

Appendix A – Notice of Preparation and Scoping Comments

Contains:

- Notice of Preparation
- Scoping Period Comments

County of Santa Clara

Department of Planning and Development
Planning Division

County Government Center, East Wing, 7th Floor
70 West Hedding Street
San Jose, California 95110-1705
(408) 299-5770 FAX (408) 288-9198
www.sccplanning.org



NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT FOR THE Z-BEST COMPOSTING FACILITY MODIFICATIONS PROJECT

Date: October 15, 2018

Project Applicant: Zanker Road Resource Management LTD

File Number: 6498-17P

Assessor's Parcel Numbers: 841-37-028, 841-37-029, and 841-37-010

As the Lead Agency, the County of Santa Clara will prepare an Environmental Impact Report (EIR) for the Z-Best Compost Facility Modifications Project (proposed project). The proposed project site is the existing Z-Best Composting Facility at 980 Highway 25, which currently operates under a County-issued Use Permit. The proposed project includes modification of Z-Best's existing composting process from the current windrow method to an aerated static pile process, as well as associated changes in operations and site design. The proposed new process, which is described on pages 2-3, would occur within the already developed area of the existing composting facility. The proposed new process would result in a throughput increase from the current maximum of 1,500 tons to 2,750 tons per day, which would require an additional 59 trucks per day. The project proponent has proposed that the increased truck trips be confined to the hours of 8 p.m. to 4 a.m.

The County is soliciting guidance from your agency on the scope and content of the environmental information to be included in the EIR that is relevant to your area of interest, or to your agency's statutory responsibilities in connection with the proposed project. The project description summary and probable environmental effects that will be analyzed in the EIR are attached.

A Public Scoping Session to solicit comments for the Notice of Preparation will be held at the Gilroy Library, 350 W. 6th Street, Gilroy on Tuesday, October 30 from 6:30 p.m. to 8:00 p.m. In accordance with the California Environmental Quality Act (CEQA), comments on the Notice of Preparation (NOP) must be received within 30 days of receipt of this notice. Written and/or email comments on the NOP should be provided to the County at the earliest possible date, but must be received by 5 p.m. on November 16, 2018. Agencies that will need to consider the final EIR when deciding whether to issue permits or other approvals for the project should provide the name of a contact person. Please address comments to:

County of Santa Clara
Department of Planning and Development
Attention: David Rader
County Government Center
70 West Hedding Street, San Jose, CA 95110
Email: david.rader@pln.sccgov.org

Prepared by:

David M. Rader

Approved by:

Maurisa Sandhu

INTRODUCTION

The purpose of an Environmental Impact Report (EIR) is to inform decision-makers and the general public of the environmental effects of a proposed project that an agency may implement or approve. The EIR process is intended to provide information sufficient to (a) evaluate a proposed project and the potential for significant impacts on the environment, (b) to examine methods of reducing adverse impacts, and (c) to consider alternatives to the project. In accordance with the requirements of CEQA, the EIR for the Z-Best Composting Process Conversion Project will include the following:

A project description;

A description of existing environmental setting, potential project-level and cumulative environmental impacts, and mitigation measures;

Alternatives to the proposed project; and

CEQA-required environmental findings, including (a) significant environmental effects that cannot be avoided if the project is implemented; (b) significant irreversible and irretrievable commitments of resources; (c) growth-inducing impacts; and (d) effects found not to be significant.

PROJECT LOCATION

The project site is located at 980 Highway 25, southeast of the city of Gilroy and northwest of the city of Hollister, in unincorporated Santa Clara County. Figure 1 shows the regional location. Figure 2 shows the project site boundaries and vicinity. The project site encompasses assessor's parcels 841-37-029 (approximately 137 acres) and 841-37-010 (approximately 99 acres). Both parcels are designated Agricultural Large Scale under the County of Santa Clara General Plan and zoned Exclusive Agriculture with a 40 acre combining district (A-40Ac).

PROJECT DESCRIPTION

The proposed project includes modifications to the existing composting facility Use Permit to convert the current composting process from a windrow composting system to a static aerated pile composting system using technology from Engineered Compost Systems. Composting is the transformation of raw organic materials (e.g., yard trimmings) into biologically-stable, humus-rich substances suitable for growing plants. The existing windrow composting system at Z-Best requires that the windrows (long piles of raw organic material in bags) be periodically turned to improve porosity and oxygen content. Aerated static pile composting, on the other hand, would biodegrade organic material without physical manipulation during primary composting as it would use a ventilation system to circulate air within compost piles.

Composting Process

The proposed aerated composting process would be installed within southwest quadrant of the developed area of the existing composting facility, west of Area 1, as shown on Figure 3 (Site Plan). The proposed new composting process would occur in two stages:

Primary Composting. In the first stage, pre-processed feedstocks (organic material) would be stacked in piles within rows of attached cement bunkers, approximately 10 feet in height. The bunkers would be grouped in zones, and each zone would have a ventilation system with an electrically powered fan and a series of ducts connected to each bunker. A front-end loader would build up the piles to a height of approximately nine feet. Each pile would be covered with a six-inch bio-layer (clean cover material) intended to provide insulation to ensure adequate pathogen control and temperatures, and to function as an in-situ biofilter layer to reduce odors from volatile organic chemical released from the top of the pile.

At the primary composting stage, the ventilation system would provide negative aeration, drawing air down through the compost piles, which would be purified in a temperature controlled biofilter before

release. An irrigation system mounted on the bunker walls would provide automatic top watering of the piles to add moisture before pile break-down or to increase the moisture in the bio-layer for additional absorption of emissions. The proposed process is designed to operate with a 17-day retention of material in the primary composting stage.

Secondary Composting. After completing the primary composting process, the material would be moved by a front-end loader to a secondary composting zone (labeled as “Extended Bed CASP” on Figure 3) and piled to a maximum height of 9.5 feet. Secondary composting would take place in an extended bed aerated static pile with positive aeration, where air would be blown up through each compost pile. According to the project proponent, positive aeration can be used at this stage because it is expected that the primary composting process would have substantially deodorized and stabilized the material. Also, according to the project proponent, the material would not be covered with an insulating bio-layer at this stage because it is expected that it will have already met all pathogen reduction requirements during the primary composting stage.

Operations

The proposed new process would result in an increase in throughput of finished compost from the current maximum of 1,500 tons allowed under the existing Use Permit, to 2,750 tons per day. This increase would require an additional 59 truck trips per day, which the project proponent has proposed be confined to the hours of 8 p.m. to 4 a.m. The proposal includes a request to modify the use permit to allow a maximum of 90 employees to be on site, which would be an increase of 32 employees above current conditions.

Grading and Drainage

Changes to the composting area would involve replacing approximately 180,000 square feet of existing impervious surfaces (sidewalks, equipment pads, etc.). The proposed project would not result in a net change to total impervious or pervious surfaces. Grading would be required to establish pads for the new composting system and to provide on-site drainage and stormwater detention. The project proponent anticipates that the current site can accommodate all required stormwater detention, with primary on-site detention occurring in the modified Detention Basin 1, with additional flood storage capacity provided on-site to the north of Area 1, as shown on Figure 3. However, in the event this proves infeasible, additional stormwater retention would be provided by a 98.8-acre North Flood Storage Basin (assessor's parcel number 841-37-010), which is shown on Figure 4. This parcel is located immediately north/northeast of the existing operations site and the highway.

Site Access

Access to the project site is provided via one existing entrance, which intersects with SR 25 on the south side approximately 700 feet west of the intersection of Bolsa Road and SR 25. The project proponent is not proposing to change this access but is proposing adjacent construction of deceleration / acceleration lanes on SR 25. The project site entrance is located within the area of a Caltrans-approved Hollister to Gilroy State Route 25 Route Adoption project, which would involve potential widening and realignment of SR 25 from San Felipe Road (in Hollister) to the end of SR 25 at US 101 in Santa Clara County. Truck traffic originating from and bound for the project site is currently restricted from using Bolsa Road. All new truck and vehicular traffic originating from and bound for the project site would continue to be restricted to the use of only SR 25 to SR 156 and US 101. However, if the Caltrans project is constructed, it is anticipated that Bolsa intersection with SR 25 would shift east, and project traffic bound for and originating from the Z-Best facility would utilize the new Bolsa Road intersection with the realigned SR 25.

Permitting

The proposed project would require a major use permit and architecture and site approval modification and grading approval from the County of Santa Clara. Additional permits or permit modifications may be required from the County Local Enforcement Agency / CalRecycle (revised Solid Waste Facility Permit), the Central Coast Regional Water Quality Control Board, the Bay Area Air Quality Management District, and Caltrans (District 4).

POTENTIAL ENVIRONMENTAL IMPACTS

The EIR will include a discussion of the environmental setting/baseline for the proposed project, a summary of applicable regulations (federal, state, regional, and local), and an analysis of the potential impacts of the project. Mitigation will be recommended to reduce or eliminate project impacts, where feasible. The specific potential environmental impacts evaluated in detail in the EIR will be determined based on evaluation of the proposed project using an Initial Study environmental checklist (to be included in the Draft EIR) and on the comments received on this NOP. At this time, it is anticipated that the EIR will focus on the following topics.

Aesthetics. The EIR will evaluate the significance of changes to public views of the project site and changes to the character of the project site as seen from public roadways in the vicinity. Light and glare impacts will also be evaluated.

Agricultural Resources. The EIR will evaluate impacts to important farmland from development of the North Flood Storage Basin option, if pursued by the project proponent.

Air Quality and Greenhouse Gas Emissions. Construction-related emissions would be evaluated for installation of the new composting system and other site improvements. Emissions from operations, including from increased truck trips and employee vehicle trips would be quantified against Bay Area Air Quality Management District thresholds. The air quality analysis would also evaluate odor impacts from the proposed new composting operations.

Biological Resources. The portion of the proposed project south of State Route 25 would take place within the existing developed footprint. Therefore, the environmental analysis would analyze potential biological impacts from development and operation of the North Flood Storage Basin option, if pursued by the project proponent.

Tribal and Other Cultural Resources. Any tribal or other cultural resources that are known or have the potential to occur on the project site will be assessed, and the potential impacts that may occur to known and unanticipated resources as a result of project implementation will be evaluated.

Hydrology and Water Quality. The potential impacts of implementation of the proposed project with respect to modification of existing drainage patterns, decreased water quality, runoff, and flooding will be evaluated.

Noise. Existing noise and vibration conditions on the project site and the nearby vicinity will be described, including information on the location of existing sensitive receptors and major noise sources, ambient noise levels, and natural factors that relate to the attenuation thereof. Construction-related noise and ground vibration will be analyzed using published reference noise and vibration levels for typical construction equipment. The project's potential to generate operations-related noise increases from the modified composting process and additional truck trips traffic will also be evaluated to determine whether noise standards could be exceeded.

Transportation and Circulation. The EIR will evaluate site access and circulation with a focus on impacts to SR 25 from the additional truck trips. The traffic assessment would evaluate intersection levels of service for existing and projected peak-hour traffic volumes with the proposed facility expansion at the project driveway and at Bolsa Road intersection, with and without the SR realignment. An analysis of Vehicle Miles Traveled will be included for informational purposes.

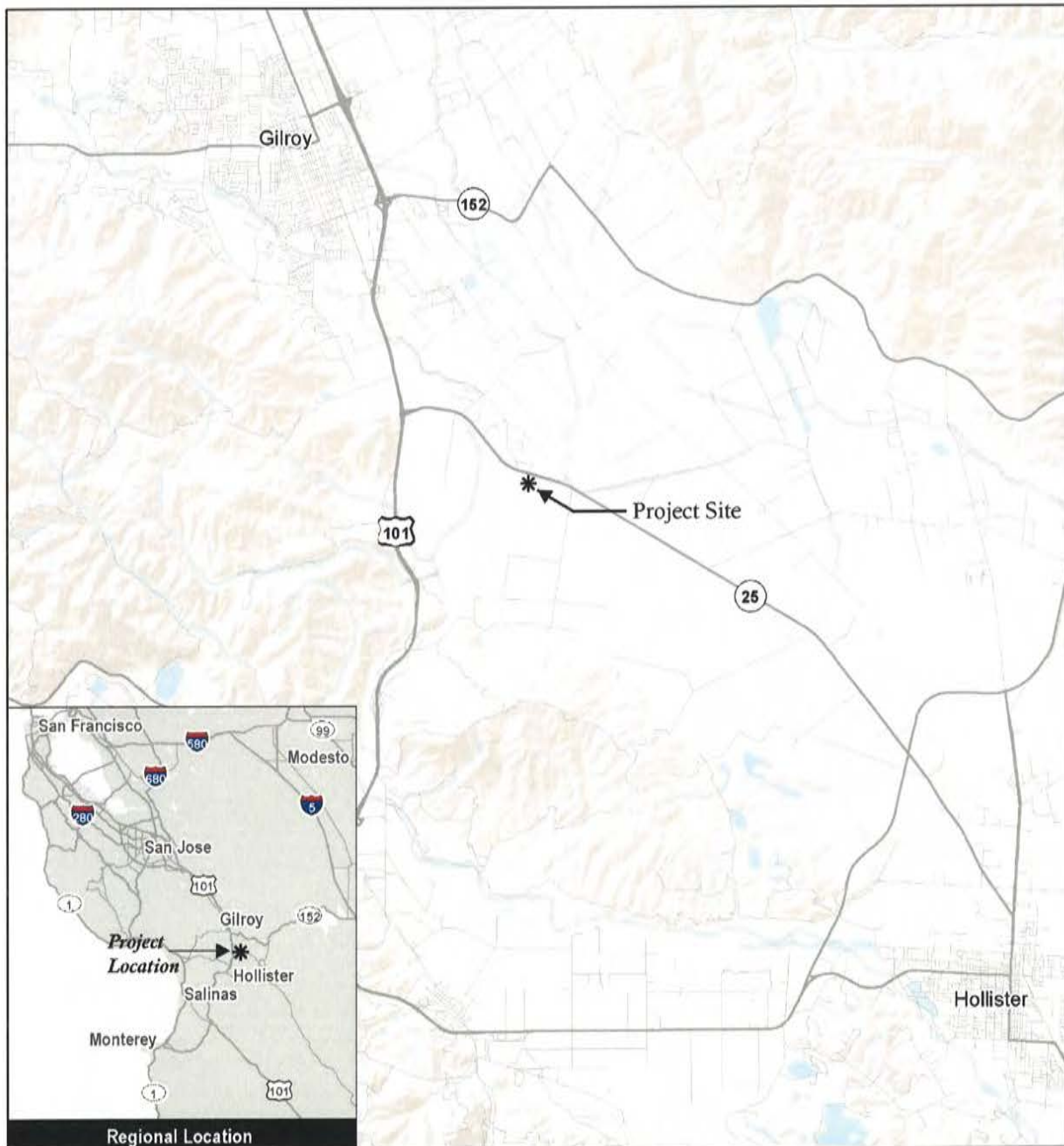
Utilities and Energy. Potential future demand from the proposed project will be compared to estimates of existing use on the site and regional planning documents to determine if the project would result in significant increases in demand for water, water treatment, natural gas, and electricity.

In addition to the evaluation of potential impacts, the following analyses will be included in the EIR.

Cumulative Impacts. This section of the EIR will discuss, issue by issue, the potential for the proposed project, when combined with other development identified in the cumulative setting, to either result in new, or contribute to existing, cumulatively considerable adverse effects on the environment.

Alternatives. CEQA requires that an EIR describe a range of reasonable alternatives to a project (or project location) that feasibly attain most of the objectives, but could avoid or reduce at least one environmental impact (see CEQA Guidelines Section 15126.6).

Growth Inducement. This section will qualitatively evaluate the project's potential to induce growth and any subsequent environmental impacts that would occur (pursuant to CEQA Guidelines Section 15126[d]).



Source: EMC Planning, ESRI 2018

Figure 1 - Project Site Location



Source: EMC Planning, ESRI 2018

Figure 2 - Project Site Vicinity

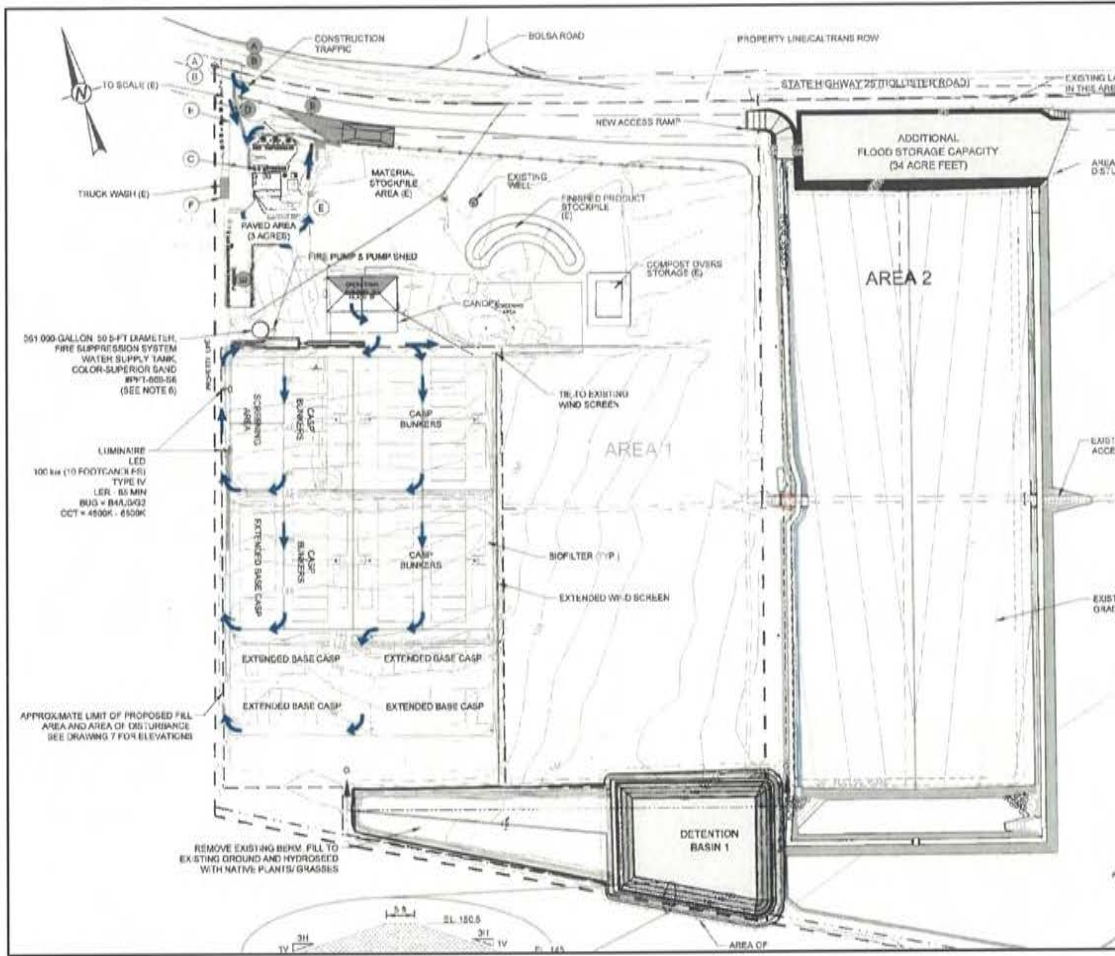


Figure 3 - Site Plan



Figure 4 - North Storage Flood Basin Option



STATE OF CALIFORNIA
GOVERNOR'S OFFICE of PLANNING AND RESEARCH



EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

Notice of Preparation

October 16, 2018

To: Reviewing Agencies
Re: Z-Best Composting Facility Modifications Project
SCH# 2018102041

Attached for your review and comment is the Notice of Preparation (NOP) for the Z-Best Composting Facility Modifications Project draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

David Rader
Santa Clara County
70 W. Hedding Street
7th Floor, East Wing
San Jose, CA 95112

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Attachments
cc: Lead Agency

**Document Details Report
State Clearinghouse Data Base**

SCH# 2018102041
Project Title Z-Best Composting Facility Modifications Project
Lead Agency Santa Clara County

Type NOP Notice of Preparation
Description The proposed project site is the existing Z-Best Composting Facility at 980 Highway 25, which currently operates under a County-issued Use Permit. The proposed project includes modification of Z-Best's existing composting process from the current windrow method to an aerated static pile process, and associated changes in operations and site design. The proposed new composting process would occur within the already developed area of the existing composting facility. The proposed new process would result in a throughput increase from the current max of 1,500 tons to 2,750 tons per day, which would require an additional 59 trucks per day. The project proponent has proposed that the increased truck trips be confined to the hours of 8 pm to 4 am.

Lead Agency Contact

Name David Rader
Agency Santa Clara County
Phone 408-299-5779 **Fax**
email
Address 70 W. Hedding Street
7th Floor, East Wing
City San Jose **State** CA **Zip** 95112

Project Location

County Santa Clara
City Gilroy
Region
Cross Streets Bolsa Rd and Hwy 25
Lat / Long
Parcel No. 841-37-029
Township **Range** **Section** **Base**

Proximity to:

Highways 25
Airports
Railways
Waterways Pajaro River
Schools
Land Use Ag large scale/A-40Ac

Project Issues Aesthetic/Visual; Agricultural Land; Air Quality; Archaeologic-Historic; Biological Resources; Drainage/Absorption; Flood Plain/Flooding; Noise; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Water Quality; Cumulative Effects; Other Issues

Reviewing Agencies Resources Agency; Department of Conservation; Department of Parks and Recreation; Department of Water Resources; Department of Fish and Wildlife, Region 3; Native American Heritage Commission; California Highway Patrol; Caltrans, District 4; California Energy Commission; Air Resources Board, Major Industrial Projects; Resources, Recycling and Recovery; State Water Resources Control Board, Division of Drinking Water; Department of Toxic Substances Control; Regional Water Quality Control Board, Region 3; Department of Pesticide Regulation; Department of Food and Agriculture

Date Received 10/16/2018 **Start of Review** 10/16/2018 **End of Review** 11/14/2018

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

2018#8102041

Project Title: Z-Best Composting Facility Modifications Project
Lead Agency: County of Santa Clara
Mailing Address: 70 W. Hedding Street, East Wing, 7th Floor
City: San Jose Zip: 95110 County: Santa Clara
Contact Person: David Rader
Phone: (408) 299-5779

Project Location: County: Santa Clara City/Nearest Community: Gilroy
Cross Streets: Bolsa Road and Highway 25 Zip Code: 95020
Longitude/Latitude (degrees, minutes and seconds):
Assessor's Parcel No.: 841-37-029 Section: Twp.: Range: Base:
Within 2 Miles: State Hwy #: 25 Waterways: Pajaro River
Airports: Railways: Schools:

Document Type:
CEQA: [X] NOP [] Draft EIR NEPA: [] NOI Other: [] Joint Document
[] Early Cons [] Supplement/Subsequent EIR [] EA [] Final Document
[] Neg Dec (Prior SCH No.) [] Draft EIS [] Other:
[] Mit Neg Dec Other:

Local Action Type:
[] General Plan Update [] Specific Plan [] Rezone [] Annexation
[] General Plan Amendment [] Master Plan [] Prezone [] Redevelopment
[] General Plan Element [] Planned Unit Development [X] Use Permit [] Coastal Permit
[] Community Plan [] Site Plan [] Other: Grading approval
Governor's Office of Planning & Research
OCT 16 2018
STATE CLEARINGHOUSE

Development Type:
[] Residential: Units Acres
[] Office: Sq.ft. Acres Employees
[] Commercial: Sq.ft. Acres Employees
[] Industrial: Sq.ft. Acres Employees
[] Educational:
[] Recreational:
[] Water Facilities: Type MGD
[] Transportation: Type
[] Mining: Mineral
[] Power: Type MW
[] Waste Treatment: Type MGD
[] Hazardous Waste: Type
[X] Other: Modification of an existing composting facility

Project Issues Discussed in Document:
[X] Aesthetic/Visual [] Fiscal [] Recreation/Parks [] Vegetation
[X] Agricultural Land [X] Flood Plain/Flooding [] Schools/Universities [X] Water Quality
[X] Air Quality [] Forest Land/Fire Hazard [] Septic Systems [] Water Supply/Groundwater
[X] Archeological/Historical [] Geologic/Seismic [] Sewer Capacity [] Wetland/Riparian
[X] Biological Resources [] Minerals [X] Soil Erosion/Compaction/Grading [] Growth Inducement
[] Coastal Zone [X] Noise [X] Solid Waste [] Land Use
[X] Drainage/Absorption [] Population/Housing Balance [X] Toxic/Hazardous [X] Cumulative Effects
[] Economic/Jobs [] Public Services/Facilities [X] Traffic/Circulation [X] Other: Energy

Present Land Use/Zoning/General Plan Designation:
Agriculture Large Scale / A-40Ac

Project Description: (please use a separate page if necessary)
The proposed project site is the existing Z-Best Composting Facility at 980 Highway 25, which currently operates under a County-issued Use Permit. The proposed project includes modification of Z-Best's existing composting process from the current windrow method to an aerated static pile process, and associated changes in operations and site design. The proposed new composting process would occur within the already developed area of the existing composting facility. The proposed new process would result in a throughput increase from the current maximum of 1,500 tons to 2,750 tons per day, which would require an additional 59 trucks per day. The project proponent has proposed that the increased truck trips be confined to the hours of 8 p.m. to 4 a.m.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.
Revised 2010

NOP Distribution List

County: Santa Clara *af*

SCH# 2018102041

Regional Water Quality Control Board (RWQCB)

Resources Agency

Resources Agency
Nadell Gayou

Dept. of Boating & Waterways
Denise Peterson

California Coastal Commission
Allyson Hitt

Colorado River Board
Elsa Contreras

Dept. of Conservation
Crina Chan

Cal Fire
Dan Foster

Central Valley Flood Protection Board
James Herota

Office of Historic Preservation
Ron P

Dept of Pan Environment Section

S.F. Bay Dev't. Com
Steve Gold

Dept. of Water Resources
Resources Agency
Nadell Gayou

Fish and Game

Depart. of Fish
Scott Flint
Environmental Services Division

Fish & Wildlife Resources
Curt Babcock

Fish & Wildlife Region 1E
Laurie Harnsberger

Fish & Wildlife Region 2
Jeff Drongesen

Fish & Wildlife Region 3
Craig Weightman

Fish & Wildlife Region 4
Julie Vance

Fish & Wildlife Region 5
Leslie Newton-Reed
Habitat Conservation Program

Fish & Wildlife Region 6
Tiffany Ellis
Habitat Conservation Program

Fish & Wildlife Region 6 I/M
Heidi Calvert
Inyo/Mono, Habitat Conservation Program

Dept. of Fish & Wildlife Marine Region
William Paznokas

*Other Dept. of Fish & Wildlife
Make 1 copy of copies
goes in file*

Delta Protection Commission
Erik Vink

Delta Stewardship Council
Anthony Navasero

California Energy Commission
Eric Knight

Native American Heritage Comm.
Debbie Treadway

Public Utilities Commission
Supervisor

Santa Monica Bay Restoration
Guangyu Wang

State Lands Commission
Jennifer Deleong

Tahoe Regional Planning Agency (TRPA)
Cherry Jacques

Cal State Transportation Agency CalSTA

Caltrans - Division of Aeronautics
Philip Crimmins

Caltrans - Planning HQ LD-IGR
Christian Bushong

California Highway Patrol
Suzann Ikeuchi
Office of Special Projects

Dept. of Transportation

Caltrans, District 1
Rex Jackman

Caltrans, District 2
Marcelino Gonzalez

Caltrans, District 3
Susan Zanchi

Caltrans, District 4
Patricia Maurice

Caltrans, District 5
Larry Newland

Caltrans, District 6
Michael Navarro

Caltrans, District 7
Dianna Watson

Caltrans, District 8
Mark Roberts

Caltrans, District 9
Gayle Rosander

Caltrans, District 10
Tom Dumas

Caltrans, District 11
Jacob Armstrong

Caltrans, District 12
Maureen El Harake

Cal EPA

Air Resources Board

Airport & Freight
Jack Wursten

Transportation Projects
Nesamani Kalandiyur

Industrial/Energy Projects
Mike Tollstrup

California Department of Resources, Recycling & Recovery
Kevin Taylor/Jeff Esquivel

State Water Resources Control Board
Regional Programs Unit
Division of Financial Assistance

State Water Resources Control Board
Cindy Forbes - Asst Deputy
Division of Drinking Water

State Water Resources Control Board
Div. Drinking Water # _____

State Water Resources Control Board
Student Intern, 401 Water Quality Certification Unit
Division of Water Quality

State Water Resources Control Board
Phil Crader
Division of Water Rights

Dept. of Toxic Substances Control Reg. # _____
CEQA Tracking Center

Department of Pesticide Regulation
CEQA Coordinator

RWQCB 1
Cathleen Hudson
North Coast Region (1)

RWQCB 2
Environmental Document Coordinator
San Francisco Bay Region (2)

RWQCB 3
Central Coast Region (3)

RWQCB 4
Teresa Rodgers
Los Angeles Region (4)

RWQCB 5S
Central Valley Region (5)

RWQCB 5F
Central Valley Region (5)
Fresno Branch Office

RWQCB 5R
Central Valley Region (5)
Redding Branch Office

RWQCB 6
Lahontan Region (6)

RWQCB 6V
Lahontan Region (6)
Victorville Branch Office

RWQCB 7
Colorado River Basin Region (7)

RWQCB 8
Santa Ana Region (8)

RWQCB 9
San Diego Region (9)

Other DWSC-pesticides

Conservancy

From: [Anna Montes](#)
To: [Rader, David](#)
Subject: File#6498-17P Z-Best Composting Facility
Date: Tuesday, October 23, 2018 4:06:28 PM

Thank you for your letter dated October 15, 2018, we own one of the impacted properties regarding this proposed Use Permit. Our main concern is for the heavy traffic flow and the back up already present on Highway 25. This use permit would increase the back up and be detrimental to all, not only those on Highway 25, but those who commute using Highway 25. The smell is horrific as well and already is an issue. Why increase all this negativity?

Thank you

Jose and Anna Montes

Managing members of AMG ENTERPRISE LLC

From: kevingconant
To: Rader, David
Cc: Wasserman, Mike; roland.velasco@cityofgilroy.org
Subject: I object to Z-Best's application for expansion
Date: Sunday, October 28, 2018 9:57:18 PM

As a resident and property owner in the unincorporated area of Gilroy, directly affected by this application, I wish to express my objection to Z-Best's application to expand their facility and change their processing of compost, thereby increasing the number of diesel trucks in my community.

One need only to breath deep and smell the air near Alviso and Milpitas to ask whether there is an offensive odor of a water pollution control plant, a dump, and a Z-Best composting facility nearby. Most likely, because the prevailing winds never make it to the Supervisor's office or San Jose city hall in downtown San Jose, Willow Glen, Almaden Valley, Saratoga or Los Gatos, does anyone of any political consequence ever get any traction in the current situation of the reduction/conversion of waste in Santa Clara County.

You are currently considering allowing Z-Best to expand their current facility and a change of process in south Santa Clara County. One would only have to live downwind from this facility to know that this request is ludicrous, offensive and potentially harmful to our health, environment and property values.

What has BAAQMD said regarding the offensive smell from any expansion of this facility, let alone, a new process and additional commercial vehicle traffic? What are the mitigations?

Where is the empirical data that this will not further create more odor of rotting/composting material downwind?

I have complained numerous times to the BAAQMD of the odor from Z-Best and the facility on Prunedale Avenue in east Gilroy, that was once the dump east of Gilroy, now a composting facility as well.

I object, wholeheartedly to this proposal and desire you to enter my objection into the record, as I cannot attend the public meeting regarding this application.

Please reply to me that you have received this correspondence and assure me in writing that my objection has been entered into the public record.

I expect an answer to my questions in writing and desire to be contacted.

Kevin Conant

3330 Leavesley Road

Gilroy, CA 95020-9000

(408) 391-7992

NATIVE AMERICAN HERITAGE COMMISSION

Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone (916) 373-3710
Email: nahc@nahc.ca.gov
Website: <http://www.nahc.ca.gov>
Twitter: @CA_NAHC



October 26, 2018

David Rader
Santa Clara County
70 W. Hedding Street, 7th Floor, East Wing
San Jose, CA 95112

RE: SCH# 2018102041 Z-Best Composting Facility Modifications Project, Santa Clara County

Dear Mr. Rader:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit. 14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:
 - a. A brief description of the project.
 - b. The lead agency contact information.
 - c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
 - d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).
2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).
 - a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).
3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:
 - a. Alternatives to the project.
 - b. Recommended mitigation measures.
 - c. Significant effects. (Pub. Resources Code §21080.3.2 (a)).
4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:
 - a. Type of environmental review necessary.
 - b. Significance of the tribal cultural resources.
 - c. Significance of the project's impacts on tribal cultural resources.
 - d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).
5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).
6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:
 - a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
 - b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:
 - a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
 - b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).
8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).
9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).
10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:
 - a. Avoidance and preservation of the resources in place, including, but not limited to:
 - i. Planning and construction to avoid the resources and protect the cultural and natural context.
 - ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
 - b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
 - i. Protecting the cultural character and integrity of the resource.
 - ii. Protecting the traditional use of the resource.
 - iii. Protecting the confidentiality of the resource.
 - c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
 - d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).
 - e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).
 - f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).
11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
 - a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.
 - b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
 - c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf

Some of SB 18's provisions include:

1. **Tribal Consultation:** If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. **No Statutory Time Limit on SB 18 Tribal Consultation.** There is no statutory time limit on SB 18 tribal consultation.
3. **Confidentiality:** Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. **Conclusion of SB 18 Tribal Consultation:** Consultation should be concluded at the point in which:
 - a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
 - b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: <http://nahc.ca.gov/resources/forms/>

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
 - a. If part or all of the APE has been previously surveyed for cultural resources.
 - b. If any known cultural resources have already been recorded on or adjacent to the APE.
 - c. If the probability is low, moderate, or high that cultural resources are located in the APE.
 - d. If a survey is required to determine whether previously unrecorded cultural resources are present.
2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
 - a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
 - b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
 - a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
 - b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.
4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
 - a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
 - b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
 - c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Debbie.Treadway@nahc.ca.gov.

Sincerely,



for

Debbie Treadway
Environmental Scientist

cc: State Clearinghouse

Public Scoping Meeting for the Environmental Impact Report on the Z-Best Composting Facility Modifications Project

SCOPING COMMENTS (Please print clearly and legibly)

Please hand in during the meeting or mail (address on back) or email by **November 16, 2018**.

Name: Jason Retterer

Organization (if any): Johnson, Rovella, Retterer, Rosenthal + Gilles, LLP

Address (optional): 318 Cayuga St.

City, State, Zip: Solinas, CA 93901

E-mail: jason@jrgattorneys.com

This comment form is being furnished to obtain suggestions and information from the public on the scope of issues and alternatives that will be addressed in the EIR. All comments received, including names and addresses, will become part of the official administrative record and may be made available to the public.

Comments (Please print clearly and legibly)

The Draft EIR must address the potential direct and indirect impacts on agricultural resources. Accordingly, the Draft EIR must address potential impacts of the expanded throughput on adjacent agricultural land, including the potential for pathogens to be transferred to off-site ag land by wind or through underlying groundwater. The EIR should specifically address whether and to what extent buffers are required to preserve the integrity of the row crops and farmland offsite. Currently, based on food safety requirements, the farmer to the south must maintain a 20-40 foot wide buffer due to the existence

(More space on reverse side)

existence of 2-Best. This land has been taken out of production. Of specific concern is an activity that is being placed closer to the adjacent farmlands. The Draft EIR should also explore whether other mitigation like perimeter fencing is required to prevent air borne transport of debris and potential pathogens to adjacent farm land.

Thank you.

Send comments to:

David Rader

County Government Center, East Wing, 7th Floor

70 W. Hedding Street, San Jose 95110

david.rader@pln.sccgov.org



DEPARTMENT OF RESOURCES RECYCLING AND RECOVERY

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P.O. BOX 4025, SACRAMENTO, CALIFORNIA 95812

November 14, 2018

David Rader
County of Santa Clara
Department of Planning and Development
70 West Hedding Street
San Jose, CA 95112

Subject: SCH No. 2018102041 –Notice of Preparation of an Environmental Impact Report for the Z-Best Composting Facility Modifications Project. Facility No. 43-AA-0015, Santa Clara County.

Dear Mr. Rader:

Thank you for allowing the Department of Resources Recycling and Recovery (CalRecycle) staff to provide comments on the proposed project and for your agency's consideration of these comments as part of the California Environmental Quality Act (CEQA) process.

PROJECT DESCRIPTION

County of Santa Clara Department of Planning and Development, acting as Lead Agency, has prepared and circulated a Notice of Preparation (NOP) of an Environmental Impact Report (EIR) in order to comply with CEQA and to provide information to, and solicit consultation with, Responsible Agencies in the approval of the proposed project.

The proposed project site is the existing Z-Best Composting Facility at 980 Highway 25, which currently operates under a County-issued Use Permit. The proposed project includes modification of Z-Best's existing composting process from the current windrow method to an aerated static pile process, and associated changes in operations and site design. The proposed new composting process would occur within the already developed area of the existing composting facility. The proposed new process would result in a throughput increase from the current max of 1,500 tons to 2,750 tons per day, which would require an additional 59 trucks per day. The project proponent has proposed that the increased truck trips be confined to the hours of 8 p.m. to 4 a.m.

COMMENTS

Composting Process

The proposed project description states that the "primary composting" process will utilize "a six-inch bio-layer (clean cover material) intended to provide insulation to ensure adequate pathogen control and temperatures, and to function as an in-situ biofilter layer to reduce odors from volatile organic chemical released from the top of the pile." Staff requests a description of the



"clean cover material" to be used as the biofilter layer, as well a description of the periodic maintenance of the biofilter to ensure efficiency in reducing potential odor emissions.

Pursuant to Title 14 California Code of Regulations (14 CCR), section 17863.4, the facility's Odor Impact Minimization Plan (OIMP) will also need to be revised accordingly to reflect the proposed changes in composting process and incoming waste tonnage.

Operations

The project description states that the proposed new composting process will result in an increase in throughput of finished compost from the current maximum of 1,500 tons per day to 2,750 tons per day. Staff requests a description of estimated quantities of feedstock and additives that will be processed as a result of the proposed daily tonnage increase. The project description also needs to clarify that the proposed increase in daily tonnage from 1,500 tons per day to 2,750 tons per day pertains to incoming feedstock (to be processed into compost) and not the amount of finished compost (after undergoing the composting process and meeting environmental sampling standards). The current Solid Waste Facilities Permit allows the facility to receive a maximum of 1,500 tons per day of composting feedstock through the gate.

The project description further states that the proposed waste tonnage increase would require an additional 59 truck trips per day. In the interest of clarity, staff requests the inclusion of the total number of vehicles per day allowed at the facility with the approval of this project.

Solid Waste Regulatory Oversight

The Santa Clara County, Environmental Health Division is the Local Enforcement Agency (LEA) and is responsible for providing regulatory oversight of solid waste handling activities, including inspections. Please contact the LEA, Jaji Murage, at 408.918.3405 to discuss the regulatory requirements for the proposed project.

Prior to implementation of the proposed project, the operator shall submit an application package to the LEA in order to revise their current Solid Waste Facilities Permit pursuant to Title 27 California Code of Regulations (27 CCR), section 21570, which shall be processed by the LEA pursuant to 27 CCR, section 21650.

CONCLUSION

CalRecycle staff thanks the Lead Agency for the opportunity to review and comment on the environmental document and hopes that this comment letter will be useful to the Lead Agency preparing the EIR and in carrying out their responsibilities in the CEQA process.

CalRecycle staff requests copies of any subsequent environmental documents, copies of public notices and any Notices of Determination for this proposed project.

If the environmental document is certified during a public hearing, CalRecycle staff requests 10 days advance notice of this hearing. If the document is certified without a public hearing, CalRecycle staff requests 10 days advance notification of the date of the certification and proposed project approval by the decision making body.

If you have any questions regarding these comments, please contact me at 916.341.6427 or by e-mail at eric.kiruja@calrecycle.ca.gov.

Sincerely,

A handwritten signature in blue ink that reads "Eric Kiruja".

Eric Kiruja
Permitting & Assistance Branch – North Unit
Waste Permitting, Compliance & Mitigation Division
CalRecycle

cc: Patrick Snider, Supervisor: Permitting & Assistance Branch – North Unit
Jaji Murage, County of Santa Clara LEA



November 15, 2018

**BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT**

David Rader
Department of Planning and Development
County Government Center
70 West Hedding Street
San Jose, CA 95110

RE: NOP on Z-Best Composting Modifications

ALAMEDA COUNTY
John J. Bauters
Pauline Russo Cutter
Scott Haggerty
Nate Miley

CONTRA COSTA COUNTY
John Gioia
David Hudson
(Chair)
Karen Mitchoff
Mark Ross

MARIN COUNTY
Katie Rice
(Vice Chair)

NAPA COUNTY
Brad Wagenknecht

SAN FRANCISCO COUNTY
Rafael Mandelman
Hillary Ronen
Tyrone Jue
(SF Mayor's Appointee)

SAN MATEO COUNTY
David Canepa
Carole Groom
Doug Kim

SANTA CLARA COUNTY
Margaret Abe-Koga
Cindy Chavez
Liz Kniss
Rod G. Sinks
(Secretary)

SOLANO COUNTY
Pete Sanchez
James Sperring

SONOMA COUNTY
Teresa Barrett
Shirlee Zane

Jack P. Broadbent
EXECUTIVE OFFICER/APCO

Dear Mr. Rader,

Bay Area Air Quality Management District (Air District) staff has reviewed the notice of preparation (NOP) for a draft environmental impact report (DEIR) on the Z-Best Composting Facility Modifications (Project). This DEIR will examine the potential impacts from conversion of an existing composting operation using windrows-based composting methods to one using aerated static piles. The planned modification includes an increase in maximum daily throughput from 1,500 to 2,750 tons per day (tpd), an estimated doubling in truck trips per day, and a proposal to restrict truck trips to between 8pm to 4am. The Project will be required to obtain an authority to construct and a permit to operate from the Air District for its composting operation. We recommend that the project proponent initiate the permit application as soon as practicable.

While the NOP contains many details about the project, the project description does not identify some critical information about the project, such as (i) the parts of the existing facility that are being expanded and/or replaced, (ii) the materials being brought in for processing, and (iii) the anticipated products and their markets. Air District staff recommends that the project description in the DEIR include this information and the air quality analysis consider it within the impact discussion.

Air District staff recommends that the following information be provided in the DEIR:

- An evaluation of proximity of nearby receptors including schools, residential areas and businesses, and potential impacts of air pollutant emissions and odors.
- An estimate of construction-related emissions of particulate matter, ozone precursors (NOx/ROG), and greenhouse gases in pounds per day and tons per year.
- An estimate of daily and annual emissions of particulate matter, ozone precursors (NOx/ROG), and greenhouse gases in pounds per day and tons per year from all on-road and off-road mobile sources of emissions.

Connect with the
Bay Area Air District:



-
- A cumulative emission estimate of all on-road and off-road mobile sources of emissions for particulate matter, ozone precursors (NOx/ROG), and greenhouse gases associated with the existing operations and the proposed Project.
 - An estimate of total vehicle miles traveled (VMT) by vehicle class. This VMT assessment should be based on where the material to be composted will be coming from and where the finished products will be transported once the composting is completed. This analysis should not be limited to just VMT in the Bay Area Air Basin (Air Basin). All vehicle miles traveled within or outside the Air Basin should be estimated and used in the emission estimate for on-road air quality impacts.
 - A project-alone and a cumulative health risk analysis to assess the potential health impacts associated with any increase in emissions at the facility on nearby sensitive receptors or sensitive receptors along State Route 25.
 - Identification of all emission sources at the existing facility by source name (including the permitted source number, where available). If the proposed aerated composting process retires and/or replaces current processes, the DEIR should be explicit about sources being retained and those being replaced.
 - An estimate of the potential air emissions associated with any new or modified transfer station (e.g., the tipping building), whether off-site or on-site.
 - An estimate of current actual air emissions, the current permitted air emissions, and the air emissions for the proposed project from both new or modified sources. If the proposed aerated composting process retires and/or replaces current processes, any associated emissions reductions associated with their retirement and replacement should be clearly detailed.
 - The emission factors used to estimate emissions, the emission calculation formulas, parameters, assumptions and bases (such as throughputs), particularly for emissions associated with the existing windrows and with the proposed aerated static piles. If any parameter and/or emission factor is different than from current source permitting (see Engineering Evaluation for 2017 Permit Application 28251), a detailed explanation and justification for the difference should be provided. If the project will include emissions testing, please describe the testing method and protocol that will be used.
 - All emission estimates should be clearly associated with its source name and permitted source number. Throughput for each emission source should detail feedstock material type and rate. The DEIR should clearly describe any Best Available Control Technology emissions controls included in the project. If biofilters will be used, please supply information about their design and maintenance schedule.
 - Details about the handling and storing of feedstock, product, and byproduct materials, such as pile design characteristics (e.g., height and length, among others) and pile management methods (e.g., limits on residence time, pile tagging, etc).
 - An assessment of available land and alternative configurations that can buffer management of feedstock piles and of product and/or byproduct piles against shocks in inflows and outflows. The goal should be to prevent disruptions to best practices in material handling and storage.
 - The impact of the proposed material delivery schedule between 8pm and 4am on the storage of materials, either on-site or off-site, given that organic materials may be collected by scavengers outside the hours of 8pm to 4am.
 - Operational changes that may occur due to the planned expansion from 1,500 to 2,750 tpd, with a focus on how the expansion will impact permitted operations. The current air permit limits operation to

this facility to 10 hours per calendar day and 56 hours per calendar week, and we encourage the EIR to reconcile these limits with the proposal for delivery between 8pm-4 am.

Air District staff is available to assist the County in addressing these comments, and we recommend that the County and its consultants meet with Air District staff to discuss them. For such discussion or for assistance with any questions that arise, please contact Chad White, Senior Environmental Planner, at 415-749-8619 or cwhite@baaqmd.gov.

Sincerely,



Greg Nudd
Deputy Air Pollution Control Officer

cc: BAAQMD Director Margaret Abe-Koga
BAAQMD Director Cindy Chavez
BAAQMD Director Liz Kniss
BAAQMD Director Rod Sinks



SBCOG

*Council of
San Benito
County Governments*

P: 831-637-7665

F: 831-636-4160

www.sanbenitocog.org

November 15, 2018

David Rader
Santa Clara County
Department of Planning and Development
70 West Hedding Street, East Wing, 7th Floor
San Jose, CA 95110

RE: Z- Best Composting Facility Modifications Project; File Number 6498-17P

Dear Mr. Rader:

The Council of San Benito County Governments (COG) is the Regional Transportation Planning Agency for San Benito County. One of our priority highway corridors in San Benito County is State Route 25. In 2016, COG completed a study of State Route 25 and identified needed safety and operational improvements to the area near the intersection of Bolsa Road and the entrance to the Z-Best facility. A copy of the Highway 25 Widening Design Alternatives Analysis Study is available online at www.sanbenitocog.org.

In May 2017, COG reviewed the Traffic Operations and Site Access Analysis prepared for the Z-Best Composting Major Use Permit Modification application. The COG Board of Directors voted unanimously to send a letter opposing any expansion of operations at Z-Best due to traffic constraints, safety concerns and the overall impact to local residents using Highway 25 as the primary route to/from Santa Clara County.

In response to the Notice of Preparation dated October 15, 2018, San Benito COG submits the following comments for consideration when preparing the Environmental Impact Report for the proposed Project.

1. **Impacts of Ingress/Egress at SR 25:** COG is concerned that traffic entering and exiting the project area onto State Route 25 will adversely impact the flow of traffic on the highway, including vehicles that are stopped making a left turn into the facility. The traffic analysis should fully evaluate the proposed construction of acceleration and deceleration lanes on SR 25 for the driveway, as well as the opportunity to consolidate access with other commercial properties adjacent to the Z-best property. In addition, the EIR should consider improvements needed to better address visibility of the project driveway along State Route 25.

*Council of San Benito County Governments
330 Tres Pinos Rd, Suite C7
Hollister, CA 95023*



SBCOG

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2. **Proposed Highway Improvements:** COG coordinated with Caltrans and Santa Clara Valley Transportation Authority to prepare an EIR for the Highway 25 Safety and Operational Enhancements Project. The EIR was certified in 2005. That project identified intersection improvements and other safety measures in the project area, including access to both the Z-Best property and its neighboring farm to the north, Uesugi Farms. COG recommends that the EIR for the Z-Best project evaluate the alternatives outlined in the 2005 Highway 25 Safety and Operational Enhancements Project EIR and more recently reviewed and recommended in COG's 2016 Highway 25 Widening Design Alternatives Analysis.
3. **Peak Traffic Periods:** COG recommends that the hours of 5 a.m. to 9 a.m. be evaluated as the A.M. peak period, as the roadway is used by long-distance commuters traveling earlier in the day. In the P.M. peak, COG recommends that the hours of 2 p.m. to 8 p.m. be evaluated.
4. **Employee Traffic:** the Traffic and Circulation element of the EIR should evaluate site access and circulation with a focus on impacts to SR 25 both from additional truck trips as well as for additional employee trips to and from the facility.
5. COG also recommends that the elimination of left turns from the facility to Northbound SR 25 be evaluated in the traffic and circulation element of the EIR.
6. **Aesthetics:** the facility is located at the gateway to San Benito County and as such its aesthetics and odor-production should be evaluated in this context within the EIR.
7. The EIR should evaluate impacts to State Route 25 operations related to construction.

Should you have any questions, please contact Mary Gilbert, Executive Director, at (831) 637-7665, extension 207.

Sincerely,

Jaime De La Cruz

*Council of San Benito County Governments
330 Tres Pinos Rd, Suite C7
Hollister, CA 95023*

DEPARTMENT OF TRANSPORTATION

DISTRICT 4

OFFICE OF TRANSIT AND COMMUNITY PLANNING

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November 16, 2018

SCH # 2018102041

GTS # 04-SCL-2016-00487

GTS ID: 2423

PM: SCL – 25 – 0.63

David Rader
Santa Clara County
70 W. Hedding Street
7th Floor, East Wing
San Jose, CA 95112

Z-Best Composting Facility Modifications Project – Notice of Preparation (NOP)

Dear David Rader:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the above referenced Project. In tandem with the Metropolitan Transportation Commission's (MTC) Sustainable Communities Strategy (SCS), Caltrans' mission signals a modernization of our approach to evaluate and mitigate impacts to the State Transportation Network (STN). Caltrans' *Strategic Management Plan 2015-2020* aims to reduce Vehicle Miles Traveled (VMT) in part, by tripling bicycle and doubling both pedestrian and transit travel by 2020. Our comments are based on the October 15, 2018 NOP.

Project Understanding

The proposed project site is the existing Z-Best Composting Facility at 980 State Route (SR) 25, which currently operates under a County-issued Use Permit. The proposed project includes modification of Z-Best's existing composting process from the current windrow method to an aerated static pile process, and associated changes in operations and site design. The proposed new composting process would occur within the already developed area of the existing composting facility. The proposed new process would result in a throughput increase from the current maximum of 1,500 tons to 2,750 tons per day, which would require an additional 59 trucks per day. The project proponent has proposed that the increased truck trips be confined to the hours of 8 pm to 4 am. The interchange of US Route (US) 101 and SR 25 is approximately two miles driving distance to the west of the project site.

State Highway Access

Any proposed access improvements, including the proposed southbound left-turn lane on SR 25, must conform with the latest *Caltrans Highway Design Manual*. This project proposes a northbound left-turn lane on SR 25 into the project driveway; please make sure the storage length can accommodate all projected trucks arriving per cycle without impacting SR 25, if not,

a longer storage lane is required. Regarding the proposed northbound SR 25 “Lane Reduction Arrows” and “Length of a Lane Reduction Transition”, we recommend using distances shown in the latest *California Manual of Uniform Traffic Control Devices* (CA MUTCD), Figure 3B-14. Any deviations from those distances will require review and approval from Caltrans. Plans should show State right-of-way (ROW), dimensions and configuration of both project access and State ROW, number of lanes, shoulder widths, existing obstructions including trees, and sufficient detail of proposed improvements to ensure that they are feasible and that sufficient ROW exists to complete the improvements as envisioned in the analysis.

Freight Mobility

Please analyze the Average Annual Daily Truck Trips (AADTT) entering and exiting the Z-Best facility and the potential impacts to the SR 25 and US 101 corridors as well as surrounding local streets and roads in both Santa Clara County and neighboring counties. An analysis of proposed truck weights, types, and configurations and potential impacts to pavement conditions for the previously mentioned highways and local roads is also advised. All analyses should measure the impacts of trucks both entering and exiting the proposed facility during the construction phase of the proposed project and during normal facility operating conditions.

Any considerations on how the proposed facility can help improve freight sustainability, operations and efficiency in California is welcomed. Caltrans is dedicated to moving freight on a modern, safe, integrated, and resilient system that supports the economy, jobs, and healthy, livable communities. In the Caltrans *Strategic Management Plan* (2015-2020), Caltrans has established an objective to improve economic prosperity of the State and local communities through a resilient and integrated transportation system. Freight system competitiveness, transportation system efficiency, and a return on transportation investments are key performance measures established for freight in support of the Caltrans *Strategic Management Plan*.

Hydraulics

The project is located within the 100-year floodplain and between Uvas Creek and Pajaro River. Any impact to the base floodplain and natural flow of the creeks due to the development and site geographical modifications shall be evaluated. Site drainage plans shall be submitted to Caltrans for review to ensure that there is no adverse impact to the state highway and its drainage facilities.

Lead Agency

As the Lead Agency, the County of Santa Clara is responsible for all project mitigation, including any needed improvements to the STN. The project’s fair share contribution, financing, scheduling, implementation responsibilities and lead agency monitoring should be fully discussed for all proposed mitigation measures.

Encroachment Permit

Please be advised that any work or traffic control that encroaches onto the State ROW requires an encroachment permit that is issued by Caltrans. To obtain an encroachment permit, a completed encroachment permit application, environmental documentation, and six (6) sets of

David Rader, County of Santa Clara

November 16, 2018

Page 3

plans clearly indicating the State ROW, and six (6) copies of signed and stamped traffic control plans must be submitted to: Office of Encroachment Permits, California DOT, District 4, P.O. Box 23660, Oakland, CA 94623-0660. To download the permit application and obtain more information, visit <http://www.dot.ca.gov/hq/traffops/developserv/permits/>.

