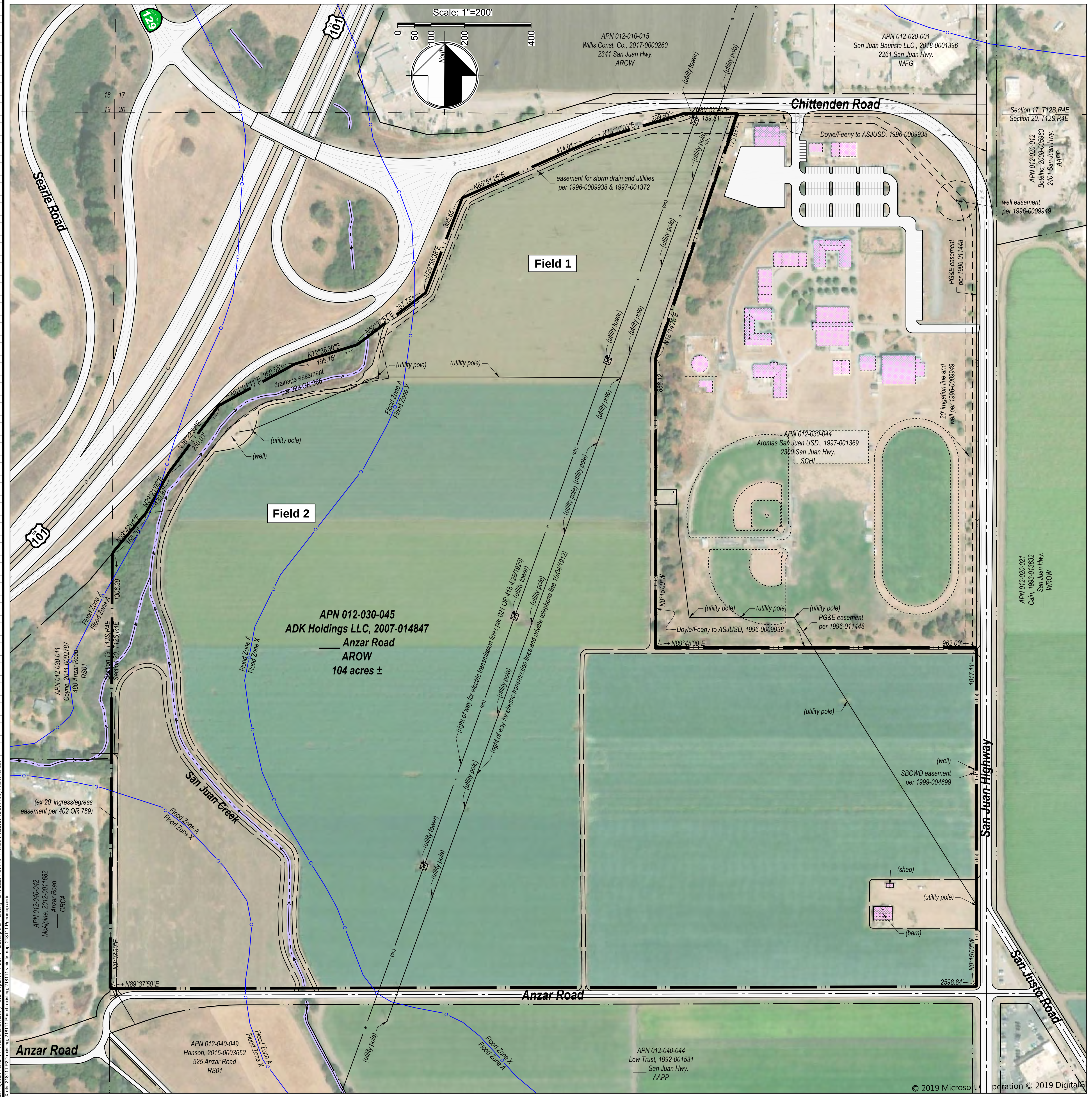
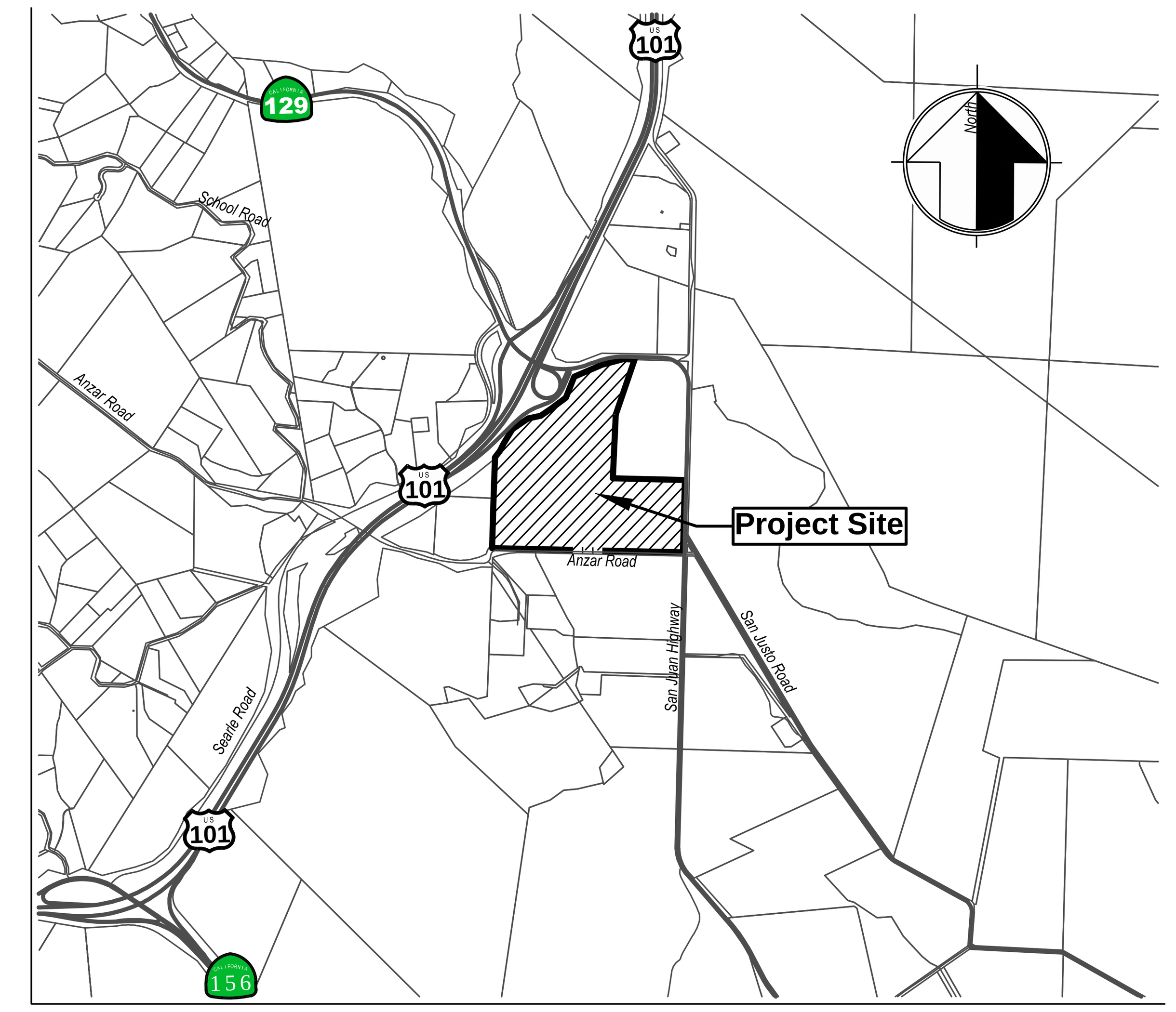
APPENDIX A

Site Plan

Existing Property Site Plan





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REGISTERED PROFESSIONAL ENGINEER
ALLEN T. ANDRADE
C58384
EXP 12-31-2020
STATE OF CALIFORNIA

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Project Information

Project Name: Kawahara Nursery
San Juan Bautista

Applicant: Kawahara Nursery
Attn: Clinton Wu
698 Burnett Ave.
Morgan Hill, CA 95037
408.655.6344
clintonw@kniplants.com

Owner: JBK Holdings LLC.
698 Burnett Ave.
Morgan Hill, CA 95037

Engineer: Allen Andrade RCE 58384 / LS 7741
MH Engineering
16075 Vineyard Blvd.
Morgan Hill, CA 95037
408.779.7381
allena@mhengineering.com

Conditional Use Permit Plan Set Index:

1. *Existing Site Plan*
2. *CUP Site Plan*
3. *Building Floor Plans & Elevations*
4. *CUP Grading & Drainage Plan*
5. *Facility plants to be produced, fertilizers & crop production products used + septic system detail*

MH engineering Co.
16075 Vineyard Boulevard
Morgan Hill, CA 95037

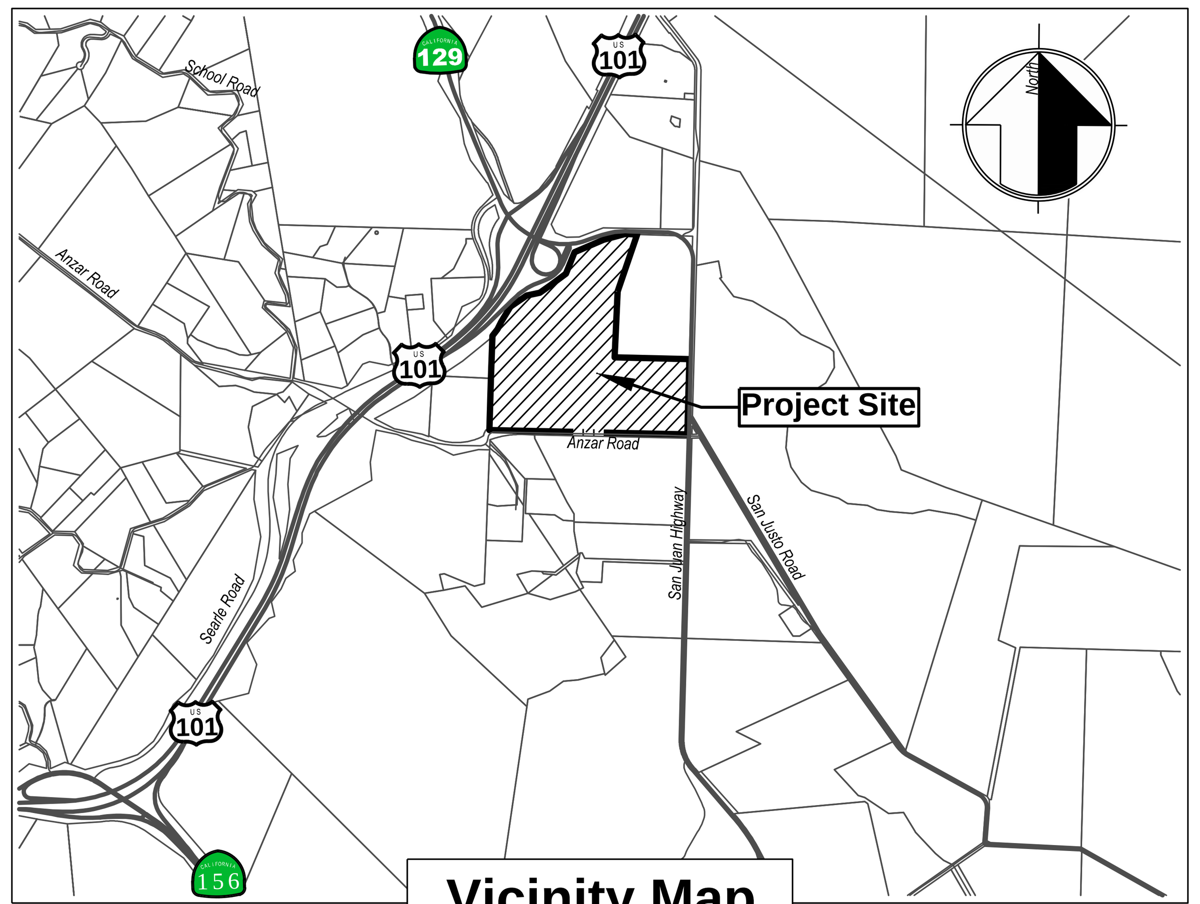
CUP - Existing Site Plan

Kawahara Nursery - San Juan Bautista

DATE:	9/16/2020
SCALE:	as noted
DRAWN BY:	aa
CHECKED BY:	cw

JOB NO.
218111

SHEET 1 OF 5



Vicinity Map

Project Description:

Wholesale nursery with 10 to 15 employees, 2-5 truck deliveries per day, hours of operation 7:00 am to 4:00 pm, Monday through Friday, with 1 to 2 employees working the weekends to water plants. Proposed facilities will include widening of San Juan/Chittenden Road at the project entrance to add a center turn lane similar to what is at the entrance to Anzar High with a westerly taper in compliance with the CalTrans Highway design manual, a paved 24' wide driveway leading to the concrete truck loading dock and vehicular parking areas around the shipping buildings. The vertical structures on-site will be a 18,000sf covered shipping and staging area, a 36,000sf shipping and handling greenhouse, an 18,000sf production greenhouse, and 518,400sf of growing block greenhouses. An employee restroom will be incorporated into the shipping and handling greenhouse with a septic system designed in accordance with County Environmental Heath requirements. Daily operations will include growing plants in the greenhouse blocks and in the fields / plantings, research, and testing in the production greenhouse / packaging and processing finished products in the within the shipping and handling greenhouse / staging of product for shipping in the shipping and staging covered area / loading of trucks at the truck loading dock. Sufficient paved areas have been provided for all vehicles and trucks to arrive and depart the site. Aggregate Base (AB) equipment storage yards and paths around the greenhouses and for the emergency secondary access have been provided to ensure safe year-round operations. This secondary emergency access will be closed with a bollard and chain to minimize use and access to Anzar Road yet will have a Knox box lock to ensure access as appropriate for emergency vehicles if necessary. The entire developed site will be graded to drain toward San Juan Creek consistent with the natural drainage pattern yet a storm water mitigation channel will run parallel to the creek separated from the creek by the existing dirt road will intercept all runoff, retain, detain, and infiltrate in accordance with CCRWQCB regulations and will only discharge to the Creek after runoff has been filtered through the vegetation in this channel so that discharge to the creek would only be during periods of extended wet weather after runoff has already been treated by the mitigation channel. A list of plants to be grown, fertilizers and crop production products to be used is listed on sheet 5 of this plan.

Project Data Table

- Scale: 1'=200'
- Date Map Prepared: September 2019
- Current revision date: see bottom right of page
- Assessor's Parcel Number: 012-030-045
- Parcel Size: 104 ac
- General Plan Designation: Agriculture
- Zoning: AP-5
- Building Site area:
- Grading Amounts:
- Tree & Vegetation removal: none (no trees proposed for removal, no work proposed within banks of San Juan Creek, and all other vegetation on site is row-crops that are planted harvested 3 to 4 times per year)
- Fire Severity: Non Wildland - Non Urban according to the San Benito County WebGIS
- Flood Zone: This property lies almost entirely within Zone X, areas determined to be outside the 0.2% annual chance floodplain, according to FEMA FIRM 06069C0045D, effective 4/16/2009 with portions along San Juan Creek being in Flood Zone A.
- Seismic Zone: No portion of this property lies within a special studies zone according to Special Studies Zones Map, San Juan Bautista Quadrangle, 7/1/1974.
- Water: on-site private well
- Electricity: PG&E
- Gas: PG&E
- Telephone: AT&T
- Sewer: proposed on-site septic to be designed and constructed pursuant to Environmental Health Department requirements
- Source of existing Contours: Contours shown on this map are based on 2010 AMBAG LiDAR and supplemented by a 2019 field survey by MH engineering
- Williamson Act: This project is not under a Williamson Act Contract
- 30% Slopes: there are no slopes in excess of 30% on the project site.
- Cultural Resources:all ground disturbance for this project will comply with Section 19.05 of County Code we expect a condition of approval to this effect.
- Exterior Lighting: any proposed lighting for this project shall comply with County ordinance 748
- Any noise generated as a part of the construction of or approved operations shall comply with County Ordinance section 19.39
- A Hazardous Materials Business Plan shall be completed and approved by the Environmental Health department prior to occupation of the finished construction for any hazardous materials to be stored or used by the operation.
- Soils Report: Preliminary Soils Engineering Report Kawahara Nursery Anzar Road & San Juan Highway, San Juan Bautista, CA dated 2/8/2000 by Earth Systems Pacific File No. NHS-7465-01
- Traffic Study: A previous traffic analysis report by Higgins and Associates dated 4/14/2000 will be updated and revised to reflect the current proposed configuration after preliminary review of the proposed building locations and access routes to ensure the update analyzes the proposed layout as vetted by County Departments.
- Prior Development on site: Site is and has historically been used for row crop farming. A barn and outbuilding removed in 2018 were the only structures on the site.
- The site was previously reviewed by County Use Permit UP791-99 including an initial study and mitigated negative declaration available at the County.

Project Information

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San Juan Bautista

Applicant: Kawahara Nursery
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Morgan Hill, CA 95037
408.655.6344
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Owner: JBK Holdings LLC.
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Engineer: Allen Andrade RCE 58384 / LS 7741
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408.779.7381
allena@mhengineering.com

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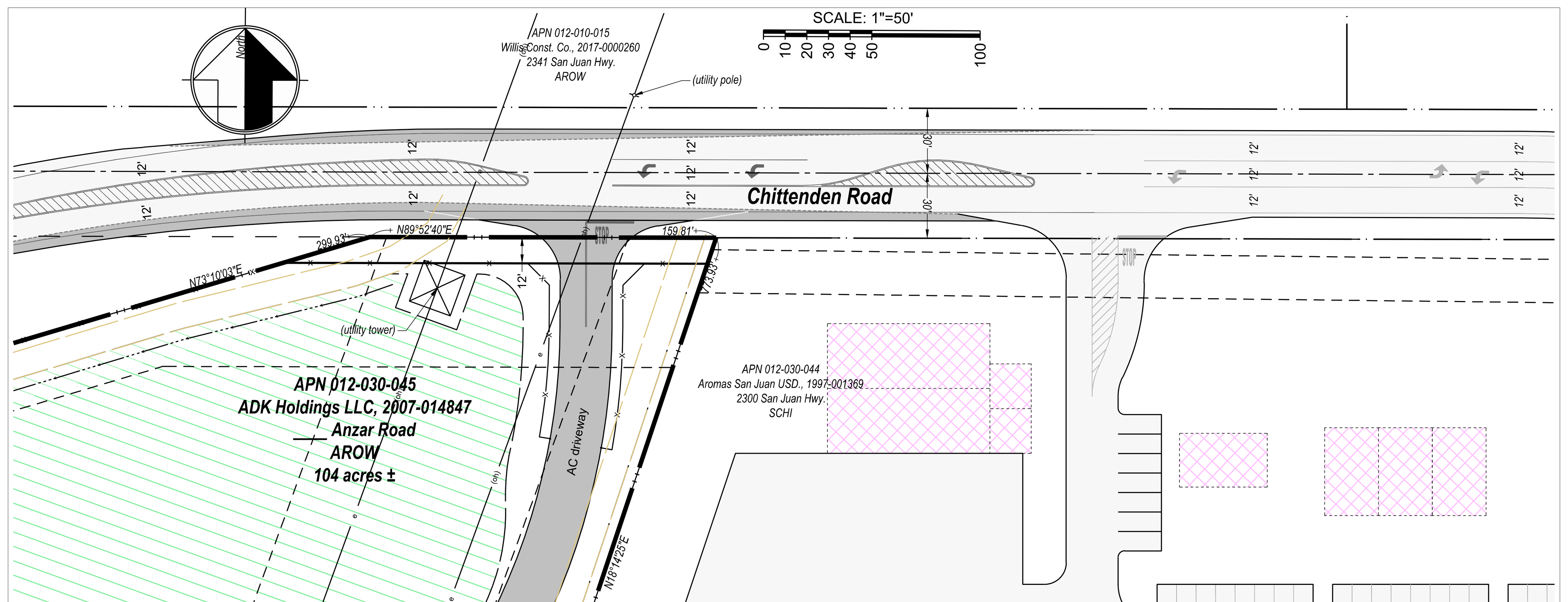
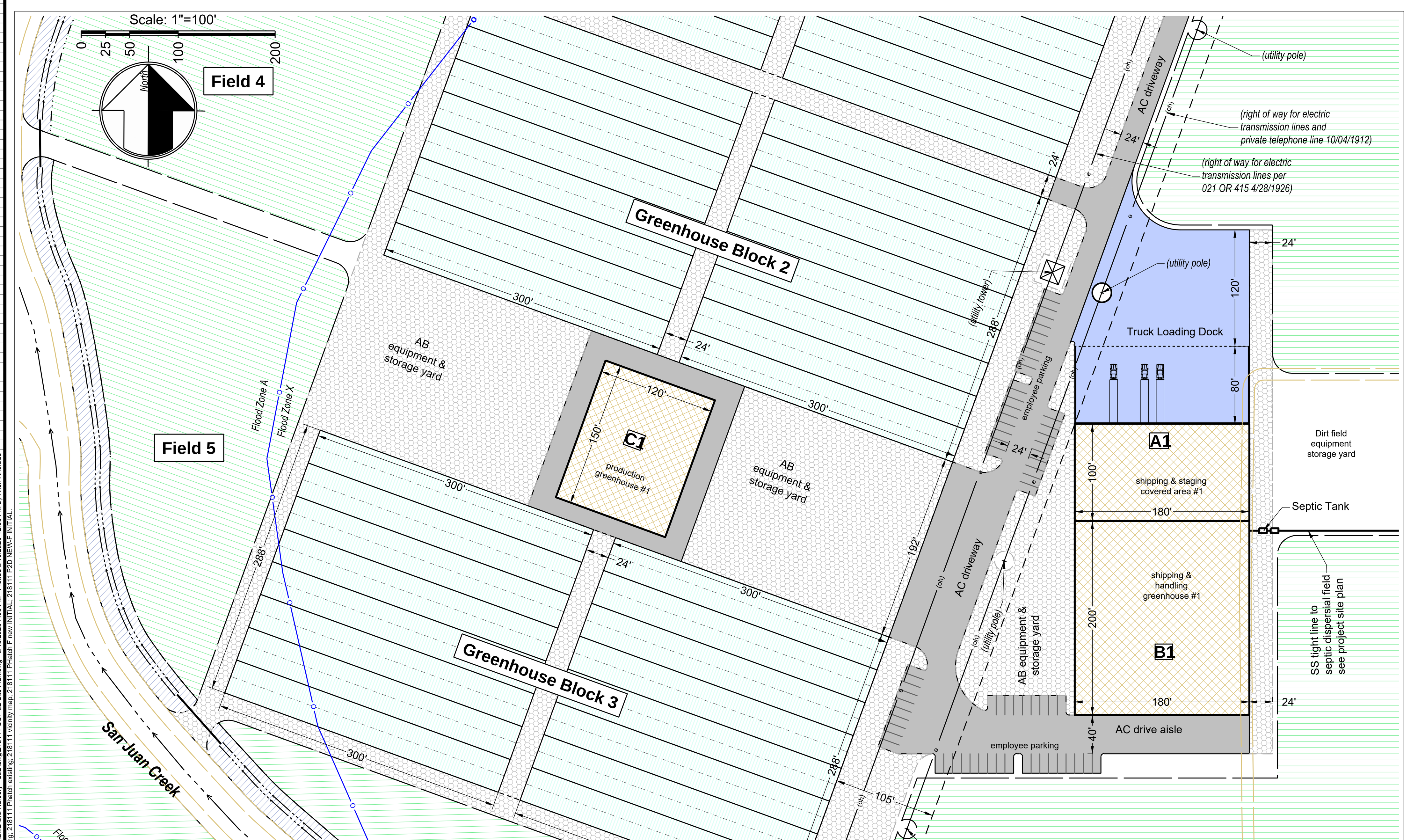
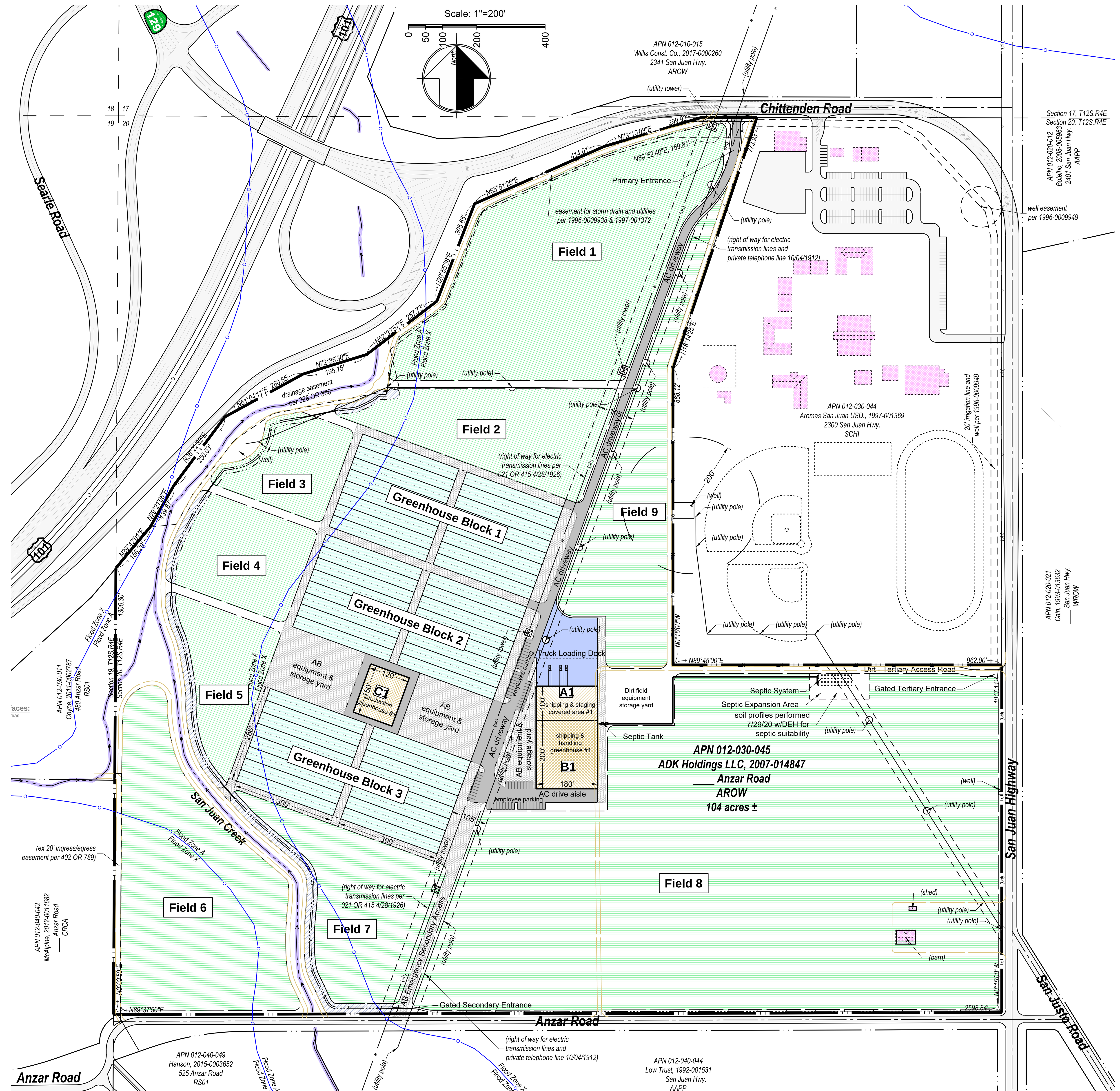


Entrance Detail



Production Area Detail



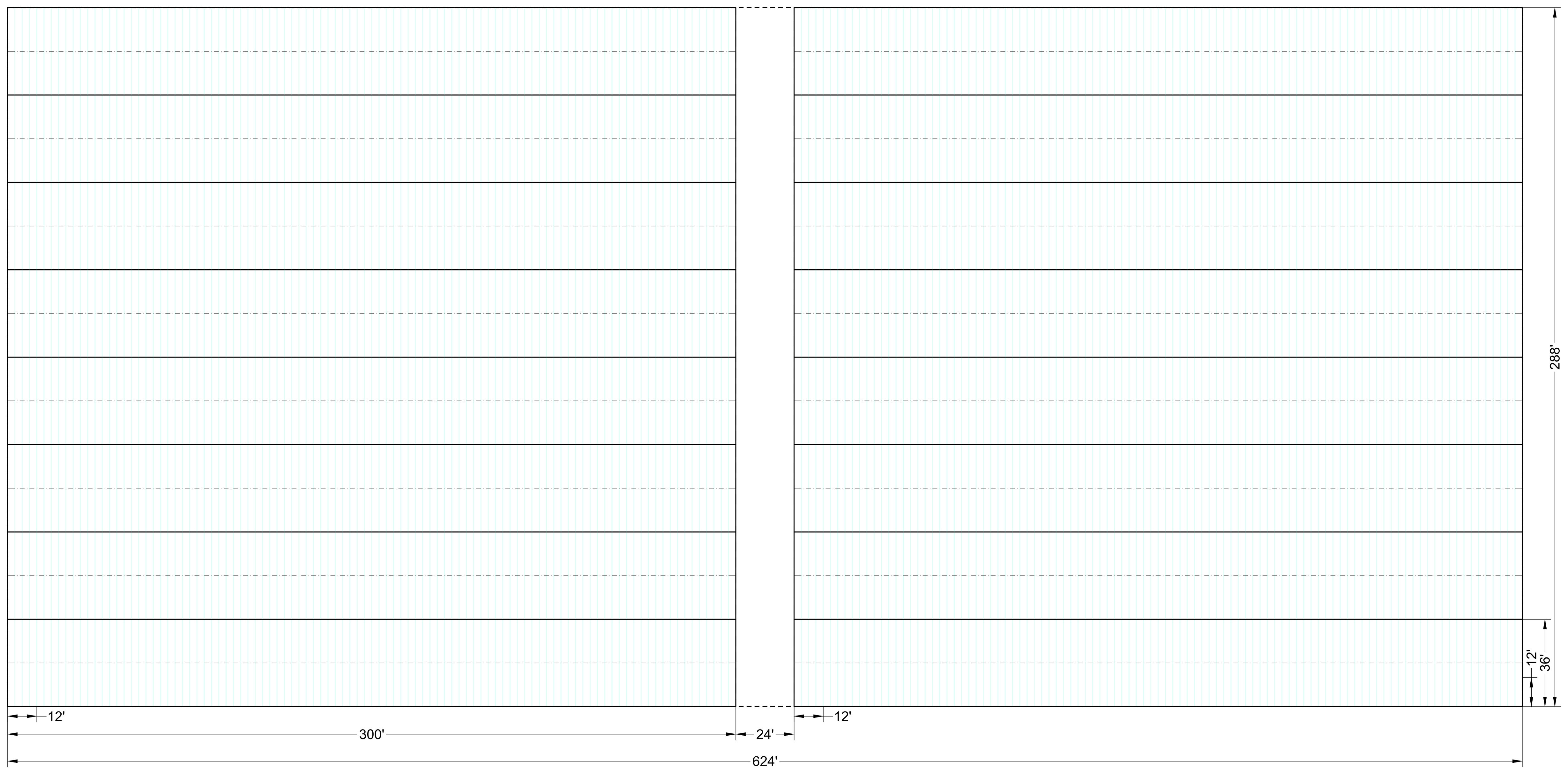
Project Site Plan

MH engineering Co.
16075 Vineyard Boulevard
Morgan Hill, CA 95037

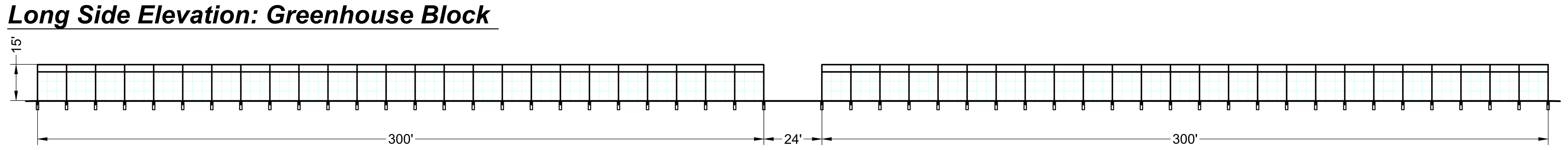
CUP - Site Plan
Kawahara Nursery - San Juan Bautista

DATE: 9/16/2020
SCALE: as noted
DRAWN BY: aa
CHECKED BY: cw
JOB NO. 218111
SHEET 2 OF 5

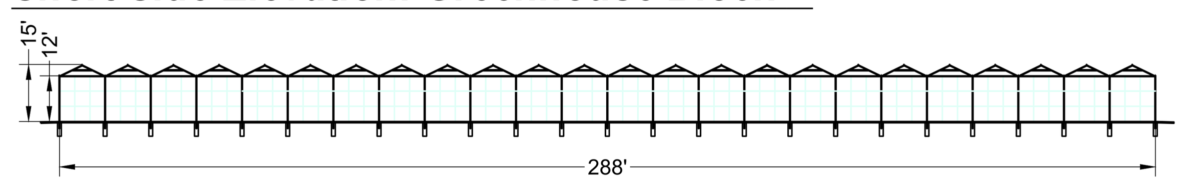
Floor Plan: Greenhouse Block



Long Side Elevation: Greenhouse Block

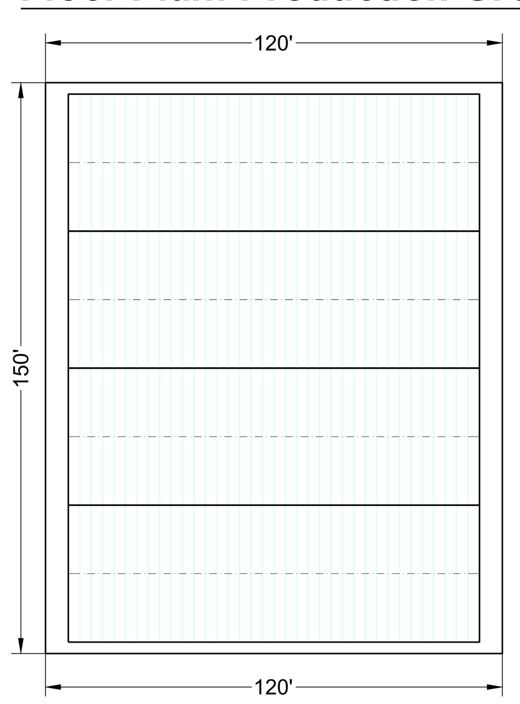


Short Side Elevation: Greenhouse Block

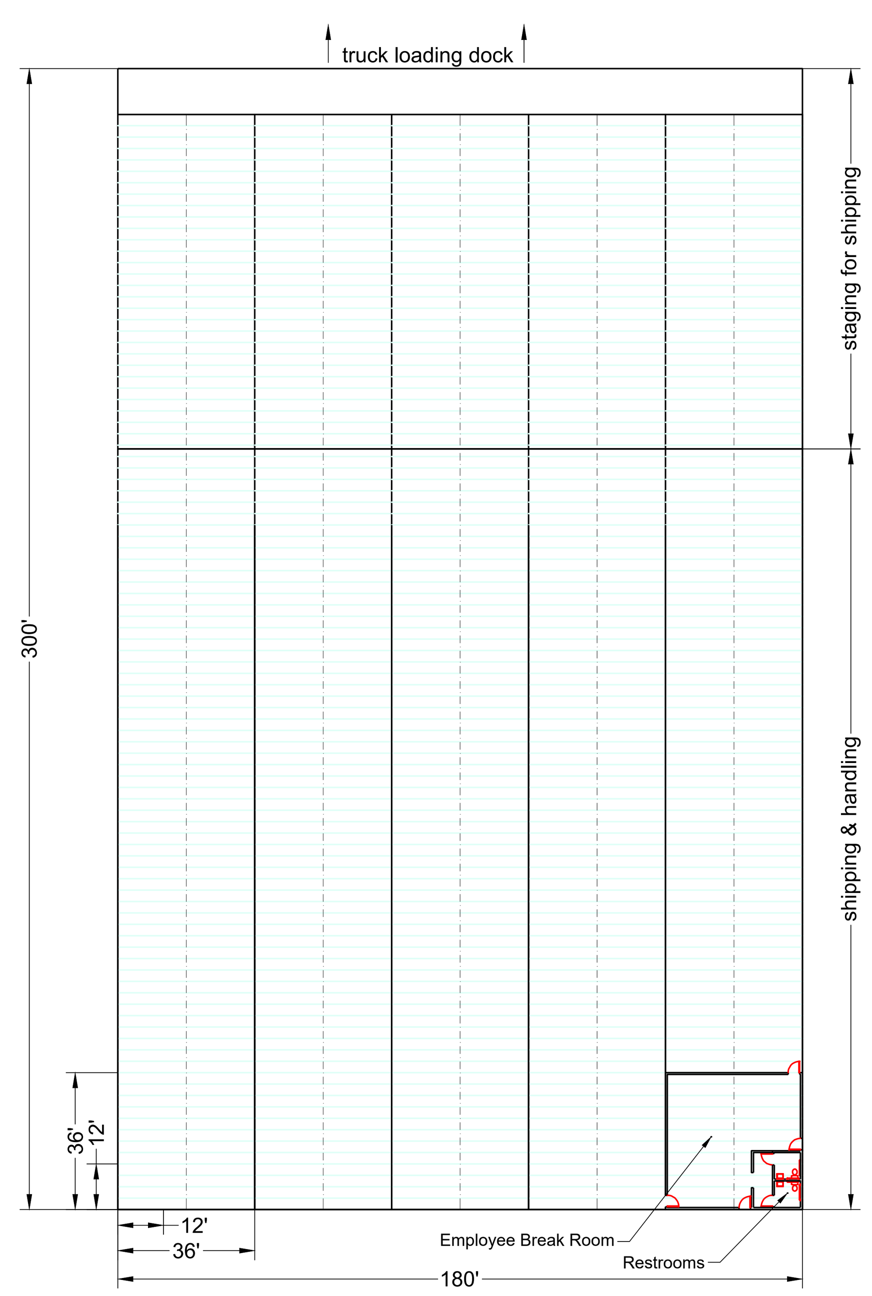


Perspective View: Greenhouse type buildings

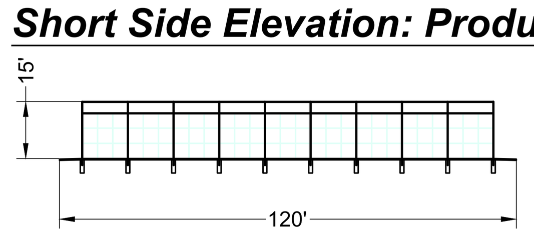
Floor Plan: Production Greenhouse



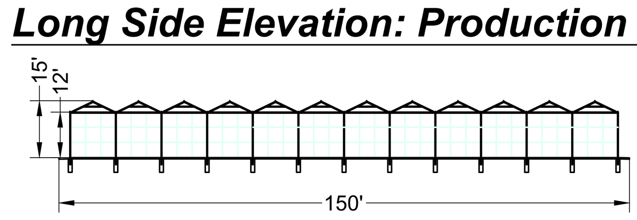
Floor Plan: Shipping, Handling, & Staging Greenhouse



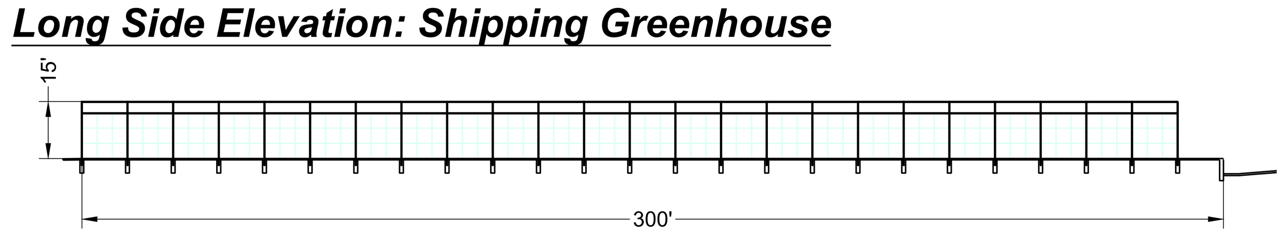
Short Side Elevation: Production Greenhouse



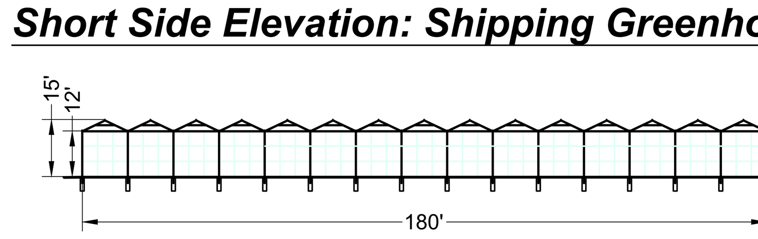
Long Side Elevation: Production Greenhouse



Long Side Elevation: Shipping Greenhouse



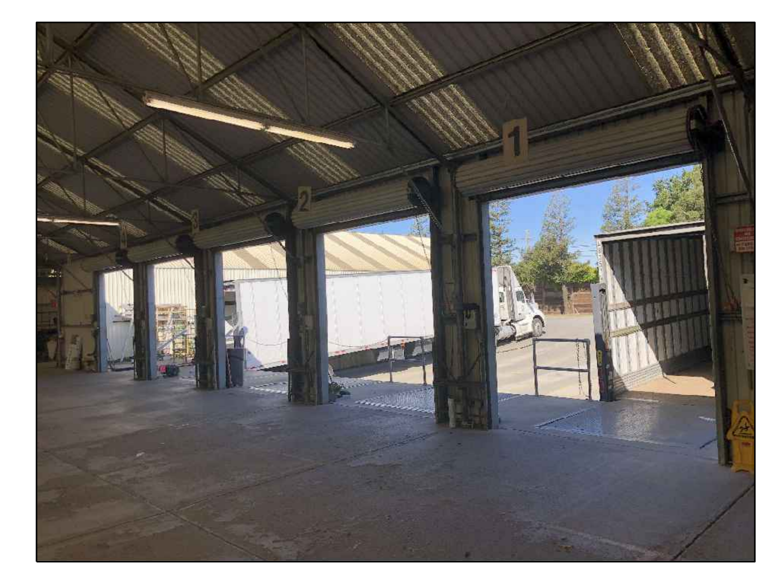
Short Side Elevation: Shipping Greenhouse



Greenhouse Interior

Shipping & Handling Greenhouse Interior

Typical Field Growing Area



Shipping Doors to Truck Loading

Greenhouse Interior

Truck Loading Dock & PCC Staging Area

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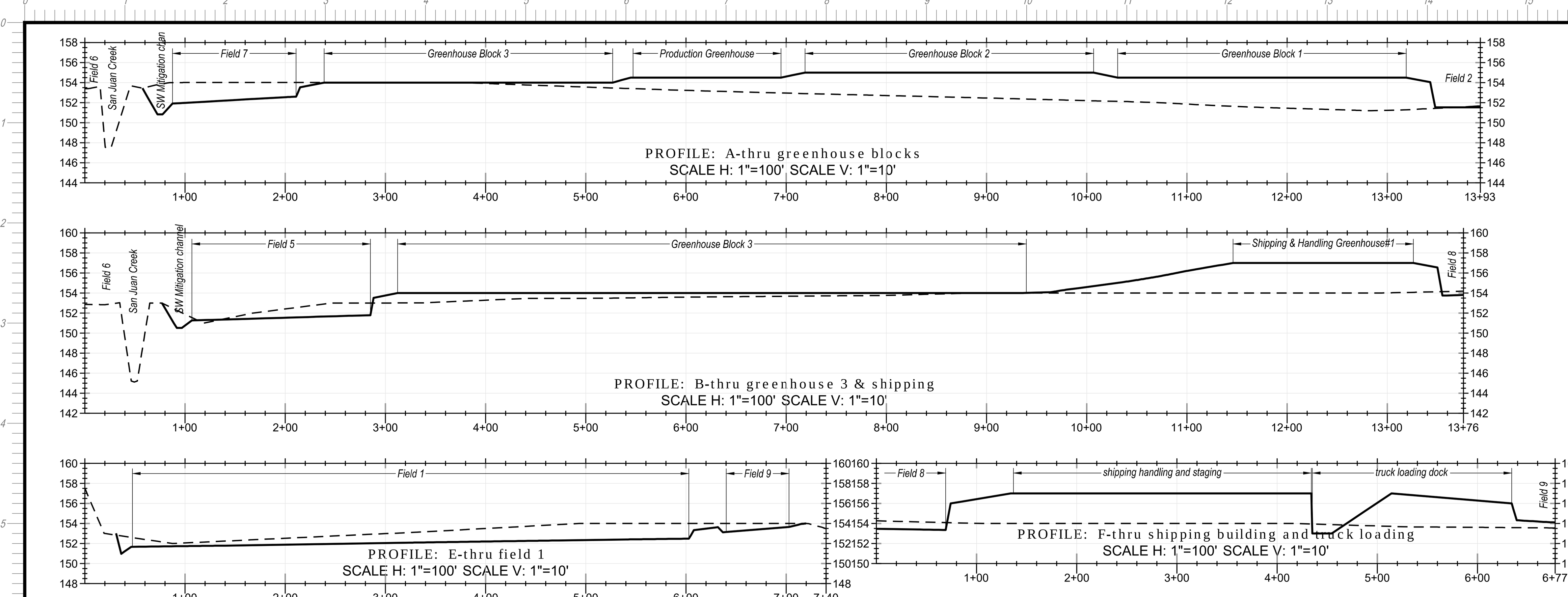
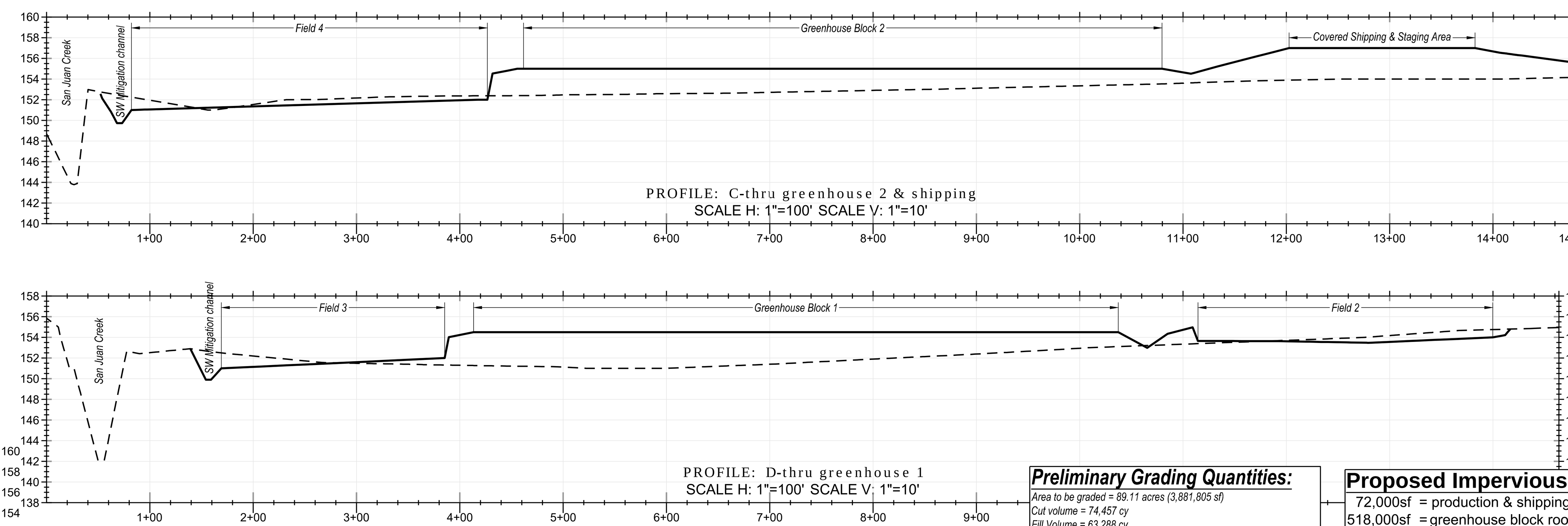
MH engineering Co.
16075 Vineyard Boulevard
Morgan Hill, CA 95037

CUP - Building footprints & elevations
Kawahara Nursery - San Juan Bautista

DATE: 9/16/2020
SCALE: as noted
DRAWN BY: aa
CHECKED BY: cw
JOB NO. 218111
SHEET 3
OF 5



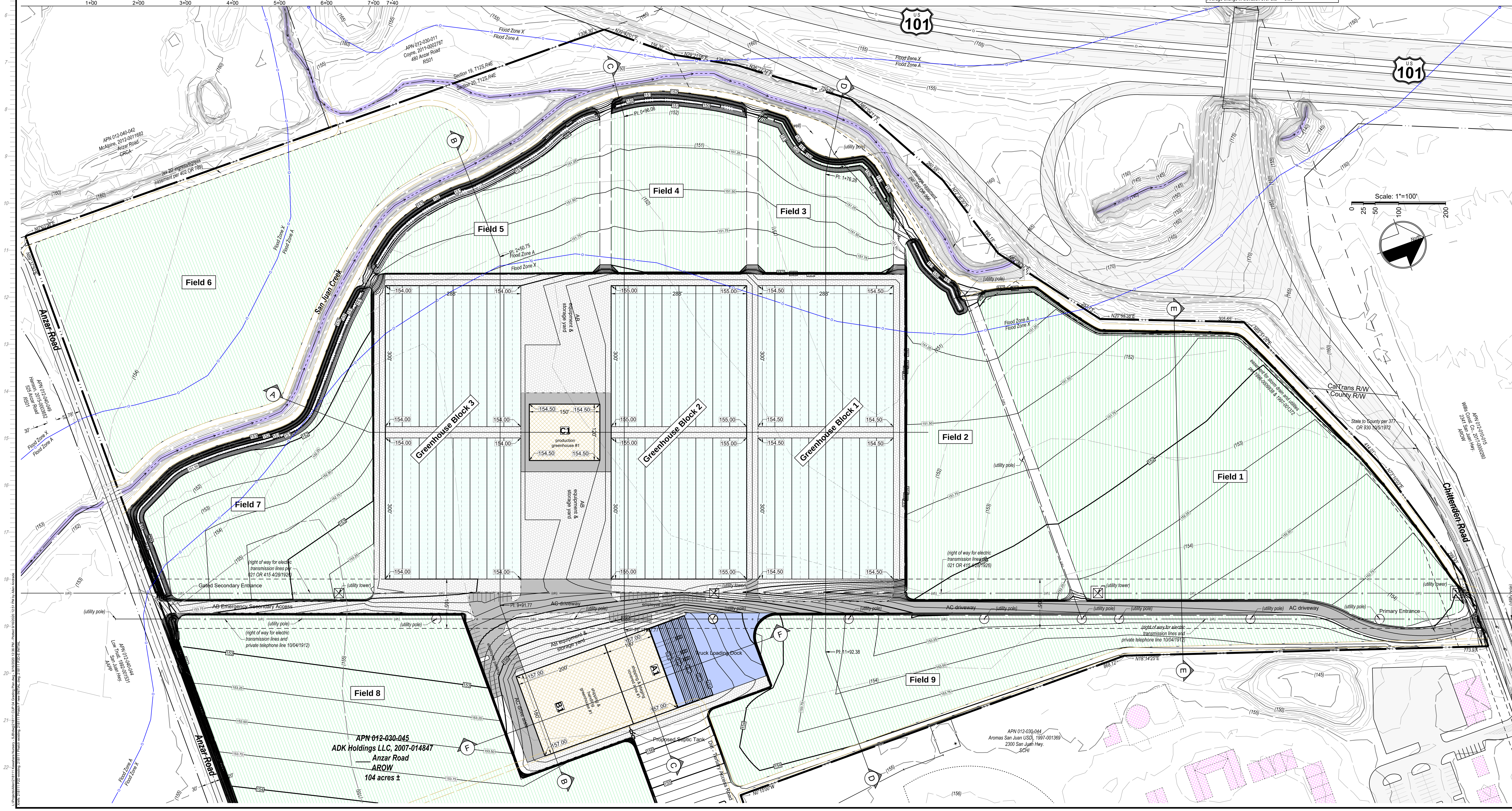


Preliminary Grading Quantities:

- Area to be graded = 89.11 acres (3,881,805 sf)
- Cut volume = 74,457 cy
- Fill Volume = 63,288 cy
- Import/Export = 0 cy (15% shrinkage => site balance)
- Max. depth of cut = 2.52'
- Max. depth of fill = 4.33'
- Average change in elevation over site = +0.05'

Proposed Impervious Surfaces:

- 72,000sf = production & shipping roof areas
- 518,000sf = greenhouse block roof areas
- 34,601sf = pcc paved areas
- 93,888sf = ac paved areas
- 271,724sf = ab paved areas



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MH engineering Co.