Thank you again for including Caltrans in the environmental review process. Should you have any questions regarding this letter, please contact Jake Freedman at 510-286-5518 or jake.freedman@dot.ca.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read "Pat", with a small flourish at the end.

PATRICIA MAURICE
District Branch Chief
Local Development - Intergovernmental Review

c: State Clearinghouse



City of Hollister Development Services

339 Fifth Street, Hollister, CA. 95023 Telephone (831) 636-4360 • Fax (831) 634-4913

November 16, 2018

To: County of Santa Clara
Department of Planning and Development
Attn: David Rader
County Government Center
70 West Hedding Street
San Jose, California 95110

From: City of Hollister Development Services Department
339 Fifth Street
Hollister, California 95023

RE: Notice of Preparation of an Environmental Impact Report for the Z-Best Composting Facility Modifications Project

Dear Mr. Rader,

The City of Hollister received a Notice of Preparation for the preparation of an Environmental Impact Report for the Z-Best Composting Facility Modifications Project on October 16, 2018. The City of Hollister Development Review Committee reviewed the Notice of Preparation in order to prepare a written response to the Notice of Preparation.

The City of Hollister appreciates the opportunity to respond to the Notice of Preparation for the Z-Best Composting Facility Modifications Project. The City of Hollister recognizes that the facility is several miles from the corporate limits of the City, but the facility does have an effect on our businesses and residents. Since the 1970's an increasing number of residents living in City of Hollister commute on Highway 25 to jobs in the Santa Clara Valley due primarily to the long-standing lack of housing production in relation to job generation. The corridor Z-Best operation is located close to the boundary between Santa Clara and San Benito Counties on the primary commute corridor to the Santa Clara Valley. The City of Hollister requests that the Environmental Impact Report address the following:

1. Project Description:
 - a. Include maps that clearly illustration the location, length and design of the proposed acceleration and deceleration lanes and the timing for the improvement. When will the improvements be completed?
2. Aesthetics
 - a. The Z-Best operation is close to the end of Santa Clara County but is near the Gateway to San Benito County. The combination of odor and appearance of the existing operations detract from the aesthetics leading to San Benito County. This affects the perception of prospective businesses, travelers visiting Pinnacles National Park, Hollister Hills State Vehicular Recreation Areas and our wine trails. It is recognized that the operation exists and CEQA analysis is limited to evaluating the existing plus project conditions. Careful consideration of the aesthetics of the operation on one of the primary corridors leading to the City of Hollister would be greatly appreciated.
3. Air Quality/Project Description
 - a. The project proposes to convert the composting process from a windrow composting system to a state aerated pile composting system using technology from Engineered Compost Systems. The odors at the existing facility affect drivers with allergies driving to and from the City of Hollister and there have been ongoing complaints in the community about the objectionable smell from the existing operation. Describe in the EIR the consistency of the existing operation with air quality standards for odor and the existing

plus project impact of odor and the health effects of the concentrated emissions/odors to drivers that use the corridor daily to commute that have allergic reactions to the facility. Describe in the EIR the effectiveness of the proposed system with the proposed scale of the operation. Evaluate other alternative compost strategies.

- b. What type of monitoring and remediation will be used if odor impacts and allergic reactions remain/increase?

4. Traffic and Circulation

- a. The project proposes to limit truck traffic from the hours of 8pm to 4am. How will this be monitored and enforced? A large number of commuters use the corridor to travel to work early in the morning. 24-hour traffic counts at the intersection should be used to establish whether there are peak hours besides the typical 7-9am and 4-6pm.
- b. Debris on Highway 25 near the Z-Best operations has posed safety hazards to residents in our community, especially on a motorcycle. Please describe the measures to limit transport of debris onto the highway and safety impacts and mitigation measures.

The City of Hollister appreciates the opportunity to submit comments on the Notice of Preparation. Please contact the City Development Services Department at (831) 636-4360 should you have any questions regarding this letter.

Sincerely,



Eva Kelly
City of Hollister Development Services Department

Appendix B – Air Quality and Greenhouse Gas Supporting Information

Contains:

- 2019 Air Quality and Greenhouse Gas Emissions Report (SCS Engineers) and peer review (EMC Planning Group)
- 2019 Health Risk Assessment for Increased Truck Traffic (Illingworth and Rodkin)
- 2020 Toxic Air Contaminant Emissions Evaluation for Proposed Capacity Expansion (Yorke Engineering)
- 2019 Air Dispersion Modelling Report (Englobe) and peer review (Yorke Engineering)
- 2020 GHG Offset Memorandum (SCS Engineers) and 2023 peer review (AECOM)
- 2022 Bioaerosols Memorandum (AECOM)
- 2023 NOx Emissions Mitigation Memorandum (AECOM)
- 2023 Updated Air Quality and Greenhouse Gas Modeling (AECOM)



EMC PLANNING GROUP INC.
A LAND USE PLANNING & DESIGN FIRM

301 Lighthouse Avenue Suite C Monterey California 93940
Tel 831-649-1799 Fax 831-649-8399 www.emcplanning.com

To: David Rader, Senior Planner
From: Ron Sisseem, Principal
Date: March 23, 2020

Re: Peer Review of SCS Emissions Report

Message:

At the request of the County, EMC Planning Group has conducted an independent review of the *Emissions from Proposed Changes to Z-Best Facility in Gilroy, California* dated December 20, 2019 prepared by SCS Engineers on behalf of Z-Best Products to verify the technical accuracy of the information, and identify any apparent deficiencies, errors and omissions affecting the completeness, methodologies, findings and adequacies of the analysis.

As a part of the review, EMC Planning Group requested revisions to reflect correct site acreage, peak truck traffic emissions, and typos. The county staff was advised of the necessary revisions or additions to the report. In turn, SCS Engineers modified the report to address the requested revisions.

This review letter and updated report from SCS Engineers are a part of the administrative record for the EIR. As revised, the *Emissions from Proposed Changes to Z-Best Facility in Gilroy, California* as revised is appropriate for use as reference in the EIR.

MEMORANDUM

December 20, 2019
File No. 01219043.00

Mr. John Doyle
Operations Manager
Z-Best Products
980 State Highway 25
Gilroy, California

Subject: Emissions from Proposed Changes to Z-Best Facility in Gilroy, California

Dear Mr. Doyle:

Z-Best Composting (Z-Best) has prepared a Notice of Preparation (NOP) for proposed changes (Project) at the Z-Best facility at 980 State Highway 25, Gilroy (Site). The Bay Area Air Quality Management District (BAAQMD) provided comments on the California Environmental Quality Act (CEQA) Notice of Preparation (NOP) for the Project in a November 15, 2018 letter to the County of Santa Clara Department of Planning and Development. At the request of Z-Best, SCS Engineers (SCS) has prepared this response to BAAQMD questions.

The project includes the removal of the existing municipal solid waste (MSW) and foodwaste in-vessel composting system (CTI bag system) and the construction of a primary covered aerated static pile (CASP) and a secondary (curing) aerated static pile composting for MSW and foodwaste composting. The CASP system would have negative aeration with emissions controlled by biofilters for primary (active) composting and positively aerated static piles for secondary (curing) composting. The Project also includes site improvements, such as modifications to the detention basin. The Project will result in the capacity to compost an additional 875 tons per day (tpd) of MSW and/or foodwaste.

This additional 875 tpd of composting capacity would be permitted as an increase in the monthly capacity for the site. Composting reactive organic gas (ROG) emissions occur over the composting cycle, so it is appropriate to evaluate the daily change in ROG emissions based on this daily average composting rate. The project would also increase the peak daily composting rate, but this peak daily rate is independent of the monthly throughput rate.

Construction-Related Emissions

The BAAQMD requested that the emissions from the construction of the Project be quantified.

To calculate the construction emissions from the Project, SCS evaluated the project the California Emission Estimator Model (CalEEMod). The emissions calculated include mobile sources and on-road emissions related to construction, including emissions from worker commutes and the importation of soil. The emissions were calculated using construction information including the area of surface disturbed, equipment counts, and the duration of construction activities provided by Z-Best and Golder Engineering, who prepared project drawings. The pollutants analyzed include ROG, oxides of nitrogen (NO_x), carbon monoxide (CO), sulfur dioxide (SO₂), respirable particulate matter (PM₁₀), fine particulate matter (PM_{2.5}), and greenhouse gas (GHG).

A summary of basic project information is shown in **Table 1**.

Table 1. Basic Project Information

Parameter	Value
Location	Santa Clara County
Climate Zone	4
Land Use Type	General Light Industry
Lot Acreage	157.32

John Doyle provided an expected construction schedule and equipment counts. Construction would occur in three phases: grading, trenching, and paving. The duration and equipment count for each phase are shown in **Table 2**.

Table 2. Construction Phases and Equipment

Parameter	Grading	Trenching	Paving
Duration (months)	3	2	3
Graders	1		
Off-highway trucks (water truck)	1		
Other construction equipment (compactor)	1		
Rubber tired dozer	1		
Scraper	5		
Tractors/Loaders (includes excavator)		2	
Off-highway trucks (concrete pump truck)			1
Other construction equipment (concrete finisher)			1
Paver			1
Paving Equipment			1

The project includes the use of a water truck, which would mitigate dust emissions from soil operations and off-road vehicle travel. These mitigation measures were included in CalEEMod emission calculations. Emissions for the Project construction phase and off-site construction emissions are shown in **Table 3** on an annual and a per day basis for summer and winter emissions. CalEEMod outputs, including all input parameters, are included in **Attachment A**.

On-Road Emissions

The BAAQMD also requested the quantification of emissions from on-road vehicles. On-road vehicle emissions were calculated using the vehicle miles traveled (VMT) provided by Hexagon Engineering and emission factors Emission Factor (EMFAC) model. Employee trips are assumed to be light duty auto (LDA). Haul vehicles are assumed to be tractor trailers. A summary of the VMT by and emission factor by trip type is shown in **Table 4**. The emissions are shown in **Table 5**. The EMFAC output is included in **Attachment B**.

Table 3. Construction Emissions

Period	ROG	NO _x	CO	SO ₂	Fugitive PM ₁₀ (dust)	Exhaust PM ₁₀	Total PM ₁₀	Fugitive PM _{2.5} (dust)	Exhaust PM _{2.5}	Total PM _{2.5}	Total GHG ¹
Annual (tons/year)	0.393	2.01	2.73	0.008	0.261	0.168	0.429	0.082	0.154	0.236	747
Summer (lb/day)	8.44	111	56.7	0.176	6.28	3.63	9.92	1.99	3.34	5.33	17,773
Winter (lb/day)	8.47	111	56.9	0.175	6.28	3.63	9.92	1.99	3.35	5.33	17,638
Off-Site (lb-day)	0.768	22.67	5.48	0.066	1.66	0.076	1.74	0.453	0.073	0.525	7,004

¹Annual GHG Emissions shown in Metric tons of CO2 equivalent (MTCO2e) per year, daily emissions in pounds of CO2 equivalent per day

Table 4. On-Road VMT and Emission Factors

Trip Type	VMT/day	Emission Factors (g/VMT)						
		ROG	NO _x	CO	SO ₂	Exhaust PM ₁₀	Exhaust PM _{2.5}	Total GHG
Existing								
Employees	3090	0.0133	0.0536	0.761	0.00273	0.00161	0.00148	276
Trucks	7348	0.161	4.58	0.597	0.0133	0.0952	0.0911	1410
Post Project								
Employees	4076	0.0133	0.0536	0.761	0.00273	0.00161	0.00148	276
Trucks	15060	0.161	4.58	0.597	0.0133	0.0952	0.0911	1410

Table 5. On-Road Emissions

Trip Type	Emissions (lb/day)						
	ROG	NO _x	CO	SO ₂	Exhaust PM ₁₀	Exhaust PM _{2.5}	Total GHG
Existing							
Employees	0.091	0.36	5.18	0.019	0.011	0.010	1,879
Trucks	2.61	74.13	9.66	0.22	1.54	1.47	22,821
Post Project							
Employees	0.12	0.48	6.83	0.025	0.014	0.013	2,478
Trucks	5.34	151.93	19.80	0.44	3.16	3.02	46,772
Trucks (peak days)	6.93	197.20	25.71	0.57	4.10	3.92	60,711

Listing of Emission Sources

The BAAQMD has requested a listing of emission sources at the existing facility by source name and permitted source number. Emission sources for both the existing facility and the post-Project facility are listed in Table 6.

The Project includes the removal of S-28, the enclosed vessel for composting, the construction of the CASP and biofilter system, upgrading the overs screen, and the addition of a new electric trommel screen. The Site is also in the process of adding a new grinder and diesel engine to power the grinder, which is unrelated to the Project but has been included in **Table 6** for completeness.

Table 6. Existing and Proposed Emission Sources

Emission Source	Permit Number	Existing	Post-Project
Green Waste Trommel Screen w/Water Spray	S-3	x	x
Green Waste Compost Windrows (15 acres) w/Water Spray	S-4	x	x
Finished Compost and Mulch Stockpiles (5 Acres) w/Water Spray	S-5	x	x
MSW Building Sort Line Disc Screen	S-8	x	x
Conveyors, MSW (2x), Green Waste/Compost (13x), MSW/Compost (13x)	S-10	x	x
Composted Green Waste 1" Overs Rotary Screen w/Water Spray	S-13	x	x
Composted MSW Fines Denzometric Table #1 w/Baghouse	S-15	x	x
Green Waste Trommel Screen (60') w/Water Spray	S-18	x	x
Composted MSW BHS 1" Disc Screen	S-19	x	x
Mobile Diesel Engine, Peterson 6701B	S-20	x	x
Mobile Grinding Operation	S-22	x	x
Composted MSW Trommel Screen w/Water Spray	S-23	x	x
Composted MSW Fines Densimetric Table #2 w/Baghouse	S-24	x	x
Composted Green Waste Wind Shifter w/Baghouse	S-25	x	x
Finished Green Waste Compost Trommel Screen w/Water Spray	S-26	x	x
Composted MSW Trommel Screen w/Water Spray	S-27	x	x
Enclosed Vessel Composting Operating (CTI Bag)	S-28	x	
Unprocessed MSW Stockpiles	S-29	x	x
Composted MSW Stockpiles	S-30	x	x
Unprocessed Green Waste Stockpiles	S-31	x	x
Processed Green Waste Stockpiles	S-32	x	x
MSW Bag Breaker	S-33	x	x
Composted MSW BHS 1 inch Overs Screen w/Water Spray	S-34	x	modified
Covered Negative Aerated Static Pile Composting (Active Phase)	new		new
Aerated Static Pile Composting (Curing Phase)	new		new
Composted MSW Trommel Screen w/Water Spray (same as S-23)	new		new

Evaluation of Compost Process

The CASP composting process with a biofilter and abatement through a biofilter is the level of emissions control currently required by BAAQMD. The BAAQMD has determined that the best available control technology (BACT) for composting process is a CASP with a positive pressure system with a biofilter cover (typically finished compost), or CASP with a negative pressure system and an engineered biofilter to control emissions.

SCS was provided a source test report by Horizon Air Measurement Services, Inc. for a facility in Southern California that Z-Best believes is comparable to the proposed facility. Emission factors for ROG, called precursor organic compounds (POCs) in the BAAQMD, determined from that source test are used to calculate emissions from the CASP (active) and positive pressure ASP (curing) phases of the composting process as shown in **Table 7**. The emission factor for tipping piles prescribed by the California Air Resources Board (CARB), and required for use by the BAAQMD, is used for the emission factors from piles tipped in the tipping building. The factor is typically based pounds per ton per day emissions, but since Z-Best plans to process all incoming waste within 24 hours, we show the emission factor as simply lb/ton. Waste will also be tipped directly onto the CASP piles, which will result in no emissions from tipped waste before it is added to the active curing phase.

Please note that the emission factors derived from the aforementioned source test are abnormally low compared to data SCS has seen for similar operations. These factors are also significantly lower than the CARB-prescribed factors for POCs, which the BAAQMD has required for permitting for other compost facilities in the BAAQMD. ECS believes that the tested composting facility and the Site are significantly better designed and that the engineered systems result in much lower emissions than systems with only “rudimentary” engineering and process control. If the BAAQMD accepts these factors, they will become permit limits, and Z-Best will be required to do testing annually to prove they can meet these levels on a continuous basis. Because of the potential challenge of passing a source test with such a low emission factor, the emission factor was increased by a factor of 50 percent.

The active composting process is mitigated by a CASP system mitigates 80 percent of VOC emissions per CARB and BAAQMD evaluations. The curing composting process will be mitigated by a positive pressure ASP with a moist compost cover layer, which provides mitigation of 50 percent of VOC emissions. The source test being used in this analysis did not provide independent testing of the curing piles, so the emission factor for the curing pile is assumed to be the same as for active composting. Curing piles have lower emission rates than the active, so the use of the emission factor for the active composting phase is a conservative assumption and is expected to overestimate VOC emissions.

BAAQMD has not published a BACT determination for composting. Several other facilities have been permitted in the BAAQMD with BACT defined as a CASP as BACT for the active composting phase. BAAQMD has not proposed BACT for the curing phase, and the use of a positive ASP with moist compost layer exceeds the mitigation required by BAAQMD.

POC emissions from the composting process, both before and after mitigation, are shown in **Table 7**.

Table 7. POC Emissions from Composting Process

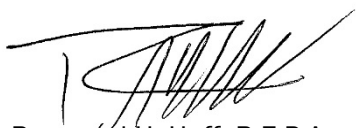
Phase	Emission Factor (lb/wet ton of material)	Daily Throughput (tpd)	Uncontrolled Daily Emission (lb/day)	Control Efficiency	Controlled Daily Emission (lb/day)	Controlled Annual Emissions (tons/year)
In-building tipping	0.2	219	43.8	0	43.75	7.98
Negative CASP (Active Phase)	0.0151	875	13.2	80%	2.64	0.48
Positive ASP (Curing Phase)	0.0151	875	13.2	50%	6.61	1.21
Total			70.2		53.00	9.67

CLOSING

This additional information was provided to address emissions-related questions from the BAAQMD about the proposed modification of the Z-Best composting facility in Gilroy, California. The emissions information for construction and on-road emissions, and the information about permitted sources can be incorporated into or referenced in an appropriate CEQA document for the proposed modification of the facility.

If you have any questions or concerns about this evaluation, please contact the undersigned at 562-637-4561.

Sincerely,



Raymond H. Huff, R.E.P.A.
 Vice President
SCS Engineers
 Sincerely,



Patrick S. Sullivan, R.E.P.A., C.P.P., B.C.E.S.
 Senior Vice President
SCS Engineers

attachments

Attachment A
CalEEMod Output

Z-Best Gilroy - Santa Clara County, Annual

Z-Best Gilroy
Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	0.00	1000sqft	157.32	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	58
Climate Zone	4			Operational Year	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	641.35	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Z-Best Gilroy - Santa Clara County, Annual

Project Characteristics -

Land Use - Acreage from Golder Drawing 5A - AERATED STATIC PILE COPOSTING PERMIT PACKAGE

Construction Phase - grading expected to take 3 months

trenching expected to take 2 months

construction expected to take 59 working days

Off-road Equipment - Equipment counts based on highest number of equipment planned for each phase

Grading "other construction equipment" is compactor

Off-road Equipment - Off Highway Truck is concrete pumping trucks (estimated 250 hp)

Other construction equipment is ride on concrete finishers (37 hp)

Off-road Equipment - equipment use from description of construction activities provided by email on 2/25/18

Trips and VMT - trip counts provided by site

Grading -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	5
tblConstructionPhase	NumDays	620.00	78.00
tblConstructionPhase	NumDays	440.00	69.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblLandUse	LotAcreage	0.00	157.32
tblOffRoadEquipment	HorsePower	402.00	250.00
tblOffRoadEquipment	HorsePower	172.00	37.00
tblOffRoadEquipment	LoadFactor	0.38	0.42
tblOffRoadEquipment	LoadFactor	0.42	0.36
tblOffRoadEquipment	OffRoadEquipmentType		Pavers
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00

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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Trenching
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Paving
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripNumber	0.00	6,200.00
tblTripsAndVMT	VendorTripNumber	0.00	50.00
tblTripsAndVMT	WorkerTripNumber	23.00	33.00
tblTripsAndVMT	WorkerTripNumber	5.00	25.00

2.0 Emissions Summary

Z-Best Gilroy - Santa Clara County, Annual

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	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
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

	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
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	Grading	Grading	4/1/2020	6/30/2020	6	78	
2	Trenching	Trenching	7/1/2020	8/31/2020	6	53	
3	Paving	Paving	9/1/2020	11/19/2020	6	69	

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Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 429

Acres of Paving: 0

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
Grading	Graders	1	8.00	187	0.41
Grading	Off-Highway Trucks	1	8.00	402	0.38
Grading	Other Construction Equipment	1	8.00	172	0.42
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	5	8.00	367	0.48
Trenching	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Off-Highway Trucks	1	8.00	250	0.42
Paving	Other Construction Equipment	1	8.00	37	0.36
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36

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
Grading	9	33.00	0.00	6,200.00	10.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	5.00	0.00	0.00	10.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	2	25.00	50.00	0.00	10.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

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Water Exposed Area

Water Unpaved Roads

3.2 Grading - 2020

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					0.4623	0.0000	0.4623	0.1537	0.0000	0.1537	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2994	3.4312	1.9957	4.3000e-003		0.1387	0.1387		0.1276	0.1276	0.0000	377.9513	377.9513	0.1222	0.0000	381.0072
Total	0.2994	3.4312	1.9957	4.3000e-003	0.4623	0.1387	0.6010	0.1537	0.1276	0.2812	0.0000	377.9513	377.9513	0.1222	0.0000	381.0072

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3.2 Grading - 2020

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	0.0258	0.8996	0.1842	2.4400e-003	0.0526	2.9200e-003	0.0555	0.0145	2.8000e-003	0.0172	0.0000	236.4395	236.4395	0.0108	0.0000	236.7099
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	4.2700e-003	3.0700e-003	0.0322	1.0000e-004	0.0102	7.0000e-005	0.0103	2.7100e-003	6.0000e-005	2.7800e-003	0.0000	8.7535	8.7535	2.1000e-004	0.0000	8.7589
Total	0.0300	0.9026	0.2164	2.5400e-003	0.0628	2.9900e-003	0.0657	0.0172	2.8600e-003	0.0200	0.0000	245.1930	245.1930	0.0110	0.0000	245.4688

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					0.1803	0.0000	0.1803	0.0599	0.0000	0.0599	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2994	3.4312	1.9957	4.3000e-003		0.1387	0.1387		0.1276	0.1276	0.0000	377.9508	377.9508	0.1222	0.0000	381.0067
Total	0.2994	3.4312	1.9957	4.3000e-003	0.1803	0.1387	0.3190	0.0599	0.1276	0.1875	0.0000	377.9508	377.9508	0.1222	0.0000	381.0067

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3.2 Grading - 2020

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	0.0258	0.8996	0.1842	2.4400e-003	0.0526	2.9200e-003	0.0555	0.0145	2.8000e-003	0.0172	0.0000	236.4395	236.4395	0.0108	0.0000	236.7099
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	4.2700e-003	3.0700e-003	0.0322	1.0000e-004	0.0102	7.0000e-005	0.0103	2.7100e-003	6.0000e-005	2.7800e-003	0.0000	8.7535	8.7535	2.1000e-004	0.0000	8.7589
Total	0.0300	0.9026	0.2164	2.5400e-003	0.0628	2.9900e-003	0.0657	0.0172	2.8600e-003	0.0200	0.0000	245.1930	245.1930	0.0110	0.0000	245.4688

3.3 Trenching - 2020

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	0.0111	0.1116	0.1208	1.6000e-004		7.0600e-003	7.0600e-003		6.4900e-003	6.4900e-003	0.0000	14.4612	14.4612	4.6800e-003	0.0000	14.5781
Total	0.0111	0.1116	0.1208	1.6000e-004		7.0600e-003	7.0600e-003		6.4900e-003	6.4900e-003	0.0000	14.4612	14.4612	4.6800e-003	0.0000	14.5781

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3.3 Trenching - 2020

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	4.4000e-004	3.2000e-004	3.3200e-003	1.0000e-005	1.0500e-003	1.0000e-005	1.0600e-003	2.8000e-004	1.0000e-005	2.9000e-004	0.0000	0.9012	0.9012	2.0000e-005	0.0000	0.9018
Total	4.4000e-004	3.2000e-004	3.3200e-003	1.0000e-005	1.0500e-003	1.0000e-005	1.0600e-003	2.8000e-004	1.0000e-005	2.9000e-004	0.0000	0.9012	0.9012	2.0000e-005	0.0000	0.9018

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	0.0111	0.1116	0.1208	1.6000e-004		7.0600e-003	7.0600e-003		6.4900e-003	6.4900e-003	0.0000	14.4612	14.4612	4.6800e-003	0.0000	14.5781
Total	0.0111	0.1116	0.1208	1.6000e-004		7.0600e-003	7.0600e-003		6.4900e-003	6.4900e-003	0.0000	14.4612	14.4612	4.6800e-003	0.0000	14.5781

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3.3 Trenching - 2020

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	4.4000e-004	3.2000e-004	3.3200e-003	1.0000e-005	1.0500e-003	1.0000e-005	1.0600e-003	2.8000e-004	1.0000e-005	2.9000e-004	0.0000	0.9012	0.9012	2.0000e-005	0.0000	0.9018
Total	4.4000e-004	3.2000e-004	3.3200e-003	1.0000e-005	1.0500e-003	1.0000e-005	1.0600e-003	2.8000e-004	1.0000e-005	2.9000e-004	0.0000	0.9012	0.9012	2.0000e-005	0.0000	0.9018

3.4 Paving - 2020

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	0.0423	0.3698	0.3178	6.5000e-004		0.0178	0.0178		0.0164	0.0164	0.0000	57.4057	57.4057	0.0186	0.0000	57.8698
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0423	0.3698	0.3178	6.5000e-004		0.0178	0.0178		0.0164	0.0164	0.0000	57.4057	57.4057	0.0186	0.0000	57.8698

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3.4 Paving - 2020

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	6.4400e-003	0.1874	0.0501	4.3000e-004	0.0103	8.9000e-004	0.0112	2.9700e-003	8.5000e-004	3.8100e-003	0.0000	41.6266	41.6266	1.9900e-003	0.0000	41.6763
Worker	2.8600e-003	2.0600e-003	0.0216	6.0000e-005	6.8400e-003	4.0000e-005	6.8800e-003	1.8200e-003	4.0000e-005	1.8600e-003	0.0000	5.8663	5.8663	1.4000e-004	0.0000	5.8699
Total	9.3000e-003	0.1895	0.0717	4.9000e-004	0.0171	9.3000e-004	0.0180	4.7900e-003	8.9000e-004	5.6700e-003	0.0000	47.4928	47.4928	2.1300e-003	0.0000	47.5462

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	0.0423	0.2010	0.3178	6.5000e-004		0.0178	0.0178		0.0164	0.0164	0.0000	57.4056	57.4056	0.0186	0.0000	57.8698
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0423	0.2010	0.3178	6.5000e-004		0.0178	0.0178		0.0164	0.0164	0.0000	57.4056	57.4056	0.0186	0.0000	57.8698

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3.4 Paving - 2020

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	6.4400e-003	0.1874	0.0501	4.3000e-004	0.0103	8.9000e-004	0.0112	2.9700e-003	8.5000e-004	3.8100e-003	0.0000	41.6266	41.6266	1.9900e-003	0.0000	41.6763
Worker	2.8600e-003	2.0600e-003	0.0216	6.0000e-005	6.8400e-003	4.0000e-005	6.8800e-003	1.8200e-003	4.0000e-005	1.8600e-003	0.0000	5.8663	5.8663	1.4000e-004	0.0000	5.8699
Total	9.3000e-003	0.1895	0.0717	4.9000e-004	0.0171	9.3000e-004	0.0180	4.7900e-003	8.9000e-004	5.6700e-003	0.0000	47.4928	47.4928	2.1300e-003	0.0000	47.5462

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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	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	0.0000	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
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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
General Light Industry	14.70	6.60	6.60	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.610498	0.036775	0.183084	0.106123	0.014413	0.005007	0.012610	0.021118	0.002144	0.001548	0.005312	0.000627	0.000740

5.0 Energy Detail

Historical Energy Use: N

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5.2 Energy by Land Use - Natural Gas

Mitigated

	Natural Gas 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					
General Light Industry	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
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

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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	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	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
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	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
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

7.0 Water Detail

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7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

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7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

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8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

9.0 Operational Offroad

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

Fire Pumps and Emergency Generators

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

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

Equipment Type	Number
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11.0 Vegetation

Z-Best Gilroy - Santa Clara County, Summer

Z-Best Gilroy
Santa Clara County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	0.00	1000sqft	157.32	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	58
Climate Zone	4			Operational Year	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	641.35	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Z-Best Gilroy - Santa Clara County, Summer

Project Characteristics -

Land Use - Acreage from Golder Drawing 5A - AERATED STATIC PILE COPOSTING PERMIT PACKAGE

Construction Phase - grading expected to take 3 months

trenching expected to take 2 months

construction expected to take 59 working days

Off-road Equipment - Equipment counts based on highest number of equipment planned for each phase

Grading "other construction equipment" is compactor

Off-road Equipment - Off Highway Truck is concrete pumping trucks (estimated 250 hp)

Other construction equipment is ride on concrete finishers (37 hp)

Off-road Equipment - equipment use from description of construction activities provided by email on 2/25/18

Trips and VMT - trip counts provided by site

Grading -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	5
tblConstructionPhase	NumDays	620.00	78.00
tblConstructionPhase	NumDays	440.00	69.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblLandUse	LotAcreage	0.00	157.32
tblOffRoadEquipment	HorsePower	402.00	250.00
tblOffRoadEquipment	HorsePower	172.00	37.00
tblOffRoadEquipment	LoadFactor	0.38	0.42
tblOffRoadEquipment	LoadFactor	0.42	0.36
tblOffRoadEquipment	OffRoadEquipmentType		Pavers
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00

Z-Best Gilroy - Santa Clara County, Summer

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Trenching
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Paving
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripNumber	0.00	6,200.00
tblTripsAndVMT	VendorTripNumber	0.00	50.00
tblTripsAndVMT	WorkerTripNumber	23.00	33.00
tblTripsAndVMT	WorkerTripNumber	5.00	25.00

2.0 Emissions Summary

Z-Best Gilroy - Santa Clara County, Summer

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Z-Best Gilroy - Santa Clara County, Summer

	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
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	Grading	Grading	4/1/2020	6/30/2020	6	78	
2	Trenching	Trenching	7/1/2020	8/31/2020	6	53	
3	Paving	Paving	9/1/2020	11/19/2020	6	69	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 429

Acres of Paving: 0

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

OffRoad Equipment

Z-Best Gilroy - Santa Clara County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Graders	1	8.00	187	0.41
Grading	Off-Highway Trucks	1	8.00	402	0.38
Grading	Other Construction Equipment	1	8.00	172	0.42
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	5	8.00	367	0.48
Trenching	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Off-Highway Trucks	1	8.00	250	0.42
Paving	Other Construction Equipment	1	8.00	37	0.36
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36

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
Grading	9	33.00	0.00	6,200.00	10.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	5.00	0.00	0.00	10.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	2	25.00	50.00	0.00	10.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Z-Best Gilroy - Santa Clara County, Summer

3.2 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					11.8548	0.0000	11.8548	3.9400	0.0000	3.9400			0.0000			0.0000
Off-Road	7.6770	87.9800	51.1712	0.1103		3.5558	3.5558		3.2714	3.2714		10,682.56 28	10,682.56 28	3.4550		10,768.93 68
Total	7.6770	87.9800	51.1712	0.1103	11.8548	3.5558	15.4107	3.9400	3.2714	7.2114		10,682.56 28	10,682.56 28	3.4550		10,768.93 68

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6530	22.6030	4.5765	0.0631	1.3892	0.0744	1.4636	0.3807	0.0712	0.4519		6,730.735 1	6,730.735 1	0.2996		6,738.224 1
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
Worker	0.1147	0.0704	0.9076	2.6700e-003	0.2711	1.6900e-003	0.2728	0.0719	1.5600e-003	0.0735		265.9821	265.9821	6.5100e-003		266.1448
Total	0.7677	22.6734	5.4841	0.0658	1.6603	0.0761	1.7364	0.4526	0.0728	0.5254		6,996.717 2	6,996.717 2	0.3061		7,004.369 0

Z-Best Gilroy - Santa Clara County, Summer

3.2 Grading - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.6234	0.0000	4.6234	1.5366	0.0000	1.5366			0.0000			0.0000
Off-Road	7.6770	87.9800	51.1712	0.1103		3.5558	3.5558		3.2714	3.2714	0.0000	10,682.56 28	10,682.56 28	3.4550		10,768.93 68
Total	7.6770	87.9800	51.1712	0.1103	4.6234	3.5558	8.1792	1.5366	3.2714	4.8080	0.0000	10,682.56 28	10,682.56 28	3.4550		10,768.93 68

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6530	22.6030	4.5765	0.0631	1.3892	0.0744	1.4636	0.3807	0.0712	0.4519		6,730.735 1	6,730.735 1	0.2996		6,738.224 1
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
Worker	0.1147	0.0704	0.9076	2.6700e- 003	0.2711	1.6900e- 003	0.2728	0.0719	1.5600e- 003	0.0735		265.9821	265.9821	6.5100e- 003		266.1448
Total	0.7677	22.6734	5.4841	0.0658	1.6603	0.0761	1.7364	0.4526	0.0728	0.5254		6,996.717 2	6,996.717 2	0.3061		7,004.369 0

Z-Best Gilroy - Santa Clara County, Summer

3.3 Trenching - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4190	4.2103	4.5594	6.2100e-003		0.2662	0.2662		0.2449	0.2449		601.5370	601.5370	0.1946		606.4008
Total	0.4190	4.2103	4.5594	6.2100e-003		0.2662	0.2662		0.2449	0.2449		601.5370	601.5370	0.1946		606.4008

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	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
Worker	0.0174	0.0107	0.1375	4.0000e-004	0.0411	2.6000e-004	0.0413	0.0109	2.4000e-004	0.0111		40.3003	40.3003	9.9000e-004		40.3250
Total	0.0174	0.0107	0.1375	4.0000e-004	0.0411	2.6000e-004	0.0413	0.0109	2.4000e-004	0.0111		40.3003	40.3003	9.9000e-004		40.3250

Z-Best Gilroy - Santa Clara County, Summer

3.3 Trenching - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4190	4.2103	4.5594	6.2100e-003		0.2662	0.2662		0.2449	0.2449	0.0000	601.5370	601.5370	0.1946		606.4008
Total	0.4190	4.2103	4.5594	6.2100e-003		0.2662	0.2662		0.2449	0.2449	0.0000	601.5370	601.5370	0.1946		606.4008

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	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
Worker	0.0174	0.0107	0.1375	4.0000e-004	0.0411	2.6000e-004	0.0413	0.0109	2.4000e-004	0.0111		40.3003	40.3003	9.9000e-004		40.3250
Total	0.0174	0.0107	0.1375	4.0000e-004	0.0411	2.6000e-004	0.0413	0.0109	2.4000e-004	0.0111		40.3003	40.3003	9.9000e-004		40.3250

Z-Best Gilroy - Santa Clara County, Summer

3.4 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2252	10.7180	9.2121	0.0189		0.5169	0.5169		0.4755	0.4755		1,834.1714	1,834.1714	0.5932		1,849.0016
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.2252	10.7180	9.2121	0.0189		0.5169	0.5169		0.4755	0.4755		1,834.1714	1,834.1714	0.5932		1,849.0016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	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	0.1827	5.3718	1.3579	0.0127	0.3062	0.0255	0.3317	0.0882	0.0244	0.1125		1,345.5498	1,345.5498	0.0613		1,347.0833
Worker	0.0869	0.0534	0.6876	2.0200e-003	0.2054	1.2800e-003	0.2067	0.0545	1.1800e-003	0.0557		201.5016	201.5016	4.9300e-003		201.6249
Total	0.2696	5.4251	2.0455	0.0148	0.5115	0.0268	0.5383	0.1426	0.0256	0.1682		1,547.0514	1,547.0514	0.0663		1,548.7082

Z-Best Gilroy - Santa Clara County, Summer

3.4 Paving - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2252	5.8263	9.2121	0.0189		0.5169	0.5169		0.4755	0.4755	0.0000	1,834.1714	1,834.1714	0.5932		1,849.0016
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.2252	5.8263	9.2121	0.0189		0.5169	0.5169		0.4755	0.4755	0.0000	1,834.1714	1,834.1714	0.5932		1,849.0016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	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	0.1827	5.3718	1.3579	0.0127	0.3062	0.0255	0.3317	0.0882	0.0244	0.1125		1,345.5498	1,345.5498	0.0613		1,347.0833
Worker	0.0869	0.0534	0.6876	2.0200e-003	0.2054	1.2800e-003	0.2067	0.0545	1.1800e-003	0.0557		201.5016	201.5016	4.9300e-003		201.6249
Total	0.2696	5.4251	2.0455	0.0148	0.5115	0.0268	0.5383	0.1426	0.0256	0.1682		1,547.0514	1,547.0514	0.0663		1,548.7082

4.0 Operational Detail - Mobile

Z-Best Gilroy - Santa Clara County, Summer

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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
General Light Industry	14.70	6.60	6.60	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.610498	0.036775	0.183084	0.106123	0.014413	0.005007	0.012610	0.021118	0.002144	0.001548	0.005312	0.000627	0.000740

Z-Best Gilroy - Santa Clara County, Summer

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Z-Best Gilroy - Santa Clara County, Summer

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	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
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	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
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

Z-Best Gilroy - Santa Clara County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Z-Best Gilroy - Santa Clara County, Summer

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

Fire Pumps and Emergency Generators

Z-Best Gilroy - Santa Clara County, Summer

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

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

Equipment Type	Number
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11.0 Vegetation

Z-Best Gilroy - Santa Clara County, Winter

Z-Best Gilroy
Santa Clara County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	0.00	1000sqft	157.32	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	58
Climate Zone	4			Operational Year	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	641.35	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Z-Best Gilroy - Santa Clara County, Winter

Project Characteristics -

Land Use - Acreage from Golder Drawing 5A - AERATED STATIC PILE COPOSTING PERMIT PACKAGE

Construction Phase - grading expected to take 3 months

trenching expected to take 2 months

construction expected to take 59 working days

Off-road Equipment - Equipment counts based on highest number of equipment planned for each phase

Grading "other construction equipment" is compactor

Off-road Equipment - Off Highway Truck is concrete pumping trucks (estimated 250 hp)

Other construction equipment is ride on concrete finishers (37 hp)

Off-road Equipment - equipment use from description of construction activities provided by email on 2/25/18

Trips and VMT - trip counts provided by site

Grading -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	5
tblConstructionPhase	NumDays	620.00	78.00
tblConstructionPhase	NumDays	440.00	69.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblLandUse	LotAcreage	0.00	157.32
tblOffRoadEquipment	HorsePower	402.00	250.00
tblOffRoadEquipment	HorsePower	172.00	37.00
tblOffRoadEquipment	LoadFactor	0.38	0.42
tblOffRoadEquipment	LoadFactor	0.42	0.36
tblOffRoadEquipment	OffRoadEquipmentType		Pavers
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00

Z-Best Gilroy - Santa Clara County, Winter

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Trenching
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Paving
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripNumber	0.00	6,200.00
tblTripsAndVMT	VendorTripNumber	0.00	50.00
tblTripsAndVMT	WorkerTripNumber	23.00	33.00
tblTripsAndVMT	WorkerTripNumber	5.00	25.00

2.0 Emissions Summary

Z-Best Gilroy - Santa Clara County, Winter

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Z-Best Gilroy - Santa Clara County, Winter

	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
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	Grading	Grading	4/1/2020	6/30/2020	6	78	
2	Trenching	Trenching	7/1/2020	8/31/2020	6	53	
3	Paving	Paving	9/1/2020	11/19/2020	6	69	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 429

Acres of Paving: 0

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

OffRoad Equipment

Z-Best Gilroy - Santa Clara County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Graders	1	8.00	187	0.41
Grading	Off-Highway Trucks	1	8.00	402	0.38
Grading	Other Construction Equipment	1	8.00	172	0.42
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	5	8.00	367	0.48
Trenching	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Off-Highway Trucks	1	8.00	250	0.42
Paving	Other Construction Equipment	1	8.00	37	0.36
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36

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
Grading	9	33.00	0.00	6,200.00	10.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	5.00	0.00	0.00	10.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	2	25.00	50.00	0.00	10.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Z-Best Gilroy - Santa Clara County, Winter

3.2 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					11.8548	0.0000	11.8548	3.9400	0.0000	3.9400			0.0000			0.0000
Off-Road	7.6770	87.9800	51.1712	0.1103		3.5558	3.5558		3.2714	3.2714		10,682.5628	10,682.5628	3.4550		10,768.9368
Total	7.6770	87.9800	51.1712	0.1103	11.8548	3.5558	15.4107	3.9400	3.2714	7.2114		10,682.5628	10,682.5628	3.4550		10,768.9368

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6710	23.1545	4.9249	0.0620	1.3892	0.0756	1.4648	0.3807	0.0724	0.4531		6,616.6469	6,616.6469	0.3137		6,624.4887
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
Worker	0.1220	0.0860	0.8410	2.4500e-003	0.2711	1.6900e-003	0.2728	0.0719	1.5600e-003	0.0735		244.3538	244.3538	6.0600e-003		244.5053
Total	0.7930	23.2405	5.7659	0.0645	1.6603	0.0773	1.7376	0.4526	0.0739	0.5266		6,861.0007	6,861.0007	0.3197		6,868.9940

Z-Best Gilroy - Santa Clara County, Winter

3.2 Grading - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.6234	0.0000	4.6234	1.5366	0.0000	1.5366			0.0000			0.0000
Off-Road	7.6770	87.9800	51.1712	0.1103		3.5558	3.5558		3.2714	3.2714	0.0000	10,682.5628	10,682.5628	3.4550		10,768.9368
Total	7.6770	87.9800	51.1712	0.1103	4.6234	3.5558	8.1792	1.5366	3.2714	4.8080	0.0000	10,682.5628	10,682.5628	3.4550		10,768.9368

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6710	23.1545	4.9249	0.0620	1.3892	0.0756	1.4648	0.3807	0.0724	0.4531		6,616.6469	6,616.6469	0.3137		6,624.4887
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
Worker	0.1220	0.0860	0.8410	2.4500e-003	0.2711	1.6900e-003	0.2728	0.0719	1.5600e-003	0.0735		244.3538	244.3538	6.0600e-003		244.5053
Total	0.7930	23.2405	5.7659	0.0645	1.6603	0.0773	1.7376	0.4526	0.0739	0.5266		6,861.0007	6,861.0007	0.3197		6,868.9940

Z-Best Gilroy - Santa Clara County, Winter

3.3 Trenching - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4190	4.2103	4.5594	6.2100e-003		0.2662	0.2662		0.2449	0.2449		601.5370	601.5370	0.1946		606.4008
Total	0.4190	4.2103	4.5594	6.2100e-003		0.2662	0.2662		0.2449	0.2449		601.5370	601.5370	0.1946		606.4008

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	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
Worker	0.0185	0.0130	0.1274	3.7000e-004	0.0411	2.6000e-004	0.0413	0.0109	2.4000e-004	0.0111		37.0233	37.0233	9.2000e-004		37.0463
Total	0.0185	0.0130	0.1274	3.7000e-004	0.0411	2.6000e-004	0.0413	0.0109	2.4000e-004	0.0111		37.0233	37.0233	9.2000e-004		37.0463

Z-Best Gilroy - Santa Clara County, Winter

3.3 Trenching - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4190	4.2103	4.5594	6.2100e-003		0.2662	0.2662		0.2449	0.2449	0.0000	601.5370	601.5370	0.1946		606.4008
Total	0.4190	4.2103	4.5594	6.2100e-003		0.2662	0.2662		0.2449	0.2449	0.0000	601.5370	601.5370	0.1946		606.4008

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	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
Worker	0.0185	0.0130	0.1274	3.7000e-004	0.0411	2.6000e-004	0.0413	0.0109	2.4000e-004	0.0111		37.0233	37.0233	9.2000e-004		37.0463
Total	0.0185	0.0130	0.1274	3.7000e-004	0.0411	2.6000e-004	0.0413	0.0109	2.4000e-004	0.0111		37.0233	37.0233	9.2000e-004		37.0463

Z-Best Gilroy - Santa Clara County, Winter

3.4 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2252	10.7180	9.2121	0.0189		0.5169	0.5169		0.4755	0.4755		1,834.1714	1,834.1714	0.5932		1,849.0016
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.2252	10.7180	9.2121	0.0189		0.5169	0.5169		0.4755	0.4755		1,834.1714	1,834.1714	0.5932		1,849.0016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	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	0.1928	5.4223	1.5577	0.0124	0.3062	0.0259	0.3321	0.0882	0.0248	0.1130		1,308.5759	1,308.5759	0.0663		1,310.2328
Worker	0.0924	0.0652	0.6371	1.8600e-003	0.2054	1.2800e-003	0.2067	0.0545	1.1800e-003	0.0557		185.1165	185.1165	4.5900e-003		185.2313
Total	0.2852	5.4875	2.1948	0.0142	0.5115	0.0272	0.5387	0.1426	0.0260	0.1686		1,493.6924	1,493.6924	0.0709		1,495.4641

Z-Best Gilroy - Santa Clara County, Winter

3.4 Paving - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2252	5.8263	9.2121	0.0189		0.5169	0.5169		0.4755	0.4755	0.0000	1,834.1714	1,834.1714	0.5932		1,849.0016
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.2252	5.8263	9.2121	0.0189		0.5169	0.5169		0.4755	0.4755	0.0000	1,834.1714	1,834.1714	0.5932		1,849.0016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	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	0.1928	5.4223	1.5577	0.0124	0.3062	0.0259	0.3321	0.0882	0.0248	0.1130		1,308.5759	1,308.5759	0.0663		1,310.2328
Worker	0.0924	0.0652	0.6371	1.8600e-003	0.2054	1.2800e-003	0.2067	0.0545	1.1800e-003	0.0557		185.1165	185.1165	4.5900e-003		185.2313
Total	0.2852	5.4875	2.1948	0.0142	0.5115	0.0272	0.5387	0.1426	0.0260	0.1686		1,493.6924	1,493.6924	0.0709		1,495.4641

4.0 Operational Detail - Mobile

Z-Best Gilroy - Santa Clara County, Winter

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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
General Light Industry	14.70	6.60	6.60	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.610498	0.036775	0.183084	0.106123	0.014413	0.005007	0.012610	0.021118	0.002144	0.001548	0.005312	0.000627	0.000740

Z-Best Gilroy - Santa Clara County, Winter

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Z-Best Gilroy - Santa Clara County, Winter

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	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
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	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
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

Z-Best Gilroy - Santa Clara County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Z-Best Gilroy - Santa Clara County, Winter

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

Fire Pumps and Emergency Generators

Z-Best Gilroy - Santa Clara County, Winter

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

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

Equipment Type	Number
----------------	--------

11.0 Vegetation

Attachment B
EMFAC Output

EMFAC2017 (v1.0.2) Emission Rates

Region Type: Air District

Region: BAY AREA AQMD

Calendar Year: 2020

Season: Annual

Vehicle Classification: EMFAC2011 Categories

Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN

Region	Calendar Yr	Vehicle Cat	Model Year	Speed	Fuel	ROG_RUNEX	CO_RUNEX	NOx_RUNEX	CO2_RUNEX	CH4_RUNEX	PM10_RUNEX	PM2_5_RUNEX	SOx_RUNEX	SOx_STREX	N2O_RUNEX
BAY AREA /	2020	LDA	Aggregate	Aggregate	GAS	0.013321179	0.760834107	0.053576977	276.358803	0.003284054	0.001605795	0.001476507	0.002734794	0.000581507	0.005456194
BAY AREA /	2020	T7 tractor	Aggregate	Aggregate	DSL	0.161086208	0.597015221	4.579019292	1409.592818	0.007482037	0.095204504	0.091086	0.013317134	0	0.221568361

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MEMO

Date: August 22, 2019
Updated February 26, 2020

To: **Tanya Kalaskar**
EMC PLANNING GROUP INC.
301 Lighthouse Avenue, Suite C
Monterey, California 93940

From: James A. Reyff
Illingworth & Rodkin, Inc.
1 Willowbrook Court, Suite 120
Petaluma, CA 94954

RE: Z-Best Composting Facility - Gilroy, CA

SUBJECT: Health Risk Assessment for Increased Truck Traffic Job#19-153

This memo addresses the health risk impacts from increase truck traffic caused by the Z-Best Composting Facility project. The purpose of the proposed project is to modify Z-Best's existing municipal solid waste (MSW) composting operations to enable more efficient composting. This is planned to be achieved by converting the existing Compost Technologies, Inc. composting process and technology, which utilizes composting bags, with an Engineered Composting System process and technology, which consists of aerated static pile (ASP) technology. The ASP technology and operations modifications would enable Z-Best to increase its current permitted MSW composting capacity from 1,500 tons per day to 2,750 tons per day. The proposed expansion would result in an increase of 32 additional employees. The additional employees would result in 64 new daily trips (32 inbound and 32 outbound trips). Under normal conditions the proposed project would generate 100 additional trucks per day, or 200 truck trips (100 inbound and 100 outbound) per day. In addition, for 20 days per year there would be an additional 57 trucks per day, or 114 trips per day, in addition to the normal 200 trips per day. All of this traffic would use State Route 25. A traffic study prepared by Hexagon indicates that 83 percent of the traffic would be traveling to the west and 17 percent would travel east of the project site. Truck traffic is expected to occur at night from about 6:00 p.m. to 9:00 a.m.

The primary health risk impacts to off-site sensitive receptors associated with this action would be

caused by heavy-duty diesel trucks. Diesel particulate matter (DPM), emitted by these trucks, is a potent toxic air contaminant (TAC) that increases cancer risk. While automobiles are also a source of TACs, the impact they pose compared to trucks is insubstantial due to the much lower emission rates and types of TACs they emit. Therefore, this screening health risk assessment evaluated the effects of emissions from diesel trucks to sensitive receptors near the highway.

As previously discussed, the project would generate 200 daily heavy-duty truck trips, assumed to occur 365 days per year, with an additional 114 trips per day for 20 days per year, over a project lifetime of 30 years. These were assumed to include a mix of heavy heavy-duty diesel trucks (HHDT) and medium heavy-duty diesel trucks (MHDT) category trucks. Travel emissions were estimated for 55-mph and 35-mph speeds, based on rates generated by the Caltrans version of the EMFAC2017 vehicle emissions model, known as CT-EMFAC. The model was run for Santa Clara County assuming 100% Truck category 2, which is a mix of HHDT and MHDT. The analysis year was 2020 only, as future decreases in truck emissions were not incorporated into this analysis. CT-EMFAC provides emission rates for mobile source air toxics (MSATs) that include diesel particulate matter.

The U.S. EPA AERMOD dispersion model was used to predict DPM and PM_{2.5} concentrations at sensitive receptors (residences) in the vicinity of the project truck travel. The AERMOD model is a BAAQMD-recommended model for use in modeling analysis of these types of emission activities for CEQA projects.¹ Annual DPM and PM_{2.5} concentrations from truck traffic were computed using the model at sensitive receptors. Some groups of people are more affected by air pollution than others. The State has identified the following people who are most likely to be affected by air pollution: children under 16, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, and elementary schools. Residential locations are assumed to include infants and small children. Residences along State Route 25 both east and west of the project site were included as sensitive receptors. Figure 1 shows the locations of residences along State Route 25 that may be affected by the project truck trips.

The modeling used two sets of meteorological data:

- (1) A five-year data set (2013 - 2017) of hourly meteorological data from San Martin Airport prepared for use with the AERMOD model by the Bay Area Air Quality Management District (BAAQMD). The airport is about 8.7 to 9.7 miles north of the western State Route 25 roadway segments that were used for modeling impacts at receptors 1 through 4 (see Figure 1).
- (2) A five-year data set (2009 - 2014)² of hourly meteorological data from Hollister Municipal Airport prepared for use with the AERMOD model by the California Air Resources Board. The airport is about 1.5 to 2.0 miles southeast of the eastern State Route 25 roadway segments were used for modeling impacts at receptors 5 through 7 (see Figure 1). Receptor 8 was not included in the modeling since it is more than 1,000 feet from State Route 25.

¹ Bay Area Air Quality Management District (BAAQMD), 2012, *Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0*. May.

² The five years of data were comprised of the period from February 1, 2009 through January 31, 2014.

Project operation was assumed to occur for 365 days per year and that the trucks would be traveling on State Route 25 during the nighttime from about 6:00 p.m. to 9:00 a.m. The emissions from truck travel were modeled with the AERMOD model using line-area sources representing the expected truck travel routes within about 1,000 feet of the residential receptors (see Figures 2, 3, and 4). DPM and PM_{2.5} concentrations were calculated at sensitive receptors using receptor heights of 1.5 meters (4.9 feet) to represent the breathing heights of the residents in nearby single-family homes. Residential receptors are assumed to include all receptor types with almost continuous exposure.

Figures 2, 3, and 4 show locations of modeled roadway segments (emission sources) and sensitive receptors (Figures 2 and 3 are for receptors west and Figure 4 is for receptors east). Also shown in the figures are the receptors that would be most affected by the project TAC and PM_{2.5} emissions along the roadway segment modeled.

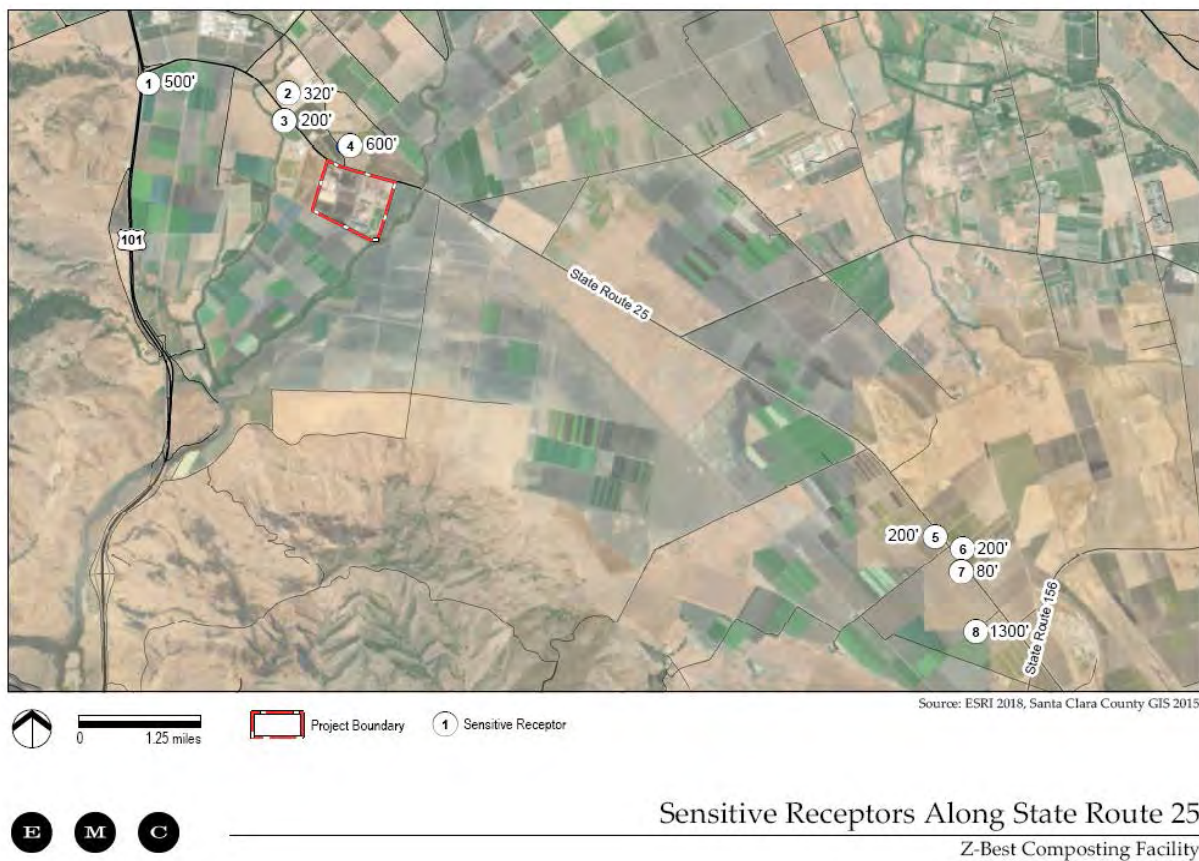


Figure 1

Roadway Segments and Receptor Location Modeled for West Receptor #1



Figure 2

Roadway Segments and Receptor Locations Modeled for West Receptors #2 - #4

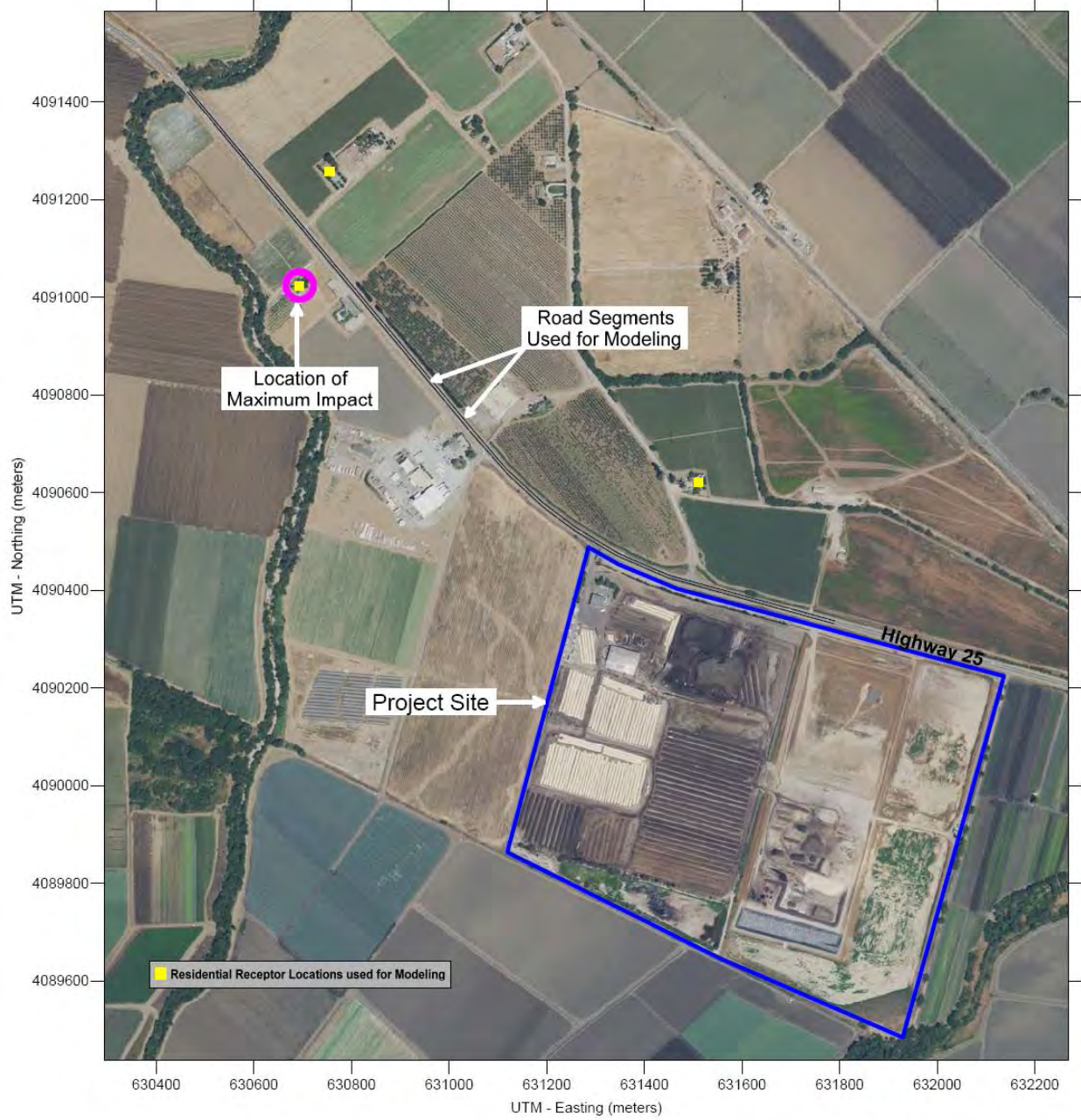


Figure 3

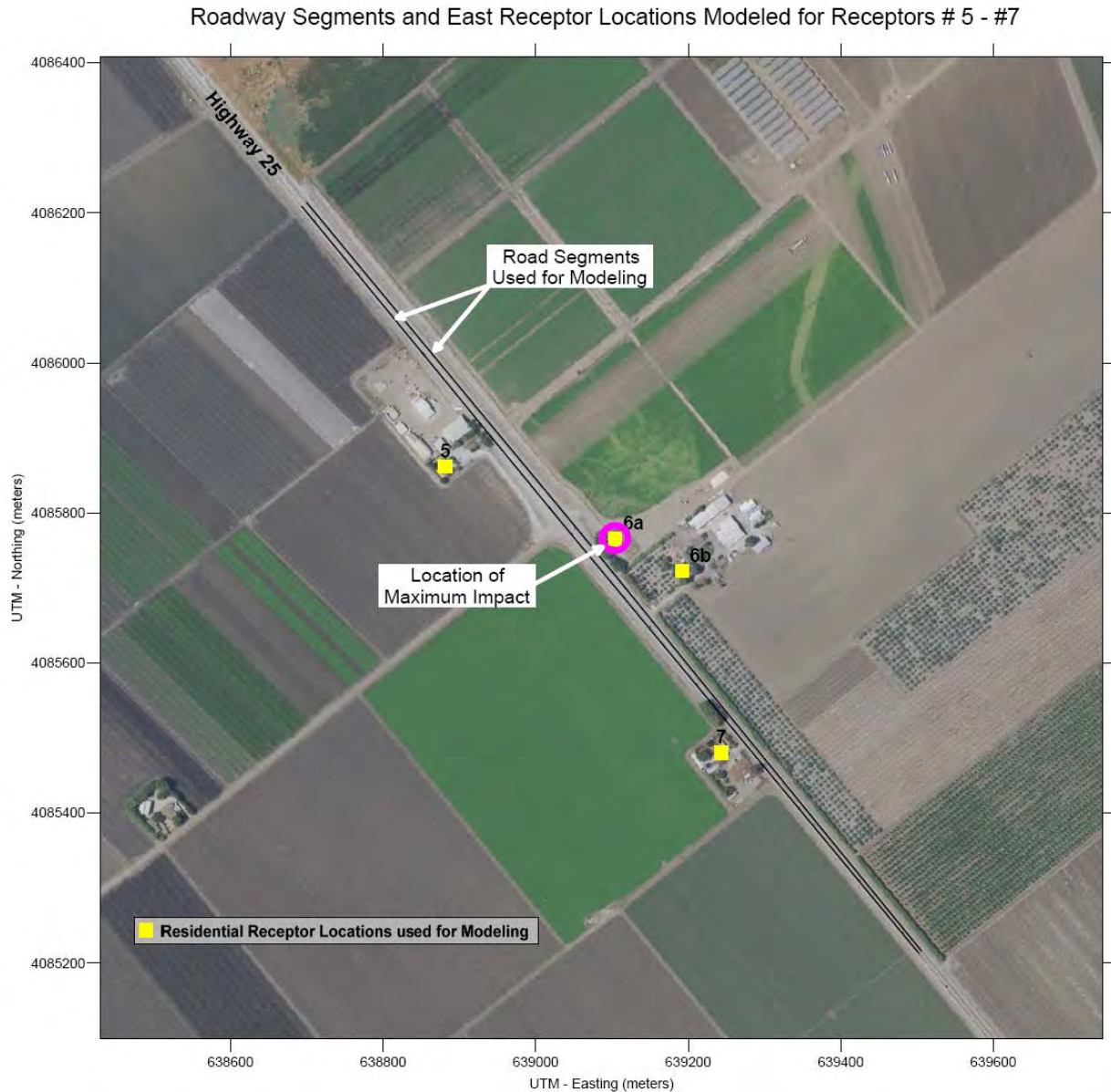


Figure 4

Increased cancer risks from the truck traffic emission sources were calculated using the modeled maximum annual DPM concentrations and BAAQMD recommended risk assessment methods and parameters described in *Attachment 1*. These methods evaluate cancer risk due to DPM exposure and incorporate age sensitivity factors methods for infant (third trimester to two years of age) and children (two years of age to 16 years). The sensitive receptor identified with the maximum increased cancer risk caused by the project traffic is referred to as the Maximally Exposed Individual (MEI). The maximum cancer risk would occur at receptor #3 and is considered to be the location of the MEI. All other receptors would have lesser impacts with respect to increase cancer risk caused by the project. The PM_{2.5} concentration and non-cancerous health risk impacts (i.e. Hazard Index) were also calculated. These results are also based on the maximum annual concentration but include sources of PM_{2.5} besides DPM (e.g., brake and tire wear and re entrained

roadway dust). The maximum PM_{2.5} concentration and Hazard Index occur at the same location as the cancer risk MEI, receptor #3.

Table 1 reports the community risk impacts in terms of MEI for cancer risk, maximum annual PM_{2.5} concentration and maximum annual Hazard Index for the project truck traffic. *Attachment 2* includes the truck traffic health risk assessment assumptions and computations.

Table 1. Project Traffic Health Risk Impacts at the Location of Maximum Impact

Source	Lifetime Cancer Risk at MEI (per million) ¹	Maximum Annual	
		PM _{2.5} (µg/m ³)	Hazard Index
State Route 25 Segment - west			
Project Increase	7.0	0.04	<0.01
<i>BAAQMD Single-Source Threshold</i>	<i>>10.0</i>	<i>>0.3</i>	<i>>1.0</i>
<i>Significant?</i>	<i>No</i>	<i>No</i>	<i>No</i>

Supporting Documentation

Attachment 1 is the methodology used to compute community risk impacts, including the methods to compute lifetime cancer risk from exposure to project emissions.

Attachment 2 is the summary of the health risk assessment inputs and outputs. AERMOD dispersion modeling files for this assessment are not included, but are available upon request and would be provided in digital format.

Attachment 1: Health Risk Calculation Methodology

A health risk assessment (HRA) for exposure to Toxic Air Contaminates (TACs) requires the application of a risk characterization model to the results from the air dispersion model to estimate potential health risk at each sensitive receptor location. The State of California Office of Environmental Health Hazard Assessment (OEHHA) and California Air Resources Board (CARB) develop recommended methods for conducting health risk assessments. The most recent OEHHA risk assessment guidelines were published in February of 2015.³ These guidelines incorporate substantial changes designed to provide for enhanced protection of children, as required by State law, compared to previous published risk assessment guidelines. CARB has provided additional guidance on implementing OEHHA's recommended methods.⁴ This HRA used the 2015 OEHHA risk assessment guidelines and CARB guidance. The BAAQMD has adopted recommended procedures for applying the newest OEHHA guidelines as part of Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants.⁵ Exposure parameters from the OEHHA guidelines and the recent BAAQMD HRA Guidelines were used in this evaluation.

Cancer Risk

Potential increased cancer risk from inhalation of TACs is calculated based on the TAC concentration over the period of exposure, inhalation dose, the TAC cancer potency factor, and an age sensitivity factor to reflect the greater sensitivity of infants and children to cancer causing TACs. The inhalation dose depends on a person's breathing rate, exposure time and frequency and duration of exposure. These parameters vary depending on the age, or age range, of the persons being exposed and whether the exposure is considered to occur at a residential location or other sensitive receptor location.

The current OEHHA guidance recommends that cancer risk be calculated by age groups to account for different breathing rates and sensitivity to TACs. Specifically, they recommend evaluating risks for the third trimester of pregnancy to age zero, ages zero to less than two (infant exposure), ages two to less than 16 (child exposure), and ages 16 to 70 (adult exposure). Age sensitivity factors (ASFs) associated with the different types of exposure are an ASF of 10 for the third trimester and infant exposures, an ASF of 3 for a child exposure, and an ASF of 1 for an adult exposure. Also associated with each exposure type are different breathing rates, expressed as liters per kilogram of body weight per day (L/kg-day) or liters per kilogram of body weight per 8-hour period for the case of worker or school child exposures. As recommended by the BAAQMD for residential exposures, 95th percentile breathing rates are used for the third trimester and infant exposures, and 80th percentile breathing rates for child and adult exposures. For children at schools and daycare facilities, BAAQMD recommends using the 95th percentile 8-hour breathing rates. Additionally, CARB and the BAAQMD recommend the use of a residential exposure duration of

3 OEHHA, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. February.

4 CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.

5 BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*. December 2016.

30 years for sources with long-term emissions (e.g., roadways). For workers, assumed to be adults, a 25-year exposure period is recommended by the BAAQMD. For school children a 9-year exposure period is recommended by the BAAQMD.

Under previous OEHHA and BAAQMD HRA guidance, residential receptors are assumed to be at their home 24 hours a day, or 100 percent of the time. In the 2015 Risk Assessment Guidance, OEHHA includes adjustments to exposure duration to account for the fraction of time at home (FAH), which can be less than 100 percent of the time, based on updated population and activity statistics. The FAH factors are age-specific and are: 0.85 for third trimester of pregnancy to less than 2 years old, 0.72 for ages 2 to less than 16 years, and 0.73 for ages 16 to 70 years. Use of the FAH factors is allowed by the BAAQMD if there are no schools in the project vicinity have a cancer risk of one in a million or greater assuming 100 percent exposure (FAH = 1.0).

Functionally, cancer risk is calculated using the following parameters and formulas:

$$\text{Cancer Risk (per million)} = CPF \times \text{Inhalation Dose} \times ASF \times ED/AT \times FAH \times 10^6$$

Where:

CPF = Cancer potency factor (mg/kg-day)⁻¹

ASF = Age sensitivity factor for specified age group

ED = Exposure duration (years)

AT = Averaging time for lifetime cancer risk (years)

FAH = Fraction of time spent at home (unitless)

$$\text{Inhalation Dose} = C_{\text{air}} \times DBR^* \times A \times (EF/365) \times 10^{-6}$$

Where:

C_{air} = concentration in air (µg/m³)

DBR = daily breathing rate (L/kg body weight-day)

8HrBR = 8-hour breathing rate (L/kg body weight-8 hours)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

* An 8-hour breathing rate (8HrBR) is used for worker and school child exposures.

The health risk parameters used in this evaluation are summarized as follows:

Parameter	Exposure Type →	Infant		Child	Adult
	Age Range →	3 rd Trimester	0<2	2 < 16	16 - 30
DPM Cancer Potency Factor (mg/kg-day) ⁻¹		1.10E+00	1.10E+00	1.10E+00	1.10E+00
Daily Breathing Rate (L/kg-day) 80 th Percentile Rate		273	758	572	261
Daily Breathing Rate (L/kg-day) 95 th Percentile Rate		361	1,090	745	335
8-hour Breathing Rate (L/kg-8 hours) 95 th Percentile Rate		-	1,200	520	240
Inhalation Absorption Factor		1	1	1	1
Averaging Time (years)		70	70	70	70
Exposure Duration (years)		0.25	2	14	14*
Exposure Frequency (days/year)		350	350	350	350*
Age Sensitivity Factor		10	10	3	1
Fraction of Time at Home (FAH)		0.85-1.0	0.85-1.0	0.72-1.0	0.73*

* For worker exposures (adult) the exposure duration and frequency are 25 years 250 days/year and FAH is not applicable.

Non-Cancer Hazards

Non-cancer health risk is usually determined by comparing the predicted level of exposure to a chemical to the level of exposure that is not expected to cause any adverse effects (reference exposure level), even to the most susceptible people. Potential non-cancer health hazards from TAC exposure are expressed in terms of a hazard index (HI), which is the ratio of the TAC concentration to a reference exposure level (REL). OEHHA has defined acceptable concentration levels for contaminants that pose non-cancer health hazards. TAC concentrations below the REL are not expected to cause adverse health impacts, even for sensitive individuals. The total HI is calculated as the sum of the HIs for each TAC evaluated and the total HI is compared to the BAAQMD significance thresholds to determine whether a significant non-cancer health impact from a project would occur.

Typically, for residential projects located near roadways with substantial TAC emissions, the primary TAC of concern with non-cancer health effects is diesel particulate matter (DPM). For DPM, the chronic inhalation REL is 5 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

Annual PM_{2.5} Concentrations

While not a TAC, fine particulate matter (PM_{2.5}) has been identified by the BAAQMD as a pollutant with potential non-cancer health effects that should be included when evaluating potential community health impacts under the California Environmental Quality Act (CEQA). The thresholds of significance for PM_{2.5} (project level and cumulative) are in terms of an increase in the annual average concentration. When considering PM_{2.5} impacts, the contribution from all sources of PM_{2.5} emissions should be included. For projects with potential impacts from nearby local roadways, the PM_{2.5} impacts should include those from vehicle exhaust emissions, PM_{2.5} generated from vehicle tire and brake wear, and fugitive emissions from re-suspended dust on the roads.

Attachment 2: Modeling Inputs Assumptions and Summary of Output

File Name: Santa Clara (SF) - 2020 - Annual.EF
 CT-EMFAC2017 Version: 1.0.2.27401
 Run Date: 2/20/2020 5:34:37 PM
 Area: Santa Clara (SF)
 Analysis Year: 2020
 Season: Annual

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction Within Category	Gas VMT Fraction Within Category
Truck 1	0.000	0.456	0.544
Truck 2	1.000	0.944	0.044
Non-Truck	0.000	0.013	0.966

Road Type:	Major/Collector		
Silt Loading Factor:	CARB	0.032 g/m2	
Precipitation Correction:	CARB	P = 64 days	N = 365 days

Fleet Average Running Exhaust Emission Factors (grams/veh-mile)

Pollutant Name	35 mph	55 mph
PM2.5	0.051048	0.070217
PM10	0.053358	0.073393
TOG	0.183346	0.111236
1,3-Butadiene	0.000332	0.000218
Acetaldehyde	0.011762	0.007584
Acrolein	0.000007	0.000005
Benzene	0.003325	0.002163
Diesel PM	0.053827	0.073597
Ethylbenzene	0.000550	0.000363
Formaldehyde	0.023592	0.015221
Naphthalene	0.000163	0.000100
POM	0.000386	0.000296
DEOG	0.159814	0.103026

Fleet Average Running Loss Emission Factors (grams/veh-hour)

Pollutant Name	Emission Factor
TOG	0.237727
1,3-Butadiene	0.000000
Benzene	0.002377
Ethylbenzene	0.003899
Naphthalene	0.000333

Fleet Average Tire Wear Factors (grams/veh-mile)

Pollutant Name	Emission Factor
PM2.5	0.006679
PM10	0.026716

Fleet Average Brake Wear Factors (grams/veh-mile)

Pollutant Name	Emission Factor
PM2.5	0.037827
PM10	0.088263

Fleet Average Road Dust Factors (grams/veh-mile)

Pollutant Name	Emission Factor
PM2.5	0.124766
PM10	0.831771

=====-END=-=====

**Z-Best Compost Facility - Morgan Hill, CA
2020 Increased Project Truck Emissions - DPM**

Road Segment	Road Segment Length (ft)	Road Segment Length (m)	Modeled Road Width (ft)	Initial ^a Vertical Height (m)	Initial ^a Vertical Dispersion (m)	Release ^a Height (m)	Percent of Daily Trucks (%)	No. of Trucks Trips	Travel Speed (mph)	DPM ^b Emission Factor (g/veh-mi)	Truck Travel DPM Emissions			
											Daily (g/day)	Daily (lb/day)	Hourly (lb/hr)	Annual (lb/year)
On-Ramp & Northbound Highway 25-Rec #1	2312	705	31.7	6.8	3.16	3.4	83%	85.6	35	0.05383	2.017	0.00445	2.97E-04	1.62
Off-Ramp & Southbound Highway 25-Rec #1	1783	543	31.7	6.8	3.16	3.4	83%	85.6	35	0.05383	1.556	0.00343	2.29E-04	1.25
Norhtbound Highway 25-Rec #s 2-4	5794	1766	31.7	6.8	3.16	3.4	83%	85.6	55	0.07360	6.913	0.01524	1.02E-03	5.56
Southbound Highway 25-Rec #s 2-4	5794	1766	31.7	6.8	3.16	3.4	83%	85.6	55	0.07360	6.913	0.01524	1.02E-03	5.56
Norhtbound Highway 25-Rec #s 5-7	4209	1283	31.7	6.8	3.16	3.4	17%	17.5	55	0.07360	1.029	0.00227	1.51E-04	0.83
Southbound Highway 25-Rec #s 5-7	4209	1283	31.7	6.8	3.16	3.4	17%	17.5	55	0.07360	1.029	0.00227	1.51E-04	0.83

^a Line-area source parameters based on EPA 2015

^b Emission factor from CT-EMFAC2017 for running exhaust for 2020

Truck Information

Normal Trucks per day =	100
Normal Truck Trips per day =	200
Normal Annual Trucks =	36,500
Additional Trucks per Year* =	1,140
Total Trucks per Year =	37,640
Total Trucks per day =	103.1
Operation Days =	365
Delivery Truck Hours (hrs/day)** =	15

* Additional 57 truck per day (114 trucks trips per day) for 20 days per year

** Truck operation from 6 PM to 9 AM

References:

EPA 2015 - *Transportation Conformity Guidance for Quantitative Hot-spot Analyses in PM2.5 and PM10 Nonattainment and maintenance Areas*, November 2015

Z-Best Compost Facility - Morgan Hill, CA
2020 Increased Project Truck Emissions - PM2.5 Emissions

Road Segment	Road Segment Length (ft)	Segment Length (m)	Modeled Road Width (ft)	Initial ^a Vertical Height (m)	Initial ^a Vertical Dispersion (m)	Release ^a Height (m)	Percent of Daily Trucks (%)	No. of Daily Trucks	Travel Speed (mph)	PM2.5 ^b Emission Factors (g/veh-mi)				Truck Travel Fugitive PM2.5 Emissions			
										Vehicle Exhaust	Tire & Brake Wear	Fugitive Road Dust	Total PM2.5 Emissions	Daily (g/day)	Daily (lb/day)	Hourly (lb/hr)	Annual (lb/year)
On-Ramp & Northbound Highway 25-Rec #1	2312	705	31.7	6.8	3.16	3.4	83%	85.6	35	0.05105	0.04451	0.12477	0.22032	8.257	0.01820	1.21E-03	6.64
Off-Ramp & Southbound Highway 25-Rec #1	1783	543	31.7	6.8	3.16	3.4	83%	85.6	35	0.05105	0.04451	0.12477	0.22032	6.368	0.01404	9.36E-04	5.12
Norhtbound Highway 25-Rec #s 2-4	5794	1766	31.7	6.8	3.16	3.4	83%	85.6	55	0.07022	0.04451	0.12477	0.23949	22.494	0.04959	3.31E-03	18.10
Southbound Highway 25-Rec #s 2-4	5794	1766	31.7	6.8	3.16	3.4	83%	85.6	55	0.07022	0.04451	0.12477	0.23949	22.494	0.04959	3.31E-03	18.10
Norhtbound Highway 25-Rec #s 5-7	4209	1283	31.7	6.8	3.16	3.4	17%	17.5	55	0.07022	0.04451	0.12477	0.23949	3.347	0.00738	4.92E-04	2.69
Southbound Highway 25-Rec #s 5-7	4209	1283	31.7	6.8	3.16	3.4	17%	17.5	55	0.07022	0.04451	0.12477	0.23949	3.347	0.00738	4.92E-04	2.69

^a Line-area source parameters based on EPA 2015

^b Emission factor for vehicle exhaust, tire and brake wear from CT-EMFAC2017 for 2020

Truck Information

Normal Trucks per day = 100
 Normal Truck Trips per day = 200
 Normal Annual Trucks = 36,500
 Additional Trucks per Year* = 1,140
 Total Trucks per Year = 37,640
 Annual Average Trucks per day = 103.1
 Operation Days = 365
 Delivery Truck Hours (hrs/day) = 15
 * Additional 57 truck per day (114 trucks trips per day) for 20 days per year
 ** Truck operation from 6 PM to 9 AM

Truck Fugitive PM2.5 Emission Information

Truck Tire Wear Emission Factor (g/veh-mi) = 0.00668
 Truck Brake Wear Emission Factor (g/veh-mi) = 0.03783
 Truck Road Dust Emission Factor (g/veh-mi) = 0.12477
 Total Fugitive PM2.5 Emissions (g/veh-mi) = 0.16927

References:

EPA 2015 - *Transportation Conformity Guidance for Quantitative Hot-spot Analyses in PM2.5 and PM10 Nonattainment and maintenance Areas*, November 2015

**Z-Best Composting, Morgan Hill - Cancer Risks from Project Operation
Project Truck Traffic
Residential Receptor #1 (1.5 meter receptor heights)**

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)⁻¹

ASF = Age sensitivity factor for specified age group

ED = Exposure duration (years)

AT = Averaging time for lifetime cancer risk (years)

FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

Values

Cancer Potency Factors (mg/kg-day)⁻¹

TAC	CPF
DPM	1.10E+00

Age --> Parameter	Infant/Child			Adult
	3rd Trimester	0 - <2	2 - <16	16 - 30
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
ED =	0.25	2	14	14
AT =	70	70	70	70
FAH =	0.85	0.72	0.72	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

MEI Cancer Risk From: Project Truck Traffic

Exposure Duration (years)	Age	Age Sensitivity Factor	DPM Annual Conc (ug/m3)	DPM Cancer Risk (per million)
0.25	-0.25 - 0*	10	0.00532	0.06
2	1 - 2	10	0.00532	1.26
14	3 - 16	3	0.00532	1.39
14	17 - 30	1	0.00532	0.21
Total Increased Cancer Risk				2.9

* Third trimester of pregnancy

Maximum PM2.5 Concentration (µg/m³) = 0.02179

**Z-Best Composting, Morgan Hill - Cancer Risks from Project Operation
Project Truck Traffic
Residential Receptors #2 - #4 (1.5 meter receptor heights)**

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

- Where: CPF = Cancer potency factor (mg/kg-day)⁻¹
 ASF = Age sensitivity factor for specified age group
 ED = Exposure duration (years)
 AT = Averaging time for lifetime cancer risk (years)
 FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10⁻⁶

- Where: C_{air} = concentration in air (µg/m³)
 DBR = daily breathing rate (L/kg body weight-day)
 A = Inhalation absorption factor
 EF = Exposure frequency (days/year)
 10⁻⁶ = Conversion factor

Values

Cancer Potency Factors (mg/kg-day)⁻¹

TAC	CPF
DPM	1.10E+00

Age --> Parameter	Infant/Child			Adult
	3rd Trimester	0 - <2	2 - <16	16 - 30
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
ED =	0.25	2	14	14
AT =	70	70	70	70
FAH =	0.85	0.72	0.72	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

MEI Cancer Risk From: Project Truck Traffic

Exposure Duration (years)	Age	Age Sensitivity Factor	DPM Annual Conc (ug/m3)	DPM Cancer Risk (per million)
0.25	-0.25 - 0*	10	0.01277	0.15
2	1 - 2	10	0.01277	3.02
14	3 - 16	3	0.01277	3.33
14	17 - 30	1	0.01277	0.51
Total Increased Cancer Risk				7.0

* Third trimester of pregnancy

Maximum PM2.5 Concentration (µg/m³) = 0.04149

**Z-Best Composting, Morgan Hill - Cancer Risks from Project Operation
Project Truck Traffic
Residential Receptors #5 - #7 (1.5 meter receptor heights)**

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)⁻¹

ASF = Age sensitivity factor for specified age group

ED = Exposure duration (years)

AT = Averaging time for lifetime cancer risk (years)

FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

Values

Cancer Potency Factors (mg/kg-day)⁻¹

TAC	CPF
DPM	1.10E+00

Age --> Parameter	Infant/Child			Adult
	3rd Trimester	0 - <2	2 - <16	16 - 30
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
ED =	0.25	2	14	14
AT =	70	70	70	70
FAH =	0.85	0.72	0.72	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

MEI Cancer Risk From: Project Truck Traffic

Exposure Duration (years)	Age	Age Sensitivity Factor	DPM Annual Conc (ug/m3)	DPM Cancer Risk (per million)
0.25	-0.25 - 0*	10	0.00136	0.02
2	1 - 2	10	0.00136	0.32
14	3 - 16	3	0.00136	0.35
14	17 - 30	1	0.00136	0.05
Total Increased Cancer Risk				0.7

* Third trimester of pregnancy

Maximum PM2.5 Concentration (µg/m³) = 0.00442

June 10, 2020

Mr. Ron Sissem, MRP
Principal
EMC Planning Group, Inc.
301 Lighthouse Avenue, Suite C
Monterey, CA 93940

**Subject: Toxic Air Contaminant (TAC) Emissions Evaluation for Proposed Capacity
Expansion of the Z-Best Composting (Z-Best) Facility**

Dear Mr. Sissem:

At the request of the County, Yorke Engineering, LLC (Yorke) performed an independent review for EMC Planning Group, Inc. (EMC) of the potential impacts on TAC emissions resulting from the proposed increase in permitted composting capacity (Project) at the Z-Best Composting (Z-Best) facility in Gilroy, CA. EMC is assisting the County of Santa Clara Department of Planning and Development with the preparation of an Environmental Impact Report (EIR) for the Project.

PROPOSED COMPOSTING CAPACITY INCREASE

Yorke understands that the Project will result in the capacity to compost an additional 875 tons per day (tpd) of municipal solid waste (MSW) and/or food waste. This additional 875 tpd of composting capacity would be permitted as an increase in the monthly capacity for the site. The Project includes the removal of the existing MSW and food waste in-vessel composting system (CTI bag system), and the construction of a covered aerated static pile (CASP) under negative aeration with emissions controlled by biofilters for primary (active) composting of MSW and food waste, and positively aerated static piles (ASPs) with a biofilter cover (finished compost) for secondary (curing) composting.

The Z-Best facility also accepts green waste, which after processing to remove uncompostable material is composted in an existing open windrow system. Other wastes, primarily inert material, is separated from the waste feed streams and transported offsite.

The current facility capacity for MSW and food waste is 700 tpd. This is also the current MSW/food waste sublimit allowed in the current facility's total waste limit on peak days. Thus, the peak MSW and food waste that would be allowed after implementation of the Project is the sum of the current limit of 700 tpd and the proposed additional capacity of 875 tpd, or 1,575 tpd. Yorke understands that the Project proposes no permitted increase in the daily capacity for green waste composting including on peak days.

COMPOSTING AIR EMISSIONS ESTIMATION METHODOLOGY

Methodology Overview

Prior to discussing the specific calculations and assumptions used for Pre- and Post-Project TAC emissions, this section presents an overview description of the methodology to provide context.

Precursor Organic Compounds

Emissions of precursor organic compounds (POCs) occur over the composting cycle. All composting TACs currently assessed by the Bay Area Air Quality Management District (BAAQMD) and other California air districts are chemicals in a class of compounds called “reactive organic gases” (ROG), with the exception of ammonia. ROG are called “precursor organic compounds” (POCs) in BAAQMD regulations. In other California air districts and under U.S. Environmental Protection Agency (USEPA) regulations, these same compounds are referred to as volatile organic compounds (VOCs). These are all different names for the same class of compounds. This can be confusing when examining assessments from different agencies, so important to point out in the context of this Project.

ROG, VOC, and POC are organic compounds¹ that can undergo photochemical reaction with nitrogen oxides (NOx) in the atmosphere in the presence of sunlight to form photochemical oxidants, which are respiratory irritants. POCs are considered “criteria air pollutants”, since they are “precursors” to an air pollutant with an ambient air quality standard, photochemical oxidants measured as ozone².

Ammonia

Ammonia is also a chemical released over the composting cycle, and is also a TAC. It is formed by nitrogen in the waste feed. The chemical formula for ammonia is NH₃ (one nitrogen atom and three hydrogen atoms), so ammonia is not an organic molecule. Although the content of the waste stream is chiefly organic with a high carbon content, some of the organic compounds in the waste streams contain nitrogen, and that nitrogen can form ammonia in the composting emissions. The amount of ammonia in the emissions depends on the carbon-to-nitrogen ratio (C/N) in the feed streams, as well as how well the composting is aerated. That is, how well air is mixed into the composting process. The better the aeration, the lower the ammonia (as well as POC) emissions. This is discussed further in this report.

Basic Calculation Methodology Approach

The basic methodology to estimate TAC emissions begins with the application of POC and ammonia “emission factors” to the amount of waste being composted. Higher POC and ammonia emission factors are applied to the amount of waste in the composting cycle. Lower POC and ammonia emission factors are applied the waste feed storage piles on the tipping floor, as waste decomposition can begin there prior to being placed into active composting. If emissions are controlled by an air pollution control device after being emitted from composting, as is the case with the Post-Project configuration, then a control

¹ An organic compound is made up of carbon atoms, with other major atoms being hydrogen, oxygen, and/or nitrogen. Organic compounds can also include also other atoms depending on the compound. The majority of emissions from composing are organic compounds due to the high organic content of the waste streams being composted.

² Ozone is a molecule made up of three oxygen atoms and is highly reactive. Normal oxygen is comprised of two oxygen atoms, and is a stable gas. Ozone is the primary photochemical oxidant in “smog.” Ozone is colorless, but the presence of NOx pollutants, which help to form ozone in reaction with sunlight, is brown, giving smog its brown appearance.

efficiency is applied. For example, if the process is 80 percent controlled, then 20 percent of the composting emissions will vent to the atmosphere.

For TAC emissions estimates, the amount of ammonia emissions estimated by the emission factors and control device efficiencies are used directly in the TAC emissions assessment. The other TACs are fractions of the POC emissions. Thus, the estimated TAC emissions after any air pollution control device are determined by using the POC emissions and the results from a UC Davis composting study.³ The UC Davis study reports each measured individual VOC constituent as a percentage of the total VOC emissions. Note that the study reports “VOCs” that contribute to photochemical oxidant formation, and thus, these are the same as POCs as discussed in this report for BAAQMD permitting purposes. The emissions of those POCs that are TACs are estimated by applying those corresponding weight fractions from the UC Davis study. The TACs that are POCs include: isopropyl alcohol, methanol, naphthalene, propene, and acetaldehyde.

More specifics on the emission factors and control equipment assumptions used for the Pre- and Post-Project emissions are described further in the following two sections

Pre-Project MSW/Food Waste Emissions Calculation Description

As depicted earlier, current MSW and food waste composting at Z-Best occurs in the CTI bag system. To assess potential POC emissions from the CTI bags, emission factors were taken from a California Air Resources Board (CARB) report, *ARB Emissions Inventory Methodology for Composting Facilities*, March 2015 (CARB Report). CARB averaged emission factors from various studies on green waste composting to recommend a POC emission factor of 3.58 pounds of POC per ton of waste composted (lb/ton) over the composting (active and curing) cycle. For storage piles on the tipping floor, a POC emission factor of 0.2 pounds per ton per day for tipping piles is recommended in the CARB Report. Since Z-Best processes incoming waste within 24 hours, the emission factor was used simply as 0.2 lb/ton. TAC emissions from these POC emissions were determined as described earlier using the UC Davis composting study.³

The recommended ammonia emission factor in the CARB Report is 0.78 lb/ton. Ammonia emissions from storage piles were not addressed in the CARB Report. An ammonia emission factor of 0.02 lb/ton was used from BAAQMD Application 26437 (for Waste Management of Alameda County – Altamont Pass).

The existing composting at Z-Best does not employ air pollution control devices, thus no control factors were applied. Attachment 1 provides full details on emissions from the CTI bags resulting from the currently permitted throughput of 700 tpd of MSW and food waste using the cited emission factors, along with example calculations. The estimated emission results are summarized in the “POC and TAC Emission Estimates” section below.

Post-Project MSW/Food Waste Emissions Calculations

The BAAQMD, as a Responsible Agency, provided comments on the California Environmental Quality Act (CEQA) Notice of Preparation (NOP) for the Project in a November 15, 2018, letter to the County of Santa Clara Department of Planning and Development. At the request of Z-Best,

³ Kumar, Anuj, et al, “Volatile organic compound emissions from green waste composting: Characterization and ozone formation”, *Atmospheric Environment*, January 7, 2011, Table 4.

SCS Engineers (SCS) prepared responses to the BAAQMD letter, as updated in SCS' December 20, 2019 response letter (SCS Letter). The following summarizes MSW/food waste composting air emissions calculations from the proposed aerated static pile (ASP) systems as presented in the SCS Letter.

SCS cited a source test report by Horizon Air Measurement Services, Inc., for a facility in Southern California similar to the proposed ASP systems at the Gilroy facility. POC emission factors determined from that source test were used to calculate POC emissions from the CASP (active) and positive pressure ASP (curing) phases of the composting process as presented in Table 1 for the additional 875 tpd of MSW/food waste composting in the proposed new ASP systems, reproduced from the SCS December 20, 2019 letter. For active phase composting, a biofilter is proposed for emissions control, providing 80 percent POC emissions reduction as stated in the SCS letter as well as in the above-referenced CARB Report. For the curing phase, a moist compost cover layer is proposed for emissions control providing 50 percent POC emissions reduction as stated in the SCS letter, slightly lower than in the above-referenced CARB Report. For storage piles on the tipping floor, the POC emission factor of 0.2 lb/ton described above was used. Waste will also be tipped directly onto the CASP piles, which results in no emissions from tipped waste before added to the active phase. There is no emissions control proposed for the tipping floor, as shown in Table 1.

Table 1. POC Emissions from the Additional 875 tpd MSW/Food Waste Composting*

Phase	Emission Factor (lb/wet ton of material)	Daily Throughput (tpd)	Uncontrolled Daily Emission (lb/day)	Control Efficiency	Controlled Daily Emission (lb/day)	Controlled Annual Emissions (tons/year)
In-building tipping	0.2	219	43.8	0	43.75	7.98
Negative CASP (Active Phase)	0.0151	875	13.2	80%	2.64	0.48
Positive ASP (Curing Phase)	0.0151	875	13.2	50%	6.61	1.21
Total			70.2		53.00	9.67

* Reproduced from December 20, 2019, SCS Letter.

For ammonia, the tipping floor storage pile emissions were estimated by Yorke from the ammonia emission factor of 0.02 lb/ton described in the Pre-Project emissions section. The SCS Letter did not provide an ammonia emission factor for composting. It was set equal to the POC emission factor for the new ASP systems for the reasons discussed in the following paragraph.

The low POC composting emissions from the proposed ASP systems result from much enhanced aeration and increased aerobic (i.e., high oxygen) conditions, which in turn, reduces organic emissions. Ammonia is produced from the nitrogen content in the waste, which will be lower than the carbon content in an organic waste stream. Thus, per ton of waste feed, ammonia emissions are lower than POC emissions. The same enhanced aeration that reduces POC emissions will also reduce ammonia emissions, since ammonia formation results from anaerobic (low oxygen) conditions. Setting the ammonia emission factor equal to the POC emission factor is, therefore, conservative (i.e., should overestimate ammonia emissions).

Yorke assumed 53 percent control of ammonia emissions from active composting, consistent with the CARB Report. Ammonia control for the curing phase by compost cover was estimated using the ammonia efficiency by biofilter multiplied by the ratio of POC emissions control by cover compost divided by POC control by biofilter.

Attachment 1 provides full details on the calculation of estimated emissions from the proposed new ASP systems resulting from the additional 875 tpd of MSW/food waste, and for the full proposed future capacity of 1,575 of MSW and food waste upon inclusion of the current 700 tpd capacity in the Post-Project configuration. Included in Attachment 1 are example calculations for both the additional 875 tpd of waste feed and the final 1,575 tpd configuration. For the additional 875 tpd, numbers presented the Table 1 from the SCS Letter are reproduced in Attachment 1. The estimated emissions results are summarized in the “POC and TAC Emission Estimates” section below.

POC AND TAC EMISSIONS ESTIMATES

The permitted Pre-Project POC emissions at an operating capacity of 700 tpd of MSW/food waste were estimated at 2,541 lb/day and 463.7 tons/year facility-wide, based on the assumptions used.

The proposed Post-Project POC emissions at an operating capacity of 1,575 tpd of MSW/food waste were estimated at 95.5 lb/day and 17.43 tons/year facility-wide, based on the assumptions used, which included the new proposed ASP systems with additional emissions control.

Table 2 shows the estimated difference in TAC emissions between Pre- and Post-Project conditions. Calculation details are presented in Attachment 1.

Table 2. TAC Emissions: Current 700 tpd and Future 1575 tpd MSW/Food Waste Composting

Compounds	Pre-Project		Post-Project		Difference	
	Hourly Emissions (lb/hr)	Annual Emissions (lb/yr)	Hourly Emissions (lb/hr)	Annual Emissions (lb/yr)	Hourly Emissions (lb/hr)	Annual Emissions (lb/yr)
Isopropanol	44.8	392,000	1.68	14,700	-43.1	-377,300
Methanol	13.5	25,700	0.509	4,460	-13.0	-21,240
Naphthalene	0.529	1,000	0.0199	174	-0.51	-826
Propene	0.233	441	0.00875	76.7	-0.224	-364.3
Acetaldehyde	0.148	281	0.00557	48.8	-0.142	-232.2
Ammonia	22.9	201,000	1.46	12,800	-21.4	-188,200

The Pre-Project TAC emissions are already accounted for in the currently permitted operation. The proposed action will create the capacity for an additional 875 tpd of MSW/food waste. Table 3 shows the estimated post-project TAC emissions for the 875 tpd increase in MSW/food waste, a subset of the total Post-Project emissions in Table 2. Calculation details are presented in Attachment 1. This is discussed further in the Findings section.

Table 3. TAC Emissions from Future Additional 875 tpd MSW/Food Waste Composting

Compounds	Hourly Emissions (lb/hr)	Annual Emissions (lb/yr)
Isopropanol	0.935	8,190
Methanol	0.283	2,480
Naphthalene	0.0111	96.8
Propene	0.00486	42.6
Acetaldehyde	0.00309	27.1
Ammonia	0.809	7,090

FINDINGS ON TAC EMISSIONS

TAC Emissions Change from Pre-Project to Post-Project Permitted Throughputs

The key findings of this assessment for CEQA are summarized in Table 2. Pre-Project TAC emissions were estimated assuming 700 tpd of MSW/food waste composted in CTI bags using composting emission factors recommended in the March 2015 CARB Report, supplemented with the other cited information. The Post-Project TAC emissions were estimated assuming the baseline 700 tpd throughput plus the proposed additional 875 tpd, for a Post-Project total of 1,575 tpd composted in the new ASP systems. As previously noted, source test data were used to establish a much lower POC emission factor as explained in the December 2019 SCS Letter. Thus, there are lower POC-based TAC emissions, and lower ammonia emissions.

Table 2 shows substantial reductions in all TAC emissions between the Pre-Project and Post-Project cases for composting activity. This net reduction in TAC emissions creates a net air quality benefit with implementation of the Project.

TAC Emissions from Processing the Additional 875 tpd of MSW and Food Waste

Table 3 shows TAC emissions associated with only the proposed additional 875 tpd waste throughput to be treated in the new ASP systems. This subset of the overall change from Pre-Project to Post-Project conditions in Table 2. The additional 875 tpd capacity will be considered by the BAAQMD in air permitting, since the current 700 tpd is already operating. The BAAQMD will evaluate potential health risks with the proposed additional throughput and would need to find health risks acceptable in order to grant an air permit. Again, the currently permitted 700 tpd would also be composted in the new ASP systems as a result of the Project, which is not reflected in Table 3. As depicted in Table 2, those accompanying future emission reductions would more than offset the TAC emissions estimated for the additional 875 tpd capacity increase in Table 3.

CONCLUSIONS

Yorke evaluated documentation on composting air emissions associated with the proposed Project and applied currently accepted methodologies to estimate the Post-Project emissions to assess the potential change in TAC emissions from Pre-Project conditions. This showed that all TAC emissions from the composting process would be reduced after Project implementation. This net reduction in TAC emissions with implementation of the Project would create a net air quality

Mr. Ron Sisseem, EMC Planning Group, Inc.

June 10, 2020

Page 7 of 7

benefit. Exposures to TACs from facility composting operations will be reduced substantially from the current conditions.

CLOSING

Should you have any additional questions on the above, please contact me at (510) 853-1277 or Raj Rangaraj at (949) 420-9519, or through the email addresses below.

Sincerely,



John Koehler, Sc.D.

Senior Engineer

Yorke Engineering, LLC

JKoehler@YorkeEngr.com

cc: Dr. Raj Rangaraj, Yorke Engineering, LLC, RRangaraj@YorkeEngr.com

Enclosures:

1. Attachment 1 – POC and TAC Emission Estimates

ATTACHMENT 1 – POC AND TAC EMISSION ESTIMATES

EXISTING MSW/FOOD WASTE PROCESSING

Note: Example Calculations on Next Page

INPUTS - CTI Bags (MSW & Food Waste)		
Process Parameters	Values	Units
Daily Max Throughput	700	tons/day
Annual Max Throughput	255,500	tons/yr
Tipping Floor Throughput ¹	175.2	tons/day
Tipping Floor Throughput	63,948	tons/year
Operating Days	365	days/year
Composting POC EF ²	3.58	lb/ton
Composting NH3 EF ²	0.78	lb/ton
POC Stockpile EF ²	0.20	lb/ton
NH3 Stockpile EF ³	0.02	lb/ton

References: ¹SCS Letter, 12/20/2019; to estimate the 700 tpd daily maximum, the 219 tpd tipping floor throughput in SCS Letter for 875 tpd was prorated to 700 tpd.

²CARB, Emissions Inventory Methodology for Composting Facilities, March 2015

³BAAQMD Application 26437 (for Waste Management of Alameda County – Altamont Pass)

Table 1: POC and NH3 Composting Emissions

Pollutant	Emission Factor (lb/ton processed)	Uncontrolled Emissions (tpy)	Uncontrolled Emissions (lbs/day)	Uncontrolled Tipping Floor Emissions (tpy)	Uncontrolled Tipping Floor Emissions (lbs/day)	Total Emissions (lbs/day)	Total Emissions (tons/year)
Composting POC	3.58	457.3	2506	--	--	2506	457.3
Composting NH3	0.78	99.6	546	--	--	546	99.6
Tipping Floor POC	0.20	--	--	6.39	35.0	35.0	6.39
Tipping Floor NH3	0.02	--	--	0.64	3.50	3.50	0.64
Total POC:						2541.0	463.7
Total NH3:						549.50	100.3

Table 2: TAC Composting Emissions

Compounds	% VOC***	lb/hr**	lb/yr
Isopropyl alcohol*	42.31%	4.48E+01	3.92E+05
Methanol*	12.79%	1.35E+01	2.57E+04
Naphthalene*	0.50%	5.29E-01	1.00E+03
Propene*	0.22%	2.33E-01	4.41E+02
Acetaldehyde*	0.14%	1.48E-01	2.81E+02
Ammonia*	NA	2.29E+01	2.01E+05

* Toxic Air Contaminants (TACs) regulated by BAAQMD.

** Maximum daily POC is divided by 24 hours since composting is continuous although loading processes are not.

***As percent total VOC from: Kumar, Anuj, et al, "Volatile organic compound emissions from green waste composting: Characterization and ozone formation", Atmospheric Environment, January 7, 2011, Table 4.

(Note: VOCs are the same as POCs under BAAQMD regulation.)

EXISTING MSW/FOOD WASTE PROCESSING

EXAMPLE CALCULATIONS

Composting POC

POC Composting Emission Factor (lb/ton)		Throughput tons/day		POC lbs/day
3.58	x	700	=	2506.0

POC lbs/day		Operating Days per Year		POC lbs per ton		POC tons/year
2506.0	x	365	÷	2000	=	457.3

Composting Ammonia (NH3)

NH3 Composting Emission Factor (lb/ton)		Throughput tons/day		NH3 lbs/day
0.78	x	700	=	546.0

NH3 lbs/day		Operating Days per Year		NH3 lbs per ton		NH3 tons/year
546.0	x	365	÷	2000	=	99.6

Tipping Floor POC

POC Composting Emission Factor (lb/ton)		Throughput tons/day		POC lbs/day
0.20	x	175.2	=	35.0

POC lbs/day		Operating Days per Year		POC lbs per ton		POC tons/year
35.0	x	365	÷	2000	=	6.39

TAC Emissions Calculation (Isopropyl Alcohol)

IPA (Percent POC)		Daily POC* (lb/day)		Days per Year		IPA lbs/year		IPA ** lbs/hr
42.31%	x	2541.0	x	365	=	3.92E+05	=	44.8

* Composting plus Tipping Floor

** 8760 hrs/yr

POST-PROJECT ADDITIONAL MSW/FOOD WASTE PROCESSING

Note: Example Calculations on Next Page

INPUTS - CASP System with Biofilter (MSW & Food Waste)		
Process Parameters	Values	Units
Daily Max Throughput	875	tons/day
Annual Max Throughput	319,375	tons/yr
Tipping Floor Throughput ¹	219	tons/day
Tipping Floor Throughput	79,935	tons/year
Operating Days	365	days/year
Composting POC EF ¹	0.0151	lb/ton
Composting NH3 EF ^{1,2}	0.0151	lb/ton
POC Stockpile EF ³	0.20	lb/ton
NH3 Stockpile EF ⁴	0.02	lb/ton

Control Efficiencies		
Device	POC ⁵	NH3 ⁶
Biofilter	80%	53%
Compost Cover	50%	33.1%

References: ⁵SCS Letter, 12/20/2019

⁶ Biofilter NH3 efficiency from CARB 2015; Compost cover NH3 efficiency assumes biofilter efficiency for NH3 ratioed by Compost Cover POC/Biofilter POC.

References: ¹SCS Letter, 12/20/2019

²Assumes with New CASP system, NH3 emissions not higher than POC emissions; set to POC emissions as a maximum value.

³CARB, Emissions Inventory Methodology for Composting Facilities, March 2015

⁴BAAQMD Application 26437 (for Waste Management of Alameda County – Altamont Pass)

Table 1: POC and NH3 Composting Emissions

Pollutant	Emission Factor (lb/ton processed)	Composting Uncontrolled Emissions (tpy)	Composting Uncontrolled Emissions (lbs/day)	Controlled Active Phase Emissions (tpy)	Controlled Active Phase Emissions (lbs/day)	Controlled Curing Phase Emissions (tpy)	Controlled Curing Phase Emissions (lbs/day)	Uncontrolled Tipping Floor Emissions (tpy)	Uncontrolled Tipping Floor Emissions (lbs/day)	Total Emissions (lbs/day)	Total Emissions (tons/year)
Composting POC	0.0151	2.41	13.2	0.482	2.64	1.21	6.61	--	--	9.25	1.688
Composting NH3	0.0151	2.41	13.2	1.133	6.21	1.61	8.84	--	--	15.05	2.746
Tipping Floor POC	0.20	--	--	--	--	--	--	7.99	43.8	43.80	7.99
Tipping Floor NH3	0.02	--	--	--	--	--	--	0.799	4.38	4.38	0.80
Total POC:										53.0	9.68
Total NH3:										19.4	3.55

Table 2: TAC Composting Emissions

Compounds	% VOC***	lb/hr**	lb/yr
Isopropyl alcohol*	42.31%	9.35E-01	8.19E+03
Methanol*	12.79%	2.83E-01	2.48E+03
Naphthalene*	0.50%	1.11E-02	9.68E+01
Propene*	0.22%	4.86E-03	4.26E+01
Acetaldehyde*	0.14%	3.09E-03	2.71E+01
Ammonia*	NA	8.09E-01	7.09E+03

* Toxic Air Contaminants (TACs) regulated by BAAQMD.

** Maximum daily POC is divided by 24 hours since composting is continuous although loading processes are not.

***As percent total VOC from: Kumar, Anuj, et al, "Volatile organic compound emissions from green waste composting: Characterization and ozone formation", Atmospheric Environment, January 7, 2011, Table 4.

(Note: VOCs are the same as POCs under BAAQMD regulation.)