16075 Vineyard Boulevard
Morgan Hill, CA 95037

CUP - Grading & Drainge Plan

Kawahara Nursery - San Juan Bautista

DATE:	9/16/2020
SCALE:	1"=100'
DRAWN BY:	aa
CHECKED BY:	cw

JOB NO. 218111

SHEET 4 OF 5

Plat List:

List of plans to be produced at proposed facility (provided by Kawahara Nurseries)

1. Achillea
2. Acorus
3. Aeonium
4. AgastacheAgave
5. Ageratum
6. Aglaonema
7. Ajuga
8. Alocasia
9. Aloe
10. Alstroemeria
11. Alternanthera
12. Alyogyne
13. Alyssum
14. Anemone
15. Angelonia
16. Anigozanthos
17. Anisodontea
18. Aptenia
19. Aquilegia
20. Arabis
21. Arctostaphylos
22. Arctotis
23. Argyranthemum
24. Armeria
25. Artemesia
26. Artichoke
27. Asclepias
28. Asiatic Lily
29. Aster
30. Astilbe
31. Aubrieta
32. Baby Tears
33. Bacopa
34. Basil
35. Beans
36. Begonia
37. Bellis
38. Bergenia Cordifolia
39. Bidens
40. Birds Nest Fern
41. Bittermelon
42. Bougainvillea
43. Brachyscome
44. Bracteantha
45. Broccoli
46. Brussel Sprouts
47. Buddleja
48. Cabbage
49. Caladium
50. Calandrinia
51. Calathea lancifolia
52. Calathea Roseopicta
53. Calendula
54. Calibrachoa
55. Calla Calypso
56. Calla Lily
57. Calocephalus
58. Campanula
59. Canna
60. Cantaloupe
61. Carnation
62. Caryopteris
63. Cauliflower
64. Ceanothus
65. Celery
66. Celosia
67. Chamelaucium
68. Chamomile
69. Chives
70. Chrysanthemum
71. Cilantro
72. Cineraria
73. Cistanthe
74. Cistus
75. Coleonema
76. Coleus
77. Collards
78. Confetti Garden Combo
79. Coprosma
80. Cordyline
81. Coreopsis
82. Corn
83. Corydalis
84. Cosmos
85. Cotyledon
86. Craspedia
87. Crassula
88. Crossandra
89. Croton
90. Cucumber
91. Cuphea
92. Cyclamen
93. Cyperus pro Little Prince
94. Dahlia
95. Delosperma
96. Delphinium
97. Dianthus
98. Diascia
99. Dichondra
100. Dill
101. Dipladenia
102. Dorotheanthus
103. Dracaena
104. Dusty Miller
105. Dymondia
106. Echeveria
107. Echibeckia
108. Echinacea
109. Echinocactus grusonii 'Golden Barrel'
110. Echium
111. Eggplant
112. Epiphyllum
113. Erigeron Karvinskianus
114. Erodium
115. Erysimum
116. Euphorbia
117. Euryops
118. Felicia
119. Fennel
120. Fern
121. Festuca
122. Ficinia
123. Ficus
124. Foxglove (Digitalis)
125. Freesia
126. Fuchsia
127. Gaillardia
128. Garden Mum
129. Garden Party
130. Gaura
131. Gazania
132. Genista
133. Geranium
134. Gerbera
135. Gloriosa Daisy (Rudbeckia)
136. Gomphrena
137. Graptosedum
138. Grevillea
139. Hebe
140. Helichrysum
141. Heliopsis
142. Heliotrope
143. Hemerocallis
144. Heuchera
145. Hibiscus
146. Hosta
147. Houttuynia
148. Hyacinth
149. Hydrangea
150. Hylocereus
151. Hypoestes
152. Iberis
153. Ice Plant
154. Impatiens
155. Ipomoea
156. Isotoma
157. Ivy
158. Kalanchoe
159. Kale
160. Kniphofia
161. Lamium
162. Lantana
163. Lavender
164. Lemon
165. Leonotis
166. Lettuce
167. Leucanthemum
168. Lewisia
169. Liatris
170. Limonium
171. Liriope
172. Lisianthus
173. Lithodora
174. Lobelia
175. Lotus
176. Lysimachia
177. Maranta
178. Marigold
179. Marjoram
180. Mecardonia
181. Mimicry
182. Mimulus
183. Mint
184. MixMasters
185. Moss
186. Muehlenbeckia
187. Myoporum
188. Myosotis
189. Narcissus
190. Nasturtium
191. Nemesia
192. Nepeta
193. Nephrolepis
194. NG Impatiens
195. Oenothera
196. Onion
197. Opuntia sp.
198. Oregano
199. Ornamental Pepper
200. Ornithogalum
201. Osteospermum
202. Ozothamnus
203. Pachira
204. Pachyveria
205. Pansy
206. Parsley
207. Peas
208. Penstemon
209. Pentas
210. Peperomia
211. Pepper
212. Pericallis
213. Perovskia
214. Petchoa
215. Petunia
216. Philodendron
217. Phlox
218. Platycodon
219. Plectranthus
220. Plumbago
221. Poinsettia
222. Polemonium
223. Polygala
224. Polygonum
225. Poppy
226. Portulaca
227. Portulacaria
228. Pot Mum
229. Pothos
230. Primrose
231. Primula Mal.
232. Pumpkin
233. PW Combo
234. Ranunculus
235. Rhipsalis
236. Rhodanthemum
237. Rosemary
238. Rudbeckia
239. Sage (Salvia)
240. Salvia
241. Sansevieria
242. Santolina
243. Saxifraga
244. SC Collection 1
245. SC Collection 5
246. Scabiosa
247. Scaevola
248. Scleranthus
249. Sedum
250. Senecio
251. Snapdragon
252. Society Garlic
253. Solidago
254. Spinach
255. Squash
256. Stachys
257. Stock
258. Strawberry
259. Strobilanthes
260. Succulent
261. Sun Lily
262. Sunflower
263. Sunpatien
264. Swiss Chard
265. Syngonium
266. Tarragon
267. Thyme
268. Tomato
269. Trixi Combo
270. Tulip
271. Verbena Rigida
272. Verbena
273. Veronica
274. Vinca Minor
275. Vinca Rosea
276. Viola
277. Wallflower
278. Watermelon
279. Zinnia

Fertilizer List:

List of fertilizers to be used at proposed facility (provided by Kawahara Nurseries)

1. Calcium Chloride
2. Cal-Mag 14-4-20 extra Iron
3. Cal-Mag Special 16-3-16 Plus (with Iron)
4. Cyclamen Finisher 12-5-30
5. Greencare 15-5-15 Cal-Mag
6. Greencare 17-0-17
7. Multi K GG Potassium Nitrate 13.5-0-46.2
8. Nutriculture Plug Special 12-2-12
9. Nutriculture Super Start 12-45-10 Plus
10. Pansy Special 15-3-20
11. Plant Marvel 18-6-18
12. Plant Marvel 17-5-17
13. Points Finisher with Calcium 10-5-30
14. Poinsettia Cal-Mag Special 14-3-20
15. Potassium
16. Romeo 12-8-33
17. Romeo 12-2-14 Plug Special
18. Romeo 15-5-15 Cal Mag Urea Free
19. Romeo 16-3-16
20. Romeo 20-10-20 without Boron
21. Romeo 20-20-20
22. Romeo 21-7-7 Acid
23. Romeo 24-14-14
24. Romeo 14-0-14
25. Romeo Peat and Points Special 19-10-19
26. Romeo Soluble Plant Food 15-30-15
27. Tetra Flake Calcium Chloride 77%
28. Ultrasol K Plus 13.7-0-46.3
29. Yara 15.5-0-0

Crop Production Product List:

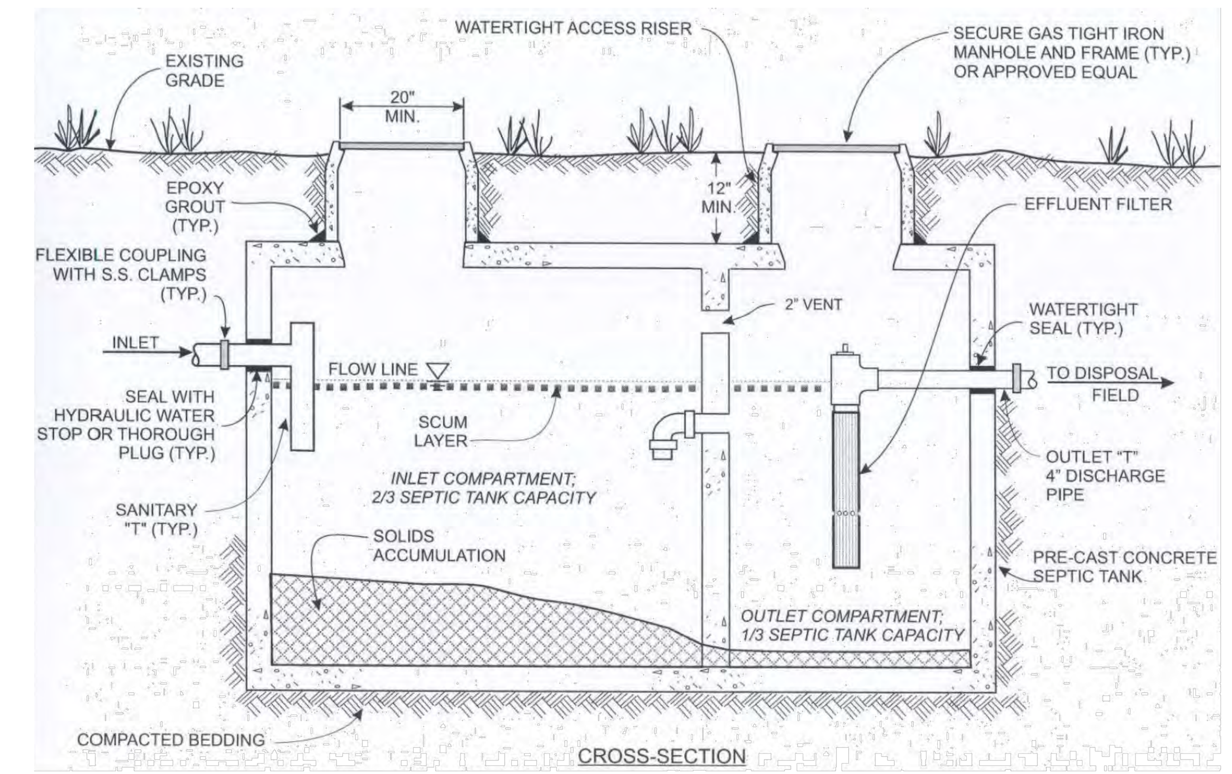
List of pesticides, herbicides, PGRs, & fungicides to be used at proposed facility (provided by Kawahara Nurseries)

1. Actinovate
2. Adept
3. Adorn
4. Agri-Mycin 17
5. Akari 5 SC
6. Aliette WDG
7. Areca TM
8. A-Rest
9. Aria
10. Astun
11. Avid 0.15 EC
12. AzaGuard
13. Azatin O 4.5%
14. Banner Maxx
15. B-Nine WSG
16. Bonzi
17. Botanigard
18. Bravo Weather Stik
19. Camelot-O
20. Capsil
21. Cease
22. Chipco 26019 FLO
23. Choice Weather Master
24. Citadel
25. Citation
26. Cleary's 3336 F
27. Collate
28. Concise
29. Configure
30. Conserve SC
31. Cycocel
32. Daconil Weather Stik
33. Dazide 85 WSG
34. Decree 50 WDG
35. Dimension 2 EW
36. Dip n Gro
37. Dipel Pro DF
38. Distance
39. Dithane F-45
40. Double Nickel
41. Eagle 20 EW
42. Eagle WP 40
43. Endeavor
44. Enstar AQ
45. Fascination
46. Floramite SC
47. Florel
48. Fore 80 WP Rainshield
49. Fosphite
50. Freehand herbicide
51. Fresco
52. Gallery SC
53. Gnatrol WDG
54. Grandevo PTO
55. GreenClean Pro Granular Algaecide
56. Heritage
57. Hormex Rooting Powder
58. Hormodin 1
59. Hormodin 2
60. Hormodin 3
61. Hortus IBA Water Soluble Salts 20%
62. Insignia Fungicide (solid)
63. KleenGrow
64. Kocide 101
65. Kocide 2000
66. Kocide 3000
67. Kontos
68. Mainspring
69. Manzate Pro-Stick
70. Marathon 1% G
71. Marengo
72. Mavrik Aquaflow
73. Medallion WDG
74. Medallion WP
75. Mesurol 75-W
76. Micora
77. Milstop
78. M-Pede
79. Neemix 4.5
80. No foam B
81. Nordox 75 WG
82. Nufarm Chlormequat SPC
83. Nufarm T-Methyl SPC 4.5 F
84. Nufarm T-Methyl SPC 50 WSB
85. NutriFOG
86. Orkestra
87. Orthene 97
88. Overture 35 WP
89. Oxidate 2.0
90. Pace PW-2
91. Pageant (Intrinsic)
92. Palladium
93. Pedestal
94. Phyton 27
95. Piccolo
96. Pipron
97. Pyganic 1.4 EC
98. Pylon
99. Regalia PTO
100. Reign
101. Reward
102. Rootshield Plus WP
103. Round Up Pro
104. Rycar
105. Sanmite SC
106. Scythe
107. Segovis
108. Segway-O
109. Snapshot 2.5 TG
110. Spectro 90 WDG
111. Stature SC
112. Subdue Maxx
113. Suffoil-X
114. Sultan
115. Sumagic
116. Suppress
117. SureGuard 51%
118. Surflan A.S.
119. Talstar P Professional
120. Terra Grow
121. Terrazole
122. Topflor
123. Triathlon BA
124. TriStar 70 WSP

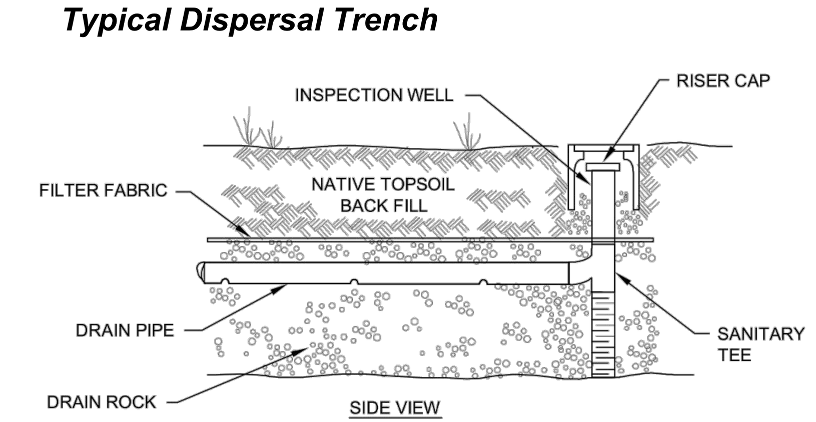
Septic System

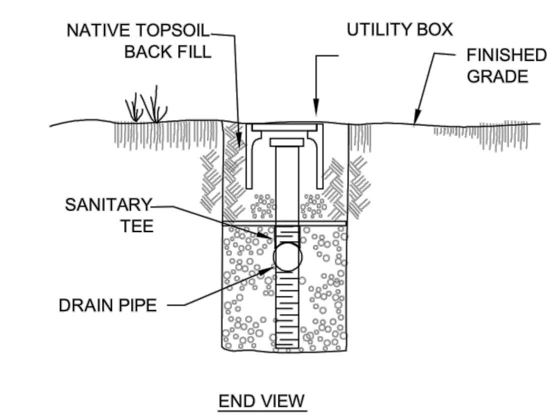
shown in concept due to soil profile testing with John Hoges of SBCDEH 7/29/2020 indicating the area shown on sheet 2 was suitable for septic system with groundwater depth at 11 feet below surface & shallow conventional system shall provide vertical separation distance between trench bottom and groundwater as required. Final design of septic system shall be coordinated directly with Environmental Health and approved prior to any building permit issuance.

Septic Tank

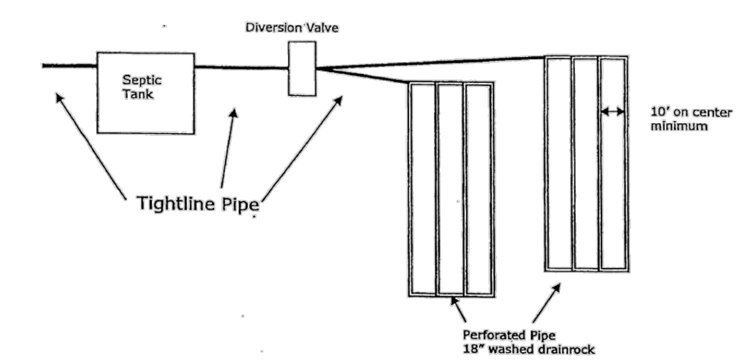


Typical Dispersal Trench





Drainfield System



"Grid" System for Leachfields

Distance between each leachline: 10-foot on center minimum

Perforated pipe throughout the "grid" - 6-foot credit for ends of leachlines

Natural terrain must be 5% or less

To ensure even distribution throughout the "grid," the bottom of all trenches must be level

Drainlines must be 50-feet in length minimum, 100' in length maximum

MH engineering Co.
16075 Vineyard Boulevard
Morgan Hill, CA 95037

CUP - additional information
Kawahara Nursery - San Juan Bautista

DATE: 9/16/2020
SCALE: as noted
DRAWN BY: aa
CHECKED BY: cw

JOB NO. 218111

SHEET 5 OF 5

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APPENDIX B

California Natural Diversity Database Report

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Mt. Madonna (3712116) OR Gilroy (3712115) OR Gilroy Hot Springs (3712114) OR Watsonville East (3612186) OR Chittenden (3612185) OR San Felipe (3612184) OR Prunedale (3612176) OR San Juan Bautista (3612175) OR Hollister (3612174))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Adela oplerella Opler's longhorn moth	IILEE0G040	None	None	G2	S2	
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G2G3	S1S2	SSC
Ambystoma californiense California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
Ambystoma macrodactylum croceum Santa Cruz long-toed salamander	AAAAA01082	Endangered	Endangered	G5T1T2	S1S2	FP
Aneides niger Santa Cruz black salamander	AAAAD01070	None	None	G3	S3	SSC
Anniella pulchra Northern California legless lizard	ARACC01020	None	None	G3	S3	SSC
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Arctostaphylos andersonii Anderson's manzanita	PDERI04030	None	None	G2	S2	1B.2
Arctostaphylos hookeri ssp. hookeri Hooker's manzanita	PDERI040J1	None	None	G3T2	S2	1B.2
Arctostaphylos pajaroensis Pajaro manzanita	PDERI04100	None	None	G1	S1	1B.1
Astragalus tener var. tener alkali milk-vetch	PDFAB0F8R1	None	None	G2T1	S1	1B.2
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Balsamorhiza macrolepis big-scale balsamroot	PDAST11061	None	None	G2	S2	1B.2
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus crotchii Crotch bumble bee	IIHYM24480	None	Candidate Endangered	G3G4	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	Candidate Endangered	G2G3	S1	
Campanula exigua chaparral harebell	PDCAM020A0	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Castilleja rubicundula var. rubicundula pink creamsacs	PDSCR0D482	None	None	G5T2	S2	1B.2
Central Maritime Chaparral Central Maritime Chaparral	CTT37C20CA	None	None	G2	S2.2	
Centromadia parryi ssp. congdonii Congdon's tarplant	PDAST4R0P1	None	None	G3T1T2	S1S2	1B.1
Chorizanthe pungens var. pungens Monterey spineflower	PDPGN040M2	Threatened	None	G2T2	S2	1B.2
Cirsium fontinale var. campylon Mt. Hamilton thistle	PDAST2E163	None	None	G2T2	S2	1B.2
Coastal Brackish Marsh Coastal Brackish Marsh	CTT52200CA	None	None	G2	S2.1	
Cordylanthus rigidus ssp. littoralis seaside bird's-beak	PDSCR0J0P2	None	Endangered	G5T2	S2	1B.1
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Deinandra halliana Hall's tarplant	PDAST4R0C0	None	None	G3	S3	1B.2
Delphinium californicum ssp. interius Hospital Canyon larkspur	PDRAN0B0A2	None	None	G3T3	S3	1B.2
Dicamptodon ensatus California giant salamander	AAAAH01020	None	None	G3	S2S3	SSC
Dipodomys venustus venustus Santa Cruz kangaroo rat	AMAFD03042	None	None	G4T1	S1	
Dudleya abramsii ssp. setchellii Santa Clara Valley dudleya	PDCRA040Z0	Endangered	None	G4T2	S2	1B.1
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Ericameria fasciculata Eastwood's goldenbush	PDAST3L080	None	None	G2	S2	1B.1
Eriogonum nortonii Pinnacles buckwheat	PDPGN08470	None	None	G2	S2	1B.3
Eryngium aristulatum var. hooveri Hoover's button-celery	PDAPI0Z043	None	None	G5T1	S1	1B.1
Eumops perotis californicus western mastiff bat	AMACD02011	None	None	G5T4	S3S4	SSC
Euphydryas editha bayensis Bay checkerspot butterfly	IILEPK4055	Threatened	None	G5T1	S1	
Extriplex joaquinana San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Falco columbarius merlin	ABNKD06030	None	None	G5	S3S4	WL
Fritillaria liliacea fragrant fritillary	PMLIL0V0C0	None	None	G2	S2	1B.2
Gonidea angulata western ridged mussel	IMBIV19010	None	None	G3	S1S2	
Helminthoglypta sequoicola consors redwood shoulderband	IMGASC2421	None	None	G2T1	S1	
Hoita strobilina Loma Prieta hoita	PDFAB5Z030	None	None	G2?	S2?	1B.1
Holocarpha macradenia Santa Cruz tarplant	PDAST4X020	Threatened	Endangered	G1	S1	1B.1
Lasiurus blossevillii western red bat	AMACC05060	None	None	G5	S3	SSC
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Lavinia exilicauda harengus Monterey hitch	AFCJB19013	None	None	G4T2T4	S2S4	SSC
Lavinia symmetricus subditus Monterey roach	AFCJB19026	None	None	G4T2T3	S2S3	SSC
Legenere limosa legenere	PDCAM0C010	None	None	G2	S2	1B.1
Lessingia micradenia var. glabrata smooth lessingia	PDAST5S062	None	None	G2T2	S2	1B.2
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Malacothamnus aboriginum Indian Valley bush-mallow	PDMAL0Q020	None	None	G3	S3	1B.2
Malacothamnus arcuatus arcuate bush-mallow	PDMAL0Q0E0	None	None	G2Q	S2	1B.2
Masticophis flagellum ruddocki San Joaquin coachwhip	ARADB21021	None	None	G5T2T3	S2?	SSC
Monolopia gracilens woodland woollythreads	PDAST6G010	None	None	G3	S3	1B.2
Navarretia prostrata prostrate vernal pool navarretia	PDPLM0C0Q0	None	None	G2	S2	1B.2
Northern Coastal Salt Marsh Northern Coastal Salt Marsh	CTT52110CA	None	None	G3	S3.2	
Oncorhynchus mykiss irideus pop. 9 steelhead - south-central California coast DPS	AFCHA0209H	Threatened	None	G5T2Q	S2	
Optioservus canus Pinnacles optioservus riffle beetle	IICOL5E020	None	None	G2	S1	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Penstemon rattanii var. kleei Santa Cruz Mountains beardtongue	PDSCR1L5B1	None	None	G4T2	S2	1B.2
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
Piperia yadonii Yadon's rein orchid	PMORC1X070	Endangered	None	G1	S1	1B.1
Plagiobothrys diffusus San Francisco popcornflower	PDBOR0V080	None	Endangered	G1Q	S1	1B.1
Plagiobothrys glaber hairless popcornflower	PDBOR0V0B0	None	None	GX	SX	1A
Puccinellia simplex California alkali grass	PMPOA53110	None	None	G3	S2	1B.2
Rallus obsoletus obsoletus California Ridgway's rail	ABNME05011	Endangered	Endangered	G5T1	S1	FP
Rana boylii foothill yellow-legged frog	AAABH01050	None	Endangered	G3	S3	SSC
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Reithrodontomys megalotis distichlis Salinas harvest mouse	AMAFF02032	None	None	G5T1	S1	
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Rosa pinetorum pine rose	PDROS1J0W0	None	None	G2	S2	1B.2
Spea hammondii western spadefoot	AAABF02020	None	None	G3	S3	SSC
Streptanthus albidus ssp. peramoenus most beautiful jewelflower	PDBRA2G012	None	None	G2T2	S2	1B.2
Sycamore Alluvial Woodland Sycamore Alluvial Woodland	CTT62100CA	None	None	G1	S1.1	
Taricha torosa Coast Range newt	AAAAF02032	None	None	G4	S4	SSC
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Trifolium hydrophilum saline clover	PDFAB400R5	None	None	G2	S2	1B.2
Tryonia imitator mimic tryonia (=California brackishwater snail)	IMGASJ7040	None	None	G2	S2	
Vireo bellii pusillus least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S2	
Vulpes macrotis mutica San Joaquin kit fox	AMAJA03041	Endangered	Threatened	G4T2	S2	

Record Count: 81

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APPENDIX C

Information for Planning and Consulting Resource List

IPaC **U.S. Fish & Wildlife Service**

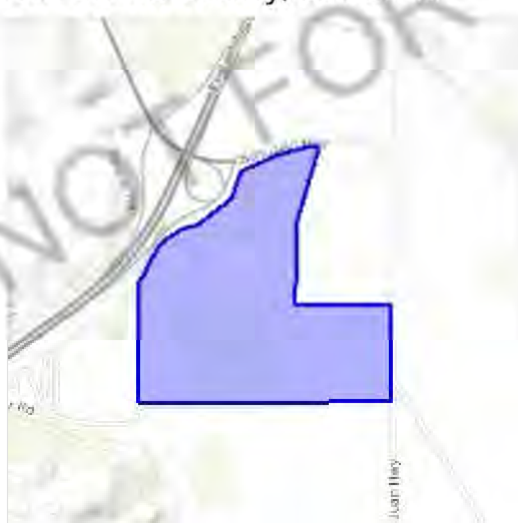
IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

San Benito County, California



Local office

Ventura Fish And Wildlife Office

- (805) 644-1766
- (805) 644-3958

2493 Portola Road, Suite B
Ventura, CA 93003-7726

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department

of Commerce.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS
California Condor Gymnogyps californianus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/8193	Endangered
Least Bell's Vireo Vireo bellii pusillus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/5945	Endangered
Southwestern Willow Flycatcher Empidonax traillii extimus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/6749	Endangered

Reptiles

NAME	STATUS
Blunt-nosed Leopard Lizard Gambelia silus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/625	Endangered

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander Ambystoma californiense There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2076	Threatened

Santa Cruz Long-toed Salamander *Ambystoma macrodactylum croceum* There is **proposed** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/7405	Endangered

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/498	Threatened

Flowering Plants

NAME	STATUS
Marsh Sandwort *Arenaria paludicola* No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2229	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Allen's Hummingbird Selasphorus sasin — Breeds Feb 1 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9637

Bald Eagle Haliaeetus leucocephalus — Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1626

Black Swift Cypseloides niger — Breeds Jun 15 to Sep 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8878

Common Yellowthroat Geothlypis trichas sinuosa — Breeds May 20 to Jul 31

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/2084

Costa's Hummingbird Calypte costae — Breeds Jan 15 to Jun 10

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9470

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Lawrence's Goldfinch Carduelis lawrencei — Breeds Mar 20 to Sep 20

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Lewis's Woodpecker Melanerpes lewis — Breeds Apr 20 to Sep 30

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9408

Nuttall's Woodpecker Picoides nuttallii — Breeds Apr 1 to Jul 20

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Rufous Hummingbird selasphorus rufus — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8002

Short-billed Dowitcher Limnodromus griseus — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

Song Sparrow Melospiza melodia — Breeds Feb 20 to Sep 5

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Spotted Towhee Pipilo maculatus clementae — Breeds Apr 15 to Jul 20

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/4243

Tricolored Blackbird Agelaius tricolor — Breeds Mar 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Whimbrel Numenius phaeopus — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9483

Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Yellow-billed Magpie Pica nuttalli — Breeds Apr 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9726

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ “Proper Interpretation and Use of Your Migratory Bird Report” before using or attempting to interpret this report.

Probability of Presence ( )

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative

probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season ( )

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)

A week is marked as having no data if there were no survey events for that week.

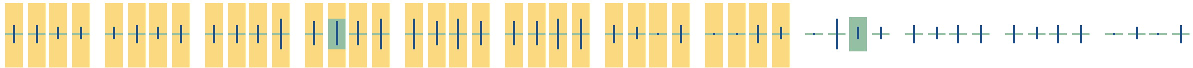
Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

SPECIES

Allen's Hummingbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

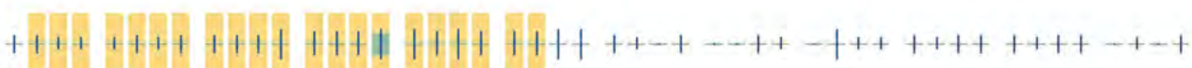
Bald Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



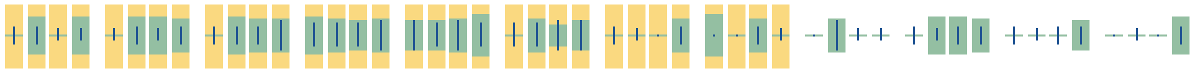
Black Swift
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Common Yellowthroat
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Costa's Hummingbird
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

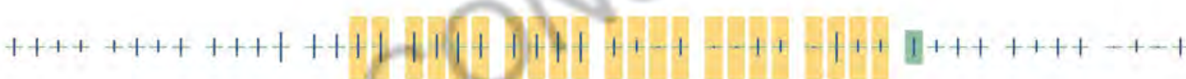


Golden Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



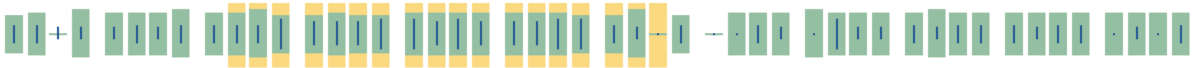
Lawrence's Goldfinch
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Lewis's Woodpecker
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

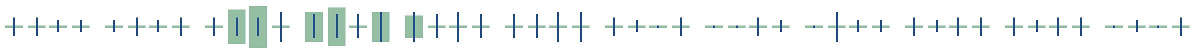


Nuttall's Woodpecker
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Oak Titmouse
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Rufous Hummingbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

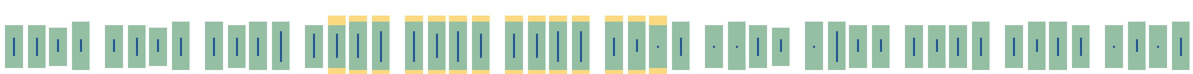


Short-billed Dowitcher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

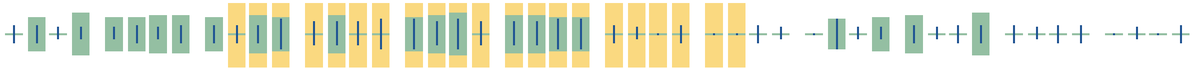
SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Song Sparrow
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Spotted Towhee
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



Tricolored Blackbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Whimbrel
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Wrentit
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Yellow-billed Magpie
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures] describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures] and/or [permits] may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or

longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND
- PEM1Cx

FRESHWATER POND
- PUBF

RIVERINE
- R4SBC
- R4SBA

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

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APPENDIX D

Special-Status Species Table

Special-Status Species Table

USGS Quadrangles: Mt. Madonna, Gilroy, Gilroy Hot Springs, Watsonville East, Chittenden, San Felipe, Prunedale, San Juan Bautista, and Hollister.

Species	Status (Service/ Department/CNPS)	General Habitat	Potential Occurrence within Survey area
MAMMALS			
Antrozous pallidus Pallid bat	-- / CSC / --	Occurs in a wide variety of habitats including grasslands, shrublands, arid desert areas, oak savanna, coastal forested areas, and coniferous forests of the mountain regions of California. Most common in open, dry habitats with rocky areas for roosting. Day roosts include caves, crevices, mines, and occasionally hollow trees and buildings. Seems to prefer rocky outcrops, cliffs, and crevices with access to open habitats for foraging. Similar structures are used for night roosting and will also use more open sites such as eaves, awnings, and open areas under bridges for feeding roosts.	**Unlikely** Limited suitable habitat within and adjacent to survey area, no suitable nesting habitat. The closest CNDDB occurrence is a 1949 collection 3.6 km from survey area.
Corynorhinus townsendii Townsend's big-eared bat	-- / CSC / --	Found primarily in rural settings from inland deserts to coastal redwoods, oak woodland of the inner Coast Ranges and Sierra foothills, and low to mid-elevation mixed coniferous-deciduous forests. Typically roost during the day in limestone caves, lava tubes, and mines, but can roost in buildings that offer suitable conditions. Night roosts are in more open settings and include bridges, rock crevices, and trees.	**Unlikely** Limited suitable habitat within and adjacent to survey area, no suitable nesting habitat. The closest CNDDB occurrence is a 1990 observation 13.3 km from survey area.
Dipodomys venustus venustus Santa Cruz kangaroo rat	-- / CNDDB / --	Common permanent residents of chaparral and foothill woodland habitats within the Santa Cruz Mountains from 0-1799 meters. Use well-drained loam or sandy loam soils for burrowing. Burrows are typically shallow (2-20 inches below the surface) and simple with a main chamber and few escape chambers.	**Unlikely** Limited suitable habitat within and adjacent to survey area, no suitable nesting habitat. The closest CNDDB occurrence is a 1985 collection 12.3 km from survey area.
Eumops perotis californicus Western mastiff bat	-- / CSC / --	Many open habitats including conifer and deciduous woodlands, coastal scrub, grassland, and chaparral. Roost in crevices in cliff faces, high buildings, trees, and tunnels.	**Low** Limited suitable habitat within and adjacent to survey area. The closest CNDDB occurrence is a 1998 observation 12.3 km from the survey area.

Species	Status (Service/ Department/CNPS)	General Habitat	Potential Occurrence within Survey area
Lasiurus blossevilii Western red bat	-- / CSC / --	Roosting habitat includes trees and sometimes shrubs in forests and woodlands from sea level up through mixed conifer forests. Roost sites are often in edge habitats adjacent to streams, fields, or urban areas. Feeds over a wide variety of habitats, including grasslands, shrublands, open woodlands and forests, and croplands.	**Low** Limited suitable habitat within and adjacent to survey area. The closest CNDDB occurrence is a 1998 observation 12.3 km from the survey area.
Lasiurus cinereus Hoary bat	-- / CNDDB / --	Prefers open habitats or habitat mosaics with access to trees for cover and open areas or edge for feeding. Generally roost in dense foliage of trees; does not use buildings for roosting. Winters in California and Mexico and often migrates towards summer quarters in the north and east during the spring. Young are born and reared in summer grounds, which is unlikely to occur in California.	**Low** Limited suitable habitat within and adjacent to survey area. The closest CNDDB occurrence is a 1945 observation 3.1 km from the survey area.
Reithrodontomys megalotis distichlis Salinas harvest mouse	-- / CNDDB / --	Known only to occur from the Monterey Bay region. Occurs in fresh and brackish water wetlands and probably in the adjacent uplands around the mouth of the Salinas River.	**Unlikely** Site outside known range for this species.
Taxidea taxus American badger	-- / CSC / --	Dry, open grasslands, fields, pastures savannas, and mountain meadows near timberline are preferred. The principal requirements seem to be sufficient food, friable soils, and relatively open, uncultivated grounds.	**Low** Limited suitable habitat within and adjacent to survey area. The closest CNDDB occurrence is a 2019 observation 0.9 km from the survey area.
Vulpes macrotis mutica San Joaquin Kit fox	FE / ST / --	Open, level areas with loose-textured soils supporting scattered, shrubby vegetation with little human disturbance. Live in annual grasslands or grassy open stages dominated by scattered brush, shrubs, and scrub.	**Unlikely** No suitable habitat within or adjacent to the survey area. The closest CNDDB occurrence is a 1992 observation 9.7 km from the survey area.
BIRDS			
Agelaius tricolor Tricolored blackbird (nesting colony)	-- / SC&CSC / --	Nest in colonies in dense riparian vegetation, along rivers, lagoons, lakes, and ponds. Forages over grassland or aquatic habitats.	**Unlikely** No suitable habitat within or adjacent to the survey area. The closest CNDDB occurrence is a 2001 occurrence 3.6 km from the survey area.

Species	Status (Service/ Department/CNPS)	General Habitat	Potential Occurrence within Survey area
Aquila chrysaetos Golden eagle (nesting & wintering)	-- / CFP / --	Use rolling foothills, mountain terrain, wide arid plateaus deeply cut by streams and canyons, open mountain slopes, cliffs, and rocky outcrops. Nest in secluded cliffs with overhanging ledges as well as large trees.	**Unlikely** No suitable habitat within or adjacent to the survey area.
Athene cunicularia Burrowing owl (burrow sites & some wintering sites)	-- / CSC / --	Year-round resident of open, dry grassland and desert habitats, and in grass, forb and open shrub stages of pinyon-juniper and ponderosa pine habitats. Frequent open grasslands and shrublands with perches and burrows. Use rodent burrows (often California ground squirrel) for roosting and nesting cover. Pipes, culverts, and nest boxes may be substituted for burrows in areas where burrows are not available.	**Low** No suitable nesting or wintering habitat within or adjacent to the survey area. Most of the survey area consists of active agricultural lands, other marginal habitat ruderal disturbed (mainly consisting of access roads). Burrows did exist during the reconnaissance survey along the edges of the San Juan Creek/ drainage ditch, although it is assumed these burrows are not perpetual due to the regular maintenance regime associated with the active agriculture.
Elanus leucurus White-tailed kite (nesting)	-- / CFP / --	Open groves, river valleys, marshes, and grasslands. Prefer such area with low roosts (fences etc.). Nest in shrubs and trees adjacent to grasslands.	**Unlikely** No suitable nesting habitat within or adjacent to the survey area.
Falco columbarius Merlin (wintering)	-- / CNDDB / --	Uses a variety of habitats in both winter and during migration. Frequents coastlines, open grasslands, savannahs, woodlands, lakes, wetland edges, and early successional stages. Does not breed in California.	**Unlikely** Low quality foraging habitat adjacent to the survey area. The closest CNDDB occurrence is a 2004 observation 18 km from survey area.
Rallus obsoletus obsoletus California Ridgway's rail	FE / SE&CFP / --	Salt and brackish marshes.	**Unlikely** No suitable habitat within or adjacent to the survey area.
Riparia riparia Bank swallow (nesting)	-- / ST / --	Nest colonially in sand banks. Found near water; fields, marshes, streams, and lakes.	**Unlikely** Multiple CNDDB occurrences recorded adjacent to survey area in 2011, however most of the survey area consists of active agricultural lands, other marginal habitat ruderal disturbed (mainly consisting of access roads). Burrows did exist during the reconnaissance survey along the edges of the San Juan Creek/ drainage ditch, although it is assumed these burrows are not perpetual due to the regular maintenance regime associated with the active agriculture.

Species	Status (Service/ Department/CNPS)	General Habitat	Potential Occurrence within Survey area
Vireo bellii pusillus Least Bell's vireo (nesting)	FE / SE / --	Riparian areas and drainages. Breed in willow riparian forest supporting a dense, shrubby understory. Oak woodland with a willow riparian understory is also used in some areas, and individuals sometimes enter adjacent chaparral, coastal sage scrub, or desert scrub habitats to forage.	**Low** Low quality habitat is present adjacent to the survey area. The closest CNDDB occurrence is a 2001 observation 7 km from the survey area.
REPTILES AND AMPHIBIANS			
Ambystoma californiense California tiger salamander	FT / ST /--	Annual grassland and grassy understory of valley-foothill hardwood habitats in central and northern California. Need underground refuges and vernal pools or other seasonal water sources.	**Low** No suitable habitat is present within and adjacent to the survey area. The CNDDB reports multiple occurrences surrounding the survey area, however most of the survey area consists of active agricultural lands, other marginal habitat ruderal disturbed (mainly consisting of access roads). burrows did exist during the reconnaissance survey along the edges of the San Juan Creek/ drainage ditch, although it is assumed these burrows are not perpetual due to the regular maintenance regime associated with the active agriculture.
Ambystoma macrodactylum croceum Santa Cruz long-toed salamander	FE / SE&CFP /--	Preferred habitats include ponderosa pine, montane hardwood-conifer, mixed conifer, montane riparian, red fir, and wet meadows. Occurs in a small number of localities in Santa Cruz and Monterey Counties. Adults spend most of the time in underground burrows and beneath objects. Larvae prefer shallow water with clumps of vegetation.	**Unlikely** Low quality habitat is present adjacent to the survey area. The closest CNDDB occurrence is a 2015 observation 13 km from the survey area
Aneides niger Santa Cruz black salamander	-- / CSC /--	Endemic to California. Occurs in the fog belt of the outer Coastal Range in mesic forests. This species occurs in moist streamside microhabitats. This species is often found in shallow standing water or seeps. Small geographical range consisting of woodland habitat within the Santa Cruz Mountains in western Santa Clara, northern Santa Cruz, and southernmost San Mateo Counties.	**Unlikely** Low quality habitat is present adjacent to the survey area. The closest CNDDB occurrence is a 2014 observation 21 km from the survey area.

Species	Status (Service/ Department/CNPS)	General Habitat	Potential Occurrence within Survey area
Anniella pulchra Northern California legless lizard	-- / CSC / --	Requires moist, warm habitats with loose soil for burrowing and prostrate plant cover, often forages in leaf litter at plant bases; may be found on beaches, sandy washes, and in woodland, chaparral, and riparian areas.	**Unlikely** No suitable habitat within or adjacent to the survey area.
Dicamptodon ensatus California giant salamander	-- / CSC / --	Endemic to California. Occurs within the Coast Range from just north of the southern border of Mendocino County to southern Santa Cruz County. Found in wet coastal forests in or around clear, cold permanent and semi-permanent streams and seepages. Typically, within elevations ranging from sea level to approximately 3000 feet.	**Unlikely** No suitable habitat within or adjacent to the survey area.
Emys marmorata Western pond turtle	-- / CSC / --	Associated with permanent or nearly permanent water in a wide variety of habitats including streams, lakes, ponds, irrigation ditches, etc. Require basking sites such as partially submerged logs, rocks, mats of vegetation, or open banks.	**Moderate** Suitable habitat adjacent to the survey area within the San Juan Creek/drainage ditch. The closest CNDDB occurrence is a 2003 observation 2.3 km from the survey area.
Masticophis flagellum ruddocki San Joaquin whipsnake	-- / CSC / --	Variety of habitats-deserts, scrub land, juniper-grassland, woodland, thorn forest, and farmland. Generally, avoid dense vegetation. Ranges from Arbuckle in the Sacramento southward to the Grapevine in the Kern County portion of the San Joaquin Valley and westward into the inner South Coast Ranges. An isolated population also occurs in the Sutter Buttes.	**Low** Limited suitable habitat within and adjacent to the survey area. The closest CNDDB occurrence is a 1996 observation 11.7 km from the survey area.
Phrynosoma blainvillii Coast horned lizard	-- / CSC / --	Associated with open patches of sandy soils in washes, chaparral, scrub, and grasslands.	**Unlikely** No suitable habitat within or adjacent to the survey area.
Rana boylii Foothill yellow-legged frog	-- / SC&CSC / --	Partly shaded, shallow streams and riffles with a rocky substrate in a variety of habitats, including hardwood, pine, and riparian forests, scrub, chaparral, and wet meadows. Rarely encountered far from permanent water.	**Unlikely** Low quality habitat is present adjacent to the survey area. The closest CNDDB occurrence is a 1971 observation 17.3 km from the survey area.
Rana draytonii California red-legged frog	FT / CSC / --	Lowlands and foothills in or near permanent or late-season sources of deep water with dense, shrubby, or emergent riparian vegetation. During late summer or fall adults are known to utilize a variety of upland habitats with leaf litter or mammal burrows.	**Unlikely** Low quality habitat is present adjacent to the survey area. The closest CNDDB occurrence is a 1982 observation 17.3 km from the survey area.

Species	Status (Service/ Department/CNPS)	General Habitat	Potential Occurrence within Survey area
Spea hammondii Western spadefoot	-- / CSC / --	Grasslands with shallow temporary pools are optimal habitats for the western spadefoot. Occur primarily in grassland habitats but can be found in valley and foothill woodlands. Vernal pools are essential for breeding and egg laying.	**Unlikely** No suitable habitat within or adjacent to the survey area.
FISH			
Lavinia exilicauda harengus Pajaro/Salinas hitch	-- / CSC / --	Found only within the Pajaro and Salinas River systems. Can occupy a wide variety of habitats, however, they are most abundant in lowland areas with large pools or small reservoirs that mimic such conditions. May be found in brackish water conditions within the Salinas River lagoon during the early summer months when the sandbar forms at the mouth of the river.	**Unlikely** No suitable habitat within or adjacent to the survey area. Survey area outside of species range.
Lavinia symmetricus subditus Monterey roach	-- / CSC / --	Generally associated with pools in unshaded and warm tributaries in relatively undisturbed areas. Most abundant when found by themselves or with just one or two other species. Found only in the Pajaro, Salinas, and San Lorenzo river systems.	**Unlikely** No suitable habitat within or adjacent to the survey area. Survey area outside of species range.
Oncorhynchus mykiss irideus Steelhead (south/central California coast DPS)	FT / -- / --	Cold headwaters, creeks, and small to large rivers and lakes; anadromous in coastal streams.	**Unlikely** No suitable habitat within survey area. The closest CNDDB occurrence is a 2007 observation 5.2 km from survey area.
INVERTEBRATES			
Adela oplerella Opler’s longhorn moth	-- / CNDDB / --	Occur in dry, nutrient-poor, serpentine soil grasslands of the greater San Francisco Bay area and adjacent foothills and valleys. Adults fly, mate, and lay their eggs between mid-March and late April; this timing varies depending on the weather. Eggs are deposited directly into the unopened flowers of the host plant, California cream cups (*Platystemon californicus*). The adult host plant is not known, though it appears that the adults may feed on the nectar of California cream cups and other native herbaceous species. Dispersal distance is typically 50 meters.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the survey area consists of active agricultural lands, other marginal habitat is disturbed mainly consisting of nonnative species.