POST-PROJECT ADDITIONAL MSW/FOOD WASTE PROCESSING

EXAMPLE CALCULATIONS

Composting POC Active Phase

POC Composting Emission Factor (lb/ton)		Throughput tons/day		1.0 - Control Efficiency		POC lbs/day
0.0151	x	875	x	20%	=	2.64

Composting POC Curing Phase

POC Composting Emission Factor (lb/ton)		Throughput tons/day		1.0 - Control Efficiency		POC lbs/day
0.0151	x	875	x	50%	=	6.61

Total Composting Emissions

Active+Curing POC lbs/day		Operating Days per Year		POC lbs per ton		POC tons/year
9.25	x	365	÷	2000	=	1.688

Composting Ammonia (NH3) Curing Phase

NH3 Composting Emission Factor (lb/ton)		Throughput tons/day		1.0 - Control Efficiency		NH3 lbs/day
0.0151	x	875	x	47%	=	6.21

NH3 lbs/day		Operating Days per Year		NH3 lbs per ton		NH3 tons/year
6.21	x	365	÷	2000	=	1.133

Tipping Floor POC

POC Composting Emission Factor (lb/ton)		Throughput tons/day		1.0 - Control Efficiency		POC lbs/day
0.20	x	219	x	100%	=	43.80

POC lbs/day		Operating Days per Year		POC lbs per ton		POC tons/year
43.8	x	365	÷	2000	=	7.99

TAC Emissions Calculation (Isopropyl Alcohol)

IPA (Percent POC)		Daily POC* (lb/day)		Days per Year		IPA lbs/year		IPA ** lbs/hr
42.31%	x	53.0	x	365	=	8.19E+03	=	0.935

* Composting (Active+Curing) plus Tipping Floor

** 8760 hrs/yr

POST-PROJECT TOTAL MSW/FOOD WASTE PROCESSING

Note: Example Calculations on Next Page

INPUTS - CASP System with Biofilter (MSW & Food Waste)		
Process Parameters	Values	Units
Daily Max Throughput	1,575	tons/day
Annual Max Throughput	574,875	tons/yr
Tipping Floor Throughput ¹	394.2	tons/day
Tipping Floor Throughput	143,883	tons/year
Operating Days	365	days/year
Composting POC EF ²	0.0151	lb/ton
Composting NH3 EF ^{2,3}	0.0151	lb/ton
POC Stockpile EF ⁴	0.20	lb/ton
NH3 Stockpile EF ⁵	0.02	lb/ton

Control Efficiencies		
Device	POC ⁶	NH3 ⁷
Biofilter	80%	53%
Compost Cover	50%	33.1%

References: ⁶SCS Letter, 12/20/2019

⁷ Biofilter NH3 efficiency from CARB 2015; Compost cover NH3 efficiency assumes biofilter efficiency for NH₃ ratioed by Compost Cover POC/Biofilter POC.

References: ¹Combined tipping floor throughputs for the "Existing" and "Added MSW" cases.

²SCS Letter, 12/20/2019

³Assumes with New CASP system, NH3 emissions not higher than POC emissions; set to POC emission factor as a maximum

⁴CARB, Emissions Inventory Methodology for Composting Facilities, March 2015

⁵BAAQMD Application 26437 (for Waste Management of Alameda County – Altamont Pass)

Table 1: POC and NH3 Composting Emissions

Pollutant	Emission Factor (lb/ton processed)	Composting Uncontrolled Emissions (tpy)	Composting Uncontrolled Emissions (lbs/day)	Controlled Active Phase Emissions (tpy)	Controlled Active Phase Emissions (lbs/day)	Controlled Curing Phase Emissions (tpy)	Controlled Curing Phase Emissions (lbs/day)	Uncontrolled Tipping Floor Emissions (tpy)	Uncontrolled Tipping Floor Emissions (lbs/day)	Total Emissions (lbs/day)	Total Emissions (tons/year)
Composting POC	0.0151	4.34	23.8	0.868	4.76	2.17	11.89	--	--	16.65	3.038
Composting NH3	0.0151	4.34	23.8	2.040	11.18	2.90	15.90	--	--	27.08	4.943
Tipping Floor POC	0.20	--	--	--	--	--	--	14.39	78.8	78.84	14.39
Tipping Floor NH3	0.02	--	--	--	--	--	--	1.439	7.88	7.88	1.44
Total POC:										95.5	17.43
Total NH3:										35.0	6.38

Table 2: TAC Composting Emissions

Compounds	% VOC ^{***}	lb/hr ^{**}	lb/yr
Isopropyl alcohol*	42.31%	1.68E+00	1.47E+04
Methanol*	12.79%	5.09E-01	4.46E+03
Naphthalene*	0.50%	1.99E-02	1.74E+02
Propene*	0.22%	8.75E-03	7.67E+01
Acetaldehyde*	0.14%	5.57E-03	4.88E+01
Ammonia*	NA	1.46E+00	1.28E+04

* Toxic Air Contaminants (TACs) regulated by BAAQMD.

** Maximum daily POC is divided by 24 hours since composting is continuous although loading processes are not.

***As percent total VOC from: Kumar, Anuj, et al, "Volatile organic compound emissions from green waste composting: Characterization and ozone formation", Atmospheric Environment, January 7, 2011, Table 4.

POST-PROJECT TOTAL MSW/FOOD WASTE PROCESSING

EXAMPLE CALCULATIONS

Composting POC Active Phase

POC Composting Emission Factor (lb/ton)		Throughput tons/day		1.0 - Control Efficiency		POC lbs/day
0.0151	x	1575	x	20%	=	4.76

Composting POC Curing Phase

POC Composting Emission Factor (lb/ton)		Throughput tons/day		1.0 - Control Efficiency		POC lbs/day
0.0151	x	1575	x	50%	=	11.89

Total Composting Emissions

Active+Curing POC lbs/day		Operating Days per Year		POC lbs per ton		POC tons/year
16.65	x	365	÷	2000	=	3.038

Composting Ammonia (NH3) Curing Phase

NH3 Composting Emission Factor (lb/ton)		Throughput tons/day		1.0 - Control Efficiency		NH3 lbs/day
0.0151	x	1575	x	47%	=	11.18

NH3 lbs/day		Operating Days per Year		NH3 lbs per ton		NH3 tons/year
11.18	x	365	÷	2000	=	2.040

Tipping Floor POC

POC Composting Emission Factor (lb/ton)		Throughput tons/day		1.0 - Control Efficiency		POC lbs/day
0.20	x	394.2	x	100%	=	78.84

POC lbs/day		Operating Days per Year		POC lbs per ton		POC tons/year
78.8	x	365	÷	2000	=	14.39

TAC Emissions Calculation (Isopropyl Alcohol)

IPA (Percent POC)		Daily POC* (lb/day)		Days per Year		IPA lbs/year		IPA ** lbs/hr
42.31%	x	95.5	x	365	=	1.47E+04	=	1.68

* Composting (Active+Curing) plus Tipping Floor

** 8760 hrs/yr

July 31, 2019

Mr. Ron Sisseem, MRP
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Office: (831) 649-1799 x207
E-mail: Sisseem@EMCPlanning.com

Subject: Review of Odor Modeling

Dear Mr. Sisseem:

At the request of the County, Yorke Engineering, LLC (Yorke) performed an independent peer review of the revised odor modeling analysis for EMC Planning Group, Inc. (EMC) on the proposed modifications at the Z-Best Composting (Z-Best) facility in Gilroy, CA. EMC is assisting the County of Santa Clara Department of Planning and Development with the preparation of an Environmental Impact Report (EIR) for the Project. Yorke assessed the data used to determine odor emissions for the sources modeled, source parameters for the air dispersion modeling, consistency of other modeling inputs with the Bay Area Air Quality Management District (BAAQMD) requirements, and adequacy of the revised analysis relative to accepted professional standards.

Yorke determined that the emissions workbook (ZBEST ODOR MODEL METRICS June 2019) and final Englobe Corporation (Englobe) report, *Air Dispersion Modelling Report: Z-Best Composting Facility*, dated June 2019, adequately documented the methodology and steps used to complete the odor analysis. Therefore, there is no need to independently review the AMS/EPA Regulatory Model (AERMOD) modeling files. Yorke has no recommendations regarding revisions or additions to the report.

PROJECT BACKGROUND

EMC is preparing a Draft Environmental Impact Report (DEIR) on behalf of the County of Santa Clara for proposed modifications to the Z-Best facility, located in a rural area of Gilroy. The modifications involve installation of aerated static pile (ASP) composting technology to replace CTI bags. A negative ASP venting to a biofilter is planned for primary composting (active phase), and positive ASP is proposed for secondary composting (curing phase). These systems are designed by Engineered Composting Systems (ECS). This is expected to reduce volatile organic compound (VOC) and odorous emissions compared to current facility operations. Work to date to assess current and future facility odors has included odor sampling at the existing CTI bags, and, to represent future ASP emissions, sampling at other similar ECS facilities processing similar feedstock. These results with additional input from ECS were incorporated into an Odor Report dated February 24, 2017 (2017 Odor Report), prepared by Englobe. Review of this work by the BAAQMD resulted in questions on the odor analysis, for which ECS provided input. Atmospheric Dynamics, Inc. (ADI), on behalf of EMC, provided additional comments as documented in Table 1-1 of the revised Odor Report. Englobe has revised the odor modeling to address the review

comments provided by ADI and prepared a revised odor report dated June 2019. EMC requested that Yorke independently assess the revised odor modeling report.

ODOR MODELING METHODOLOGY

The odor modeling methodology is based on guidance for determining odor thresholds and use of regulatory air dispersion modeling programs. The following sections summarize our review of the odor modeling methodology followed in preparing the revised odor report.

Odor Standard

Initially, the methodology used by Englobe was based on the California Air Resources Board (CARB) and South Coast Air Quality Management District (SCAQMD) documented odor threshold of 5 dilutions to threshold (D/T)^{1,2} and modeling the odor concentration to meet that D/T standard. However, consistent with the ADI review letter issue #1 (“Use 4 OU instead of 5”), a D/T of 4 OU/m³ was used in the revised odor report as a more conservative approach³. This standard establishes an odor threshold requirement of four volumes of odor free air to one volume of exhaust air to reach the odor detection threshold consistent with typical practice for projects within the BAAQMD jurisdiction.

Air Dispersion Modeling Analysis

To demonstrate compliance with an odor standard of 4 D/T at the fenceline, Englobe used AERMOD to simulate air dispersion conditions associated with stack release characteristics and site (building) geometry. AERMOD is a steady-state plume dispersion model that incorporates air dispersion calculations based on planetary boundary layer turbulence structure and scaling concepts. AERMOD includes the treatment of both surface and elevated sources, and both simple and complex terrain. AERMOD, like most dispersion models, uses mathematical formulations to characterize the atmospheric processes that disperse pollutants emitted by a source. Using odor emission rates (OU/s), exhaust parameters, terrain characteristics, and meteorological inputs, AERMOD calculates down-wind pollutant concentrations at specified receptor locations. AERMOD is recommended by both the USEPA and BAAQMD for stationary source air dispersion modeling. At the time of modeling for the revised odor report, the latest version of AERMOD was utilized (version 18081).

Receptor Grid

For the revised odor report, Englobe used a nested receptor grid with tiered spacing up to 5,000 meters from the center of the facility. Minimum receptor spacing in areas of maximum concentration should be at least 100 meters, which this nested receptor grid satisfies. In addition, 10 additional discrete receptors were added for the closest

¹ Amoores, J.E., The Perception of Hydrogen Sulfide odor in Relation to Setting an Ambient Standard, (1985), Prepared for the California Air Resources Board.

² South Coast Air Quality Management District (1993). California Environmental Quality Act (CEQA) Air Quality Handbook.

³ OU = odor unit. Synonymous with D/T. Four D/T equals 4 OU per cubic meter of air (OU/m³).

neighboring properties to adequately capture maximum odor impacts. For facilities in rural areas with scattered receptors, this is consistent with BAAQMD practice.

Meteorological (MET) data

For the revised odor report, preprocessed MET data (5th-generation Mesoscale Model or MM5) for a six-year averaging period (2010-2015) from Lakes Environmental was used by Englobe. The MM5 MET data was utilized as the Gilroy meteorological station is no longer recording site data. Utilizing MM5 MET data is a common practice in air dispersion modeling and is widely accepted by the U.S. EPA and local air districts.

Terrain Considerations

For the revised odor report, elevations for all receptors, buildings, and emission sources were imported directly into AERMOD View™ by Englobe using the WebGIS import feature from the 30-meter National Elevation Dataset (NED) files from the United States Geological Survey (USGS). All geographical coordinates referenced were in the UTM coordinate system with the NAD83 datum. In addition, a secondary treatment of terrain data was performed for the facility for the stockpile heights (not accounted for in the NED files) as this will have impacts on the ground level odor concentrations. This is a common practice used in air dispersion modeling and is widely accepted by local air districts.

On-Site Buildings

For the revised odor report, all significant buildings (Primary MSW processing building and office building) were included in the dispersion model by Englobe for the purpose of estimating building downwash. Downwash can occur due to wind flow over a structure that can draw pollutant plumes closer to the ground. Building downwash effects were assessed using the Building Profile Input Program for PRIME (BPIPPRM). This is standard practice used in air dispersion modeling.

Source Information and Release Parameters

Table 2-1 and Table 2-2 of the revised odor modeling report summarizes the sources and emission rates used in AERMOD by Englobe for both the current odor and proposed odor emission sources. The revised odor report included figures showing how the sources were configured for input to the dispersion model. The updated modeling odor emission rates for both the current and proposed odor emission sources were calculated as described below.

Odor Emission Rate- Existing

Odor emission rates emanating from the CTI bags were calculated as follows:

$$E = [(O*V)/A]*C$$

Where:

E = Odor emission rate (OU/s/m²)

O = Odor measurement within headspace (OU/m³)

V = Volumetric air flow into each bag (m³/min)

A = Area per bag (m²)

C = min/60 sec

Odor Emission Rate- Proposed (Primary and Secondary Composting)

Odor emission rates emanating from active phase composting using negatively aerated static piles venting to biofilters and curing phase composting using positively aerated static piles were calculated as follows:

$$E = [(O*V*(1-CE))/A]*C$$

Where:

E = Odor emission rate (OU/s/m²)

O = Odor measurement from aeration duct (OU/m³)

V = Volumetric air flow into duct or ASP (m³/min)

CE = Control Efficiency of biofilter (assumed as 85% for biofilter and 0% (i.e. unabated) for curing phase)

A = Area per biofilter or ASP (m²)

C = min/60 sec

Additional comments in the ADI review letter were identified as issues #2, #3 and #4 (“Difficulty in reviewing table 2-1”, “Emanation rates for CTI bags and ASP biofilters”, “ASP and biofilter sizes”, respectively).

In the 2017 odor report, the CTI bags were modeled as three separate sources defined by the age of the content with the emission rates derived from actual measurement data. For the revised odor report, the odor emission rates for the CTI bags were averaged and modeled as a single source rather than as three separate sources. This approach is reasonable.

The revised odor report updated the odor emission rates for the proposed ASP composting sources from literature values to odor sampling measurements taken at ECS reference facilities. The revised emission rates are presented in Tables 2-1 and 2-2 of the revised odor report. The emission rate values presented are consistent with the emissions workbook where the equations above are implemented. While we have reviewed the workbook, we have not reviewed the source of the OU data used in the calculations. The abatement efficiency assumptions are consistent with practice.

The graphical locations of the modeled and excluded sources for the current facility are presented in Map 1 while the proposed sources along with the excluded sources are presented in Map 2 of the revised odor report. The dimensions of the ASP and biofilters were also adequately represented in Map 2 of the revised odor report and are more specifically documented in the emission workbook. It should be noted that some green waste sources were excluded from this analysis (ADI review letter issue #5) since those sources are present in the current and proposed facility and will operate unchanged.

ODOR MODELING RESULTS

In the revised odor report, air dispersion modeling results in units of odor concentrations (odor units per cubic meter, OU/m³) were compared to the odor detection threshold by Englobe. Odor compounds disperse quickly with short timescales that are nearly instantaneous in nature. Therefore, AERMOD was run with the lowest averaging period (1-hour) available in the model. A 6-year average run was also conducted for both the current and proposed operations at the facility.

Updates in emission rates with the current CTI system for the revised modeling resulted in minimal differences in the maximum hourly and 6-year average odor concentrations compared to that in the 2017 odor report. This is to be expected as the odor emission rates for the CTI system were similar to that reported in the initial 2017 odor report.

With the proposed system, odor impacts were reduced compared to the initial analysis presented in the 2017 odor report. The reduction can be attributed to the lower odor emission rates used in the revised modeling. The methodology used to calculate the odor emission rates incorporated odor measurements that better reflect the emission rates specific to the facility.

CONCLUSION

The revised odor report by Englobe included updating the odor threshold from 5 OU/m³ to 4 OU/m³ and revising the odor emission rates for both the current and proposed sources. Odor emission rates for the current emission sources (CTI bags) were derived from measurements, and averaged and modeled as a single source rather than separate sources. For the proposed system (negative ASP with biofilter for active phase and positive ASP for curing phase), the odor emission rates were updated from literature values to odor sampling measurements from similar facilities. In addition, Englobe's revised modeling, as reflected in the revised odor report, did not include the impacts from the green waste windrows and other unaffected emission sources at the facility. Since these green waste windrows and other unaffected emission sources will continue to operate unchanged in the proposed facility, their exclusion from an evaluation of the potential odor impacts of proposed changes to the composting technology is appropriate.

Englobe's air dispersion modeling results suggest that the 6-year and 1-hour average for the proposed system are well below 4 OU/m³ for the discrete neighboring receptors. Concentration isopleths in the revised odor report suggest that the 6-year average modeled concentrations are well below 4 OU/m³ for the nested grid while the 1-hour average modeled concentrations may be between 4 OU/m³ and 5 OU/m³ for a few nested receptors outside the west-side fenceline (the revised odor report is not sufficiently documented to investigate this further). Further, the modeling results for the proposed ASP system indicate significantly lower concentrations than for the current CTI bag system. This may be attributed to the lower modeled odor emission rates calculated for the revised analysis. Overall, Yorke finds the Englobe analysis presented in the revised Odor Report adequately addresses the ADI comments and the overall methodology used in the odor assessment is generally consistent with current practice.

PEER REVIEW STATEMENT

At the request of the County, Yorke Engineering, LLC, has conducted an independent peer review of Englobe's June 2019 Odor Report for the modifications proposed by Z-Best Project to verify

the technical accuracy of the information, and identify any apparent deficiencies, errors and omissions affecting the completeness, methodologies, findings and adequacies of the analysis. The ultimate goal of the peer review is to help ensure that the information contained in the June 2019 Odor Report meets accepted professional standards for use in the EIR.

This peer review letter is part of the administrative record for the EIR. Based on the peer review conducted, Yorke Engineering concludes Englobe's June 2019 Odor Report as revised is appropriate for use as reference in the EIR.

CLOSING

Should you have any questions or concerns, please contact me at (510) 853-1277 or Raj Rangaraj at (949) 420-9519, or through the email addresses below.

Sincerely,



John Koehler, Sc.D.

Senior Engineer

Yorke Engineering, LLC

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cc: Dr. Raj Rangaraj, Yorke Engineering, LLC, RRangaraj@YorkeEngr.com
Mr. John Furlong, Yorke Engineering, LLC
Dr. Nick Gysel, Yorke Engineering, LLC



Z-Best Composting Facility

AIR DISPERSION MODELLING REPORT Z-BEST COMPOSTING FACILITY

Current & Proposed Expansion Gilroy,
California, USA

JUNE 2019

129-P-0018788-0-01-001-00

FINAL REPORT



Prépared by:

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Jean-Luc Bugnon, M. Sc.
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Revision and publication register		
Revision N°	Date	Modification And/Or Publication Details
2017	2017-02-24	First published version of this report
0A	2019-06-10	Preliminary revision of the report following ADI review
00	2019-06-17	Final revision of the report following ADI review

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Appendices

- Appendix A ECS Memo and odor assessment report
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1 Introduction & facility description

Along with the Engineered Compost Systems' (ECS) Memo, this section provides a description of the mandate and its purpose.

1.1 Mandate & purpose

The mandate for the original 2017 report consisted of modelling and comparing the odor dispersion resulting from the emissions of the existing Municipal Solid Waste (MSW) composting process compared against the proposed expansion of the composting process using ECS compost technology. This new report has the same mandate but has been revised following the review that was performed by ADI (letter dated Dec. 10 2018).

ECS collected air samples and measured air flow from the existing Z-Best facility and a nearby MSW facility with ECS compost technology (Mariposa, CA, Landfill). ECS had the air samples analyzed for odor based on dynamic olfactometry which reports odor unit (OU). This data was provided to Englobe for input in an air model based on odor emissions from identified sources (OU/s/m², OU/s). Odoriferous species are reactive and will deposit on available surfaces, thus reducing the odor level at receptors located downwind of the sources (Final Odor Emission Technical Report, Jones & Stokes, 2007). Odor is also comprised of a wide variety of compounds that have widely varying detection thresholds, making generalized odor unit (OU) a much more relevant measure of odor impact.

The main objective of this study was to better show and compare the current odor footprint of the MSW composting process with the modelled odor footprint resulting from the proposed technology upgrade and expansion of the MSW composting process without the influencing factors of facility components (and odor sources) that will not be altered. MSW is currently processed in CTI bags, which will be replaced in the upgraded and expanded facility with a two-stage aerated static pile (ASP) from ECS. The ECS system consists of a negatively aerated covered aerated static pile primary composting (CASP) venting to static biofilters. The secondary composting process (curing) is a positively aerated static pile (ASP). Odor data were all pulled from actual measurements on similar composting site; please refer to Appendix A for the memo from ECS wherein the data sources and the data are presented. A copy of each of these reports are also included in this appendix.

Graphical dispersion of odors of the current process and proposed expansion process were modelled using the latest version of AERMOD (version 18081).

It should be noted that the purpose of this study was not to provide professional advice or conformity to any state or federal regulation, its objective was to compare two scenarios of odor dispersion.

1.2 Description of the facility, topography and local environment

The Z-Best Composting Facility (Z-Best) is in Santa Clara County near the City of Gilroy.

The site is flat, and subject to strong winds at times. These wind conditions have been modelled in this exercise by the addition of a meteorological dataset of 6 years (from 2010 to 2015).

Agricultural activities border the facility on all sides. Potential receptors have been added to the model, based on a review of aerial photography, and previous studies.

1.3 Context

As previously stated in this section, the purpose of this study is to compare two different composting technologies regarding their odor emission dispersion following the review from ADI of the report that was prepared in 2017. The table below presents an overview at how each of these interrogations were integrated in the review of this report.

Table 1-1: Overview of the interrogations from ADI

ADI review letter issue #	ADI comment	Englobe actions in this new report
1	Use 4 OU instead of 5	The threshold for odor unit was adjusted throughout this report.
2	Difficulty in reviewing table 2-1	An Excel file containing all the calculations is included with the report
3	Emanation rates for CTI bags and ASP biofilters	All emanations rates are now based on odor assessment, refer to appendix A for all details.
4	ASP and biofilter sizes	All dimensions for the entirety of the units is supplied in appendix B
5	Modifications to greenwaste	The facility expansion is only for MSW processed by ECS system as a replacement for the CTI bags system on similar footprint. The new waste is tipped straight into ECS bunkers for immediate processing. There are no changes to the greenwaste and thus it and all related equipment and sources have been removed from this modeling exercise.

Key odor emission rates included for this study (primary and secondary composting) were provided by ECS. The dispersion model output integrates odor emission rates for all modelled sources, whilst considering all existing local conditions such as prevailing winds, topography, exhaust locations, and buildings.

2 Initial identification of sources and contaminants

A list of all potential sources of odor has been established based on the information provided by the client for both processes. Maps 1 and 2 indicate the location of all potential sources considered in this study, and they are listed in Tables 2-1 and 2-2.

2.1 Discussion on sources & contaminant modelled

As stated previously, all possible sources have not been considered since the proposed change in the MSW composting technology does not modify the odor emission rate for unrelated greenwaste sources. The tipping building was also removed from the calculations as its throughput will not be affected by increased total requested throughput. Additional feedstock beyond what is processed currently by the tipping building will be directed straight into ECS CASP bunkers, bypassing the tipping building entirely. Following the ADI comments, only the sources associated to the CTI bags system or the CASP biofilters and ASP surfaces were modeled. All other sources that remains constant following the change to the MSW composting process were excluded.

The only aspect of air emissions considered in this study was odor.

3 Assessment of the significance of contaminants and sources

The Tables 2-1 and 2-2 summarizes the information about the assessment of sources, and their respective emission rates. Site and facility information was provided by ECS.

Table 2-1: Current odor emission sources modelled and odor emission rates (CTI system only – no change to greenwaste windrow planned and thus not modelled)

Source ID	Description	Emission rate modelled 2019	Data Source	Emission rate modelled 2017 (Original facility)	Data Source
		[OU/s*m ²]		[OU/s*m ²]	
4	Positively aerated CTI BAG surface emission (average 0-120 days for simplification)	7	I	-	
4_A1	Positively aerated CTI BAG surface emission 0-40 days	-		7.14	II
4_A2	Positively aerated CTI BAG surface emission 40-80 days	-		6.69	II
4_A3	Positively aerated CTI BAG surface emission 80-120 days	-		6.35	II

* Data Source I: Average of data sources in Data Source II. The bags do not move locations as they age, so over the course of a year, it is better to model these sources as one combined area source, rather than location specific age specific sources.

* Data Source II: Odor Samples collected in Tedlar bags and lung chamber send to IDES, Ontario, CA for analysis. appendix A

Table 2-2: Proposed odor emission sources modelled and odor emission rates (ECS system only – no change to greenwaste windrow planned and thus not modelled)

Source ID	Description	Emission rate modelled 2019	Data Source	Emission rate modelled 2017	Data Source
		[OU/s*m ²]		[OU/s*m ²]	
BIO1	Negatively aerated CASP to biofilter surface emission	0.13	III	2.31	V
BIO2	Negatively aerated CASP to biofilter surface emission	0.13	III	2.31	V
BIO3	Negatively aerated CASP to biofilter surface emission	0.13	III	2.31	V
BIO4	Negatively aerated CASP to biofilter surface emission	0.13	III	2.31	V
BIO5	Negatively aerated CASP to biofilter surface emission	0.13	III	2.31	V
BIO6	Negatively aerated CASP to biofilter surface emission	0.13	III	2.31	V
BIO7	Negatively aerated CASP to biofilter surface emission	0.13	III	2.31	V
BIO8	Negatively aerated CASP to biofilter surface emission	0.13	III	2.31	V
BIO9	Negatively aerated CASP to biofilter surface emission	0.13	III	2.31	V
BIO10	Negatively aerated CASP to biofilter surface emission	0.13	III	2.31	V
BIO11	Negatively aerated CASP to biofilter surface emission	0.13	III	2.31	V
BIO12	Negatively aerated CASP to biofilter surface emission	0.13	III	2.31	V
ASP1	Positively aerated curing ASP surface emission	0.16	IV	0.12	V
ASP2	Positively aerated curing ASP surface emission	0.16	IV	0.12	V
ASP3	Positively aerated curing ASP surface emission	0.16	IV	0.12	V
ASP4	Positively aerated curing ASP surface emission	0.16	IV	0.12	V
ASP5	Positively aerated curing ASP surface emission	0.16	IV	0.12	V

Notes:

Data Source III: Odor sampling at ECS reference facilities in Washington state 2014-2018. See xls file.

Data Source IV: odor sampling at ECS reference facility at Mariposa, CA, 2017, values in IDES report, appendix A

Data Source V: odor estimates from various studies and literature

In the previous report the odor threshold was based on a report by the California Air Resources Board (CARB)¹, which highlighted current approaches on odors and suggested thresholds of annoyance, AERMOD criteria were refined. The CARB study suggested that the level at which odor reaches a 'nuisance' level is approximately five times the threshold of detection (5 OU). In addition, the California's South Coast Air Quality Management District² states that at a value of 5 OU/m³ Dilution/Threshold (D/T), people become consciously aware of the presence of an odor; between 5 to 10 OU/m³ D/T, odors may be strong enough to evoke a complaint.

Based on these assumptions, Englobe previously selected a comparative value of 5 OU/m³ D/T on an average of 6 years, and 10 OU/m³ to 20 OU/m³ for the 99.5 % and 98 % 1 hour maximum yearly average. Although, following ADI review of the 2017 report, the comparative value was lowered to 4 OU/m³.

3.1 Discussion on other sources of contaminants (negligible and neighbouring sources)

Local environment and land use nearby the site facility are mainly agricultural. Agricultural activities can be a source of odors in the environment. Similar to the Z-Best Facility secondary sources that were not included, and are predictably static, these activities are not considered in this study. Again, the focus was a comparison, not a total area analysis at a single snapshot in time.

¹ Amoores, J.E., The Perception of Hydrogen Sulfide odor in Relation to Setting an Ambient Standard, (1985), Prepared for the California Air Resources Board

² South Coast Air Quality Management District (1993). California Environmental Quality Act (CEQA) Air Quality Handbook.

4 Operating conditions, emission rates estimation & data quality

4.1 Operating conditions

4.1.1 Current operation process

Some MSW enters the reception building where it is screened/sorted to segregate recyclable materials. This sorted MSW is combined with pre-sorted MSW and transferred to the CTI bags for composting. After composting the bags are opened, left to air for a day and then screened and stockpiled in large blocks prior to final screening and glass removal.

The green waste process will not be discussed as it is not relevant and static in the baseline and upgraded facility.

4.1.2 Proposed expansion process

The main difference from the baseline scenario and the upgraded facility is the replacement of the CTI bags composting with two phases of ASP composting; the first phase with negative aeration capturing process air and scrubbing it with a biofilter and the second phase with positive aeration to maintain BMP conditions.

The upgraded facility has the capability to process close to four times the current CTI bag throughput, largely due to reduced retention time and substantially faster stabilization rates that accompany higher aeration rates, lower temperatures, higher oxygen concentrations, and more uniform aeration distribution.

4.2 Emission rates calculation & assumptions

All emission sources of this study are presented in Table 2-1 and 2-2 and on Maps 1 and 2 (Appendix B). Please note that all sources that were removed in this revision are shown in red.

5 Sources variable emission factors and operating hours

For both the CTI bags and the ASP biofilters systems, the emissions are considered to be constant over a 24h hour period.

5.1 Meteorological data

Dispersion models based on Gaussian plume equations need a complete set of meteorological data that covers an extended period to be able to consider specific meteorological conditions. A 6-year period prognostic-modeled meteorological data (MM5) was purchased from Lakes Environmental, the standard choice for dispersion modelling exercises such as this. Lakes Environmental are the maker of the AERMOD software. MM5 data is well accepted as a meteorological data by the USEPA Air Quality Group.³

There are several reasons why MM5 data are used as prognostic meteorological model data:

- ▶ there are no meteorological stations available in your area;
- ▶ there is no other representative meteorological station site available for your site;
- ▶ the available station data is out of date;
- ▶ the available station data does not cover enough years;
- ▶ the available station data does not meet data quality standards (e.g. poor treatment of calms).

In this study, MM5 data has been selected since the Gilroy meteorological station is no longer registered and does not record any more data.

The MM5 dataset is a limited-area, non-hydrostatic, terrain-following modelling system that solves the full set of physical and thermodynamic equations governing atmospheric motions. In this study, the sensitivity of the model to surface roughness length variations is higher for low level releases, thus passing MM5 data through AERMET with more localized surface characteristics is more appropriate (Journal of the Air & Waste Management Association, volume 57/2007, p.593). You will find hereafter all meteorological data input for this study:

³ https://www.weblakes.com/services/met_data.html, consulted on February 21, 2017.

Table 5-1: Calculated Met Station Parameters for the Z-Best Facility, Gilroy (CA)

Met Data Type:	<ul style="list-style-type: none"> ▪ AERMET-Ready (Surface & Upper Air Data) ▪ Lakes Pre-processed MM5
Start-End Date:	Jan 01, 2010 -Dec 31, 2015 (6 years)
Latitude:	36.948 N
Longitude:	121.524 W
Datum:	WGS 84
Site Time Zone:	UTC/GMT UTC -8 hour(s)
Closest City & Country:	Gilroy (USA)
Anemometer Height:	15 m
Station Base Elevation:	131 m
Upper Air Adjustment:	+8 hours

MM5-Processed Grid Cell

- ▶ Grid cell centre (Lat, Lon): 36.948 N, 121.524 W
- ▶ Grid cell dimension: 12 km x 12 km
- ▶ Output period: Jan 01, 2010 to Dec 31, 2015
- ▶ Type MM5 Mesoscale Model⁴

Hourly Surface Met Data (*.sam)

- ▶ Format: SAMSON (surface met data for preprocessing by AERMET)
- ▶ Anemometer height: 15 meters
- ▶ Base elevation above MSL: 131 meters
- ▶ Time Zone: UTC/GMT UTC -8 hour(s) (data reported in local time)
- ▶ Output interval: hourly

Sector and Surface Parameters

- ▶ 1 sector: 5km radius from site: Cultivated land
- ▶ Albedo: 0.28
- ▶ Bowen ratio: 0.78
- ▶ Surface Roughness : 0.0725

The wind rose associated with the meteorological data set is presented in Appendix B.

⁴ <http://www.mmm.ucar.edu/mm5/mm5-home.html>

5.2 Topographical data

In order to model odor dispersion for the composting operations of the Z-Best facility, the primary data source that has been used was a 10 km x 10 km cell sourced from the National Elevation Dataset (NED)⁵ of the United States Geological Survey (USGS). The NED is a seamless dataset of the best conterminous United States, Alaska, Hawaii, and territorial islands raster elevation data available. The NED is updated on a nominal two-month cycle to integrate newly available and improved elevation source data.

The NED is derived from diverse sources of data that are processed through a common coordinate system and elevation units. NED data is distributed in geographic coordinates (decimal degrees) in compliance with the 1983 North American Datum (NAD 83). All elevation values are in meters and, over the United States, are referenced to the 1988 North American Vertical Datum (NAVD 88). NED data used in this project has a resolution of one arc-second (about 30 meters).

A secondary treatment of terrain data has been performed to integrate elevations or summits that can affect odor dispersion around the Z-Best facility. Hence, all heights of stockpiles located on the northern portion of the site were integrated into the NED terrain model. It should be noted that these stockpiles may act as a natural barrier for other odor sources at the site.

⁵ <https://nationalmap.gov/elevation.html>

5.3 Receptors grid & discrete receptors

One nested grid was defined using the parameters presented in Table 5-2.

Table 5-2: Receptors Grid & Discrete Receptors

Bounding Box (m from center of the site)	Receptor Spacing (m)
250	50
750	75
2,000	150
3,000	250
5,000	500

Another set of ten discrete receptors was added to the locations of the closest neighbouring properties located near the Z-Best facility.

Figures maps 3 to 6 illustrate all the discrete receptor locations.

5.4 Building considerations

To consider local building downwash effects, the model required information on the dimensions and location of the building located on the northern portion of the site, near the entrance. In addition, the adjacent office building was also considered. No other temporary building or structure was incorporated in the model. Table 5-3 presents the on-site building dimensions considered in the model.

In this study, the most dominant building for the downwash effects is the Processing building.

Table 5-3: Building Considerations

Building	X-length (m)	Y-length (m)	Height (m)
Building – Primary MWS Processing	60	30	8
Office Building	25	25	4

6 Emission summary tables, conclusion and recommendations

The main goal of this study was to compare the baseline and the proposed expansion in terms of odor dispersion. Table 6-1 presented below details the results for all discrete receptors, for both the baseline and proposed expansion processes.

As it can be observed in Table 6-1, all individual results for each of the 10 discrete receptors show reduced odor concentrations associated with the upgraded and expanded facility. Reduction in odor is consistent for the average as well as for the maximum (worst case) 1-hour results. These results suggest that the proposed facility improvements will improve the ambient air quality near the Z-Best facility.

Table 6-2 and 6-3 presents a comparison for maximum concentration between this model and the previous model. Finally, table 6-4 and 6-5 shows the contribution of each source for both the current and proposed systems.

6.1 Current operation results

Results for the current operation are summarized and presented on Map 1 and 2 in Appendix B.

Map 4 shows the average results over a 6-year period (2010-2015) for the baseline operation at the Z-Best facility. As it can be observed on this figure, five of the discrete receptors are located within the 4 OU/m³ isopleth. This result suggests (and based on the guideline stated in section 3) that under the current operation process, some odors could be detected in the area. However, it is important to note that no odor complaints have been assigned to the Z-Best facility in recent years in history.

However, it should be noted that an average concentration is not the most representative form of human perception of odors. For this reason, Englobe also presented the maximum results over a 1-hour period 98 percentile.

Baseline Map 3 presents the 98 percentiles of the maximum results over a 1-hour period. This time, two of the discrete receptors are located within the 20 OU/m³ isopleth. This is an indication that the maximum odor levels are limited to specific isolated meteorological conditions and could thus be considered as exceptional conditions.

6.2 Proposed expansion operation results

Results for the proposed expansion operation are summarized and presented on Map 5 and 6 in Appendix B.

Upgraded Facility Map 6 shows the average results over a 6-year period (2010-2015) for the proposed expansion operation at the Z-Best facility. As can be observed on this figure, none of the discrete receptors are located within the 4 OU/m³ isopleth. This result suggests that under the proposed expansion operation process, the ambient air quality will be improved near the Z-Best Facility.

Upgraded Facility Map 5 represents the 98 percentiles of the maximum results over a 1-h period. This time, none of the discrete receptors are located within the 20 OU/m³ isopleth. This result can be interpreted as an indication that discrete receptors should not be affected by odor annoyance resulting from the proposed expansion at the Z-Best Facility.

The proposed expansion process was modelled and compared to the current process. The results should not be interpreted to show total site wide odor emitted currently or in the future. It shows distinctly improved results for odor dispersion for the ambient air near the site. If this process is to be implemented at the Z-Best Composting Facility, it is expected, since this study demonstrates an improvement by using the new composting technology, that no additional mitigation measures will be necessary to reduce odor impacts.

There are various activities that are not modelled because accurate data on odor emission rates are impossible to collect, including the pickup and movement of material by loader bucket between primary and secondary composting. But the surface area of a 10 yards loader bucket is insignificant at a site of this scale.

Table 6-1: Summary of Air Modelling Results

Discrete Receptors	X m	Y m	CURRENT OPERATIONS PROCESS		PROPOSED EXPANSION PROCESS	
			6-year average (100%)	1-hour max. (98%)	6-year average (100%)	1-hour max. (98%)
			OU/m ³	OU/m ³	OU/m ³	OU/m ³
1_1	630955,08	4090585,94	4	36	0.31	0.04
1_2	631089,96	4090774,34	4	48	0.46	0.03
1_3	633098,92	4089746,20	1	8	0.08	0.01
1_4	630682,84	4089085,47	1	1	0.01	0.01
1_5	630794,78	4090967,63	2	8	0.07	0.02
1_6	630710,34	4091021,18	2	6	0.06	0.02
1_7	630239,74	4092054,79	<1	1	0.00	0.00
1_8	629203,40	4092287,34	<1	<1	0.00	0.00
1_9	628867,38	4094021,74	<1	<1	0.00	0.00
1_10	627689,19	4092446,29	<1	<1	0.00	0.00

Table 6-2: Comparison with previous results (current CTI system)

Period	Method	Maximum Concentration 2019	Maximum Concentration 2017
		[OU/m ³]	[OU/m ³]
1 h	98 percentiles	681	631
6 years	average	118	110

Table 6-3: Comparison with previous results (proposed ECS system)

Period	Method	Maximum Concentration 2019	Maximum Concentration 2017
		[OU/m ³]	[OU/m ³]
1h	98 percentiles	6	159
6 years	average	1	47

Table 6-4: Source contribution for current CTI system

Source ID	Concentration	Contribution
	[OU/m ³]	[%]
4	1278	100

Table 6-5: Source contribution for proposed ECS system

Source ID	Concentration	Contribution
	[OU/m ³]	[%]
ASP4	8	45
ASP3	4	24
ASP2	4	24
ASP5	1	6
ASP1	<1	<1
BIO8	<1	<1
BIO7	<1	<1
BIO12	<1	<1
BIO1	<1	<1
BIO10	<1	<1
BIO11	<1	<1
BIO2	<1	<1
BIO3	<1	<1
BIO4	<1	<1
BIO5	<1	<1
BIO6	<1	<1
BIO9	<1	<1

Appendix A ECS Memo and odor assessment report



engineered **COMPOST** systems

DATE:	6/17/19	ECS PROJ. NO.:	P251
BY:	Geoff Hill	PROJECT NAME:	Odor model
TO:	John Doyle, ZBest	COPY TO:	
SUBJECT:	Explanation of changes to the re-issued ZBest odor model		

RESPONSE REQUESTED

Yes	X	No		Hard Copy		E-Mail	X	Phone Call	
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Summary

In 2016 ECS was tasked to develop an improved odor report in order to update a document by Jones and Stokes, authored in 2007. This 2007 report contained no actual analysis or site specific data. ECS encouraged ZBest to select odor modelling as the most advanced means of odor analysis, as odor models were becoming more commonplace in eastern Canada (Ontario and Quebec specifically) where odor is regulated at the property line. ZBest approved and ECS selected Englobe (a Quebec Canada company) to conduct the odor modelling analysis. The odor model was completed and submitted in early 2017; its objective is summarized in the next section of this memo. Due to a rather extensive review in 2018 by ADI, the odor model was updated and resubmitted. This memo serves to accompany the updated odor model and provide context and a summary of why changes were made and what the changes were.

It is important to note that this facility does not have odor complaints filed against it, as other Bay Area composting facilities do.

The 2017 ZBest odor model

The objective of the 2017 odor model was to document the impact of changing from the CTI bag system to the ECS system within the context of a large greenwaste composting facility. The greenwaste windrow operation will not change with the facility upgrade. At the time of modelling, many of the emission sources odor flux rates were not actually known and numerous assumptions were made including:

- Emission rate of the windrows, which while not know, was held constant for both current and future operations due to the fact that no changes are proposed, and thus negated the need for a site specific odor flux rate.
- Emission rate of tipping building (same rational as above)
- Emission rates of the stockpiles of MSW and greenwaste (same rationale as above)
- Emission rate of the ECS negative CASPs venting to a permanent wood chip biofilter, which was assumed to emit at the same odor rate (pre biofilter) as the CTI system. This assumption was made in order to simplify the evaluation, knowing that the biofilter achieves ~90% reduction in odor, despite ECS knowledge that odor generation rates (per mass and time) are 1-2 orders of magnitude lower with the properly engineered process controls which accompany all ECS systems

(dynamic control of aeration supply rate, high dynamic range of CFM/cy, coupled with homogenous aeration distribution through our Low Friction Trench floor).

The 2019 ZBest odor model

Upon review of ADI's comments on the 2017 model, it became clear that what was needed was not a full facility odor model, but a much more accurate technology (system) specific odor model which evaluated *only* the change in composting equipment from the CTI bag to the ECS system. In the 2017 odor model it was impossible to isolate the impact of the technology change because of the influence of the greenwaste windrows and other (constant) emission sources. As the data for the greenwaste was not actually site specific data, and does not change with the CTI / ECS upgrade, it was decided to remove it entirely from the analysis so as to clarify exactly what the changes are to be in the odor plume between CTI and ECS equipment.

With the removal of all sources which do no change between current CTI operations and planned ECS equipment, it was possible to use only real source specific data for the odor model, thereby increasing its accuracy and value in this planning exercise. The odor flux data assigned to the CTI bags was collected in 2016 during VOC sampling and analyzed by IDES following EN13725 odor protocols (the only exception is that the number of odor analysts were fewer). The odor flux data assigned to the ECS negative CASP vented to permanent biofilters was collected in 2015 at representative ECS facilities in Washington processing food waste and sent to IDES following the same EN13725 with reduced odor analysts. The odor flux data assigned to the ECS positive ASP vented through its surface (unabated) was collected from the Mariposa facility where MSW is composted outdoors, following the same EN13725 procedures and analyzed by IDES. The IDES report containing the Mariposa and CTI bag odor values are included.

We are also providing a live version of the Excel file which was used to calculate the final odor emission rates for each surface source. The calculations were made in different ways, as is explained below.

CTI bag surface emission: measured odor value per IDES report (OU/volume) x airflow (volume/time)= OU/time. $OU/time * Area\ of\ bags = odor\ flux\ rate\ (OU/Time/Area)$

ECS primary CASP to Biofilter surface emission: the most representative data for odor generation from a negative ECS system is odor per mass aerated per time as the depth of a pile can vary considerably between sites and the aeration system aerates a volume (which has a density and mass), not a surface. The Excel file can be followed from reference facility odor values through to the final selected odor value (OU/min/mt). The value of 50 OU/min/mt, selected for the ECS facility at ZBest, was conservatively high based on data from two other ECS systems with same technology and similar feedstock. For reference, the CTI system's value for odor generation per unit mass and time was ~350 ou/min/mt, which is not quite 10x higher, but which was around what was expected (10x higher than the ECS system) given the lack of process control, severe heterogeneity (maldistribution). A peer reviewed literature reference (will full text download access) which gives further explanation of how odor can be 10-100x higher in an un-optimized process follows:

https://www.researchgate.net/publication/232810830_Effects_of_pH_and_microbial_composition_on_odor_in_food_waste_composting

ECS ASP vented unabated out surface: concentration from Mariposa odor sampling (data in IDES report) * flow rate (calculated based on mechanical design) * Area of ASP = OU/Time/Area.

SCENTROID

FUTURE OF SENSORY TECHNOLOGY



Odor Assessment Report

Engineering Compost Systems

Odor assessment - compost samples

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Odor assessment - compost samples

Document Reference

Customer:	Engineering Compost Systems
Customer contact	Geoff Hill
Customer address:	4220 24th Avenue West Seattle, Washington 98199
Project:	Odor Assessment – air compost samples.
Project number:	SO-1524
Reference:	SCENTROID, 2016. <i>Odor assessment - compost air samples for by Scentroid for ECS (2).</i> , Jan 20 th 2017, Markham ON., Canada.
Version	Final
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Author:	Sidarta E. Medina
Reviewed by:	Ardevan Bakhtari
Project director:	Ardevan Bakhtari

Approved for issue by:

Date:

*Jan 20th, 2017*

Ardevan Bakhtari PhD.
President
Scentroid

Odor assessment - compost samples

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Odor assessment - compost samples

Acronyms Used

Term	Definition
ASTM	American Society for Testing and Materials
EN	European Norm
LPM	Liters per Minute
MDL	Method Detection Limit
ORIS	Odor Reference Intensity Scale
PPBV	Parts per Billion by Volume
QA	Quality Assurance
QA/QC	Quality Control/Quality Assurance

Chemical nomenclature

OU_E/m^3 odor units – is the number of times that a sample of odor must be diluted to reduce its concentration to its detection threshold

Odor assessment - compost samples

1. Introduction.

Scentroid was commissioned by Engineering Compost Systems (ECS) to assess air samples sent by the customer. The assessment was carried out at Scentroid Research Center to evaluate odour concentration from the bag containing the sample. As per customer request, odour concentration was carried out by only one assessor partially following the EN13725:2003 standard, therefore the results only corresponds to the individual detection threshold.

2. Project description

The scope of the project consisted in the following objective:

- **Objective One:** To obtain odor concentration per each sample.

The analysis was performed on Jan 17th, 2017. Samples were conditioned at room temperature during 30 minutes at 22.5° Celsius with an average relative humidity of 35.5%.

Odor Concentration:

Odor concentration evaluation was performed according the EN13725:2003¹ modified standard. This approach involve a controlled mixture of odorous air with non-odorous air to achieve known discrete dilutions, which are presented to a human subjects for evaluation (assessors). The process starts with exposure of odor assessors to a highly diluted air sample, where odor-containing air cannot be distinguish from odorless air. The assessors are methodically presented with progressively lower dilution levels (greater odorous air content) in measured steps. The odor unit level of odor concentration (OU/m³) correspond to an odor concentration in which the observer detects air is no longer the same as it was before. A total of 3 rounds were conducted to assess the odour concentration from the samples contained in the bags. The results of the 3 rounds are presented in Table 2

¹ C. (2013). EN13725:2003 Air Quality - Determination of odor concentration by dynamic Olfactometry.

Odor assessment - compost samples

The OU/m³ is a unitless ratio calculated as:

$$\text{OU/m}^3 = \frac{\text{Volume of odorous air} + \text{Volume of filtered air}}{\text{Volume of odorous air}}$$

Detection of an odor at high dilution indicates the presence of a strong odor. Conversely, detection at low dilution indicates a relatively weak odor.

Odor assessor, was selected in accordance the methodology described in the EN 13725:2003 Standard. The sensitivity of the assessor met the quality criteria of sensitivity (0,020 µmol/mol a 0,080µmol/mol) and variability (<2.3). Special attention was given in the assessor selection regarding their age, gender and health condition. The assessor was screened using the triangular force choice method in a SCENTORID SC300 mobile olfactometer on April 20th, 2016. The assessor was screened using a mixture of N-butanol (Sigma-Aldrich CAS-No. 71-36-3) evaporated in nitrogen to create a concentration of 40 ppm. A Teflon bag with stainless steel fitting SCENTROID Model BGF10 was used as a sample container.

Instruments Used for the Assessment.

A SM100i olfactometer was used for the assessment of odour concentration from the bag sent by ECS. This instrument has the capability to assess ambient odor samples or samples from a sampling bag. The instrument complies with the specifications of the 6.5.2 section "Dilution Apparatus" of the EN13725:2003 and the sections 6.5.1 "Olfactometer Construction," 6.5.2, "Dilution range," 6.5.3, "interface between the nose and olfactometer," 6.5.4, "Decision limit," and 6.5.5, "Calibration procedures".

The instrument allows the administrator to conduct Yes/No tests according the EN13725:2003 presenting blanks randomly within the dilution series. The instrument is managed using the SM100i application developed by Studio Okolje that runs in Android OS. This application works with a Bluetooth interface that connects the instrument with the Android device. The Android device manages a servo controller that controls the dilutions and blanks presented to the assessor. Likewise, the equipment works using odorless air that is contained in a high pressure 4500 psi cylinder with 20 minutes duration to provide to the assessor with the necessary air flow to reach 20.0L/min. The air contained in the cylinder is filtered twice using an activated carbon filter to ensure 100% clean air.