Species	**Status** (Service/ Department/CNPS)	General Habitat	Potential Occurrence within Survey area
Bombus caliginosus Obscure bumble bee	-- / CNDDB / --	Native to the West Coast of the United States. Occurs primarily along the coast in grassy prairies and meadows within the Coast Range. This species can nest both under and above ground. When nesting above ground the species may utilize abandoned bird nests. Found in areas that are relatively humid including areas that are frequently foggy.	**Unlikely** Low quality habitat is present within the project site; however, the project site is outside of the currently known range of this species.
Bombus crotchii Crotch bumble bee	-- / SC / --	Occurs in open grassland and scrub at relatively warm and dry sites. Requires plants that bloom and provide adequate nectar and pollen throughout the colony's life cycle, which is from early February to late October. Generally nests underground, often in abandoned mammal burrows. Within California this species is known to occur in the Mediterranean, Pacific Coast, Western Desert, as well as Great Valley and adjacent foothill regions.	**Unlikely** Low quality habitat is present within the project site; however, the project site is outside of the currently known range of this species.
Bombus occidentalis Western bumble bee	-- / CNDDB / --	Occurs in open grassy areas, urban parks, urban gardens, chaparral, and meadows. This species generally nests underground.	**Unlikely** Low quality habitat is present within the project site. The closest CNDDB occurrence is a 1959 observation 15.6 km from survey area.
Euphydryas editha bayensis Bay checkerspot butterfly	FT / -- / --	Restricted to native grasslands on outcrops of serpentine soil in the vicinity of the San Francisco Bay. *Plantago erecta* is the primary host plant; *Castilleja densiflorus* and *Castilleja exserta* are secondary host plants.	**Unlikely** No suitable habitat within or adjacent to the survey area.
Gonidea angulate Western ridged muscle	-- / CNDDB / --	Inhabits cold creeks and streams from low to mid-elevations.	**Unlikely** No suitable habitat within or adjacent to the survey area.
Helminthoglypta sequoicola consors Redwood shoulderband snail	-- / CNDDB / --	Known only from the south slope of San Juan grade, near foot, 8 miles northwest of Salinas.	**Unlikely** The project site is outside of the currently known range of this species.
Linderiella occidentalis California linderiella	-- / CNDDB / --	Ephemeral ponds with no flow. Generally associated with hardpans.	**Unlikely** No suitable habitat within or adjacent to the survey area.
Optioservus canus Pinnacles optioservus riffle beetle	-- / CNDDB / --	Species of this genus generally prefer gravelly or rocky streams and some often occur on moss covered rocks. Both adults and larvae crawl on rocks and gravel mostly in riffle areas.	**Unlikely** No suitable habitat within or adjacent to the survey area.

Species	Status (Service/ Department/CNPS)	General Habitat	Potential Occurrence within Survey area
Tryonia imitator mimic tryonia (California brackishwater snail)	-- / CNDDB / --	Inhabits coastal lagoons, estuaries, and salt marshes. Found only in permanently submerged areas in a variety of sediment types. Tolerant of a wide range of salinities.	**Unlikely** No suitable habitat within or adjacent to the survey area.
PLANTS			
Arctostaphylos andersonii Anderson's manzanita	-- / -- / 1B	Openings and edges of broadleaved upland forest, chaparral, and north coast coniferous forest at elevations of 60-760 meters. Evergreen shrub in the Ericaceae family; blooms November-May.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the project is within active agriculture, these areas are subject to anthropogenic disturbance regime related to the cultivation of row cropping. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent.
Arctostaphylos hookeri ssp. *hookeri* Hooker's manzanita	-- / -- / 1B	Closed-cone coniferous forest, chaparral, cismontane woodland, and coastal scrub on sandy soils at elevations of 85-536 meters. Evergreen shrub in the Ericaceae family; blooms January-June.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the project is within active agriculture, these areas are subject to anthropogenic disturbance regime related to the cultivation of row cropping. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent.
Arctostaphylos pajaroensis Pajaro manzanita	-- / -- / 1B	Chaparral on sandy soils at elevations of 30-760 meters. Evergreen shrub in the Ericaceae family; blooms December-March.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the project is within active agriculture, these areas are subject to anthropogenic disturbance regime related to the cultivation of row cropping. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent.
Astragalus tener var. *tener* Alkali milk-vetch	-- / -- / 1B	Playas, valley and foothill grassland on adobe clay, and vernal pools on alkaline soils at elevations of 1-60 meters. Annual herb in the Fabaceae family; blooms March-June.	**Unlikely** No suitable habitat within or adjacent to the survey area. Site is located outside of suitable elevation for this species

Species	Status (Service/ Department/CNPS)	General Habitat	Potential Occurrence within Survey area
Balsamorhiza macrolepis *Big-scale balsamroot*	-- / -- / 1B	Chaparral, cismontane woodland, and valley and foothill grassland, sometimes on serpentinite soils, at elevations of 90-1555 meters. Perennial herb in the Asteraceae family; blooms March-June.	**Unlikely** Low quality habitat adjacent to survey area. The closest CNDDB occurrence is a 2014 observation 21 km from survey area.
Campanula exigua Chaparral harebell	-- / -- / 1B	Chaparral on rocky, usually serpentinite soils at elevations of 275-1250 meters. Annual herb in the Campanulaceae family; blooms May-June.	**Unlikely** Suitable soil type not found within or adjacent to survey area.
Castilleja rubicundula var. *rubicundula* Pink creamsacs	-- / -- / 1B	Openings in chaparral, cismontane woodlands, meadows and seeps, and valley and foothill grasslands on serpentinite soils, at elevations of 20-910 meters. Annual herb in the Orobanchaceae family; blooms April-June.	**Unlikely** Suitable soil type not found within or adjacent to survey area.
Centromadia parryi ssp. *congdonii* Congdon's tarplant	-- / -- / 1B	Valley and foothill grassland on heavy clay, saline, or alkaline soils at elevations of 0-230 meters. Annual herb in the Asteraceae family; blooms May-November.	**Unlikely** Low quality habitat adjacent to survey area. The closest CNDDB occurrence is a 2016 observation 21 km from survey area.
Chorizanthe pungens var. *pungens* Monterey spineflower	FT / -- / 1B	Maritime chaparral, cismontane woodland, coastal dunes, coastal scrub, and valley and foothill grassland on sandy soils at elevations of 3-450 meters. Annual herb in the Polygonaceae family; blooms April-July.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the project is within active agriculture, these areas are subject to anthropogenic disturbance regime related to the cultivation of row cropping. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent.
Cirsium fontinale var. campylon Mount Hamilton fountain thistle	-- / -- / 1B	Chaparral, cismontane woodland, and valley and foothill grassland on serpentinite seeps, at elevations of 100-890 meters. Perennial herb in the Asteraceae family; blooms February-October.	**Unlikely** Low quality habitat adjacent to survey area. The closest CNDDB occurrence is a 2016 observation 27 km from survey area.
Cordylanthus rigidus ssp. *littoralis* Seaside bird's-beak	-- / SE / 1B	Closed-cone coniferous forests, maritime chaparral, cismontane woodlands, coastal dunes, and coastal scrub on sandy soils, often on disturbed sites, at elevations of 0-425 meters. Annual hemi-parasitic herb in the Orobanchaceae family; blooms April-October.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the project is within active agriculture, these areas are subject to anthropogenic disturbance regime related to the cultivation of row cropping. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent.

Species	**Status** (Service/ Department/CNPS)	General Habitat	Potential Occurrence within Survey area
Deinandra halliana Hall's tarplant	-- / -- / 1B	Chenopod scrub, cismontane woodland, and valley and foothill grassland on clay soils at elevations of 260-950. Annual herb in the Asteraceae family; blooms April-May.	**Unlikely** No suitable habitat within or adjacent to the survey area. Site is located outside of suitable elevation for this species
Delphinium californicum ssp. interius Hospital Canyon California larkspur	-- / -- / 1B	Openings in chaparral, coastal scrub, and mesic areas of cismontane woodland at elevations of 230-1095 meters. Perennial herb in the Ranunculaceae family; blooms April-June.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the project is within active agriculture, these areas are subject to anthropogenic disturbance regime related to the cultivation of row cropping. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent.
Dudleya abramsii ssp. setchellii Santa Clara Valley dudleya	-- / -- / 1B	Cismontane woodland and valley and foothill grasslands on rocky serpentinite soils, at elevations of 60-455 meters. Perennial herb in the Crassulaceae family; blooms April-October.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the project is within active agriculture, these areas are subject to anthropogenic disturbance regime related to the cultivation of row cropping. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent.
Ericameria fasciculata Eastwood's goldenbush	-- / -- / 1B	Openings in closed-cone coniferous forest, maritime chaparral, coastal dunes, and coastal scrub on sandy soils at elevations of 30-275 meters. Evergreen shrub in the Asteraceae family; blooms July-October.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the project is within active agriculture, these areas are subject to anthropogenic disturbance regime related to the cultivation of row cropping. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent.

Species	Status (Service/ Department/CNPS)	General Habitat	Potential Occurrence within Survey area
Eriogonum nortonii Pinnacles buckwheat	-- / -- / 1B	Chaparral and valley and foothill grassland on sandy soils, often on recent burns, at elevations of 300-975 meters. Annual herb in the Polygonaceae family; blooms May-September.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the project is within active agriculture, these areas are subject to anthropogenic disturbance regime related to the cultivation of row cropping. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent.
Eryngium aristulatum var. hooveri Hoover's button-celery	-- / -- / 1B	Vernal pools at elevations of 3-45 meters. Annual/perennial herb in the Apiaceae family; blooms June-August.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the project is within active agriculture, these areas are subject to anthropogenic disturbance regime related to the cultivation of row cropping. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent.
Extriplex joaquiniana San Joaquin spearscale	-- / -- / 1B	Meadows and seeps, playas, chenopod scrub, and valley and foothill grassland on alkaline soils at elevations of 1-835 meters. Annual herb in the Chenopodiaceae family; blooms April-October.	**Low** Limited suitable habitat within or adjacent to survey area. The closest CNDDB occurrence is a 2013 observation 12.8 km from survey area
Fritillaria liliacea Fragrant fritillary	-- / -- / 1B	Cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland, often serpentinite, at elevations of 3-410 meters. Bulbiferous perennial herb in the Liliaceae family; blooms February-April.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the project is within active agriculture, these areas are subject to anthropogenic disturbance regime related to the cultivation of row cropping. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent.
Hoita strobilina Loma Prieta hoita	-- / -- / 1B	Mesic areas of chaparral, cismontane woodland, and riparian woodland, usually on serpentinite soils, at elevations of 30-860 meters. Perennial herb in the Fabaceae family; blooms May-October.	**Unlikely** Limited suitable habitat adjacent to survey area. The closest CNDDB occurrence is a 1918 observation 12.5 km from survey area.

Species	Status (Service/ Department/CNPS)	General Habitat	Potential Occurrence within Survey area
Holocarpha macradenia Santa Cruz tarplant	FT / SE / 1B	Coastal prairies and valley foothill grasslands often clay or sandy soils, at elevations of 10-220 meters. Annual herb in the Asteraceae family; blooms June-October.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the project is within active agriculture, these areas are subject to anthropogenic disturbance regime related to the cultivation of row cropping. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent.
Legenere limosa Legenere	-- / -- / 1B	Vernal pools and wetlands at elevations of 1-880 meters. Annual herb in the Campanulaceae family; blooms April- June.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the project is within active agriculture, these areas are subject to anthropogenic disturbance regime related to the cultivation of row cropping. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent.
Lessingia micradenia var. glabrata Smooth lessingia	-- / -- / 1B	Chaparral and cismontane woodlands on serpentinite soils, often on roadsides, at elevations of 120-420 meters. Annual herb in the Asteraceae family; blooms July-November.	**Unlikely** Limited suitable habitat adjacent to survey area. The closest CNDDB occurrence is a 2005 observation 17.3 km from survey area.
Malacothamnus aboriginum Indian Valley bush-mallow	-- / -- / 1B	Chaparral and cismontane woodland on rocky or granitic soils, often in burned areas, at elevations of 150-1700. Deciduous shrub in the Malvaceae family; blooms April-October.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the project is within active agriculture, these areas are subject to anthropogenic disturbance regime related to the cultivation of row cropping. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent.

Species	Status (Service/ Department/CNPS)	General Habitat	Potential Occurrence within Survey area
Malacothamnus arcuatus Arcuate bush-mallow	-- / -- / 1B	Chaparral and cismontane woodland at elevations of 15-355 meters. Perennial evergreen shrub in the Malvaceae family; blooms April-September.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the project is within active agriculture, these areas are subject to anthropogenic disturbance regime related to the cultivation of row cropping. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent.
Monolopia gracilens Woodland woollythreads	-- / -- / 1B	Openings of broadleaved upland forest, chaparral, cismontane woodland, North Coast coniferous forest, and valley and foothill grassland on serpentinite soils at elevations of 100-1200 meters. Annual herb in the Asteraceae family; blooms February-July.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the project is within active agriculture, these areas are subject to anthropogenic disturbance regime related to the cultivation of row cropping. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent.
Navarretia prostrata Prostrate vernal pool navarretia	-- / -- / 1B	Meadows, seeps, vernal pools, and mesic areas of coastal scrub and valley and foothill grassland at elevations of 15-2110 meters. Annual herb in the Polemoniaceae family; blooms April-July.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the project is within active agriculture, these areas are subject to anthropogenic disturbance regime related to the cultivation of row cropping. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent.
Penstemon rattanii var. *kleei* Santa Cruz Mountains beardtongue	-- / -- / 1B	Chaparral and lower montane and North Coast coniferous forests at elevations of 400-1100 meters. Perennial herb in the Plantaginaceae family; blooms May-June.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the project is within active agriculture, these areas are subject to anthropogenic disturbance regime related to the cultivation of row cropping. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent.

Species	Status (Service/ Department/CNPS)	General Habitat	Potential Occurrence within Survey area
Piperia yadonii Yadon's rein orchid	FE / -- / 1B	Sandy soils in coastal bluff scrub, closed-cone coniferous forest, and maritime chaparral at elevations of 10-510 meters. Annual herb in the Orchidaceae family; blooms February-August.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the project is within active agriculture, these areas are subject to anthropogenic disturbance regime related to the cultivation of row cropping. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent.
Plagiobothrys diffusus San Francisco popcorn-flower	-- / SE / 1B	Coastal prairie and valley and foothill grassland at elevations of 60-360 meters. Annual herb in the Boraginaceae family; blooms March-June.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the survey area consists of active agricultural lands, other marginal habitat is disturbed mainly consisting of nonnative species.
Plagiobothrys glaber Hairless popcorn-flower	-- / -- / 1A	Alkaline meadows and seeps, and coastal salt marshes and swamps at elevations of 15-180 meters. Annual herb in the Boraginaceae family; blooms March-May.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the project is within active agriculture, these areas are subject to anthropogenic disturbance regime related to the cultivation of row cropping. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent.
Puccinellia simplex California alkali grass	-- / -- / 1B	Valley and foothill grasslands, chenopod scrub, meadows and seeps, and vernal pools. Found in alkaline, vernally mesic; sinks, flats, and lake margins. Occurs at elevations of 2-930 meters. Annual herb in the Poaceae family; blooms March-May.	**Low** Limited suitable habitat within and adjacent to survey area. The closest CNDDB occurrence is a 2006 observation 4.2 km from survey area.

Species	Status (Service/ Department/CNPS)	General Habitat	Potential Occurrence within Survey area
Rosa pinetorum Pine rose	-- / -- / 1B	Closed-cone coniferous forest at elevations of 2-300 meters. Perennial shrub in the Rosaceae family; blooms May-July. Possible hybrid of *R. spithamea*, *R. gymnocarpa*, or others; further study needed.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the project is within active agriculture, these areas are subject to anthropogenic disturbance regime related to the cultivation of row cropping. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent.
Streptanthus albidus ssp. *peramoenus* Most beautiful jewel-flower	-- / -- / 1B	Chaparral, cismontane woodlands, and valley and foothill grasslands on serpentinite soils at elevations of 94-1000 meters. Annual herb in the Brassicaceae family; blooms March-October.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the project is within active agriculture, these areas are subject to anthropogenic disturbance regime related to the cultivation of row cropping. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent.
Trifolium hydrophilum Saline clover	-- / -- / 1B	Marshes and swamps, mesic and alkaline valley and foothill grassland, and vernal pools at elevations of 0-300 meters. Annual herb in the Fabaceae family; blooms April-June.	**Unlikely** No suitable habitat within or adjacent to the survey area. Most of the project is within active agriculture, these areas are subject to anthropogenic disturbance regime related to the cultivation of row cropping. Due to this disturbance regime all other species or vegetation, besides those species associated with the row cropping and a few weedy species able to persist on the edges, are nonexistent.

STATUS DEFINITIONS

Federal

FE	= listed as Endangered under the federal Endangered Species Act
FT	= listed as Threatened under the federal Endangered Species Act
FC	= Candidate for listing under the federal Endangered Species Act
--	= no listing

State

SE	= listed as Endangered under the California Endangered Species Act
ST	= listed as Threatened under the California Endangered Species Act
SR	= listed as Rare under the California Endangered Species Act
SC	= Candidate for listing under the California Endangered Species Act
CSC	= California Department of Fish and Wildlife Species of Concern
CFP	= California Fully Protected Animal
CNDDB	= This designation is being assigned to animal species with no other status designation defined in this table. These animal species are included in the Department's CNDDB "Special Animals" list (2018), which includes all taxa the CNDDB is interested in tracking, regardless of their legal or protection status. This list is also referred to as the list of "species at risk" or "special-status species." The Department considers the taxa on this list to be those of the greatest conservation need.
WL	= The Department of Fish and Wildlife maintains a list consisting of taxa that were previously designated as "Species of Special Concern" but no longer merit that status, or which do not yet meet SSC criteria, but for which there is concern and a need for additional information to clarify status.
--	= no listing

California Native Plant Society

1A	= California Rare Plant Rank 1A species; presumed extirpated in California and either rare or extinct elsewhere
1B	= California Rare Plant Rank 1B species; rare, threatened, or endangered in California and elsewhere
2B	= California Rare Plant Rank 2B species; rare, threatened, or endangered in California, but more common elsewhere
3	= California Rare Plant Rank 3 species; CNPS review list
4	= California Rare Plant Rank 4 Limited distribution (CNPS Watch List)
--	= no listing

POTENTIAL TO OCCUR

Present	= known occurrence of species within the site; presence of suitable habitat conditions; or observed during field surveys
High	= known occurrence of species in the vicinity from the CNDDB or other documentation; presence of suitable habitat conditions
Moderate	= known occurrence of species in the vicinity from the CNDDB or other documentation; presence of marginal habitat conditions within the site
Low	= species known to occur in the vicinity from the CNDDB or other documentation, lack of suitable habitat or poor quality
Unlikely	= species not known to occur in the vicinity from the CNDDB or other documentation, no suitable habitat is present within the site
Not Present	= species was not observed during surveys

APPENDIX C
GEOTECHNICAL REPORT

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PRELIMINARY SOILS ENGINEERING REPORT
KAWAHARA NURSERY
ANZAR ROAD AND SAN JUAN HIGHWAY
SAN JUAN BAUTISTA, CALIFORNIA

February 8, 2000

Prepared for
Kawahara Nursery

Prepared by

Earth Systems Consultants Northern California
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February 8, 2000

File No.: NHS-7465-01

Mr. Dave Kawahara
Kawahara Nursery
698 Burnett Avenue
Morgan Hill, CA 95037

PROJECT: KAWAHARA NURSERY
ANZAR ROAD AND SAN JUAN HIGHWAY
SAN JUAN BAUTISTA, CALIFORNIA

SUBJECT: Preliminary Soils Engineering Report

REFERENCE: Proposal for a Preliminary Soils Engineering Investigation and Percolation Testing, Kawahara Nursery Property, Anzar Road, San Juan Bautista, California, by Earth Systems Consultants Northern California, Proposal No. HP-5398, dated November 10, 1999.

Dear Mr. Kawahara;

In accordance with your authorization of the above referenced proposal, this preliminary soils engineering report has been prepared for use in development of plans and specifications for the planned Kawahara Nursery facility to be located in the San Juan Bautista area of San Benito County, California. Preliminary geotechnical recommendations for site preparation, grading, foundations, exterior flatwork, retaining walls, pavement sections, site drainage, and finish improvements are presented herein. Results of percolation tests are also included. Two copies of this report are being furnished for your use; four additional copies have been forwarded to MH Engineering Company.

We appreciate the opportunity to have provided services for this project and look forward to working with you again in the future. If there are any questions concerning this report, please do not hesitate to contact the undersigned.

Earth Systems Consultants Northern California

for William J. Leonard
Senior Project Engineer

GEORGE J. LARWEIT
CE 2000
GEOTECHNICAL

Distribution: Kawahara Nursery, Attn: Mr. Dave Kawahara (2)
MH Engineering Company, Attn: Mr. Brian Curtis (4)

Doc. No.: 0002-510.SER

Earth Systems Consultants
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1.0 INTRODUCTION

Kawahara Nursery proposes to expand their operations to a site near the intersection of Anzar Road and San Juan Highway in San Juan Bautista, California. The new buildings will be located on the southeast portion of the 104.8-acre site and will consist of an office/warehouse and a set of 130,000 square foot greenhouse structures. The new office/warehouse will probably be a steel framed building with a concrete slab-on-grade. Below grade truck docks will be provided on the south side of the office/warehouse building. The greenhouses will be supported by drilled pier foundations. Parking areas were not assigned at the time of this report, but it is likely that paved parking lots will be constructed adjacent to the office/warehouse. Other portions of the site may be surfaced with gravel. A septic system will be located on the southeastern portion of the property. The northern and western portions of the property will not be developed at this time.

2.0 SCOPE OF SERVICES

The scope of work for the soils engineering investigation included a general site reconnaissance, subsurface investigation, percolation testing, laboratory testing, data analysis, and a summary of our conclusions and recommendations in this report. This study was based on the undated preliminary plans prepared by MH Engineering Company.

The report and recommendations are intended to comply with the considerations of Sections 1804.3 and 3309.5 of the Uniform Building Code (UBC), 1997 Edition, as amended by pertinent sections of Title 24 of the California Code of Regulations, and standard soils engineering practice. The test procedures were accomplished in general conformance with the standards noted, as modified by standard geotechnical practice in this area at this time.

Preliminary geotechnical recommendations for site preparation, grading, seismic design, foundations, slabs-on-grade, exterior flatwork, retaining walls, utility trenches, pavement sections, site drainage, and finish improvements are presented to guide the development of project plans and specifications. It is our intent that this report be used by the client and the client's architect/engineer to form the geotechnical basis of the design of the project and in the preparation of plans and specifications. To verify that pertinent issues have been addressed and to aid in conformance with the intent of this report, it is requested that final plans be submitted to this office for review.

Evaluation of the site geology, and analysis of the soil for radioisotopes, hydrocarbons, or other chemical properties are beyond the scope of this report. This report does not address issues in the domain of the contractor such as, but not limited to, site safety, loss of volume due to stripping of the site, shrinkage of fill soils during compaction, excavatability, and construction methods. The development of recommendations for deep ground improvement for liquefaction mitigation was also beyond the scope of this study.

In the event that there are any changes in the nature, design, or locations of improvements, or if any assumptions used in the preparation of this report prove to be incorrect, the conclusions and recommendations contained herein shall not be considered valid unless the changes are reviewed and the conclusions of this report modified or verified in writing. The criteria presented in this report are considered preliminary until such time as they are modified or verified by the soils engineer in the field during construction.

3.0 SITE SETTING

The Kawahara Nursery site is located northwest of the intersection of Anzar Road and San Juan Highway in the San Juan Bautista area of San Benito County, California. The 104.8 acre site is irregular in shape and is bordered by a KOA campground, Anzar High School, U.S. Highway 101, Chittenden Road, Anzar Road, and San Juan Highway. The San Juan Creek crosses the western portion site. The topography of the site slopes gently toward the creek. The site is currently used for row crops. The existing improvements consist of barns located in the southeastern segment of the site and two sets of overhead power lines.

4.0 FIELD AND LABORATORY INVESTIGATIONS

The field investigation was performed on December 15, 1999, and consisted of eight borings and two sets of percolation test holes. The borings and percolation test holes were drilled using a Mobile Drill rig, Model B-53, equipped with 8-inch outside diameter, continuous flight, hollow stem augers. The approximate locations of the borings and percolation tests are shown on the Field Exploration Location Map in Appendix A.

Soils encountered in the borings and percolation test holes were categorized and logged in general accordance with the Unified Soil Classification System. Logs of the borings and percolation test holes can be found in Appendix A. As the borings were drilled, soil samples were obtained using a ring-lined barrel sampler in accordance with ASTM D 3550-84 (with shoe similar to D 2937-94, re-approved 1995). Standard penetration tests were performed at selected intervals (ASTM D 1586-84, re-approved 1992), and bulk soil samples were obtained from the auger cuttings.

The laboratory testing program was implemented to evaluate engineering properties of the soil and to verify field classifications. The following tests were performed:

A. <u>Moisture-Density (ASTM D 2937-94, modified for ring liners):</u> This test was conducted on ring samples to measure their in-situ moisture contents and dry unit weights. The test results are used to assess the distribution of subsurface pressures and to calculate degrees of in-situ relative compaction.

B. <u>Atterberg Limits (ASTM D 4318-95):</u> The liquid limit, plastic limit, and plasticity index values of remolded samples were determined by this test. The test provides moisture contents for the sample's liquid and plastic phases to aid in evaluating the expansive characteristics of the soil, as well as other engineering properties.

C. <u>Particle Size Analysis of Soils (ASTM D 1140-92 and D 422-63, reapproved 1990):</u> In this test, the grain size distribution of the soil is determined by passing a sample through a standard series of sieves. The grain size distribution is based on the percent of material retained on each sieve.

D. Direct Shear (ASTM D 3080-90): This test method covers the determination of the consolidated drained shear strength of a soil in direct shear. The test is performed by deforming three or more specimens under normal load to determine strength parameters.

5.0 GENERAL SUBSURFACE PROFILE

The topsoil layer at the boring locations generally consisted of 9 to 13.5 feet of medium stiff to very stiff, brown to dark brown, lean clay (CL) that had a variable sand and gravel content. The upper clays were typically underlaid by loose to medium dense, olive brown, clayey sand (SC). The clayey sand extended to average depths of 14 feet in Borings 2 and 5, and to the 16.5-foot depths of Borings 3, 4, and 6. It was not encountered in Boring 1 or in the relatively shallow percolation borings (Borings 7 and 8). In Borings 2 and 5 medium dense, poorly graded sand (SP) was encountered at the bottoms of the borings. In the deep boring (Boring 1) the deeper deposits were loose to medium dense poorly graded sands (SP) separated by soft to medium stiff, olive lean clay (CL) between depths of 17 and 32 feet. At the time of drilling, the soils were generally very moist above the groundwater elevations. Free subsurface water was encountered at depths ranging from 4 to 15 feet. The estimated groundwater level at percolation Borings 7 and 8 were 4 feet and 7.5 feet below existing grade, respectively.

6.0 LIQUEFACTION AND LATERAL SPREADING

The term liquefaction refers to the liquefied condition and subsequent loss of strength that can occur in soils when they are subjected to cyclic strains, such as those generated during a seismic event. Liquefaction has typically occurs in saturated, loose to medium dense, sand deposits subject to a sufficiently strong earthquake. The evaluation for liquefaction potential at the site was based the data gathered during the field exploration and laboratory testing program. The liquefaction analysis was performed using the computer programs EQFAULT, Version 2.2, and LIQUEFY2, Version 1.5 and data developed by Tokimatsu and Seed (1987).

The seismic source judged most likely to cause liquefaction at the site is the San Andreas Fault (1906 Segment). The estimated peak ground acceleration at the site for seismic events on this fault is 0.5g. Based on the results of the analysis, there are approximately 20 feet of potentially liquefiable soils underlying the site. During a major seismic event in the region, liquefaction induced settlements on the order of 1 to 3 inches could occur at the site. The area adjacent to San Juan Creek may be prone to seismically induced lateral spreading.

7.0 PERCOLATION TESTING

Percolation tests were conducted in general accordance with the County of San Benito Division of Environmental Health guidelines. The test holes were presaturated after drilling, and the tests were performed the following day. The measured depths to groundwater at the time of the percolation tests were approximately 4 feet in Boring 7 (percolation test B-7A and B-7B), and 7.5 feet in Boring 8 (percolation test B-8B). Percolation tests were performed at an approximate depth of 2.75 feet in Boring B-7C, and at approximate depths of 3.25 and 4.75 feet in Borings B-8A and B-8C, respectively. Although groundwater was present in the test holes, percolation rates were measured in Borings B-7A and B8-B. Percolation rates were not measured in Boring B-7B. The test results indicate that the soils at the test locations exhibit slow to very slow percolation rates. The approximate locations of the percolation tests are indicated on the Field Exploration Location Map in Appendix A of this report. Copies of the logs of the deepest percolation borings (Borings 7 and 8) are included in Appendix B. Tables listing the percolation test readings are included in Appendix C.

8.0 CONCLUSIONS

<u>Site Suitability</u>: In our opinion, the site is geotechnically suitable for the proposed Kawahara Nursery provided that the recommendations contained herein are implemented in the design and construction. As discussed below, the primary geotechnical concerns are the potentials for differential settlement of the foundations due to liquefaction, lateral spreading of the soil during liquefaction, severe ground shaking during an earthquake, and the expansive soil condition.

<u>Liquefaction and Lateral Spreading Potential</u>. The liquefaction potential for site is considered high based on the findings of this study. The estimated seismically induced settlement for this site ranges between 1 and 3 inches. Damage to the building would probably be caused by loss of

soil support beneath portions of the foundations and differential settlement. Various mitigation methods are available to reduce the liquefaction hazard to low. Such methods include deep dynamic compaction, stone columns, vibrocompaction, and vibroreplacement. The development of deep ground improvement recommendations was beyond the scope of this study. The client should evaluate the risk of potential damage to the building compared to the cost of deep ground improvement methods. At a minimum, the structure should be supported by a foundation system that includes interior grade beams designed to span over areas of liquefaction induced settlement. This type of foundation system will not prevent damage that might occur to floor slabs, but should prevent extensive damage to the building structure. If liquefaction were to occur, repair of the slab would probably be necessary. To prevent damage to the floor slab, a rigid mat foundation would be necessary, but a mat foundation would probably be cost prohibitive compared to the expense of repairing the slab. There is a potential for lateral spreading along the banks of the San Juan Creek, therefore improvements should not be constructed near the creek banks.

Soil Expansion Potential: Atterberg limits testing of the upper clay materials resulted in plasticity indices of 15, 18, and 22. These values indicate that the upper soil has a moderate expansion potential. Expansive soils tend to swell with increases in soil moisture and shrink as the soil moisture decreases. The volume changes that the soils undergo in this cyclical pattern can stress and damage slabs and foundations if precautionary measures are not incorporated into the construction procedure. To help mitigate the effects of soil expansion on foundations, the footings and grade beams should be deepened to penetrate through the zone most affected by moisture variations. The floor slab should be protected by placing nonexpansive material on top of the building pad. Nonexpansive imported material could also be placed in exterior flatwork areas to help protect the flatwork from expansive soil damage.

Site Grading: The upper foot of soil was in a disturbed condition due to previous cultivation. Therefore, removal (subexcavation) and recompaction of the upper soil is recommended to reduce differential foundation settlement. Site grading will entail placement of about 2 feet of fill in the building area. This will result in foundations and slabs for the building being supported entirely by compacted material. The depths to groundwater generally varied from 4 to 15 feet below the existing ground surface at the time of the field exploration. The relatively shallow ground water could cause soil instability during site grading, particularly if the grading is performed during or shortly after the rainy season.

Soil R-value: A similar soil from a nearby site was tested for R-value. The test resulted in an R-value of 5. This value indicates that the soil has a low resistance to the types of loads imposed by traffic. Pavement sections based on this R-value are provided later in this report.

9.0 RECOMMENDATIONS

Site Preparation and Grading

1. The ground surface should be prepared for grading by removing vegetation, large roots, debris, and other deleterious materials. Voids resulting from site preparation operations should be backfilled with compacted soil. The voids should be observed by a representative of this firm prior to being backfilled.

2. Existing utility lines that will not be serving the building should be either removed or abandoned. The appropriate method of utility abandonment will depend upon the type and depth of the utility. Recommendations for abandonment can be made as necessary.

3. The soil should be removed (overexcavated) to a minimum depth of 1 foot below existing grade in the building area, in pavement areas, and in other areas to receive improvements. The overexcavated areas should extend a minimum of 5 feet beyond the foundation perimeters and 2 feet beyond areas to receive pavement or other improvements.

4. The overexcavated surfaces should be cross-scarified a minimum of 8 inches. The soil should then be moisture conditioned to a level above optimum moisture content and recompacted to a minimum of 90 percent of maximum dry density.

5. Fill should be placed in thin lifts, moisture conditioned to a level above optimum moisture content, and compacted to a minimum of 90 percent of maximum dry density. The previously subexcavated soil should generally be suitable for use as fill below the

nonexpansive material provided that it is cleared of rocks and other irreducible material larger than 4 inches in diameter, organics, and other deleterious materials.

6. To help reduce the effects of soil expansion on slabs, a minimum of 12 inches of nonexpansive material should be placed in the slab areas. Nonexpansive import could also be used to reduce the effects of soil expansion on exterior flatwork and other improvements.

7. Nonexpansive soils are defined as being coarse grained (ASTM D 2488-93), having an expansion index of 10 or less (ASTM D 4829-95), and having a plasticity index (ASTM D 4318-95) of 12 or less. Proposed nonexpansive material and other imported soils should be evaluated by a representative of this firm before being used, and on an intermittent basis during placement on the site. Aggregate base would be suitable for use as nonexpansive import.

8. Due to the fine-grained nature of the upper soils, and depending on moisture conditions at the time of construction, there is a potential for the soils to become unstable during grading. Unstable soils hinder compactive effort and are inappropriate for placement of additional fill. Alternatives to correct instability include aeration to dry the soils, the use of gravel or geotextiles, or lime treatment. Recommendations for stabilization should be provided by a representative of this firm as needed during construction.

9. In areas to be paved, the upper 1 foot of subgrade soil, and all aggregate base, should be compacted to a minimum of 95 percent of maximum dry density. Subgrade and base should be firm and unyielding when proofrolled with heavy, rubber-tired equipment prior to paving.

10. Angles of cut and fill slopes should not be steeper than 2:1, measured horizontally to vertically.

Seismic Design

1. Due to potential for significant ground shaking, as a minimum the proposed structure should be designed in accordance with the seismic provisions of the 1997 Uniform Building Code (UBC). The seismic design parameters for the site per Chapter 16 of the Uniform Building Code (1997 Edition) are as follows;

   Seismic Zone Factor (Table 16-I) $Z = 0.40$
   Soil Profile Type (Table 16-J) $= S_D$
   Near Source Factor (Table 16-S), $N_a = 1.5$
   Near Source Factor (Table 16-T), $N_v = 2.0$

2. Settlement on the order of one to three inches could be experienced if liquefaction was to occur. The proposed structure should be designed for seismic related settlement. Refer to the following section for recommendations. Due to the potential for lateral spreading, buildings and other improvements should not be constructed within 60 feet of the banks of San Juan Creek.

Office/Warehouse Foundations

1. The office/warehouse building should be supported by conventional perimeter footings interconnected by grade beams on maximum 20-foot grid spacings. The perimeter footings and the grade beams should be designed to span a 15-foot diameter zone of liquefied soil with less than 1/4 inch of deflection. The perimeter footings and interior grade beams for should extend a minimum of 24-inches below the lowest adjacent grade.

2. The foundations should be designed for an allowable bearing capacity of 2500 psf. This value may be increased by one-third to accommodate wind loads. An increase for seismic loads is not recommended, due to the liquefaction potential at the site.

3. Under static conditions, the estimated settlement is approximately one-inch; the estimated differential settlement is approximately half that value. Liquefaction induced settlement is estimated to be between 1 and 3 inches. The foundation parameters noted above should improve the capacity of the building to sustain a major seismic event. However the structure may require re-leveling and repairs following a major earthquake.

4. Resistance to lateral loads should be calculated based on a passive equivalent fluid pressure of 300 pcf and a friction factor of 0.4. Passive and frictional resistance can be combined in the calculations. These values are based on the assumption that backfill adjacent to foundations is adequately compacted.

5. Footing and grade beam excavations should be observed by a representative of this firm prior to placement of formwork or reinforcement. The excavations should be moistened to close any desiccation cracks prior to placement of concrete.

Slabs-on-Grade and Exterior Flatwork

1. Slabs-on-grade and exterior flatwork should have minimum thicknesses of 4 full inches and should be reinforced as directed by the architect/engineer. Based on soil expansion only, slab reinforcement should consist of #3 rebar spaced at 24 inches on center each way. The reinforcement should be placed at the midpoint of the concrete unless otherwise directed. Use of steel reinforcement should also be considered for exterior flatwork.

2. Slabs, footings, and grade beams should be doweled together as required by the architect/engineer; based on soil expansion potential only, the dowels should be a minimum of #3 rebar spaced on 24-inch centers. The dowels should extend to 3 inches from the bottoms of the footings and a minimum of 18 inches into the slab.

3. To help protect interior slabs from damage due to expansive soils, they should underlaid by a minimum of 12 inches of nonexpansive material (refer to Site Preparation and Grading).

4. A minimum of 4 inches of clean sand should be provided beneath all interior slabs where moisture transmitted from the subgrade would be undesirable. Clean sand is defined as a coarse grained material (ASTM D 2488-93) of which less than 3 percent passes the #200 sieve. Prior to placement of the clean sand, the soil surface in the slab area should be at or above optimum moisture content, and no desiccation cracks should be present.

5. A vapor barrier placed at the midsection of the clean sand is recommended to protect floor coverings from infiltration of subsurface moisture or to provide protection where moisture transmitted from the subgrade is undesirable. Care should be taken to properly lap and seal the barrier, particularly around utilities, and to protect it from damage during construction. To reduce the potential for moisture in the subslab area, the vapor barrier should be placed a minimum of 1 inch above exterior grade. Specification of the moisture barrier type is left to the architect/engineer.

6. Exterior flatwork should be cast on a minimum 4-inch layer of compacted nonexpansive material. Performance of exterior flatwork would be enhanced by using a greater thickness of nonexpansive material. Prior to placement of the nonexpansive material, the soil surface in the flatwork area should be at or above optimum moisture content, and no desiccation cracks should be present.

7. Assuming that minor movement (i.e., 1/4-inch or more) of exterior flatwork beyond the structure is acceptable, the flatwork should be designed to be independent of the building foundations. The flatwork should not be doweled to foundations, and a separator should be placed between the two.

8. If differential movement of flatwork is considered undesirable, the flatwork should be designed and constructed in roughly the same manner as the structure slabs. This should entail overexcavation and recompaction of the soil and placement of a layer of nonexpansive import, as discussed in Site Preparation and Grading; footings should be provided around the perimeter of the flatwork. Reinforcing of the flatwork and footings should be designed by the architect/engineer to resist moderate expansive soil forces.

9. To reduce shrinkage cracks in the concrete, contraction joints can be installed. Joint spacing should be at the direction of the architect/engineer.

10. The conventional slabs-on-grade discussed in this section could experience damage due to liquefaction induced settlement. If liquefaction were to occur, sections of the slab might require re-leveling or replacement. Designing the slabs to span the liquefied zones discussed in the preceding section of this report would help reduce the potential for earthquake damage.

Greenhouse Foundations

1. The greenhouses should be supported by foundation systems utilizing drilled piers. The piers should have minimum diameters of 12 inches and should be reinforced as directed by the architect/engineer. The piers should penetrate a minimum of 6 feet into firm soil, as observed by a representative of this firm at the time of drilling.

2. The piers should be designed to derive vertical support from skin friction against the soil; end bearing capacity should be disregarded. The soil should be assigned a maximum allowable skin friction value of 500 psf. Using this value, static total and differential settlements are expected to be less than one half-inch. The allowable skin friction value may be increased by one-third when transient loads such as wind or seismicity are included.

3. Lateral loads should be resisted by passive resistance of the soil against the piers. Passive resistance should be calculated based on an equivalent fluid pressure of 300 pcf. A factor of safety has not been included in this value.

4. The piers should not deviate from a plumb line by more than 2 percent of the pier length, as measured from the top to the point of interest. Adequate pier oversize may be assumed to provide the recommended tolerance.

Retaining Walls

1. Retaining wall footings should have minimum depths of 24 inches below lowest adjacent grade. Retaining wall footings reinforcement should be as required by the architect/engineer.

2. The walls may be backfilled with either native soil or clean imported granular material. The backfill material should be placed in thin, moisture conditioned lifts, each compacted to a minimum of 90 percent of maximum dry density.

3. Wall design should be based on the following parameters:

Active equivalent fluid pressure (using on-site soils as backfill)	50 pcf
Active equivalent fluid pressure (granular or gravel backfill)	35 pcf
At-rest equivalent fluid pressure (on-site backfill)	65 pcf
At-rest equivalent fluid pressure (granular or gravel backfill)	50 pcf
Passive equivalent fluid pressure	300 pcf
Maximum toe pressure	2,500 psf
Coefficient of sliding friction	0.4

4. No surcharges are taken into consideration in the above values. The maximum toe pressure is an allowable value; all others are ultimate values that will require application of appropriate factors of safety by the architect/engineer.

5. Retaining walls should be drained using either perforated pipe encased in gravel, manufactured synthetic drains, or weep holes. If the walls are to be drained using perforated pipe, the pipe should be placed perforations downward and should discharge in a nonerosive manner away from foundations and other improvements. The gravel blanket should have a width of approximately 1 foot and should extend upward to approximately 1 foot from the top of the wall. The upper foot of backfill above the gravel should consist of compacted native material. To reduce infiltration of the backfill soil into the gravel, a permeable synthetic fabric conforming to Caltrans Standard Specifications, Section 88-1.03 for edge drains, should be placed between the two. Manufactured synthetic drains such as Miradrain or Enkadrain are acceptable alternatives to the use of gravel, provided that they are installed in accordance with the recommendations of the manufacturer.

6. If the walls are to be drained using weep holes, the weep holes should consist of 2-inch diameter holes at 6-foot maximum spacings or alternately spaced unmortared head joints (closed cell masonry walls). They should be placed as low as possible while still daylighting on the downslope side of the wall. Filter fabric conforming to Caltrans

Standard Specifications, Section 88-1.03 for edge drains should be placed behind the weep holes to reduce the chance of gravel washing out from behind the wall.

7. The architect/engineer should bear in mind that retaining walls by their nature are flexible structures, and that surface treatments on walls could crack. Where walls are to be plastered or otherwise have a finish applied, the flexibility should be considered in determining the suitability of the surfacing material, spacing of horizontal and vertical control joints, etc. The flexibility should also be considered where a retaining wall will abut or be connected to a rigid structure, and where the geometry of the wall is such that the flexibility of the wall will vary along the length of the wall.

Site Drainage and Finish Improvements

1. Unpaved ground surfaces should be finish graded to direct surface runoff away from site improvements at a minimum 2 percent grade for a minimum distance of 5 feet. If this is not practicable due to the terrain or other site features, swales with improved surfaces should be provided to divert drainage away from improvements. Paved surfaces should slope away from foundations and other improvements.

2. Runoff from driveways, roof gutters, downspouts, planter drains and other improvements should discharge in a nonerosive manner away from improvements in accordance with the requirements of the governing agencies.

3. The on-site soils are erodible. Stabilization of surface soils, particularly those disturbed during construction, by vegetation or other means during and following construction is essential to protect the site from erosion damage. Care should be taken to establish and maintain vegetation. The landscaping should be planned and installed to maintain the surface drainage recommended above.

4. Planter beds adjacent to foundations should be provided with sealed sides and bottoms so that irrigation water is not allowed to penetrate the subsurface beneath foundations. Outlets should be provided in the planters to direct accumulated irrigation water away from foundations.

5. Irrigation systems should be controlled to the minimum levels that will sustain the vegetation.

Pavement Sections

The following pavement sections are based on an R-value of 5. The asphalt concrete (A.C.) sections were designed in accordance with the Caltrans Highway Design Method for Traffic Indices (T.I.s) of 3.5, 4.5, 5.5, and 6.5. Determination of the appropriate T.I. for each area to be paved is the province of the civil engineer. The calculated base and A.C. thickness are for compacted material. Normal Caltrans construction tolerances should apply.

Traffic Index	A.C.	Class 2 Base
3.5	2.0"	7"
4.5	2.5"	9"
5.5	3.0"	12"
6.5	3.75"	14"

1. The upper 12 inches of subgrade and all aggregate base should be compacted to a minimum of 95 percent of maximum dry density. Aggregate base and subgrade should be firm and unyielding when proofrolled by heavy rubber-tired equipment prior to paving.

2. Pavement longevity will be enhanced if the surface grade drains away from the edges of the pavement. Finished A.C. surfaces should slope toward drainage facilities at 2 percent where practicable, but in no case should water be allowed to pond.

3. Cutoff walls below curbs and around landscape islands may be used to extend the life of the pavement by reducing irrigation and runoff that seeps into the aggregate base. Where utilized, cutoff walls should extend through the aggregate base to penetrate a minimum of 3 inches into the subgrade soils.

4. To reduce migration of surface drainage into the subgrade, maintenance of the paved areas is critical. Any cracks that develop in the A.C. should be promptly sealed.

Utility Trenches

1. A select, noncorrosive, granular, easily compacted material should be used as bedding and shading immediately around utilities. The site soils may be used for trench backfill above the select material. If obtaining compaction is difficult with the site soils, use of a more easily compacted sand may be desirable.

2. Trench backfill in landscaped or other unimproved areas should be compacted to a minimum of 85 percent of maximum dry density. Trench backfill in the upper 1 foot of subgrade beneath asphalt and concrete pavement should be compacted to a minimum of 95 percent of maximum dry density. Trench backfill in all other areas should be compacted to a minimum of 90 percent of maximum dry density. Jetting of utility trench backfill should not be allowed.

3. Due to the potential for non-uniform settlement to occur due to liquefaction, there is a greater than normal risk that rigid underground utilities could be damaged in a major earthquake, primarily at the point where they enter the buildings. The installation of flexible joints in the utility line systems is recommended. The estimated seismic induced settlements range between two and four inches.

10.0 OBSERVATION AND TESTING

It must be recognized that the recommendations contained in this report are based on a limited number of borings and rely on continuity of the subsurface conditions encountered. It is assumed that this firm will be retained to provide consultation during the design phase, to review final plans once they are available, to interpret this report during construction, and to provide construction monitoring in the form of testing and observation. The standard test used to define maximum dry density and field density should be ASTM D 1557-91, ASTM D 2922-81, respectively, or other methods acceptable to the soils engineer and jurisdiction.

At a minimum, the following items should be reviewed, tested, or observed by this firm:

- Final plans
- Stripping and clearing of vegetation and deleterious materials
- Overexcavation to the recommended depth
- Scarification and recompaction
- Fill placement and compaction
- Nonexpansive import
- Foundation excavations
- Retaining wall backfill compaction
- Utility trench backfill compaction
- Pavement subgrade and base compaction

It will be necessary to develop a program of quality control prior to beginning grading. It is the responsibility of the owner, contractor, or project manager to determine any additional inspection items required by other design professionals or the governing jurisdiction. A preconstruction conference between a representative of the owner, this firm, the architect/engineer and contractors is recommended to discuss planned construction procedures and quality control requirements. This firm should be notified at least 48 hours prior to beginning grading operations.

If Earth Systems Consultants Northern California is not retained to provide construction observation and testing services, it shall not be responsible for the interpretation of the information by others or any consequences arising therefrom.

11.0 CLOSURE

This report is valid for conditions as they exist at this time for the type of development described herein. Our intent was to perform the investigation in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing in the locality of this project under similar conditions. No representation, warranty, or guarantee is either expressed or implied. This report is intended for the exclusive use by the client and the client's architect/engineer as discussed in the Scope of Services section. Application beyond the stated intent is strictly at the user's risk.

If changes with respect to development type or location become necessary, if items not addressed in this report are incorporated into plans, or if any of the assumptions stated in this report are not correct, this firm shall be notified for modifications to this report. Any items not specifically addressed in this report shall comply with the Uniform Building Code as modified by pertinent sections of Title 24 of the California Code of Regulations and the requirements of the governing jurisdiction.

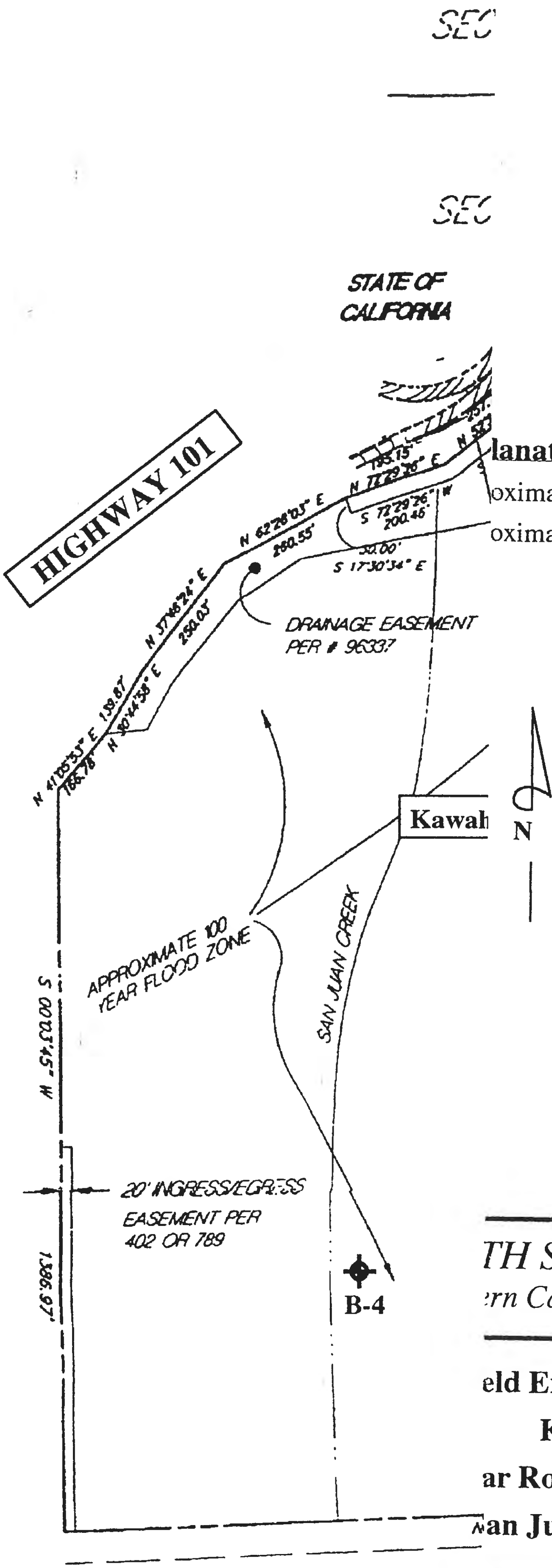
The preliminary recommendations of this soils report are based upon the geotechnical conditions encountered during the soils investigation, and may be augmented by additional requirements of the architect/engineer, or by additional recommendations provided by this firm based on conditions exposed at the time of construction.

This document, the data, conclusions, and recommendations contained herein are the property of Earth Systems Consultants Northern California. This report shall be used in its entirety, with no individual sections reproduced or used out of context. Copies may be made only by Earth Systems Consultants Northern California, the client, and his authorized agents for use exclusively on the subject project. Any other use is subject to federal copyright laws and the written approval of Earth Systems Consultants Northern California.
Thank you for this opportunity to have been of service. If you have any questions, please feel free to contact this office at your convenience.

End of Text

APPENDIX A

Field Exploration Location Map
Boring Logs



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oximate Exploratory Boring Location

oximate Percolation Test Location

Map not to scale

TH SYSTEMS CONSULTANTS

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eld Exploration Location Map

Kawahara Nursery

ar Road and San Juan Highway

an Juan Bautista, California

Base Map prepared by: MH Engineering Company, Inc., n **000**

File No.: NHS-7465-01

SOIL CLASSIFICATION SYSTEM

(Modified from U.S.C.S)

MAJOR DIVISIONS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS		GW	Well-graded gravels, gravel-sand mixtures, little or no fines
				GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	More than 50% of coarse fraction <u>retained</u> on No. 4 sieve	GRAVELS WITH FINES		GM	Silty gravels, gravel-sand-silt mixtures
				GC	Clayey gravels, gravel-sand-clay mixtures
More than 50% of material is <u>larger</u> than No. 200 sieve size	SAND AND SANDY SOILS	CLEAN SAND (little or no fines)		SW	Well-graded sands, gravelly sands, little or no fines
				SP	Poorly-graded sands, gravelly sands, little or no fines
	More than 50% of coarse fraction <u>passing</u> No. 4 sieve	SAND WITH FINES (Appreciable amount of fines)		SM	Silty sands, sand-silt mixtures
				SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT <u>LESS</u> THAN 50		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
				CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
				OL	Organic silts and organic silty clays of low plasticity
More than 50% of material is <u>smaller</u> than No. 200 sieve size		LIQUID LIMIT <u>GREATER</u> THAN 50		MH	Inorganic silts, micaceous, or diatomaceous fine sand or silty soils
				CH	Inorganic clays of high plasticity, fat clays
				OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS				PT	Peat, humus, swamp soils with high organic contents

File Name: Kawahara Nursery, San Juan Bautista, California

File No.: NHS-7465-01

DATE DRILLED: ______

TYPE OF RIG: ______

BORING DIAMETER: ______

LOGGED BY: ______

BORING NO.: ______

DRIVE WEIGHT: ______

DROP: ______

Depth (ft)	Sample Type: Drive	Sample Type: Bulk	Blows Per 6 inch	Graphic Log	*Explanation of Exploratory Boring*	U.S.C.S Soil Group	In-Place Moisture (% dry weight)	In-Place Dry Density (pcf)
0								
1								
2					Modified Cal sample			
3					No Sample Recovered		NSR	
4								
5					Bulk sample; Perched Groundwater			
6								
7					Groundwater			
8					Standard Penetration test			
9					Seepage			
10								
11					Solid line denotes lithologic change			
12								
13								
14					Dashed line denotes gradational lithologic change			
15								
16								
17								
18					Termination of boring			
19								
20								

Earth Systems Consultants Northern California

File Name: Kawahara Nursery, San Juan Bautista, California | File No.: NHS-7465-01

DATE DRILLED: 12-15-99
TYPE OF RIG: Mobile B-53 | DRIVE WEIGHT: 140 lbs
BORING DIAMETER: 8" Hollow Stem | DROP: 30 inches
LOGGED BY: C. Sykes | DEPTH TO GROUNDWATER: 15.0 feet

Log of Exploratory Boring No. 1

Depth (ft)	Sample No.	Sample Type: Drive	Sample Type: Bulk	Blows Per 6 Inch	Description	U.S.C.S Soil Group	In-Place Moisture (% dry weight)	In-Place Dry Density (pcf)
0–2.5		Drive	A	9, 8, 7	Dark brown lean CLAY with gravel, very moist, stiff	CL	19.6	106.0
2.5–5		Drive	B	6, 5, 5	Brown lean CLAY with sand, very moist, stiff	CL	22.7	100.2
5–8		Drive		4, 4, 6	Brown lean CLAY, very moist, medium stiff	CL	18.8	101.2
8–11		Drive		6, 8, 9	Olive brown sandy lean CLAY, moist, stiff to very stiff	CL	10.7	102.1
11–17		Drive		3, 3, 3	Olive poorly graded SAND, very moist, loose saturated below 15.0 feet	SP		
17–28		Drive		2, 3, 3 3, 3, 5	Olive lean CLAY, very moist, soft to medium stiff	CL		
28–31.5		Drive		7, 9, 16	Olive lean CLAY with sand, saturated, very stiff	CL		
31.5–36.5		Drive		7, 6, 7	Blue grey poorly graded SAND, saturated, medium dense	SP		

The stratification lines represent the approximate boundry between soil types and the transitions may be gradual. Terminated at a depth of 36.5 feet below existing grade. Groundwater was encountered at a depth of 15.0 feet below existing grade.

Earth Systems Consultants Northern California

File Name: Kawahara Nursery, San Juan Bautista, California

File No.: NHS-7465-01

DATE DRILLED: 12-15-99

TYPE OF RIG: Mobile B-53

DRIVE WEIGHT: 140 lbs

BORING DIAMETER: 8" Hollow Stem

DROP: 30 inches

LOGGED BY: C. Sykes

DEPTH TO GROUNDWATER: N/A

Log of Exploratory Boring No. 2

Depth (ft)	Sample No.	Sample Type	Blows Per 6 Inch	Description	U.S.C.S Soil Group	In-Place Moisture (% dry weight)	In-Place Dry Density (pcf)
0–5		Drive; Bulk C	10 14 15	Dark brown lean CLAY with sand, very moist, stiff, trace sand	CL	23.1	100.2
		Drive	5 7 10			21.8	99.2
5–9		Drive	5 8 12	Brown sandy lean CLAY, very moist, very stiff	CL	21.7	98.6
9–14	NSR	Drive	5 5 5	Olive brown clayey SAND, very moist, medium dense	SC		
14–16.5		Drive	7 7 10	Light brown poorly graded SAND, very moist, medium dense	SP		

The stratification lines represent the approximate boundry between soil types and the transitions may be gradual. Terminated at a depth of 16.5 feet below existing grade. Groundwater was not encountered.

Earth Systems Consultants Northern California

File Name: Kawahara Nursery, San Juan Bautista, California | File No.: NHS-7465-01

DATE DRILLED: 12-15-99
TYPE OF RIG: Mobile B-53 | DRIVE WEIGHT: 140 lbs
BORING DIAMETER: 8" Hollow Stem | DROP: 30 inches
LOGGED BY: C. Sykes | DEPTH TO GROUNDWATER: N/A

Log of Exploratory Boring No. 3

Depth (ft)	Sample No.	Sample Type: Drive	Sample Type: Bulk	Graphic Log	Blows Per 6 Inch	Description	U.S.C.S Soil Group	In-Place Moisture (% dry weight)	In-Place Dry Density (pcf)
0–5.5		Drive	D		5, 8, 9	Dark brown lean CLAY with sand, very moist, stiff	CL	27.7	98.0
		Drive			4, 5, 6			26.9	90.4
5.5–10.5		Drive			5, 5, 6	Brown sandy lean CLAY, very moist, stiff	CL	28.9	91.3
10.5–16.5		Drive			2, 3, 3	Olive brown clayey SAND, moist to very moist, loose	SC		
		Drive			2, 3, 3				

The stratification lines represent the approximate boundry between soil types and the transitions may be gradual. Terminated at a depth of 16.5 feet below existing grade. Groundwater was not encountered.

Earth Systems Consultants Northern California

File Name: Kawahara Nursery, San Juan Bautista, California — File No.: NHS-7465-01

DATE DRILLED: 12-15-99
TYPE OF RIG: Mobile B-53 — DRIVE WEIGHT: 140 lbs
BORING DIAMETER: 8" Hollow Stem — DROP: 30 inches
LOGGED BY: C. Sykes — DEPTH TO GROUNDWATER: 9.0 feet

Log of Exploratory Boring No. 4

Depth (ft)	Sample No.	Sample Type: Drive	Sample Type: Bulk	Graphic Log	Blows Per 6 Inch	Description	U.S.C.S Soil Group	In-Place Moisture (% dry weight)	In-Place Dry Density (pcf)
0–3			E		11, 9, 10	Dark brown sandy lean CLAY with gravel, moist, very stiff	CL	16.2	111.2
3–5					4, 6, 7	Brown lean CLAY, very moist, stiff, trace sand	CL	22.7	97.9
5–9					5, 6, 7	Brown sandy lean CLAY, very moist, stiff	CL	21.9	103.2
9–16.5					3, 4, 6 4, 5, 8	Olive brown clayey SAND, saturated, loose to medium dense	SC		

The stratification lines represent the approximate boundry between soil types and the transitions may be gradual. Terminated at a depth of 16.5 feet below existing grade. Groundwater was encountered at a depth of 9.0 feet below existing grade.

File Name: Kawahara Nursery, San Juan Bautista, California — File No.: NHS-7465-01

DATE DRILLED: 12-16-99

TYPE OF RIG: Mobile B-53 — DRIVE WEIGHT: 140 lbs

BORING DIAMETER: 8" Hollow Stem — DROP: 30 inches

LOGGED BY: C. Sykes — DEPTH TO GROUNDWATER: 9.0 feet

Log of Exploratory Boring No. 5

Depth (ft)	Sample No.	Sample Type: Drive	Sample Type: Bulk	Graphic Log	Blows Per 6 Inch	Description	U.S.C.S Soil Group	In-Place Moisture (% dry weight)	In-Place Dry Density (pcf)
0–4.5			F		5, 9, 18; 9, 14, 15	Dark brown lean CLAY with sand, very moist, very stiff, trace sand	CL	29.1; 25.7	77.7; 94.7
4.5–9					9, 10, 11	Olive brown sandy lean CLAY, very moist, very stiff	CL	27.3	93.6
9–13.5					2, 3, 3	Olive brown clayey SAND, saturated, loose	SC		
13.5–16.5					4, 7, 10	Olive poorly graded SAND, saturated, medium dense, trace fines	SP		

The stratification lines represent the approximate boundry between soil types and the transitions may be gradual. Terminated at a depth of 16.5 feet below existing grade. Groundwater was encountered at a depth of 9.0 feet below existing grade.

Earth Systems Consultants Northern California

File Name: Kawahara Nursery, San Juan Bautista, California | File No.: NHS-7465-01

DATE DRILLED: 12-16-99

TYPE OF RIG: Mobile B-53 | DRIVE WEIGHT: 140 lbs

BORING DIAMETER: 8" Hollow Stem | DROP: 30 inches

LOGGED BY: C. Sykes | DEPTH TO GROUNDWATER: 13.5 feet

Log of Exploratory Boring No. 6

Depth (ft)	Sample No.	Sample Type: Drive	Sample Type: Bulk	Graphic Log	Blows Per 6 Inch	Description	U.S.C.S Soil Group	In-Place Moisture (% dry weight)	In-Place Dry Density (pcf)
0–2.5					4, 10, 14	Brown lean CLAY with gravel, very moist, very stiff	CL	27.7	91.0
2.5–7.5					5, 8, 8; 6, 7, 8	Olive brown sandy lean CLAY, very moist, stiff	CL	26.0; 24.7	92.7; 91.1
7.5–13.5					3, 4, 3; 2, 3, 4	Olive brown sandy lean CLAY, moist, medium stiff	CL		
13.5–16.5					3, 4, 4	Olive brown clayey SAND, saturated, loose	SC		

The stratification lines represent the approximate boundry between soil types and the transitions may be gradual. Terminated at a depth of 16.5 feet below existing grade. Groundwater was encountered at a depth of 13.5 feet below existing grade.

File Name: Kawahara Nursery, San Juan Bautista, California | File No.: NHS-7465-01

DATE DRILLED: 12-16-99
TYPE OF RIG: Mobile B-53 | DRIVE WEIGHT: 140 lbs
BORING DIAMETER: 8" Hollow Stem | DROP: 30 inches
LOGGED BY: C. Sykes | DEPTH TO GROUNDWATER: 4.0 feet

Log of Percolation Test Hole
Boring No. 7

Depth (ft)	Sample No.	Sample Type: Drive	Sample Type: Bulk	Graphic Log	Blows Per 6 Inch	Description	U.S.C.S Soil Group	In-Place Moisture (% dry weight)	In-Place Dry Density (pcf)
0–4						Brown lean CLAY with gravel, moist, stiff	CL		
4–7						Olive brown sandy lean CLAY, very moist, medium stiff	CL		

The stratification lines represent the approximate boundry between soil types and the transitions may be gradual. Terminated at a depth of 7.0 feet below existing grade. Groundwater was encountered at a depth of 4.0 feet below existing grade.

Earth Systems Consultants Northern California

File Name: Kawahara Nursery, San Juan Bautista, California

File No.: NHS-7465-01

DATE DRILLED: 12-16-99

TYPE OF RIG: Mobile B-53

DRIVE WEIGHT: 140 lbs

BORING DIAMETER: 6" Hollow Stem

DROP: 30 inches

LOGGED BY: C. Sykes

DEPTH TO GROUNDWATER: 7.5 feet

Log of Percolation Test Hole
Boring No. 8

Depth (ft)	Sample No.	Sample Type: Drive	Sample Type: Bulk	Graphic Log	Blows Per 6 Inch	Description	U.S.C.S Soil Group	In-Place Moisture (% dry weight)	In-Place Dry Density (pcf)
0–3						Brown lean CLAY with gravel, moist, stiff	CL		
3–4.6						Olive brown sandy lean CLAY, moist, medium stiff	CL		
4.6–8						Olive clayey SAND, moist, medium dense wet below 7.5 feet	SC	▼	

The stratification lines represent the approximate boundry between soil types and the transitions may be gradual. Terminated at a depth of 8.0 feet below existing grade. Groundwater was encountered at a depth of 7.5 feet below existing grade.

Depth scale (ft): 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42

APPENDIX B

Laboratory Test Results

Kawahara Nursery

NHS-7465-01
February, 2000

BULK DENSITY & MOISTURE TEST RESULTS

ASTM D 2937-94 (modified for ring liners)

BORING NO.	DEPTH feet	MOISTURE CONTENT, %	WET DENSITY, pcf	DRY DENSITY, pcf
B-1	2.0 - 2.5	19.6	126.8	106.0
B-1	4.0 - 4.5	22.7	122.8	100.2
B-1	6.0 - 6.5	18.8	120.3	101.2
B-1	9.5 - 10.0	10.7	113.0	102.1
B-2	2.0 - 2.5	23.1	127.1	100.2
B-2	4.0 - 4.5	21.8	120.8	99.2
B-2	6.0 - 6.5	21.7	120.0	98.6
B-3	2.0 - 2.5	27.7	125.1	98.0
B-3	4.0 - 4.5	26.9	114.7	90.4
B-3	6.0 - 6.5	28.9	117.7	91.3
B-4	2.0 - 2.5	16.2	129.3	111.2
B-4	4.0 - 4.5	22.7	120.1	97.9
B-4	6.0 - 6.5	21.9	125.7	103.2
B-5	2.0 - 2.5	29.1	100.4	77.7
B-5	4.0 - 4.5	25.7	119.0	94.7
B-5	6.0 - 6.5	27.3	119.1	93.6
B-6	2.0 - 2.5	27.7	116.2	91.0
B-7	4.0 - 4.5	26.0	130.0	92.7
B-6	6.0 - 6.5	24.7	113.6	91.1

PLASTICITY INDEX TEST RESULTS

ASTM D 4318-95

BORING NO.	DEPTH feet	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
B-1, Bulk A	0.0 - 2.5	42	24	18
B-1	25.0 - 26.5	36	22	14
B-2, Bulk C	0.0 - 3.0	46	28	18
B-4, Bulk E	0.0 - 3.0	37	22	15
B-6	1.0 - 2.5	48	26	22

Kawahara Nursery

NHS-7465-01
February, 2000

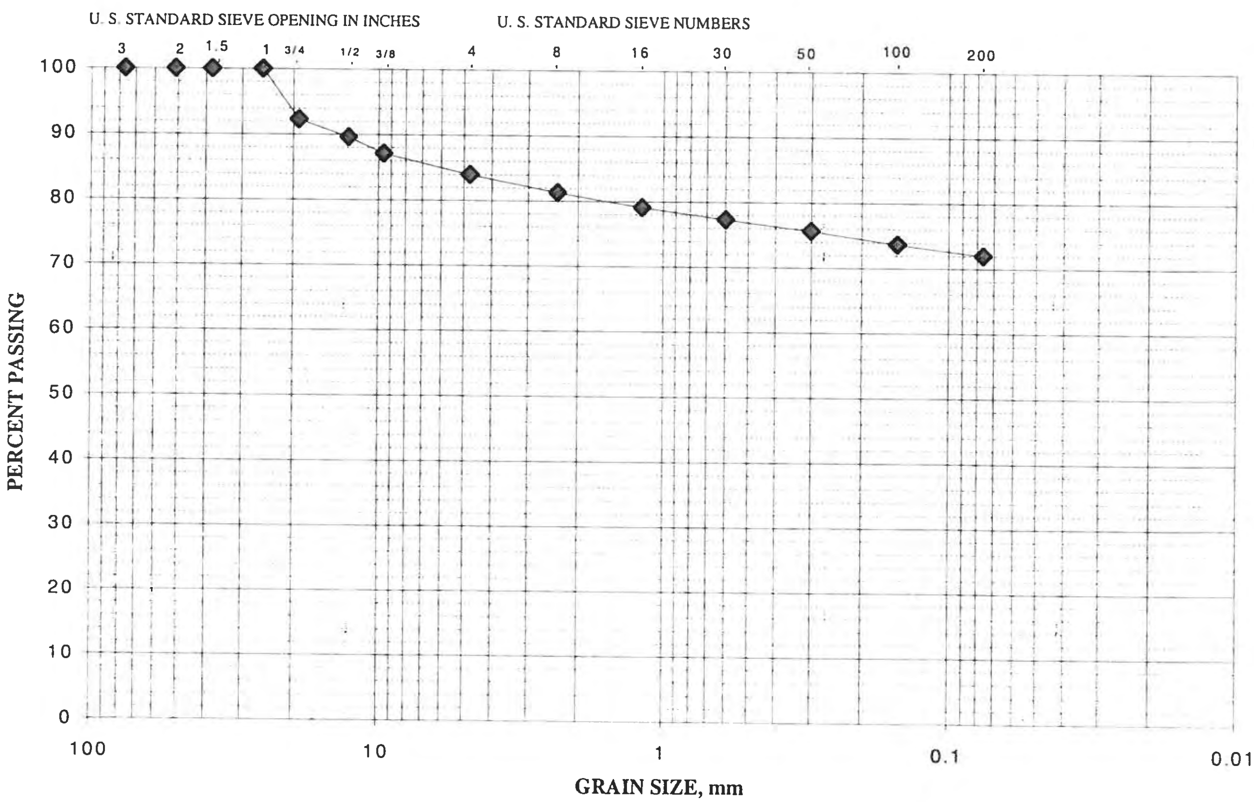
PARTICLE SIZE ANALYSIS

ASTM D 422-90; D 1140-92

Bulk A, Boring 1 @ 0.0' - 2.5'

Dark brown lean CLAY with gravel (CL)

Sieve size	% Retained	% Passing
3"	0	100
2"	0	100
1.5"	0	100
1"	0	100
3/4"	8	92
1/2"	10	90
3/8"	13	87
#4	16	84
#8	19	81
#16	21	79
#30	23	77
#50	24	76
#100	26	74
#200	28	72



Kawahara Nursery

NHS-7465-01
February, 2000

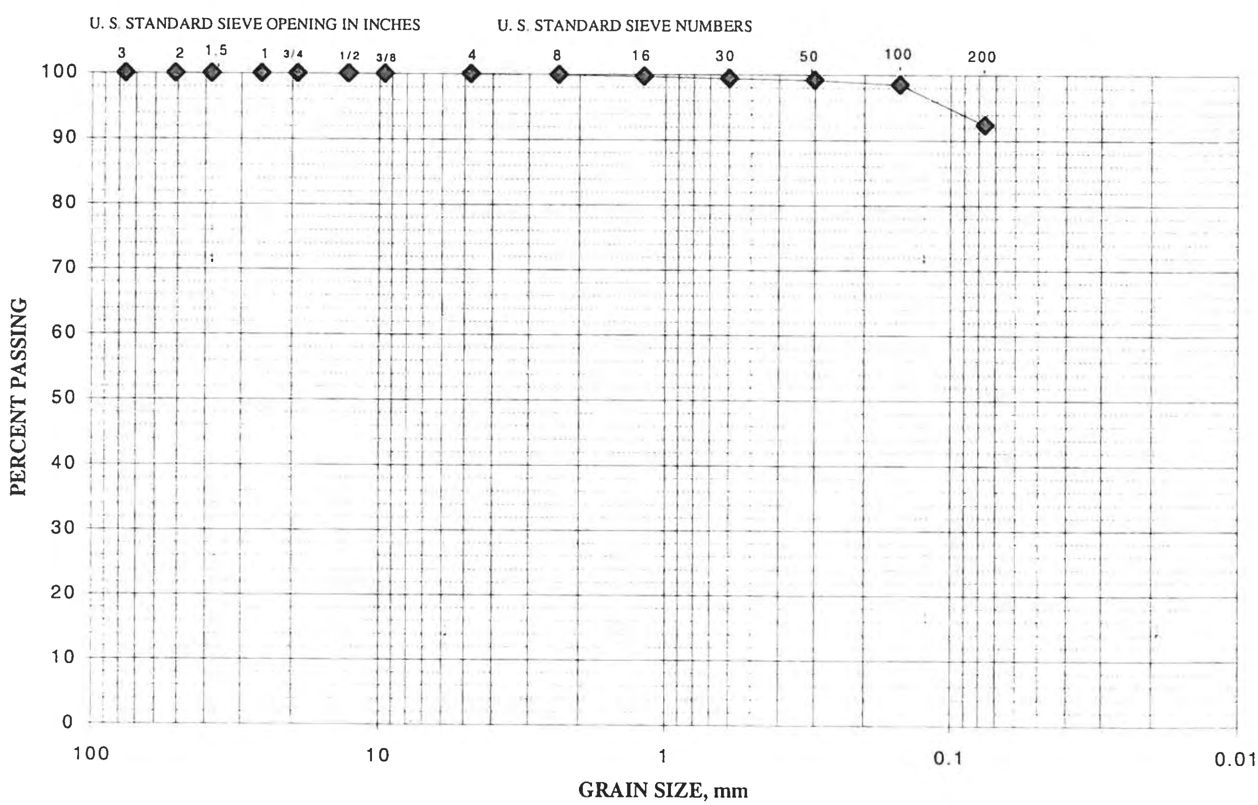
PARTICLE SIZE ANALYSIS

ASTM D 422-90; D 1140-92

Boring 1 @ 5.0' - 6.5'

Brown lean CLAY (CL)

Sieve size	% Retained	% Passing
3"	0	100
2"	0	100
1.5"	0	100
1"	0	100
3/4"	0	100
1/2"	0	100
3/8"	0	100
#4	0	100
#8	0	100
#16	0	100
#30	1	99
#50	1	99
#100	1	99
#200	8	92



Kawahara Nursery

NHS-7465-01
February, 2000

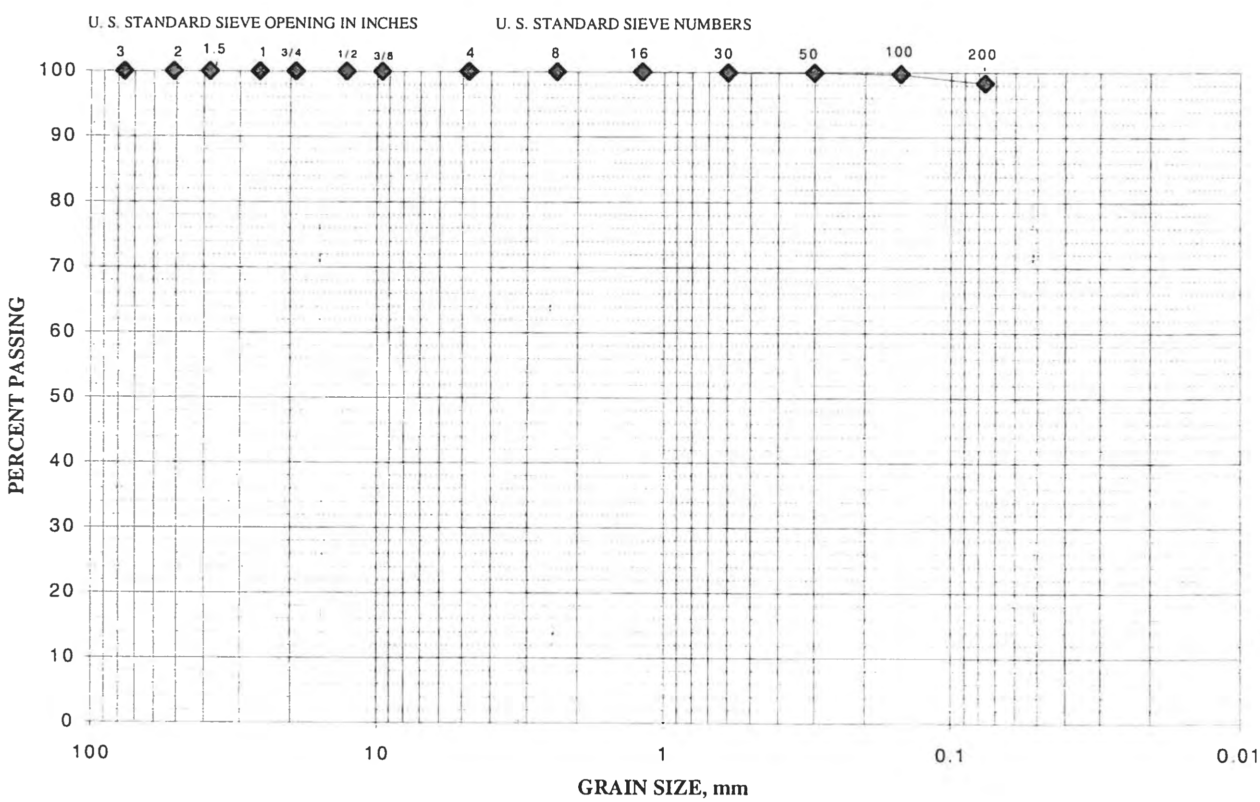
PARTICLE SIZE ANALYSIS

ASTM D 422-90; D 1140-92

Boring 1 @ 20.0' -21.5'

Olive lean CLAY (CL)

Sieve size	% Retained	% Passing
3"	0	100
2"	0	100
1.5"	0	100
1"	0	100
3/4"	0	100
1/2"	0	100
3/8"	0	100
#4	0	100
#8	0	100
#16	0	100
#30	0	100
#50	0	100
#100	0	100
#200	2	98



Kawahara Nursery

NHS-7465-01
February, 2000

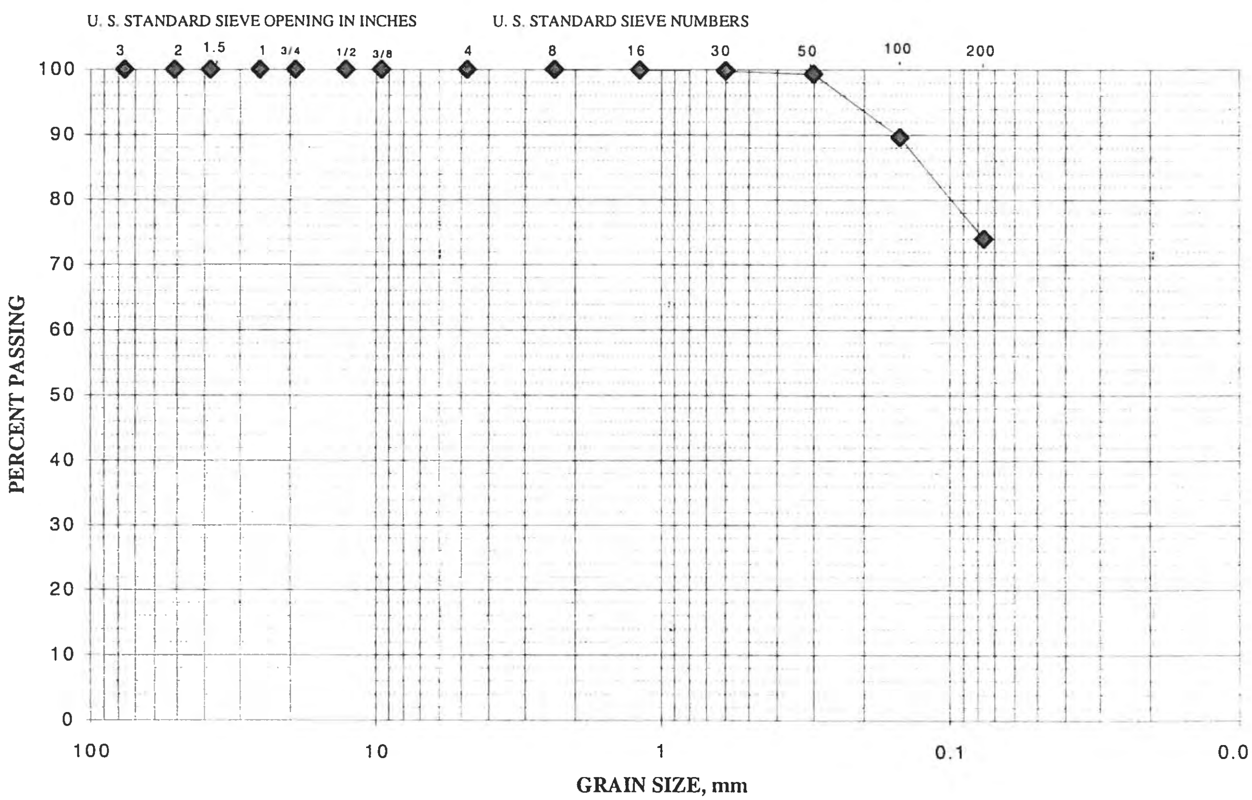
PARTICLE SIZE ANALYSIS

ASTM D 422-90; D 1140-92

Boring 1 @ 30.0' - 31.5'

Olive lean CLAY with sand (CL)

Sieve size	% Retained	% Passing
3"	0	100
2"	0	100
1.5"	0	100
1"	0	100
3/4"	0	100
1/2"	0	100
3/8"	0	100
#4	0	100
#8	0	100
#16	0	100
#30	0	100
#50	1	99
#100	10	90
#200	26	74



Kawahara Nursery

NHS-7465-01

DIRECT SHEAR

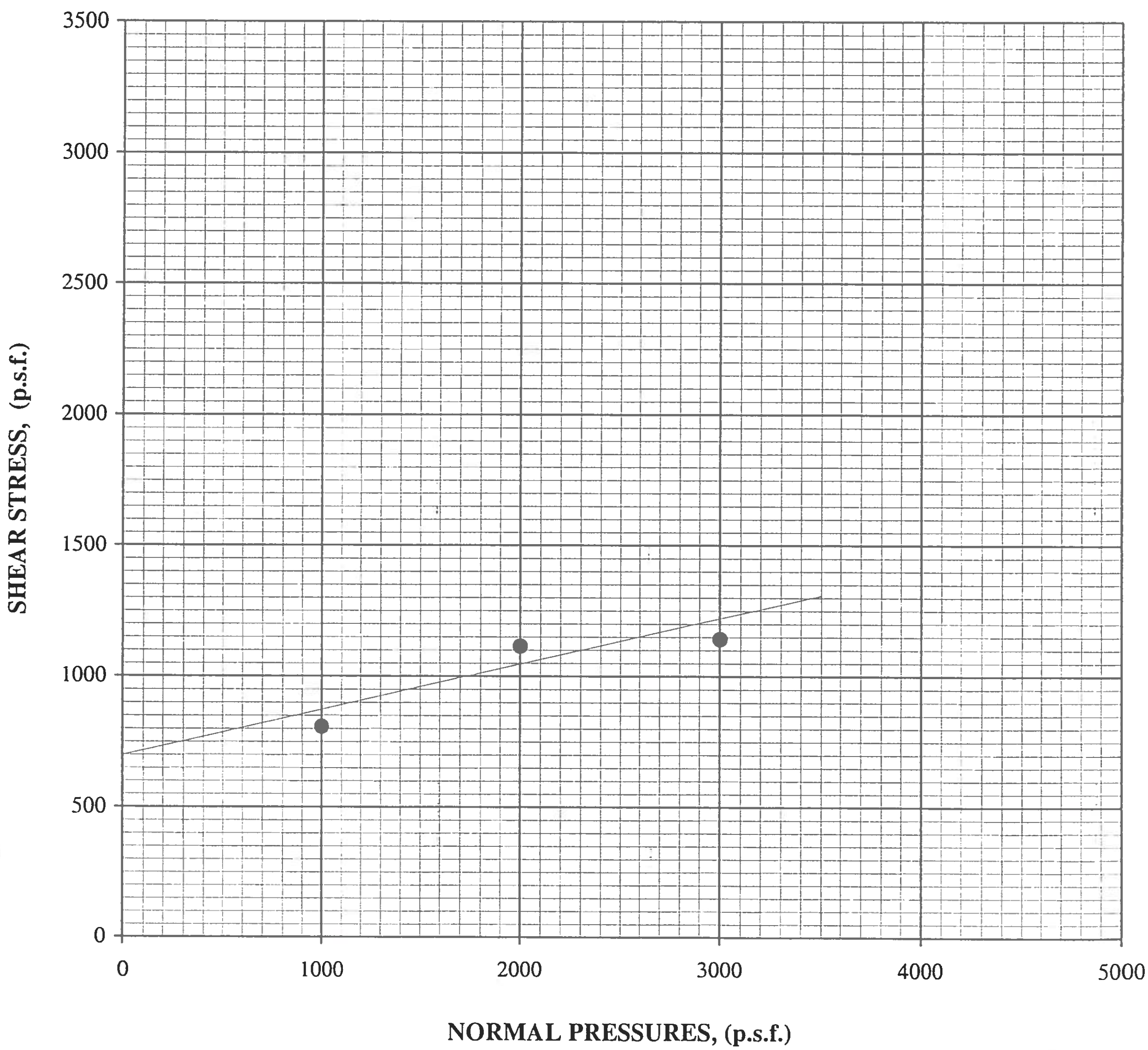
ASTM D 3080-90 (modified for consolidated, undrained conditions)

January, 2000

Boring # 6 @ 3.0' - 4.5'
Olive brown sandy lean CLAY (CL)
Ring sample

INITIAL DRY DENSITY: 92.7 pcf
INITIAL MOISTURE CONTENT: 26.0 %
PEAK SHEAR ANGLE (Ø): 10°
COHESION (C): 700 psf

SHEAR STRESS vs. NORMAL PRESSURES



APPENDIX C

Percolation Test Results

NHS-7465-01 February, 2000

Kawahara Nursery

Percolation Test No.:	**B-7A**
Lot No.:	N/A
Date Drilled:	12/14/1999
Date Presaturated:	12/21/1999
Date Tested:	12/22/1999
Technician:	JM
Test Duration:	3 hrs.
Percolation Test Hole Depth:	62"
Boring Diameter:	8"

Time	**Interval** minutes	**Reading** inches	**Fall** inches	**Percolation Rate** minutes/inch	**Corrected Rate** minutes/inch
1:35 PM	*****	32.8	****	*****	*****
2:05 PM	30	33.0	0.2	150	200
2:35 PM	30	33.1	0.1	300	400
3:05 PM	30	33.2	0.1	300	400
3:35 PM	30	33.4	0.2	150	200
4:05 PM	30	33.5	0.1	300	400
4:35 PM	30	33.6	0.1	300	400

Note: Groundwater elevation was approximately 48" below existing grade.

NHS-7465-01 February, 2000

Kawahara Nursery

Percolation Test No.:	**B-7B**
Lot No.:	N/A
Date Drilled:	12/14/1999
Date Presaturated:	12/21/1999
Date Tested:	12/22/1999
Technician:	JM
Test Duration:	3 hrs.
Percolation Test Hole Depth:	81"
Boring Diameter:	8"

Time	**Interval**	**Reading**	**Fall**	**Percolation Rate**	**Corrected Rate**
	minutes	inches	inches	minutes/inch	minutes/inch

Percolation tests could not be performed.

Groundwater elevation was approximately 48" below existing grade.

NHS-7465-01 February, 2000

Kawahara Nursery

Percolation Test No.: **B-7C**

Lot No.: N/A

Date Drilled: 12/14/1999

Date Presaturated: 12/21/1999

Date Tested: 12/22/1999

Technician: JM

Test Duration: 3 hrs.

Percolation Test Hole Depth: 33"

Boring Diameter: 8"

Time	**Interval**	**Reading**	**Fall**	**Percolation Rate**	**Corrected Rate**
	minutes	inches	inches	minutes/inch	minutes/inch
1:38 PM	*****	17.2	****	*****	*****
2:08 PM	30	17.4	0.2	150	200
2:38 PM	30	17.4	0.0	*****	*****
3:08 PM	30	17.4	0.0	*****	*****
3:38 PM	30	17.5	0.1	300	400
4:08 PM	30	17.5	0.0	*****	*****
4:38 PM	30	17.6	0.1	300	400

NHS-7465-01 February, 2000

Kawahara Nursery

Percolation Test No.:	**B-8B**
Lot No.:	N/A
Date Drilled:	12/14/1999
Date Presaturated:	12/21/1999
Date Tested:	12/22/1999
Technician:	JM
Test Duration:	3 hrs.
Percolation Test Hole Depth:	92"
Boring Diameter:	8"

Time	**Interval**	**Reading**	**Fall**	**Percolation Rate**	**Corrected Rate**
	minutes	inches	inches	minutes/inch	minutes/inch
1:20 PM	*****	79.9	****	*****	*****
1:50 PM	30	80.2	0.3	100	136
2:20 PM	30	80.4	0.2	150	200
2:50 PM	30	80.5	0.1	300	400
3:20 PM	30	80.6	0.1	300	400
3:50 PM	30	80.8	0.2	150	200
4:20 PM	30	80.9	0.1	300	400

Note: Groundwater elevation was approximately 90" below existing grade.

NHS-7465-01

Kawahara Nursery

February, 2000

Percolation Test No.:	**B-8C**
Lot No.:	N/A
Date Drilled:	12/14/1999
Date Presaturated:	12/21/1999
Date Tested:	12/22/1999
Technician:	JM
Test Duration:	3 hrs.
Percolation Test Hole Depth:	57"
Boring Diameter:	8"

Time	**Interval**	**Reading**	**Fall**	**Percolation Rate**	**Corrected Rate**
	minutes	inches	inches	minutes/inch	minutes/inch
1:23 PM	*****	35.6	****	*****	*****
1:53 PM	30	35.8	0.2	150	200
2:23 PM	30	36.0	0.2	150	200
2:53 PM	30	36.4	0.4	75	100
3:23 PM	30	36.5	0.1	300	400
3:53 PM	30	36.7	0.2	150	200
4:23 PM	30	37.0	0.3	100	136

NHS-7465-01 February, 2000

Kawahara Nursery

Percolation Test No.: **B-8A**

Lot No.: N/A

Date Drilled: 12/14/1999

Date Presaturated: 12/21/1999

Date Tested: 12/22/1999

Technician: JM

Test Duration: 3 hrs.

Percolation Test Hole Depth: 39"

Boring Diameter: 8"

Time	**Interval**	**Reading**	**Fall**	**Percolation Rate**	**Corrected Rate**
	minutes	inches	inches	minutes/inch	minutes/inch
1:26 PM	*****	24.0	****	*****	*****
1:56 PM	30	24.1	0.1	300	400
2:26 PM	30	24.1	0.0	*****	*****
2:56 PM	30	24.2	0.1	300	400
3:26 PM	30	24.4	0.2	150	200
3:56 PM	30	24.4	0.0	*****	*****
4:26 PM	30	24.5	0.1	300	400

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APPENDIX D
DRAINAGE REPORT

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Preliminary Drainage Analysis & Storm Water Management Calculations

for:

Kawahara Nursery - San Juan Bautista
APN 012-030-045

9/16/2020
Job# 218111

Prepared By:
MH Engineering
Allen Andrade, PE,LS,QSD
16075 Vineyard Blvd.
Morgan Hill, CA 95037

Contents

Kawahara Nursery - San Juan Bautista
Job# 218111
9/16/2020

Drainage Synopsis

Project Description:

This project consists of the construction of greenhouses, and prduciton and shipping facilities on APN 012-030-045, a 104 acre parcel in San Juan Bautista bound on the south by Anzar Road, on the east by San Juan Highway and Anzar High School, on the north by Chittenden Road and on the west roughly by US Highway 101. The site is currently all 100% row crop being intesively planted and irrigated in cycles throughout the year. The westerly portion of the property is bisected by San Juan Creek. The current agricultrual operations include dirt roads around the fields and along the banks of San Juan Creek. The site drainas as sheet flow toward San Juan Creek at minimal slopes with the runoff from storms or irrigation typically being prevented from migrating to the Creek by small roadside ditches that contain runoff to the fields.

The proposed project will include 72,000 sf of production and shipping roof areas and 518,000 sf of greenhouse roof areas as well as 128,489 sf of paved driveway, parking, and truck loading areas. Areas areound the greenhouses and the parking will be surfaced with aggregate base rock as well. These new impervious areas will decrease the natural pervious areas on site and to prevent an increase in fromoff from the site, the site will be graded such that all the new impervious areas are the high points fo the property with everything sloping away from these areas in ditches along the field boundaries following the natural drainge pattern at very slight slopes toward the east side of San Juan Creek. This runoff will be continually treated as it progresses from the impervious areas over the fields and in the ditches along the roads as it will run through vegetation, be absorbed into the ground, and evaporate along the entire course. The retention and treatement requirements of CCRWQCB 2013-0032 and County Ordinance shall be met by these dithches as well as the stormwater mitigation channel that runs along the east side of San Juan Creek to effectivley limit any discharge from this site to San Juan Creek.

Post Construction Storm Water Control Measure Calculations

Attached to this report in the following sections are the calculations prepared to document compliance with the Central Coast Regional Water Quality Control Board's post construction requirements. Pursuant to these requirements, the drainage management area (DMA) for the project is defined and the hydraulic characteristics of the post development site have been documented to determine the required retention volumes. Section 3 PRC Calculations is specific to the retention volume required and Section 4 details the structural storm water control components to provide that volume per CCRWQCB Resolution 2013-0032.

Hydrology & Routing - Hydrograph Method

The following sections of this report are the calculations prepared to support the project design. The tributary areas, Pre & post development runoff characteristics where calculated for input into the SCS routing software. 24 hour rainfall depth was calculated according to the NOAA 14 point precipitation estimates for the San Juan Bautista Station and the SCVWD December 1955 rainfall event was used for input into the SCS routing software. The routing includes exfiltration at 0.5 in/hr consistent with the USDA NRCS Web Soil Survey and the percolation testing on the site. A summary of the SCS output indicates that the peak flow for return events (2year through 25year) has zero discharge from the site, and discharge of 13% of the pre-project discharge for a small period of time during the 100-year event and that the storage areas provided appropriately detain and allow the runoff to infiltrate similar to the pre-project conditions.

Summary

This drainage report and the calculations shown herein substantiate this project's compliance with the Central Coast Regional Water Quality Control Board's post construction requirements LID requirements and City storm water management requirements as described above. The drainage impacts of the proposed project on this site are effectively mitigated by the incorporation of the project storm water control measures that retains, infiltrates and detains storm water runoff from the developed site.

Kawahara Nursery - San Juan Bautista
Job# 218111
9/16/2020

Post Construction Storm Water Management Calculations
Per Resolution No. R3-2013-0032

1.) Determination of the Retention Tributary Area

a.)

Drainage Areas

	Pre-Development Area 1	Post-Development Area 1
A_{total}	4,431,146	4,431,146
A_{roofs}	0	72,000
$A_{greenhouses}$	0	518,000
$A_{pcc-walks/parking}$	0	34,601
$A_{AC-streets}$	0	93,888
$A_{AB-yards}$	0	271,724
$A_{pervious}$	4,431,146	3,440,933
$A_{imptotal}$	0	990,213
i	0.00%	22.35%
C	0.040	0.184

A_{total} = drainage area (sf)
A_{roofs} = roof areas (sf)
$A_{pcc-walks/parking}$ = area of pcc walks & parking lot
$A_{pcc\ -streets}$ = area of pcc walks and curbs (sf)
$A_{AC-streets}$ = Street pavement areas (sf)
$A_{AB-yards}$ = aggregate base yard areas (sf)
$A_{pervious}$ = Planted & Open Areas (sf)
$A_{impervious}$ = total impervious roof areas, PCC areas & AC areas (sf)
i = fraction of the tributary area that is impervious = $A_{impervious}$ / A_{area}
$C_{area\#}$ = Area runoff coefficient=C = 0.858i3 - 0.78i2 + 0.774i + 0.04

b.)adjustments for redevelopment project

4,431,146 = $A_{project}$ = Entire project tributary area (sf)
0 = A_{PA} = Planted & Open Areas (sf)
0 = A_{IDA} = Impervious area ths discharge to independent Infiltrating
- = A_{rep} = Replaced impervious surface areas that do not discharge to

= $A_{ret} = A_{project} - A_{PA} - A_{IDA} - (0.5*A_{rep})$
4,431,146 = A_{ret} = Retention Tributary Area (sf)

4,431,146 = $A_{project}$ = Project Drainage Management Area (sf)

2.) Determination of Retention Volume

a.) retention requirement

1 = WMZ = watershed management zone per WMZ map San Juan Bautista

b.) WMZ 1 Runoff Retention Requirement = Retain 95th percentile 24-hour rainfall event

c.) comput the runoff coefficient

$C = 0.858i^3 - 0.78i^2 + 0.774i + 0.04$

0.223 = i = fraction of the tributary area that is impervious = $A_{impervious}$ / $A_{project}$

0.184 = $C_{project}$ = Project runoff coefficient

d.) Compute Retention Volume required

$V_{retention} = C_{project} * R_{95\%} * A_{ret}$

0.184 = $C_{project}$ = Project runoff coefficient

1.2 = $R_{95\%}$ = 95th percentile 24-hour rainfall event per poster for posting from CCRWQCB (in.)

4,431,146 = A_{ret} = Retention Tributary Area (sf)

81,350 = $V_{95\%retention}$ = Retention Volume Required (cf)

3.) Structural Stormwater Control Measure Sizing

see next section

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Post Construction Stormwater Control Measure Sizing

A mitigation swale and site grading for storage has been selected for this site's storm water mitigation because it allows for the mitigation of both the increase in flow and volume due to the proposed project. All developed project runoff is routed via the site grading to the swale parallel to and easterly of San Juan Creek. The swale fill with runoff and retain runoff to the 151.00 elevation at which elevation flows will begin to flow into field areas between this swale and the greenhouses. Note that the limiting elevation of the storage is 152.50 as defined by the existing dirt road along said east side of San Juan Creek and all post development flows are fully contiained up to the 100 year event. Disharge from the site would only occur during the 100 year event from hour 20 to hour 27 with a peak discharge of 8.57 cfs which is 13% of the pre-development peak discharge for this event. The collection and retention of runoff promotes infiltration into the natural soils that exist on the site and attemt to mimic the historic surface absorbtion on the site while effectively eliminating discharge from the site.