Odor assessment - compost samples

3. Results:

Once all the specimens were conditioned and prepared. The samples were assessed finding the following:

Odor assessment - compost samples





Engineering Compost Systems

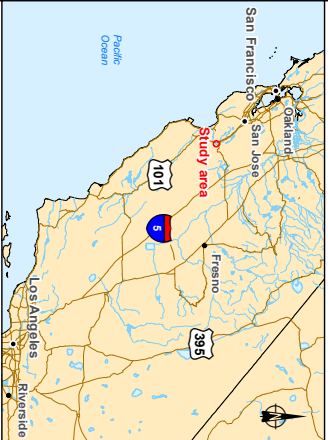
Item No.	Description	OU _E /m ³											
		Low D	High D	Z _{ITE} R1	Low D	High D	Z _{ITE} R2	Low D	High D	Z _{ITE} R3	Z _{ITE}		
1	MARIPOSA 2 REGULAR	47	83	62	47	83	62	47	83	62	62		
2	MARIPOSA 1 FAST	83	162	116	47	83	62	83	162	116	94		
3	CTI (1)	2926	4479	3620	2926	4479	3620	2926	4479	3620	3620		
4	ZBEST DOWNWIND	390	625	494	264	390	321	264	390	321	370		
5	ZBEST CTI 2	2926	4479	3620	2211	2926	2543	2211	2926	2543	2861		

Table 1 Odour concentration results

Appendix B Figures



- Project components**
-  Included source
 -  Excluded source
 -  Excluded punctual source
 -  All these surfacic sources for the CTI bags were combined into one




Zbest Composting Facility
Atmospheric particle dispersion studies

Map 1
Excluded sources in current CTI System

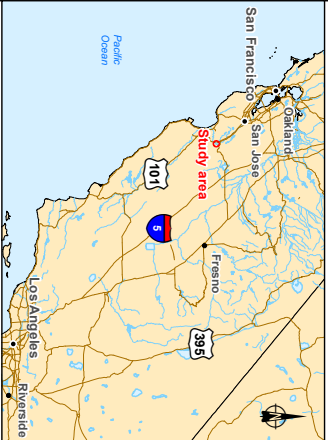
Sources :
Data : Google Maps, @Google 2019
Illustration : Englobe 2019
Cartography : Englobe

June 2019

		Project manager : A. Milard		Date : 2019-06-13	
Prepared by : C. Banchet	Drawn by : J.F. Bazan	Verified by : L. Savois			
Master Serv. Project	Obj	Disc. Type	N° drawing	Rev.	
46	P-0018788	0	01	100	EN D 0101 00



- Project components**
- Included source
 - Excluded source
 - Excluded potential source



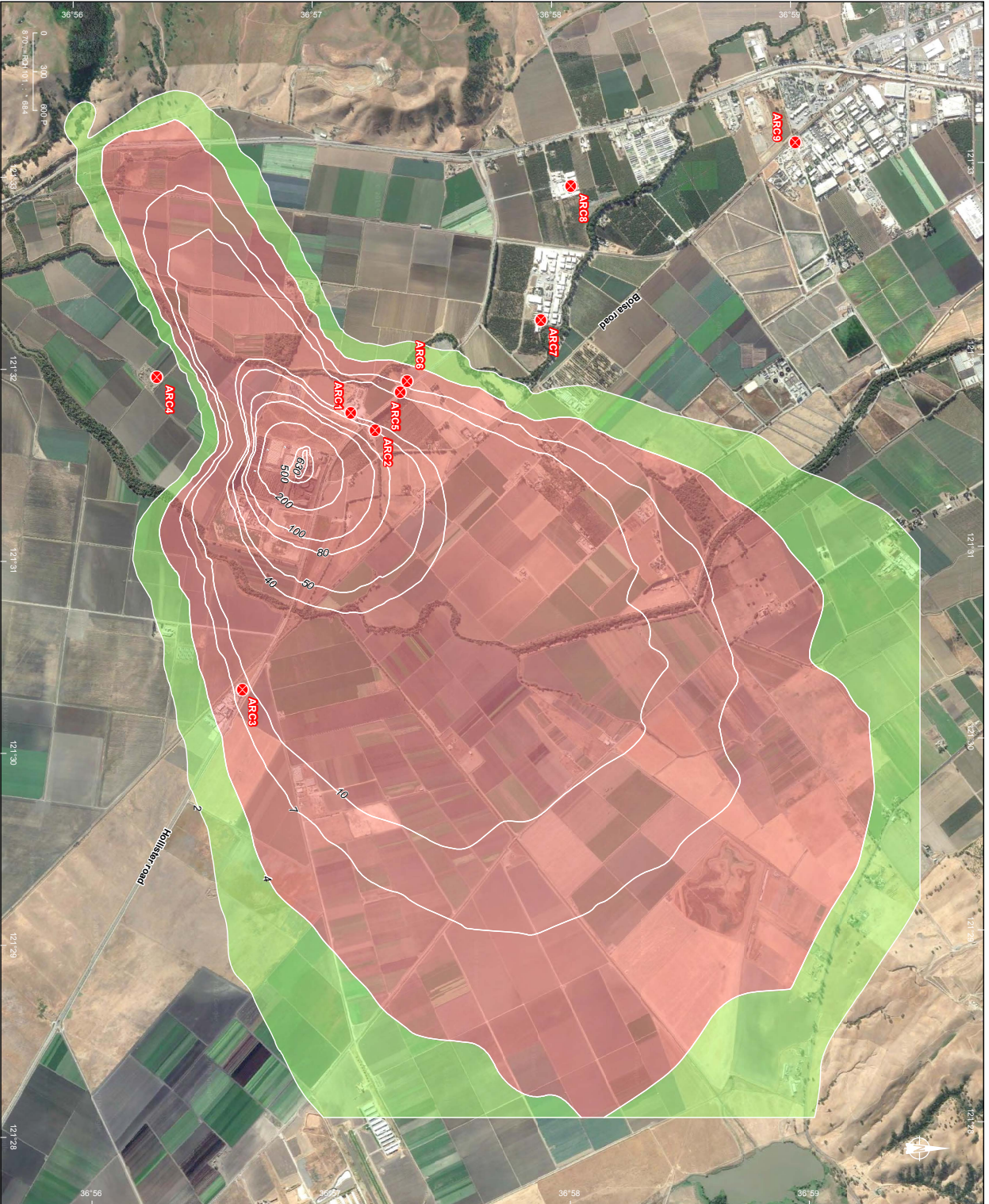
Zbest Composting Facility
Atmospheric particle dispersion studies

Map 2
Excluded sources in proposed ECS System

Sources:
Data: Google Maps, ©Google 2019
Illustrations: Englobe 2019
Cartography: Englobe

June 2019

Project manager: A. Millard		Date: 2019-06-13	
Prepared by: C. Barnhart	Drawn by: J.F. Eszen	Verified by: L. Saville	
Master Serv: Project	Obj: 01	Disc: Type	N° drawing Rev.
46	P-0018788	0	01 100 EN D 0101 00

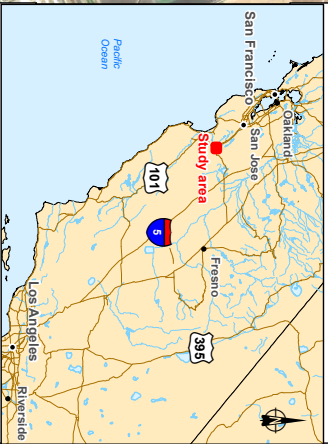


7.0 11.0 310.0 600.0
 5.0 10.0 300.0 600.0
 0 300 600
 500=60101 = 684

Project components

- AIRCH-COMPOST PRODUKT 4 RQP³
- AIRCH-COMPOST PRODUKT 4 RQP³
- ARCxM
- AIRCH-COMPOST PRODUKT 4 RQP³

Maximum concentration value : 681 ou/m³



Zbest Composting Facility
 \$AIRRSKLE SQUERIGASHUACR VIKGHV

Map 3
 Maximum 98 percentile odor concentration (ou/m³)
 in current CTI System

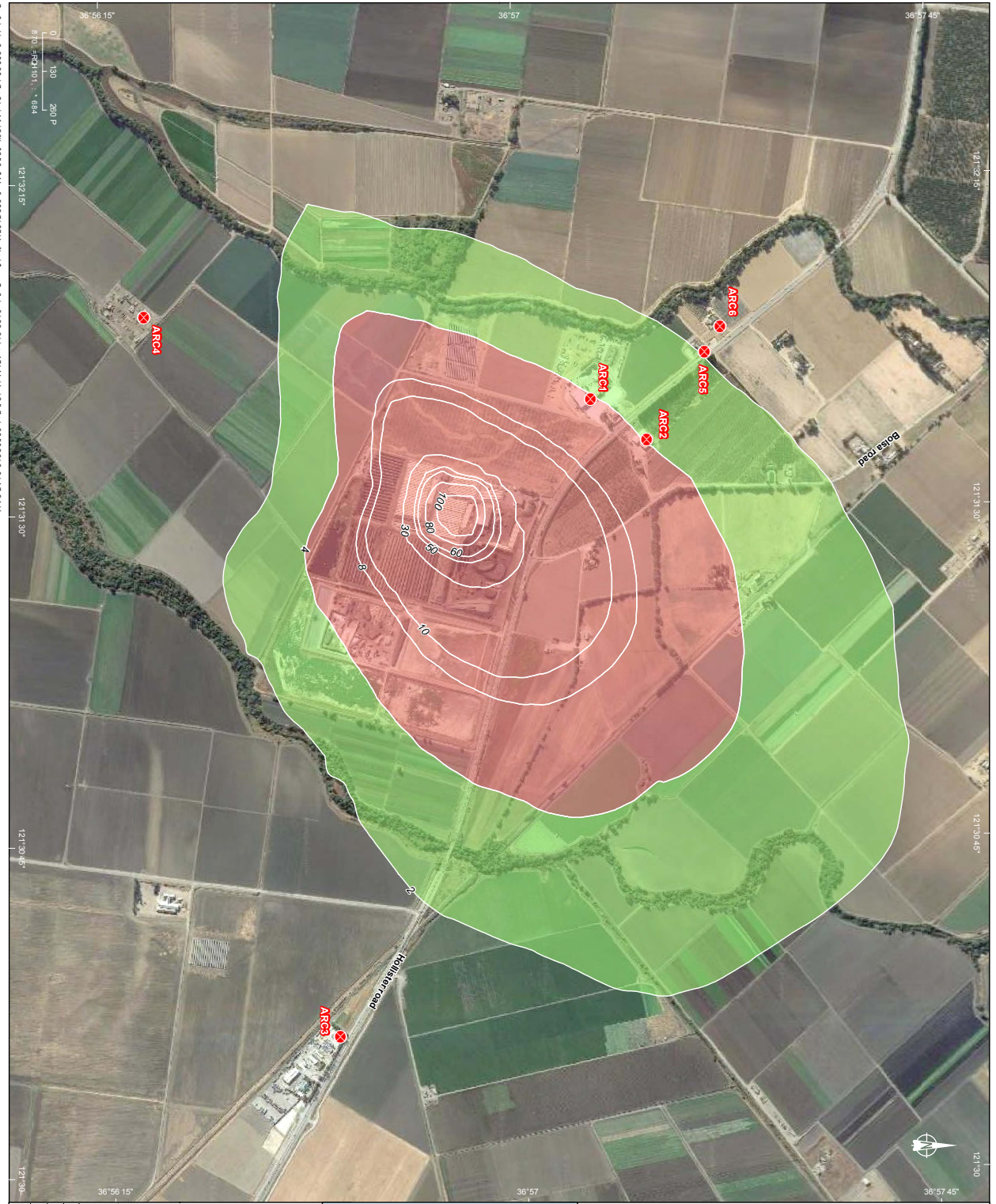
Sources :
 Base : Google Maps, ©Google 2019
 Interiors : Englobe 2019
 Cartography : Englobe

June 2019



318MPP001HJ \$ 0.00006	DM : 2019-06-13
318SUCLE \$ 8.00000000	UTZOE : -1, 5000
0.00000000	318MPP001HJ
2.00	UF : 71 SH - 00200 10P 5HV
46	P-0018788 0 01 100 EN D 0301 00

File : I:\qwe7-8-001\Project1259P-0018788_Zbest products\5_CAD\GD\2_Carro\18788_c4_ZBest_C_Ita_Av_190811.mxd
7+0) (L 302.55 (-7.2) (-1.72) 823.3 311.0 302.7 821. - 96.4 5. - 7.0 1.34 86.8 (-17.1) (-12.5 7) 1.38 532.8 6 0.1 2.1 (-
314.585 / 78.5 72.8) / 51.052 / 86.1 21.2 3 33.9 7.21 1.6 0.7 5.6 (-352.4) 6.11 : 7.2 8.7 + 6.5 11 : 5.2 7 1. 38 9 7 4 5 1 4 9 2 1 1 1 2 5 1 1 1 5 2 0 1 1 7 2 1 1 8 2 3 3
810 = FCH1010 : 684



Project components

- ARCE1 - RCP-CHONDROPERAZOLU 4 RCP-3
- ARCE2 - RCP-CHONDROPERAZOLU 4 RCP-3
- ARCE4 - URUMU IPT-SRNU

Map 4

Maximum averaging percentile odor concentration (oun³) in current CTI System

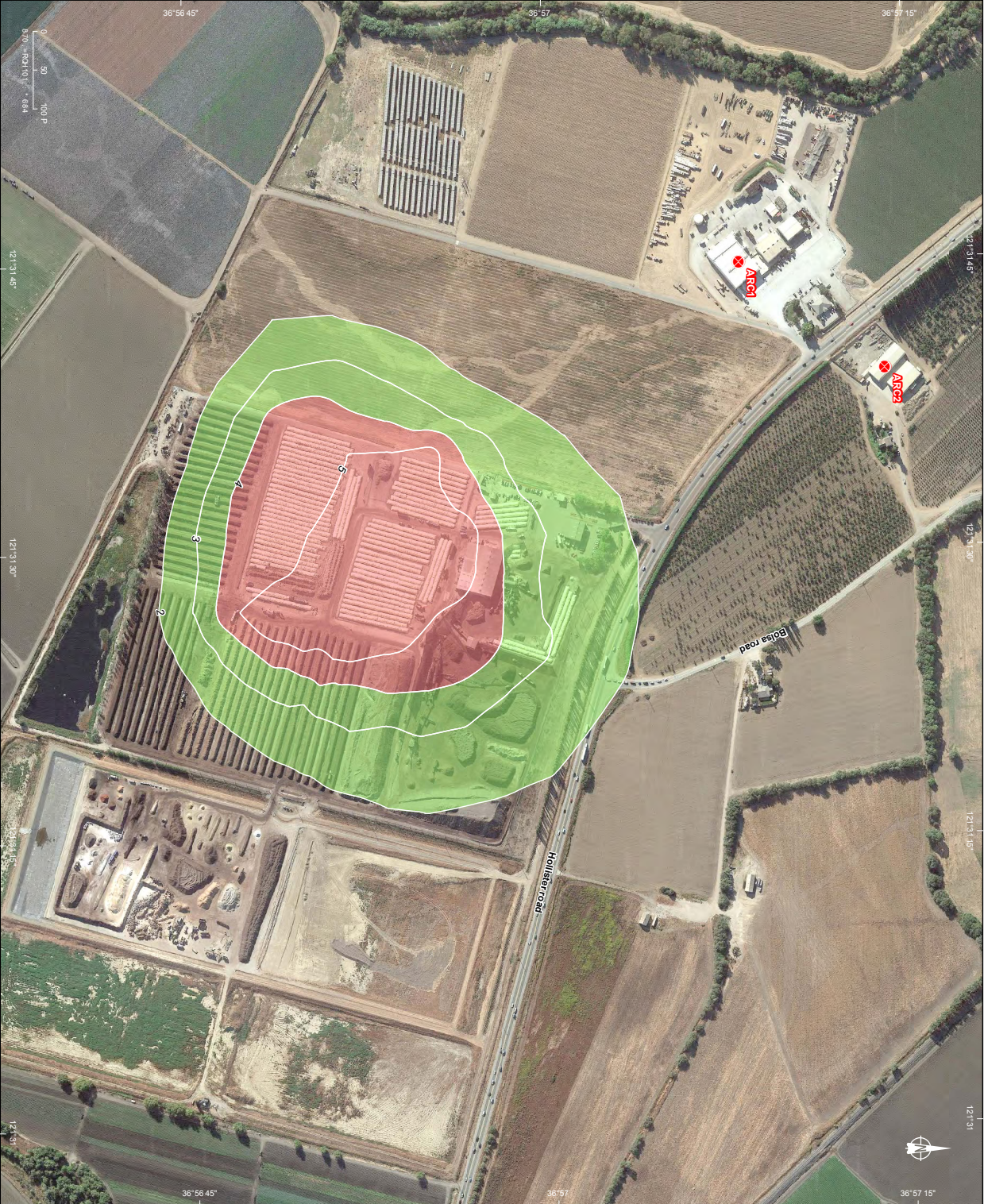
Maximum concentration value : 118 oun³

ZBest Composting Facility
S1R1R5K5L5E S0UW55E1R Q1S1H5L1R5C1 W1K5H1V

Sources :
Base : Google Maps, ©Google 2019
Imagery : Google 2019
Contouring : Englobe

June 2019

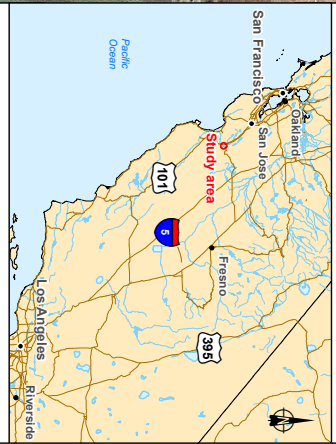
318WV001HU S. 0 0006	URZCE : 1:1	S1R1R5K5L5E	DM : 201906-13
3185UC5E1 S. 3002R1W	URZCE : 1:1	S1R1R5K5L5E	SHUN5E1 : 7 67R1W
0 D1M1R1W	318R1W	2 19	UR : 71 SH - URZCU 1 19P 51W
46	P-0018788	0 01 100	EN D 0401 00



31896*P0018788.S.0.00006
 31896*P0018788.S.0.00006
 0.0000000000000000
 46

- Project components**
- ARC1 - QUAQUORQUOQUO 4 RQP³
 - ARC2 - QUAQUORQUOQUO 4 RQP³
 - ARC3 - QUAQUORQUOQUO 4 RQP³

Maximum concentration value: 6 ou/m³



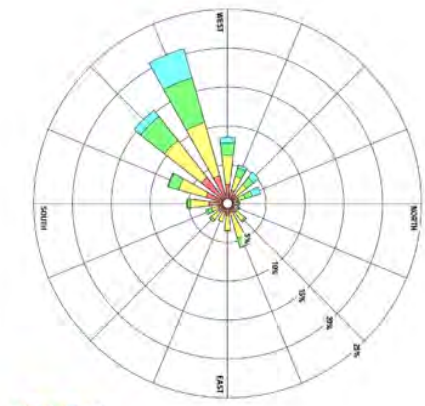
Zbest Composting Facility
 \$PRRSKLE SQUER GASHUWQV WYGHV
Map 5
 Maximum 98 percentile odor concentration (ou/m³)
 in proposed ECS System

Sources: Base - Google Maps, @Google 2019
 Interpolation - Englobe 2019
 Cartography - Englobe

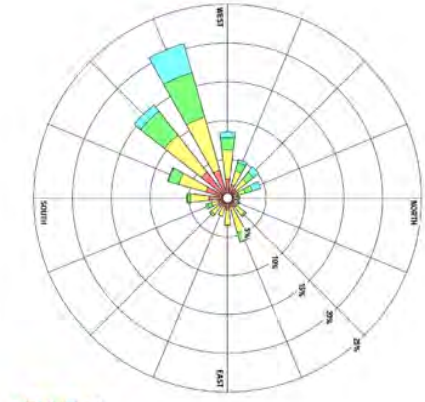
June 2019



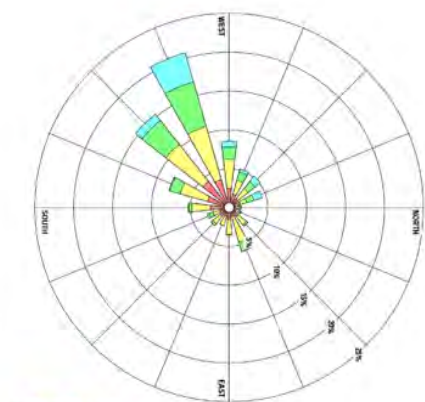
31896*P0018788.S.0.00006	0.0000000000000000	DM: 2019-06-13
31896*P0018788.S.0.00006	0.0000000000000000	
0.0000000000000000	2.00	EN
46	P-0018788	00



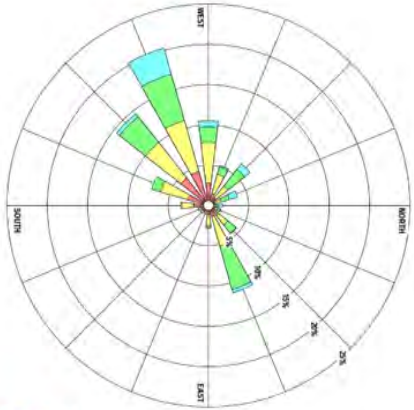
Wind rose (2010)



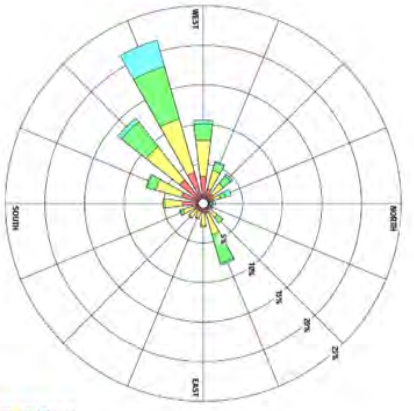
Wind rose (2011)



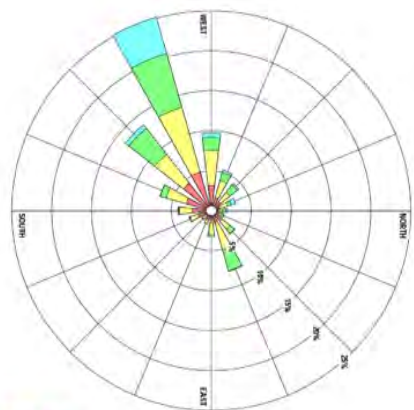
Wind rose (2012)



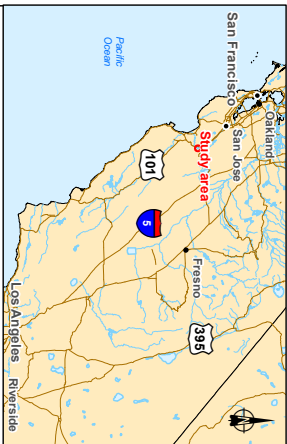
Wind rose (2013)



Wind rose (2014)



Wind rose (2015)



ZBest Composting Facility
Atmospheric particle dispersion studies

Map 7
Wind roses of the years used for modelisation

Sources :
Data - Google Maps, @Google 2019
Illustrations - Englobe 2019
Cartography - Englobe

June 2019

Project manager : A. Millard		Date : 2019/06/14	
Prepared by : C. Binaudet		Drawn by : J.F. Bazan	
Master Serv. :		Disc. Type : Drawing Num. Rev.	
Project :		Op :	
46		P-0018788 0 01 100 EN D 0701 00	



To: Mr. Sam Gutierrez
County of Santa Clara
Department of Planning and
Development
70 West Hedding Street, 7th Floor
East Wing
San Jose, CA 95110

Project name: Z-Best Composting Facility
– CEQA Services

Project ref: 60666256

From: Rob Larkin, GHG Emissions
Assessment & Sustainability Specialist
Paola Pena, Air Quality Scientist
Emma Rawnsley, Project Manager

CC: Emmanuel Ursu
Valerie Negrete
Lizanne Reynolds

Date: January 6, 2023

Memorandum: Peer Review of Greenhouse Gas Emissions Study

This memorandum provides an evaluation of the October 9, 2020 “Emissions from Proposed Changes to Z-Best Facility in Gilroy, California” document completed by the project applicant’s consultant SCS Engineers (SCS October 2020 GHG Letter). This letter was submitted as a comment on the Draft Environmental Impact Report (DEIR) for the Z-Best Composting Facility Project (project) which was circulated for public review from January 15 to March 1, 2021.

The project greenhouse gas (GHG) emissions calculations used in the DEIR were conducted by SCS and reviewed by the County’s consultant, EMC Planning Group (EMC). The GHG emissions calculation methodology and results were initially summarized in a December 20, 2019, memorandum by SCS, included in Appendix B of the DEIR. Section 9 of the DEIR provides a summary and impact analysis of those SCS GHG calculations.

The DEIR assessed the project generation of GHG emissions in Impact 9-1 as Significant and Unavoidable. Mitigation Measure 9-1 addresses this impact by requiring purchase of GHG offset credits to offset the calculated project GHG emissions. Section 9.4 of the DEIR states: “Because it is not feasible to accurately quantify GHG reductions from diverting MSW from landfills and avoiding GHG (methane) emissions through more complete compost aeration, these benefits are not factored into the project GHG emissions inventory. These potential GHG emissions reductions are discussed for informational purposes only.”

Subsequent to this DEIR conclusion, the SCS October 2020 GHG Letter included updated calculations of project GHG emissions, along with calculations of GHG emissions reductions due to diversion of waste from landfill deposition.

AECOM has reviewed the SCS October 2020 GHG Letter, along with the calculation spreadsheets that were the basis of that letter, the underlying methodologies, and the relevant sections of the DEIR. Based on this review, we concur with the SCS October 2020 GHG Letter's assertion that the project will result in a net reduction of GHG emissions. Our concurrence is predicated upon the following overall considerations:

- **Reasonableness** – AECOM's review has confirmed that the SCS GHG calculations utilized standard, reputable methodologies and were based on reasonable selections of inventory boundaries, activity level inputs, and emission factors applied to those activity levels. The calculation assumptions used by SCS are generally conservative and tend towards providing a low estimate of net GHG reduction benefit.
- **Scale** – The estimated GHG reductions from waste diversion are approximately 21 times greater than the increase in operational GHG emissions from the proposed project. Key assumptions and calculation inputs would therefore have to change drastically in order to alter the assertion of a net GHG benefit from the project.

Based on these considerations, AECOM supports the SCS October 2020 GHG Letter's conclusion that the project will result in a net reduction of GHG emissions. This memorandum provides the details of the assessment AECOM conducted to evaluate this conclusion.

Summary

The "GHG Emissions" section of the SCS October 2020 GHG Letter shows the projected net change in GHG emissions due to the project. As summarized in AECOM's Table 1 below, SCS's letter estimated that the project would result in a net GHG reduction benefit of 82,167 MTCO_{2e} per year.

Table 1. Net Total GHG Change Per Year (MTCO_{2e})

GHG Reductions from Waste Diversion	Increase in Operational GHG Emissions	Net Change in GHG Emissions
-86,231	4,064	-82,167

Acronym: metric tons of carbon dioxide equivalent (MTCO_{2e})

Notes: See discussion below for details

The SCS October 2020 GHG Letter's calculated increase in operational GHG emissions includes emissions from additional employee vehicles and haul trucks for composting, due to the expanded composting capacity resulting from the project. The calculations for these operational GHG emissions sources were conducted as part of the DEIR. Section 9.4 of the DEIR states: "GHG emissions from constructing and operating the proposed project were evaluated and quantified by SCS, the applicant's consultant, using the

California Emission Estimator Model (CalEEMod). This evaluation was reviewed by the County’s EIR consultant, EMC Planning Group, for technical sufficiency.”

As EMC has previously found the project GHG calculations to be consistent with acceptable methodologies and standards, AECOM’s focus in this memorandum is to evaluate the key components of the SCS October 2020 GHG Letter’s assertion of net GHG reduction benefit.

The following sections assess the calculations conducted for each GHG emission source included in the calculations of net GHG benefit, as well as the sources that were excluded from those calculations.

GHG Emissions Reduction from Waste Diversion

Table 2 summarizes the key components of the calculations for GHG reduction from waste diversion.

Table 2. Summary & Assessment of Waste Diversion GHG Avoidance Calculations

Key Components	Summary & Assessment
Calculation methodology	Appropriate methodology: benefits calculator tool, for the Organics Programs of the California Climate Investments initiative.
Input: additional tons per day (TPD) of composted MSW	875 TPD: assumes full capacity
Input: days of operation per year	365: assumes year-round operation
Input: composition of food waste in feedstock	50% food waste: conservative estimate

The following sub-sections provide further detail on the components summarized in Table 2 above.

Calculation Methodology

The SCS October 2020 GHG Letter calculated the GHG emissions reduction from waste diversion using the California Air Resources Board (CARB) “Benefits Calculator Tool for the Organics Program” (CARB Organics Tool).^{1,2} CARB is a reputable source for GHG assessment methodologies, and developed this tool based on an assessment of peer-reviewed literature. The CARB Organics Tool was first developed for entities applying for organics program grant funding through the California Climate Investments (CCI) initiative. CCI invests Cap-and-Trade revenue into projects that reduce GHG emissions in California, and waste diversion is one of the project types.³ Use of this CARB Organics Tool is an appropriate methodology for estimating the GHG emissions avoided by diverting waste from landfill deposition to usage at the Z-Best Composting facility.

¹ The tool is available at <https://ww2.arb.ca.gov/resources/documents/cci-quantification-benefits-and-reporting-materials>

² The CARB calculation methodology document for the benefits calculator tool is available at: https://ww2.arb.ca.gov/sites/default/files/classic/cc/capandtrade/auctionproceeds/calrecycle_organics_finalqm_6-15-20.pdf

³ <http://www.caclimateinvestments.ca.gov/>

Input: Additional Tons Composted

Regardless of the exact amount of MSW feedstock increase, it would still remain a defensible conclusion that the project will represent a net decrease in GHG emissions. The conclusion is due to the scale of the estimated GHG reductions from waste diversion, compared with the increase in operational GHG emissions from the proposed project.

The SCS October 2020 GHG Letter’s estimated MSW feedstock increase of 875 TPD represents the facility’s increased MSW composting capacity due to the proposed technology upgrade. This estimated increase is less than the maximum permitted limit increase of 1,250 TPD (from the current 1,500 TPD limit to a new limit of 2,750 TPD).

Based on dialogue with County of Santa Clara and the project applicant, the initial increase of MSW feedstock will be an average of 250 to 400 TPD. Over time, the MSW intake will ramp up, and is estimated to reach that 875 TPD increase over current levels. For illustrative purposes of the most conservative estimate: If the MSW increase was 250 TPD, and all other inputs remained the same, the project would still generate a net GHG reduction of 20,574 MTCO_{2e} per year. Table 3 summarizes this conservative scenario estimate.

Table 3. Net Total GHG Change Per Year (MTCO_{2e})

GHG Reductions from Waste Diversion	Increase in Operational GHG Emissions	Net Change in GHG Emissions
-24,638	4,064	-20,574

Acronym: metric tons of carbon dioxide equivalent (MTCO_{2e})

Furthermore, a lower amount of composting feedstock increase would mean a lesser increase of haul truck and employee vehicle mileage, and therefore a smaller associated increase in project GHG emissions related to those operational sources.

Input: Composition of Food Waste in Feedstock

The SCS calculations were based on an assumption that the MSW increase would be 50% food waste and 50% green waste. This is a conservative assumption; based on the DEIR, the SCS October 2020 GHG Letter, and follow up communication with the applicant, food waste is expected to represent the majority of the additional MSW feedstock, with a smaller fraction of wood, metal, rubber, textiles, cardboard, inert materials, and plastic (both film and solid). No increase in green waste volume is actually proposed to occur as a result of the project; however, the CARB Organics Tool only provides GHG emission reduction factors for food waste and green waste.

This estimate of waste stream percentages is relevant because the CARB Organics Tool’s GHG emission reduction factor for aerated static pile food waste (0.36 MTCO_{2e}/short ton feedstock) is double the GHG emission reduction factor for aerated static pile green waste (0.18 MTCO_{2e}/short ton feedstock). Accordingly, assuming 50% food waste and 50% green waste is a conservative proxy for the expected feedstock composition described above. A low estimate of the food waste percentage leads to a

low (conservative) estimate of GHG emissions reduction achieved per ton of MSW increased due to the project.

Operational Emissions from Employee Vehicles and Hauling Trucks

The key components of the operational GHG calculations are summarized in Table 4 and detailed in the sub-sections below.

Table 4. Summary & Assessment of Operational GHG Emissions Calculations

Key Components	Summary & Assessment
Calculation methodology	Standard methodology: vehicle miles traveled (VMT) multiplied by emission factors obtained from CARB's Emission Factor (EMFAC) model
Input: VMT from employee vehicles and hauling trucks	Provided by Hexagon Transportation Consultant
Emission factors	EMFAC: reputable source ⁴ Used emission factors from EMFAC 2017 EMFAC 2021 is now available, with updated emission factors

Calculation Methodology

EMFAC is a CARB-developed and approved model that CARB uses as a primary tool to assess emissions from on-road vehicles including cars and trucks. Sourcing emission factors from EMFAC is a standard methodology for CEQA and other air emissions assessments.

For haul trucks, the SCS October 2020 GHG Letter's Table 1 (Emissions Summary) uses the annual average emissions per day, as opposed to the higher GHG emissions calculated for trucks on peak days. AECOM concurs with this choice, which is explained in the SCS October 2020 GHG Letter as follows:

"GHG are a pollutant with impacts on the scale of years and which do not have associated ambient air standards, so it is appropriate to evaluate the GHG impacts of the project based on annual average emissions rather than peak daily emissions."

Input: VMT

As discussed in Section 12 of the DEIR, project increases in vehicle miles traveled (VMT) were estimated through a traffic analysis by Hexagon Transportation Consultant. AECOM has not evaluated this traffic analysis, but has evaluated the GHG calculations derived from the resulting VMT estimation.

⁴ <https://arb.ca.gov/emfac/>

Emission Factors

SCS used EMFAC 2017 (v1.0.2), the most current version available at the time of DEIR preparation. The most recent version, EMFAC 2021, has updates to emission factors incorporating recent legislation and updated methodology, as appropriate. For purposes of the recirculated DEIR, the project applicant could consider updating the project GHG emissions calculations using emission factors from EMFAC 2021. However, this update would not lead to a substantially different emissions estimate, and the minor updates would not change the SCS October 2020 GHG Letter's conclusion that the project will result in a net reduction of GHG emissions because of waste diversion. The focus of this AECOM memorandum is vetting this overall conclusion. Specifics of DEIR project GHG emissions calculations are tangential and mentioned here for the sake of thoroughness. Recalculation would only be recommended for elements that would lead to substantial updates, and these emission factor updates would not.

Construction Emissions

The key components of the construction GHG calculations are summarized in Table 5.

Table 5. Summary & Assessment of Construction GHG Emissions Calculations

Key Components	Summary & Assessment
Calculation methodology	CalEEMod: reputable, standard methodology ⁵
Input: construction vehicle and equipment usage	Provided by the project applicant
Input: haul truck VMT	Provided by Hexagon Transportation Consultant
Off-road emission factors	Unchanged in the most current version of CalEEMod
On-road emission factors	Updated in the most current version of CalEEMod

Construction emissions are discussed briefly in this AECOM memorandum, as they are minor relative to other emissions sources, and because these construction emissions are being recalculated by AECOM in a separate task. Based on current assumptions, the updated construction emissions estimate is 635 MTCO_{2e}, equating to an amortized amount of approximately 21 MTCO_{2e} per year of operation over a 30-year project lifetime.

SCS calculated the construction emissions using the California Emissions Estimator Model (CalEEMod), which is an approved and standard best practice model. Those emission calculations were conducted in December 2019, utilizing the most current version of CalEEMod available at that time (version 2016.3.2). CalEEMod was updated in June 2022 to version 2022.1, which included updates to on-road vehicle emission factors as well as other sources not relevant to construction-related emissions (e.g., 2019 Title 24 Standards and utility intensity factors). AECOM's updates to the construction emissions are being conducted with the current version of CalEEMod, so that emission factors are updated along with other applicable assumptions.

⁵ <http://www.caleemod.com/>

As stated in the DEIR, the construction GHG emissions should be amortized over the lifetime of the project, to derive the total GHG emission increase per year due to the project. The SCS October 2020 GHG Letter provided a summary of the construction emissions but did not include them in the project emissions total used to estimate the net GHG impact. Although these construction emissions are minor compared with the other sources, excluding the construction emissions leads to a lower estimate of project emissions. AECOM recommends that the updated construction GHG emissions be amortized over the project lifetime and incorporated into the project emissions total and determination of net GHG impact.

Global Warming Potentials

It is worth mentioning the global warming potentials (GWPs) applied to the GHG calculations discussed in this memorandum. The DEIR's calculations of project operational GHG emissions used methane (CH₄) and nitrous oxide (N₂O) GWPs from the IPCC 2nd Assessment Report; 21 and 310 respectively. Section 9 of the DEIR also refers to this CH₄ GWP of 21 when discussing the CH₄ emissions avoided due to waste diversion from landfill deposition, although this calculation was not conducted for the DEIR. However, the CARB Organics Tool's source for emission factors^{6, 7} cites the IPCC 4th Assessment Report, with a CH₄ GWP of 25. The CARB Organics Tool applies this GWP of 25 to the CH₄ emissions avoided due to waste diversion from landfills. Furthermore, CalEEMod also uses the IPCC 4th Assessment Report GWPs (including the CH₄ GWP of 21) for construction GHG emissions.

For consistency, the Z-Best project GHG calculations would ideally apply the same GWP to each emission source included in the calculation of net GHG impact. However, further perspective is useful regarding on the impact of GWPs on the results.

- The only source for which the CH₄ GWP would make a significant difference is the GHG emissions avoided by waste diversion from landfill deposition. This significance is because the avoided GHG emissions from anaerobic decomposition of organic waste in a landfill are CH₄. Therefore, an approximate 20 percent difference in the CH₄ GWP (from 21 to 25) would represent a comparable difference in the associated emissions.
- However, CH₄ is only a trace emission from fuel combustion, representing less than 1 percent of the total GHG emissions. Therefore, the choice of CH₄ GWP makes a negligible impact on project GHG emissions associated with vehicle fuel combustion. Accordingly, this GWP consistency consideration does not make a noticeable impact on the determination of net GHG reduction benefit from the project.

This GWP consideration is noted here for thoroughness but does not require action for the purposes of this memorandum.

⁶ <https://ww2.arb.ca.gov/sites/default/files/classic/cc/waste/cerffinal.pdf>

⁷ http://ww2.arb.ca.gov/sites/default/files/auction-proceeds/ef_database_documentation.pdf

Emissions Sources Excluded from Calculation of Net Reductions

The following is a summary of the GHG emission sources that the SCS October 2020 GHG Letter excluded from the calculation of net GHG emissions impact due to the project.

Emissions at Composting Facility

Although the project increase in electricity consumption at the Z-Best Composting facility will create additional GHG emissions, these emissions have been excluded from the calculation of net GHG reductions. Specifically, the DEIR shows an estimated increase of 738.71 MTCO_{2e} per year of operational emissions due to increased electricity demand at the Z-Best Composting facility. The rationale for this exclusion is that process energy emissions at the composting facility are approximately equivalent to the avoided process energy emissions at landfills due to waste diversion.

The CARB Organics Tool cites a CARB waste diversion GHG calculation methodology document⁸ as its source for emission factors, and this CARB document states:

“Because process emissions from composting likely fall within the same range as process emissions from landfilling, and are relatively insignificant to the total emission reduction estimate, landfilling and composting are considered to be functionally equivalent in regards to process emissions. For this reason, the process emissions term is equal to zero for the composting emissions calculation.”

Based on the logic of this CARB justification, AECOM concurs that composting facility operational emissions increases are a reasonable exclusion from the calculation of estimated net GHG benefit.

Avoided Emissions – Trucks Hauling Waste to Landfills

The SCS October 2020 GHG Letter and supporting project GHG spreadsheet includes calculations for the GHG emissions avoided from trucks that would otherwise be hauling waste to a landfill. However, these avoided emissions are not included in the calculation of net GHG reductions, and the SCS October 2020 GHG Letter does not state a reason. The CARB methodology document applies the same logic as discussed for process energy above: project transportation emissions are excluded from the calculation of net GHG emissions, as additional haul truck trips to a composting facility are assumed to be approximately equivalent to the displaced haul truck trips to landfills.

Excluding the avoided emissions for landfill haul trucks is potentially reasonable, as there are different scenarios for the VMT that would be avoided depending on which landfills would have been used. This exclusion is a conservative approach leading to a lower estimate of net GHG reductions, considering that the calculations do include the

⁸ <https://ww2.arb.ca.gov/sites/default/files/classic/cc/waste/cerffinal.pdf>

project emissions from haul trucks to the Z-Best Composting facility. If maintaining this conservative approach, the recirculated DEIR should:

- Clearly state this decision to exclude avoided landfill haul truck emissions, along with the reasoning, and
- Note that including composting facility haul truck emissions, along with excluding landfill haul truck emissions, leads to a lower estimate of net GHG reductions.

However, it would also be reasonable to take a less conservative approach, and assume that the project’s additional compost haul truck VMT would displace landfill haul truck VMT. The project GHG emissions increase due to compost haul truck trips and employee vehicles are estimated to be 4,064 MTCO_{2e} per year. The DEIR estimates of displaced landfill haul trips were calculated for four scenarios, ranging from 2,485 MTCO_{2e} per year to 7,777 MTCO_{2e} per year.

- The mid-point of this estimated range is 5,131 MTCO_{2e} per year, which is greater than the project operational GHG emissions increase of 4,064 MTCO_{2e} per year. Accounting for the displacement of landfill haul truck VMT using this mid-point value (keeping all other assumptions the same as in the October 2020 GHG Letter) would result in a net GHG emissions of -87,298 MTCO_{2e} per year from the project, as detailed in Table 5.
- If the displaced landfill haul truck GHG emissions equaled the lowest estimate (2,485 MTCO_{2e} per year), the net GHG impact of the project would be -84,652 MTCO_{2e} per year (see Table 5). Accordingly, SCS’s current calculation of -82,167 MTCO_{2e} per year is a conservative estimate of net GHG impact due to the project.

Table 5. Net Total GHG Change Per Year (MTCO_{2e}) accounting for displaced landfill haul trips

Landfill Haul Truck Scenario	GHG Reductions from Waste Diversion	GHG Reductions from displaced Landfill Haul Trucks	Increase in Operational GHG Emissions from Project	Net Change in GHG Emissions
Not accounted for	-86,231	0	4,064	-82,167
Mid-Point Estimate	-86,231	-5,131	4,064	-87,298
Lowest Estimate	-86,231	-2,485	4,064	-84,652

Acronym: metric tons of carbon dioxide equivalent (MTCO_{2e})

Conclusion

AECOM has assessed the SCS October 2020 GHG Letter found its overall logic to be sound. Certain assumptions and inputs could potentially be clarified or reconsidered, as outlined in the preceding sections of this memorandum. However, recalculation is not warranted, due to two key considerations:

- **Reasonableness** – AECOM’s review has confirmed that the SCS GHG calculations were appropriate and reasonable. Furthermore, the assumptions used by SCS were

generally conservative and tend towards providing a low estimate of net GHG reduction benefit. In consideration of both the avoided landfill methane emissions as well as the displaced landfill haul truck trips, it is clear that the project will not create additional GHG emissions, and furthermore will have a net benefit of GHG reductions.

- **Scale** – The estimated GHG reductions from waste diversion, even with the conservative assumptions detailed in this memorandum, are approximately 21 times greater than the increase in operational emissions from the proposed project. Therefore, a moderate change in calculation assumptions and inputs would not alter the conclusion that the project will result in a net GHG benefit.

Based on these considerations identified through assessment of SCS's GHG calculations, AECOM supports the SCS October 2020 GHG Letter's overall conclusion of that the project would result in a net reduction in GHG emissions.

October 9, 2020
File No. 01219043.00

Mr. John Doyle
Operations Manager
Z-Best Products
980 State Highway 25
Gilroy, California

Subject: Emissions from Proposed Changes to Z-Best Facility in Gilroy, California

Dear Mr. Doyle:

Z-Best Composting (Z-Best) has prepared a Notice of Preparation (NOP) for proposed changes (Project) at the Z-Best facility at 980 State Highway 25, Gilroy (Site). SCS Engineers (SCS) has prepared this greenhouse gas (GHG) and criteria pollutant evaluation for use in the California Environmental Quality Act (CEQA) document prepared by County of Santa Clara Department of Planning and Development.

The project includes the removal of the existing municipal solid waste (MSW) and foodwaste in-vessel composting system (CTI bag system) and the construction of a primary covered aerated static pile (CASP) and a secondary (curing) aerated static pile composting for MSW and foodwaste composting. The CASP system would have negative aeration with emissions controlled by biofilters for primary (active) composting and positively aerated static piles for secondary (curing) composting. The Project also includes site improvements, such as modifications to the detention basin. The Project will result in the capacity to compost an additional 875 tons per day (tpd) of MSW and/or foodwaste.

This additional 875 tpd of composting capacity would be permitted as an increase in the monthly capacity for the site. Composting is an important component of the California Air Resources Board (CARB) Climate Change Scoping Plan Update (CARB 2017), which states that “[The State] can invest in and streamline in-state infrastructure development to support recycling, remanufacturing, **composting**, anaerobic digestion, and other beneficial uses of organic waste,” (emphasis added). Composting is also part of California’s strategy to reduce short-lived climate pollutants (Senate Bill 1383). It is clear from California climate strategy that state agencies view composting as a net reduction in GHG emissions. This reduction is achieved by reducing the amount of methane generated by waste that would be landfilled if it were not composted.

GHG Emissions

SCS has previously calculated the GHG emissions from the construction and operation of the new project in a letter from SCS to John Doyle of Z-Best dated December 19, 2019 (December 2019 Letter). Those GHG emissions are summarized in **Table 1**. All GHG emissions are shown as metric tons of carbon dioxide equivalent (MTCO_{2e}). GHG are a pollutant with impacts on the scale of years and which do not have associated ambient air standards, so it is appropriate to evaluate the GHG impacts of the project based on annual average emissions rather than peak daily emissions.

Table 1. Previously Evaluated GHG Emissions

Source	GHG (lb/day)	GHG (MTCO ₂ e/year)
Construction Emissions	17,773	747
Employee Trip Emissions (baseline)	1,879	311
Trucks (baseline)	22,821	3,778
Baseline total	24,700	4,089
Employee Trip Emissions (project)	2,478	410
Trucks (project)	46,772	7,742
Project total	49,250	8,152
Net Change in Previously Calculated Operational Emissions	24,551	4,064

To calculate the composting emissions from the Project, SCS evaluated the project using the CARB “Benefits Calculator Tool for Organics” program¹. The benefit calculator uses a GHG benefit from each ton of greenwaste composted in an aerated static pile (ASP) of 0.18 MTCO₂e/ton of greenwaste and a benefit of 0.36 MTCO₂e/ton of composted foodwaste. Most of the composted material would be foodwaste, but Z-Best expects that some composted material at the new facility would be other streams such as fiber organics (e.g. cardboard). Composting of foodwaste has greater GHG benefit than composting of other materials, so SCS has conservatively assumed that only 50 percent of the composted material is foodwaste. The evaluation of one year of the increased composting of material proposed by this project is shown in **Attachment A**. This benefit is the potential composting benefit for each year the Z-Best facility operates at its composting capacity.

Based on the Benefits Calculator Tool evaluation, the project would result in a GHG reduction from composting of 86,231 MTCO₂e per year. This benefit greatly exceeds the increase in GHG emissions from the increased number of truck trips shown in **Table 1** and the proposed project would result in a net GHG benefit of 82,167 MTCO₂e per year.

On-Road Emissions

The proposed project is expected to result in a net decrease in the miles traveled by trucks hauling compostable materials. The Benefits Calculator Tool is capable of evaluating the change in the emission of pollutants other than GHG, but project-specific information is available to calculate the change in non-GHG pollutants for this project.

Z-Best indicated that compostable materials are currently transported past the Z-Best Gilroy facility and taken to the Marina Landfill in Monterey County, approximately 28 miles away. Currently there is about 217 tons per day going to Marina, an additional 77 tons per day will go to Marina in 2021 and an additional 88 tons per day in 2022 for a total of 382 tpd in 2022. Hexagon has estimated that the Project will generate an additional 200 trips carrying 875 tons of waste per day or 4.38 tons of

¹ User guide available at https://ww2.arb.ca.gov/sites/default/files/classic/cc/capandtrade/auctionproceeds/calrecycle_organics_fin_aluserguide_6-15-20.pdf

waste per trip. Based on this tonnage per trip, the additional 382 tpd of waste generate an additional 87 trips per day to the Marina Landfill.

The emissions from trucks were calculated for four scenarios.

- Scenario 1 – Existing baseline scenario. In this scenario, 173 truck trips compost greenwaste at the Z-Best Gilroy facility. The emission reduction calculations assume that the 173 truck trips would be routed to the Marina Landfill if the material were not composted at the Z-Best facility. Emission reductions shown reflect the current reduction in emissions based on this assumption. Only ten percent of the miles would be in Santa Clara County. The other 90 percent of the miles would be outside of Santa Clara County.
- Scenario 2 – In this scenario, trucks transport 382 tpd of compostable greenwaste that currently passes the Z-Best Gilroy facility is landfilled at the Marina Landfill to the Z-Best facility instead of the Marina Landfill. The 382 tpd of compostable material is estimated to be transported in 87 truck trips, which are combined with the current 173 truck trips and would result in an additional 14,550 VMT relative to the VMT that would result if that greenwaste was composted at the Z-Best Gilroy facility. Only ten percent of the miles would be in Santa Clara County. The other 90 percent of the miles would be outside of Santa Clara County.
- Scenario 3 – In this scenario, trucks transport the full 875 tpd of greenwaste to the Z-Best Gilroy facility. The number of trips in this scenario was determined by Hexagon to be 372 trips per day. The difference in the VMT is based on the assumption that the compostable materials would have to be composted due to state regulations, and that the most likely alternative compost facility is in Vernalis. There are additional concerns that may mean that the Vernalis facility is not a suitable destination, which would result in additional emissions from truck trips and that the shown emission reductions underestimate the benefit that would result from the Project. The trip distance to the Z-Best composting facility is estimated to be 31 miles per trip shorter than the distance to the Vernalis facility.
- Scenario 4 – This scenario is the same as Scenario 3 but emissions are shown for peak composting days at the Z-Best facility. These emission reductions are not representative of typical emission reductions and represent the greatest daily emission reductions that would result from the Project. Hexagon determined that peak days would have a total of 488 haul truck trips. In this scenario, trucks travel 14 fewer miles in Santa Clara County and 17 fewer miles outside of Santa Clara County than they would if the waste were not transported the Z-Best facility.

Using the pollutant emission factors from the December 2019 Letter and shown in **Table 2**, SCS calculated the pollutant emissions from trucks. The emissions that are avoided from trucks that would transport compostable material to the Marina Landfill are shown in **Table 3**. Emission reductions are shown as separate line items for emission reductions in Santa Clara County and emission reductions outside of Santa Clara County.

Table 2. Truck Emission Factors

Trip Type	Avoided trips/day	Avoided VMT/day	Emission Factors (g/VMT)						
			ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	GHG
Scenario 1									
Trucks	173	4,833	0.161	4.58	0.597	0.0133	0.0952	0.0911	1,410
Scenario 2									
Trucks (Currently going to Marina Landfill)	260	7,275	0.161	4.58	0.597	0.0133	0.0952	0.0911	1,410
Scenario 3									
Trucks (As alternative to composting in Vernalis)	372	11,544	0.161	4.58	0.597	0.0133	0.0952	0.0911	1,410
Scenario 4									
Trucks (As alternative to composting in Vernalis)	488	15,128	0.161	4.58	0.597	0.0133	0.0952	0.0911	1,410

Table 3. Avoided Truck Emissions

Trip Type	Emissions (lb/day)							Emissions (MTCO2e/year)
	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	GHG	GHG
Scenario 1								
Total	1.71	48.76	6.36	0.14	1.01	0.97	15,011	2,485
In Santa Clara County	0.17	4.88	0.64	0.01	0.10	0.10	1,501	248
Outside Santa Clara County	1.54	43.88	5.72	0.13	0.91	0.87	13,510	2,236
Scenario 2								
Total	2.58	73.39	9.57	0.21	1.53	1.46	22,595	3,740
In Santa Clara County	0.26	7.34	0.96	0.02	0.15	0.15	2,259	374
Outside Santa Clara County	2.32	66.05	8.61	0.19	1.37	1.31	20,335	3,366
Scenario 3								
Total	4.09	116.45	15.18	0.34	2.42	2.32	35,852	5,935
In Santa Clara County	1.85	52.59	6.86	0.15	1.09	1.05	16,191	2,680
Outside Santa Clara County	2.24	63.86	8.32	0.19	1.33	1.27	19,661	3,254
Scenario 4								
Total	5.36	152.61	19.89	0.44	3.17	3.04	46,983	7,777
In Santa Clara County	2.42	52.59	6.86	0.15	1.09	1.05	16,191	2,680
Outside Santa Clara County	2.94	63.86	8.32	0.19	1.33	1.27	19,661	3,254

Overall, the Project is expected to reduce emissions from the haul of compostable materials due to the decreased transport distance from material sources to the Z-Best composting facility.

CLOSING

This additional information was provided to address environmental benefits from the proposed modification of the Z-Best composting facility in Gilroy, California that would occur outside the facility boundary that have not been previously addressed. The increased composting capacity proposed by the project are expected to result in significant air pollution and GHG benefits outside of the facility boundary by providing additional composting capacity close to material sources and reducing transportation emissions. Increased composting capacity is also expected to lead to less compostable material being landfilled, where it would emit more GHG emissions, thus resulting in GHG reductions.

Composting is a critical component in the California Scoping Plan and SB 1383 strategy to reduce GHG emissions from the waste sector. This project is consistent with that GHG reduction strategy, and the calculated GHG reductions support the conclusion that the proposed project would be a net reduction in GHG.

If you have any questions or concerns about this evaluation, please contact the undersigned at 916-361-1297.

Sincerely,



John Henkelman
Air Quality and Greenhouse Gas Consultant



Patrick S. Sullivan
Senior Vice President
SCS Engineers

Attachments:

CARB Benefits Calculator Tool Output



California Air Resources Board
Benefits Calculator Tool
Organics Programs
California Climate Investments

Note to applicants:

A step-by-step **user guide**, including **project examples**, for this Benefits Calculator Tool is available [here](#).

Organics Programs applicants must enter the applicable information in the table below before proceeding with the project-specific data on the Inputs tab.

Project Name:	Z-Best Gilroy Facility
Applicant ID:	To be completed by CalRecycle
Contact Name:	Patrick Sullivan
Contact Phone Number:	916-503-2956
Contact Email:	psullivan@scsengineers.com
Date Calculator Completed:	10/26/2020
Total Organics GGRF Funds Requested (\$):	not applicable
Other GGRF Leveraged Funds (\$):	not applicable
Non-GGRF Leveraged Funds (\$):	not applicable
Total Funds (\$):	\$ -

Key for color-coded fields:	
Green	Required input field
Blue	Optional input field*
Grey	Output field / not modifiable
Yellow	Helpful hints / important tips
Black	Not applicable

*See "Documentation" tab for additional information



California Air Resources Board

**Benefits Calculator Tool
Organics Programs**

California Climate Investments

Note to applicants:

A step-by-step **user guide**, including **project examples**, for this Benefits Calculator Tool is available [here](#).