Project Volume Provided Calculation

Mitigation Channel along Field 7

Contour	Area	inc. vol	cum. Vol
150.80	974	0.0	0
150.90	3,329	215.2	215
151.00	6,193	476.1	691
151.10	7,495	684.4	1,376
151.20	8,802	814.8	2,191
151.30	10,112	945.7	3,136
151.40	11,427	1,076.9	4,213
151.50	12,746	1,208.6	5,422
151.60	14,069	1,340.7	6,763
151.70	15,397	1,473.3	8,236
	Storage Volume (cf) =		8,236

Mitigation Channel along Field 5

Contour	Area	inc. vol	cum. Vol
150.40	854	0.0	0
150.50	1,990	142.2	142
150.60	3,404	269.7	412
150.70	5,091	424.7	837
150.80	6,268	567.9	1,405
150.90	7,415	684.1	2,089
151.00	8,569	799.2	2,888
	Storage Volume (cf) =		2,888

Mitigation Channel along Field 4

Contour	Area	inc. vol	cum. Vol
149.80	397	0.0	0
149.90	949	67.3	67
150.00	1,620	128.4	196
150.10	2,250	193.5	389
150.20	2,676	246.3	636

150.30	3,105	289.0	925
150.40	3,537	332.1	1,257
150.50	3,974	375.5	1,632
150.60	4,415	419.4	2,052
150.70	4,860	463.7	2,515
150.80	5,310	508.5	3,024
150.90	5,764	553.7	3,578
151.00	6,224	599.4	4,177
	Storage Volume (cf) =		4,177

Mitigation Channel along Field 3

Contour	Area	inc. vol	cum. Vol
149.80	152	0.0	0
149.90	1,039	59.5	60
150.00	2,126	158.2	218
150.10	2,708	241.7	459
150.20	3,230	296.9	756
150.30	3,764	349.7	1,106
150.40	4,311	403.7	1,510
150.50	4,869	459.0	1,969
150.60	5,440	515.4	2,484
150.70	6,022	573.1	3,057
150.80	6,617	631.9	3,689
150.90	7,224	692.0	4,381
151.00	7,844	753.4	5,135
	Storage Volume (cf) =		5,135

Mitigation Channel along Field 2

Contour	Area	inc. vol	cum. Vol
149.50	146	0.0	0
149.60	634	39.0	39
149.70	1,187	91.0	130
149.80	1,432	130.9	261
149.90	1,679	155.5	417
150.00	1,929	180.4	597
150.10	2,181	205.5	802
150.20	2,438	230.9	1,033
150.30	2,697	256.7	1,290
150.40	2,960	282.8	1,573
150.50	3,225	309.2	1,882
150.60	3,496	336.0	2,218
150.70	3,769	363.2	2,582
150.80	4,048	390.8	2,972
150.90	4,330	418.9	3,391
151.00	4,616	447.3	3,839
	Storage Volume (cf) =		3,839

Storage in Field Areas 1,2,3,4,6,&7 (fills after mitigation channels fill, limiting elevation 152.50 where flows would then cross dirt road)

Contour	Area	inc. vol	cum. Vol

151.1	67,271	0.0	0
151.20	107,759	8,751.5	8,751
151.30	155,555	13,165.7	21,917
151.40	210,722	18,313.9	40,231
151.50	272,623	24,167.3	64,398
151.60	337,332	30,497.8	94,896
151.70	402,772	37,005.2	131,901
151.80	487,160	44,496.6	176,398
151.90	560,892	52,402.6	228,801
152.00	610,285	58,558.9	287,359
152.10	638,834	62,455.9	349,815
152.20	710,730	67,478.2	417,294
152.30	781,919	74,632.5	491,926
152.40	838,660	81,029.0	572,955
152.50	885,851	86,225.5	659,181
	Storage Volume (cf) =		659,181

683,455 = V_{total} = Total storage volume provided (cf)

Check to ensure that V_{total} > $V_{95\%retention}$

81,350 = $V_{95\%retention}$ = Retention Volume Required (cf) **OK**

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Summary for Subcatchment 7S: Pre-Development

Runoff = 63.62 cfs @ 18.43 hrs, Volume= 36.153 af, Depth= 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
SCVWD 1956 Storm 100 year Rainfall=5.96"

	Area (sf)	CN	Description
*	0	98	roof areas
*	0	98	pcc areas
*	0	98	ac areas
	4,431,146	85	Row crops, straight row, Good, HSG C
	4,431,146	85	Weighted Average
	4,431,146		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.0					**Direct Entry, TC**

Events for Subcatchment 7S: Pre-Development

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
-95%	1.40	7.72	3.305	0.39
2 year	2.34	18.63	8.921	1.05
10 year	3.72	35.72	18.728	2.21
25 year	4.58	46.46	25.280	2.98
100 year	**5.96**	**63.62**	**36.153**	**4.26**

Summary for Subcatchment 2S: POST-Development

Runoff = 65.16 cfs @ 18.37 hrs, Volume= 37.968 af, Depth= 4.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
SCVWD 1956 Storm 100 year Rainfall=5.96"

	Area (sf)	CN	Description
*	72,000	98	building roofs
*	518,000	98	greenhouse roofs
*	34,601	98	pcc areas
*	93,888	98	ac areas
*	271,724	89	ab areas
	3,440,933	85	Row crops, straight row, Good, HSG C
	4,431,146	87	Weighted Average
	3,712,657		83.79% Pervious Area
	718,489		16.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description

30.0	**Direct Entry,**

Events for Subcatchment 2S: POST-Development

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
-95%	1.40	8.91	3.960	0.47
2 year	2.34	20.17	9.990	1.18
10 year	3.72	37.37	20.185	2.38
25 year	4.58	48.08	26.902	3.17
100 year	**5.96**	**65.16**	**37.968**	**4.48**

Summary for Pond 7P: Storm Wter Mitigation

Inflow Area = 101.725 ac, 16.21% Impervious, Inflow Depth = 4.48" for 100 year event
Inflow = 65.16 cfs @ 18.37 hrs, Volume= 37.968 af
Outflow = 20.51 cfs @ 22.72 hrs, Volume= 37.958 af, Atten= 69%, Lag= 260.7 min
Discarded = 11.93 cfs @ 22.72 hrs, Volume= 33.251 af
Primary = 8.57 cfs @ 22.72 hrs, Volume= 4.707 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 152.75' @ 22.72 hrs Surf.Area= 928,501 sf Storage= 905,298 cf

Plug-Flow detention time= 713.1 min calculated for 37.953 af (100% of inflow)
Center-of-Mass det. time= 713.2 min (1,678.5 - 965.3)

Volume	Invert	Avail.Storage	Storage Description
#1	150.80'	8,236 cf	**mitigation channel along field 7 (Prismatic)** Listed below (Recalc)
#2	150.40'	2,888 cf	**mitigation channel along field 5 (Prismatic)** Listed below (Recalc)
#3	149.80'	4,140 cf	**mitigation channel along field 4 (Prismatic)** Listed below (Recalc)
#4	149.80'	7,045 cf	**mitigation channel along field 3 (Prismatic)** Listed below (Recalc)
#5	149.50'	3,839 cf	**mitigation channel along field 2 (Prismatic)** Listed below (Recalc)
#6	151.10'	1,102,106 cf	**storage in field areas 1,2,3,4,6,&7 (Prismatic)** Listed below (Recalc)
		1,128,253 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.80	974	0	0
150.90	3,329	215	215
151.00	6,193	476	691
151.10	7,495	684	1,376
151.20	8,802	815	2,190
151.30	10,112	946	3,136
151.40	11,427	1,077	4,213
151.50	12,746	1,209	5,422
151.60	14,069	1,341	6,763
151.70	15,397	1,473	8,236

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.40	854	0	0
150.50	1,990	142	142
150.60	3,404	270	412
150.70	5,091	425	837
150.80	6,268	568	1,405

150.90	7,415	684	2,089
151.00	8,569	799	2,888

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
149.80	397	0	0
149.90	949	67	67
150.00	1,620	128	196
150.10	2,250	193	389
150.20	2,676	246	636
150.30	3,105	289	925
150.40	3,537	332	1,257
150.50	3,974	376	1,632
150.60	4,415	419	2,052
150.70	4,486	445	2,497
150.80	5,310	490	2,987
150.90	5,764	554	3,540
151.00	6,224	599	4,140

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
149.80	152	0	0
149.90	1,039	60	60
150.00	21,226	1,113	1,173
150.10	2,708	1,197	2,369
150.20	3,230	297	2,666
150.30	3,764	350	3,016
150.40	4,311	404	3,420
150.50	4,869	459	3,879
150.60	5,440	515	4,394
150.70	6,022	573	4,967
150.80	6,617	632	5,599
150.90	7,224	692	6,291
151.00	7,844	753	7,045

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
149.50	146	0	0
149.60	634	39	39
149.70	1,187	91	130
149.80	1,432	131	261
149.90	1,679	156	417
150.00	1,929	180	597
150.10	2,181	205	802
150.20	2,438	231	1,033
150.30	2,697	257	1,290
150.40	2,960	283	1,573
150.50	3,225	309	1,882
150.60	3,496	336	2,218
150.70	3,769	363	2,582
150.80	4,048	391	2,972
150.90	4,330	419	3,391
151.00	4,616	447	3,839

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.10	67,271	0	0
151.20	107,759	8,752	8,752
151.30	155,555	13,166	21,917

151.30	155,555	13,166	21,917
151.40	210,722	18,314	40,231
151.50	272,623	24,167	64,398
151.60	337,332	30,498	94,896
151.70	402,772	37,005	131,901
151.80	487,160	44,497	176,398
151.90	560,892	52,403	228,800
152.00	610,285	58,559	287,359
152.10	638,834	62,456	349,815
152.20	710,730	67,478	417,293
152.30	781,919	74,632	491,926
152.40	838,660	81,029	572,955
152.50	885,851	86,226	659,180
153.00	885,851	442,926	1,102,106

Device	Routing	Invert	Outlet Devices
#1	Primary	152.50'	**20.0' long Overflow weir** 2 End Contraction(s) 0.5' Crest Height
#2	Discarded	149.50'	**0.500 in/hr Infiltration over Surface area** Conductivity to Groundwater Elevation = 140.00'

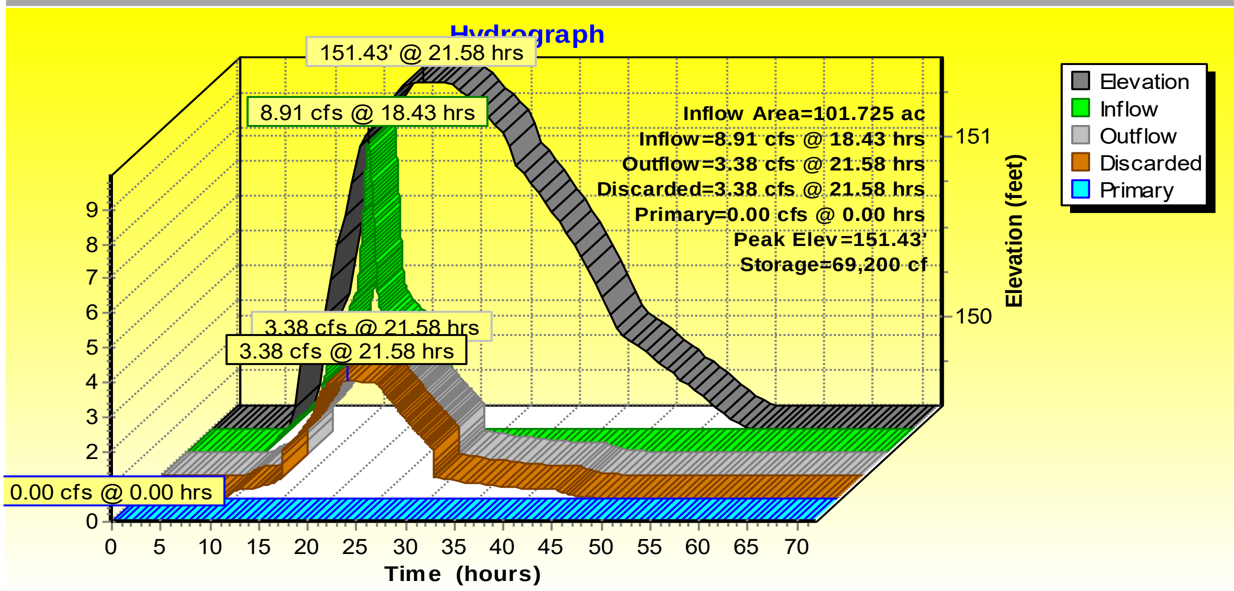
Discarded OutFlow Max=11.93 cfs @ 22.72 hrs HW=152.75' (Free Discharge)
↑—**2=Infiltration** (Controls 11.93 cfs)

Primary OutFlow Max=8.56 cfs @ 22.72 hrs HW=152.75' (Free Discharge)
↑—**1=Overflow weir** (Weir Controls 8.56 cfs @ 1.73 fps)

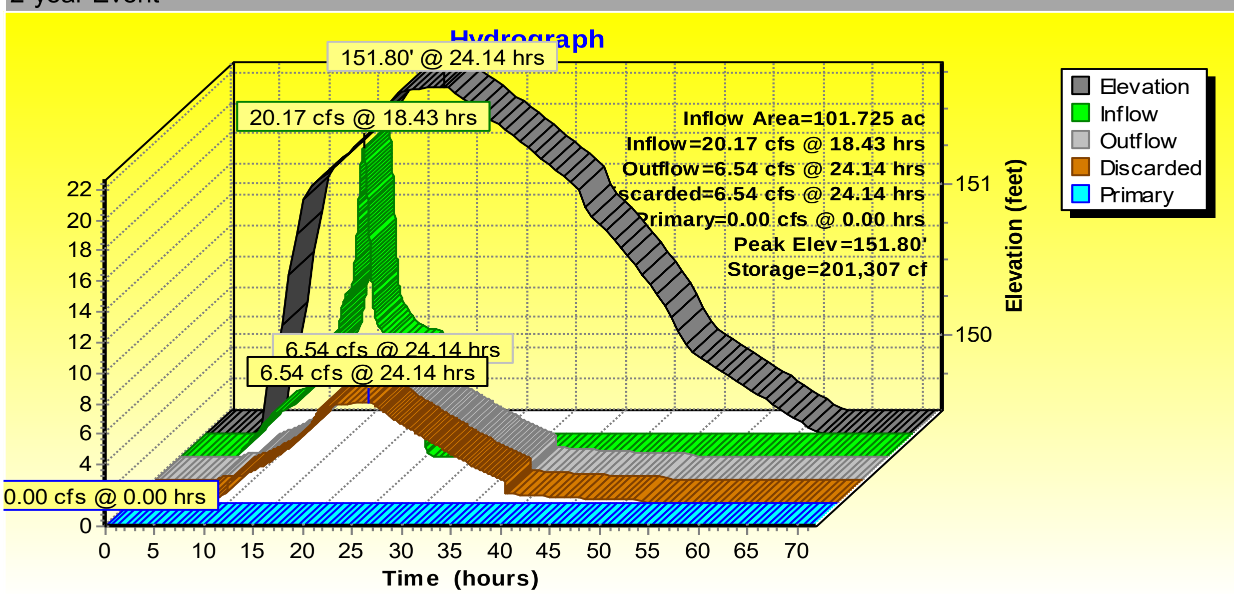
Events for Pond 7P: Storm Wter Mitigation

Event	Inflow (cfs)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
-95%	8.91	3.38	3.38	0.00	151.43	69,200
2 year	20.17	6.54	6.54	0.00	151.80	201,307
10 year	37.37	9.86	9.86	0.00	152.25	479,012
25 year	48.08	11.63	11.63	0.00	152.49	676,463
100 year	**65.16**	**20.51**	**11.93**	**8.57**	**152.75**	**905,298**

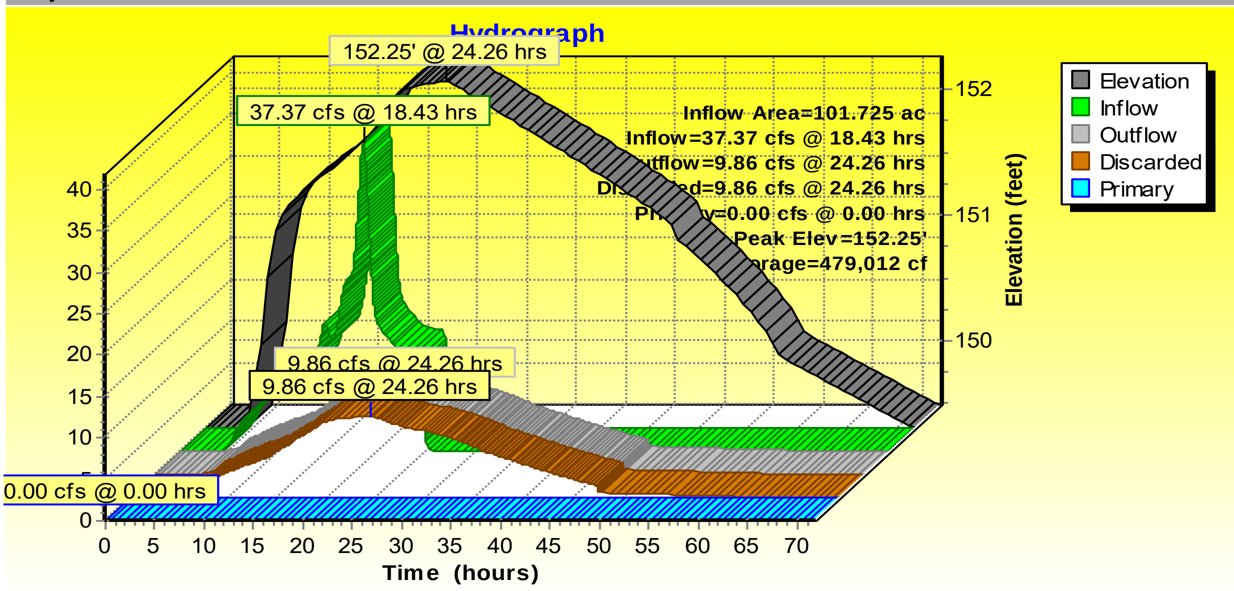
95th% Event



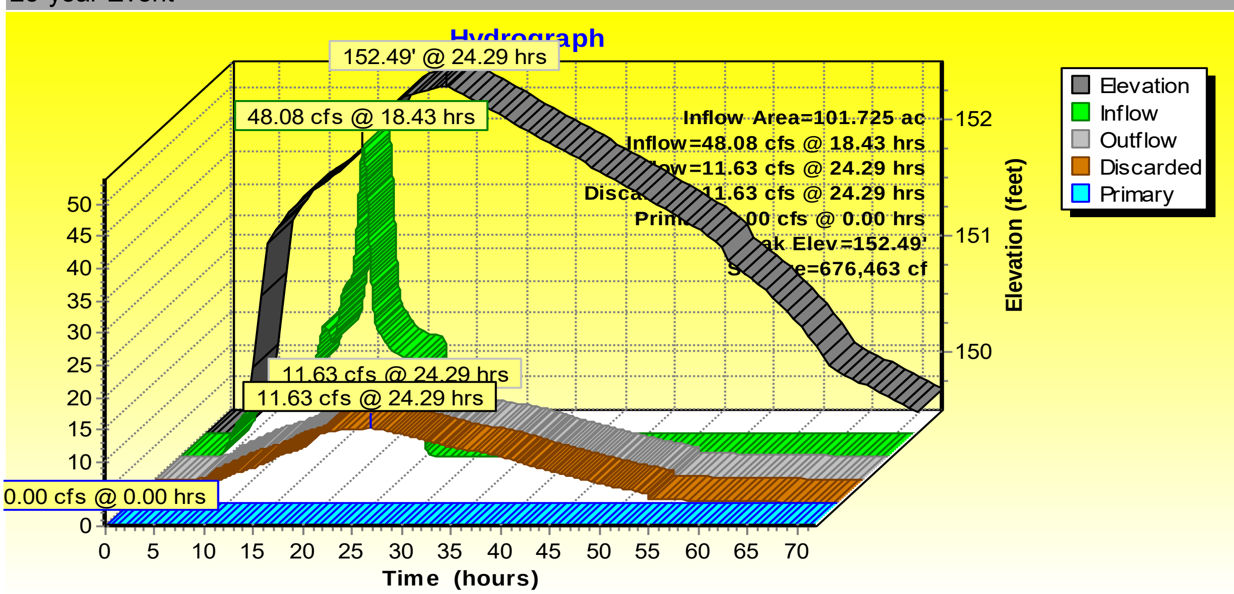
2-year Event



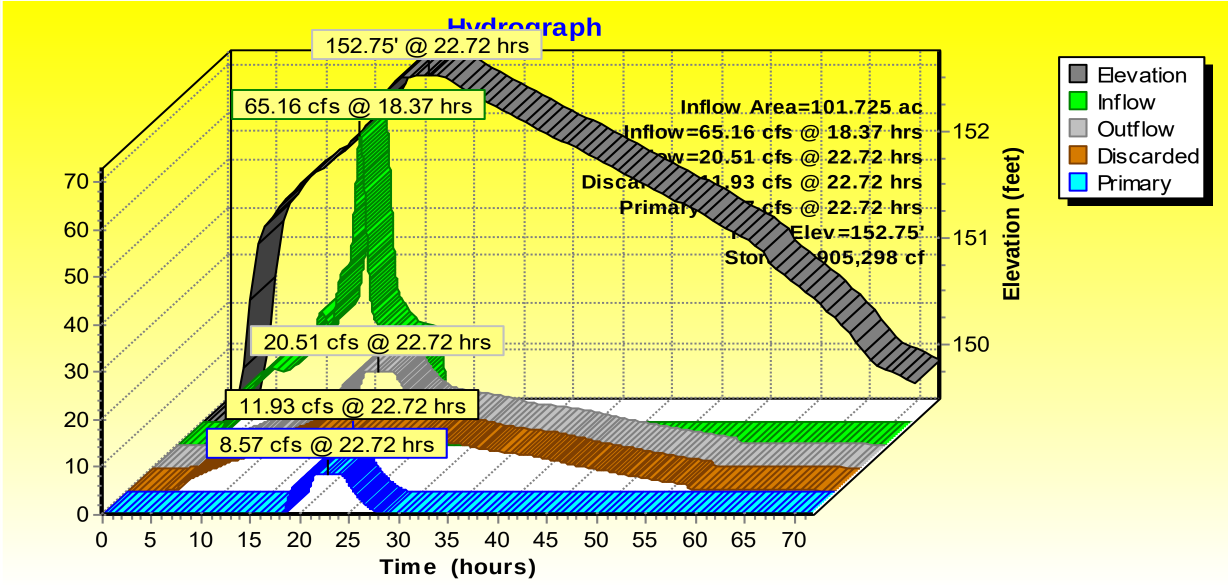
10-year Event



25-year Event



100-year Event



Kawahara Nursery - San Juan Bautista
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Percolation Rate

Saturated Hydraulic Conductivity (Ksat)

Map unit symbol	Map unit name	Rating (micrometers per second)	Acres in AOI	Percent of AOI
SrA	Sorrento silty clay loam, 0 to 2 percent slopes, MLRA 14	2.8000	105.8	100.0
Totals for Area of Interest			**105.8**	**100.0**

Kawahara Nursery - San Juan Bautista
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NOAA Atlas 14, Volume 6, Version 2
Location name: San Juan Bautista, California, USA*
Latitude: 36.8787°, Longitude: -121.561°
Elevation: 153.02 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF tabular | PF graphical | Maps & aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.122 (0.110-0.136)	0.148 (0.134-0.166)	0.187 (0.168-0.210)	0.221 (0.197-0.251)	0.272 (0.231-0.324)	0.316 (0.260-0.387)	0.363 (0.289-0.461)	0.416 (0.319-0.549)	0.496 (0.359-0.692)	0.564 (0.390-0.825)
10-min	0.174 (0.159-0.194)	0.213 (0.192-0.238)	0.268 (0.241-0.301)	0.317 (0.282-0.360)	0.390 (0.331-0.465)	0.452 (0.373-0.554)	0.521 (0.415-0.660)	0.597 (0.457-0.787)	0.711 (0.515-0.992)	0.809 (0.559-1.18)
15-min	0.211 (0.191-0.235)	0.257 (0.233-0.288)	0.324 (0.292-0.364)	0.384 (0.341-0.436)	0.472 (0.401-0.562)	0.547 (0.451-0.670)	0.629 (0.501-0.798)	0.722 (0.553-0.951)	0.860 (0.623-1.20)	0.978 (0.677-1.43)
30-min	0.290 (0.262-0.323)	0.354 (0.320-0.395)	0.446 (0.402-0.500)	0.528 (0.470-0.599)	0.649 (0.551-0.773)	0.752 (0.620-0.922)	0.866 (0.689-1.10)	0.992 (0.761-1.31)	1.18 (0.856-1.65)	1.35 (0.930-1.97)
60-min	0.407 (0.368-0.454)	0.497 (0.449-0.555)	0.626 (0.564-0.702)	0.740 (0.659-0.841)	0.911 (0.773-1.09)	1.06 (0.870-1.29)	1.22 (0.968-1.54)	1.39 (1.07-1.84)	1.66 (1.20-2.32)	1.89 (1.31-2.76)
2-hr	0.614 (0.556-0.685)	0.749 (0.677-0.837)	0.940 (0.847-1.06)	1.11 (0.987-1.26)	1.36 (1.16-1.62)	1.57 (1.30-1.93)	1.80 (1.44-2.29)	2.06 (1.58-2.71)	2.44 (1.77-3.40)	2.76 (1.91-4.04)
3-hr	0.772 (0.699-0.861)	0.943 (0.853-1.05)	1.19 (1.07-1.33)	1.40 (1.25-1.59)	1.72 (1.46-2.04)	1.98 (1.63-2.42)	2.27 (1.80-2.87)	2.58 (1.98-3.40)	3.05 (2.21-4.25)	3.44 (2.38-5.03)
6-hr	1.06 (0.955-1.18)	1.31 (1.18-1.46)	1.66 (1.49-1.86)	1.96 (1.74-2.22)	2.40 (2.04-2.86)	2.76 (2.28-3.39)	3.15 (2.51-4.00)	3.58 (2.74-4.72)	4.20 (3.04-5.86)	4.72 (3.26-6.89)
12-hr	1.38 (1.25-1.54)	1.76 (1.59-1.96)	2.27 (2.05-2.55)	2.71 (2.41-3.08)	3.33 (2.83-3.97)	3.83 (3.16-4.70)	4.36 (3.47-5.53)	4.92 (3.77-6.49)	5.73 (4.15-7.99)	6.38 (4.41-9.33)
24-hr	1.78 (1.63-1.98)	2.34 (2.15-2.61)	3.09 (2.83-3.46)	3.72 (3.37-4.18)	4.58 (4.02-5.33)	5.26 (4.52-6.24)	5.96 (5.00-7.25)	6.70 (5.47-8.38)	7.73 (6.06-10.1)	8.56 (6.48-11.5)

MH engineering Co.

16075 Vineyard Blvd., Morgan Hill, CA 95037 - (408) 779-7381

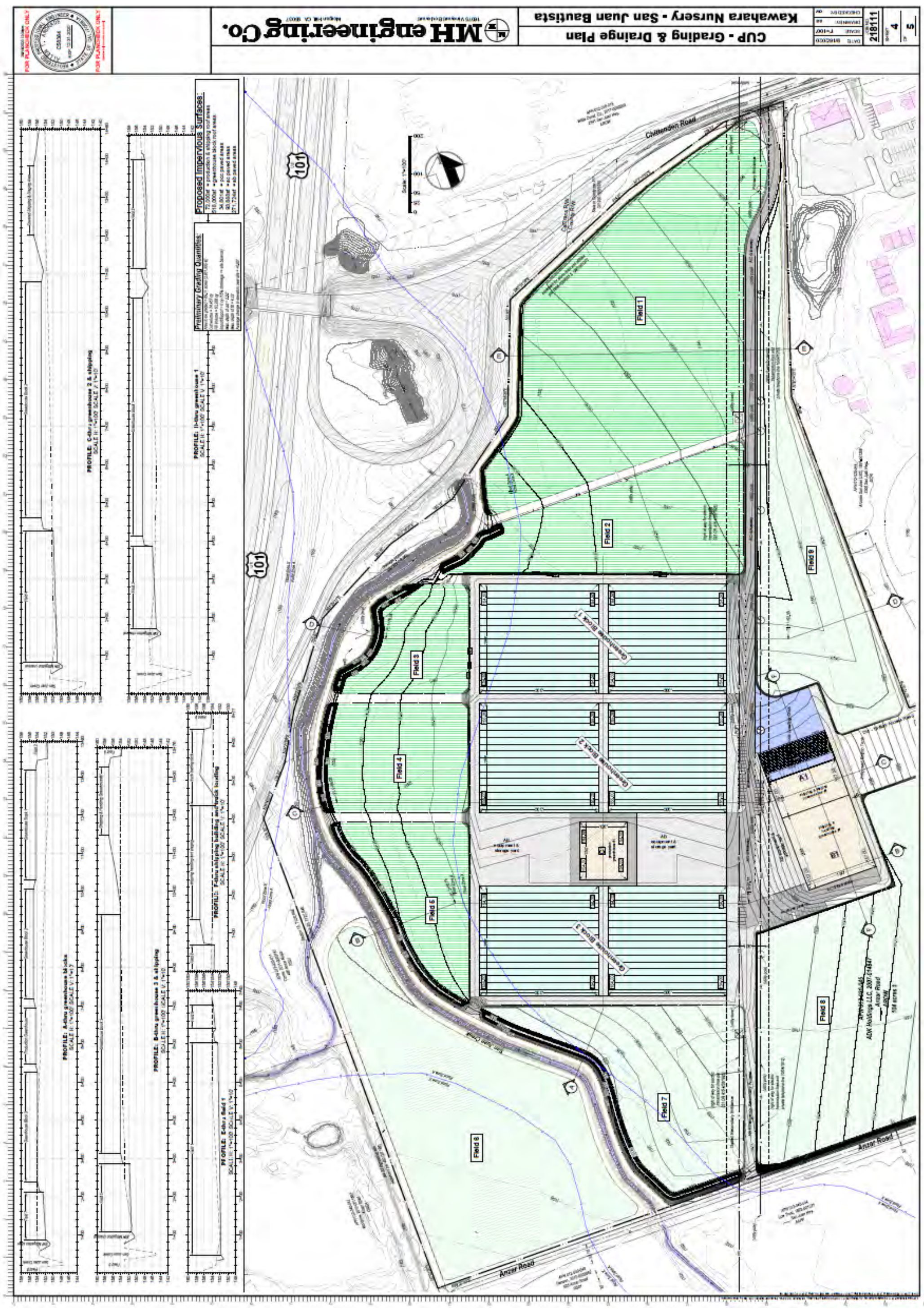
Kawahara Nursery - San Juan Bautista

Job# 218111

9/16/2020

(see project improvement plans for full drainage details)

Drainage Map



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APPENDIX E
TRAFFIC REPORT

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Keith Higgins

Traffic Engineer

KAWAHARA NURSERY
TRAFFIC IMPACT ANALYSIS

ADMINISTRATIVE DRAFT REPORT

SAN BENITO COUNTY, CALIFORNIA

Prepared for
Coats Consulting
Carmel, CA 93921

Prepared by
Keith Higgins, Traffic Engineer
Gilroy, CA 95020

August 25, 2020

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1 INTRODUCTION

A wholesale nursery is being proposed on San Juan Highway between the US 101 / State Route 129 interchange and Anzar High School, in San Benito County, California. The location of the project site and study area are indicated on **Exhibit 1**. The site plan is shown on **Exhibit 2**.

This report presents the findings of an analysis of vehicular, pedestrian, bicycle, and transit circulation at the project site and the immediately surrounding street network under existing, existing plus project, cumulative and cumulative plus project conditions.

1.1 Scope of Work

This report addresses the following topics:

- Existing vehicular, pedestrian and bicycle circulation at the two project access points and the surrounding street network.
- Assessment of potential effects to vehicular, pedestrian, bicycle, and transit circulation due to the Project, and recommendations to minimize or alleviate those effects.
- Assessment of potential Cumulative traffic conditions with and without the project and recommendations to minimize or alleviate anticipated operational deficiencies.
- Assessment of site access and on-site circulation.
- Estimate of vehicle-miles traveled generated by the project.

1.2 Study Network

The AM and PM peak periods are analyzed at the following three intersections:

1. Southbound US 101 Ramps / State Route 129
2. Northbound US 101 Ramps / State Route 129 – San Juan Highway
3. Anzar High School Driveway (North) – Willis Construction Driveway / San Juan Highway

1.3 Traffic Operation Evaluation Methodologies

Intersection traffic operations were evaluated based upon the level of service (LOS) concept. LOS is a qualitative description of an intersection's operations, ranging from LOS A to LOS F. Level of Service "A" represents free flow uncongested traffic conditions. Level of Service "F" represents highly congested traffic conditions with unacceptable delay to vehicles at intersections. The intermediate levels of service represent incremental levels of congestion and delay between these two extremes. The analysis was performed using the *2010 Highway Capacity Manual* methodologies. LOS descriptions for each type of existing traffic control at the study intersections (i.e., signal and one-way stop) are included as **Appendix A**.

Intersection traffic operations were evaluated using the Synchro© traffic analysis software (Version 10). The average delay is then correlated to a level of service. For two-way stop-controlled intersections, only the vehicle delay for side street traffic is analyzed. LOS for each side street movement is based on the distribution of gaps in the major street traffic stream and driver judgment in selecting gaps. For signalized intersections, the overall intersection delay is used to determine LOS.

1.4 Level of Service Standards

The study intersections are under the jurisdiction of Caltrans (Intersections 1-2) and San Benito County (Intersection 3).

1.4.1 San Benito County

The overall standard for congestion levels in San Benito County is LOS D. LOS D is also considered the maximum acceptable level of service for side-street operations at one- and two-way stop-controlled intersections.

1.4.2 Caltrans

The Caltrans level of service standard is the transition from LOS C to LOS D (abbreviated as C-D in this report). This is essentially LOS C.

However, San Benito County General Plan Policy C-1.12 states that a standard of LOS D shall be used for all state highway facilities within the county, consistent with its countywide level of service standard. As quoted from the *2035 San Benito County General Plan Update Revised Draft Environmental Impact Report,* EMC Planning Group, March 16, 2015:

> *As the LOS policy for such highways primarily affects local residents and local development, 2035 General Plan Policy C-1.12 proposes a LOS standard of D for state highway facilities within the County to accommodate expected development growth within the County while still providing reasonable operating conditions for auto traffic.*
>
> *In addition to the fact that the Board of Supervisors has indicated that it wants to use LOS D as its new roadway improvement for General Plan consistency purposes, the County believes that LOS D is an appropriate threshold of significance for CEQA purposes, particularly if development becomes denser in the Hollister area and in the northern parts of the County nearer the Bay Area. Use of LOS D as a CEQA threshold of significance is consistent with the practice of many other public agencies in California and it is the*

> *recommended threshold of significance by the County's traffic experts. Use of LOS C as a threshold of significance for CEQA purposes is also likely to result in mitigation measures that result in overbuilding roadway improvements based on the County's policy priorities. Roadway improvements necessary to meet an [sic] LOS C in the buildout condition are not considered fundable, necessary or desirable.*

For this reason, this report will apply a LOS D standard to all study Caltrans intersections.

1.5 Significance Criteria

Two different significance criteria have been used to assess the impacts and adverse effects of this project – one for environmental impacts and one for local adverse effects. The environmental impacts refer to impacts assessed per the California Environmental Quality Act (CEQA) guidelines. The local adverse effects are assessed relative to capacity and the San Benito County level of service standard and are used only for determining compliance with agency policies and guidelines. The following significance criteria have been used in this study:

1.5.1 Environmental (CEQA)

Senate Bill (SB) 743 requires that, starting July 2020, transportation impacts for projects per the California Environmental Quality Act (CEQA) be based on a project's Vehicle Miles Traveled (VMT), rather than level of service. The publication *Technical Advisory on Evaluating Transportation Impacts in CEQA,* State of California Governor's Office of Planning and Research, December 2018, suggests that a significant environmental (CEQA) VMT threshold for commercial/retail be a projects be a maintaining of the current retail VMT for the region, although agencies are allowed to adopt their own customized thresholds. As of this writing, San Benito County has not established either a VMT standard or significance threshold for VMT analysis. This report, therefore, includes a qualitative VMT analysis and significance evaluation per CEQA for the study project.

1.5.2 Local

SB 743 also allows local jurisdictions to assess local adverse impacts associated with their own adopted level of service standards. This is separate from the CEQA significance analysis. The level of service criteria of San Benito County apply to intersections under Caltrans jurisdiction if the intersection is located in unincorporated San Benito County.

For the purposes of this analysis, a local adverse effect would occur at any study intersection in the following circumstances:

All-Way Stop-Controlled Intersections (Intersection 1):

At an all-way stop-controlled intersection:

- An local adverse effect would occur if an intersection operating at LOS A, B, C or D degrades to LOS E or F due to the addition of project trips; or
- For intersections already operating at LOS E or F, a local adverse effect would occur if the addition of project trips causes the intersection delay to increase by more than 4.0 seconds.

One- or Two-Way Stop-Controlled Intersections (Intersections 2-3):

At a one-way or two-way stop-controlled intersection is defined to occur under the following conditions:

- A local adverse effect would occur if side-street operations at an intersection operating at LOS A, B, C or D degrades to LOS E or F due to the addition of project trips and the traffic volumes with the addition of project trips are sufficiently high enough to satisfy the peak hour traffic signal warrant adopted by Caltrans in its Manual of Uniform Traffic Control Devices (CA MUTCD).
- For intersections with side-street operations already at E or F, a local adverse effect would occur if the project adds at least one trip to the intersection and the traffic volumes with the addition of project trips are sufficiently high enough to satisfy the peak hour traffic signal warrant adopted by Caltrans in its Manual of Uniform Traffic Control Devices (CA MUTCD).

1.6 Regional Transportation Impact Mitigation Fee

The Council of San Benito County Governments (COG) administers the San Benito County Regional Transportation Impact Mitigation Fee (TIMF). This fee funds construction of traffic improvements on the regional highway system throughout northern San Benito County, including the following improvements in the greater study area:

Segment:

1. Widen SR 156 to four lanes between The Alameda and Union Road.

The TIMF is assessed based upon the square footage of the proposed building to be occupied by the Project. The Project's TIMF assessment will be determined by San Benito County, based upon the project definition and the fee rates established in *Regional Transportation Impact Mitigation Fee Nexus Study,* Michael Baker International, January 2016.

Intersections:

All TIMF intersections are within, or in the immediate vicinity of, the City of Hollister. No intersections are within 10 miles of the Project.

Bicycle and Pedestrian Improvement:

1. San Benito River Trail (Project U-1 and H-1) from San Juan Bautista State Historical Park to Airline Highway south of Hollister. The closest part of this improvement is about 3 miles from the Project.

2 EXISTING TRAFFIC CONDITIONS

This chapter evaluates Existing traffic conditions and includes a description of the project setting.

2.1 Existing Traffic Network

The project site is located on Searle Road south of State Route 129 (SR 129). Regional access to the project site is provided by US 101, SR 129 and San Juan Highway. Other roadways in the study area include driveways to Anzar High School and a private construction company. The following is a brief description of each roadway in the study area.

US 101 is a four- to five-lane state highway in San Benito County, connecting San Benito County with Gilroy and the San Francisco Bay Area to the north and Monterey County to the south. It also provides statewide circulation, extending north into Oregon and south to Los Angeles. US 101 is also a major commute corridor from San Benito and Monterey Counties into the Bay Area. In the study area, US 101 is a freeway with a full interchange at State Route 129. The speed limit on US 101 is 65 miles per hour (mph).

State Route 129 (SR 129) is a two-lane state highway in San Benito County, extending from US 101 north of San Juan Bautista to State Route 1 (SR 1) in Watsonville. It serves as both a commute corridor between the two counties, as well as a major commercial trucking corridor between Santa Cruz, Monterey, San Benito and Santa Clara Counties. A connection to State Route 156 via US 101 also provides continued access to and from the Central Valley. The presumed speed limit of SR 129 in the study area is 55 mph.

San Juan Highway is a two-lane, generally north-south roadway in San Benito County, connecting US 101/SR 129 and San Juan Bautista. It provides access to and from San Juan Bautista, as well as adjacent properties, such as Anzar High School and various agricultural fields and produce processing facilities. Through its connection to San Justo Road, it also provides an alternative access to the City of Hollister, bypassing both State Route 25 and State Route 156. The presumed speed limit on San Juan Highway is 55 mph. There is also a 25 mph school zone in the vicinity of Anzar High School.

Anzar High School Driveway (North) and **Willis Construction Driveway** are two driveways in San Benito County on opposite sides of San Juan Highway east of the US 101 / SR 129 interchange. These driveways, which are slightly offset from each other – provide access to Anzar High School and a private commercial business, respectively.

2.2 Existing Pedestrian Network

There are no sidewalks within the study area, including near Anzar High School.

There are no marked crosswalks at any of the study intersections.

2.3 Existing Bicycle Network

There are four types of bicycle facilities defined by Caltrans. Each type is described below:

1. Bike path (Class I) – A separate right-of-way designed for the exclusive use of bicycle and pedestrian traffic with minimal cross-traffic.
2. Bike lane (Class II) – A striped lane for one-way bike travel on a street or highway, typically including signs placed along the street segment.
3. Bike route (Class III) – Provides a shared use with pedestrian or motor vehicle traffic. Typically, these facilities are city streets with signage designating the segment for Bike Route without additional striping or facilities.
4. Separated bikeways (Class IV) – A bikeway for the exclusive use of bicycles and includes a separation between the bikeway and the through vehicular traffic. The separation may include, but is not limited to, grade separation, flexible posts, inflexible posts, inflexible barriers, or on-street parking.

There are no bicycle facilities in the study area, although Class II bike lanes are present on San Juan Highway south of Anzar High School.

Although the shoulders of SR 129 and San Juan Highway in the study area are of sufficient width to accommodate bicycle traffic, these shoulders narrow as one proceeds westward towards Watsonville, limiting bicycle travel.

2.4 Existing Transit Service

San Benito County Local Transportation Authority (LTA) provides fixed-route bus service in San Benito County. Operating as County Express, it provides three lines in Hollister, plus intra-county service to Gilroy via San Juan Bautista, Dial-a-Ride and Paratransit services.

There is no bus service to the immediate project vicinity. The nearest bus stop is located at Anzar High School, located adjacent to the project site. This stop, which is located on Intercounty line between Hollister and Gilroy via San Juan Bautista, is only serviced roughly every two hours during the school year.

2.5 Existing Traffic Conditions

2.5.1 Vehicle Circulation

In March 2020, the San Benito County Health and Human Services Agency instituted a shelter-in-place order for all of San Benito County, restricting operations and travel to/from offices, commercial businesses and recreational activities. This order was in response to the COVID-19 pandemic occurring within the County during the Year 2020. As a result, traffic activity throughout the county was significantly reduced from typical conditions, precluding the usual collection of peak period traffic volumes at the four study intersections.

Existing peak hour traffic volumes at the four study intersections were therefore approximated using a combination of resources, as listed below.

1. First, historical traffic volumes from October 2019 were obtained from StreetLight Data at the US 101 Southbound Ramps / SR 129 and US 101 Northbound Ramps / SR 129 – San Juan Highway intersections. This data can be found in **Appendix B**. The StreetLight Data volumes are approximations of hourly turning movement volumes derived from contextualized, aggregated and normalized cell phone, connected vehicle, commercial vehicle and navigation data that are further validated by StreetLight Data with historical traffic counts and in-roadway sensors. The StreetLight Data was further analyzed by Keith Higgins Traffic Engineer to derive existing AM and PM peak hour volumes at the three study intersections.
2. Second, historical traffic volume counts in the study area were reviewed. Although few intersection traffic counts have been performed at this intersection in the past 20 years, traffic volumes from the traffic study for the previously proposed version of the study project (Year 2000 volumes) were reviewed for historical context.
3. Finally, AM and PM peak period intersection traffic counts were performed at the three study intersections. Fifteen-minute “spot” counts were performed during the AM peak hour in July 2020 at the two US 101 / SR 129 ramp intersections (i.e., Intersections 1 and 2), and a 75-minute count was performed during the PM peak hour at the US 101 Southbound Ramps / SR 129 intersection (i.e., Intersection 1). In addition, AM and PM peak hour counts (7-9 AM, 4-6 PM) were performed at the Willis Construction driveway on San Juan Road in July 2020. **Appendix B** also contains these traffic counts. These counts were compared to the StreetLight Data to derive the AM and PM peak hour volumes, the peak hour factors and the percentages of heavy vehicles at the three study intersections. An additional 10% increase to the AM peak hour volumes was also applied to account for traffic to and from Anzar High School, which was not in session during the traffic counts. Staff at Willis Construction were contacted in July 2020 to confirm that they were under normal staffing and operating conditions during the traffic count.

The resulting Existing Condition AM and PM peak hour volumes used in this analysis are depicted in **Exhibit 3**.

Existing levels of service at the study intersections are summarized on **Exhibit 4A**. Recommended intersection improvements are summarized on **Exhibit 4B**. The LOS calculation sheets for Existing conditions can be found in **Appendix C**.

All of the study intersections currently operate at or better than their respective level of service standards.

2.5.2 Pedestrian Circulation

Existing pedestrian activity at the study intersections was not able to be obtained. However, due to the rural nature of the study area and very spare development, little if any pedestrian activity is likely present.

2.5.3 Bicycle Circulation

Existing bicycle activity at the study intersections was not able to be obtained. However, due to the rural nature of the study area and very spare development, little bicycle activity is likely present.

3 EXISTING PLUS PROJECT CONDITIONS

3.1 Project Trip Generation

The project is a wholesale nursery on approximately 104 acres, including a covered shipping and staging area, a shipping and handling greenhouse, a production greenhouse, growing block greenhouses divided into three main blocks, and nine field growing areas. The primary project driveway is proposed to be on San Juan Highway just west of Anzar High School. An emergency driveway is also proposed on Anzar Road west of San Juan Highway.

The project will grow plants for sale at an existing wholesale nursery located in Morgan Hill. No sales will occur on site. A total of 10-15 employees will work at the site with hours of operation between 7:00 AM – 4:00 PM, Monday through Friday. Two to five truck deliveries will occur per day.

Note: One to two employees will work weekends to water plants. This would generate a negligible amount of traffic, hence a weekend traffic analysis is not necessary.

Trip generation is typically estimated using trip rates published in *Trip Generation Manual,* Institute of Transportation Engineers (ITE), 10th Edition, 2017. However, the project is a wholesale nursery that is essentially greenhouses and open fields. Operations so not correspond with any land uses in the ITE Trip Generation Manual. Therefore, a custom trip generation was developed for the project, using project information and typical trip generation rates for industrial employees. For example, the number of daily trips generated by employees is conservatively estimated as 3.05 trips per employee, which is the ITE trip generation rate for the General Light Industrial land use.

Exhibit 5 summarizes the project trip generation. The project would generate an estimated 62 daily trips, with 12 trips (7 in, 5 out) during the AM peak hour and 21 trips (5 in, 16 out) during the PM peak hour.

3.2 Project Trip Distribution and Assignment

Exhibit 6 depicts the trip distribution for the project trips. This distribution was derived based upon existing traffic distributions at the study intersections as well as the locations of population subareas within commute distance of the project. The project trip distribution was combined with the project trip generation to estimate the project trip assignment depicted on **Exhibit 7**.

3.3 Existing Plus Project Traffic Conditions

3.3.1 Vehicle Circulation

The project trip assignment (**Exhibit 7**) was added to the existing traffic volumes in **Exhibit 3** to estimate Existing Plus Project volumes, which are depicted on **Exhibit 8**.

Existing Plus Project intersection levels of service are summarized on **Exhibit 4A**. Recommended intersection improvements are summarized on **Exhibit 4B**. The LOS calculation sheets for Existing Plus Project conditions can be found in **Appendix D**.

All of the study intersections under Existing Plus Project conditions would continue to operate at or better than their respective level of service standards. No improvements are required.

3.3.2 Pedestrian Circulation

There are minimal residential or commercial uses are within walking distance of the project site. In addition, no pedestrian facilities are provided on any of the rural roads in the greater project vicinity. This will result in minimal generation of pedestrian traffic from the project site. Therefore, the project would not represent a significant local adverse effect to pedestrian circulation.

3.3.3 Bicycle Circulation

The project is anticipated to generate minimal bicycle traffic. Therefore, the project would not represent a significant local adverse effect to bicycle circulation.

3.3.4 Transit Circulation

The project would not increase transit usage, as there is no bus service within walking distance of the project site. Therefore, the project would not represent a significant demand for, or local adverse effect to, transit service.

3.3.5 Regional Transportation Impact Mitigation Fee

The project would be responsible for payment of the San Benito County Regional Transportation Impact Mitigation Fee (TIMF), which would represent the project's fair share contribution towards countywide roadway improvements funded by the fee program. San Benito County will determine the project's TIMF fee.

4 CUMULATIVE WITHOUT PROJECT CONDITIONS

This chapter describes Cumulative Conditions which represent traffic operations at buildout of the San Benito County general plan, or the Year 2035.

4.1 Cumulative Without Project Traffic Volumes

Exhibit 9 depicts the Cumulative Without Project condition traffic volumes at the study intersections. These traffic volumes were derived by applying a 10% growth factor over Existing condition volumes. This is based on a review of the San Benito County general plan forecasts for SR 129 west of US 101 which forecasts a net volume growth of 6.4% between Year 2009 and Year 2035. To be conservative, this growth rate was increased to 10% for this analysis.

In addition, traffic from the proposed Travelers Station project was incorporated into the Cumulative Without Project volumes. This project – a gasoline station with convenience market – is located on Searle Road south of SR 129, southwest of the US 101 / SR 129 interchange.

4.2 Cumulative Without Project Traffic Conditions

4.2.1 Vehicle Circulation

Exhibit 4A summarizes the levels of service of the study intersections under Cumulative Without Project conditions. Recommended intersection improvements are summarized on **Exhibit 4B**. **Appendix E** contains the level of service calculations under Cumulative Without Project conditions.

Most of the study intersections under Cumulative Without Project conditions would continue to operate at or better than their respective level of service standards. However, the following intersection would operate at deficient levels of service under Cumulative Plus Project conditions:

1. Intersection 1: US 101 Southbound Ramps / State Route 129 – Overall LOS E (AM, PM)
   - Recommendation to improve operations: Implement one of the following improvement alternatives:
     1. Alternative 1 – Signalize the intersection.
     2. Alternative 2 – Convert intersection into a roundabout.
   - Operations after Implementation of Improvement:
     - Signal: Overall LOS C (AM), LOS B (PM).
     - Roundabout: Overall LOS A (AM, PM).

4.2.2 Pedestrian Circulation

4.2.3 Due to the rural location of the project and minimal amount of anticipated pedestrian traffic, sidewalks will not be required in the project vicinity.

4.2.4 Bicycle Circulation

According to the *San Benito County Bicycle and Pedestrian Master Plan,* Alta Planning + Design, December 2009, no new bicycle infrastructure improvements are proposed in the study area.

4.2.5 Transit Circulation

There are no planned expansions to bus service in the study area.

5 CUMULATIVE PLUS PROJECT CONDITIONS

This section describes anticipated traffic conditions with the addition of Project traffic to Cumulative Without Project traffic volumes.

5.1 Derivation of Cumulative Plus Project Condition Traffic Volumes

The project trip assignment depicted on **Exhibit 7** was combined with the Cumulative Without Project volumes (**Exhibit 9**) to forecast Cumulative Plus Project volumes, which are depicted on **Exhibit 10**.

5.2 Cumulative Plus Project Traffic Conditions

5.2.1 Vehicle Circulation

Cumulative Plus Project AM, PM and Friday PM intersection levels of service are summarized on **Exhibit 4A**. Recommended intersection improvements are summarized on **Exhibit 4B**. The LOS calculation sheets for Cumulative Plus Project traffic conditions can be found in **Appendix F**.

Most of the study intersections under Cumulative Plus Project conditions would continue to operate at or better than their respective level of service standards. However, the following intersection would operate at deficient levels of service under Cumulative Plus Project conditions:

1. Intersection 2: US 101 Southbound Ramps / State Route 129 – Overall LOS E (AM, PM)

Below is a discussion of the recommended improvements at the study intersections operating with deficient operations under Cumulative Plus Project conditions. These improvements would be necessary to improve operations to acceptable or better level of service.

1. <u>Intersection 1 – US 101 Southbound Ramps / State Route 129:</u>

   The overall level of service would be a deficient LOS E (AM and PM), with no change from the deficient LOS E (AM and PM) without the Project. Overall intersection delay would increase by 0.2 seconds (AM) and 0.3 seconds (PM) with the project, compared to without project trips. The Project would add 4 (AM) and 7 new trips (PM) to the intersection. This intersection would also meet the Caltrans peak hour signal warrant. (See **Appendix G** for the warrant.) Per the significance criteria in Section 1.6, the Project would <u>not</u> result in a significant local adverse effect at this intersection. However, the project should share in the cost of implementing one of the following alternative improvements at this intersection:

   1. Alternative 1 – Signalize the intersection.
   2. Alternative 2 – Convert intersection into a roundabout.

- Operations after Implementation of Improvement:
  - Signal: Overall LOS C (AM), LOS B (PM).
  - Roundabout: Overall LOS A (AM, PM).
- Responsibility for Improvement: Payment of fair-share contribution towards cost of implementing improvement. Based on the number of trips added to this intersection during the AM and PM peak hours, the project's fair-share contribution would be 1.3% of the total cost of the improvement.
- Determination of Improvement Alternative: Prior to implementation, an Intersection Control Evaluation (ICE) should be completed, per Caltrans requirements. The results of this evaluation shall determine which of the improvement alternatives – signal or roundabout – is ultimately implemented at this intersection.

7.2.2 Pedestrian Circulation

The Project will add minimal pedestrian activity above levels expected under Cumulative Without Project conditions. Therefore, the Project would not represent a significant contribution to Cumulative Plus Project local adverse effects to pedestrian circulation.

7.2.3 Bicycle Circulation

The Project will add minimal bicycle activity above levels expected under Cumulative Without Project conditions. Therefore, the Project would not represent a significant contribution to Cumulative Plus Project local adverse effects to bicycle circulation.

7.2.4 Transit Circulation

The Project will add minimal transit demand above levels expected under Cumulative Plus Project conditions. The Project would therefore not represent a significant contribution to Cumulative Plus Project transit demand.

9 SITE ACCESS AND INTERNAL CIRCULATION

This section summarizes the site access and internal circulation analysis, including operations of the Project driveway operations.

9.1 Site Access

9.1.1 Project Access Operations

The project site plan depicted on **Exhibit 2** proposes both a primary driveway on San Juan Highway and an emergency driveway on Anzar Road. All project traffic would utilize the primary driveway for access. As the name implies, the emergency driveway on Anzar Road would only be used for emergency access or site evaluations, hence it would only carry traffic on extremely rare occasions.

Exhibit 4A summarizes the operations of the project driveway, which will operate at LOS C or better through Cumulative Plus Project conditions. These operations are better than the San Benito County LOS D standard.

A westbound left turn lane is proposed on San Juan Highway at the primary project driveway. This turn lane would have a length of approximately 90 feet, which is adequate for the anticipated demand.

9.1.2 Location of Project Access

The project driveway is located approximately 760 feet east of the US 101 Northbound ramps at SR 129. This exceeds the Caltrans minimum distance of 400 feet and preferred minimum distance of 500 feet, as referenced from the Caltrans *Highway Design Manual.* The driveway spacing from the ramps is adequate.

9.1.3 Project Access Sight Distance

The available vehicle sight distance at the project driveway on San Juan Highway was evaluated. There is no signed speed limit on San Juan Highway. A speed limit of 55 mph and design speed of 60 mph is assumed for this roadway.

Sight distance standards for intersections and driveways in California are taken from the Caltrans *Highway Design Manual*. Private driveways – such as the project primary driveway – must only meet the stopping sight distance standards. For a design speed of 60 mph, Caltrans sight distance standards require a minimum stopping sight distance of 580 feet.

Exhibit 11 summarizes the available sight distance at the project driveway. **Appendix H** contains the sight distance calculations.

At the project driveway, the available sight distance towards the east is 580 feet, which extends into the curve at the San Juan Highway / Y Road intersection. The available sight distance meets the sight distance standard.

To the west, the available sight distance at the primary project driveway is 760 feet, which exceeds the sight distance standard. There is an electrical transmission tower located on the south of San Juan Highway west of the driveway. This tower is set bac about 38 feet from the edge of the eastbound travel way and is outside the 580-foot sight line. The tower does not encroach into the sight lines at the project primary driveway.

Any fencing or other sight distance obstruction proposed to be added along the project's site should be located outside the 580-foot sight line.

9.2 Internal Circulation

The internal street circulation will be more than adequate for the projected traffic demand.

All of the project site will be accessible from the project primary driveway on San Juan Highway. The majority of the project site will be either outdoor fields or greenhouse buildings, the latter being located at the center of the project site. All shipping, handling and truck loading areas will be located immediately east of the greenhouses, surrounded by 67 parking spaces for employees and guests. The equipment and storage yard will be located in the middle of the cluster of greenhouses. The consolidation of the project buildings near the center of the project site will minimize the on-site vehicle circulation once vehicles have parked.

The proposed project access road is 24 feet in width. This will be adequate for the anticipated traffic demand on the roadway, including the unlikely occurrence of two trucks passing by one another. This width will also operate acceptably opposite the various parking stalls adjacent to the greenhouses, as 24 feet is a standard aisle width within typical parking lots. It is recommended that truck turning templates be prepared to evaluate if trucks can adequately maneuver the reverse curves south of San Juan Highway. If they cannot, it is recommended that the project access road be widened as necessary.

There is an existing utility pole located within the proposed driveway for the truck loading area. It is unclear from the site plan if trucks backed into all positions in the loading area can adequately maneuver around the pole. It is recommended that truck turning templates be used to evaluate if trucks can adequately maneuver around the utility pole. If trucks cannot, it is recommended that the utility pole be relocated away from the loading area driveway.

9.3 Project Frontage Improvements

The project proposes to add a westbound left turn lane on San Juan Highway at the project driveway. This left turn lane will extend eastward approximately 90 feet to the adjacent Anzar High School Driveway (North). The addition of this left turn lane will require the dedication of additional property and new pavement along the project site, both east and west of the proposed project driveway.

It is recommended that this left turn lane be striped as a two-way left turn lane, similar to the existing two-way left turn lane on San Juan Highway east of Anzar High School

Driveway (North). In addition, it is recommended that the two-way left turn lane be extended westward to the end of the existing westbound left turn lane at the US 101 Northbound Ramps intersection. This would then serve the existing building complex located on the northeast quadrant of the US 101 / State Route 129 interchange.

10 PROJECT VEHICLE MILES TRAVELED

This section summarizes the calculation of the total vehicle miles traveled by Project traffic.

As described in Section 1.5.1 of this report, SB 743 is changing the CEQA Guidelines statewide beginning on July 1, 2020. The changes to CEQA guidelines will replace congestion-based metrics, such as auto delay and level of service, with Vehicle Miles Traveled (VMT) as the basis for determining significant impacts under the California Environmental Quality Act (CEQA), unless the guidelines provide specific exceptions..

San Benito County has not established a VMT standard nor significance criteria for VMT evaluations in the county. As a result, this analysis uses state guidance with regards to analysis and significance criteria.

The publication *Technical Advisory on Evaluating Transportation Impacts in CEQA* ("TAETI-CEQA"), State of California Governor's Office of Planning and Research, December 2018, discusses VMT evaluations for residential, commercial and office projects. As stated in this publication, projects generating 110 of fewer daily trips could be considered to not result in a significant impact on traffic. The project, as summarized on **Exhibit 5**, would generate only 62 daily trips. Therefore, the project would not represent a significant transportation impact under CEQA.

11 SUMMARY OF IMPROVEMENT RESPONSIBILITIES

11.1 Summary of Project Responsibilities

1. Pay the San Benito County Regional Transportation Impact Mitigation Fee (TIMF). San Benito County will determine the Project's TIMF fee. The project will not impact any locations that will be funded by the TIMF. Also, the Southbound US 101 Ramps / State Route 129 intersection is the intersection of two state highways and serves regional traffic between US 101 and western San Benito County as well as southern Santa Cruz County. This intersection should be included in the TIMF program. The project's fair share contribution to the improvements at the Southbound US 101 Ramps / State Route 129 intersection described in Item 2 below should be credited toward the project's TIMF.
2. The project will be responsible for 1.3% of the cost to convert the US 101 Southbound Ramps / State Route 129 intersection into either a traffic signal or a roundabout. An Intersection Control Evaluation (ICE) analysis will be required prior to any conversion, per Caltrans policy.
3. Any fencing added along the project's San Juan Highway frontage should be located outside the 580-foot sight line.
4. Prepare truck turning templates to evaluate if trucks can adequately maneuver around the following on-site locations:
    a. Reverse curves on project access road south of San Juan Highway. If trucks cannot maneuver adequately through the curves, it is recommended that the project access road be modified as necessary.
    b. Utility pole located north of the shipping and staging area. If trucks cannot maneuver around it, it is recommended that the utility pole be relocated or the driveway modified as necessary.
5. Instead of a standard westbound San Juan Highway left turn lane (as proposed on the project site plan), construct a two-way left turn lane between the project driveway and Anzar High School Driveway (north).

11.2 Summary of San Benito County Responsibilities

None Required.

11.3 Summary of Caltrans Responsibilities

None Required.

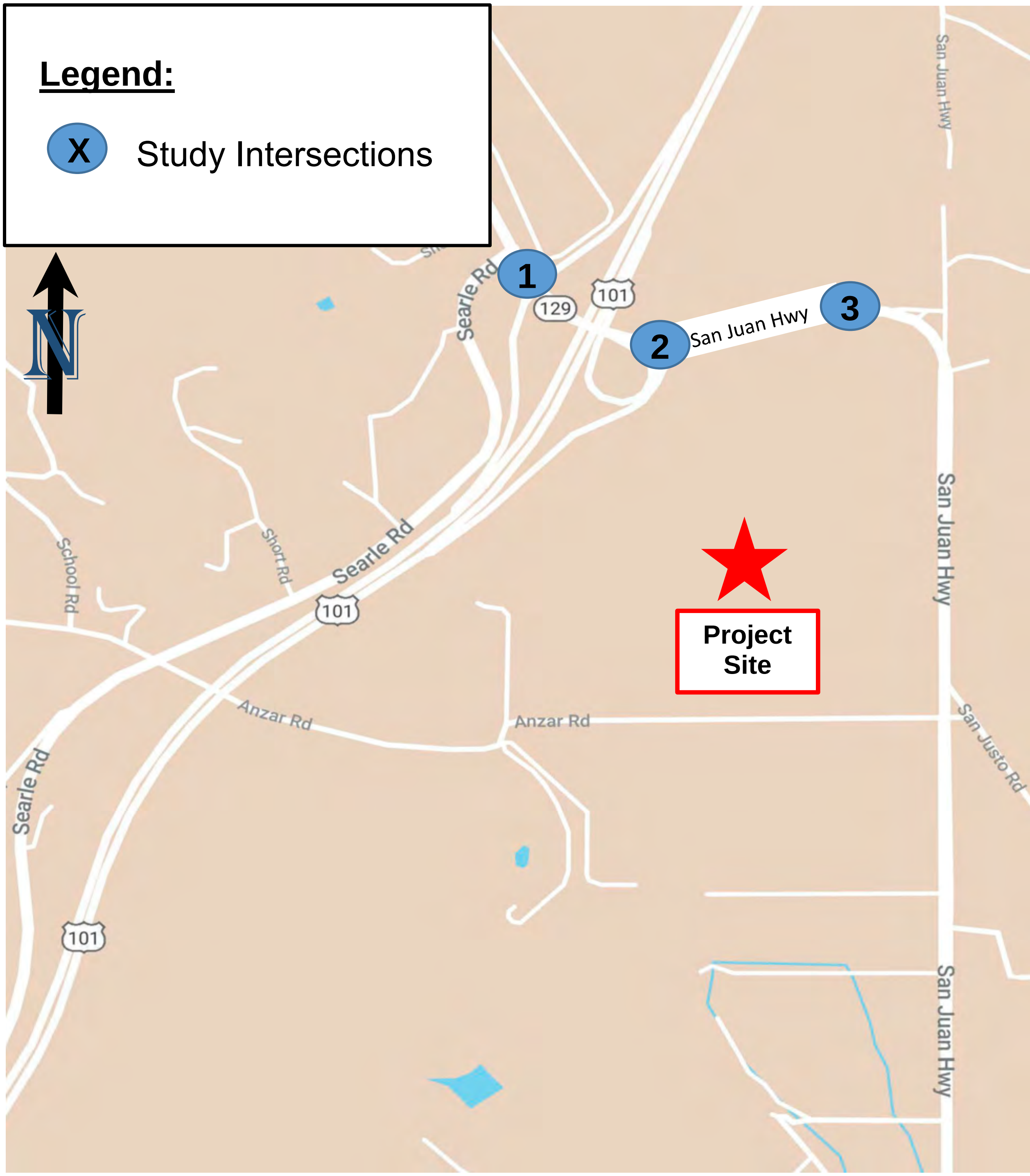
12 REFERENCES

12.1 List of References

1. *2010 Highway Capacity Manual,* Transportation Research Board, 2010.
2. *2035 San Benito County General Plan Update Revised Draft Environmental Impact Report,* EMC Planning Group, March 16, 2015.
3. *Guide for the Preparation of Traffic Impact Studies,* California Department of Transportation (Caltrans), December 2002.
4. *Highway Design Manual,* California Department of Transportation, Updated March 2020.
5. *San Benito County Bicycle and Pedestrian Master Plan,* Alta Planning + Design, December 2009.
6. San Benito County Express web site, http://www.sanbenitocountyexpress.org/. Accessed June 16, 2020.
7. *Regional Transportation Impact Mitigation Fee Nexus Study,* Michael Baker International, January 2016.
8. *Kawahara Nursery Traffic Analysis Report,* Higgins Associates, April 14, 2020.
9. *Trip Generation Manual,* 10th Edition, Institute of Transportation Engineers, 2017.
10. *Technical Advisory on Evaluating Transportation Impacts in CEQA,* State of California Governor's Office of Planning and Research, December 2018.

12.2 List of Contacts

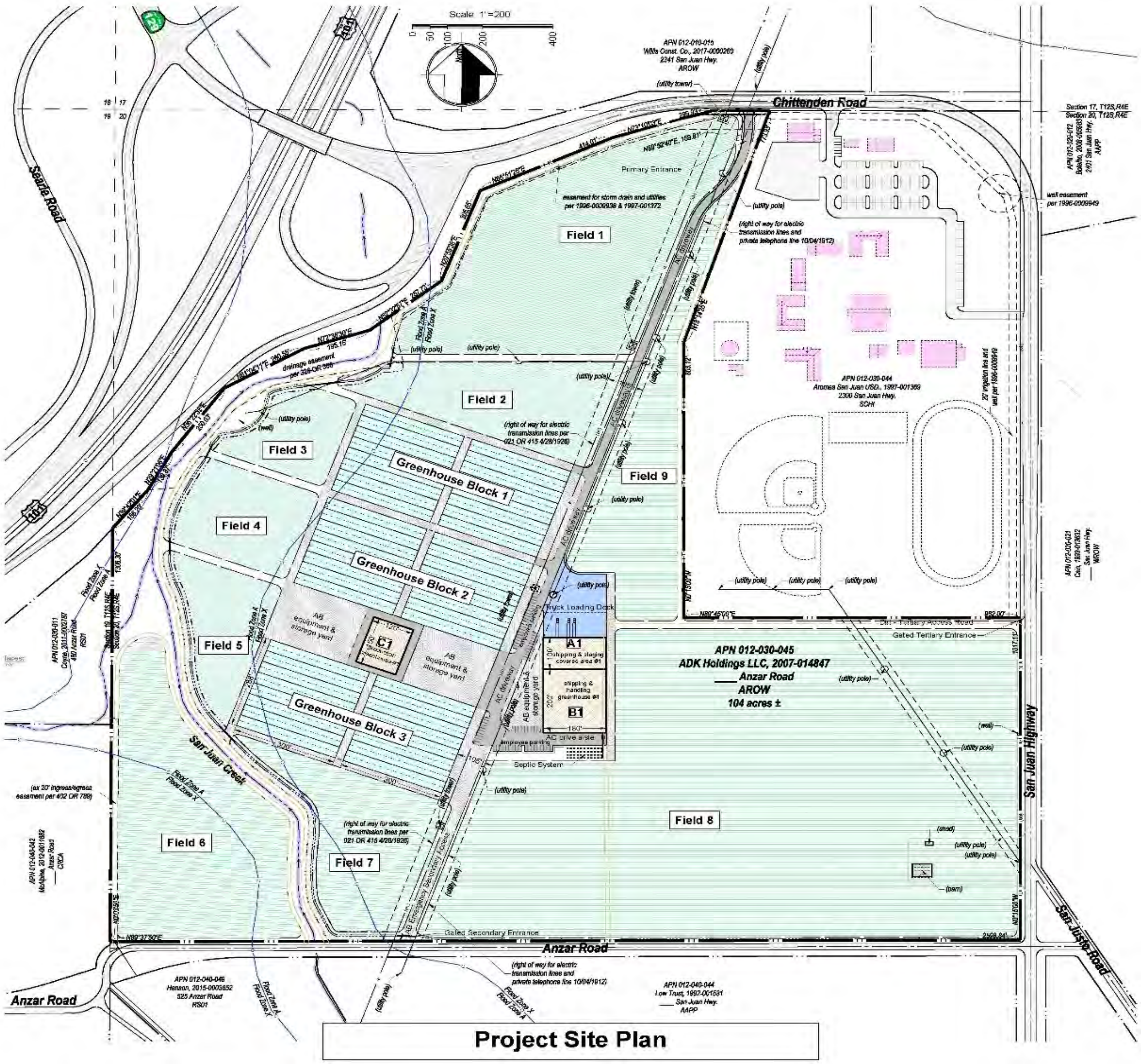
1. Allen Andrade, MH Engineering, Morgan Hill, California.
2. Arielle Goodspeed, San Benito County Resource Management Agency, Hollister, California.
3. Larry Willis, Willis Construction, San Juan Bautista, California.



Basemap Source: Google Maps, 2020.

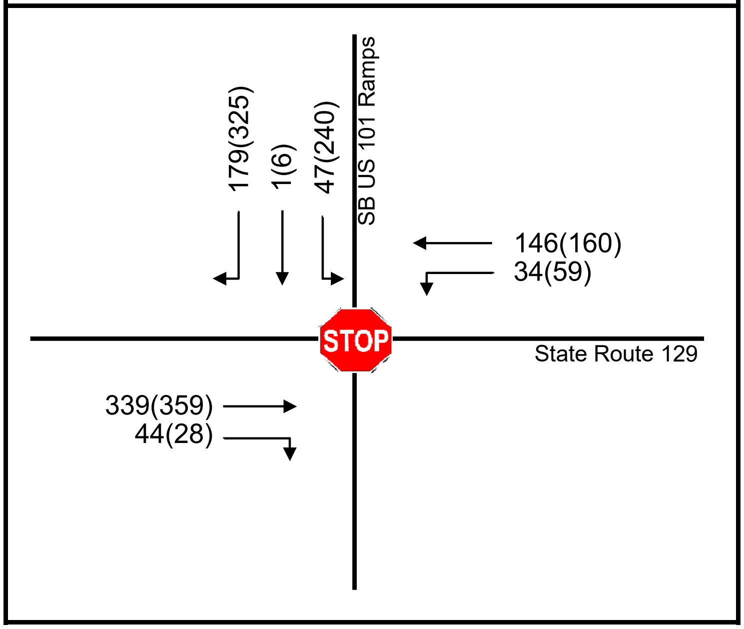
Keith Higgins
Traffic Engineer

Exhibit 1
Project Location Map
and Study Area

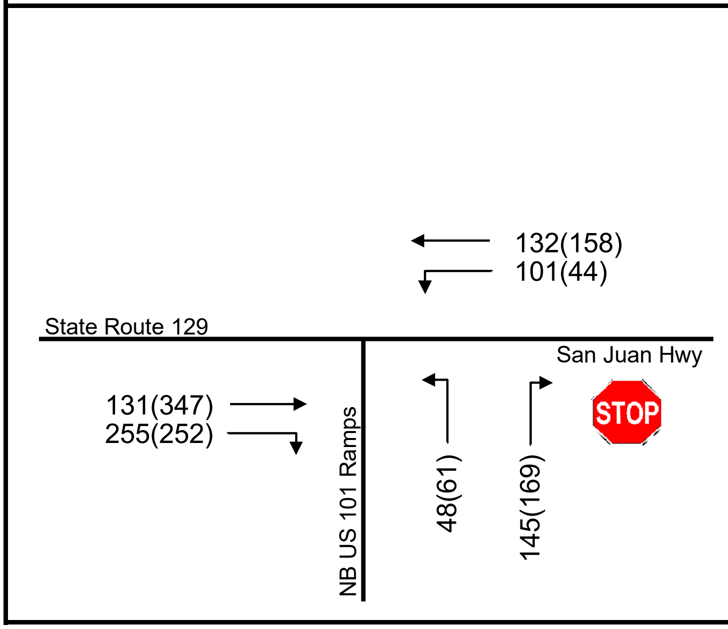


Source: MH Engineering, September 2019.

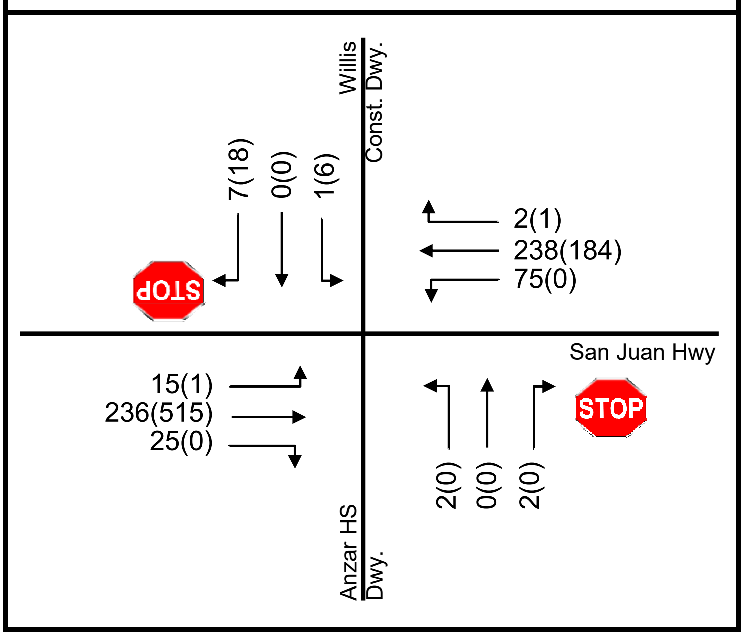
1. Southbound US 101 Ramps / State Route 129



2. Northbound US 101 Ramps / State Route 129 - San Juan Highway



3. Anzar High School Driveway (North) - Willis Construction Driveway / San Juan Highway



4. Project Driveway / San Juan Highway

N/A
(Intersection does not exist under this scenario)

Keith Higgins
Traffic Engineer

Exhibit 3
Existing Conditions
AM & PM Peak Hour Volumes

#	N-S Street	E-W Street	Jurisdiction	Existing Lane Configuration	Existing Intersection Control	LOS Standard	Peak Hour	Existing Conditions Delay	Existing Conditions LOS	Existing Plus Project Conditions Delay	Existing Plus Project Conditions LOS	Cumulative Without Project Conditions Delay	Cumulative Without Project Conditions LOS	Cumulative Plus Project Conditions Delay	Cumulative Plus Project Conditions LOS
1	Southbound US 101 Ramps	State Route 129	Caltrans	SB 1-L/T, 1-R EB 1-T, 1-R WB 1-L, 1-T	All-Way Stop	D	AM	14.8	B	14.8	B	40.3	**E**	40.5	**E**
							PM	18.0	C	18.1	C	43.7	**E**	44.0	**E**
					With Improvement Alternative 1 (Signal)		*AM*					*20.4*	*C*	*20.4*	*C*
							PM					*19.7*	*B*	*19.8*	*B*
					Alternative 2 (Roundabout)		*AM*					*8.5*	*A*	*8.6*	*A*
							PM					*8.2*	*A*	*8.3*	*A*
2	Northbound US 101 Ramps	State Route 129 - San Juan Highway	Caltrans	NB 1-L/R EB 1-T, 1-R WB 1-L, 1-T	One-Way Stop	D	AM	12.8	B	12.9	B	22.6	C	23.1	C
							PM	15.4	C	15.7	C	26.9	D	28.3	D
3	Anzar HS Driveway (North) - Willis Construction Driveway	San Juan Highway	San Benito County	NB 1-L/T/R SB 1-L/T/R EB 1-L/T/R WB 1-L, 1-T/R	Two-Way Stop	D/D	AM	13.5/11.4	B/B	13.6/11.4	B/B	14.7/11.9	B/B	14.7/11.9	B/B
							PM	0.0/11.5	A/B	0.0/11.6	A/B	0.0/12.4	A/B	0.0/12.4	A/B
					With Improvement		*AM*								
							PM								
4	Project Driveway	San Juan Highway	San Benito County	N/A	N/A	D	AM	N/A		11.7	B	N/A		12.5	B
							PM			14.9	B			16.6	C

Notes:

1. L, T, R = Left, Through, Right.
2. NB, SB, EB, WB = Left, Through, Right, Northbound, Southbound, Eastbound, Westbound.
3. * = Delay exceeds 3000 seconds
4. Overall and side-street level of service standard for San Benito County is LOS D. Overall Caltrans level of service standard is the transition between LOS C and LOS D, abbreviated as "LOS C-D". However, due to San Benito County General Plan Policy C-1.12, the San Benito County level of service standard is also applied to Caltrans facilities.
5. N/A = Not Applicable. This intesection does not exist under this scenario.
6. For signalized and all-way stop intersection analysis, delay is average overall delay in seconds per vehicle (sec/veh). For one- and two-way stop intersections, delays are side-street approach operations, also in seconds per vehicle (sec/veh).
7. Analysis performed using 2010 Highway Capacity Manual methodologies.
8. Level of service calculations can be found in **Appendices C - F.**
9. LOS highlighted in **red** indicates intersection operating below level of service standard.
10. LOS with a thick black border represents a significant local advers effect. Resulting levels of service wi recommended improvements noted under "With Improvements". A list of applied improvements can be found on **Exhibit 4B**.

Keith Higgins
Traffic Engineer

Exhibit 4A
Intersection
Levels of Service

	N-S Street	E-W Street	Jurisdiction	Existing Conditions	Existing Plus Project Conditions	Cumulative Without Project Conditions	Cumulative Plus Project Conditions
1	Southbound US 101 Ramps	State Route 129	Caltrans	None Required	None Required	1. Signalize Intersection; OR 2. Convert to Roundabout	1. Signalize Intersection; OR 2. Convert to Roundabout
2	Northbound US 101 Ramps	State Route 129 - San Juan Highway	Caltrans	None Required	None Required	None Required	None Required
3	Anzar HS Driveway (North) - Willis Construction Driveway	San Juan Highway	San Benito County	None Required	None Required	None Required	None Required
4	Project Driveway	San Juan Highway	San Benito County	N/A	None Required	N/A	None Required

Notes:

1. L, T, R = Left, Through, Right.
2. NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound.
3. N/A = Not Applicable. This intesection does not exist under this scenario.

Keith Higgins
Traffic Engineer

Exhibit 4B
Recommended
Intersection Improvements

PROPOSED USE		UNITS	DAILY TRIPS	WEEEKDAY AM PEAK HOUR PEAK HOUR TRIPS	% OF ADT	TRIPS IN	TRIPS OUT	PM PEAK HOUR PEAK HOUR TRIPS	% OF ADT	TRIPS IN	TRIPS OUT
A. Employees		15	46	8	17%	6	2	17	37%	2	15
B. Trucks											
	2-axle	5	10	2	20%	0	2	2	20%	2	0
	3-axle	0	0	0		0	0	0		0	0
	Subtotal	5	10	2	20%	0	2	2	20%	2	0
C. Deliveries		3	6	2	33%	1	1	2	33%	1	1
D. Total			**62**	**12**		**7**	**5**	**21**		**5**	**16**

Notes:

General:

1. Hours of Operation: 7:00 AM - 4:00 PM
2. A trip is defined here as a journey from Point A to Point B.

Employees:

3. Number of Employees: 15 people
4. Employee Vehicle Occupancy: 1 employee/vehicle (estimated)
5. Employee Daily Trip Rate: 3.05 trips/employee (per ITE *Trip Generation Manual* Land Use 110 General Light Industrial)
6. Percentage of Employees arriving/departing during peak hours (assumption):
   AM: 40% in, 0% out
   PM: 0% in, 100% out
7. Percentage of Employees being dropped off by non-employees (assumption):
   AM: 10%
   PM: 10%

Trucks:

8. Trucks transport grown plants to and from Morgan Hill facility.
9. Number of Daily Trucks: 5 trucks
   Number of 2-axle: 5 trucks
   Number or 3-axle: 0 trucks
10. One Truck = 2 trips
11. One 3-axle Truck = 2 Passenger Cars
12. Truck Trips occurring in each peak hour (assumption): AM: 20%
    PM: 20%
13. Truck Directional Split: AM: In: 0%
    Out: 100%
    PM: In: 100%
    Out: 0%

Deliveries:

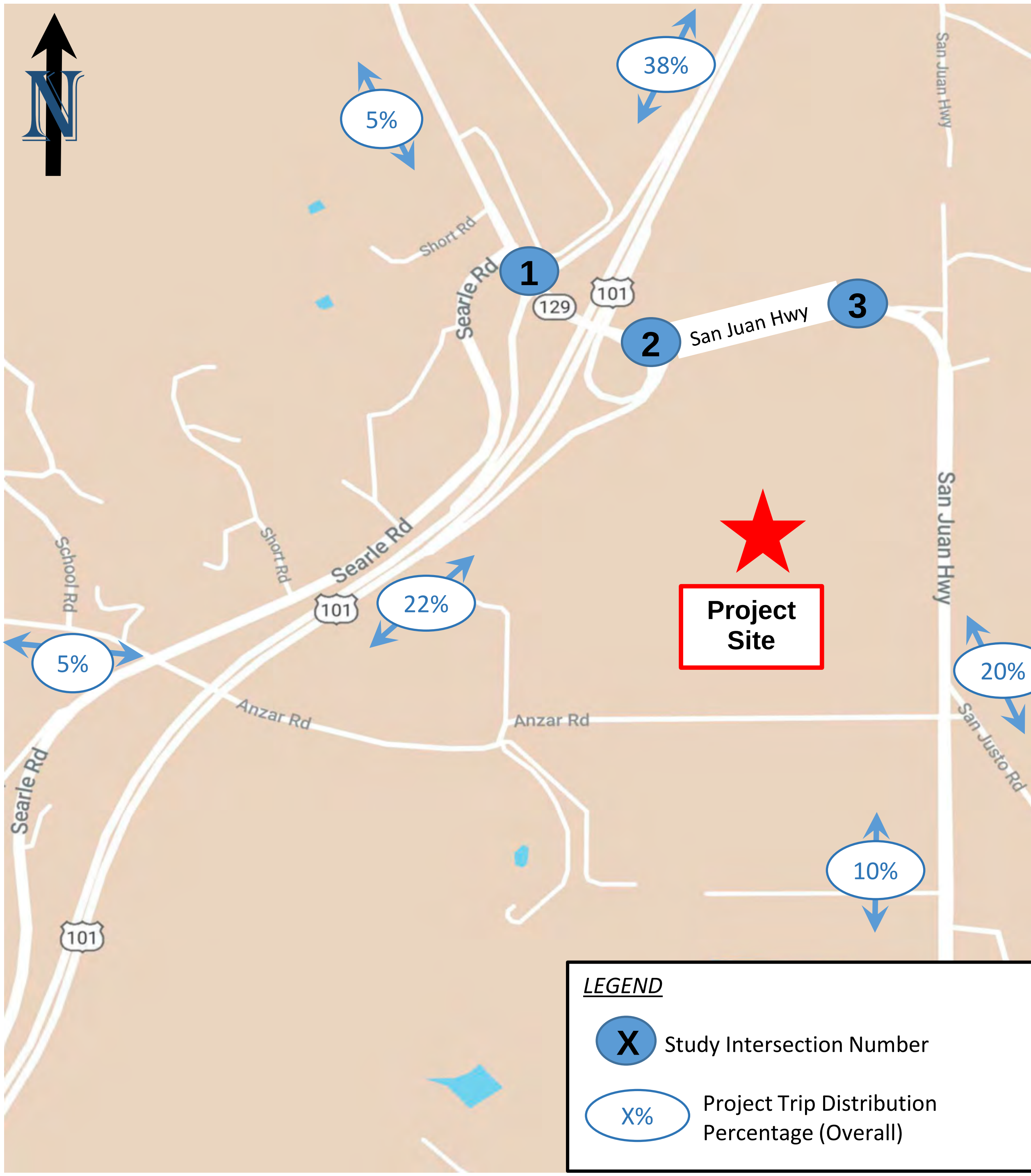
14. Deliveries include US Mail, overnight deliveries, etc.
15. Number of Daily Deliveries to site (assumed): 3 deliveries
16. One Delivery = 2 trips
17. Delivery Trips occurring in each peak hour (assumption): AM: 33%
    PM: 33%
18. Delivery Directional Split: AM: In: 50%
    Out: 50%
    PM: In: 50%
    Out: 50%

Visitors:

19. Number of Daily Visitors (assumed): 0 visitors

Keith Higgins
Traffic Engineer

Exhibit 5
Project Trip Generation

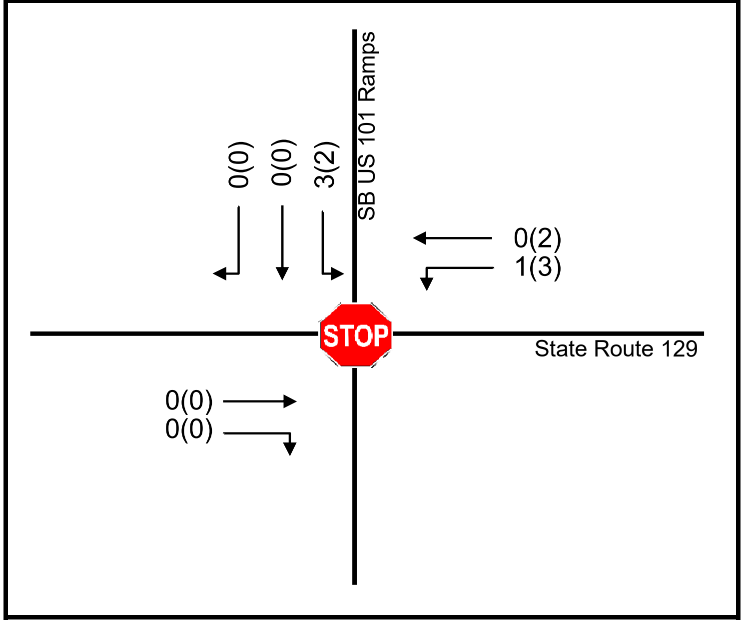


Basemap Source: Google Maps, 2020.

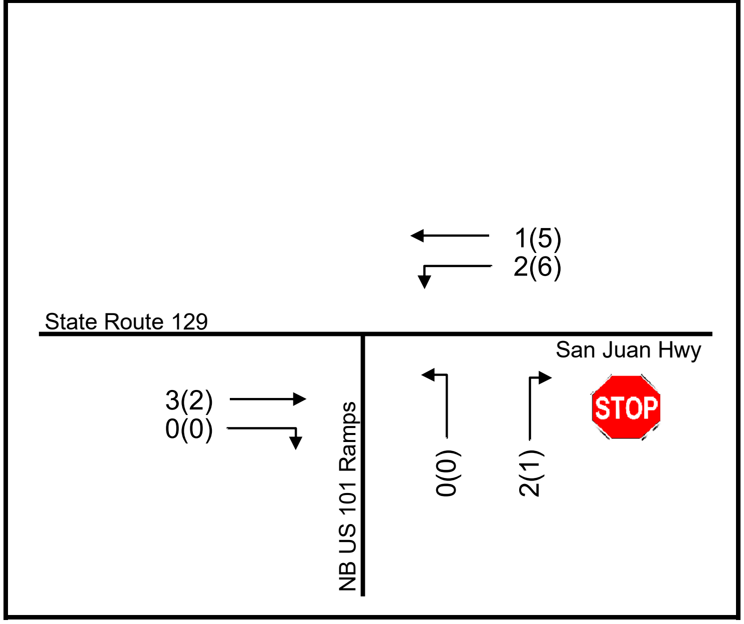
Keith Higgins
Traffic Engineer

Exhibit 6
Project Trip Distribution

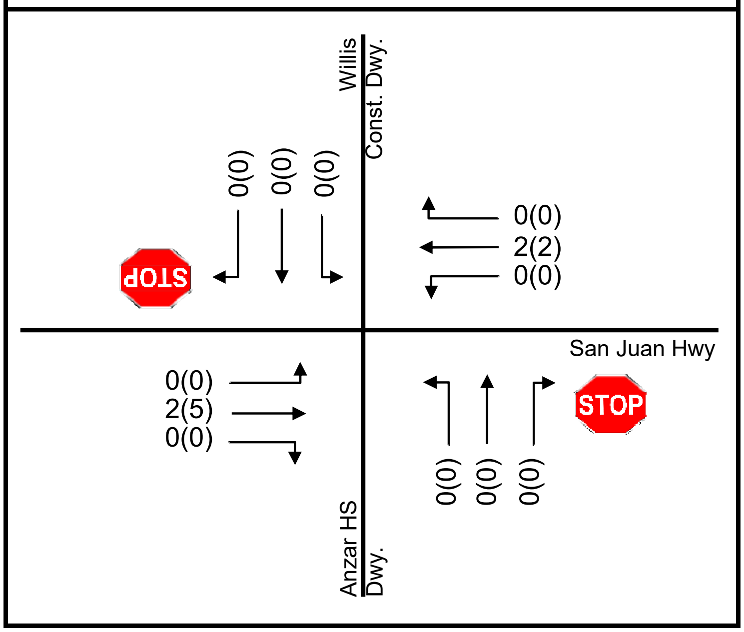
1. Southbound US 101 Ramps / State Route 129



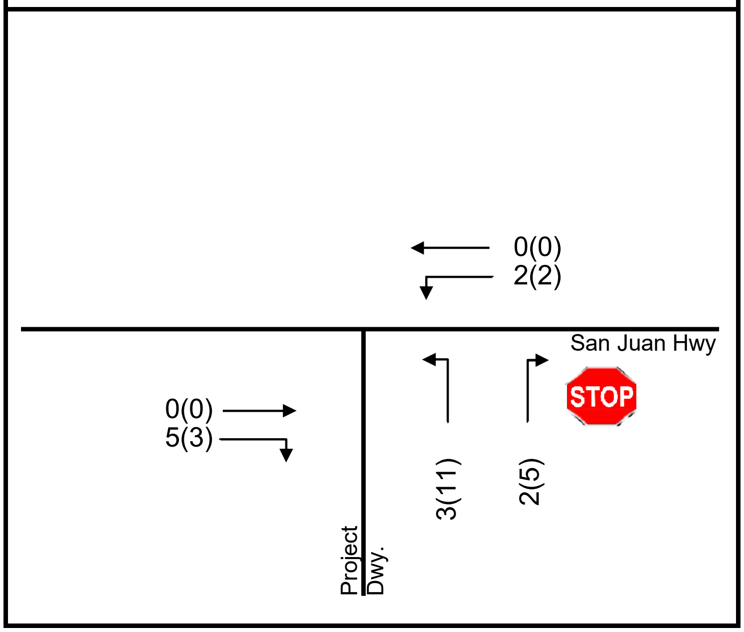
2. Northbound US 101 Ramps / State Route 129 - San Juan Highway



3. Anzar High School Driveway (North) - Willis Construction Driveway / San Juan Highway



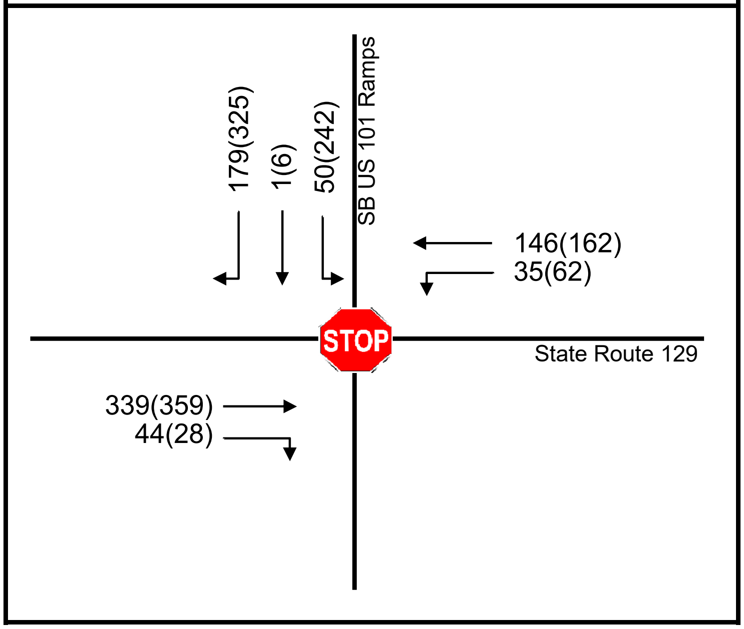
4. Project Driveway / San Juan Highway



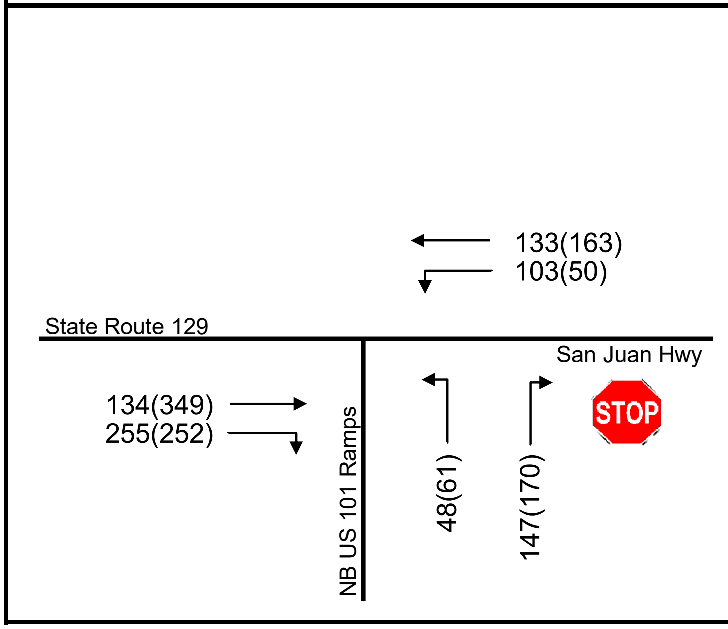
Keith Higgins
Traffic Engineer

Exhibit 7
Project Trip Assignment
AM & PM Peak Hour Volumes

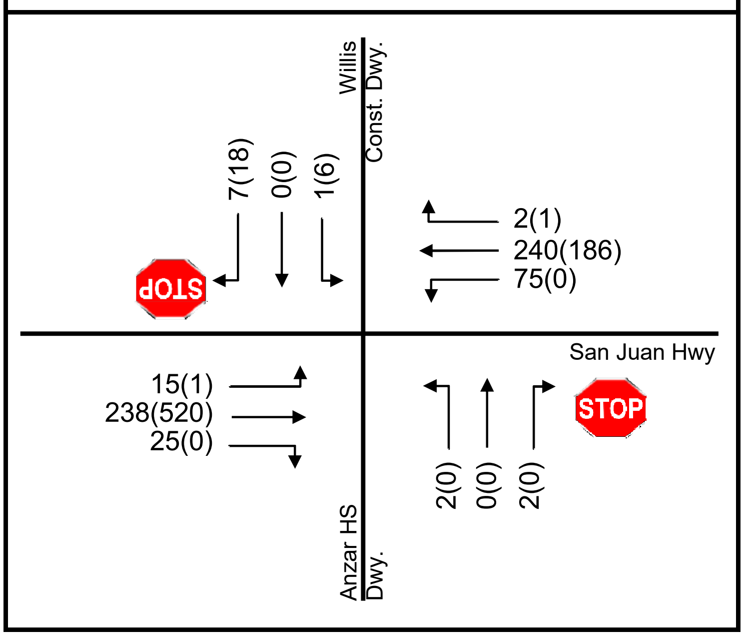
1. Southbound US 101 Ramps / State Route 129



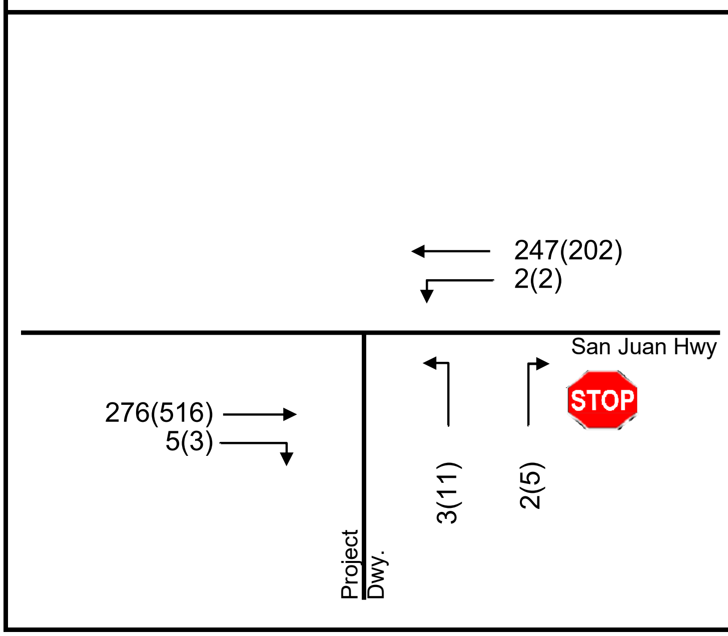
2. Northbound US 101 Ramps / State Route 129 - San Juan Highway



3. Anzar High School Driveway (North) - Willis Construction Driveway / San Juan Highway



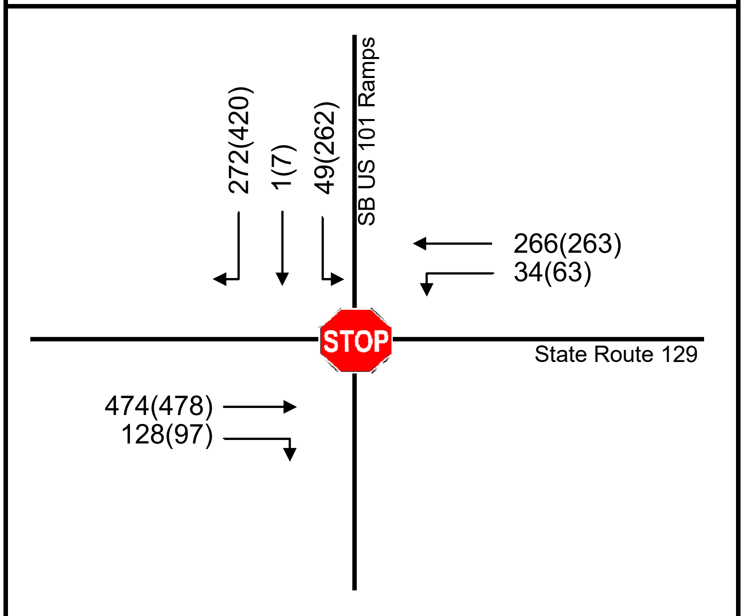
4. Project Driveway / San Juan Highway



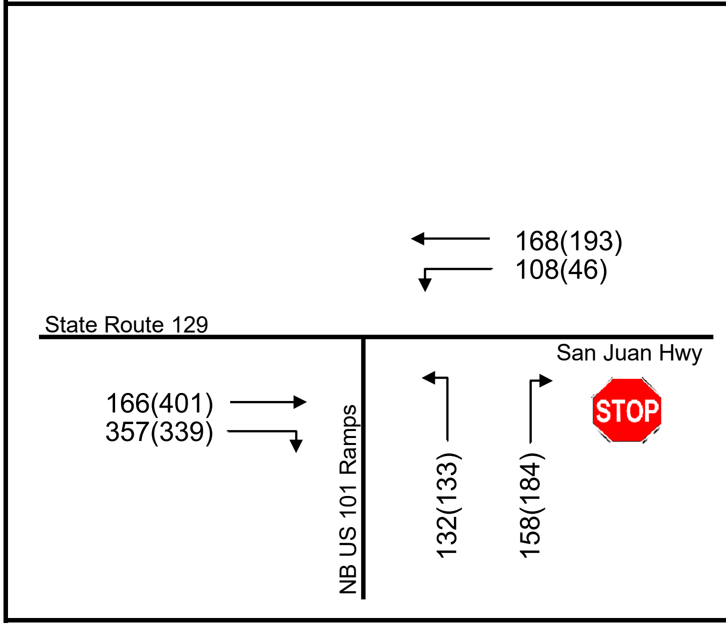
Keith Higgins
Traffic Engineer

Exhibit 8
Existing Plus Project Conditions
AM & PM Peak Hour Volumes

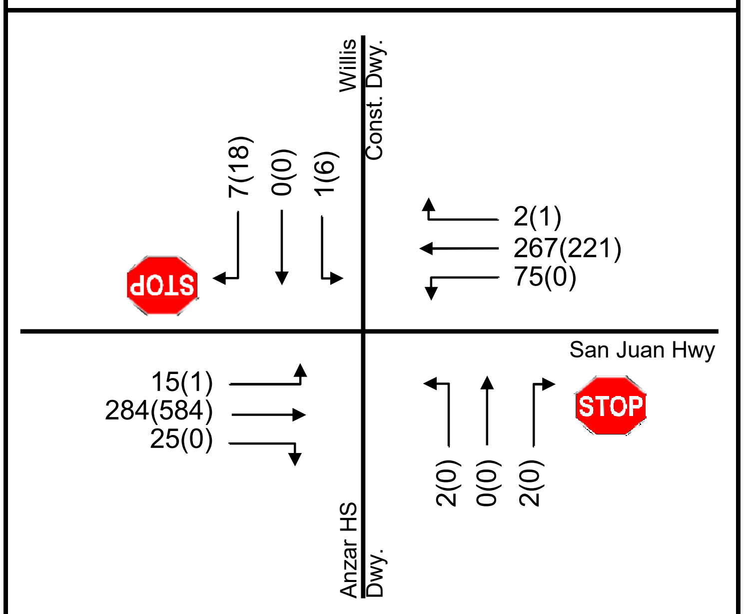
1. Southbound US 101 Ramps / State Route 129



2. Northbound US 101 Ramps / State Route 129 - San Juan Highway



3. Anzar High School Driveway (North) - Willis Construction Driveway / San Juan Highway



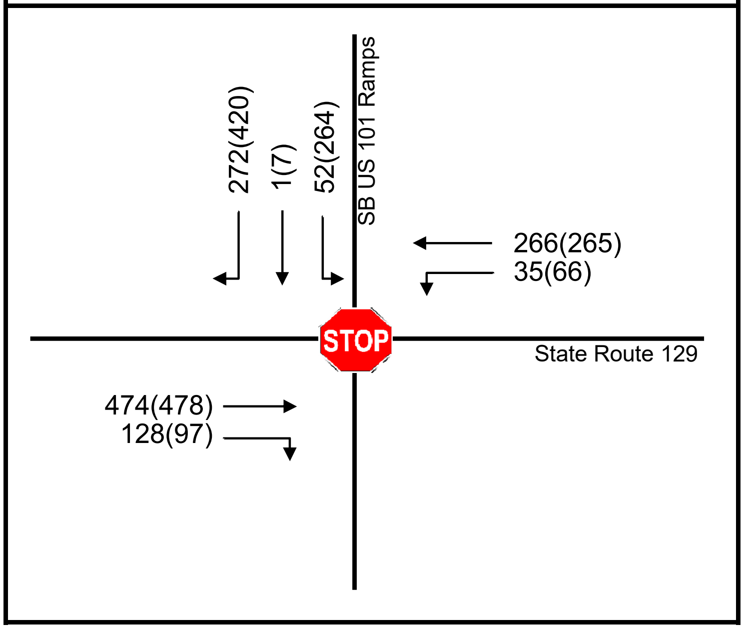
4. Project Driveway / San Juan Highway

N/A
(Intersection does not exist under this scenario)

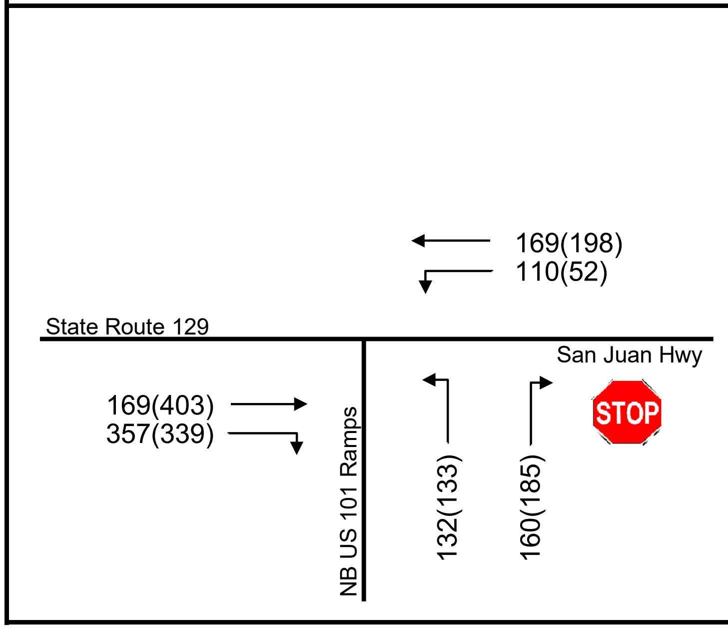
Keith Higgins
Traffic Engineer

Exhibit 9
Cumulative Without Project Conditions
AM & PM Peak Hour Volumes

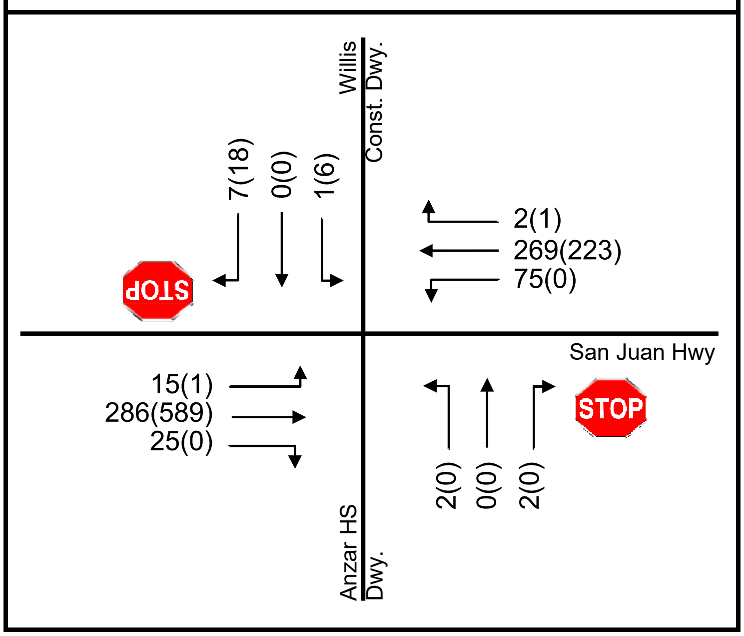
1. Southbound US 101 Ramps / State Route 129



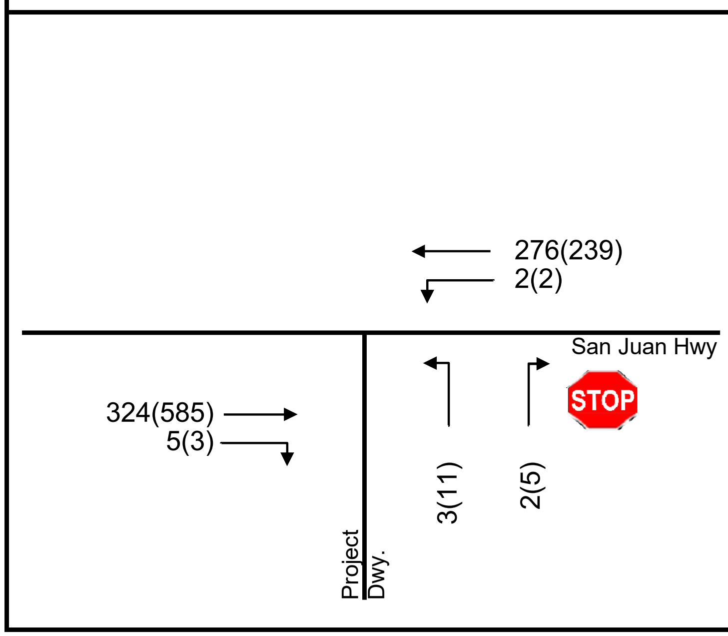
2. Northbound US 101 Ramps / State Route 129 - San Juan Highway



3. Anzar High School Driveway (North) - Willis Construction Driveway / San Juan Highway



4. Project Driveway / San Juan Highway



Keith Higgins
Traffic Engineer

Exhibit 10
Cumulative Plus Project Conditions
AM & PM Peak Hour Volumes

N-S Street	E-W Street	Jurisdiction	Mainline Speed Limit	Direction	Sight Distance Standards (feet)		Available Sight Distance (feet)	Limiting Factors
					Corner	*Stopping*		
Project Driveway (North)	San Juan Highway	San Benito County	55 mph	To/From East	N/A	580	760	Roadway Curvature
				To/From West		580	580	Adjacent Intersection

Notes:

1. Mainline Speed Limit refers to speed limit on San Juan Highway. As there is no signed speed limit on San Juan Highway, the speed limit is presumed as 55 miles per hour (mph).
2. Sight Distance Standards are the two Caltrans sight distance standards -- corner and stopping -- as documented in the *Highway Design Manual,* 6th Edition.
   At a minimum, the stopping sight distance standard must be met.
3. N/A = Not Applicable. The corner sight distance standard does not apply to driveways, per Caltrans requirements.
4. Sight distance calculations can be found in **Appendix H**.
5. Available sight distances highlighted in **red** are shorter than the applicable standard.
6. Limiting Factor are restricting factors on available sight distance.