Composting Worksheet

Year (January- December)	Feedstock Diverted for Windrow Composting (Short Tons)	Feedstock Diverted for Aerated Static Pile Composting (Short Tons)	Composition of Food Waste in Feedstock (%)	Composition of Green Waste in Feedstock (%)	Residual Material (Short Tons)	Net GHG Benefit (MTCO ₂ e)
Year 1		319,375	50%	50%		86,231
Year 2						0
Year 3						0
Year 4						0
Year 5						0
Year 6						0
Year 7						0
Year 8						0
Year 9						0
Year 10						0
SUBTOTAL	0	319,375	-	-	0	86,231



California Air Resources Board

Benefits Calculator Tool for the Organics Grant Program

California Climate Investments

Emission Reduction Factors Worksheet

Additional documentation on how the emission reduction factors used in the calculator were developed is available from: <http://www.arb.ca.gov/cqi-resources>

Compost			
Compost Process & Feedstock	Emission Reduction Factor	Unit	Primary Source
Windrow food waste	0.32	MTCO ₂ e/short ton feedstock	Method for Estimating Greenhouse Gas Emission Reductions from Diversion of Organic Waste from Landfills to Compost Facilities
Windrow green waste	0.14	MTCO ₂ e/short ton feedstock	
Aerated static pile food waste	0.36	MTCO ₂ e/short ton feedstock	
Aerated static pile green waste	0.18	MTCO ₂ e/short ton feedstock	
Fugitive landfill emission factor food waste	0.39	MTCO ₂ e/short ton feedstock	
Fugitive landfill emission factor green waste	0.21	MTCO ₂ e/short ton feedstock	

Standalone Anaerobic Digestion			
Product	Emission Reduction Factor	Unit	Primary Source
Vehicle fuel - Landfill/Use for ADC	0.32	MTCO ₂ e/short ton feedstock	LCFS Pathway for the Production of Biomethane from High Solids Anaerobic Digestion of Organic (Food and Green) Waste
Vehicle fuel - Compost	0.39	MTCO ₂ e/short ton feedstock	
Vehicle fuel - Land Application	0.36	MTCO ₂ e/short ton feedstock	
Electricity Generation - Landfill/Use for ADC	0.17	MTCO ₂ e/short ton feedstock	LCFS Pathway for the Production of Biomethane from High Solids Anaerobic Digestion of Organic (Food and Green) Waste
Electricity Generation - Compost	0.24	MTCO ₂ e/short ton feedstock	
Electricity Generation - Land Application	0.21	MTCO ₂ e/short ton feedstock	
Injection in Utility Pipeline - Landfill/Use for ADC	0.23	MTCO ₂ e/short ton feedstock	LCFS Pathway for the Production of Biomethane from High Solids Anaerobic Digestion of Organic (Food and Green) Waste
Injection in Utility Pipeline - Compost	0.29	MTCO ₂ e/short ton feedstock	
Injection in Utility Pipeline - Land Application	0.27	MTCO ₂ e/short ton feedstock	
Fugitive landfill emission factor (assumes 40% food waste 60% green waste per LCFS pathway)	0.28	MTCO ₂ e/short ton feedstock	LCFS Pathway for the Production of Biomethane from High Solids Anaerobic Digestion of Organic (Food and Green) Waste Method for Estimating Greenhouse Gas Emission Reductions from Diversion of Organic Waste from Landfills to Compost Facilities

Co-Digestion of Organics at Wastewater Treatment Plants			
Emission Source	Emission Factor	Unit	Primary Source
Fugitive landfill food waste emission factor	0.39	MTCO ₂ e/short ton feedstock	Method for Estimating Greenhouse Gas Emission Reductions from Diversion of Organic Waste from Landfills to Compost Facilities
Small-Medium Facility - Landfill Digestate			
Vehicle Fuel - Small-Medium Facility	0.28	MTCO ₂ e/short ton feedstock	LCFS Pathway for the Production of Biomethane from the Mesophilic Anaerobic Digestion of Wastewater Sludge at Publicly-Owned Treatment Works
Electricity Generation - Small-Medium Facility	0.15	MTCO ₂ e/short ton feedstock	
Injection in Utility Pipeline - Small-Medium Facility	0.23	MTCO ₂ e/short ton feedstock	
Medium-Large Facility - Landfill Digestate			
Vehicle Fuel - Medium-Large Facility	0.26	MTCO ₂ e/short ton feedstock	LCFS Pathway for the Production of Biomethane from the Mesophilic Anaerobic Digestion of Wastewater Sludge at Publicly-Owned Treatment Works
Electricity Generation - Medium-Large Facility	0.28	MTCO ₂ e/short ton feedstock	
Injection in Utility Pipeline - Medium-Large Facility	0.34	MTCO ₂ e/short ton feedstock	
Small-Medium Facility - Compost Digestate			
Vehicle Fuel - Small-Medium Facility	0.30	MTCO ₂ e/short ton feedstock	LCFS Pathway for the Production of Biomethane from the Mesophilic Anaerobic Digestion of Wastewater Sludge at Publicly-Owned Treatment Works
Electricity Generation - Small-Medium Facility	0.20	MTCO ₂ e/short ton feedstock	
Injection in Utility Pipeline - Small-Medium Facility	0.28	MTCO ₂ e/short ton feedstock	
Medium-Large Facility - Compost Digestate			

Vehicle Fuel - Medium-Large Facility	0.27	MTCO ₂ e/short ton feedstock	LCFS Pathway for the Production of Biomethane from the Mesophilic Anaerobic Digestion of Wastewater Sludge at Publicly-Owned Treatment Works
Electricity Generation - Medium-Large Facility	0.33	MTCO ₂ e/short ton feedstock	
Injection in Utility Pipeline - Medium-Large Facility	0.40	MTCO ₂ e/short ton feedstock	
Small-Medium Facility - Land Apply Digestate			
Vehicle Fuel - Small-Medium Facility	0.29	MTCO ₂ e/short ton feedstock	LCFS Pathway for the Production of Biomethane from the Mesophilic Anaerobic Digestion of Wastewater Sludge at Publicly-Owned Treatment Works
Electricity Generation - Small-Medium Facility	0.18	MTCO ₂ e/short ton feedstock	
Injection in Utility Pipeline - Small-Medium Facility	0.26	MTCO ₂ e/short ton feedstock	
Medium-Large Facility - Land Apply Digestate			
Vehicle Fuel - Medium-Large Facility	0.27	MTCO ₂ e/short ton feedstock	LCFS Pathway for the Production of Biomethane from the Mesophilic Anaerobic Digestion of Wastewater Sludge at Publicly-Owned Treatment Works
Electricity Generation - Medium-Large Facility	0.31	MTCO ₂ e/short ton feedstock	
Injection in Utility Pipeline - Medium-Large Facility	0.38	MTCO ₂ e/short ton feedstock	

Food Waste Prevention			
	Emission Reduction Factor	Unit	Primary Source
Food waste prevention	1.78	MTCO ₂ e/short ton feedstock	The Climate Change and Economic Impacts of Food Waste in the United States
Refrigeration & Freezer Equipment			
Emissions from Energy Consumption			
Residential Refrigerator/Freezer Combination	8.46	kWh/year per ft ³ of volume	10 CFR 431.66 - Energy conservation standards and their effective dates
	335.7	kWh/year	
Residential Freezer Only	7.85	kWh/year by ft ³ of volume	
	172.3	kWh/year	
Residential Refrigerator Only	7.28	kWh/year by ft ³ of volume	
	206.7	kWh/year	
Commercial Refrigerator with solid doors	36.5	kWh/year per ft ³ of volume	
	744.6	kWh/year	
Commercial Refrigerator with transparent doors	43.8	kWh/year by ft ³ of volume	
	1,219.1	kWh/year	
Commercial Freezer with solid doors	146.0	kWh/year by ft ³ of volume	
	503.7	kWh/year	
Commercial Freezer with transparent doors	273.8	kWh/year by ft ³ of volume	
	1,496.5	kWh/year	
Commercial Refrigerator/freezer with solid doors	98.6	kWh/year by ft ³ of volume	
	-259.2	kWh/year	
	255.5	minimum value kWh/year	
Electricity emission factor	0.0002279	MTCO ₂ e/kWh	CARB California grid electricity emission factor for GGRF programs

Emission Reduction Factors for Organics Projects - Composting

Primary Source:

California Air Resources Board, Method for Estimating Greenhouse Gas Emission Reductions from Composting of Commercial Organic Waste (2017) (CERF)

<http://www.arb.ca.gov/cc/waste/cerffinal.pdf>

Additional sources used as appropriate and noted below

Material and Compost Method	Emission Reduction Factor (MTCO ₂ e/short ton)
Windrow food waste	0.32
Windrow green waste	0.14
Aerated static pile food waste ¹	0.36
Aerated static pile green waste ¹	0.18
Fugitive landfill emission factor food waste	0.39
Fugitive landfill emission factor green waste	0.21

Table 14. Summary of compost emission reduction factor (CERF)

Emissions		Emission (MTCO ₂ e/ton of feedstock)
Emission Type		
Transportation emissions		0
Process emissions		0
Fugitive CH ₄ emissions		0.049
Fugitive N ₂ O emissions		0.021
Total		0.070
Emission Reductions		Emission reduction (MTCO ₂ e/ton of feedstock)
Emission reduction type		
Decreased soil erosion ²		0.15
Decreased fertilizer use ²		0.15
Decreased herbicide use ²		0.0
Total		0.3
Avoided landfill methane	Food Waste	0.39
	Yard Trimmings	0.21
Overall		Emission reduction (MTCO ₂ e/ton of feedstock)
Feedstock Type		
Food Waste		0.62
Yard Trimmings		0.44

Table excerpted from California Air Resources Board, Method for Estimating Greenhouse Gas Emission Reductions from Composting of Commercial Organic Waste (2017) (CERF)

<http://www.arb.ca.gov/cc/waste/cerffinal.pdf>

[1] The source material assumes windrow composting. ASP composting produces less fugitive emissions. Fugitive emissions have been reduced for the ASP emission reduction factor based on the following sources:

San Joaquin Valley Air Pollution Control District, Greenwaste Compost Site Emissions Reductions from Solar-powered Aeration and Biofilter Layer

http://www.valleyair.org/Grant_Programs/TAP/documents/C-15636-ACP/C-15636_ACP_FinalReport.pdf

Climate Action Reserve Organic Waste Digestion Project Protocol Version 2.1 (2014)

http://www.climateactionreserve.org/wp-content/uploads/2009/10/Organic_Waste_Digestion_Project_Protocol_Version2.1.pdf

[2] Emission reductions resulting from the application of compost are outside of the GHG accounting boundary for this program and are excluded from the emission reduction factor.

To: Mr. Sam Gutierrez
County of Santa Clara
Department of Planning and
Development
70 West Hedding Street, 7th Floor
East Wing
San Jose, CA 95110

Project name: Z-Best Composting Facility
– CEQA Services

Project ref: 60666256

From: Luis Smith – Industrial Hygienist
Crystal Brillhart - Microbiologist
Emma Rawnsley – Project Manager

CC: Emmanuel Ursu, Valerie Negrete,
Lizanne Reynolds

Date: December 9, 2022

Memorandum: Z-Best Composting Facility - Evaluation of potential bioaerosol emissions from proposed project operations compared to existing operations

In response to the Draft Environmental Impact Report (Draft EIR) for the Z-Best Composting Facility Project (Project) which was circulated for public review from January 15 to March 1, 2021, public comments were received which requested additional evaluation of the potential for bioaerosol emissions from the Z-Best facility and potential impacts of such emissions on agricultural workers on adjacent properties or on the viability of horticultural activities on adjoining parcels.

This memorandum provides an evaluation of the potential for bioaerosol emissions from the Z-Best Facility under existing and proposed conditions to determine whether implementation of the Project would have potential to result in an increase in emissions of fungal and bacterial organisms.

This scope of work was completed through the following tasks:

- Review of pertinent literature on bioaerosol emissions from composting and other similar land uses;
- Review of original Draft EIR, its appendices, and public comments received on the Draft EIR;
- Review of existing site conditions and surrounding land uses; and
- Review of existing and proposed composting processes, raw materials, agents, and environmental conditions.

Note that due to the complexity of these issues and the limited information regarding the risks of bioaerosols from composting facilities, this memorandum cannot, without speculating, reach definitive conclusions regarding the bioaerosol dispersion from sources at the site and whether there is potential for the Project to create significant health effects for agricultural workers on adjacent properties or other receptors, or whether bioaerosol emissions from the facility would significantly impact the viability of horticultural activities on adjoining parcels. However, based on an extensive review and analysis of the available literature and analysis of the changes in operations that would occur with the proposed Project, this memorandum represents our best effort to find out and disclose all we reasonably can regarding these issues. A summary of our conclusions and recommendations is provided at the end of this memorandum based on available information reviewed.

Summary

AECOM conducted a thorough literature review and analyzed Project components and processes that could affect the production and dispersal of bioaerosols. The question of bioaerosol production from composting facilities is nuanced and varies greatly depending on the circumstances including mechanical disturbance, wind direction, and distance from the compost. Although Project implementation could increase the amount of bioaerosols that are produced and dispersed due to the proposed increased volume of Municipal Solid Waste (MSW) that would be processed at the facility, and/or alter the type of bioaerosols that are produced due to the different composting method, the available science indicates that bioaerosols disperse over relatively short distances to the point at which they no longer exceed background levels. Bioaerosols including *A. fumigatus* are commonly present within compost and can be detected downwind of compost, but their quantities rapidly decrease with distance from the compost. Therefore, the risk due to exposure to bioaerosols to workers in neighboring fields or to neighboring residents would decrease with distance from the Z-best facility. The literature supports that the majority of enteric pathogens (e.g., *E. coli* or *Salmonella*) would become inactivated by the heat of the primary composting process, and would not be present in bioaerosols. Thus, the proposed Project is not expected to increase the risk to adjacent food crops from enteric pathogens. While the proposed Project would double the volume of MSW that would be processed, the understood risk from bioaerosols based on previous published studies appears to be distance-related and not volume-related. Because the distance between the Z-Best facility and adjacent uses would not change, the risk to neighboring areas is not expected to substantially change either.

Introduction to Bioaerosols

The term “bioaerosol” encompasses all particles having a biological source that are in suspension in the air and includes microorganisms (e.g., bacteria, fungi, virus, protozoa, algae, pollen) as well as biomolecules (e.g., toxins, debris from membranes) (Sykes et al 2011).

Bioaerosols occur naturally in the environment and are typically introduced into the air via wind turbulence over a surface, such as soil or water. However, the production and/or transmission of bioaerosols can also be accelerated by various human activities, e.g., through processes that increase the number of biological particulates in a medium (such as composting) or through processes that increase turbulence or the surface area of the medium (such as tilling of the soil).

Ambient bioaerosol concentrations vary significantly by season and are influenced by factors such as weather, temperature, precipitation, and air pressure. Most bioaerosols associated with composting facilities are ubiquitous to the environment and already exist in rural and agricultural areas. Bioaerosol concentrations decrease rapidly with distance from their source, and it is difficult to verify that measurements at a distance are related to a specific activity rather than to other background non-compost sources (Taha et al., 2005).

In addition, sampling and analytical methods for bioaerosol sampling have a number of significant limitations that may limit reliability. Most bioaerosol collection methods provide a snapshot of the environmental bioaerosols at a specific time. Temporal variations in bioaerosol concentrations are commonly observed, especially if the bioaerosol generation occurs during episodic events rather than continuously (NIOSH 2017).

There are a wide range of bioaerosol particles, which may cause varying degrees of human health impacts. Health effects from bioaerosol exposure can include infections, immuno-allergic, non-allergic inflammatory and toxic effects (Schlosser 2019). However, regulatory exposure limits have not been established for exposure to bioaerosols including occupational and ambient air exposures. Regarding bioaerosols, exposure-response relationship is lacking for most agents (Macher 1999; Eduard 2009; Searl et al. 2008; Walser et al. 2015). Voluntary numerical guidelines for most bioaerosol exposures have also not been established by the scientific community.

The Environment Agency for England (and Wales until 2013; now referred to as the Environment Agency) published a position statement with provisional guidance for composting operators when applying for an operating permit (Environment Agency 2010). It states that acceptable levels of bioaerosols, measured using the standardized sampling protocol (Association for Organics Recycling [AfOR] 2009), above upwind background concentrations, need to be maintained at 250 meters (820 feet) or at the nearest sensitive receptor (such as a dwelling or place of work), whichever is closer, to protect public health, as bioaerosol concentrations are considered to generally reduce to near-background levels within 250 meters (Wheeler et al. 2001). The acceptable levels are:

- 1000 cfu/m³ for total bacteria.
- 300 cfu/m³ for gram-negative bacteria.
- 500 cfu/m³ for *Aspergillus fumigatus*.

These levels are guidelines and are not based upon dose-response relationships or health measures. The Environmental Agency has not established guideline levels for endotoxins.¹

Original Draft Environmental Impact Report, Appendices, and Comments

The Draft EIR and its appendices contain an analysis of air quality impacts including particulate matter (PM₁₀ and PM_{2.5}) and odor. However, the analysis did not specifically address bioaerosols.

During the public review period for the Draft EIR, three comments were received relating to bioaerosols. Key issues raised in these comments include:

- Whether the Project would increase the potential for bioaerosol generation from the site;
- Whether the Project would increase inhalation exposure hazards for Z-Best workers, agricultural workers on neighboring properties, or neighboring residents; and
- Whether the Project would increase potential for deposition of bioaerosols on food crops grown on adjacent properties.

Literature Review

AECOM conducted an extensive literature search and reviewed numerous research papers providing evaluations of the potential impacts of bioaerosols associated with composting facilities throughout the world. However, these studies were conducted at a variety of different composting facilities that may utilize different raw feedstock, control methods, and/or composting processes, or which may be co-located with other bioaerosol-generating facilities such as wastewater treatment ponds, that limit direct comparison with the Z-Best facility. However, a brief summary of key findings from pertinent studies is reproduced here to provide background and context.

Studies of bioaerosol emissions from composting facilities largely test for the opportunistic pathogenic fungus *Aspergillus fumigatus* and mesophilic bacteria. *A. fumigatus* is commonly identified in composting bioaerosols (Wéry 2014) and is an allergen that has been linked to allergy and asthma symptoms in sensitive individuals (Chaudhary and Marr 2011). While enteric pathogens like *Salmonella* and shiga-toxin producing *E. coli* can possibly be found in raw materials entering municipal solid waste

¹ An endotoxin is a lipopoly-saccharide found in the cell wall of Gram-negative bacteria. It is a pyrogen which induces inflammation and fever as an immune response in higher organisms. Endotoxins can be found on the outer membranes of bacteria like *Escherichia coli*, *Salmonella*, *Shigella*, *Vibrio cholerae*, and *Haemophilus influenzae*.

composts, composts that are maintained at >55 °C demonstrate rapid inactivation of these enteric pathogens (Wichuk and McCartney 2007). Additionally, studies that characterized the species of bacteria present in MSW compost bioaerosols did not discover enteric pathogens in the bioaerosols by either culturing methods or a more sensitive DNA sequencing technique (Wéry 2014).

Bioaerosol emission rates and dispersal at composting sites are influenced by many factors, including compost temperature, sorting, shredding and turning of the piles, geographic area, topography, meteorological conditions (e.g., temperature, humidity, wind and weather), and the composition of the source organic material (Conza et al. 2013).

Pearson et al (2015) performed a systematic review of studies of bioaerosol exposures from waste composting and related health effects indexed in bibliographic databases up to July 2014. Robertson et al (2019) provided an updated review up to June 2018, which concluded that given the absence of any consistent evidence on the toxicity of bioaerosols from composting facilities, there is insufficient evidence to provide a quantitative comment on the risk to nearby residents from exposure to composting bioaerosols.

In a study of three Italian composting plants, Fracchia et al (2005) concluded that activities involving mechanical movement of the composting mass and processes occurring indoors represented the greatest potential risk for plant workers, which was consistent with other studies reviewed by that author (Epstein 1994; Millner et al. 1994; Marchand et al. 1995; Breum et al. 1997; Reinthaler et al. 1997; Folmsbee and Strevett 1999; Neef et al. 1999; Hryhorczuk et al. 2001).

The same study found that the quality and the quantity of treated raw material, as well as the level of activity at the facility, seemed to affect the bacterial contamination, with the highest levels of contamination detected in facilities that treated unsorted solid urban waste and/or that underwent high levels of composting activities. Lower levels of contamination were detected in the facility that had a low level of activity and only treated highly selected organic wastes (Fracchia et al 2005).

Some of the common exposure concerns from composting facilities include *A. fumigatus*, endotoxins, β -1,2 Glucans, and organic dust toxic syndrome (ODTS). Exposure to fungal spores was reported to be among the most significant outcomes although the risk of exposure was generally limited to general respiratory complaints rather than allergy or infection.

One study showed that compost could be a reservoir of *Legionella* bacteria but recommended that further studies are needed to evaluate the extent of the risk to humans deriving from the bioaerosol produced from composting facilities (Conza et al 2013).

Another study found that workers involved in manual sorting of unseparated domestic waste, as well as workers at compost plants, experience more or less frequent symptoms of ODTS (cough, chest-tightness, dyspnea, influenza-like symptoms such as chills, fever, muscle ache, joint pain, fatigue and headache), gastrointestinal problems such as nausea and diarrhea, irritation of the skin, eye and mucous membranes of the

nose and upper airways, etc. In addition, cases of severe occupational pulmonary diseases (asthma, alveolitis, bronchitis) have been reported (Poulson et al 1995).

The distance at which airborne impacts related to composting facilities can affect neighboring areas has been reported to vary between approximately 200 and 500 meters downwind of the composting facilities. However, many of these studies were based on odor thresholds and not on the measurement or impacts of bioaerosols or fugitive dust emissions. Some studies that specifically addressed bioaerosols found that bioaerosol emissions generally reduced to background levels within approximately 75 to 300 meters (246 to 984 feet). For example:

- Milner et al. 1994 after reviewing published data concluded that “the data have indicated that at distances of 76-152 meters (249-499 feet) from the compost facility perimeters the airborne concentrations of *Aspergillus fumigatus* were at or below background concentrations”.
- At the distance of 150 meters (492 feet) from the composting plant there is no increased risk of contamination due to bioaerosols in the air. (Vitězova and Vitěz 2013).
- Sanchez-Montero et al. 2005 monitored airborne concentrations of *Aspergillus fumigatus* and mesophilic bacteria at various upwind and downwind locations from a greenwaste composting facility in the United Kingdom over a 12-month period. Results showed that concentrations of both microorganisms 40 meters (131 feet) downwind of the facility did not differ from background levels during periods when no composting activities were taking place, but that during periods of vigorous activity (such as shredding, screening and pile turning) airborne concentrations of both microorganisms were up to two logarithmic units higher at 25 and 40 meters (82–131 feet) downwind, but remained similar to background levels at locations 200 to 300 meters (656-984 feet) downwind.
- LeGoff et al. (2012) compiled data obtained from 12 different sampling campaigns carried out at 11 composting plants at distances from 30 to 500 meters (98–1,640 feet), with samples collected during a turning activity. For all campaigns, an impact was measurable up to distances of 100 meters (328 feet). Further away, the impact was not systematically observed as it depended on meteorological conditions (windspeed) and on levels of bioaerosol emissions. Beyond 200 meters (656 feet), the emissions were largely dispersed, falling to the background level.

Most of the above studies were conducted on windrow composts. The proposed composting process at the Z-Best facility would involve static aerated piles with negative airflow that will be blown through a shredded wood biofilter. Sanchez-Moderno et al. (2003) investigated commercial composting facilities that were systems similar to the Project and used static piles with forced aeration where the exhaust air was blown through biofilters for odor control. Bioaerosol samples were collected before the biofilter (within the composting hall) and 40 cm above the surface of the biofilter. They found that *A. fumigatus* concentrations before the biofilter (within the composting hall) were significantly higher than background levels. This was likely due to the release of material from the forced aeration and mechanical agitation of the compost. However, in all areas sampled, the *A. fumigatus* concentrations were reduced by more than 90%

after passing through the biofilter systems and the post biofilter concentrations were similar or only slightly higher than background levels. This demonstrates that the biofilter successfully filtered *A. fumigatus* and prevented the fungus from dispersing into the air.

There is little available literature on modeling the dispersal of bioaerosols emitted by composting facilities. Wery et al (2014) suggests that this is partly due to the fact that a facility’s range of activities and fluctuations in temperature and weather lead to episodic or periodic changes in aerosol release from such facilities. These wide changes make modeling difficult. The same study goes on to note that in particular, the distance at which the bioaerosol concentration reverts to the level of the background noise is still under debate and different results in the literature are due notably to the variable nature of emissions as well as the influence of diverse factors on aerosol dispersal.

Review of existing and proposed composting processes, raw materials, agents, and environmental conditions at Z-Best facility

As explained above, bioaerosol emission rates and dispersal at composting sites are influenced by many factors, including compost temperature, sorting, shredding and turning of the piles, geographic area, topography, meteorological conditions (e.g., temperature, humidity, wind and weather), and the composition of the source organic material (Conza et al 2013).

Based on the findings of previous studies, emission of bioaerosols at the Z-Best Facility would be anticipated to occur during activities such as unloading/loading, sorting/grinding, turning of the greenwaste windrows, aeration of MSW compost piles, and screening/blending, as well as during movement of materials from one step of the process to another. The volume of emissions would be anticipated to vary based on the frequency and duration of such activities and the volume of feedstock being processed.

A comparison of composting processes, materials, and conditions at the existing Z-Best facility with those that would be part of the proposed Project is provided in Table 1 below.

Table 1. Comparison of Existing and Proposed Site Operations

Variables	Existing Operations (CTI system)	Proposed Operations (ECS system)
Greenwaste Compost Throughput	Approx. 700 TPD average	Approx. 700 TPD average
Greenwaste Compost Method	Initial processing: portable horizontal grinder Composting: 9-16 weeks in open windrows with turning on regular basis. Temperature and moisture controlled. Pre-screening stockpiles: 0-2 days Screening then trucked to Area 2 for blending with additives or amendments to create finished product.	Initial processing: new electric shredder and existing grinder Composting: unchanged from existing. Pre-screening stockpiles: unchanged from existing Screening: unchanged from existing, except that movement from Area 1 to Area 2 will occur using an open overland conveyor.

Variables	Existing Operations (CTI system)	Proposed Operations (ECS system)
		Blending: unchanged from existing.
Greenwaste Compost Location	<p>Pre-processing: Area A1</p> <p>Primary screening: Area 1</p> <p>Primary windrows: Area 1C</p> <p>Screening stockpiles: Area 2</p> <p>Woody waste grinding: Area 1</p> <p>Compost overs grinding: Areas 1 and 2</p>	<p>Pre-processing: Area A1</p> <p>Primary screening: Areas 1 and 2</p> <p>Primary windrows: Area 1C</p> <p>Screening stockpiles: Area 2</p> <p>Woody waste grinding: Areas 1 and 2</p> <p>Compost overs grinding: Areas 1 and 2</p>
MSW Compost Throughput	700 TPD average	1,575 TPD average
MSW Processing Stages and Durations	<p>Composting via Compost Technologies Inc. (CTI) bagged system (14 weeks)</p> <p>Primary screening stockpile (10-14 days)</p> <p>Curing piles (up to 180 days max)</p> <p>Secondary screening to finished product.</p>	<p>Composting via Engineered Compost Systems (ECS) system (4-5 weeks)</p> <ul style="list-style-type: none"> - Primary CASP bunkers - Secondary ASP bunkers <p>Curing piles: unchanged from existing.</p> <p>Secondary screening to finished product: unchanged from existing, except that screening equipment will be replaced with new.</p>
MSW Material Handling/Movement	<p>Pre-screened MSW unloaded from trucks onto a feed table conveyor using truck or loader then fed into the compaction unit of the bagging machine.</p> <p>Composts within bags for 14 weeks.</p> <p>From bags, composted material is then hauled by trucks to primary screening stockpile for 10-14 days.</p> <p>Screened materials moved to curing piles by loaders and/or trucks for up to 180 days.</p> <p>Materials are then screened again then moved from secondary screening area to finished product storage area by trucks.</p>	<p>Pre-screened MSW unloaded from trucks and placed into primary phase CASP bunkers using front end loaders (1 new loader proposed).</p> <p>Primary composting within CASP bunkers for 3-4 weeks.</p> <p>From primary bunkers, material goes through primary (garbage) screening and is then moved to secondary phase ASP bunkers using front end loaders.</p> <p>Secondary composting within ASP bunkers for up to 17 days.</p> <p>From secondary bunkers materials moved to curing piles by loaders and/or trucks for up to 180 days.</p> <p>Materials are then screened again then moved from secondary screening area to finished product storage area by trucks.</p>
MSW Composting Location	<p>CTI Composting inside thermoplastic compost bags approximately 12-14 feet in diameter and 350 feet in length within Area 1B.</p> <p>Curing and screening: Area 1B.</p> <p>Blending & storage of finished product: Area 2.</p>	<p>Primary ECS composting phase – in concrete bunkers up to 9 feet depth capped by 6 inches of pre-composted material (biolayer) within Area 1B.</p> <p>Secondary ECS composting phase – in concrete bunkers up to 9.5 feet depth (uncapped) within Area 1B.</p> <p>Curing and screening Area 1B.</p> <p>Blending & storage of finished product in Area 2.</p>
MSW Composting Aeration	Two blowers per bag. Fan aeration through HDPE pipes and holes on sides of bags (bags kept open for first 2 days). Estimated airflow of 45,000 cubic feet of air per ton of feedstock.	Primary phase – negative suction through floor with exhaust discharged upward through biofilter bed. Estimated airflow of 389,000 cubic feet of air per ton of feedstock.

Variables	Existing Operations (CTI system)	Proposed Operations (ECS system)
		Secondary phase – positive upward discharge. Estimated airflow of 389,000 cubic feet of air per ton of feedstock.
Duration to pathogen reduction temperature of 131 F	Approximately 5 to 6 days	Approximately 3 days
Leachate	Seepage from compost bags covered with mulch. Stormwater from pad directed to unlined drainage swales and ditches leading to sedimentation basin.	Leachate would be collected at primary and secondary locations and pumped to detention basin for reuse. Stormwater from pad would be collected by French drains and distributed to detention basin for reuse. The existing basin is proposed to be reconfigured and lined to prevent percolation into groundwater.

Source: ECS Memo - Process BMPs and CompTroller Process Control Strategy, 9/21/21; Odor Impact Management Plan Z-Best Composting Facility, 10/1/13, Draft EIR Z-Best Composting Facility Modifications January 11, 2020, Z-Best CTI Temperature Data Sheet, May to August 2021; Z-Best Odor Model Metrics, June 2019. Power Use Comparison: ECS versus CTI Composting November 2022.

Acronyms:; F: Fahrenheit; MSW: municipal solid waste, TPD: tons per day.

For the greenwaste processing activities, the volume and source composition of greenwaste feedstock would not change as a result of the Project and method of greenwaste composting would remain the same, except that an electric shredder will be added to the pre-processing system, which would reduce the volume of material that is ground by the existing portable diesel horizontal grinder; the location where woody waste grinding will occur would be expanded to include Area 2 (currently limited to Area 1 only); and an overland conveyor system would be used to transfer materials from Area 1 to Area 2 (currently trucks). These changes could affect bioaerosol emissions and dispersal in the following ways:

- Expanding the location of the primary screening and woody waste grinding activities to Area 2 would change the location of bioaerosols emitted during screening and grinding, which could affect dispersal patterns, but would not increase overall emissions.
- Use of an overland conveyor system to move greenwaste compost from Area 1 to Area 2 may be expected to increase bioaerosol emissions compared to the current use of trucks, due to the additional agitation of materials, which would increase the likelihood of biological particles becoming airborne. The use of a water misting system around the conveyor system may be an option for reducing the release of dusts and bioaerosols.

For MSW processing activities, the source composition of inbound materials is not anticipated to change, but the volume of materials processed would be increased substantially (more than double) as a result of the Project. If all other factors were held equal, then this increase in volume would be anticipated to result in a doubling of bioaerosol emissions at the facility. However, because the Project would also use a new process for MSW composting, other factors would also influence the quantity and type of bioaerosol emissions and their dispersal, as discussed below.

- The active composting phase of the existing CTI system occurs inside bags for the entire duration of the composting phase, whereas both the primary and secondary phases of the proposed ECS system would occur in three-sided concrete bunkers that are open to the air on the top surface and one side. The proposed Project would therefore increase the surface area of materials exposed to wind, which in turn would increase the potential for bioparticles to be dispersed. Although the primary phase CASP bunkers are capped with a bio-layer of finished compost material, such material could also be a source of bioaerosols that could be dispersed. The proposed irrigation system that would be installed on the bunkers would limit the amount of bioaerosols compared to if the bunkers were not watered regularly.
- The proposed aeration system for the ECS primary bunkers would utilize downward suction to draw air through the pile to a vent in the floor (negative aeration) with the exhaust passing through a biofilter consisting of a bed of shredded wood with a depth of 4 to 6 inches before being released into the air. The primary purpose of the biofilter is to capture larger particulate matter and odors associated with the primary compost phase. Similar biofilters have been demonstrated to reduce *A. fumigatus* bioaerosols to levels that are equivalent to background levels (Sanchez-Monedero et al 2003); however, the biofilter materials themselves could be an additional source of bioaerosols if bacteria and fungi are able to grow within the biofilter matrix (Muszyński et al 2021). Periodic removal and replacement of the biofilter materials would be anticipated to reduce the potential for such growth within the biofilter.
- The secondary bunkers would be positively aerated by air being pushed through the compost from the floor to the top of the pile, increasing the potential for bioaerosol emissions from the surface of the secondary bunkers.
- The bags used in the existing CTI system are aerated by blowers which feed into the bags via pipes. The air from the blowers exhausts through the bag openings for the first two days, and then through ventilation holes along the sides of the bags for the remainder of the composting phase. The volume of air passing through the CTI bags is relatively low (estimated at approximately 45,000 cubic feet of air per ton of feedstock) compared to the volume of air (389,000 cubic feet of air per ton of feedstock) that would flow through the bunkers during the primary and secondary phases of the proposed ECS system (ECS 2022).
- In addition, the new ECS system would include an extra step of material movement (from primary bunkers to secondary bunkers) that is not present within the current CTI system. This additional material handling would be expected to increase bioaerosol emissions, due to the additional agitation of materials, which would increase the likelihood of biological particles becoming airborne.
- The proposed ECS system is expected to reach pathogen reduction temperatures of 55 °C in the primary composting phase after 48 hours, whereas the existing CTI system has been documented to take up to 6 days to reach the same temperature. Attainment of pathogen reduction temperatures over a shorter period of time is expected to reduce the number of viable organisms, particularly pathogenic enteric bacteria that can cause intestinal illness.

- The leachate and stormwater capture improvements associated with the ECS system are expected to reduce bioaerosol production and distribution as more of the leachate will be captured and pumped to detention basins, rather than the current process of being covered with mulch and left to evaporate.
- The installation of a liner on the existing detention pond will reduce the potential risk of microbiological contamination of the groundwater. This could limit potential impacts to nearby agricultural crops if the groundwater is used for irrigation purposes.

Surrounding Area Review

The Z-Best facility is located in a sparsely populated area of Santa Clara County, California that is surrounded by agricultural lands that are used to produce food crops. **Figure 1** shows the active composting areas (Areas 1A, 1B, and 1C) of the Z-Best facility and outlines buffer zones of 75 m and 300 m from the edge of the active composting area. As noted above, data from the literature indicates that bioaerosols reduce to background levels within 75 to 300 m (246 to 984 feet) from composting areas. The greatest risk related to bioaerosols would be within the 75 m buffer, with the risk decreasing with distance away from the compost. The majority of the changes to the facility with the proposed Project would be within Area 1B, and therefore the actual likely impact from potential bioaerosol emissions would be smaller than that shown on the figure. The nearest sensitive residential receptor is understood to be approximately 225 meters (738 feet) away from the boundary of the Z-Best facility and approximately 400 meters (1,312 feet) away from the boundary of Area 1B. The nearest school is the Dr. TJ Owens Gilroy Early College Academy, located approximately 2.8 miles northeast of the Project site in Gilroy.

Several commercial buyers of produce have rules or guidelines concerning the growth of food crops in proximity to various activities, including required setback distances from composting facilities. The distances vary widely between guidelines, and none of the guidelines include an explanation of how the required setback distance was calculated. For example, Taylor Farms requires a setback of 1,200 feet (366 meters) from composting operations involving manure or animal products (Taylor Farms 2021); Dole Foods prohibits the storage of composted manure and/or compost within 1,200 feet of growing crops (Dole Foods 2019); and McDonalds requires a setback of 1 mile (5,280 feet or 1,609 meters) from any commercial composting facility or requires risk mitigation strategies if such a setback cannot be maintained (McDonalds 2012). As a result, it is understood that the farms adjacent to the Z-Best facility leave certain fields fallow and/or cannot supply certain buyers from fields closest to the Z-Best facility (Willoughby 2019; Taylor 2022). Since the proposed Project will not change the boundary of the facility, there will be no change to the produce farming setback requirements that currently apply to the Z-Best facility.

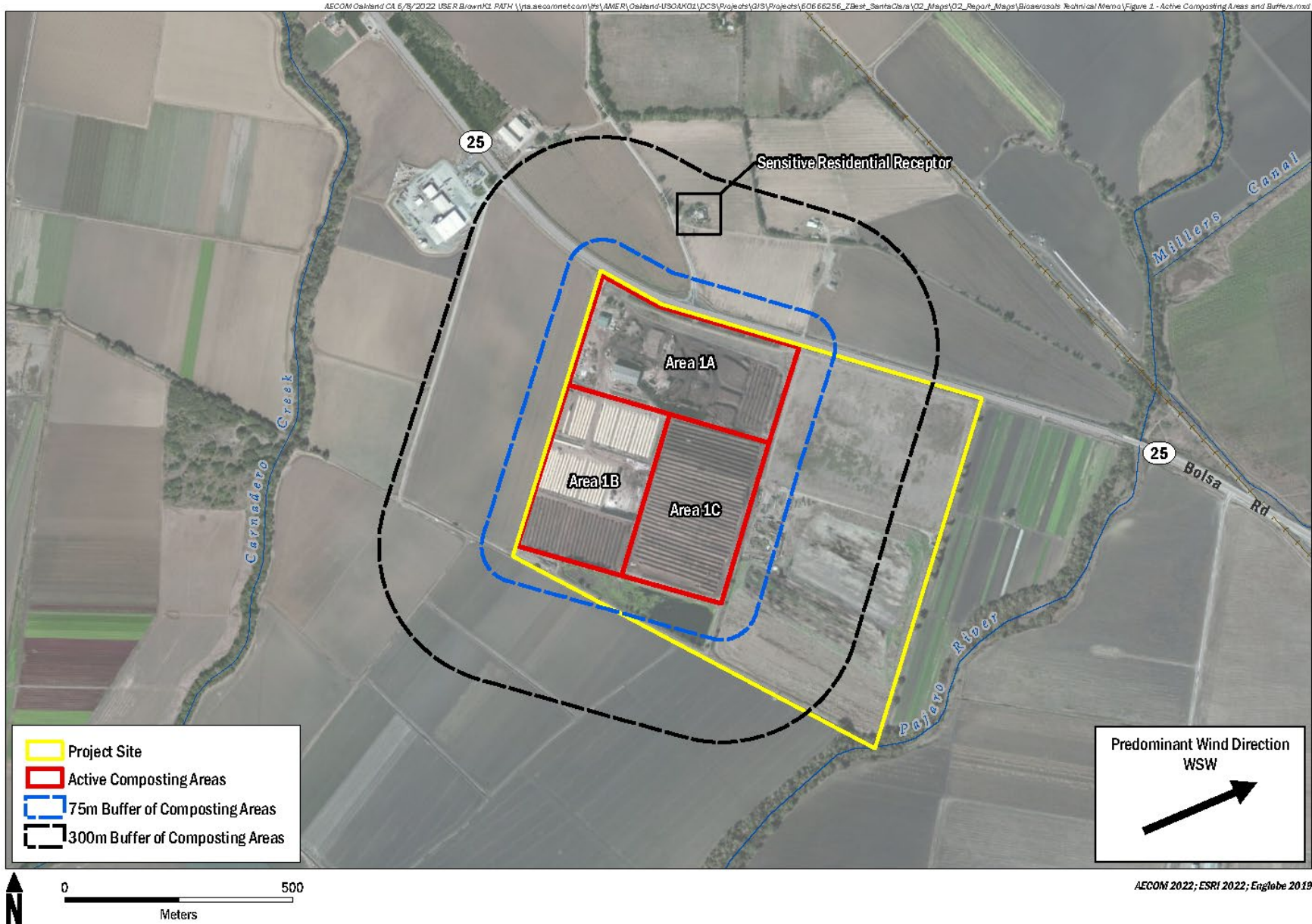


FIGURE 1
Active Composting Areas and Buffers

Conclusions and Recommendations

Based on review of the Project and other information sources discussed above, AECOM offers the following conclusions regarding the potential for bioaerosol emissions to increase at the site as a result of Project implementation.

- It is AECOM's opinion that the total amount of bioaerosols emitted from the Z-Best facility's proposed ECS system could increase compared to existing conditions, largely due to the proposed doubling of MSW being processed. However, because the current and proposed composting systems operate so differently, there is not enough data to reach a definitive conclusion.
- Other variables that could potentially cause an increase in bioaerosol production include the use of an open conveyor system for transport of finished green waste compost and an increase in the amount of aeration for MSW composting.
- Some variables associated with the ECS system may cause a reduction in bioaerosol production and emissions and/or change the types of bioaerosols emitted, including achieving pathogen reduction temperatures after two days using the ECS system instead of 6 days using the CTI method, distributing air through a biofilter, and using an automated aeration control and monitoring system that adjusts aeration rates to maintain moisture. The improved control of leachate and storm water runoff may also be expected to reduce bioaerosol production.

A separate question which cannot be fully answered due to limitations on available information is whether the potential increased bioaerosol emissions from the Z-Best facility from the Project would have the potential to create significant health effects for nearby residents, agricultural workers on adjacent properties, or to impact the viability of horticultural activities on adjoining parcels. With respect to this question, are the following factors:

- Bioaerosol emissions from the Z-Best facility are expected to include a wide variety of microorganisms including but not limited to bacteria, fungi, viruses, protozoa, algae as well as their metabolic byproducts and toxins including β -1,2 Glucans, microbial volatile organic compounds (MVOCs), endotoxins, mycotoxins, other toxins. Most of these bioaerosols are ubiquitous to the environment and already exist in rural and agricultural areas.
- Composting operations fluctuate on a daily basis and potential bioaerosol exposures are periodic and irregular. Vigorous activities such as shredding, screening, and transporting feedstock or compost are likely to generate the highest volumes of bioaerosols.
- Multiple factors influence dispersion of bioaerosols including the wind direction, range of organism types and sizes; the quantity, location, frequency, and duration of emissions; and meteorological conditions.
- Due to the lack of exposure standards and dose-response data for most bioaerosols as well as the lack of existing bioaerosol sampling data at the Project site, it is not

clear whether the potential increase in MSW processing and attendant bioaerosol emissions would have a significant health impact to nearby receptors.

- Bioaerosol concentrations quickly reduce with distance, and previous studies at other facilities have found that concentrations typically reduce to background levels within approximately 75 to 300 meters (246 to 984 feet) downwind of composting activities. **Figure 1** shows the Z-Best facility and indicates the adjoining areas that are within 75 to 300 meters of the site.
- The closest residential sensitive receptor is 225 meters (735 feet) from the boundary of the Z-Best facility, and is approximately 400 meters (1312 feet) from the area of the site where the new ECS technology would be installed (Area 1B). The residential receptor is just within the 250 meters (820 feet) residential setback recommended by the Environment Agency of England and is beyond the distance where many of the cited studies were able to detect bioaerosols above background levels. Thus, the risk to residents within that home are expected to be minimal. All other residential dwellings are beyond 300 meters.
- The risk to workers on adjacent properties is expected to decrease with distance from the property boundaries and be highly dependent on wind direction and the amount of time that such workers would spend in close proximity to the facility during downwind conditions.
- The predominant wind direction in the vicinity of the site is from the west-southwest (Englobe 2019). Active MSW composting occurs within the southwest portion of the Z-Best facility; therefore, the majority of the time the rest of the Z-Best facility would act as a buffer between the areas of active MSW composting and adjacent properties. **Figure 1** also indicates the predominant wind direction in the vicinity of the Project site.
- The potential for aerial deposition of enteric pathogens on nearby food crops from MSW compost is not supported by the literature. It was noted that many of the research studies that have been conducted and that were cited in the public comments were based on water-based impacts from contaminated irrigation systems. Based on findings of other relevant studies, as detailed in the literature review section above, it is AECOM's opinion that the majority of enteric pathogens will become inactivated by the heat of the primary composting process and thus it is not expected for there to be any increased risk of enteric pathogens to adjacent food crops with the proposed Project.
- The industry guidelines for setbacks of food crop production from composting facilities appear to be based on a fixed distance from the facility and not the quantity of material processed or the method of composting. Since the proposed Project would not increase the geographical size nor alter the boundaries of the facility, the industry required setbacks for food crops from the Z-Best composting facility would not change.

References

- Chaudhary, N., Marr, K.A. Impact of *Aspergillus fumigatus* in allergic airway diseases. *Clin Transl Allergy* 1, 4 (2011). <https://doi.org/10.1186/2045-7022-1-4>
- Conza L, Pagani SC, Gaia V (2013) Presence of *Legionella* and Free-Living Amoebae in Composts and Bioaerosols from Composting Facilities. *PLoS ONE* 8(7): e68244. doi:10.1371/journal.pone.0068244
- County of Santa Clara, 2020. Draft EIR Z-Best Composting Facility Modifications January 11, 2020.
- ECS 2021. Memo - Process BMPs and CompTroller Process Control Strategy. September 21.
- ECS 2022. Estimated Power Use Comparison: ECS Primary CASP and Secondary ASP versus CTI Bags. November 16.
- Eduard W, Pearce N, Douwes J. Chronic bronchitis, COPD, and lung function in farmers: the role of biological agents. *Chest*. 2009 Sep;136(3):716-725. doi: 10.1378/chest.08-2192. Epub 2009 Mar 24. PMID: 19318669.
- Fracchia, L., S. Pietronave, M. Rinaldi, and M.G. Marinotti. 2006. The assessment of airborne bacterial contamination in three composting plants revealed site-related biological hazard and seasonal variations. *Journal of Applied Microbiology* 100 (2006) 973-984. [doi:10.1111/j.1365-2672.2006.02846.x](https://doi.org/10.1111/j.1365-2672.2006.02846.x)
- Macher, J. 1999. Bioaerosols: Assessment and Control, American Conference of Governmental Industrial Hygienists, ACGIH.
- Millner, P., Olenchok, S.A., Epstein, E., Rylander, R., Haines, J., Walker, J., Ooi, B.L. Horne E., Maritato. M. 1994. Bioaerosols associated with composting facilities. *Compost Science and Utilization*. 2(4): 6-57.
- Muszyński A, Tabernacka A, Załęska-Radziwiłł M. 2021. How to Reduce the Emission of Microorganisms from a Biofilter Used to Treat Waste Gas from a Food Industry Plant. *Atmosphere*. 2021; 12(6):673. <https://doi.org/10.3390/atmos12060673>
- NIOSH 2017. <https://www.cdc.gov/niosh/nmam/pdf/chapter-ba.pdf>
- Pearson, C., E. Littlewood, P. Douglas, S. Robertson, T.W. Gant, A.L. Hansell. 2015. Exposures and health outcomes in relation to bioaerosol emissions from composting facilities: a systematic review of occupational and community studies. *J. Toxicol. Environ. Health part B*, 18 (2015), pp. 43-69. <https://doi.org/10.1080/10937404.2015.1009961>
- Poulsen, O.M., N.O. Breum, N. Ebbehøj, A.M. Hansen, U.I. Ivens, D. van Lelieveld, P. Malmros, L. Matthiasen, B.H. Neilsen, E.M. Nelisen, et al. Sorting and Recycling of Domestic Waste: Review of occupational health problems and their possible causes. 1995 May 19;168(1):33-56. <https://pubmed.ncbi.nlm.nih.gov/7610383/>

- Robertson, Sarah, Philippa Douglas, Deborah Jarvis, Emma Marczylo. 2019. Bioaerosol exposure from composting facilities and health outcomes in workers and in the community: A systematic review update, *International Journal of Hygiene and Environmental Health*, Volume 222, Issue 3, 2019, Pages 364-386, ISSN 1438-4639, <https://doi.org/10.1016/j.ijheh.2019.02.006>.
- Sanchez-Monedero, M.A., Stentiford, E.I., Mondini, C. Biofiltration at Composting Facilities: Effectiveness for Bioaerosol Control. 2003 37 (18): 4299-4303. <https://doi.org/10.1021/es0202309>
- Sanchez-Monedero, M.A., E.I. Stentiford, and S.T. Urpilainen. 2005. Bioaerosol Generation at Large-Scale. *BioCycle* September 2005, Vol. 46, No. 9, p. 50. <https://www.biocycle.net/bioaerosol-generation-at-large-scale/>
- Schlosser, O. 2019. Bioaerosols and health: current knowledge and gaps in the field of waste management. *Detritus*, 5(1): 111–125. Available: <http://dx.doi.org/10.31025/2611-4135/2019.13786>. Accessed June 2022.
- Searl, A. 2008. Exposure-response relationships for bioaerosols emissions from waste treatment processes. Edinburgh, UK: Institute of Occupational Medicine. Defra project WR0606.
- Sykes, P., Morris, R.H.K., Allen, J.A., Wildsmith, J.D., and K.P. Jones. 2011. Workers' exposure to dust, endotoxin and β -(1-3) glucan at four large-scale composting facilities. *Waste Management*. 2011 Mar;31(3):423-30. Available: <https://doi.org/10.1016/j.wasman.2010.10.016>. Accessed June 2022.
- Vítězová, M., & Vítěz, T. (2013). Microbiological characteristics of bioaerosols at the composting plant. *Acta Univ. Agric. Silvic. Mendel. Brun.*, 61(5), 1479-1485. doi: 10.11118/actaun201361051479
- Walser SM, Gerstner DG, Brenner B, et al Evaluation of exposure-response relationships for health effects of microbial bioaerosols - a systematic review. *Int J Hyg Environ Health*. 2015;218(7):577-89
- Wéry N. Bioaerosols from composting facilities--a review. *Front Cell Infect Microbiol*. 4 (2014):1-9. <https://www.frontiersin.org/article/10.3389/fcimb.2014.00042>
- Wichuck, K.M. and McCartney, D.M. A review of the effectiveness of current time-temperature regulations on pathogen inactivation during composting. *J Environ Engineering and Science*. 2007 6:5, 573-586, <https://doi.org/10.1139/S07-011>
- Z-Best Composting Facility 2013. Odor Impact Management Plan Z-Best Composting Facility.
- Z-Best CTI Temperature Data Sheet, May to August 2021.

To: Mr. Sam Gutierrez
County of Santa Clara
Department of Planning and
Development
70 West Hedding Street, 7th Floor
East Wing
San Jose, CA 95110

Project name: Z-Best Composting Facility
– CEQA Services

Project ref: 60666256

From: Paola Peña, Air Quality and GHG
Emissions – CEQA Specialist

CC: Emmanuel Ursu
Valerie Negrete
Lizanne Reynolds

Date: January 9, 2023

Memorandum: NOx and GHG Mitigation Assessment

Introduction

This memorandum provides an evaluation of the appropriateness, feasibility, and effectiveness of the suggested mitigation measures provided by the Bay Area Air Quality Management District (BAAQMD) in their February 26, 2021 comment letter on the Z-Best Composting Facility Modifications Draft Environmental Impact Report (DEIR). This letter was submitted as a comment on the DEIR for the Z-Best Composting Facility Project (project), which was circulated for public review from January 15 to March 1, 2021.

The BAAQMD letter provided comments and suggested additional mitigation measures for the following topics:

- Nitrogen oxides (NOx) construction emission reductions
- NOx operational emission reductions
- On-site operational greenhouse gas (GHG) emission reductions
- Off-site GHG emission reductions

Thus, the organization of this memorandum will be to summarize the DEIR's findings for NOx and GHG emissions under project construction and operations, update the construction emissions calculations for the project, and evaluate the feasibility and effectiveness of the suggested construction and operational emission reduction measures.

Summary of DEIR Findings Related to NOx and GHG Emissions

NOx Emissions – Construction

Construction of the project would generate NOx emissions from the exhaust of heavy-duty construction equipment and haul trucks. The DEIR utilized the California Emissions Estimator Model (CalEEMod, version 2016.3.2) to estimate the project's construction emissions. The maximum daily construction emissions of NOx were found to exceed the BAAQMD recommended threshold of significance. The DEIR included the following mitigation measure to reduce NOx emissions during construction:

Mitigation Measure 6-1a. *Prior to issuance of a grading permit, the project applicant shall develop a plan demonstrating that off-road equipment (more than 50 horsepower) to be used during construction (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet-average 20 percent NOx reduction compared to the most recent California Air Resources Board fleet average. Acceptable options for reducing emissions include the use of newer model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such become available. The plan shall be subject to review and approval by the County Planning Department.*

The DEIR concluded a significant and unavoidable impact stating that there is no feasible way to quantify all of the emissions reductions from the mitigation measure, and as a result there is no assurance that the mitigation measure would reduce NOx emissions to a level that is below the 54 pounds per day threshold.

NOx Emissions – Operation

Operation of the project would also generate NOx emissions associated with vehicle exhaust from employee commutes and haul trucks. The DEIR utilized the California Air Resources Board (CARB) on-road emissions inventory EMFAC model to estimate the project's operational emissions. The maximum daily and annual operational emissions of NOx were found to exceed the BAAQMD recommended thresholds of significance. The DEIR described that the primary source of increased NOx emissions is the increase in truck trips by contract waste haulers that are required to transport feedstock to the site and to transport finished products and unusable inert materials from the site. The DEIR included the following mitigation measure to reduce NOx emissions on-site during operation:

Mitigation Measure 6-2. *The applicant shall require that the engines of on-road trucks operating within the project site be shut off while queuing for loading and unloading for time periods longer than two minutes. This requirement shall be incorporated by the project applicant into contract specifications for all operators of [municipal solid waste] MSW, finished material, and waste haul trucks and the applicant shall ensure that all contractors comply with this contractual requirement.*

The DEIR concluded a significant and unavoidable impact stating that since the majority of the emissions are from the contract waste haulers, and the applicant has no control

over the on-road truck fleet of these contract waste haulers, NOx emissions would continue to exceed the thresholds of significance.

Update to the Construction Emissions

As described previously, the DEIR utilized CalEEMod 2016.3.2 to estimate the project’s construction emissions. CalEEMod 2016.3.2 was the latest version of CalEEMod available at the time of the analysis. Construction, consisting of grading, trenching, and paving activities, were anticipated to begin in April 2020 and last approximately 200 days. The DEIR also compared the project’s *maximum daily* construction emissions to the BAAQMD’s recommended *average daily* threshold of significance.

As such, this memorandum provides an update to the construction emission calculations to incorporate the following items:

- In June 2022, an updated version of CalEEMod (version 2022.1) was released.
- The revised anticipated construction start date for the project is Quarter 1 of 2023.
- The comparison of the project’s emissions to the BAAQMD thresholds of significance was revised to utilize the project’s *average daily* construction emissions, consistent with BAAQMD guidance, which states, “...for construction projects that are less than one year duration, lead agencies should annualize impacts over the scope of actual days that peak impacts are to occur, rather than the full year” (BAAQMD 2017).

Consistent with the analysis presented in the December 20, 2019, SCS Engineers Memo (“Emissions from Proposed Changes to Z-Best facility in Gilroy, California), the updated construction emissions assumed that construction would consist of a 3-month grading phase, 2-month trenching phase, and a 3-month paving phase. Construction equipment is anticipated to include a grader, an off-highway truck (water truck), compactor, rubber tired dozer, scraper, tractors/loaders, concrete pump truck, concrete finisher, paver, and a paving equipment. It is anticipated that the grading, trenching, and paving phases would require approximately 12, 5, and 25 daily worker trips, respectively. Grading activities would result in a balanced cut/fill and there would be no import or export of material. Additional modeling assumptions and details are included in Attachment A of this memorandum. Table 1 below presents the updated construction emission estimates associated with implementation of the project.

Table 1. Unmitigated Construction Criteria Air Pollutant Emissions

Description	ROG	NOx	PM ₁₀ (Exhaust)	PM _{2.5} (Exhaust)
Total Emissions (tons)	0.31	2.91	0.12	0.11
Average Daily Emissions (lbs/day) ¹	3.10	29.10	1.20	1.10
BAAQMD Average Daily Threshold (lbs/day)	54	54	82	54

Source: Estimated by AECOM in 2023 (see Attachment A for detailed modeling assumptions and outputs). BAAQMD average daily thresholds provided in the BAAQMD 2017 CEQA Guidelines (BAAQMD 2017).

Acronyms: ROG = reactive organic gases; NOx = nitrogen oxides; PM₁₀ = particulate matter less than 10 micrometers in diameter; PM_{2.5} = particulate matter less than 2.5 micrometers in diameter; lbs/day = pounds per day; BAAQMD = Bay Area Air Quality Management District.

Notes: ¹ Average daily emission estimates are based on 200 construction workdays.

As shown in Table 1, the updated construction emissions would not exceed the BAAQMD recommended thresholds of significance. Therefore, Mitigation Measure 6-1a would no longer be required. As described in the DEIR, the BAAQMD does not have quantitative mass emissions thresholds for fugitive coarse and fine particulate matter (PM₁₀ and PM_{2.5}). Instead, the BAAQMD recommends that all projects, regardless of the level of average daily emissions, implement applicable best management practices (BMPs), including those listed as Basic Construction Measures in the BAAQMD CEQA Guidelines (BAAQMD 2017). Thus, the fugitive dust reduction measures included in Mitigation Measure 6-1b of the DEIR would still be required; however, these would be updated to include only the Basic Construction Measures since construction emissions would not exceed the BAAQMD recommended thresholds of significance and the “Additional Construction Mitigation Measures” would not be required.

Table 2 presents the updated estimate of the project’s construction-related GHG emissions.

Table 2. Unmitigated Construction-Related GHG Emissions

Description	GHG Emissions (MT CO ₂ e)
Total Emissions	635

Source: Estimated by AECOM in 2023 (see Attachment A for detailed modeling assumptions and outputs).