Keith Higgins
Traffic Engineer

Exhibit 11
Sight Distance Evaluation
at Project Driveway

Appendix A

Level of Service

Descriptions

APPENDIX A1

LEVEL OF SERVICE (LOS) DESCRIPTION
UNSIGNALIZED INTERSECTIONS WITH ALL-WAY STOP CONTROL (AWSC)

AWSC intersections require every vehicle to stop at the intersection before proceeding. Since each driver must stop, the judgement as to whether to proceed into the intersection is a function of traffic conditions on the other approaches. While giving priority to the driver on the right is a recognized rule in some areas, it is not a good descriptor of actual intersection operations. What happens is the development of a consensus of right-of-way that alternates between the drivers on the intersection approaches, a consensus that depends primarily on the intersection geometry and the arrival patterns at the stop line.

If no traffic is present on the other approaches, a driver can proceed immediately after the stop is made. If there is traffic on one or more of the other approaches, a driver proceeds only after determining that there are no vehicles currently in the intersection and that it is the driver's turn to proceed. Since no traffic signal controls the stream movement or allocates the right-of-way to each conflicting stream, the rate of departure is controlled by the interaction between the traffic streams themselves.

For AWSC intersections, the average control delay (in seconds per vehicle) is used as the primary measure of performance. Control delay is the increased time of travel for a vehicle approaching and passing through an AWSC intersection, compared with a free-flow vehicle if it were not required to slow down or stop at the intersection.

The criteria for AWSC intersections have different threshold values than do those for signalized intersections, primarily because drivers expect different levels of performance from different kinds of traffic control devices (i.e., traffic signals, two way stop or all way stop, etc.). The expectation is that a signalized intersection is designed to carry higher traffic volumes than an AWSC intersection and a higher level of control delay is acceptable at a signalized intersection for the same LOS.

For AWSC analysis using the HCM 2010 method, the LOS shown reflects the weighted average of the delay on each of the approaches.

LEVEL OF SERVICE (LOS) CRITERIA FOR AWSC INTERSECTIONS
(Reference 2010 Highway Capacity Manual)

Level of Service	Control Delay (seconds / vehicle)
A	0 - 10
B	>10 - 15
C	>15 - 25
D	>25 - 35
E	>35 - 50
F	>50

APPENDIX A2

LEVEL OF SERVICE (LOS) DESCRIPTION
UNSIGNALIZED INTERSECTIONS WITH TWO-WAY STOP CONTROL (TWSC)

TWSC intersections are widely used and stop signs are used to control vehicle movements at such intersections. At TWSC intersections, the stop-controlled approaches are referred to as the minor street approaches; they can be either public streets or private driveways. The intersection approaches that are not controlled by stop signs are referred to as the major street approaches. A three-leg intersection is considered to be a standard type of TWSC intersection if the single minor street approach (i.e. the stem of the T configuration) is controlled by a stop sign. Three-leg intersections where two of the three approaches are controlled by stop signs are a special form of unsignalized intersection control.

At TWSC intersections, drivers on the controlled approaches are required to select gaps in the major street flow through which to execute crossing or turning maneuvers on the basis of judgment. In the presence of a queue, each driver on the controlled approach must use some time to move into the front-of-queue position and prepare to evaluate gaps in the major street flow. Capacity analysis at TWSC intersections depends on a clear description and understanding of the interaction of drivers on the minor or stop-controlled approach with drivers on the major street. Both gap acceptance and empirical models have been developed to describe this interaction.

Thus, the capacity of the controlled legs is based on three factors:

- the distribution of gaps in the major street traffic stream;
- driver judgment in selecting gaps through which to execute the desired maneuvers; and
- the follow-up time required by each driver in a queue.

The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions, in the absence of incident, control, traffic or geometric delay. Average control delay for any particular minor movement is a function of the capacity of the approach and the degree of saturation and referred to as level of service.

LEVEL OF SERVICE (LOS) CRITERIA FOR TWSC INTERSECTIONS

(Reference 2010 Highway Capacity Manual)

Level of Service	Control Delay (seconds / vehicle)
A	0 - 10
B	>10 - 15
C	>15 - 25
D	>25 - 35
E	>35 - 50
F	>50

Appendix B

Intersection

StreetLight and

Traffic Volume

Counts

StreetLight Data

Period: October 2019

Intersections: Searle / SR 129 and US 101 SB Ramps / SR 129

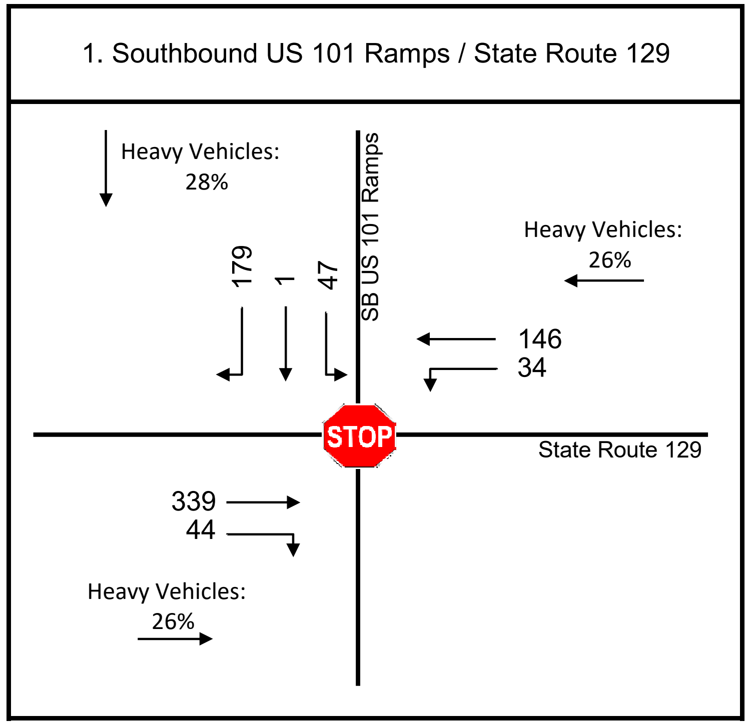
Origin Zone Name	Destination Zone Name	Day Type	Day Part	Average Daily O-D Traffic (StL Volume)
129 e of sb 101 ramps	129 w of searle	1: Weekday (M-Th)	1: Peak AM (7am-9am)	253
129 e of sb 101 ramps	129 w of searle	1: Weekday (M-Th)	2: Peak PM (4pm-6pm)	140
129 e of sb 101 ramps	sb 101 on	1: Weekday (M-Th)	1: Peak AM (7am-9am)	66
129 e of sb 101 ramps	sb 101 on	1: Weekday (M-Th)	2: Peak PM (4pm-6pm)	226
129 e of sb 101 ramps	searle s of 129	1: Weekday (M-Th)	1: Peak AM (7am-9am)	5
129 e of sb 101 ramps	searle s of 129	1: Weekday (M-Th)	2: Peak PM (4pm-6pm)	10
129 w of searle	129 e of sb 101 ramps	1: Weekday (M-Th)	1: Peak AM (7am-9am)	428
129 w of searle	129 e of sb 101 ramps	1: Weekday (M-Th)	2: Peak PM (4pm-6pm)	1097
129 w of searle	129 w of searle	1: Weekday (M-Th)	1: Peak AM (7am-9am)	1472
129 w of searle	129 w of searle	1: Weekday (M-Th)	2: Peak PM (4pm-6pm)	1524
129 w of searle	sb 101 off	1: Weekday (M-Th)	1: Peak AM (7am-9am)	4
129 w of searle	sb 101 on	1: Weekday (M-Th)	1: Peak AM (7am-9am)	88
129 w of searle	sb 101 on	1: Weekday (M-Th)	2: Peak PM (4pm-6pm)	52
129 w of searle	searle s of 129	1: Weekday (M-Th)	1: Peak AM (7am-9am)	4
129 w of searle	searle s of 129	1: Weekday (M-Th)	2: Peak PM (4pm-6pm)	30
sb 101 off	129 e of sb 101 ramps	1: Weekday (M-Th)	1: Peak AM (7am-9am)	73
sb 101 off	129 e of sb 101 ramps	1: Weekday (M-Th)	2: Peak PM (4pm-6pm)	568
sb 101 off	129 w of searle	1: Weekday (M-Th)	1: Peak AM (7am-9am)	781
sb 101 off	129 w of searle	1: Weekday (M-Th)	2: Peak PM (4pm-6pm)	294
sb 101 off	sb 101 on	1: Weekday (M-Th)	1: Peak AM (7am-9am)	3
sb 101 off	sb 101 on	1: Weekday (M-Th)	2: Peak PM (4pm-6pm)	14
sb 101 off	searle s of 129	1: Weekday (M-Th)	1: Peak AM (7am-9am)	30
sb 101 off	searle s of 129	1: Weekday (M-Th)	2: Peak PM (4pm-6pm)	131
searle s of 129	129 e of sb 101 ramps	1: Weekday (M-Th)	1: Peak AM (7am-9am)	63
searle s of 129	129 e of sb 101 ramps	1: Weekday (M-Th)	2: Peak PM (4pm-6pm)	14
searle s of 129	129 w of searle	1: Weekday (M-Th)	1: Peak AM (7am-9am)	44
searle s of 129	129 w of searle	1: Weekday (M-Th)	2: Peak PM (4pm-6pm)	3
searle s of 129	sb 101 on	1: Weekday (M-Th)	2: Peak PM (4pm-6pm)	17

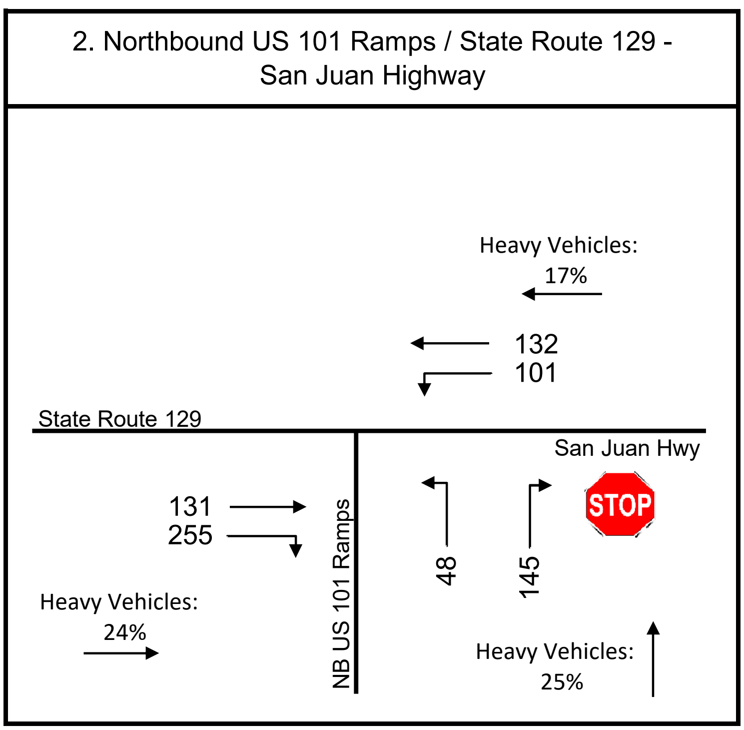
StreetLight Data

Period: October 2019

Intersection: US 101 Northbound Ramps / SR 129 - San Juan Hwy

Origin Zone Name	Destination Zone Name	Day Type	Day Part	Average Daily O-D Traffic (StL Volume)
129 e of nb 101	129 w of nb 101 ramps	1: Weekday (M-Th)	1: Peak AM (7am-9am)	195
129 e of nb 101	129 w of nb 101 ramps	1: Weekday (M-Th)	2: Peak PM (4pm-6pm)	193
129 e of nb 101	nb 101 off and on	1: Weekday (M-Th)	1: Peak AM (7am-9am)	114
129 e of nb 101	nb 101 off and on	1: Weekday (M-Th)	2: Peak PM (4pm-6pm)	87
129 w of nb 101 ramps	129 e of nb 101	1: Weekday (M-Th)	1: Peak AM (7am-9am)	187
129 w of nb 101 ramps	129 e of nb 101	1: Weekday (M-Th)	2: Peak PM (4pm-6pm)	915
129 w of nb 101 ramps	nb 101 off and on	1: Weekday (M-Th)	1: Peak AM (7am-9am)	332
129 w of nb 101 ramps	nb 101 off and on	1: Weekday (M-Th)	2: Peak PM (4pm-6pm)	659
nb 101 off and on	129 e of nb 101	1: Weekday (M-Th)	1: Peak AM (7am-9am)	129
nb 101 off and on	129 e of nb 101	1: Weekday (M-Th)	2: Peak PM (4pm-6pm)	338
nb 101 off and on	129 w of nb 101 ramps	1: Weekday (M-Th)	1: Peak AM (7am-9am)	109
nb 101 off and on	129 w of nb 101 ramps	1: Weekday (M-Th)	2: Peak PM (4pm-6pm)	102





Keith Higgins
Traffic Engineer

Existing Conditions
AM Peak Hour Volumes
and Heavy Vehicle Percentages

US 101 Southbound Ramps / State Route 129

7/9/2020 Thursday

Time	Volume (Vehicles)													
	US 101 Southbound Ramps						State Route 129						Total	
	Northbound			*Southbound*			*Eastbound*			*Westbound*				
	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R	Interval	Hourly
4:00 PM	0	0	0	50	0	69	0	65	4	26	51	0	265	
4:15 PM	0	0	0	26	0	82	0	54	2	14	40	0	218	
4:30 PM	0	0	0	34	2	60	0	93	9	18	32	0	248	
4:45 PM	0	0	0	68	2	91	0	86	6	9	34	0	296	1,027
5:00 PM	0	0	0	90	1	62	0	93	8	13	39	0	306	**1,068**

Peak: 4:15 - 5:15 PM

Time	Volume (Heavy Vehicles)													
	US 101 Southbound Ramps						State Route 129						Total	
	Northbound			*Southbound*			*Eastbound*			*Westbound*				
	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R	Interval	Hourly
4:00 PM	0	0	0	3	0	5	0	16	1	8	4	0	37	
4:15 PM	0	0	0	1	0	2	0	7	0	5	3	0	18	
4:30 PM	0	0	0	3	0	3	0	3	3	4	4	0	20	
4:45 PM	0	0	0	2	0	2	0	6	1	4	3	0	18	93
5:00 PM	0	0	0	5	0	3	0	3	2	5	3	0	21	77

Peak: 4:15 - 5:15 PM

Volume (Vehicles)											
US 101 Southbound Ramps						State Route 129					
Northbound			*Southbound*			*Eastbound*			*Westbound*		
NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
0	0	0	218	5	295	0	326	25	54	145	0

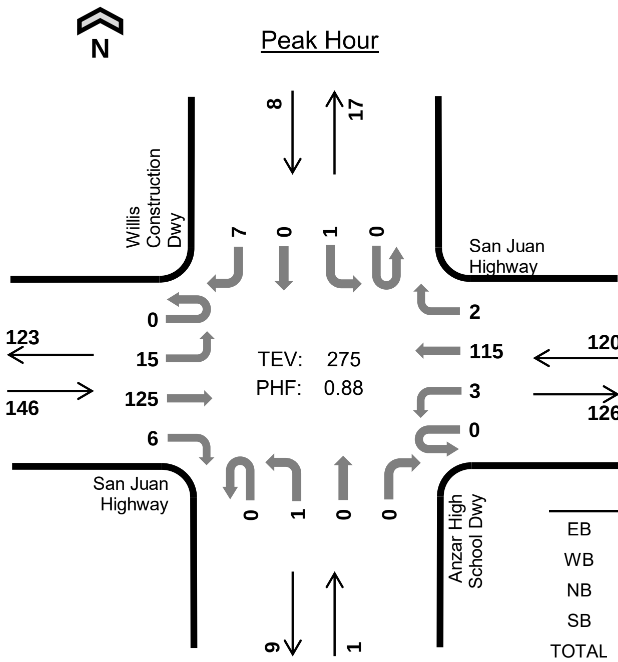
PHF: 0.87254902

	Volume (Heavy Vehicles)											
	US 101 Southbound Ramps						State Route 129					
	Northbound			*Southbound*			*Eastbound*			*Westbound*		
	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
	0	0	0	11	0	10	0	19	6	18	13	0
Percentage:	#DIV/0!			4.05%			7.12%			15.58%		

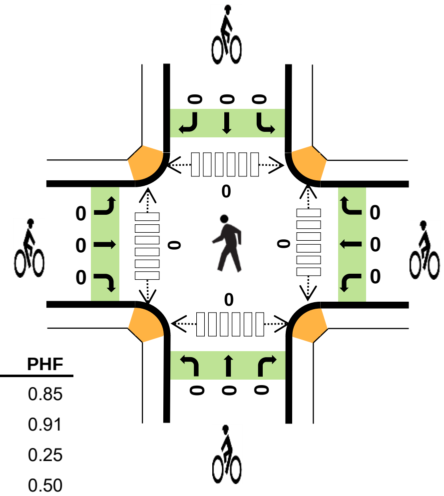
Willis Construction Dwy
San Juan Highway

Date: 07-28-2020
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM

Peak Hour



	HV %:	PHF
EB	31.5%	0.85
WB	27.5%	0.91
NB	0.0%	0.25
SB	37.5%	0.50
TOTAL	29.8%	0.88



Two-Hour Count Summaries

Interval Start	San Juan Highway Eastbound UT	LT	TH	RT	San Juan Highway Westbound UT	LT	TH	RT	Anzar High School Dwy Northbound UT	LT	TH	RT	Willis Construction Dwy Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	0	2	28	0	0	0	26	1	0	0	0	0	0	1	0	1	59	0
7:15 AM	0	3	22	0	0	1	19	0	0	0	0	0	0	0	0	1	46	0
7:30 AM	**0**	**3**	**29**	**3**	**0**	**2**	**30**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**71**	0
7:45 AM	**0**	**6**	**36**	**1**	**0**	**1**	**31**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**78**	254
8:00 AM	**0**	**4**	**30**	**1**	**0**	**0**	**27**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**64**	259
8:15 AM	**0**	**2**	**30**	**1**	**0**	**0**	**27**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**62**	**275**
8:30 AM	0	2	34	0	0	1	31	0	0	0	0	1	0	0	0	0	69	273
8:45 AM	0	4	31	0	0	1	33	1	0	0	0	0	0	1	0	1	72	267
Count Total	0	26	240	6	0	6	224	4	0	1	0	1	0	3	0	10	521	0
Peak Hour All	**0**	**15**	**125**	**6**	**0**	**3**	**115**	**2**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**7**	**275**	**0**
Peak Hour HV	**0**	**2**	**44**	**0**	**0**	**0**	**33**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**82**	**0**
Peak Hour HV%	**-**	**13%**	**35%**	**0%**	**-**	**0%**	**29%**	**0%**	**-**	**0%**	**-**	**-**	**-**	**0%**	**-**	**43%**	**30%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	9	7	0	0	*16*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	8	5	0	0	*13*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	**14**	**8**	**0**	**2**	***24***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:45 AM	**13**	**13**	**0**	**1**	***27***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**10**	**7**	**0**	**0**	***17***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**9**	**5**	**0**	**0**	***14***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:30 AM	12	10	0	0	*22*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	10	13	0	0	*23*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	85	68	0	3	*156*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**46**	**33**	**0**	**3**	***82***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Project Manager: (415) 310-6469
project.manager.ca@idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	San Juan Highway				San Juan Highway				Anzar High School Dwy				Willis Construction Dwy				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	9	0	0	0	7	0	0	0	0	0	0	0	0	0	16	0
7:15 AM	0	2	6	0	0	0	5	0	0	0	0	0	0	0	0	0	13	0
7:30 AM	**0**	**2**	**12**	**0**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**24**	0
7:45 AM	**0**	**0**	**13**	**0**	**0**	**0**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**27**	80
8:00 AM	**0**	**0**	**10**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**17**	81
8:15 AM	**0**	**0**	**9**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**14**	**82**
8:30 AM	0	0	12	0	0	0	10	0	0	0	0	0	0	0	0	0	22	80
8:45 AM	0	1	9	0	0	0	13	0	0	0	0	0	0	0	0	0	23	76
Count Total	0	5	80	0	0	0	68	0	0	0	0	0	0	0	0	3	156	0
Peak Hour	**0**	**2**	**44**	**0**	**0**	**0**	**33**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**82**	**0**

Two-Hour Count Summaries - Bikes

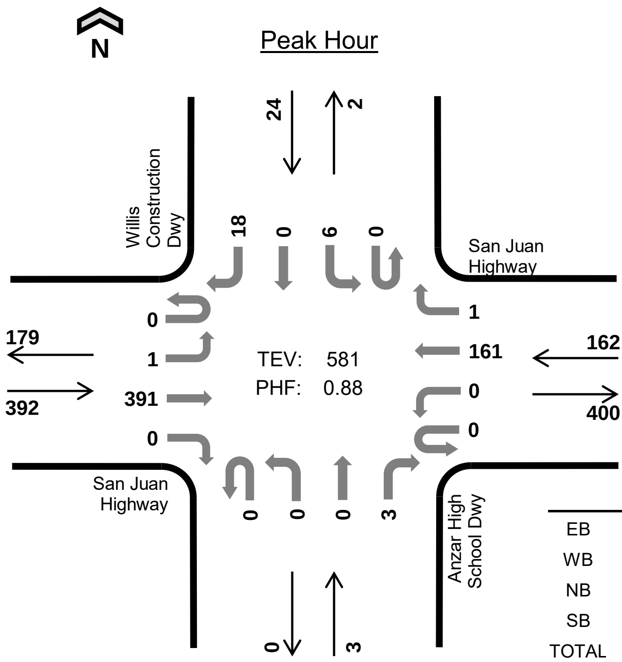
Interval Start	San Juan Highway			San Juan Highway			Anzar High School Dwy			Willis Construction Dwy			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

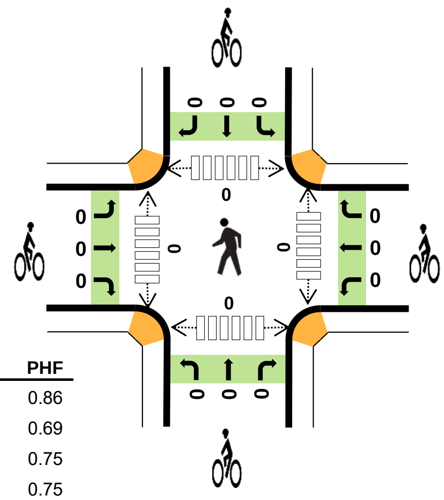
Willis Construction Dwy
San Juan Highway

Date: 07-28-2020
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM

Peak Hour



	HV %:	PHF
EB	7.9%	0.86
WB	21.6%	0.69
NB	0.0%	0.75
SB	0.0%	0.75
TOTAL	11.4%	0.88



Two-Hour Count Summaries

Interval Start	San Juan Highway Eastbound UT	LT	TH	RT	San Juan Highway Westbound UT	LT	TH	RT	Anzar High School Dwy Northbound UT	LT	TH	RT	Willis Construction Dwy Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM	0	1	86	0	0	0	48	0	0	0	0	0	0	1	0	4	140	0
4:15 PM	1	1	95	0	0	0	35	0	0	0	0	0	0	2	0	2	136	0
4:30 PM	**0**	**0**	**100**	**0**	**0**	**0**	**59**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**4**	**165**	0
4:45 PM	**0**	**1**	**92**	**0**	**0**	**0**	**30**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**2**	**128**	569
5:00 PM	**0**	**0**	**85**	**0**	**0**	**0**	**46**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**7**	**140**	569
5:15 PM	**0**	**0**	**114**	**0**	**0**	**0**	**26**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**5**	**148**	**581**
5:30 PM	0	0	104	0	0	0	40	0	0	0	0	1	0	1	0	6	152	568
5:45 PM	0	0	90	0	0	0	35	0	0	0	0	0	0	0	0	4	129	569
Count Total	1	3	766	0	0	0	319	1	0	0	0	4	0	10	0	34	1,138	0
Peak Hour All	**0**	**1**	**391**	**0**	**0**	**0**	**161**	**1**	**0**	**0**	**0**	**3**	**0**	**6**	**0**	**18**	**581**	**0**
Peak Hour HV	**0**	**0**	**31**	**0**	**0**	**0**	**35**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**66**	**0**
Peak Hour HV%	**-**	**0%**	**8%**	**-**	**-**	**-**	**22%**	**0%**	**-**	**-**	**-**	**0%**	**-**	**0%**	**-**	**0%**	**11%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	15	10	0	1	*26*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	11	6	0	0	*17*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	**9**	**13**	**0**	**0**	***22***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**8**	**10**	**0**	**0**	***18***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**6**	**6**	**0**	**0**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**8**	**6**	**0**	**0**	***14***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:30 PM	6	15	0	0	*21*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	7	9	0	0	*16*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	70	75	0	1	*146*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**31**	**35**	**0**	**0**	***66***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	San Juan Highway				San Juan Highway				Anzar High School Dwy				Willis Construction Dwy				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	14	0	0	0	10	0	0	0	0	0	0	0	0	1	26	0
4:15 PM	0	0	11	0	0	0	6	0	0	0	0	0	0	0	0	0	17	0
4:30 PM	**0**	**0**	**9**	**0**	**0**	**0**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**22**	0
4:45 PM	**0**	**0**	**8**	**0**	**0**	**0**	**10**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**18**	83
5:00 PM	**0**	**0**	**6**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**12**	69
5:15 PM	**0**	**0**	**8**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**14**	**66**
5:30 PM	0	0	6	0	0	0	15	0	0	0	0	0	0	0	0	0	21	65
5:45 PM	0	0	7	0	0	0	9	0	0	0	0	0	0	0	0	0	16	63
Count Total	0	1	69	0	0	0	75	0	0	0	0	0	0	0	0	1	146	0
Peak Hour	**0**	**0**	**31**	**0**	**0**	**0**	**35**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**66**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	San Juan Highway			San Juan Highway			Anzar High School Dwy			Willis Construction Dwy			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Appendix C

Intersection

Level of Service

Calculations

Existing

Conditions

Intersection	
Intersection Delay, s/veh	14.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	339	44	34	146	0	0	0	0	47	1	179
Future Vol, veh/h	0	339	44	34	146	0	0	0	0	47	1	179
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	26	26	26	27	27	27	2	2	2	28	28	28
Mvmt Flow	0	385	50	39	166	0	0	0	0	53	1	203
Number of Lanes	0	1	1	1	1	0	0	0	0	0	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	18.1	11.5	11.8
HCM LOS	C	B	B

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	0%	100%	0%	98%	0%
Vol Thru, %	100%	0%	0%	100%	2%	0%
Vol Right, %	0%	100%	0%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	339	44	34	146	48	179
LT Vol	0	0	34	0	47	0
Through Vol	339	0	0	146	1	0
RT Vol	0	44	0	0	0	179
Lane Flow Rate	385	50	39	166	55	203
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.65	0.075	0.074	0.294	0.11	0.344
Departure Headway (Hd)	6.076	5.368	6.889	6.382	7.292	6.09
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	597	669	521	564	492	590
Service Time	3.8	3.092	4.619	4.112	5.028	3.825
HCM Lane V/C Ratio	0.645	0.075	0.075	0.294	0.112	0.344
HCM Control Delay	19.4	8.5	10.2	11.8	10.9	12
HCM Lane LOS	C	A	B	B	B	B
HCM 95th-tile Q	4.7	0.2	0.2	1.2	0.4	1.5

Intersection	
Int Delay, s/veh	4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	131	255	101	132	48	145
Future Vol, veh/h	131	255	101	132	48	145
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	315	300	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	24	24	17	17	25	25
Mvmt Flow	149	290	115	150	55	165

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	149	0	529	149
Stage 1	-	-	-	-	149	-
Stage 2	-	-	-	-	380	-
Critical Hdwy	-	-	4.27	-	6.65	6.45
Critical Hdwy Stg 1	-	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	-	5.65	-
Follow-up Hdwy	-	-	2.353	-	3.725	3.525
Pot Cap-1 Maneuver	-	-	1346	-	472	840
Stage 1	-	-	-	-	825	-
Stage 2	-	-	-	-	644	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1346	-	432	840
Mov Cap-2 Maneuver	-	-	-	-	432	-
Stage 1	-	-	-	-	755	-
Stage 2	-	-	-	-	644	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.4	12.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	680	-	-	1346	-
HCM Lane V/C Ratio	0.323	-	-	0.085	-
HCM Control Delay (s)	12.8	-	-	7.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	1.4	-	-	0.3	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	236	25	75	238	2	2	0	2	1	0	7
Future Vol, veh/h	15	236	25	75	238	2	2	0	2	1	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	32	32	32	28	28	28	2	2	2	38	38	38
Mvmt Flow	17	268	28	85	270	2	2	0	2	1	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	272	0	0	296	0	0	761	758	282	758	771	271
Stage 1	-	-	-	-	-	-	316	316	-	441	441	-
Stage 2	-	-	-	-	-	-	445	442	-	317	330	-
Critical Hdwy	4.42	-	-	4.38	-	-	7.12	6.52	6.22	7.48	6.88	6.58
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.48	5.88	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.48	5.88	-
Follow-up Hdwy	2.488	-	-	2.452	-	-	3.518	4.018	3.318	3.842	4.342	3.642
Pot Cap-1 Maneuver	1137	-	-	1131	-	-	322	336	757	283	292	689
Stage 1	-	-	-	-	-	-	695	655	-	531	520	-
Stage 2	-	-	-	-	-	-	592	576	-	624	586	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1137	-	-	1131	-	-	296	305	757	262	265	689
Mov Cap-2 Maneuver	-	-	-	-	-	-	296	305	-	262	265	-
Stage 1	-	-	-	-	-	-	682	643	-	521	481	-
Stage 2	-	-	-	-	-	-	541	533	-	611	575	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	2	13.5	11.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	426	1137	-	-	1131	-	-	572
HCM Lane V/C Ratio	0.011	0.015	-	-	0.075	-	-	0.016
HCM Control Delay (s)	13.5	8.2	0	-	8.4	-	-	11.4
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0.2	-	-	0

Intersection	
Intersection Delay, s/veh	18
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	359	28	59	160	0	0	0	0	240	6	325
Future Vol, veh/h	0	359	28	59	160	0	0	0	0	240	6	325
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	7	7	7	16	16	16	2	2	2	4	4	4
Mvmt Flow	0	378	29	62	168	0	0	0	0	253	6	342
Number of Lanes	0	1	1	1	1	0	0	0	0	0	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	23.4	13.1	16.2
HCM LOS	C	B	C

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	0%	100%	0%	98%	0%
Vol Thru, %	100%	0%	0%	100%	2%	0%
Vol Right, %	0%	100%	0%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	359	28	59	160	246	325
LT Vol	0	0	59	0	240	0
Through Vol	359	0	0	160	6	0
RT Vol	0	28	0	0	0	325
Lane Flow Rate	378	29	62	168	259	342
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.71	0.049	0.133	0.336	0.507	0.555
Departure Headway (Hd)	6.76	6.045	7.7	7.188	7.048	5.845
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	533	590	464	499	510	616
Service Time	4.522	3.808	5.473	4.96	4.811	3.607
HCM Lane V/C Ratio	0.709	0.049	0.134	0.337	0.508	0.555
HCM Control Delay	24.5	9.1	11.7	13.6	16.9	15.7
HCM Lane LOS	C	A	B	B	C	C
HCM 95th-tile Q	5.7	0.2	0.5	1.5	2.8	3.4

Intersection	
Int Delay, s/veh	3.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	347	252	44	158	61	169
Future Vol, veh/h	347	252	44	158	61	169
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	315	300	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	4	16	16	4	4
Mvmt Flow	365	265	46	166	64	178

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	365	0	623	365
Stage 1	-	-	-	-	365	-
Stage 2	-	-	-	-	258	-
Critical Hdwy	-	-	4.26	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.344	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	1120	-	447	676
Stage 1	-	-	-	-	698	-
Stage 2	-	-	-	-	780	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1120	-	429	676
Mov Cap-2 Maneuver	-	-	-	-	429	-
Stage 1	-	-	-	-	669	-
Stage 2	-	-	-	-	780	-

Approach	EB		WB		NB	
HCM Control Delay, s	0		1.8		15.4	
HCM LOS					C	

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	586	-	-	1120	-
HCM Lane V/C Ratio	0.413	-	-	0.041	-
HCM Control Delay (s)	15.4	-	-	8.4	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	2	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	515	0	0	184	1	0	0	0	6	0	18
Future Vol, veh/h	1	515	0	0	184	1	0	0	0	6	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	8	8	8	22	22	22	2	2	2	2	2	2
Mvmt Flow	1	585	0	0	209	1	0	0	0	7	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	210	0	0	585	0	0	807	797	585	797	797	210
Stage 1	-	-	-	-	-	-	587	587	-	210	210	-
Stage 2	-	-	-	-	-	-	220	210	-	587	587	-
Critical Hdwy	4.18	-	-	4.32	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.272	-	-	2.398	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1326	-	-	898	-	-	300	319	511	305	319	830
Stage 1	-	-	-	-	-	-	496	497	-	792	728	-
Stage 2	-	-	-	-	-	-	782	728	-	496	497	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1326	-	-	898	-	-	293	319	511	305	319	830
Mov Cap-2 Maneuver	-	-	-	-	-	-	293	319	-	305	319	-
Stage 1	-	-	-	-	-	-	496	497	-	791	728	-
Stage 2	-	-	-	-	-	-	763	728	-	496	497	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	11.5
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1326	-	-	898	-	-	580
HCM Lane V/C Ratio	-	0.001	-	-	-	-	-	0.047
HCM Control Delay (s)	0	7.7	0	-	0	-	-	11.5
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.1

Appendix D

Intersection

Level of Service

Calculations

Existing Plus Project

Conditions

Intersection	
Intersection Delay, s/veh	14.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	339	44	35	146	0	0	0	0	50	1	179
Future Vol, veh/h	0	339	44	35	146	0	0	0	0	50	1	179
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	26	26	26	27	27	27	2	2	2	28	28	28
Mvmt Flow	0	385	50	40	166	0	0	0	0	57	1	203
Number of Lanes	0	1	1	1	1	0	0	0	0	0	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	18.2	11.5	11.8
HCM LOS	C	B	B

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	0%	100%	0%	98%	0%
Vol Thru, %	100%	0%	0%	100%	2%	0%
Vol Right, %	0%	100%	0%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	339	44	35	146	51	179
LT Vol	0	0	35	0	50	0
Through Vol	339	0	0	146	1	0
RT Vol	0	44	0	0	0	179
Lane Flow Rate	385	50	40	166	58	203
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.652	0.075	0.076	0.295	0.118	0.344
Departure Headway (Hd)	6.09	5.382	6.901	6.393	7.299	6.096
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	593	667	520	562	491	590
Service Time	3.815	3.107	4.635	4.128	5.035	3.832
HCM Lane V/C Ratio	0.649	0.075	0.077	0.295	0.118	0.344
HCM Control Delay	19.5	8.5	10.2	11.8	11	12
HCM Lane LOS	C	A	B	B	B	B
HCM 95th-tile Q	4.7	0.2	0.2	1.2	0.4	1.5

Intersection	
Int Delay, s/veh	4.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	134	255	103	133	48	147
Future Vol, veh/h	134	255	103	133	48	147
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	315	300	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	24	24	17	17	25	25
Mvmt Flow	152	290	117	151	55	167

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	152	0	537	152
Stage 1	-	-	-	-	152	-
Stage 2	-	-	-	-	385	-
Critical Hdwy	-	-	4.27	-	6.65	6.45
Critical Hdwy Stg 1	-	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	-	5.65	-
Follow-up Hdwy	-	-	2.353	-	3.725	3.525
Pot Cap-1 Maneuver	-	-	1342	-	467	837
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	640	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1342	-	426	837
Mov Cap-2 Maneuver	-	-	-	-	426	-
Stage 1	-	-	-	-	751	-
Stage 2	-	-	-	-	640	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.5	12.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	676	-	-	1342	-
HCM Lane V/C Ratio	0.328	-	-	0.087	-
HCM Control Delay (s)	12.9	-	-	7.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	1.4	-	-	0.3	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	238	25	75	240	2	2	0	2	1	0	7
Future Vol, veh/h	15	238	25	75	240	2	2	0	2	1	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	32	32	32	28	28	28	2	2	2	38	38	38
Mvmt Flow	17	270	28	85	273	2	2	0	2	1	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	275	0	0	298	0	0	766	763	284	763	776	274
Stage 1	-	-	-	-	-	-	318	318	-	444	444	-
Stage 2	-	-	-	-	-	-	448	445	-	319	332	-
Critical Hdwy	4.42	-	-	4.38	-	-	7.12	6.52	6.22	7.48	6.88	6.58
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.48	5.88	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.48	5.88	-
Follow-up Hdwy	2.488	-	-	2.452	-	-	3.518	4.018	3.318	3.842	4.342	3.642
Pot Cap-1 Maneuver	1134	-	-	1129	-	-	320	334	755	281	290	686
Stage 1	-	-	-	-	-	-	693	654	-	529	519	-
Stage 2	-	-	-	-	-	-	590	575	-	623	585	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1134	-	-	1129	-	-	294	303	755	260	263	686
Mov Cap-2 Maneuver	-	-	-	-	-	-	294	303	-	260	263	-
Stage 1	-	-	-	-	-	-	681	642	-	519	480	-
Stage 2	-	-	-	-	-	-	539	532	-	610	574	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	2	13.6	11.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	423	1134	-	-	1129	-	-	569
HCM Lane V/C Ratio	0.011	0.015	-	-	0.075	-	-	0.016
HCM Control Delay (s)	13.6	8.2	0	-	8.4	-	-	11.4
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0.2	-	-	0

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	276	5	2	247	3	2
Future Vol, veh/h	276	5	2	247	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	90	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	32	32	28	28	2	2
Mvmt Flow	314	6	2	281	3	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	320	0	602	317
Stage 1	-	-	-	-	317	-
Stage 2	-	-	-	-	285	-
Critical Hdwy	-	-	4.38	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.452	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1107	-	463	724
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	763	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1107	-	462	724
Mov Cap-2 Maneuver	-	-	-	-	462	-
Stage 1	-	-	-	-	737	-
Stage 2	-	-	-	-	763	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	540	-	-	1107	-
HCM Lane V/C Ratio	0.011	-	-	0.002	-
HCM Control Delay (s)	11.7	-	-	8.3	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Intersection Delay, s/veh	18.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	359	28	62	162	0	0	0	0	242	6	325
Future Vol, veh/h	0	359	28	62	162	0	0	0	0	242	6	325
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	7	7	7	16	16	16	2	2	2	4	4	4
Mvmt Flow	0	378	29	65	171	0	0	0	0	255	6	342
Number of Lanes	0	1	1	1	1	0	0	0	0	0	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	23.5	13.1	16.4
HCM LOS	C	B	C

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	0%	100%	0%	98%	0%
Vol Thru, %	100%	0%	0%	100%	2%	0%
Vol Right, %	0%	100%	0%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	359	28	62	162	248	325
LT Vol	0	0	62	0	242	0
Through Vol	359	0	0	162	6	0
RT Vol	0	28	0	0	0	325
Lane Flow Rate	378	29	65	171	261	342
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.711	0.05	0.14	0.341	0.512	0.557
Departure Headway (Hd)	6.778	6.063	7.71	7.198	7.065	5.862
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	533	588	463	498	509	612
Service Time	4.542	3.828	5.484	4.971	4.828	3.624
HCM Lane V/C Ratio	0.709	0.049	0.14	0.343	0.513	0.559
HCM Control Delay	24.6	9.2	11.7	13.7	17.1	15.8
HCM Lane LOS	C	A	B	B	C	C
HCM 95th-tile Q	5.7	0.2	0.5	1.5	2.9	3.4

Intersection	
Int Delay, s/veh	3.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	349	252	50	163	61	170
Future Vol, veh/h	349	252	50	163	61	170
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	315	300	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	4	16	16	4	4
Mvmt Flow	367	265	53	172	64	179

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	367	0	645	367
Stage 1	-	-	-	-	367	-
Stage 2	-	-	-	-	278	-
Critical Hdwy	-	-	4.26	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.344	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	1118	-	434	674
Stage 1	-	-	-	-	696	-
Stage 2	-	-	-	-	764	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1118	-	414	674
Mov Cap-2 Maneuver	-	-	-	-	414	-
Stage 1	-	-	-	-	663	-
Stage 2	-	-	-	-	764	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2	15.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	578	-	-	1118	-
HCM Lane V/C Ratio	0.421	-	-	0.047	-
HCM Control Delay (s)	15.7	-	-	8.4	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	2.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	520	0	0	186	1	0	0	0	6	0	18
Future Vol, veh/h	1	520	0	0	186	1	0	0	0	6	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	8	8	8	22	22	22	2	2	2	2	2	2
Mvmt Flow	1	591	0	0	211	1	0	0	0	7	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	212	0	0	591	0	0	815	805	591	805	805	212
Stage 1	-	-	-	-	-	-	593	593	-	212	212	-
Stage 2	-	-	-	-	-	-	222	212	-	593	593	-
Critical Hdwy	4.18	-	-	4.32	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.272	-	-	2.398	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1323	-	-	894	-	-	296	316	507	301	316	828
Stage 1	-	-	-	-	-	-	492	493	-	790	727	-
Stage 2	-	-	-	-	-	-	780	727	-	492	493	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1323	-	-	894	-	-	289	316	507	301	316	828
Mov Cap-2 Maneuver	-	-	-	-	-	-	289	316	-	301	316	-
Stage 1	-	-	-	-	-	-	492	493	-	789	727	-
Stage 2	-	-	-	-	-	-	761	727	-	492	493	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	11.6
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1323	-	-	894	-	-	576
HCM Lane V/C Ratio	-	0.001	-	-	-	-	-	0.047
HCM Control Delay (s)	0	7.7	0	-	0	-	-	11.6
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	516	3	2	202	11	5
Future Vol, veh/h	516	3	2	202	11	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	90	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	8	8	22	22	2	2
Mvmt Flow	586	3	2	230	13	6

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	589	0	822	588
Stage 1	-	-	-	-	588	-
Stage 2	-	-	-	-	234	-
Critical Hdwy	-	-	4.32	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.398	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	895	-	344	509
Stage 1	-	-	-	-	555	-
Stage 2	-	-	-	-	805	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	895	-	343	509
Mov Cap-2 Maneuver	-	-	-	-	343	-
Stage 1	-	-	-	-	554	-
Stage 2	-	-	-	-	805	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	14.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	382	-	-	895	-
HCM Lane V/C Ratio	0.048	-	-	0.003	-
HCM Control Delay (s)	14.9	-	-	9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Appendix E

Intersection

Level of Service

Calculations

Cumulative Without Project

Conditions

Intersection	
Intersection Delay, s/veh	40.3
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	474	128	34	266	0	0	0	0	49	1	272
Future Vol, veh/h	0	474	128	34	266	0	0	0	0	49	1	272
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	26	26	26	27	27	27	2	2	2	28	28	28
Mvmt Flow	0	539	145	39	302	0	0	0	0	56	1	309
Number of Lanes	0	1	1	1	1	0	0	0	0	0	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	61.3	20.6	19.3
HCM LOS	F	C	C