Acronyms: GHG = greenhouse gas; MT CO₂e = metric tons of carbon dioxide equivalents

Evaluation of the Suggested Mitigation Measures

Additional NOx construction emission reductions

BAAQMD recommended the following emission reduction measures to reduce construction-related NOx emissions:

1. Zero-emissions construction equipment when available.
2. Interim Tier 4 engines for off-road equipment engines with less than 750 horsepower (hp). If Interim Tier 4 equipment are not available, use Tier 3 equipment with the Best Available Control Technology (BACT) for NOx emissions.
3. Final Tier 4 equipment for off-road equipment with engines greater than 750 hp. If Final Tier 4 equipment are not available, use Interim Tier 4 equipment with BACT for NOx emissions.
4. Grid power whenever possible, rather than relying on portable or back-up diesel generators. If grid power is not available, use alternative power such as battery storage, hydrogen fuel cells, or renewable fuels. If no other options are available, use Final Tier 4 diesel generators.

As shown in Table 1, the updated construction average daily emissions would not exceed the BAAQMD thresholds of significance. Therefore, the additional construction mitigation measures suggested by BAAQMD are not necessary to reduce NOx emissions.

Additional NOx operational emission reductions

BAAQMD recommended the following NOx emission reduction measures to reduce operational NOx emissions:

1. Encourage lower-emitting truck fleets by providing reduced entrance fees, line jumping, and other incentives to lower-emitting vehicles. A tiered system of reduced fees and other incentives can benefit operators with lower-emitting NOx trucks while providing the deepest discount to zero-emission vehicles.
2. Install Level 2 electric vehicle (EV) charging infrastructure in employee and visitor light-duty parking spots. This mitigation also will reduce NOx emissions from trips to the site.
3. In preparation for future zero-emission fleets, install conduit for EV charging stations at locations where trucks will be parked or idling. This mitigation also will reduce future NOx emissions from trips to the site.

As mentioned above, the primary source of increased NOx emissions is the increase in truck trips by contract waste haulers that are required to transport feedstock to the site and to transport finished products and unusable inert materials from the site. This on-road truck fleet is independent of the Z-Best facility operations. For reference, the project’s operational emissions presented in the DEIR are included in Table 3 below.

Table 3. Unmitigated Operational Criteria Air Pollutant Emissions

Description	ROG	NOx	PM ₁₀	PM _{2.5}
Existing Conditions (lbs/day)	2.70	74.49	1.55	1.48
Post-Project Peak Day Conditions (lbs/day)	7.05	197.68	4.11	3.93
Net Increase with Peak Day Project Conditions (lbs/day)	4.35	123.19	2.56	2.45
BAAQMD Daily Thresholds (lbs/day)	54	54	82	54

Source: SCS Engineers 2019 (See Table 7-7 of the DEIR).

However, implementation of the proposed project, which would enable Z-Best to compost up to 875 tons per day more MSW than is possible under existing conditions, would also result in a decrease in vehicle miles traveled from trucks currently transporting this waste to other landfills or to other composting facilities in the region. In other words, this waste would continue to be generated in the region and would need to be disposed in a landfill or an alternate composting facility in the absence of the proposed project.

The October 2020 memorandum prepared by SCS Engineers, “Emissions from Proposed Changes to Z-Best Facility in Gilroy, California,” (SCS October 2020 GHG

Letter) evaluated the potential avoided truck emissions under four scenarios in absence of the project, which included waste traveling to the Marina Landfill and an alternative composting facility in Vernalis.

As detailed in the SCS October 2020 GHG Letter, the potential avoided NOx emissions could range from approximately 49 pounds of NOx per day to approximately 153 pounds of NOx per day. When accounting for these potential avoided NOx emissions, the actual net increase in project emissions could range from 74 pounds of NOx per day or be entirely offset, resulting in a net reduction of 30 pounds of NOx per day. However, because the actual avoided vehicle miles traveled in the region due to implementation of the proposed project would vary on a daily basis based on the quantity of MSW and ultimate destination (landfill or alternate compost facility) in the region in the absence of the project, the DEIR analysis conservatively did not account for the avoided truck emissions.

Nonetheless, considering the unique nature of the proposed project's emissions and lack of feasibility in reducing emissions from independently owned truck fleets, the BAAQMD recommended on-site emission reduction measures were evaluated to consider reducing emissions to the extent feasible.

Since Z-Best facility operations implements fees based on material (i.e. feedstock) content, providing incentives such as reduced entrance fees and line jumping based on truck engine type would not be technically and operationally feasible and the facility would not have the operational control to collect information on independent truck fleet truck types and/or truck engine information. Furthermore, introducing a feature like line jumping, may potentially result in higher-emitting trucks idling for longer periods of time than necessary.

Since the proposed project would not change the parking capacity and configuration of the parking area is not anticipated to change, it would also be infeasible at this time to incorporate changes to the parking area at this time. Therefore, installation of Level 2 EV charging infrastructure in employee and visitor light-duty parking spots and/or installation of conduit for EV charging stations for trucks would not be possible under the current proposed project.

However, as described in the DEIR, the applicant does have control over how on-road vehicles are operated once on the project site; therefore, the truck idling limit per Mitigation Measure 6-2 above, would still be required.

Additional on-site operational GHG emission reductions

BAAQMD recommended the following additional on-site emission measures to reduce GHG emissions:

1. Invest in onsite renewable energy generation, such as rooftop solar at the existing operations building.
2. Join Silicon Valley Clean Energy's (SVCE) GreenPrime program and commit to purchasing 100 percent renewable energy or negotiating an electricity contract with SVCE for 100 percent renewable energy.

3. Encourage lower-emitting truck fleets by providing reduced entrance fees, line jumping, and other incentives to lower-emitting vehicles. A tiered system of reduced fees and other incentives can benefit operators with lower-emitting NOx trucks while providing the deepest discount to zero-emission vehicles.
4. Install Level 2 electric vehicle (EV) charging infrastructure in employee and visitor light-duty parking spots. This mitigation also will reduce NOx emissions from trips to the site.
5. In preparation for future zero-emission fleets, install conduit for EV charging stations at locations where trucks will be parked or idling. This mitigation also will reduce future NOx emissions from trips to the site.

The purpose of the project is to replace an existing composting technology at the Z-Best Facility with a newer technology that allows compost to be processed in a shorter amount of time, increasing the daily volume of municipal solid waste that may be accepted and processed at the facility. As described in the October 2020 memorandum prepared by SCS Engineers, "Emissions from Proposed Changes to Z-Best Facility in Gilroy, California," (SCS October 2020 GHG Letter) composting is an important component of the CARB 2017 Climate Change Scoping Plan, the State's strategy for achieving the California's 2030 GHG target, which states that "[The State] can invest in and streamline in-state infrastructure development to support recycling, remanufacturing, composting, anaerobic digestion, and other beneficial uses of organic waste." (CARB 2017) Compost diverts organic materials from landfills where they would break down and be emitted into the atmosphere as methane (CH₄), a potent GHG. Thus, by composting food waste and other organics, methane emissions are significantly reduced (USEPA 2021).

The SCS October 2020 GHG Letter, which was peer reviewed by AECOM in 2022, evaluated the GHG emissions benefit associated with implementation of the project. Since the project would result in an increase in the capacity of the facility to compost an additional 875 tons per day of municipal solid waste and/or foodwaste, implementation of the project would result in a GHG emissions reduction benefit by reducing the amount of methane generated by the waste that would have been landfilled if it were not composted. SCS utilized the CARB "Benefits Calculator Tool for Organics" program to calculate the GHG emission benefit from one year of the increased composting of material proposed by the project.

Due to waste diversion from landfill deposition, the project would provide a GHG reduction of approximately 86,231 metric tons of carbon dioxide equivalents (MTCO_{2e}) per year. After accounting for the currently estimated increase in operational GHG emissions of 4,064 MTCO_{2e} at the facility due to an increase in employee vehicle and haul truck trips, it is estimated that the project would result in a net GHG benefit of 82,167 MTCO_{2e} per year. Since the increased composting capacity proposed by the project would result in a significantly higher GHG emissions reduction benefit than the project's increased operational GHG emissions, the project would result in a net reduction in GHG emissions. In addition, the project is consistent with one of the State's strategy for achieving the 2030 GHG emissions target of increasing composting,

anaerobic digestion, and other beneficial uses of organic waste in the State. Thus, the additional GHG emission reductions recommended by the BAAQMD are not required.

Off-site GHG emission reductions

BAAQMD recommended the following off-site GHG emission reduction program to further reduce GHG emissions:

Once on-site GHG emission reductions measures have been exhausted, any remaining and necessary offset credits purchased to mitigate Project impacts should be real, permanent, quantifiable, verifiable, enforceable, and additional, and follow a hierarchy to prioritize benefits first within the community, city, region, or State (in order of location preference).

As described previously, the project would result in a net reduction in GHG emissions; therefore, an off-site GHG emission reduction program to reduce GHG emissions would not be required.

Summary

Based on the updated construction emissions analysis, construction of the project would not exceed the BAAQMD regional thresholds of significance. Therefore, the construction-related NOx emission reduction measures recommended by BAAQMD would not be required.

Regarding operational NOx emissions, as described above, given the unique nature of the proposed project's emissions and lack of feasibility in implementing changes to facility operations and reducing independently owned truck fleet emissions, the BAAQMD recommended on-site emission reduction measures would not be feasible to implement. However, the potential avoided NOx emissions from the reduced truck travel to other landfills or composting facilities could partially or entirely offset the on-road emissions associated with the proposed project. In addition, as fleets turn over older trucks per the CARB Truck and Bus Regulation and future developments under the Advanced Clean Trucks Regulation, the proposed project's on-road truck emissions would be expected to decrease. Therefore, additional onsite or offsite NOx emission reductions as recommended by BAAQMD would not be required.

As described previously, the project would result in a net reduction in GHG emissions; therefore, additional on-site or off-site GHG emissions reduction measures recommended by BAAQMD would not be required.

References

Bay Area Air Quality Management District (BAAQMD). 2017. California Environmental Quality Act: Air Quality Guidelines. Available online: https://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en. Accessed October 2021.

----. 2021. Z-Best Composting Facility Modifications Draft Environmental Impact Report (DEIR). February 26, 2021, Comment Letter.

California Air Resources Board (CARB). 2017. California's 2017 Climate Change Scoping Plan. Available online:
https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/scoping_plan_2017.pdf.
Accessed October 2021.

United States Environmental Protection Agency (USEPA). 2021. Reducing the Impact of Wasted Food by Feeding the Soil and Composting. Available online:
<https://www.epa.gov/sustainable-management-food/reducing-impact-wasted-food-feeding-soil-and-composting>. Accessed October 2021.

Emissions Summary

Annual Construction Emissions											
	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	CO2e
Year	tons/year										MT/year
2023	0.31	2.91	2.4	1.00E-02	0.53	0.12	0.65	0.17	0.11	0.27	635
Total Emissions (tons)	0.31	2.91	2.40	0.01	0.53	0.12	0.65	0.17	0.11	0.27	635

Notes: ROG = reactive organic gases; NOx = nitrogen oxides; CO = carbon monoxide; SO2 = sulfur dioxide; PM10 = particulate matter equal or less than 10 micrometers in diameter; PM2.5 = particulate matter equal or less than 2.5 micrometers in diameter

Average Daily Construction Emissions										
	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Total Emissions (tons)	0.31	2.91	2.40	0.01	0.53	0.12	0.65	0.17	0.11	0.27
Average Daily Emissions (pounds/day)¹	3.10	29.10	24.00	0.10	5.30	1.20	6.50	1.70	1.10	2.70
Threshold ²	54	54				82			54	
Exceed Threshold?	No	No				No			No	

Notes:
¹Average daily emission estimates are based on approximately 200 construction workdays.
²Thresholds from Table 2-1 of the BAAQMD CEQA Air Quality Guidelines (BAAQMD 2017)
 ROG = reactive organic gases; NOx = nitrogen oxides; CO = carbon monoxide; SO2 = sulfur dioxide; PM10 = particulate matter equal or less than 10 micrometers in diameter; PM2.5 = particulate matter equal or less than 2.5 micrometers in diameter

Start Date	1/3/2023
End Date	8/23/2023
Total Days of Construction	200
lb/ton	2000

Unit Conversions	
tons	pounds
1	2000

CalEEMod Inputs and Assumptions - all information confirmed in "Z-Best_DataNeedsRequest_09-02-21_with_notes"

Project Characteristics	Input	Notes
Project Name	Z-Best Composting Facility Project Construction	
Project Location	Santa Clara County Zip Code: 95110	
Climate Zone	4	
Land Use Setting	Rural	
Construction Start Date	1/2/2023	Assumes construction start date in Q1 2023
Operational Year	2023	
Utility	PG&E	

Land Use	Component	Size	Square Feet	Acreage
	General Light Industry	0	0	157.32

Construction Phases & Equipment	Notes
Construction Work Days	6 days per week

Phase	CalEEMod Phase	Duration	Equipment	Quantity	Hours Per Day	Notes
Grading	Grading	78 days	Graders	1	8	
			Water Truck	1	8	modeled as off-highway truck
			Other Construction Equipment	1	8	Compactor (172 HP)
			Rubber Tired Dozer	1	8	
			Scraper	5	8	
Trenching	Trenching	53 days	Tractors/Loaders	2	8	
Paving	Paving	69 days	Concrete Pump Truck	1	8	250 hp, modeled as off-highway truck
			Concrete Finisher	1	8	37 hp, modeled as other construction equipment
			Paver	1	8	
			Paving Equipment	1	8	

Cut/Fill and Haul and Worker Trips

PD: Overall, the cut and fill volumes for the proposed project would be balanced, with no net import or export required

Paving 0.74
 Total Impervious Area 810,000.00 From 2022-04 Site Plan 18.60

CalEEMod Phase	Worker Trips	Vendor Trips	Trip Length	Notes
Grading	24		default	
Trenching	10	2	default	
Paving	50	100	default	

Construction Mitigation
Watering unpaved roads
Watering twice per day

Z-Best Composting Facility Project Construction Custom Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Z-Best Composting Facility Project Construction
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	1.80
Precipitation (days)	29.8
Location	980 CA-25, Gilroy, CA 95020, USA
County	Santa Clara
City	Unincorporated
Air District	Bay Area AQMD
Air Basin	San Francisco Bay Area
TAZ	1938
EDFZ	1
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
General Light Industry	1.00	1000sqft	157	1,000	0.00	0.00	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-10-A	Water Exposed Surfaces

2. Emissions Summary

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	7.60	6.39	63.3	48.9	0.12	2.55	12.6	15.1	2.35	4.04	6.39	—	12,998	12,998	0.53	0.44	9.23	13,046
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	7.59	6.39	63.3	48.7	0.12	2.55	12.6	15.1	2.35	4.04	6.39	—	12,983	12,983	0.52	0.11	0.03	13,029
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	1.95	1.72	16.0	13.2	0.03	0.64	2.91	3.55	0.59	0.92	1.51	—	3,797	3,797	0.16	0.11	0.88	3,834
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.36	0.31	2.91	2.40	0.01	0.12	0.53	0.65	0.11	0.17	0.27	—	629	629	0.03	0.02	0.15	635

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2023	7.60	6.39	63.3	48.9	0.12	2.55	5.03	7.58	2.35	1.61	3.96	—	12,998	12,998	0.53	0.44	9.23	13,046
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	7.59	6.39	63.3	48.7	0.12	2.55	5.03	7.58	2.35	1.61	3.96	—	12,983	12,983	0.52	0.11	0.03	13,029
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	1.95	1.72	16.0	13.2	0.03	0.64	1.30	1.93	0.59	0.40	0.99	—	3,797	3,797	0.16	0.11	0.88	3,834
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.36	0.31	2.91	2.40	0.01	0.12	0.24	0.35	0.11	0.07	0.18	—	629	629	0.03	0.02	0.15	635

3. Construction Emissions Details

3.1. Grading (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	7.50	6.30	63.2	47.7	0.12	2.55	—	2.55	2.35	—	2.35	—	12,784	12,784	0.52	0.10	—	12,828
Dust From Material Movement	—	—	—	—	—	—	12.4	12.4	—	4.00	4.00	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	7.50	6.30	63.2	47.7	0.12	2.55	—	2.55	2.35	—	2.35	—	12,784	12,784	0.52	0.10	—	12,828
Dust From Material Movement	—	—	—	—	—	—	12.4	12.4	—	4.00	4.00	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.60	1.35	13.5	10.2	0.03	0.55	—	0.55	0.50	—	0.50	—	2,732	2,732	0.11	0.02	—	2,741
Dust From Material Movement	—	—	—	—	—	—	2.65	2.65	—	0.85	0.85	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29	0.25	2.46	1.86	< 0.005	0.10	—	0.10	0.09	—	0.09	—	452	452	0.02	< 0.005	—	454
Dust From Material Movement	—	—	—	—	—	—	0.48	0.48	—	0.16	0.16	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	0.07	1.13	0.00	0.00	0.01	0.01	0.00	0.00	0.00	—	214	214	0.01	0.01	0.97	217
Vendor	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	0.00
Hauling	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	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.09	0.98	0.00	0.00	0.01	0.01	0.00	0.00	0.00	—	198	198	0.01	0.01	0.03	201
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.21	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	42.8	42.8	< 0.005	< 0.005	0.09	43.4
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	7.08	7.08	< 0.005	< 0.005	0.01	7.19
Vendor	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	0.00
Hauling	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	0.00

3.2. Grading (2023) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	7.50	6.30	63.2	47.7	0.12	2.55	—	2.55	2.35	—	2.35	—	12,784	12,784	0.52	0.10	—	12,828
Dust From Material Movement	—	—	—	—	—	—	4.83	4.83	—	1.56	1.56	—	—	—	—	—	—	—
Onsite truck	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	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	7.50	6.30	63.2	47.7	0.12	2.55	—	2.55	2.35	—	2.35	—	12,784	12,784	0.52	0.10	—	12,828
Dust From Material Movement:	—	—	—	—	—	—	4.83	4.83	—	1.56	1.56	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.60	1.35	13.5	10.2	0.03	0.55	—	0.55	0.50	—	0.50	—	2,732	2,732	0.11	0.02	—	2,741
Dust From Material Movement:	—	—	—	—	—	—	1.03	1.03	—	0.33	0.33	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29	0.25	2.46	1.86	< 0.005	0.10	—	0.10	0.09	—	0.09	—	452	452	0.02	< 0.005	—	454
Dust From Material Movement:	—	—	—	—	—	—	0.19	0.19	—	0.06	0.06	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	0.07	1.13	0.00	0.00	0.01	0.01	0.00	0.00	0.00	—	214	214	0.01	0.01	0.97	217

Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.09	0.98	0.00	0.00	0.01	0.01	0.00	0.00	0.00	—	198	198	0.01	0.01	0.03	201
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.21	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	42.8	42.8	< 0.005	< 0.005	0.09	43.4
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	7.08	7.08	< 0.005	< 0.005	0.01	7.19
Vendor	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	0.00
Hauling	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	0.00

3.3. Paving (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.03	0.87	6.81	7.54	0.02	0.34	—	0.34	0.32	—	0.32	—	1,657	1,657	0.07	0.01	—	1,663
Paving	—	0.52	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.19	0.16	1.29	1.43	< 0.005	0.06	—	0.06	0.06	—	0.06	—	313	313	0.01	< 0.005	—	314
Paving	—	0.10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.23	0.26	< 0.005	0.01	—	0.01	0.01	—	0.01	—	51.9	51.9	< 0.005	< 0.005	—	52.0
Paving	—	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.18	0.15	2.36	0.00	0.00	0.03	0.03	0.00	0.00	0.00	—	446	446	0.02	0.02	2.03	453
Vendor	0.28	0.10	3.80	1.81	0.02	0.04	0.15	0.19	0.04	0.06	0.09	—	2,777	2,777	0.17	0.41	7.20	2,910
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.03	0.38	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	78.9	78.9	< 0.005	< 0.005	0.17	80.0
Vendor	0.05	0.02	0.74	0.35	< 0.005	0.01	0.03	0.04	0.01	0.01	0.02	—	525	525	0.03	0.08	0.59	549
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.01	0.01	0.01	0.07	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	13.1	13.1	< 0.005	< 0.005	0.03	13.3
Vendor	0.01	< 0.005	0.14	0.06	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	86.9	86.9	0.01	0.01	0.10	91.0
Hauling	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	0.00

3.4. Paving (2023) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.03	0.87	6.81	7.54	0.02	0.34	—	0.34	0.32	—	0.32	—	1,657	1,657	0.07	0.01	—	1,663
Paving	—	0.52	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.19	0.16	1.29	1.43	< 0.005	0.06	—	0.06	0.06	—	0.06	—	313	313	0.01	< 0.005	—	314
Paving	—	0.10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.23	0.26	< 0.005	0.01	—	0.01	0.01	—	0.01	—	51.9	51.9	< 0.005	< 0.005	—	52.0
Paving	—	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.18	0.15	2.36	0.00	0.00	0.03	0.03	0.00	0.00	0.00	—	446	446	0.02	0.02	2.03	453
Vendor	0.28	0.10	3.80	1.81	0.02	0.04	0.15	0.19	0.04	0.06	0.09	—	2,777	2,777	0.17	0.41	7.20	2,910
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.03	0.38	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	78.9	78.9	< 0.005	< 0.005	0.17	80.0
Vendor	0.05	0.02	0.74	0.35	< 0.005	0.01	0.03	0.04	0.01	0.01	0.02	—	525	525	0.03	0.08	0.59	549
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.07	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	13.1	13.1	< 0.005	< 0.005	0.03	13.3
Vendor	0.01	< 0.005	0.14	0.06	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	86.9	86.9	0.01	0.01	0.10	91.0
Hauling	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	0.00

3.5. Trenching (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.29	0.25	2.54	3.82	0.01	0.12	—	0.12	0.11	—	0.11	—	581	581	0.02	< 0.005	—	583
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.04	0.37	0.56	< 0.005	0.02	—	0.02	0.02	—	0.02	—	84.3	84.3	< 0.005	< 0.005	—	84.6
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.07	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	14.0	14.0	< 0.005	< 0.005	—	14.0
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.03	0.47	0.00	0.00	0.01	0.01	0.00	0.00	0.00	—	89.1	89.1	< 0.005	< 0.005	0.41	90.6
Vendor	0.01	< 0.005	0.08	0.04	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	55.5	55.5	< 0.005	0.01	0.14	58.2
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.06	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	12.1	12.1	< 0.005	< 0.005	0.03	12.3
Vendor	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.07	8.07	< 0.005	< 0.005	0.01	8.44
Hauling	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	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	2.01	2.01	< 0.005	< 0.005	< 0.005	2.04
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.34	1.34	< 0.005	< 0.005	< 0.005	1.40
Hauling	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	0.00

3.6. Trenching (2023) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29	0.25	2.54	3.82	0.01	0.12	—	0.12	0.11	—	0.11	—	581	581	0.02	< 0.005	—	583
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.04	0.37	0.56	< 0.005	0.02	—	0.02	0.02	—	0.02	—	84.3	84.3	< 0.005	< 0.005	—	84.6
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.07	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	14.0	14.0	< 0.005	< 0.005	—	14.0
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.03	0.47	0.00	0.00	0.01	0.01	0.00	0.00	0.00	—	89.1	89.1	< 0.005	< 0.005	0.41	90.6
Vendor	0.01	< 0.005	0.08	0.04	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	55.5	55.5	< 0.005	0.01	0.14	58.2
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.06	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	12.1	12.1	< 0.005	< 0.005	0.03	12.3
Vendor	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.07	8.07	< 0.005	< 0.005	0.01	8.44
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	2.01	2.01	< 0.005	< 0.005	< 0.005	2.04
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.34	1.34	< 0.005	< 0.005	< 0.005	1.40
Hauling	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	0.00

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Grading	Grading	1/3/2023	4/3/2023	6.00	78.0	—
Paving	Paving	6/4/2023	8/23/2023	6.00	69.0	—
Trenching	Trenching	4/4/2023	6/3/2023	6.00	53.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Scrapers	Diesel	Average	5.00	8.00	423	0.48
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36
Grading	Plate Compactors	Diesel	Average	1.00	8.00	8.00	0.43
Grading	Off-Highway Trucks	Diesel	Average	1.00	8.00	376	0.38
Paving	Off-Highway Trucks	Diesel	Average	1.00	8.00	250	0.38
Paving	Other Construction Equipment	Diesel	Average	1.00	8.00	37.0	0.42
Trenching	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Grading	—	—	—	—
Grading	Worker	24.0	11.7	LDA,LDT1,LDT2
Grading	Vendor	—	8.40	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	50.0	11.7	LDA,LDT1,LDT2
Paving	Vendor	100	8.40	HHDT,MHDT

Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Trenching	—	—	—	—
Trenching	Worker	10.0	11.7	LDA,LDT1,LDT2
Trenching	Vendor	2.00	8.40	HHDT,MHDT
Trenching	Hauling	0.00	20.0	HHDT
Trenching	Onsite truck	—	—	HHDT

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
General Light Industry	18.6	74%

8. User Changes to Default Data

Screen	Justification
Land Use	Acreage based on project site acreage. Unit amount of 1 entered as placeholder. Operational emissions estimated off-model.
Construction: Construction Phases	Construction specific schedule of a 78-day grading phase, 53-day trenching phase, and 69-day paving phase.
Construction: Off-Road Equipment	Project specific construction equipment. Compactor modeled as plate compactor. Water truck modeled as off-highway truck. Concrete finisher modeled as other construction equipment. Concrete pump truck modeled as off-highway truck.
Construction: Trips and VMT	Project specific worker and vendor truck trips. Cut/fill expected to be balanced.
Construction: Paving	Based on total impervious surface area and assumes site entrance is asphalt.

Z Best
 Electricity Consumption
 Indirect GHG Emissions

	kWh/year	MWh/year	GHG Emissions
Existing CTI Bag	851,862.00	851.86	38
Proposed (ECS CASP Primary & Curing)	8,151,000.00	8,151.00	362

Source: *Email Communication 20221116: ECS aerated composting system fans at Z-Best Facility*

0.05%

PG&E Power Content Label

Base Plan

GHG Emissions Intensity (lbs CO₂e/MWh) 98

Source: https://www.pge.com/pge_global/common/pdfs/your-account/your-bill/understand-your-bill/bill-inserts/2022/1022-Power-Content-Label.pdf

lbs/MT	2204.62
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Appendix C – Biological Resources Supporting Information

Contains:

- 2014 California Red-Legged Frog Habitat Assessment (WRA Environmental Consultants)
- 2017 Verification of Absence of Sensitive Species and Habitat (WRA Environmental Consultants)
- 2020 Biological Report for Site Access and State Highway 25 Improvements (EMC Planning Group)
- 2022 Updated Biological Records Searches (AECOM)



July 3, 2014

Greg Ryan
Zanker Road Resource Management, Ltd.
675 Los Esteros Road
San Jose, CA 95134

RE: CALIFORNIA RED-LEGGED FROG HABITAT ASSESSMENT AT THE Z-BEST COMPOSTING FACILITY, SANTA CLARA COUNTY, CALIFORNIA

Dear Mr. Ryan,

The purpose of this letter is to provide a technical assessment of the potential habitat for the federally threatened California red-legged frog (*Rana draytonii*; CRLF) at the Z-Best Composting Facility located south of Gilroy in Santa Clara County, California (Study Area). Currently, under the proposed Santa Clara County HCP, the entirety of the existing facility is modeled as CRLF Secondary Habitat, with the existing industrial detention basin in the southern portion of the facility modeled as CRLF Primary Habitat. Based on an assessment of the Study Area and a focused CRLF day/night survey performed on June 9, 2014, it is WRA's opinion that the Study Area is not suitable CRLF aquatic or upland habitat.

Study Area Overview

Z-Best is proposing to expand compost processing operations into 28 acres of an 80-acre parcel east of the current operational footprint (see attached figure), as well as complete improvements to their existing composting operations on the 77-acre Area 1. Expansion into Area 2 will not increase the quantity of composted materials. Instead, the proposed expansion is intended to create a more efficient operation.

The Study Area is located in southern Santa Clara County and is bordered to the north by Highway 25, and the vast majority of land use surrounding the Study Area is actively irrigated row-crop agriculture. The southeastern corner of the Study Area abuts the Pajaro River and in a general context is located between the Pajaro and Carnadero Creek.

The Study Area is bisected by a north-south irrigation ditch that originates north of Highway 25 and terminates in a perpendicular confluence with a roughly east-west trending irrigation ditch along the southern property boundary. This east-west irrigation ditch receives agricultural irrigation run-off from the south and flows between the Pajaro River and Carnadero Creek. These ditches are maintained for storm-water and are only wetted immediately after storm-events and after extensive irrigation on the fields to the south of the Study Area.

The western half of the Study Area supports Z-Best's current composting operations, which largely consist of compost wind-rows in various stages of the composting process. The northwestern corner supports a warehouse, weigh-station and administrative offices. The southern portion of the western Study Area supports a large industrial detention basin, from

which water is pumped in support of the composting process. This basin does not drain into any adjacent waterbodies except in extreme flood events.

The detention basin receives input from three sources; seasonal rainfall, occasional groundwater added to maintain the pond-level, and primarily from compost leachate. Water is circulated (pumped) from the pond and applied to the compost to facilitate in the decomposition process. A byproduct of this process is leachate, a dark brown liquid that seeps out from the compost and is directed back into this basin via informal channels or overland run-off. Aside from input from rainwater and groundwater, this is a closed-loop process and the leachate continues to concentrate in the pond as it is re-applied to the wind-rows, and drains back into the detention basin.

Species Information

Historically CRLF extended along the coast of Marin County and inland from Shasta County southward to northwestern Baja California in Mexico (Jennings and Hayes 1994). According to the U.S. Fish and Wildlife ruling to designate Critical Habitat for CRLF (2006); there are four Primary Constituent Elements (PCEs) considered to be essential for the conservation of the species (USFWS 2006):

- Aquatic breeding habitat;
- Non-breeding aquatic habitat for foraging and shelter;
- Upland habitat for foraging; and
- Dispersal habitat for movement to other breeding habitats.

Aquatic breeding habitat consists of low-gradient freshwater bodies, including natural and manmade (e.g., stock) ponds, backwaters within streams and creeks, marshes, lagoons, and dune ponds. Aquatic breeding habitat must hold water for a minimum of 20 weeks in most years. Aquatic non-breeding habitat may or may not hold water long enough for this species to hatch and complete its aquatic life cycle, but it provides shelter, foraging, predator avoidance, and aquatic dispersal for juvenile and adult CRLF. Non-breeding aquatic features enable CRLF to survive drought periods (USFWS 2006). Upland habitats include areas within 200 feet of aquatic and riparian habitat and are composed of grasslands, woodlands, and/or vegetation that provide shelter, forage, and predator avoidance (USFWS 2006). Dispersal habitat includes accessible upland or riparian habitats between occupied locations within 0.7 mile of each other that allow for movement between these sites. Dispersal habitat includes various natural and altered habitats such as agricultural fields, which do not contain barriers to dispersal. Moderate to high-density urban or industrial developments, large reservoirs and heavily traveled roads without bridges or culverts are considered barriers to dispersal (USFWS 2006).

Habitat Assessment

There are numerous known occurrences of CRLF within five miles of the Study Area (CNDDDB 2014), though it is worthwhile to note that all but one of these occurrences are from stock ponds or sag ponds within undeveloped rangeland, and not from the areas dominated by active farming. No designated Critical Habitat occurs within five miles of the site. The Study Area is discussed in additional detail below in the context of the four PCEs for CRLF:

Aquatic Breeding Habitat

The Pajaro River corridor is located in the far southeast portion of the Study Area, although no records of CRLF have been documented along the Pajaro River within 1.7 miles of the Study Area, these areas are hydrologically connected, therefore the presence of CRLF cannot be ruled out. Within the context of the proposed Project, the potential for CRLF being present along the Pajaro River is not being disputed, but is analyzed below for completeness.

The Pajaro in the vicinity of the Study Area is relatively low-gradient and has banks that support dense stands of native and non-native riparian vegetation. The result is a relatively complex river system that contains backwater and slackwater areas that are potentially suitable for CRLF breeding. However because of the timing of seasonal high-flows and corresponding high water-velocity and the known presence of fish predators (e.g. steelhead), it is likely that reproductive success of CRLF along the Pajaro River is very low. In the greater vicinity of the Study Area, stock ponds and sag ponds offer higher quality aquatic breeding habitat.

The irrigation ditches within the Study Area are wholly unsuitable as aquatic breeding habitat for CRLF. These ditches are maintained for storm-water and irrigation run-off. As such, they have a trapezoidal shaped channel and are maintained free of vegetation. These channels only convey water immediately following storm-events and during heavy irrigation of the surrounding fields. They lack the depth and hydroperiod to support CRLF breeding or larval development. As verified during the June 9, 2014 site-visit, the hydrology of the ditch that runs along the southern property boundary cycles between wet and dry as often as daily during the growing season, as crops are irrigated during the day and not at night. The north-south ditch was entirely dry and likely only conveys water during major storm events.

The detention basin in the southern portion of the Study Area serves as the primary recipient of the resultant leachate from the composting process. It is pumped and recycled continuously, such that the leachate concentrates in the detention pond. The result is that the water observed at the detention basin during the June 9, 2014 site visit is highly turbid (nearly black) with dissolved organic materials. The water is also strongly odiferous with volatile organic compounds, such as ammonia.

Water samples were recently taken (John Doyle, pers.comm. 7/1/2014) and are currently being analyzed. However based on the observed condition and my extensive experience with CRLF and its habitats, the biotic and abiotic conditions of the pond are unsuitable for CRLF to complete its lifecycle.

The observed turbidity alone would be likely to preclude sufficient light penetration into the water column to allow for the growth of periphyton, the preferred food for CRLF larvae. The anaerobic processes that result in the production of volatile organic compounds such as ammonia suggest that dissolved oxygen levels are insufficient for the development of CRLF eggs and larvae. Additionally, during the June 9, 2014 survey, no amphibians of any species, including the ubiquitous Pacific chorus frog (*Pseudacris regilla*) were observed. In fact, in all likelihood, the detention basin within the Study Area is likely a population sink for amphibians.

Non-breeding Aquatic Habitat

The Pajaro River and Carnaderos Creek are the only aquatic features in the vicinity that provide perennial or seasonal hydration and foraging habitat for CRLF. The irrigation ditches are maintained to be free of vegetation, which eliminates any structural protection from predators or availability of food resources. Additionally, the irrigation ditches do not provide reliable hydration habitat as only the east-west channel along the southern property boundary contains water and only immediately following heavy irrigation of the adjacent fields. The north-south ditch that bisects the Study Area only conveys water immediately after storm events.

As discussed in more detail above, the detention basin located within the southern portion of the Study Area likely acts as a population sink for CRLF and other amphibians. The unfavorable water quality certainly limits the availability of invertebrate prey, which was confirmed during the June 9th site-visit. No emergent aquatic invertebrates (dragonflies, damselflies, mayflies, caddisflies, stoneflies), or evidence of these taxa (molt casts left over by metamorphosing invertebrates) were observed. It is likely that the biotic and abiotic processes occurring at the detention basin severely limits the food web needed to support CRLF, in both quantity and diversity. Additionally, since the banks of the detention basin are nearly completely devoid of emergent aquatic vegetation, small mammal burrows, leaf litter or other structural habitat components, the pond or its immediate surrounds does not provide CRLF with suitable cover from terrestrial or avian predators.

Upland Habitat

Suitable upland habitat for CRLF typically consists of structural components where CRLF can shelter in the short-term to avoid predation, buffer against thermal extremes (both hot and cold), provide hydration, and offer foraging opportunities. Upland habitat may also provide opportunities for long-term aestivation, where CRLF can shelter during unfavorable conditions (drought, low prey availability, etc.). Examples of suitable upland habitat features include; burrows, leaf-litter, root-balls, deep desiccation cracks, dense vegetation (e.g. blackberry tickets), or structures (e.g. rocks, woody debris) to shelter under. The Study Area is nearly devoid of such features.

The irrigation ditches are maintained free of vegetation, and do not support either burrows or leaf-litter. The banks of the detention basin support ornamental trees, but the ground itself is completely bare, maintained free of low-growing vegetation, and lacks burrows, desiccation cracks, rocks or woody debris that could provide shelter to CRLF. The undeveloped eastern portion of the Study Area is disked annually and does not support perennial vegetation or burrows of other habitat components capable of supporting short or long-term occupancy of CRLF.

The only suitable upland habitat for CRLF within the Study Area is in the extreme southeastern corner, within the Pajaro River riparian corridor. The vegetation cover and structure, presence of leaf-litter, root-balls and low-growing vegetation (e.g. blackberry and cape-ivy), provide ideal cover for CRLF. Additionally, the abundance diversity of plants and presence of standing water foster a food web suitable to support CRLF.

Dispersal Habitat

Both Carnadero Creek and the Pajaro River support documented occurrences of CRLF downstream of the Study Area (CNDDDB 2014), and since the Study Area is located between these two waterways, overland dispersal between them cannot be ruled out. Any dispersal of CRLF between Carnadero Creek and the Pajaro River would most likely occur via the network of existing irrigation ditches.

Overland movements through the Study Area would likely only occur during storm events when the rains prompt CRLF to disperse or migrate to aquatic breeding sites. Movements across the uplands of the Study Area, such as the open, disked field that makes up the entirety of the eastern half of the site, would expose these individuals to avian (e.g. corvids), terrestrial (e.g. raccoons and skunks) and feral (e.g. cats) predators.

Additionally, dispersing individuals would encounter and fall into one of the several perpendicular irrigation ditches located between the Pajaro River and Carnaderos Creek. Because of the loose soils and steep banks, it is likely that dispersing individuals would be unable to climb out and would be forced to continue along the bottom of the ditches until it reaches its destination, desiccates, or is predated.

Conclusions and Recommendations

Though it is known that both the Pajaro River and Carnaderos Creek in the vicinity of the Study Area support CRLF, the ongoing agricultural uses of the lands between these waterways and south of Highway 25 has rendered these areas unsuitable for CRLF, and likely create a population sink for this species.

The created detention basin in the southern portion of the Study Area is used as part of the industrial composting process and concentrates leachate, the anaerobic byproduct of the composting process. In my ten years of experience surveying and assessing habitat for CRLF, this detention basin is perhaps the worst aquatic feature that I have ever surveyed for CRLF. Results of the water quality sampling are expected back shortly, but based on the observed biotic and abiotic conditions, the detention basin is unsuitable to support this species, and in all likelihood any amphibians attempting to utilize this detention basin as habitat succumb to acute or chronic toxicity or disease, as evidenced by the complete absence of amphibians observed during the June 9 assessment and survey.

Based on the proposed placement of the Z-Best Facility expansion, it is in my professional opinion that no CRLF aquatic or upland habitat will be impacted and the conversion of the disked field in the eastern portion of the Study Area to create additional compost wind-rows will not create any additional barriers to CRLF dispersal.

Please do not hesitate to contact me if you have any questions or if you require any additional information.

Sincerely,



Rob Schell - Herpetologist and Wildlife Biologist

Literature Cited

Jennings, M.R. and M.P. Hayes. 1994. Amphibian and reptile species of special concern in California. Final Report to the California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, CA.

U.S. Fish and Wildlife Service. (USFWS). 2006. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the California Red-Legged Frog, and Special Rule Exemption Associated With Final Listing for Existing Routine Ranching Activities; Final Rule. Federal Register 71: 19244-19346.

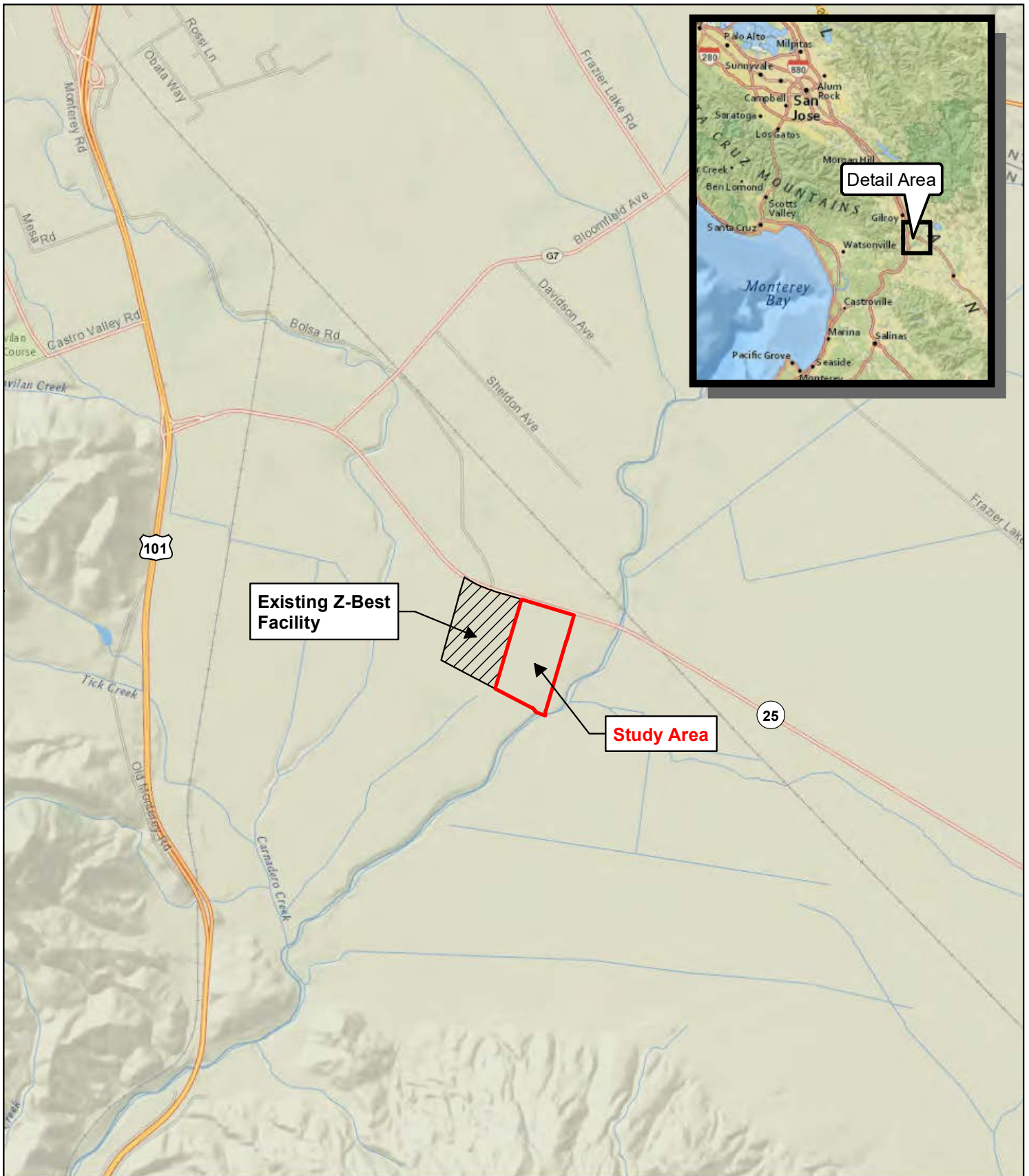
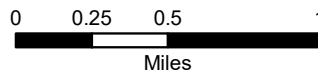


Figure 1. Study Area Location Map

Z-Best Composting
 Santa Clara County, California



Map Date: June 2013
 Map By: Derek Chan
 Base Source: ESRI/National Geographic

Memorandum

To: John Doyle, Zanker Road Management

Subject: Z-Best Composting Facility Modification: Verification of Absence of Sensitive Species and Habitat Covered by the SCVHP

Date: February 27, 2017

This memo addresses item number 14 in the County Response [File 6498-16PA – Pre-application Summary for Use Permit Modification for Z- Best's Composting Facility located at 980 State Highway, Gilroy (APN 841-37-028, 841- 37-029)]. This memo discusses the presence of sensitive species and habitats covered by the Santa Clara Valley Habitat Plan for the Z-Best Compost Products Composting Facility Aerated Static Pile Project (Santa Clara County File 6498-16P4) in support of the Santa Clara Valley Habitat Plan Coverage Screening Form (enclosed).

The proposed project is located at 980 State Highway, Gilroy, Santa Clara County, California (APNs 841-37-028 and 841-37-029). The proposed project includes construction of an Engineered Compost Systems (ECS) aerated floor at the location of the current composting facility. The foot print of the project is shown in the Proposed Site Plans (Golder Associates Project 133-97640).

Existing Conditions

The proposed project footprint is located entirely within an existing developed and active composting facility area, designated as “agriculture developed” land cover type and occurs in “Urban Area” Land Cover Fee Zone. Currently the area is disturbed and processed regularly with movement of soils and composting material and foot and equipment traffic. Little to no general wildlife habitat value lies within the composting facility as there is no vegetation and disturbance is high. The Agency HCP Geobrowser website designates a “grain, row-crop, hay and pasture, disked/short-term fallowed” and “pond” land cover types immediately south of the proposed project footprint and “permanent development area.”

A stormwater control feature (detention basin) lies to the south of the project area and is categorized as “pond” by the Agency HCP geobrowser. However, this feature provides little habitat for wildlife. An assessment of the basin for its value as wildlife habitat was conducted by WRA in 2014. No amphibians of any species were observed during the field visits to the detention basin. No emergent aquatic invertebrates (dragonflies, damselflies, mayflies, caddisflies, stoneflies), or evidence of these animals (molt casts left over by metamorphosing invertebrates) were observed. It is likely that the biotic and abiotic processes occurring at the detention basin severely limits the food web needed to support any wildlife, in both quantity and diversity. Additionally, no emergent vegetation was observed at the detention basin. Because

the banks of the detention basin are nearly completely devoid of emergent aquatic vegetation or other structural habitat components, the basin and its immediate surroundings provide little suitable nesting habitat for birds, and no suitable nesting habitat for tricolored blackbird (*Agelaius tricolor*). A row of planted trees separates the basin and a lay-down yard from the exiting composting activities to the north. Given that this row of trees is narrow and surrounded by composting facility activities, it is unlikely to support special-status species and would not be considered a sensitive habitat as defined by the HCP. An analysis of aerial photographs (Google Earth 2017) shows that conditions in the detention basin has not changed since 2014.

The detention basin serves as the primary recipient of the resultant leachate from the composting process. It is pumped and recycled continuously, such that the leachate concentrates in the detention basin. The result is that the water observed at the detention basin is highly turbid (nearly black) with dissolved organic materials. Even though the basin is mapped as sensitive pond habitat on the HCP Geobrowser, it is in the opinion of WRA that the stormwater control feature has no potential to support aquatic wildlife species. In addition, potential for special status birds and other wildlife is very low due to lack of emergent vegetation.

WRA has assessed that the detention basin would not meet the definition of a “waters of the United States” because it is a stormwater control feature constructed to convey, treat, or store stormwater that was created in dry land (33 CFR 328.3).

A “grain, row-crop, hay and pasture, disked/short-term fallowed” area is located south of the proposed project and west of the basin. It is now being used as a lay-down or staging yard with little to no substantial habitat value and could likely be re-characterized as “agriculture developed” instead of the existing cover type. A field survey by WRA biologists to verify this finding and document it may be necessary.

The project footprint, including the “permanent development area” is expected to occur only within the existing developed composting facility, and will be more than 100 feet from the detention basin and lay-down/staging yard. Therefore, the project will be outside any land cover fee zone subject to the HCP. While the “permanent development area” will encroach into the neighboring parcel to the west, which is categorized as “grain, row-crop, hay and pasture, disked/short-term fallowed” land cover type, the land would not be included within the development area per the HCP (Chapter 6, Page 6-31):

Plans do not need to show buffer areas (50 feet for permanent improvements and 10 feet for temporary improvements) that cross property boundaries (e.g., a house 30 feet from a property line only needs to show the buffer area up to the property line).

This brief analysis assumes that no fees will be paid based on the neighboring properties.

Conclusion

The “permanent development area” (project footprint plus a 50-foot buffer) of the proposed project is designed to be located 50 feet from any potential sensitive land cover types and therefore will not impact sensitive land cover types or covered species, specifically the pond and tricolored blackbird survey areas. The project is not a covered project under the Habitat Plan and no additional actions regarding the Habitat Plan is needed

Please contact me at 415.524.7205 or email at avent@wra-ca.com if you need more clarification or if you have questions.

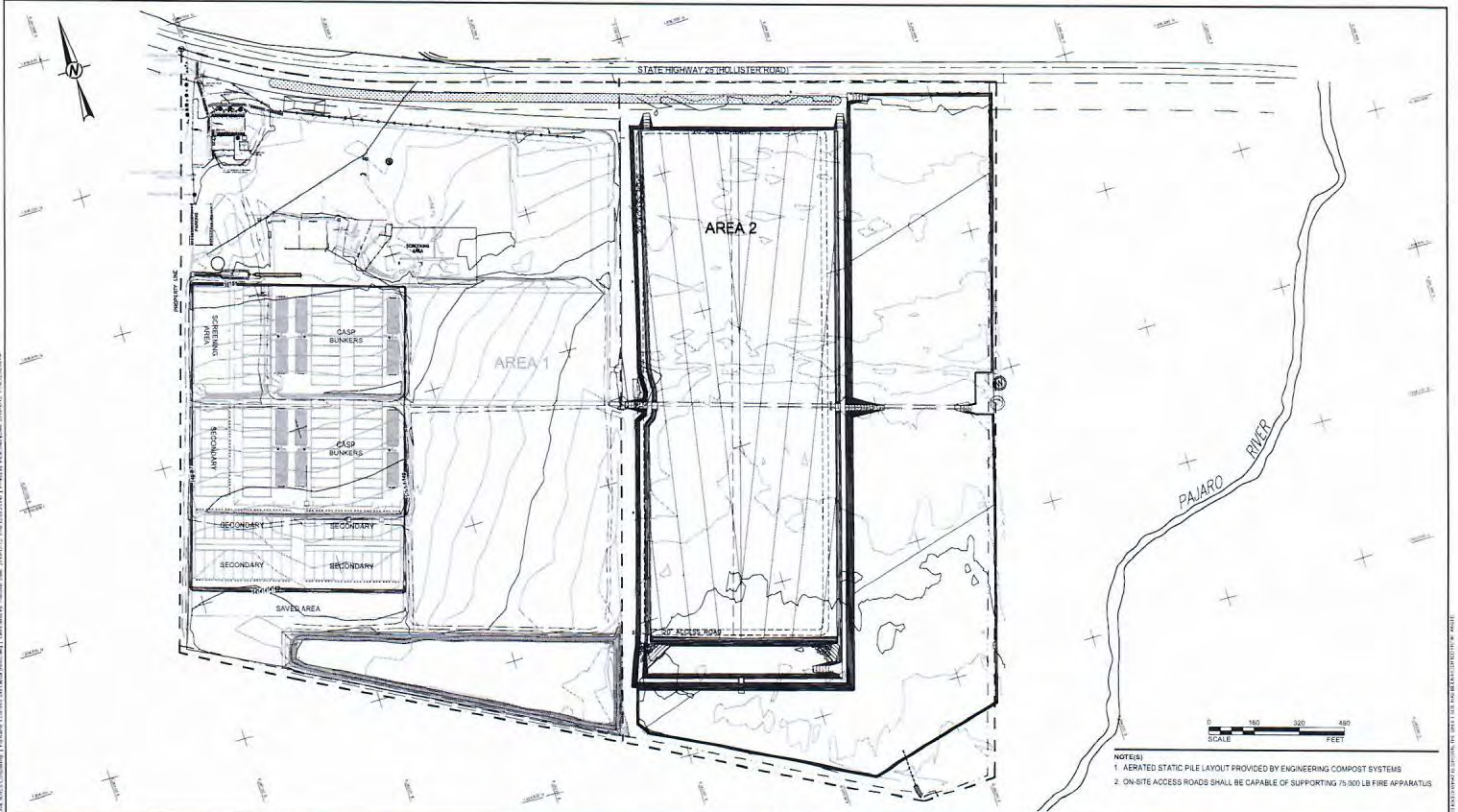
Sincerely,

A handwritten signature in blue ink, appearing to read 'S. Avent', with a long horizontal flourish extending to the right.