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	0%	100%	0%	98%	0%
Vol Thru, %	100%	0%	0%	100%	2%	0%
Vol Right, %	0%	100%	0%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	474	128	34	266	50	272
LT Vol	0	0	34	0	49	0
Through Vol	474	0	0	266	1	0
RT Vol	0	128	0	0	0	272
Lane Flow Rate	539	145	39	302	57	309
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	1.034	0.25	0.085	0.622	0.131	0.611
Departure Headway (Hd)	6.909	6.195	8.025	7.511	8.431	7.115
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	522	575	449	484	428	504
Service Time	4.698	3.983	5.725	5.211	6.131	4.913
HCM Lane V/C Ratio	1.033	0.252	0.087	0.624	0.133	0.613
HCM Control Delay	74.9	11.1	11.5	21.8	12.4	20.6
HCM Lane LOS	F	B	B	C	B	C
HCM 95th-tile Q	15.3	1	0.3	4.2	0.4	4

Intersection						
Int Delay, s/veh	6.8					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	166	357	108	168	132	158
Future Vol, veh/h	166	357	108	168	132	158
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	315	300	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	24	24	17	17	25	25
Mvmt Flow	189	406	123	191	150	180

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	189	0	626	189
Stage 1	-	-	-	-	189	-
Stage 2	-	-	-	-	437	-
Critical Hdwy	-	-	4.27	-	6.65	6.45
Critical Hdwy Stg 1	-	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	-	5.65	-
Follow-up Hdwy	-	-	2.353	-	3.725	3.525
Pot Cap-1 Maneuver	-	-	1300	-	413	797
Stage 1	-	-	-	-	791	-
Stage 2	-	-	-	-	605	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1300	-	374	797
Mov Cap-2 Maneuver	-	-	-	-	374	-
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	605	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.2	22.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	526	-	-	1300	-
HCM Lane V/C Ratio	0.627	-	-	0.094	-
HCM Control Delay (s)	22.6	-	-	8.1	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	4.3	-	-	0.3	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	284	25	75	267	2	2	0	2	1	0	7
Future Vol, veh/h	15	284	25	75	267	2	2	0	2	1	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	32	32	32	28	28	28	2	2	2	38	38	38
Mvmt Flow	17	323	28	85	303	2	2	0	2	1	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	305	0	0	351	0	0	849	846	337	846	859	304
Stage 1	-	-	-	-	-	-	371	371	-	474	474	-
Stage 2	-	-	-	-	-	-	478	475	-	372	385	-
Critical Hdwy	4.42	-	-	4.38	-	-	7.12	6.52	6.22	7.48	6.88	6.58
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.48	5.88	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.48	5.88	-
Follow-up Hdwy	2.488	-	-	2.452	-	-	3.518	4.018	3.318	3.842	4.342	3.642
Pot Cap-1 Maneuver	1104	-	-	1077	-	-	281	299	705	245	258	659
Stage 1	-	-	-	-	-	-	649	620	-	509	502	-
Stage 2	-	-	-	-	-	-	568	557	-	581	553	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1104	-	-	1077	-	-	257	270	705	226	233	659
Mov Cap-2 Maneuver	-	-	-	-	-	-	257	270	-	226	233	-
Stage 1	-	-	-	-	-	-	637	608	-	499	462	-
Stage 2	-	-	-	-	-	-	517	513	-	568	542	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	1.9	14.7	11.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	377	1104	-	-	1077	-	-	532
HCM Lane V/C Ratio	0.012	0.015	-	-	0.079	-	-	0.017
HCM Control Delay (s)	14.7	8.3	0	-	8.6	-	-	11.9
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0.3	-	-	0.1

Intersection	
Intersection Delay, s/veh	43.7
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	478	97	63	263	0	0	0	0	262	7	420
Future Vol, veh/h	0	478	97	63	263	0	0	0	0	262	7	420
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	7	7	7	16	16	16	2	2	2	4	4	4
Mvmt Flow	0	503	102	66	277	0	0	0	0	276	7	442
Number of Lanes	0	1	1	1	1	0	0	0	0	0	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	72.9	21.2	29.9
HCM LOS	F	C	D

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	0%	100%	0%	97%	0%
Vol Thru, %	100%	0%	0%	100%	3%	0%
Vol Right, %	0%	100%	0%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	478	97	63	263	269	420
LT Vol	0	0	63	0	262	0
Through Vol	478	0	0	263	7	0
RT Vol	0	97	0	0	0	420
Lane Flow Rate	503	102	66	277	283	442
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	1.06	0.195	0.157	0.618	0.624	0.825
Departure Headway (Hd)	7.586	6.865	8.695	8.177	8.066	6.85
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	483	526	415	446	450	531
Service Time	5.286	4.565	6.395	5.877	5.766	4.55
HCM Lane V/C Ratio	1.041	0.194	0.159	0.621	0.629	0.832
HCM Control Delay	85.4	11.2	13	23.2	23.2	34.2
HCM Lane LOS	F	B	B	C	C	D
HCM 95th-tile Q	15.6	0.7	0.6	4.1	4.2	8.2

Intersection	
Int Delay, s/veh	6.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	401	339	46	193	133	184
Future Vol, veh/h	401	339	46	193	133	184
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	315	300	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	4	16	16	4	4
Mvmt Flow	422	357	48	203	140	194

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	422	0	721	422
Stage 1	-	-	-	-	422	-
Stage 2	-	-	-	-	299	-
Critical Hdwy	-	-	4.26	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.344	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	1066	-	391	627
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	748	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1066	-	373	627
Mov Cap-2 Maneuver	-	-	-	-	373	-
Stage 1	-	-	-	-	627	-
Stage 2	-	-	-	-	748	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.6	26.9
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	488	-	-	1066	-
HCM Lane V/C Ratio	0.684	-	-	0.045	-
HCM Control Delay (s)	26.9	-	-	8.5	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	5.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	584	0	0	221	1	0	0	0	6	0	18
Future Vol, veh/h	1	584	0	0	221	1	0	0	0	6	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	8	8	8	22	22	22	2	2	2	2	2	2
Mvmt Flow	1	664	0	0	251	1	0	0	0	7	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	252	0	0	664	0	0	928	918	664	918	918	252
Stage 1	-	-	-	-	-	-	666	666	-	252	252	-
Stage 2	-	-	-	-	-	-	262	252	-	666	666	-
Critical Hdwy	4.18	-	-	4.32	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.272	-	-	2.398	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1279	-	-	837	-	-	248	272	461	252	272	787
Stage 1	-	-	-	-	-	-	449	457	-	752	698	-
Stage 2	-	-	-	-	-	-	743	698	-	449	457	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1279	-	-	837	-	-	241	272	461	252	272	787
Mov Cap-2 Maneuver	-	-	-	-	-	-	241	272	-	252	272	-
Stage 1	-	-	-	-	-	-	449	457	-	751	698	-
Stage 2	-	-	-	-	-	-	724	698	-	449	457	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	12.4
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1279	-	-	837	-	-	514
HCM Lane V/C Ratio	-	0.001	-	-	-	-	-	0.053
HCM Control Delay (s)	0	7.8	0	-	0	-	-	12.4
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	474	128	34	266	0	0	0	0	49	1	272
Future Volume (veh/h)	0	474	128	34	266	0	0	0	0	49	1	272
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1508	1508	1496	1496	0				1900	1484	1484
Adj Flow Rate, veh/h	0	539	0	39	302	0				56	1	309
Adj No. of Lanes	0	1	1	1	1	0				0	1	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88				0.88	0.88	0.88
Percent Heavy Veh, %	0	26	26	27	27	0				28	28	28
Cap, veh/h	0	618	525	59	808	0				393	7	357
Arrive On Green	0.00	0.41	0.00	0.04	0.54	0.00				0.28	0.28	0.28
Sat Flow, veh/h	0	1508	1282	1425	1496	0				1390	25	1262
Grp Volume(v), veh/h	0	539	0	39	302	0				57	0	309
Grp Sat Flow(s),veh/h/ln	0	1508	1282	1425	1496	0				1415	0	1262
Q Serve(g_s), s	0.0	16.7	0.0	1.4	5.9	0.0				1.5	0.0	11.8
Cycle Q Clear(g_c), s	0.0	16.7	0.0	1.4	5.9	0.0				1.5	0.0	11.8
Prop In Lane	0.00		1.00	1.00		0.00				0.98		1.00
Lane Grp Cap(c), veh/h	0	618	525	59	808	0				400	0	357
V/C Ratio(X)	0.00	0.87	0.00	0.66	0.37	0.00				0.14	0.00	0.87
Avail Cap(c_a), veh/h	0	847	720	140	1120	0				502	0	447
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	13.8	0.0	24.0	6.7	0.0				13.6	0.0	17.3
Incr Delay (d2), s/veh	0.0	7.6	0.0	11.7	0.3	0.0				0.2	0.0	13.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	8.2	0.0	0.7	2.5	0.0				0.6	0.0	5.5
LnGrp Delay(d),s/veh	0.0	21.3	0.0	35.6	7.0	0.0				13.8	0.0	31.0
LnGrp LOS		C		D	A					B		C
Approach Vol, veh/h		539			341						366	
Approach Delay, s/veh		21.3			10.3						28.3	
Approach LOS		C			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			6.6	25.3		18.8		31.9
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s			5.0	28.5		18.0		38.0
Max Q Clear Time (g_c+I1), s			3.4	18.7		13.8		7.9
Green Ext Time (p_c), s			0.0	2.1		0.5		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	20.4
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	478	97	63	263	0	0	0	0	262	7	420
Future Volume (veh/h)	0	478	97	63	263	0	0	0	0	262	7	420
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1776	1776	1638	1638	0				1900	1827	1827
Adj Flow Rate, veh/h	0	503	0	66	277	0				276	7	442
Adj No. of Lanes	0	1	1	1	1	0				0	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	7	7	16	16	0				4	4	4
Cap, veh/h	0	597	507	94	799	0				560	14	511
Arrive On Green	0.00	0.34	0.00	0.06	0.49	0.00				0.33	0.33	0.33
Sat Flow, veh/h	0	1776	1509	1560	1638	0				1699	43	1553
Grp Volume(v), veh/h	0	503	0	66	277	0				283	0	442
Grp Sat Flow(s),veh/h/ln	0	1776	1509	1560	1638	0				1742	0	1553
Q Serve(g_s), s	0.0	12.9	0.0	2.0	5.1	0.0				6.4	0.0	13.1
Cycle Q Clear(g_c), s	0.0	12.9	0.0	2.0	5.1	0.0				6.4	0.0	13.1
Prop In Lane	0.00		1.00	1.00		0.00				0.98		1.00
Lane Grp Cap(c), veh/h	0	597	507	94	799	0				574	0	511
V/C Ratio(X)	0.00	0.84	0.00	0.70	0.35	0.00				0.49	0.00	0.86
Avail Cap(c_a), veh/h	0	811	690	174	1081	0				655	0	583
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	15.1	0.0	22.7	7.8	0.0				13.2	0.0	15.5
Incr Delay (d2), s/veh	0.0	6.0	0.0	9.1	0.3	0.0				0.7	0.0	11.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.3	0.0	1.1	2.4	0.0				3.2	0.0	7.2
LnGrp Delay(d),s/veh	0.0	21.2	0.0	31.8	8.0	0.0				13.9	0.0	27.1
LnGrp LOS		C		C	A					B		C
Approach Vol, veh/h		503			343						725	
Approach Delay, s/veh		21.2			12.6						22.0	
Approach LOS		C			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			7.5	21.0		20.7		28.5
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s			5.5	22.5		18.5		32.5
Max Q Clear Time (g_c+I1), s			4.0	14.9		15.1		7.1
Green Ext Time (p_c), s			0.0	1.6		1.1		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	19.7
HCM 2010 LOS	B

MOVEMENT SUMMARY

Site: 1 [US101SB-129]

1. US 101 Southbound Ramps / State Route 129
Cumulative Without Project Conditions
AM Peak Hour - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
East: SR 129											
1	L2	39	27.0	0.314	6.4	LOS A	0.0	0.0	0.00	0.00	36.9
6	T1	302	27.0	0.314	6.4	LOS A	0.0	0.0	0.00	0.00	37.3
Approach		341	27.0	0.314	6.4	LOS A	0.0	0.0	0.00	0.00	37.3
North: US 101 SB Offramp											
7	L2	56	28.0	0.076	5.6	LOS A	0.2	6.9	0.45	0.35	31.6
4	T1	1	28.0	0.076	5.6	LOS A	0.2	6.9	0.45	0.35	31.9
14	R2	309	28.0	0.413	10.2	LOS B	1.6	48.8	0.55	0.53	30.8
Approach		366	28.0	0.413	9.5	LOS A	1.6	48.8	0.54	0.50	31.0
West: SR 129											
2	T1	539	26.0	0.530	10.1	LOS B	2.4	73.0	0.34	0.20	32.3
12	R2	145	26.0	0.152	5.2	LOS A	0.5	14.9	0.25	0.13	33.2
Approach		684	26.0	0.530	9.1	LOS A	2.4	73.0	0.32	0.19	32.5
All Vehicles		1391	26.8	0.530	8.5	LOS A	2.4	73.0	0.30	0.22	33.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1 [US101SB-129]

1. US 101 Southbound Ramps / State Route 129
Cumulative Without Project Conditions
PM Peak Hour - With Improvement
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
East: SR 129											
1	L2	66	16.0	0.288	5.7	LOS A	0.0	0.0	0.00	0.00	37.1
6	T1	277	16.0	0.288	5.7	LOS A	0.0	0.0	0.00	0.00	37.2
Approach		343	16.0	0.288	5.7	LOS A	0.0	0.0	0.00	0.00	37.2
North: US 101 SB Offramp											
7	L2	276	4.0	0.298	6.9	LOS A	1.3	34.0	0.52	0.45	31.7
4	T1	7	4.0	0.298	6.9	LOS A	1.3	34.0	0.52	0.45	31.7
14	R2	442	4.0	0.465	9.4	LOS A	2.8	71.9	0.60	0.59	31.8
Approach		725	4.0	0.465	8.4	LOS A	2.8	71.9	0.57	0.54	31.7
West: SR 129											
2	T1	503	7.0	0.520	10.3	LOS B	3.5	93.5	0.59	0.61	32.5
12	R2	102	7.0	0.114	5.1	LOS A	0.4	10.9	0.43	0.34	33.7
Approach		605	7.0	0.520	9.4	LOS A	3.5	93.5	0.56	0.56	32.7
All Vehicles		1674	7.5	0.520	8.2	LOS A	3.5	93.5	0.45	0.43	33.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix F

Intersection

Level of Service

Calculations

Cumulative Plus Project

Conditions

Intersection	
Intersection Delay, s/veh	40.5
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	474	128	35	266	0	0	0	0	52	1	272
Future Vol, veh/h	0	474	128	35	266	0	0	0	0	52	1	272
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	26	26	26	27	27	27	2	2	2	28	28	28
Mvmt Flow	0	539	145	40	302	0	0	0	0	59	1	309
Number of Lanes	0	1	1	1	1	0	0	0	0	0	1	1

Approach		EB		WB						SB		
Opposing Approach		WB		EB								
Opposing Lanes		2		2						0		
Conflicting Approach Left		SB								WB		
Conflicting Lanes Left		2		0						2		
Conflicting Approach Right				SB						EB		
Conflicting Lanes Right		0		2						2		
HCM Control Delay		61.9		20.7						19.3		
HCM LOS		F		C						C		

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	0%	100%	0%	98%	0%
Vol Thru, %	100%	0%	0%	100%	2%	0%
Vol Right, %	0%	100%	0%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	474	128	35	266	53	272
LT Vol	0	0	35	0	52	0
Through Vol	474	0	0	266	1	0
RT Vol	0	128	0	0	0	272
Lane Flow Rate	539	145	40	302	60	309
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	1.036	0.251	0.088	0.623	0.139	0.611
Departure Headway (Hd)	6.922	6.208	8.037	7.524	8.338	7.122
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	522	575	449	484	428	504
Service Time	4.711	3.996	5.737	5.224	6.137	4.919
HCM Lane V/C Ratio	1.033	0.252	0.089	0.624	0.14	0.613
HCM Control Delay	75.6	11.1	11.5	21.9	12.5	20.6
HCM Lane LOS	F	B	B	C	B	C
HCM 95th-tile Q	15.3	1	0.3	4.2	0.5	4

Intersection						
Int Delay, s/veh	7					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	169	357	110	169	132	160
Future Vol, veh/h	169	357	110	169	132	160
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	315	300	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	24	24	17	17	25	25
Mvmt Flow	192	406	125	192	150	182

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	192	0	634	192
Stage 1	-	-	-	-	192	-
Stage 2	-	-	-	-	442	-
Critical Hdwy	-	-	4.27	-	6.65	6.45
Critical Hdwy Stg 1	-	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	-	5.65	-
Follow-up Hdwy	-	-	2.353	-	3.725	3.525
Pot Cap-1 Maneuver	-	-	1296	-	409	794
Stage 1	-	-	-	-	788	-
Stage 2	-	-	-	-	602	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1296	-	370	794
Mov Cap-2 Maneuver	-	-	-	-	370	-
Stage 1	-	-	-	-	712	-
Stage 2	-	-	-	-	602	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.2	23.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	523	-	-	1296	-
HCM Lane V/C Ratio	0.634	-	-	0.096	-
HCM Control Delay (s)	23.1	-	-	8.1	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	4.4	-	-	0.3	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	286	25	75	269	2	2	0	2	1	0	7
Future Vol, veh/h	15	286	25	75	269	2	2	0	2	1	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	32	32	32	28	28	28	2	2	2	38	38	38
Mvmt Flow	17	325	28	85	306	2	2	0	2	1	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	308	0	0	353	0	0	854	851	339	851	864	307
Stage 1	-	-	-	-	-	-	373	373	-	477	477	-
Stage 2	-	-	-	-	-	-	481	478	-	374	387	-
Critical Hdwy	4.42	-	-	4.38	-	-	7.12	6.52	6.22	7.48	6.88	6.58
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.48	5.88	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.48	5.88	-
Follow-up Hdwy	2.488	-	-	2.452	-	-	3.518	4.018	3.318	3.842	4.342	3.642
Pot Cap-1 Maneuver	1101	-	-	1075	-	-	279	297	703	243	256	656
Stage 1	-	-	-	-	-	-	648	618	-	507	500	-
Stage 2	-	-	-	-	-	-	566	556	-	580	551	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1101	-	-	1075	-	-	255	268	703	224	231	656
Mov Cap-2 Maneuver	-	-	-	-	-	-	255	268	-	224	231	-
Stage 1	-	-	-	-	-	-	636	606	-	497	461	-
Stage 2	-	-	-	-	-	-	515	512	-	567	541	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	1.9	14.7	11.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	374	1101	-	-	1075	-	-	529
HCM Lane V/C Ratio	0.012	0.015	-	-	0.079	-	-	0.017
HCM Control Delay (s)	14.7	8.3	0	-	8.6	-	-	11.9
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0.3	-	-	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	324	5	2	276	3	2
Future Vol, veh/h	324	5	2	276	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	90	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	32	32	28	28	2	2
Mvmt Flow	368	6	2	314	3	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	374	0	689	371
Stage 1	-	-	-	-	371	-
Stage 2	-	-	-	-	318	-
Critical Hdwy	-	-	4.38	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.452	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1055	-	412	675
Stage 1	-	-	-	-	698	-
Stage 2	-	-	-	-	738	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1055	-	411	675
Mov Cap-2 Maneuver	-	-	-	-	411	-
Stage 1	-	-	-	-	697	-
Stage 2	-	-	-	-	738	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	12.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	487	-	-	1055	-
HCM Lane V/C Ratio	0.012	-	-	0.002	-
HCM Control Delay (s)	12.5	-	-	8.4	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Intersection Delay, s/veh	44
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	478	97	66	265	0	0	0	0	264	7	420
Future Vol, veh/h	0	478	97	66	265	0	0	0	0	264	7	420
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	7	7	7	16	16	16	2	2	2	4	4	4
Mvmt Flow	0	503	102	69	279	0	0	0	0	278	7	442
Number of Lanes	0	1	1	1	1	0	0	0	0	0	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	73.7	21.4	30.2
HCM LOS	F	C	D

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	0%	100%	0%	97%	0%
Vol Thru, %	100%	0%	0%	100%	3%	0%
Vol Right, %	0%	100%	0%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	478	97	66	265	271	420
LT Vol	0	0	66	0	264	0
Through Vol	478	0	0	265	7	0
RT Vol	0	97	0	0	0	420
Lane Flow Rate	503	102	69	279	285	442
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	1.063	0.195	0.165	0.623	0.63	0.827
Departure Headway (Hd)	7.604	6.884	8.705	8.187	8.08	6.865
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	483	525	415	444	451	531
Service Time	5.304	4.584	6.405	5.887	5.78	4.565
HCM Lane V/C Ratio	1.041	0.194	0.166	0.628	0.632	0.832
HCM Control Delay	86.4	11.2	13.1	23.5	23.6	34.4
HCM Lane LOS	F	B	B	C	C	D
HCM 95th-tile Q	15.7	0.7	0.6	4.1	4.2	8.3

Intersection	
Int Delay, s/veh	7.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	403	339	52	198	133	185
Future Vol, veh/h	403	339	52	198	133	185
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	315	300	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	4	16	16	4	4
Mvmt Flow	424	357	55	208	140	195

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	424	0	742	424
Stage 1	-	-	-	-	424	-
Stage 2	-	-	-	-	318	-
Critical Hdwy	-	-	4.26	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.344	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	1064	-	380	626
Stage 1	-	-	-	-	656	-
Stage 2	-	-	-	-	733	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1064	-	360	626
Mov Cap-2 Maneuver	-	-	-	-	360	-
Stage 1	-	-	-	-	622	-
Stage 2	-	-	-	-	733	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.8	28.3
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	478	-	-	1064	-
HCM Lane V/C Ratio	0.7	-	-	0.051	-
HCM Control Delay (s)	28.3	-	-	8.6	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	5.4	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	589	0	0	223	1	0	0	0	6	0	18
Future Vol, veh/h	1	589	0	0	223	1	0	0	0	6	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	8	8	8	22	22	22	2	2	2	2	2	2
Mvmt Flow	1	669	0	0	253	1	0	0	0	7	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	254	0	0	669	0	0	935	925	669	925	925	254
Stage 1	-	-	-	-	-	-	671	671	-	254	254	-
Stage 2	-	-	-	-	-	-	264	254	-	671	671	-
Critical Hdwy	4.18	-	-	4.32	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.272	-	-	2.398	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1277	-	-	834	-	-	246	269	458	250	269	785
Stage 1	-	-	-	-	-	-	446	455	-	750	697	-
Stage 2	-	-	-	-	-	-	741	697	-	446	455	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1277	-	-	834	-	-	239	269	458	250	269	785
Mov Cap-2 Maneuver	-	-	-	-	-	-	239	269	-	250	269	-
Stage 1	-	-	-	-	-	-	446	455	-	749	697	-
Stage 2	-	-	-	-	-	-	722	697	-	446	455	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	12.4
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1277	-	-	834	-	-	511
HCM Lane V/C Ratio	-	0.001	-	-	-	-	-	0.053
HCM Control Delay (s)	0	7.8	0	-	0	-	-	12.4
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	585	3	2	239	11	5
Future Vol, veh/h	585	3	2	239	11	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	90	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	8	8	22	22	2	2
Mvmt Flow	665	3	2	272	13	6

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	668	0	943	667
Stage 1	-	-	-	-	667	-
Stage 2	-	-	-	-	276	-
Critical Hdwy	-	-	4.32	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.398	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	834	-	291	459
Stage 1	-	-	-	-	510	-
Stage 2	-	-	-	-	771	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	834	-	290	459
Mov Cap-2 Maneuver	-	-	-	-	290	-
Stage 1	-	-	-	-	509	-
Stage 2	-	-	-	-	771	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	16.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	328	-	-	834	-
HCM Lane V/C Ratio	0.055	-	-	0.003	-
HCM Control Delay (s)	16.6	-	-	9.3	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	474	128	35	266	0	0	0	0	52	1	272
Future Volume (veh/h)	0	474	128	35	266	0	0	0	0	52	1	272
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1508	1508	1496	1496	0				1900	1484	1484
Adj Flow Rate, veh/h	0	539	0	40	302	0				59	1	309
Adj No. of Lanes	0	1	1	1	1	0				0	1	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88				0.88	0.88	0.88
Percent Heavy Veh, %	0	26	26	27	27	0				28	28	28
Cap, veh/h	0	618	525	60	809	0				393	7	357
Arrive On Green	0.00	0.41	0.00	0.04	0.54	0.00				0.28	0.28	0.28
Sat Flow, veh/h	0	1508	1282	1425	1496	0				1391	24	1262
Grp Volume(v), veh/h	0	539	0	40	302	0				60	0	309
Grp Sat Flow(s),veh/h/ln	0	1508	1282	1425	1496	0				1415	0	1262
Q Serve(g_s), s	0.0	16.7	0.0	1.4	5.9	0.0				1.6	0.0	11.8
Cycle Q Clear(g_c), s	0.0	16.7	0.0	1.4	5.9	0.0				1.6	0.0	11.8
Prop In Lane	0.00		1.00	1.00		0.00				0.98		1.00
Lane Grp Cap(c), veh/h	0	618	525	60	809	0				400	0	357
V/C Ratio(X)	0.00	0.87	0.00	0.66	0.37	0.00				0.15	0.00	0.87
Avail Cap(c_a), veh/h	0	845	718	140	1118	0				501	0	446
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	13.8	0.0	24.0	6.7	0.0				13.7	0.0	17.3
Incr Delay (d2), s/veh	0.0	7.6	0.0	11.7	0.3	0.0				0.2	0.0	13.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	8.2	0.0	0.8	2.5	0.0				0.7	0.0	5.5
LnGrp Delay(d),s/veh	0.0	21.4	0.0	35.7	7.0	0.0				13.8	0.0	31.1
LnGrp LOS		C		D	A					B		C
Approach Vol, veh/h		539			342						369	
Approach Delay, s/veh		21.4			10.4						28.3	
Approach LOS		C			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			6.7	25.3		18.9		32.0
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s			5.0	28.5		18.0		38.0
Max Q Clear Time (g_c+I1), s			3.4	18.7		13.8		7.9
Green Ext Time (p_c), s			0.0	2.1		0.5		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	20.4
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	478	97	66	265	0	0	0	0	264	7	420
Future Volume (veh/h)	0	478	97	66	265	0	0	0	0	264	7	420
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1776	1776	1638	1638	0				1900	1827	1827
Adj Flow Rate, veh/h	0	503	0	69	279	0				278	7	442
Adj No. of Lanes	0	1	1	1	1	0				0	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	7	7	16	16	0				4	4	4
Cap, veh/h	0	596	507	97	801	0				559	14	511
Arrive On Green	0.00	0.34	0.00	0.06	0.49	0.00				0.33	0.33	0.33
Sat Flow, veh/h	0	1776	1509	1560	1638	0				1699	43	1553
Grp Volume(v), veh/h	0	503	0	69	279	0				285	0	442
Grp Sat Flow(s),veh/h/ln	0	1776	1509	1560	1638	0				1742	0	1553
Q Serve(g_s), s	0.0	13.0	0.0	2.1	5.2	0.0				6.5	0.0	13.2
Cycle Q Clear(g_c), s	0.0	13.0	0.0	2.1	5.2	0.0				6.5	0.0	13.2
Prop In Lane	0.00		1.00	1.00		0.00				0.98		1.00
Lane Grp Cap(c), veh/h	0	596	507	97	801	0				573	0	511
V/C Ratio(X)	0.00	0.84	0.00	0.71	0.35	0.00				0.50	0.00	0.86
Avail Cap(c_a), veh/h	0	809	687	174	1077	0				652	0	581
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	15.2	0.0	22.7	7.8	0.0				13.3	0.0	15.5
Incr Delay (d2), s/veh	0.0	6.1	0.0	9.4	0.3	0.0				0.7	0.0	11.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.3	0.0	1.2	2.4	0.0				3.2	0.0	7.3
LnGrp Delay(d),s/veh	0.0	21.3	0.0	32.1	8.0	0.0				14.0	0.0	27.3
LnGrp LOS		C		C	A					B		C
Approach Vol, veh/h		503			348						727	
Approach Delay, s/veh		21.3			12.8						22.1	
Approach LOS		C			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			7.6	21.1		20.8		28.7
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s			5.5	22.5		18.5		32.5
Max Q Clear Time (g_c+I1), s			4.1	15.0		15.2		7.2
Green Ext Time (p_c), s			0.0	1.6		1.1		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	19.8
HCM 2010 LOS	B

MOVEMENT SUMMARY

Site: 1 [US101SB-129]

1. US 101 Southbound Ramps / State Route 129
Cumulative Plus Project Conditions
AM Peak Hour - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
East: SR 129											
1	L2	40	27.0	0.315	6.4	LOS A	0.0	0.0	0.00	0.00	36.9
6	T1	302	27.0	0.315	6.4	LOS A	0.0	0.0	0.00	0.00	37.3
Approach		342	27.0	0.315	6.4	LOS A	0.0	0.0	0.00	0.00	37.3
North: US 101 SB Offramp											
7	L2	59	28.0	0.081	5.6	LOS A	0.2	7.4	0.45	0.36	31.5
4	T1	1	28.0	0.081	5.6	LOS A	0.2	7.4	0.45	0.36	31.9
14	R2	309	28.0	0.414	10.2	LOS B	1.6	49.0	0.55	0.53	30.8
Approach		369	28.0	0.414	9.5	LOS A	1.6	49.0	0.54	0.50	31.0
West: SR 129											
2	T1	539	26.0	0.533	10.2	LOS B	2.4	73.3	0.34	0.21	32.3
12	R2	145	26.0	0.153	5.2	LOS A	0.5	15.0	0.25	0.14	33.2
Approach		684	26.0	0.533	9.1	LOS A	2.4	73.3	0.33	0.19	32.5
All Vehicles		1395	26.8	0.533	8.6	LOS A	2.4	73.3	0.30	0.23	33.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1 [US101SB-129]

1. US 101 Southbound Ramps / State Route 129
Cumulative Plus Project Conditions
PM Peak Hour - With Improvement
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
East: SR 129											
1	L2	69	16.0	0.293	5.7	LOS A	0.0	0.0	0.00	0.00	37.0
6	T1	279	16.0	0.293	5.7	LOS A	0.0	0.0	0.00	0.00	37.2
Approach		348	16.0	0.293	5.7	LOS A	0.0	0.0	0.00	0.00	37.2
North: US 101 SB Offramp											
7	L2	278	4.0	0.302	7.0	LOS A	1.3	34.5	0.52	0.46	31.7
4	T1	7	4.0	0.302	7.0	LOS A	1.3	34.5	0.52	0.46	31.6
14	R2	442	4.0	0.468	9.4	LOS A	2.8	73.3	0.61	0.60	31.7
Approach		727	4.0	0.468	8.5	LOS A	2.8	73.3	0.57	0.54	31.7
West: SR 129											
2	T1	503	7.0	0.522	10.4	LOS B	3.6	95.1	0.59	0.62	32.5
12	R2	102	7.0	0.115	5.1	LOS A	0.4	10.9	0.43	0.34	33.7
Approach		605	7.0	0.522	9.5	LOS A	3.6	95.1	0.57	0.57	32.7
All Vehicles		1681	7.6	0.522	8.3	LOS A	3.6	95.1	0.45	0.44	33.1

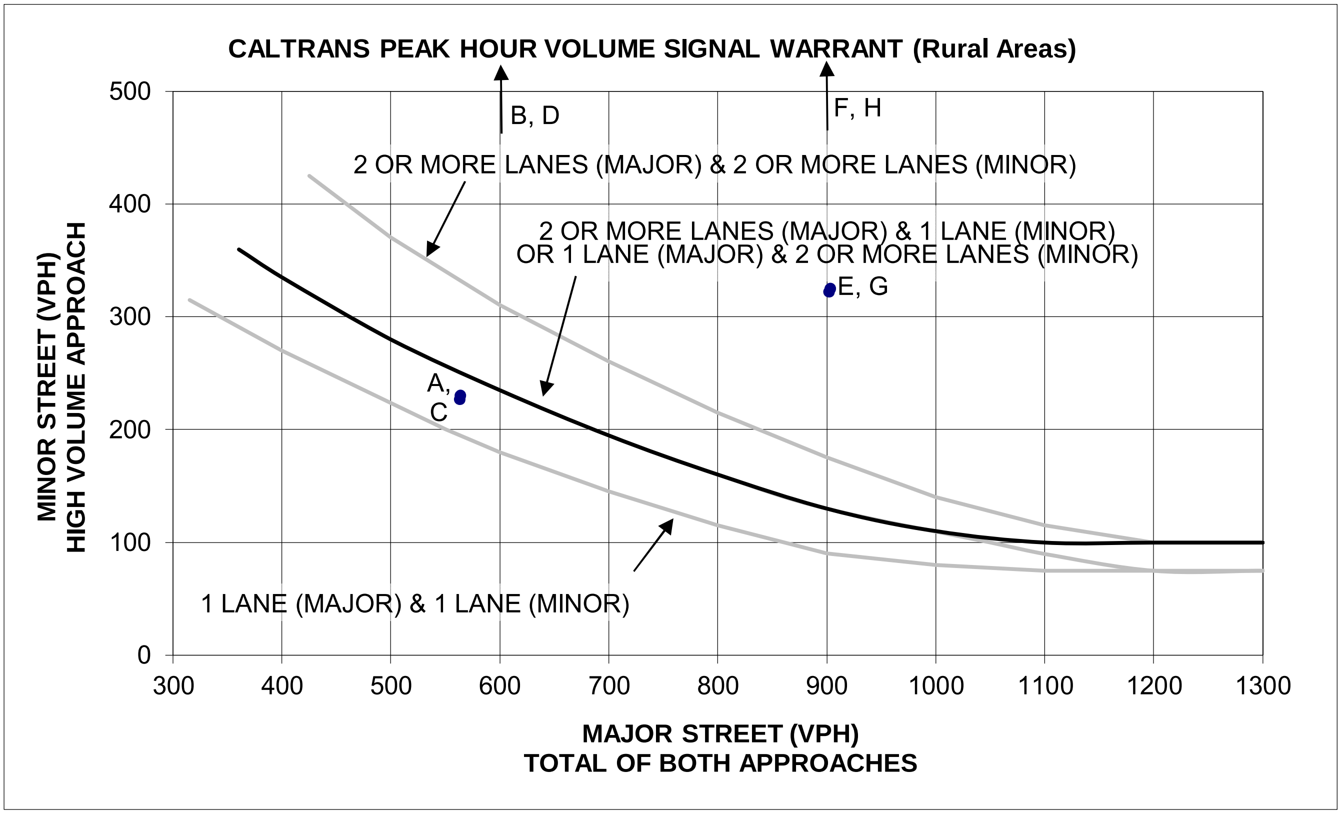
Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix G

Warrant

Worksheets

Intersection #1
Southbound US 101 Ramps / State Route 129



Scenario	SR 129	SB US 101	Warrant
	East/West	North/South	Met?
A. Exist AM	563	227	No
B. Exist PM	606	571	Yes
C. Ex+Pro AM	564	230	No
D. Ex+Pro PM	611	573	Yes
E. CumNoPro AM	902	322	Yes
F. CumNoPro PM	901	689	Yes
G. Cum+Pro AM	903	325	Yes
H. Cum+Pro PM	906	691	Yes

Notes:

1. 100 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 75 VPH applies as the lower threshold volume for a minor street approaching with one lane.
2. Bold line applies to intersection geometry.

Keith Higgins
Traffic Engineer

Warrant 3 (Part B) - Peak Hour Delay
#1 - Southbound US 101 Ramps / State Route 129

Number of Approaches to Intersection: 3 approaches — **Minimum Entering Vehicles: 650 vehicles**
Number of Approach Lanes: SB US 101 Rps: 2 lanes

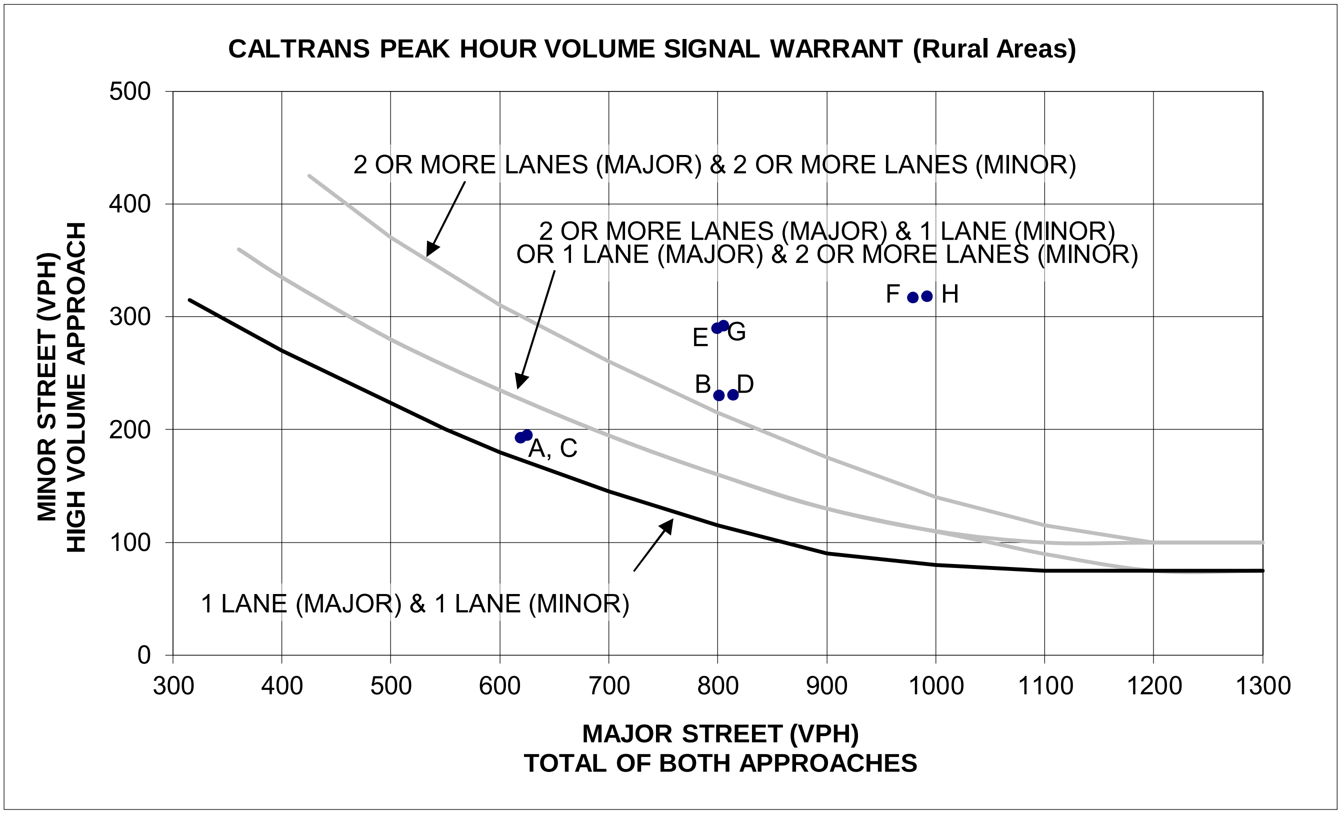
Total Entering Volumes:

Existing AM:	790 vehicles		
Existing PM:	1,177 vehicles		
Exist+Proj AM:	794 vehicles	CumNoPro AM:	1,224 vehicles
Exist+Proj PM:	1,184 vehicles	CumNoPro PM:	1,590 vehicles
		Cum+Proj AM:	1,228 vehicles
		Cum+Proj PM:	1,597 vehicles

Street	Direction	Scenario	Peak Hour	No. of Stopped Vehicles	Average Vehicle Delay (sec)	Total Vehicle Delay (sec)	Total Delay (hours)	Min. Approach Delay? 4 Veh-Hrs (One-Lane)	Min. Approach Delay? 5 Veh-Hrs (Two-Lane)	Min. Approach Vols? 100 Veh (One-Lane)	Min. Approach Vols? 150 Veh (Two-Lane)	At least 650 Veh? (Intersection)	Warrant Met?
US 101 Rps	SB	Existing	AM	227	11.8	2,679	0.74	N/A	NO	N/A	YES	YES	NO
US 101 Rps	SB	Existing	PM	571	16.2	9,250	2.57	N/A	NO	N/A	YES	YES	NO
US 101 Rps	SB	Exist+Proj	AM	230	11.8	2,714	0.75	N/A	NO	N/A	YES	YES	NO
US 101 Rps	SB	Exist+Proj	PM	573	16.4	9,397	2.61	N/A	NO	N/A	YES	YES	NO
US 101 Rps	SB	CumNoPro	AM	322	19.3	6,215	1.73	N/A	NO	N/A	YES	YES	NO
US 101 Rps	SB	CumNoPro	PM	689	29.9	20,601	5.72	N/A	YES	N/A	YES	YES	YES
US 101 Rps	SB	Cum+Proj	AM	325	19.3	6,273	1.74	N/A	NO	N/A	YES	YES	NO
US 101 Rps	SB	Cum+Proj	PM	691	30.2	20,868	5.80	N/A	YES	N/A	YES	YES	YES

Notes:
1. Warrant based on level of service calculations.
2. NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound.
3. N/A = Not Applicable - this evaluation does not apply to that approach.

Intersection #2
Northbound US 101 Ramps / State Route 129 - San Juan Highway



Scenario	SR 129-SJH	NB US 101	Warrant
	East/West	North/South	Met?
A. Exist AM	619	193	Yes
B. Exist PM	801	230	Yes
C. Ex+Pro AM	625	195	Yes
D. Ex+Pro PM	814	231	Yes
E. CumNoPro AM	799	290	Yes
F. CumNoPro PM	979	317	Yes
G. Cum+Pro AM	805	292	Yes
H. Cum+Pro PM	992	318	Yes

Notes:

1. 100 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 75 VPH applies as the lower threshold volume for a minor street approaching with one lane.
2. Bold line applies to intersection geometry.

Keith Higgins
Traffic Engineer

Warrant 3 (Part B) - Peak Hour Delay
#2 - NB US 101 Ramps / State Route 129 - San Juan Highway

Number of Approaches to Intersection: 3 approaches — **Minimum Entering Vehicles: 650 vehicles**
Number of Approach Lanes: NB US 101 Rps: 1 lanes

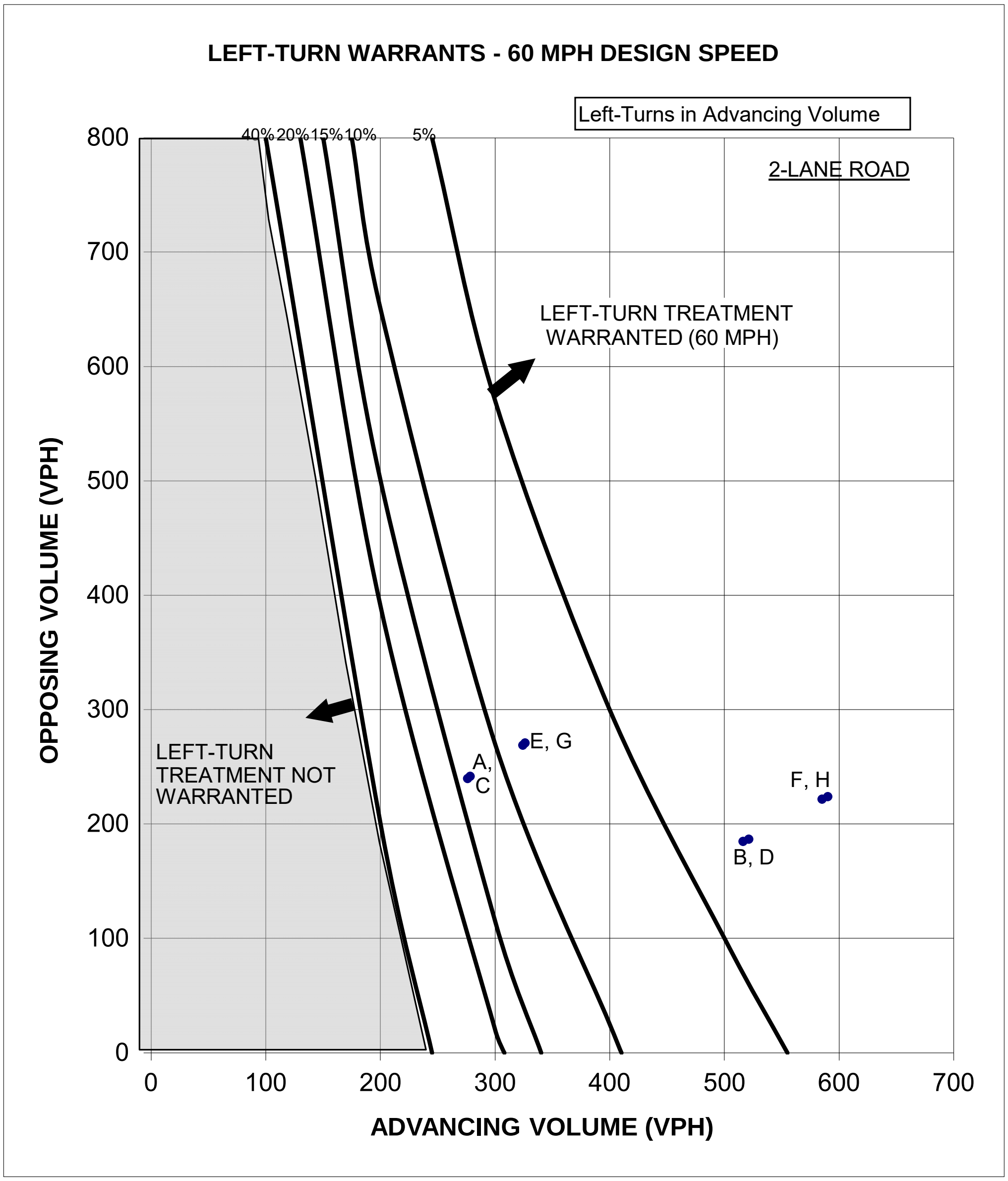
Total Entering Volumes:

Existing AM:	812 vehicles		
Existing PM:	1,031 vehicles		
Exist+Proj AM:	820 vehicles	CumNoPro AM:	1,089 vehicles
Exist+Proj PM:	1,045 vehicles	CumNoPro PM:	1,296 vehicles
		Cum+Proj AM:	1,097 vehicles
		Cum+Proj PM:	1,310 vehicles

Street	Direction	Scenario	Peak Hour	No. of Stopped Vehicles	Average Vehicle Delay (sec)	Total Vehicle Delay (sec)	Total Delay (hours)	Min. Approach Delay? 4 Veh-Hrs (One-Lane)	Min. Approach Delay? 5 Veh-Hrs (Two-Lane)	Min. Approach Vols? 100 Veh (One-Lane)	Min. Approach Vols? 150 Veh (Two-Lane)	At least 650 Veh? (Intersection)	Warrant Met?
US 101 Rps	NB	Existing	AM	193	12.8	2,470	0.69	NO	N/A	YES	N/A	YES	NO
US 101 Rps	NB	Existing	PM	230	15.4	3,542	0.98	NO	N/A	YES	N/A	YES	NO
US 101 Rps	NB	Exist+Proj	AM	195	12.9	2,516	0.70	NO	N/A	YES	N/A	YES	NO
US 101 Rps	NB	Exist+Proj	PM	231	15.7	3,627	1.01	NO	N/A	YES	N/A	YES	NO
US 101 Rps	NB	CumNoPro	AM	290	22.6	6,554	1.82	NO	N/A	YES	N/A	YES	NO
US 101 Rps	NB	CumNoPro	PM	317	26.9	8,527	2.37	NO	N/A	YES	N/A	YES	NO
US 101 Rps	NB	Cum+Proj	AM	292	23.1	6,745	1.87	NO	N/A	YES	N/A	YES	NO
US 101 Rps	NB	Cum+Proj	PM	318	28.3	8,999	2.50	NO	N/A	YES	N/A	YES	NO

Notes:
1. Warrant based on level of service calculations.
2. NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound.
3. N/A = Not Applicable - this evaluation does not apply to that approach.

Intersection #3
Anzar HS Dwy. (N) - Willis Construction Dwy. / San Juan Highway
Eastbound Approach



Scenario	Advancing	Opposing	% Left-Turn	Warrant Met?
A. Existing AM	276	240	5%	No
B. Existing PM	516	185	0%	Yes
C. Ex+Pro AM	278	242	5%	No
D. Ex+Pro PM	521	187	0%	Yes
E. CumNoPro AM	324	269	5%	No
F. CumNoPro PM	585	222	0%	Yes
G. Cum+Pro AM	326	271	5%	No
H. Cum+Pro PM	590	224	0%	Yes

Source: Transportation Research Board, "Intersection Channelization Guide", NCHRP Report 279, November, 1985

Keith Higgins
Traffic Engineer

Appendix H

Sight Distance

Calculations

Appendix H
Sight Distance Evaluation
Caltrans Method (Highway Design Manual)

Project Name:	Kawahara Nursery
Location:	Primary Project Driveway at San Juan Highway
Date:	7/27/20
Prepared by:	Jeff Waller
Reviewed by:	Keith Higgins

A. Data:

		Applicable?	
Location Type:	Private Driveway	Corner	No
Vehicle Type:	Combination Truck	Stopping	Yes
Type of Maneuver:	Left Turn		
Number of Lanes Crossed When Making Maneuver:	1 lanes		
Median Width:	1 feet (including left turn lanes)		
Travel Speed:			
Eastbound:	60 mph		
Westbound:	60 mph		
Grade:			
Stopped Approach:	0.00%		

B. Corner Sight Distance

Does not apply to
Private Intersections
and Driveways

C. Stopping Sight Distance

Sight Distance Standard:		
To/From East:	580 feet	
To/From West:	580 feet	
Available Sight Distance:		
To/From East:	580 feet	**Adequate**
To/From West:	760 feet	**Adequate**

D. Overall Conclusion

To/From East:	**Adequate**
To/From West:	**Adequate**