Sean Avent
Associate Biologist

Enclosure: 1) Proposed Site Plans (Golder Associates Project 133-97640)
 2) Santa Clara Valley Habitat Plan Coverage Screening Form

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- NOTES:
1. AERATED STATIC PILE LAYOUT PROVIDED BY ENGINEERING COMPOST SYSTEMS
 2. ON-SITE ACCESS ROADS SHALL BE CAPABLE OF SUPPORTING 75,000 LB FIRE APPARATUS

REV	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED

CLIENT
Z-BEST COMPOST PRODUCTS
 COMPOSTING FACILITY
 GILROY, CALIFORNIA
 CONSULTANT

zanker ARCHITECTS ENGINEERS
 SUNNYVALE
 425 LAKESIDE DRIVE
 SUNNYVALE, CALIFORNIA 94085
 USA
 (415) 498-2222
 www.zanker.com

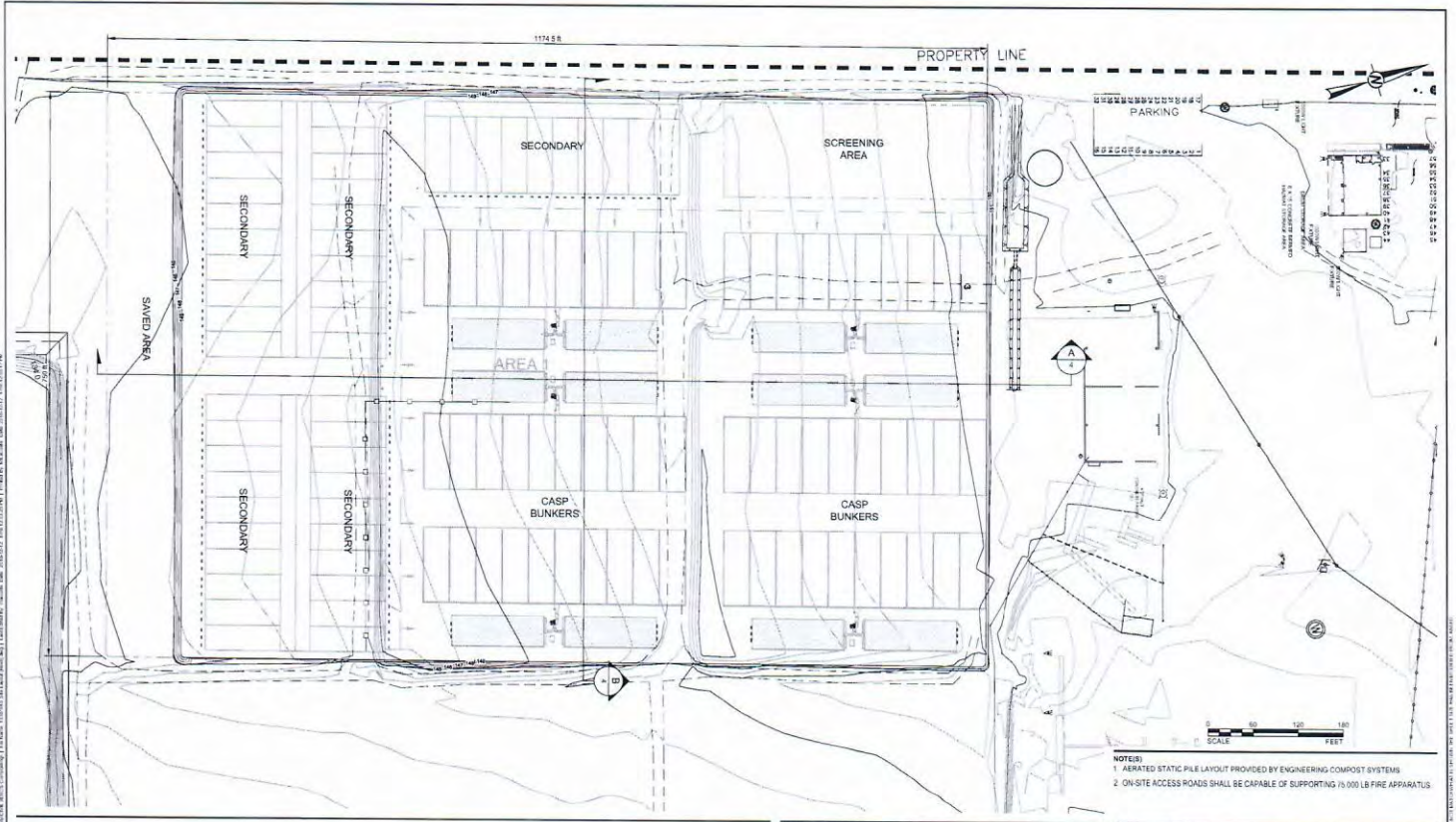
PROJECT
AERATED STATIC PILE PERMIT PACKAGE

TITLE
PROPOSED SITE PLAN

PROJECT NO
 133-97640

REV 01 DRAWING
 2





- NOTES:
1. AERATED STATIC PILE LAYOUT PROVIDED BY ENGINEERING/COMPOST SYSTEMS
 2. ON-SITE ACCESS ROADS SHALL BE CAPABLE OF SUPPORTING 75,000 LB FIRE APPARATUS

PROJECT
AERATED STATIC PILE PERMIT PACKAGE

TITLE
COMPOSTING PAD GRADING PLAN

PROJECT NO
133-97640

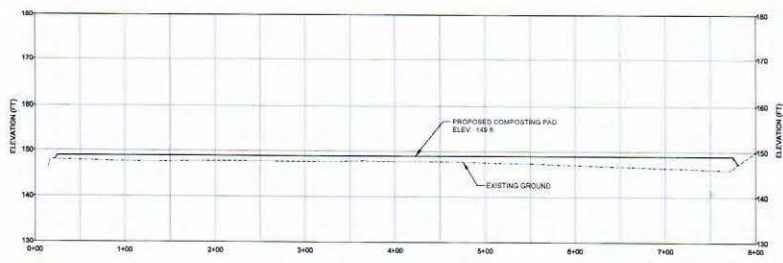
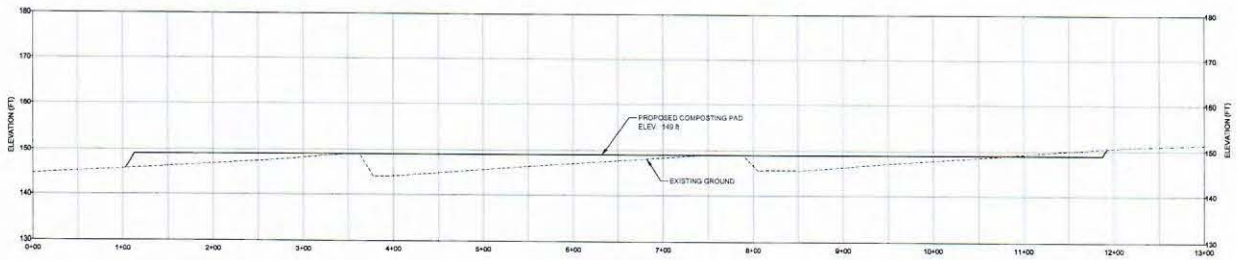
REV of DRAWING
3

REV	YYYYMMDD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED

CLIENT
Z-BEST COMPOST PRODUCTS
COMPOSTING FACILITY
GILROY, CALIFORNIA

CONSULTANT
Golden Associates

zanker engineers architects interior design
SUNNYVALE
40 LAKEVIEW DRIVE
SUNNYVALE, CALIFORNIA 94089
USA
[+1] 408 201-9223
www.zanker.com



REV	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED

CLIENT
Z-BEST COMPOST PRODUCTS
 COMPOSTING FACILITY
 GILROY, CALIFORNIA

CONSULTANT
 Golden Associates

PROJECT
AERATED STATIC PILE PERMIT PACKAGE

TITLE
SECTIONS

PROJECT NO.
 133-07640

REV _____ of _____ DRAWING
4

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SANTA CLARA VALLEY
HABITAT AGENCY



City of Gilroy

City of Morgan Hill

City of San José

County of Santa Clara

Santa Clara Valley Water District

Santa Clara Valley
Transportation Authority



Santa Clara Valley Habitat Plan COVERAGE SCREENING FORM

Habitat Plan Application File Number
(Assigned by jurisdiction)

Planning Office File Number
(Assigned by jurisdiction)

To determine if a project is eligible for coverage under the Santa Clara Valley Habitat Plan ("Habitat Plan"), complete and submit this form to the planning or building office of the applicable local jurisdiction (County of Santa Clara, City of Gilroy, City of Morgan Hill, or City of San José) as soon as possible in the development process.

This form is used to evaluate if a private development project located within the Habitat Plan Permit Area is classified as a "covered project" under the Habitat Plan. Certain projects within the Habitat Plan Permit Area may **not** be covered projects under the Habitat Plan due to their location and size. This form is used to determine one of two conclusions and courses of action regarding a proposed project:

(1) A project **is not** a covered project under the Habitat Plan. Submit this form to the applicable local jurisdiction. No additional action regarding the Habitat Plan is needed.¹

(2) A project **is** a covered project under the Habitat Plan. Submit this form to the applicable planning or building office along with the Application for Private Projects when submitting applications for planning approvals.

1. Project Type (subdivision, conditional use permit, etc.) Compost Facility

2. Project Location (address / Assessor's Parcel Number) 980 State Highway 25, Gilroy / APN's 84137028 and 84137029

3. Project Description (including proposed use) Installation of an Engineered Compost Systems (ECS) aerated floor at the existing developed composting facility. The project will not affect sensitive species or habitat - Land Cover Verification attached.

A. Project Location

On the Private Development Areas map², where is the project located? (check the applicable box below)

Area 1: Private Development Covered Go to Question C, page 2

Area 2: Rural Development Equal to or Greater Than 2 Acres Covered Go to Question B, page 2

Area 3: Rural Development Not Covered Go to Conclusion 1, page 3

Area 4: Urban Development Equal to or Greater Than 2 Acres Covered Go to Question B, page 2

¹ See disclaimer under Conclusion 1 below regarding Endangered Species Act requirements.

² The Private Development Areas map can be viewed on the Habitat Agency Geobrowser at www.hcpmaps.com or at each of the planning and building offices (County of Santa Clara, City of Gilroy, City of Morgan Hill, or City of San José).

B. Size of the Permanently Disturbed Footprint

What is the total size of the permanently disturbed footprint (not parcel size; see box below), in acres?

If the size of the permanently disturbed area is less than 2 acres, go to Conclusion 1, page 3.

If the size of the permanently disturbed area is 2 acres or greater, go to Conclusion 2, page 3.

Calculating the Size of the Permanently Disturbed Footprint: *The permanently disturbed area is not the parcel size. It is determined by calculating the total land area that will be permanently affected by the proposed development project.*

This area includes all new buildings, new impervious surfaces (parking areas, roads, sidewalks, pools, etc.), and other areas that will be permanently affected by the project (lawns or formal landscaping areas, etc.). Refer to Exhibit A for calculating the Permanently Disturbed Footprint.

This area shall be shown on plans submitted with this Coverage Screening Form.

If necessary, the planning or building office reviewing this Coverage Screening Form may require this area to be calculated by a licensed professional (architect, engineer, surveyor) to verify accuracy.

C. Additions³

- i. Is the project site currently developed? YES Go to Question ii below
 NO Go to Conclusion 2, page 3
- ii. Does the project consist of total new impervious surface less than 5,000 square feet for (a) a building addition or (b) a new building within 50 feet of existing buildings?⁴ YES Provide area below in iii and go to Conclusion 1, page 3
 NO Go to Conclusion 2, page 3
- iii. What is the total impervious surface (see box below) that will be added (in square feet)? _____

Calculating Impervious Surface: *New impervious surfaces include all new buildings and paved areas (asphalt and concrete), such as parking areas, driveways, roads, sidewalks and pools.*

This area shall be shown on the plans submitted with this Coverage Screening Form.

If necessary, the planning department reviewing the Coverage Screening Form may require impervious surface area to be calculated by a licensed professional (architect, engineer, surveyor) to verify accuracy.

³ A developed site means a site has existing permanent improvements, such as buildings and impervious areas, that were legally established prior to the Operative Date of the Habitat Plan (October 14, 2013). Review of building permits or aerial photos may be required by the planning department for verification.

⁴ Building addition and new building area is cumulative effective October 14, 2013.

CONCLUSION 1 Project **is not** a covered project under the Habitat Plan.

Submit this Coverage Screening Form to the planning or building office with the applicable planning application (such as use permit, subdivision, etc.) for the project. Planning staff will evaluate and confirm the project is not a Covered Project. Verification of the absence of sensitive habitats, which may include photos and aerials of the site, may be required.

Sensitive Habitats: If the proposed project affects any wildlife and/or plant species covered by the Habitat Plan, or any unmapped burrowing owl occupied nesting habitat, serpentine, riparian, stream, pond, or wetland land covers on the property, then coverage under the Habitat Plan is required. Go to Conclusion 2, below.

Projects that are not covered projects under the Habitat Plan must still comply with Federal and State Endangered Species Act requirements. If a project has the potential to take a federally or state-listed plant or wildlife species, the applicant must contact the U.S. Department of Fish and Wildlife and/or the California Department of Fish and Wildlife to determine whether an endangered species permit should be obtained.

CONCLUSION 2 Project **is** a covered project under the Habitat Plan.

Submit this Coverage Screening Form to the planning or building office with the planning application (such as use permit, subdivision, etc.). Work with planning or building office staff to complete the *Application for Private Projects*, which includes the *Fees and Conditions Worksheet*—a planning tool that provides guidance for land cover mapping requirements, fees, and conditions that may apply to your project.

Property Owner John Doyle for Zanker Road Resource Managemnt, Ltd.

Property Owner Signature  Date 2-28-17

Applicant John Doyle for Zanker Road Resource Managemnt, Ltd.

Applicant Signature  Date 2-28-17

Planning/Building Office Contact Information

City of Gilroy 7351 Rosanna St. Gilroy, CA 95020 Tel: (408) 846-0451 Fax: (408) 846-0429 www.ci.gilroy.ca.us/planning	City of Morgan Hill 17575 Peak Ave. Morgan Hill, CA 95037 Tel: (408) 778-6480 Fax: (408) 779-7236 www.morganhill.ca.gov	City of San Jose 200 E. Santa Clara St., T-3 San Jose, CA 95113 Tel: (408) 535-3555 Fax: (408) 292-6055 www.sanjoseca.gov/planning	County of Santa Clara 70 West Hedding St., 7th Floor San Jose, CA 95110 Tel: (408) 299-5770 Fax: (408) 288-9798 www.sccplanning.org
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If the project is not a covered project under the Habitat Plan and "opt-in" coverage from the Habitat Plan is desired, work with the applicable planning or building office to complete the Application for Private Projects and submit it to the planning or building office with the planning application. Opt-in coverage is not guaranteed and will be authorized by the local jurisdiction in consultation with the Habitat Agency.

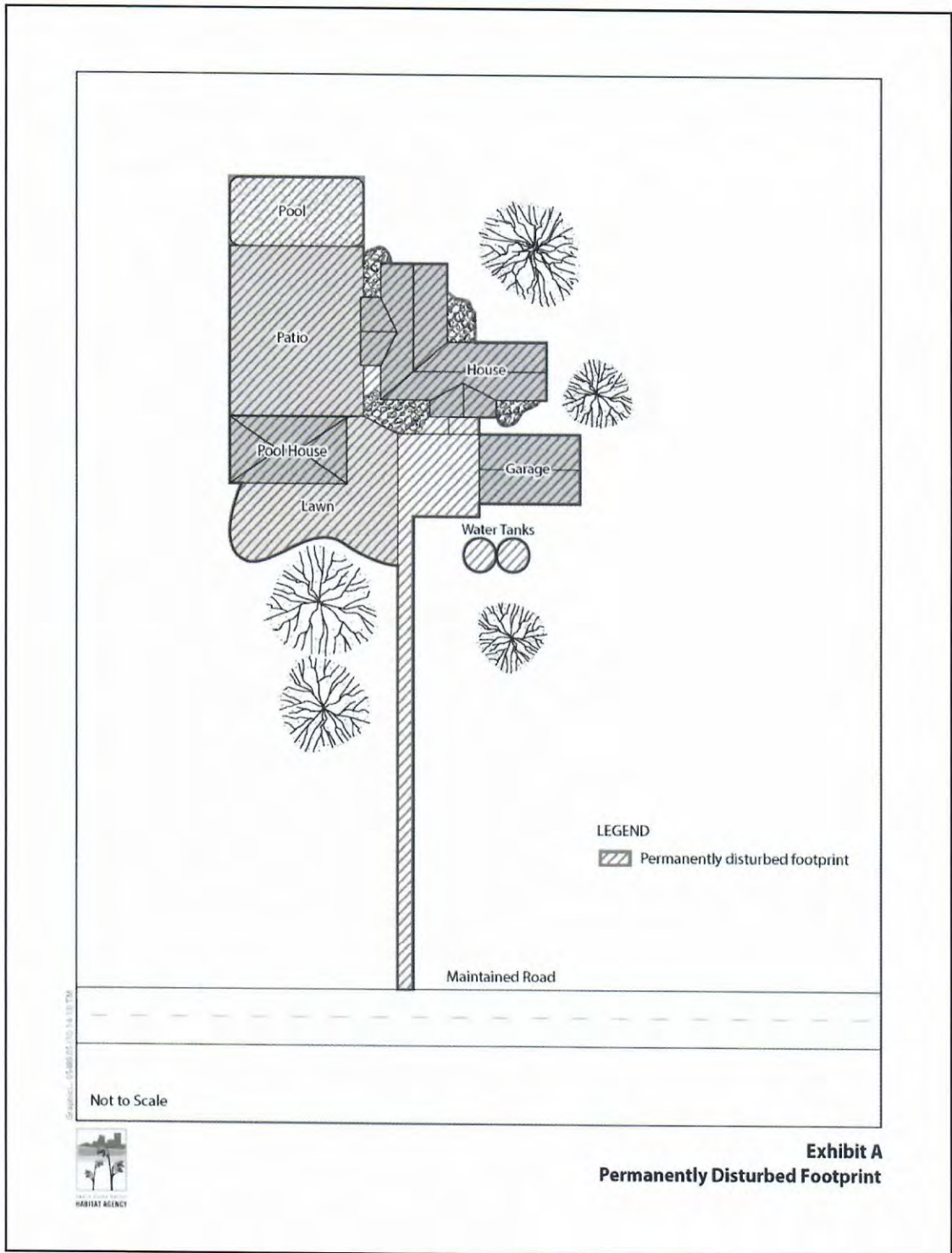
For Staff Verification Use Only

Project is Covered Project is Not Covered No Sensitive Habitats Located on Project Site Date _____

Project Planner _____

Phone Number _____ Email _____

SOURCES FOR THIS FORM: This form incorporates the policies contained within Chapter 2, *Land Use and Covered Activities*, of the Santa Clara Valley Habitat Plan, specifically subsection *Private Development Subject to the Plan*, beginning on Page 2-42.



Note: The permanently disturbed footprint, as shown in Exhibit A, is used to determine if your project is eligible for coverage under the Habitat Plan. Please refer to the Fees and Conditions Worksheet Exhibit 1 to determine how to calculate fees, impacts, and conditions if your project is eligible for coverage under the Habitat Plan.



Planning for Success.

April 1, 2020

Dave Rader
Senior Planner
County of Santa Clara
Department of Planning and Development
70 W. Hedding St., 7th Floor, East Wing
San Jose, CA 95110

Re: Biological Report for Site Access Change at the Z-Best Composting Facility: 980
State Route 25, County of Santa Clara

Dear Mr. Rader:

This report summarizes the results of a reconnaissance-level biological survey of areas that would be affected by proposed site access/driveway and State Route 25 improvements at the Z-Best facility. On February 6, 2020, EMC Planning Group senior biologist Gail Bellenger conducted a survey of the impact areas shown on [Figure 1, Project Entrance/Driveway and SR 25 Improvements Areas of Impact](#). This biological report letter is a supplement to a prior reconnaissance-level biological resources survey and analysis conducted to examine potential biological resources impacts from implementing a range of other activities at the Z-Best site by EMC Planning Group in 2019. Additional relevant documents include the following:

- WRA. July 3, 2014. *California Red-legged Frog Habitat Assessment at the Z-Best Composting Facility, Santa Clara County, California* (“2014 WRA report”),
- WRA. February 27, 2017. *Memorandum: Z-Best Composting Facility Modification: Verification of Absence of Sensitive Species and Habitat covered by the SCVHP*,
- California Department of Fish and Wildlife (CDFW) *California Natural Diversity Database* (CDFW 2020),

EMC PLANNING GROUP INC.
A LAND USE PLANNING & DESIGN FIRM

- California Native Plant Society (CNPS) *Inventory of Rare and Endangered Plants* (CNPS 2020), and
- U.S. Fish and Wildlife Service (USFWS) *Endangered Species Program* (USFWS 2020a) and *National Wetlands Inventory* (USFWS 2020b).

Proposed New Site Access and State Route 25 Improvements

A new site access driveway to the Z-Best facility is proposed approximately 600 feet south of the existing entrance and exit. This site access would constitute a new fourth leg of the existing three-legged State Route 25/Bolsa Road intersection. The new on-site driveway would be approximately 600 feet long. The driveway would traverse the site parallel to State Route 25, then connect with the existing driveway to the site. The existing entrance would be closed once the new access is operational. The new access will cross over the existing storm water drainage ditch that borders the southern side of State Route 25. A 24-inch storm drain pipe carrying stormwater flow through the ditch will be installed underneath the entrance. When the existing entrance is closed, the existing storm drainage pipe that conveys storm water through the ditch under the existing driveway will be removed.

The improvements on State Route 25 consist of right- and left-turn acceleration and deceleration lanes that separate traffic flow into and out of the Z-Best site and into and out of Bolsa Road from through traffic on State Route 25. To accommodate the improvements, SR 25 will need to be widened on both sides along its frontage with the Z-Best facility. Widening both sides of the highway will require that new pavement be placed on both sides and storm drainage improvements constructed. For these improvements to occur, the existing storm drainage channels on both sides of the highway will need to be filled in and replaced with storm drainage piping. Low retaining walls will be placed at the edge of the new pavement to control and direct storm water into drains and the storm drain pipes. On the southern side of the highway, the paving and retaining wall/storm drain pipe improvements will extend approximately 1,800 feet. On the northern side of the highway, the paving and retaining wall/storm drain pipe improvements will extend approximately 1,600 feet. Storm drainage pipes are assumed to be 24-inch reinforced concrete.

Biological Survey

EMC Planning Group biologist Gail Bellenger conducted a reconnaissance-level field survey of the impact areas on February 6, 2020 to determine if conditions for California red-legged frog (*Rana draytonii*) as described in the 2014 WRA report are applicable to the impact areas, to document existing plant communities and wildlife habitats, and to evaluate the potential for other special-status biological resources to occur. Qualitative estimates of plant cover, structure, and spatial changes in species composition were used to determine plant communities and wildlife habitats. Habitat quality and disturbance level were also noted. [Figure 2, Representative Site Photographs – South of SR 25](#) and [Figure 3, Representative Site Photographs – North of SR 25](#), include representative photos of the areas surveyed.

Existing Conditions

The proposed new access driveway parallel to and south of SR 25 is planned within a heavily disturbed area containing a compacted gravel road used by vehicles. To widen SR 25, new paving will be required along both the northern and southern sides of the highway. The road shoulders currently consist of compacted dirt and gravel with scattered non-native grasses.

Storm water drainage ditches approximately 15-foot wide run parallel along both sides of the highway. To accommodate the paving, the ditches will be filled and replaced with 24-inch storm water drainage pipes. At the time of the survey, the drainage ditches were dry but densely vegetated with ruderal (weedy) species such as cheeseweed (*Malva parviflora*), bristly ox-tongue (*Helminthotheca echinoides*), filaree (*Erodium botrys*), and chard (*Beta vulgaris*), most likely an agricultural escapee. Scattered cattail (*Typha* sp.) remnants were periodically interspersed with the ruderal species along the drainage ditch north of SR 25. A row of planted poplar trees used for visual screening of the compost facility is present along the south side of SR 25.

An approximately 0.2-acre wetland area was identified east of the intersection of Bolsa Road and SR 25. The wetland contained evidence of wetland species (cattails), however the identification of additional wetland species potentially present was not possible due to the time of the year. The wetland area location is shown on Figures 1-3.

Bird species noted included American crow (*Corvus brachyrhynchos*), seagull (*Larus occidentalis*), and mourning dove (*Zenaida macroura*). No mammal or amphibian species

were observed, but several gopher mounds were noted in the grassy area in the center of the proposed driveway impact area. No other small mammal burrows were found.

Special-Status Species

Special-status species in this report are those listed as endangered, threatened, or rare, or as candidates for listing by the USFWS or CDFW under the state and/or federal endangered species acts. The special-status designation also includes CDFW Species of Special Concern and Fully Protected species, CNPS Rare Plant Rank 1B and 2B species, and other locally rare species that meet the criteria for listing as described in Section 15380 of CEQA Guidelines. Special-status species are generally rare, restricted in distribution, declining throughout their range, or have a critical, vulnerable stage in their life cycle that warrants monitoring.

Special-Status Plants

Special-status plant species potentially occurring in the project vicinity were evaluated for potential to occur within the impact areas. Special-status plant species typically occur in relatively undisturbed native habitat areas. The entire compost facility has been heavily disturbed as a result of facility operations. The impact areas along SR 25 and the driveway expansion have also been frequently disturbed and support only limited ruderal species. Therefore, it is anticipated that no special-status plant species will be impacted by the associated improvements.

California Red-Legged Frog

California red-legged frog is federally listed as threatened and is a California Species of Special Concern. The SR 25 impact areas are not located within federally designated critical habitat for this species. California red-legged frog is California's largest native frog and is generally restricted to riparian and lacustrine (lake) habitats. This species prefers deep, still pools, usually greater than two feet in depth, and creeks, rivers or lakes below 5,000 feet in elevation. Breeding habitats require freshwater emergent vegetation or thick riparian vegetation, especially willow thickets adjacent to shorelines. California red-legged frogs can survive in seasonal bodies of water that dry up for short periods if a permanent water body or dense vegetation is nearby. Dispersal distances are typically less than 0.3 miles (0.5 kilometer) from a pond, with a few individuals moving up to 1.2–1.9 miles (2–3 kilometers) overland, with movement occurring predominantly along creek drainages. Individuals are often found during the summer in foraging

habitat not suitable for breeding, and therefore, are presumed to move seasonally between summer foraging and winter breeding habitats (USFWS 2002).

A search of the CNDDDB indicates there are known occurrences of California red-legged frog within 1.5 miles of the SR 25 impact areas, with the closest recorded sightings approximately 1.2 miles to the southwest (2017) and southeast (1997). In addition, occurrences of California red-legged frog have been documented downstream in both Carnadero Creek and the Pajaro River (CNDDDB 2020).

In general, potential California red-legged frog habitat is divided into three types: breeding habitat, upland habitat and dispersal habitat. The 2014 WRA report addressed the potential for the occurrence of California red-legged frog within the compost facility boundary and general vicinity. According to the 2014 WRA report, potential breeding habitat is absent within the compost facility boundary. The facility is also nearly devoid of potential upland habitat; the only suitable upland habitat for California red-legged frog is in the extreme southeastern corner, within the Pajaro River riparian corridor, which is outside of the compost facility and SR 25 impact areas (WRA 2014).

The compost facility and SR 25 impact areas are situated between the Pajaro River and Carnadero Creek; therefore, the potential for overland dispersal between them cannot be dismissed. According to the 2014 WRA report, any dispersal of California red-legged frog between Carnadero Creek and the Pajaro River would most likely occur via the network of existing irrigation and drainage ditches. However, because these ditches are regularly maintained to reduce vegetation and have loose soils and steep banks, it is likely that dispersing individuals would be unable to climb out and would be forced to continue along the bottom of the ditches until reaching an outlet, desiccate, or are predated (WRA 2104).

The drainage ditches were dry at the time of the 2020 survey and it is unlikely that they or the small wetland would retain water long enough to support California red-legged frog breeding. Agricultural activities and frequent disturbance immediately adjacent to the SR 25 corridor have limited the presence of features utilized as upland habitat, such as burrows, leaf-litter, deep soil cracks, dense vegetation or debris for individuals to shelter within or under. Although some small mammal activity was observed, it is unlikely that the area is utilized as upland habitat. However, because the SR 25 impact

areas are located between Carnadero Creek and the Pajaro River, the drainage ditches along both sides of SR 25 are considered potential dispersal habitat corridors.

Burrowing Owl

Western burrowing owl is a California Species of Special Concern. Burrowing owls live and breed in burrows in the ground, especially in abandoned ground squirrel burrows. Optimal habitat conditions include large open, dry, and nearly level grasslands or prairies with short to moderate vegetation height and cover, areas of bare ground, and populations of burrowing mammals. Areas with active colonies of California ground squirrels or human-made structures such as culverts that could be utilized for nesting provide suitable nesting habitat.

The nearest observation of burrowing owl was recorded in 2007, approximately 1.5 miles to the south of the compost facility and the Survey Areas. Infrequent, scattered burrows were found in the flood storage expansion area and within the driveway and small wetland area in Survey Area 2. These burrows were likely created by voles or other small rodents. These small pockets of available prey are not likely to provide adequate habitat for foraging or habitation. There was no sign or observation of burrowing owls during field surveys, and this species is not expected to occur. However, this species is highly mobile and may move into the SR 25 impact areas at any time.

Migratory Nesting Birds

Many bird species are migratory and fall under the jurisdiction of the Migratory Bird Treaty Act, protections for birds of prey, and/or are considered Fully Protected Species. Although no nesting activity was observed during the surveys, several avian species were observed. Non-native grassland and ruderal vegetation will be removed as a result of construction within the impact areas, and approximately 10 ornamental poplar trees would be removed and replaced around the radius of the turn section of the new driveway. Various bird species may nest throughout the impact areas, including in structures, on open ground, or in any type of vegetation, including trees.

Wetlands and Waterways

Wetlands are identified by the presence of hydrophytic vegetation, hydric soils (soils intermittently or permanently saturated by water), and wetland hydrology. Waterways

or drainage channels are defined by their ordinary high-water marks on channel banks and their connection to other waterways or aquatic features.

Within the impact areas, long linear drainage ditches approximately 15 feet wide are present parallel to the north and to the south of SR 25. The ditches are periodically cleared and vegetation present at the time of the survey was dominated by ruderal species. The ditches north of SR 25 also supported scattered cattails. No standing water was observed. These ditches appear to connect to Carnadero Creek and the Pajaro River and may be considered jurisdictional by one or more resource agencies.

An approximately 0.02-acre wetland area was identified east of the intersection of Bolsa Road and SR 25. The area was wet but did not contain ponded water. Remnants of wetland vegetation (cattails) were identifiable, though the time of year precluded additional plant identification. If the wetland area supports the necessary criteria, one or more resource agencies may consider this feature jurisdictional.

Mitigation Measures

California Red-Legged Frog

If California red-legged frog is present within the impact areas, construction activities could result in the loss or disturbance of individual animals. This would be a potentially significant adverse environmental impact. Implementation of the following mitigation measures would reduce the potential impact to a less-than-significant level.

BIO-1 Before construction activities begin within the impact areas, a qualified biologist shall conduct a training session for all construction personnel. At a minimum, the training shall include a description of special-status species potentially occurring in the project vicinity, including, but not limited to California red-legged frog and nesting birds and raptors. Their habitats, general measures that are being implemented to conserve species as they relate to the project, and the boundaries within which construction activities will occur will be explained. Informational handouts with photographs clearly illustrating the species' appearances shall be used in the training session. All new construction personnel shall undergo this mandatory environmental awareness training.

The qualified biologist will train biological monitors selected from the construction crew by the construction contractor (typically the project foreman). Before the start of work each day, the monitor will check for animals under any equipment such as vehicles and stored pipes within active construction zones. The monitor will also check all excavated steep-walled holes or trenches greater than one foot deep for trapped animals. If a California red-legged frog is observed within an active construction zone, the qualified biologist will be notified immediately and all work within 100 feet of the individual will be halted and all equipment turned off until the individual has left the construction area.

BIO-2 A qualified consulting biologist will conduct preconstruction surveys following the guidance documented in the *Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog* (USFWS 2005) no more than two weeks (14 days) prior to the start of construction activities. The impact areas, specifically the drainage ditches and small wetland area, will be surveyed for potential migratory and/or upland activity.

If California red-legged frog is found, the applicant will coordinate with the USFWS and/or CDFW to determine the appropriate course of action per the requirements of FESA and/or CESA (e.g., obtaining Incidental Take Permits) and implement the permit requirements prior to ground disturbance.

BIO-3 The project proponent shall obtain an Incidental Take Permit from the U.S. Fish and Wildlife Service (USFWS) for potential project impacts to California red-legged frog, and implement all avoidance, minimization, and compensatory mitigation measures required by these permits. Avoidance and minimization measures may include, but not be limited to, the following from the *USFWS Programmatic Biological Opinion for Issuance of Permits under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, including Authorizations Under 22 Nationwide Permits, for Projects that May Affect the Threatened California Red-legged Frog in Nine San Francisco Bay Area Counties, California* (USFWS 2014):

- A qualified biologist will be on site during all activities within 200 feet from the outer edge of potential habitat that may result in take of the

California red-legged frog, including the drainage ditches and small wetland area.

- To the extent possible, all ground-disturbing work within 200 feet from the outer edge of potential habitat (specifically the drainage ditches and small wetland area) will be avoided between November 1 and March 31, the time period when California red-legged frogs are most likely to be moving through upland areas. No construction activities will occur within 200 feet from the outer edge of potential habitat (specifically the drainage ditches and small wetland area) during rain events or within 24-hours following a rain event.
- To minimize harassment, injury, death, and harm in the form of temporary habitat disturbances, all project-related vehicle traffic will be restricted to established roads, construction areas, equipment staging, storage, parking, and stockpile areas.
- If a California red-legged frog is encountered, all activities which have the potential to result in the harassment, injury, or death of the individual will be immediately halted. A qualified biologist will then assess the situation and select a course of action that will avoid or minimize adverse effects to the animal.
- Uneaten human food and trash attracts crows, ravens, coyotes, and other predators of the California red-legged frog. A litter control program will be instituted at each construction site. All workers will ensure their food scraps, paper wrappers, food containers, cans, bottles, and other trash are deposited in covered or closed trash containers. The trash containers will be removed from the construction site at the end of each working day.
- Where needed, loss of soil from run-off or erosion will be prevented with straw bales, straw wattles, or similar means provided they do not entangle, block escape or dispersal routes of the California red-legged frog.

- No insecticides or herbicides will be used within the impact areas during construction or long-term operational maintenance where there is the potential for these chemical agents to enter the drainage ditches or small wetland area that contain potential habitat for the California red-legged frog.
- No pets will be permitted at the construction site, to avoid and minimize the potential for harassment, injury, and death of the California red-legged frog.
- For on-site storage of pipes, conduits, and other materials that could provide shelter for special-status species, an open-top trailer will be used to elevate the materials above ground. This is intended to reduce the potential for animals to climb into the conduits and other materials.
- To the maximum extent possible, night-time construction will be minimized or avoided because dusk and dawn are often the times when the California red-legged frog is most actively moving and foraging.
- Plastic monofilament netting (erosion control matting), loosely woven netting, or similar material in any form will not be used at the construction site because California red-legged frogs can become entangled and trapped in them. Materials utilizing fixed weaves (strands cannot move), polypropylene, polymer, or other synthetic materials will not be used.
- Trenches or pits one foot or deeper that are going to be left unfilled for more than 48 hours will be securely covered with boards or other material to prevent the California red-legged frog from falling into them.

Burrowing Owl

If burrowing owl is present on or adjacent to the compost facility or Survey Areas, construction activities could result in the loss or disturbance of individual animals. This

would be a significant adverse environmental impact. Implementation of the following mitigation measure would reduce the potential impact to a less-than-significant level.

BIO-4 To avoid/minimize impacts to burrowing owls potentially occurring on or adjacent to the impact areas, the project proponent shall retain a qualified consulting biologist to conduct a two-visit (i.e. morning and evening) presence/absence survey at areas of suitable habitat on and adjacent to the impact areas no less than 14 days prior to the start of construction or ground disturbance activities. Surveys shall be conducted according to methods described in the *Burrowing Owl Survey Protocol and Mitigation Guidelines* (CBOC 1993) and the *Staff Report on Burrowing Owl Mitigation* (CDFW 2012).

Because burrowing owls occupy habitat year-round, seasonal no-disturbance buffers, as outlined in the *Burrowing Owl Survey Protocol and Mitigation Guidelines* (CBOC 1993) and the *Staff Report on Burrowing Owl Mitigation* (CDFW 2012), shall be in place around occupied habitat prior to and during any ground disturbance activities. The following table includes buffer areas based on the time of year and level of disturbance (CDFG 2012), unless a qualified biologist approved by CDFW verifies through non-invasive measures that either: 1) birds have not begun egg laying and incubation; or 2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.

Location	Time of Year	Level of Disturbance		
		Low	Med	High
Nesting Sites	April 1 – Aug 15	200 m	500 m	500 m
Nesting Sites	Aug 16 – Oct 15	200 m	200 m	500 m
Nesting Sites	Oct 16 – Mar 31	50 m	100 m	500 m

If burrowing owl are found to occupy the compost facility or SR 25 impact areas and avoidance is not possible, burrow exclusion may be conducted by qualified biologists only during the non-breeding season, before breeding behavior is exhibited and after the burrow is confirmed empty through non-

invasive methods, such as surveillance. Occupied burrows will be replaced with artificial burrows at a ratio of one collapsed burrow to one constructed artificial burrow (1:1). Evicted burrowing owls may attempt to colonize or re-colonize an area that will be impacted, thus ongoing surveillance of the compost facility or SR 25 impact areas during project activities will be conducted at a rate sufficient to detect burrowing owls if they return.

If surveys locate occupied burrows in or near construction areas, consultation with the CDFW shall occur to interpret survey results and develop a project-specific avoidance and minimization approach.

Roosting Bats

Potential habitat for western mastiff bat and pallid bat occurs in mature trees present within the impact areas. If special-status bats are present or in the vicinity, tree removal and other construction activities could result in the loss of individual animals. This would be a significant adverse environmental impact. Implementation of the following mitigation measure would reduce the potential impact to a less-than-significant level.

Mitigation Measure

BIO-5 Approximately 14 days prior to tree removal activities, a qualified biologist shall conduct a habitat assessment for bats and potential roosting sites in trees to be removed and in trees within 50 feet of the construction footprint. These surveys shall include a visual inspection of potential roosting features (bats need not be present) and a search for presence of guano within the project site, construction access routes, and 50 feet around these areas. Cavities, crevices, exfoliating bark, and bark fissures that could provide suitable potential nest or roost habitat for bats shall be surveyed. Assumptions can be made on what species is present due to observed visual characteristics along with habitat use, or the bats can be identified to the species level with the use of a bat echolocation detector such as an "Anabat" unit. Potential roosting features found during the survey shall be flagged or marked.

- If no roosting sites or bats are found, a letter report confirming absence shall be prepared and no further mitigation is required.
- If bats or roosting sites are found, bats shall not be disturbed without specific notice to and consultation with CDFW.
- If bats are found roosting outside of the nursery season (May 1 through October 1), the CDFW shall be consulted prior to any eviction or other action. If avoidance or postponement is not feasible, a Bat Eviction Plan shall be submitted to CDFW for written approval prior to project implementation. A request to evict bats from a roost includes details for excluding bats from the roost site and monitoring to ensure that all bats have exited the roost prior to the start of activity and are unable to re-enter the roost until activity is completed. Any bat eviction shall be timed to avoid lactation and young-rearing. If bats are found roosting during the nursery season, they shall be monitored to determine if the roost site is a maternal roost. This could occur by either visual inspection of the roost bat pups, if possible, or by monitoring the roost after the adults leave for the night to listen for bat pups. Because bat pups cannot leave the roost until they are mature enough, eviction of a maternal roost cannot occur during the nursery season. Therefore, if a maternal roost is present, a 50-foot buffer zone (or different size if determined in consultation with the CDFW) shall be established around the roosting site within which no construction activities including tree removal or structure disturbance shall occur until after the nursery season.

Protected Nesting Birds

Protected nesting birds, including raptor species, have the potential to nest in structures, on open ground, or in any type of vegetation, including trees, during the nesting bird season (January 15 through September 15). If nesting birds protected by state and federal regulations are present within or adjacent to the impact areas during soil-disturbing or construction activities, the proposed project may directly result in loss of active nests, or indirectly result in nest abandonment and thereby cause loss of fertile eggs or nestlings. This would be a significant adverse environmental impact. Implementation of the

following mitigation measure would reduce the potential impact to a less-than significant level.

BIO-6 Construction activities can cause direct or indirect impacts to nesting birds. Any tree removal, pruning, grading, grubbing, or demolition within the impact areas shall be conducted outside of the bird nesting season (January 15 through September 15) to the greatest extent feasible. If this type of construction, or noise resulting from construction activities, occurs during the bird nesting season, then a qualified biologist shall conduct pre-construction surveys for nesting birds to ensure that no nests would be disturbed during project activities. Sustained noise can cause indirect impacts by creating stress in birds.

If project-related work is scheduled during the nesting season (February 15 to August 30 for small bird species such as passerines; January 15 to September 15 for owls; and February 15 to September 15 for other raptors), or if construction activities are suspended for at least 15 days and recommence during the nesting season, a qualified biologist shall conduct nesting bird surveys. Two surveys for active nests of such birds shall occur within 15 days prior to the start of construction, with the second survey conducted within 48 hours prior to the start of construction. Appropriate minimum survey radii surrounding each work area are typically 250 feet for passerines, 500 feet for smaller raptors, and 1,000 feet for larger raptors. Surveys shall be conducted at the appropriate times of day to observe nesting activities when birds are most active. Off-site locations where access is not available may be surveyed from within the site or from public areas. A report documenting survey results and plan for active bird nest avoidance (if needed) shall be completed by the qualified biologist prior to initiation of construction activities.

If the qualified biologist documents active nests within the impact areas or in nearby surrounding areas, an appropriate buffer between each nest and active construction shall be established. The buffer shall be clearly marked and maintained until the young have fledged and are foraging independently. Prior to construction, the qualified biologist shall conduct baseline monitoring of each nest to characterize normal bird behavior and establish a buffer distance, which allows the birds to exhibit normal behavior.

The qualified biologist shall monitor the nesting birds daily during construction activities and increase the buffer if birds show signs of unusual or distressed behavior (e.g. defensive flights and vocalizations, standing up from a brooding position, and/or flying away from the nest). If buffer establishment is not possible, the qualified biologist or construction foreman shall have the authority to cease all construction work in the area until the young have fledged and the nest is no longer active.

Jurisdictional Wetlands and Waters

Construction within the impact areas would require installation of new culverts and will result in fill of potentially jurisdictional drainage ditches and a small wetland. If considered jurisdictional by the USACE and/or RWQCB, permits may be required for construction of the new access driveway and widening of SR 25. Impacts to jurisdictional wetlands and waterways are considered significant adverse impacts. Implementation of the following mitigation measure would reduce the impact to a less-than-significant level.

BIO-7 Prior to initiation of ground disturbance or construction activities within the new access driveway and SR 25 impact areas, the project proponent shall retain a qualified biologist to determine the extent of drainage ditches and potential wetlands regulated by the USACE and RWQCB. If the USACE claims jurisdiction, the project proponent shall retain a qualified biologist to obtain a Clean Water Act Section 404 Nationwide Permit. If the impacts to the drainage ditches and potential wetlands do not qualify for a Nationwide Permit, the project proponent shall proceed with the qualified biologist in obtaining an Individual Permit from the USACE. The project proponent shall then retain a qualified biologist to coordinate with the RWQCB to obtain a Clean Water Act Section 401 Water Quality Certification.

To compensate for temporary and/or permanent impacts to wetlands and other waters of the U.S. that will be impacted as a result of the proposed project, mitigation will be provided as required by the regulatory permits. Mitigation would be provided through one of the following mechanisms:

- a. A Wetland Mitigation and Monitoring Plan will be developed that will outline mitigation and monitoring obligations for temporary impacts to

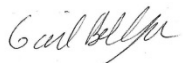
wetlands and other waters as a result of construction activities. The Wetland Mitigation and Monitoring Plan would include thresholds of success, monitoring and reporting requirements, and site-specific plans to compensate for wetland losses resulting from the project. The Wetland Mitigation and Monitoring Plan will be submitted to the appropriate regulatory agencies for review and approval during the permit application process.

- b. To compensate for permanent impacts, the purchase and/or dedication of land to provide suitable wetland restoration or creation will ensure a no net loss of wetland values or functions. If restoration is available and feasible, a minimum 1:1 impact to mitigation ratio would apply to projects for which mitigation is provided in advance.

The project proponent shall comply with terms and conditions of the permits, including measures to protect and maintain water quality, restore work sites, and mitigation to offset temporary and/or permanent wetland impacts. The project proponent shall be responsible for implementation of this mitigation measure prior to issuance of a grading permit, with oversight by the County of Santa Clara.

Please contact me with any questions or comments. I can be reached at 831-649-1799 ext. 221 or by email at bellenger@emcplanning.com.

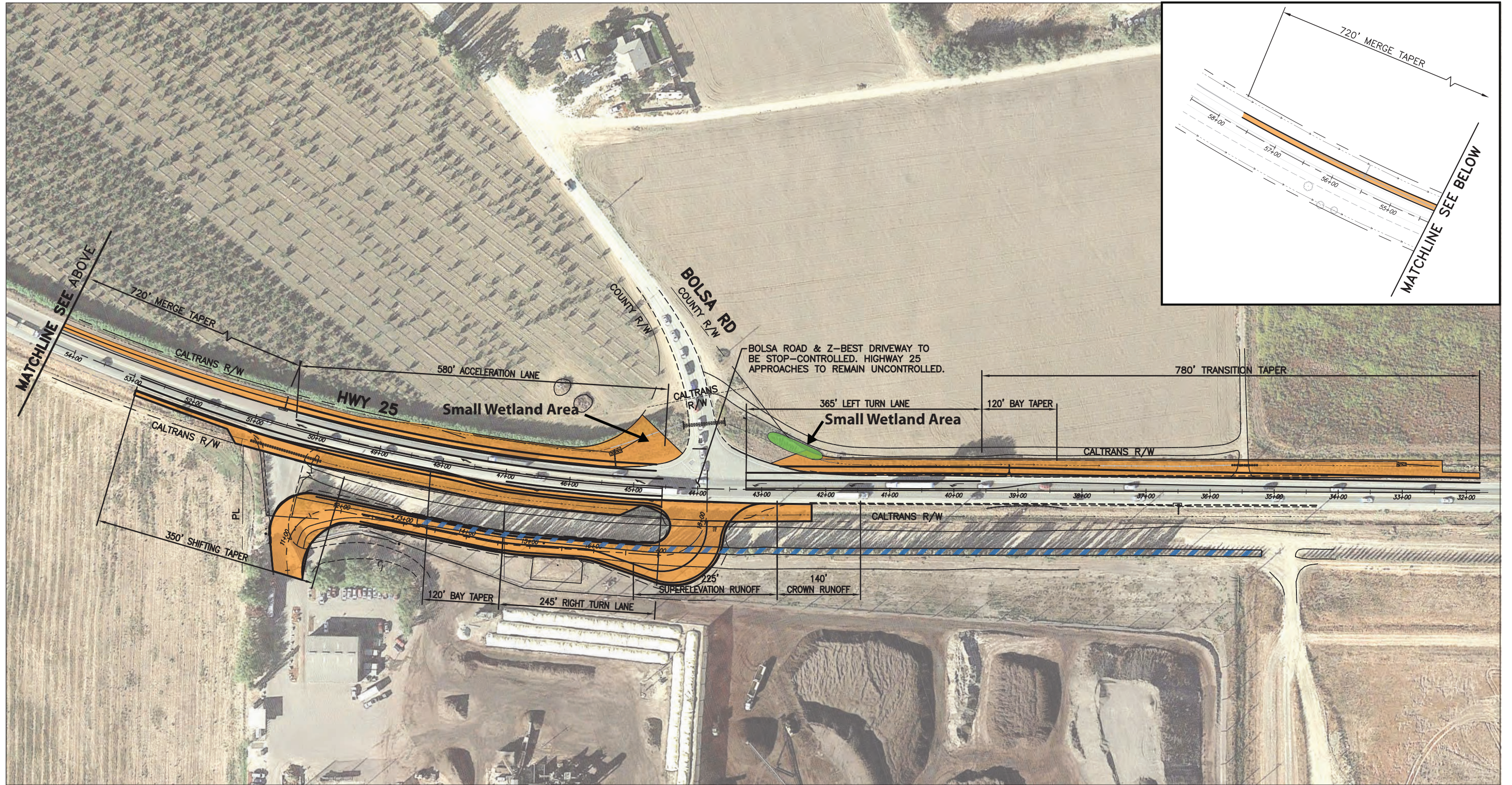
Sincerely,



Gail Bellenger, M.A.
Senior Biologist

References

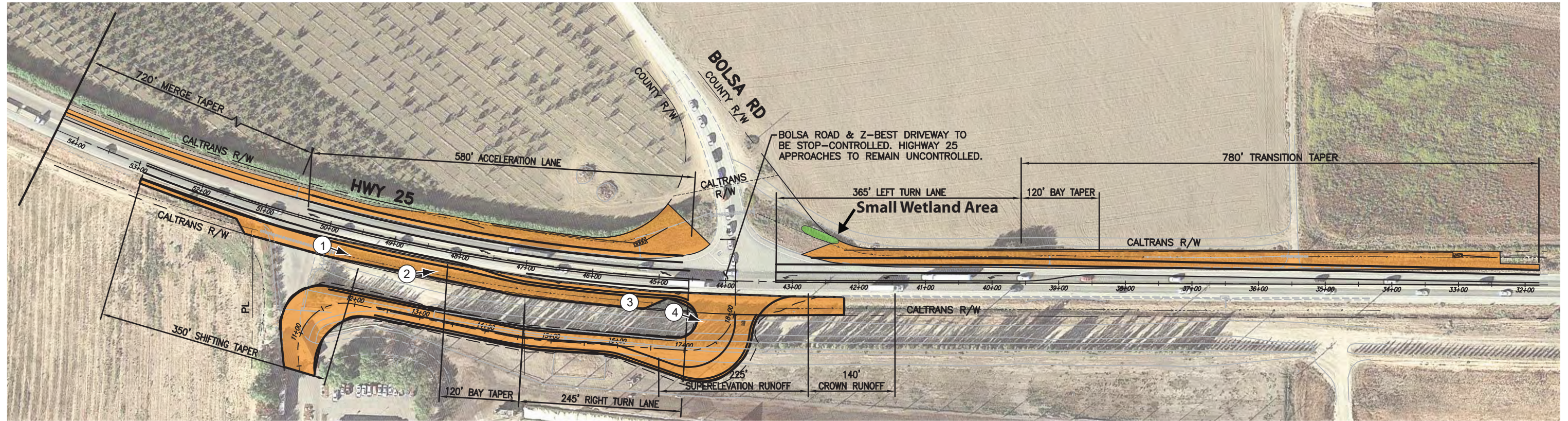
- California Burrowing Owl Consortium (CBOC). 1993. *Burrowing Owl Survey Protocol and Mitigation Guidelines*.
- California Department of Fish and Wildlife (CDFW). 2020. *California Natural Diversity Database*. Mount Madonna, Gilroy, Gilroy Hot Springs, Watsonville East, Chittenden, San Felipe, Prunedale, San Juan Bautista, and Hollister USGS quadrangles.
- CDFW. 2012. *Staff Report on Burrowing Owl Mitigation*.
- California Native Plant Society (CNPS). 2020. *Inventory of Rare and Endangered Plants*. Mount Madonna, Gilroy, Gilroy Hot Springs, Watsonville East, Chittenden, San Felipe, Prunedale, San Juan Bautista, and Hollister USGS quadrangles.
- U.S. Fish and Wildlife Service (USFWS). 2002. Recovery Plan for the California Red-legged Frog (*Rana aurora draytonii*). U.S. Fish and Wildlife Service, Portland, Oregon. 173 pp.
- USFWS. 2005. Guidance on site assessment and field surveys for California Red-Legged Frogs. Appendix: California Red-Legged Frog Ecology and Distribution. Sacramento, CA.
- USFWS. 2014. *USFWS Programmatic Biological Opinion for Issuance of Permits under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, including Authorizations Under 22 Nationwide Permits, for Projects that May Affect the Threatened California Red-legged Frog in Nine San Francisco Bay Area Counties, California*.
- USFWS. 2020a. *Endangered Species Program*. Santa Clara County.
- USFWS. 2020b. *National Wetlands Inventory*.
- WRA. 2014. *California Red-legged Frog Habitat Assessment at the Z-Best Composting Facility, Santa Clara County, California*. July 3, 2014
- WRA. 2017. *Memorandum: Z-Best Composting Facility Modification: Verification of Absence of Sensitive Species and Habitat covered by the SCVHP*. February 27, 2017.



Source: ESRI 2018, Santa Clara County GIS 2015, RJA 2020



Figure 1
Proposed Improvements and Survey Area



  Impact Areas



① View east along SR 25 of planted landscape trees and access road



② Drainage ditch parallel to SR 25



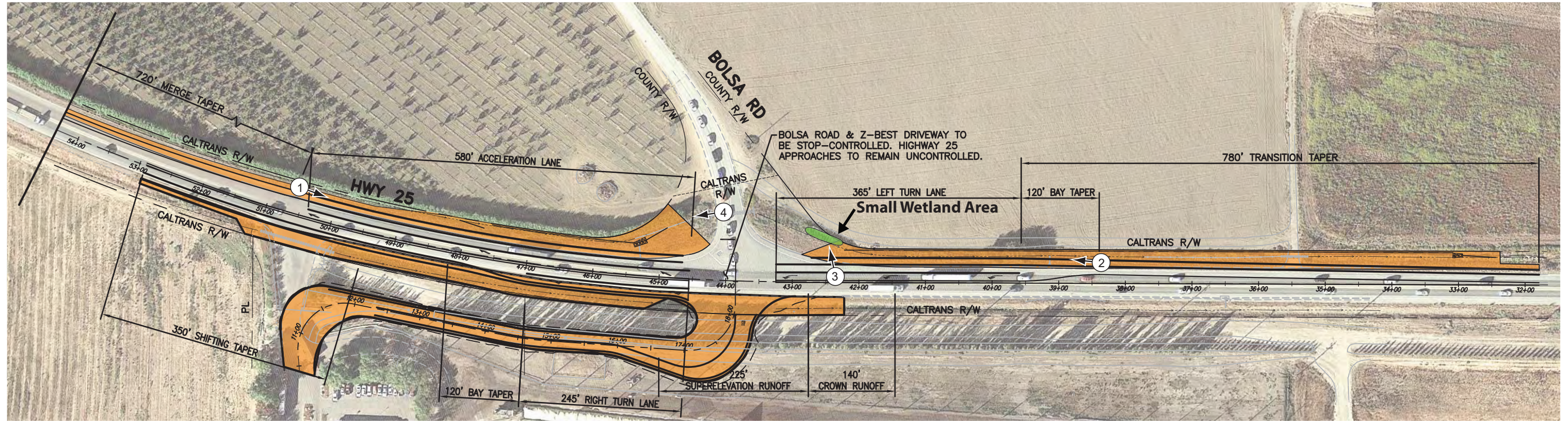
③ Compacted gravel and non-native grasses along road shoulder



④ Unpaved access road south of SR 25 and landscape trees

Source: ESRI 2019, Santa Clara County GIS 2015, RJA 2020
Photographs: EMC Planning Group 2020

Figure 2
Representative Survey Area Photographs – South Side of SR 25
Z-Best Composting Facility Modifications EIR – Supplemental Biological Resources Report



  Impact Areas



① Drainage ditch on north side of SR-25, looking east



② Drainage ditch and wetland on north side of SR-25, looking west



③ Small wetland area associated with drainage ditch (Google Earth 2019)



④ Looking west along drainage ditch from culvert under Bolsa Road

Source: ESRI 2019, Santa Clara County GIS 2015, RJA 2020
Photographs: EMC Planning Group 2020

Figure 3
Representative Survey Area Photographs – North Side of SR 25



Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Quad (Chittenden (3612185) OR Mt. Madonna (3712116) OR Gilroy (3712115) OR Gilroy Hot Springs (3712114) OR San Felipe (3612184) OR Hollister (3612174) OR San Juan Bautista (3612175) OR Prunedale (3612176) OR Watsonville East (3612186)) AND (Federal Listing Status IS Threatened OR Proposed Endangered OR Proposed Threatened OR Candidate OR All CNDDDB element occurrences OR Delisted) OR State Listing Status (Endangered OR Threatened OR Rare OR Delisted OR Candidate Endangered OR Candidate Threatened))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Adela oplerella</i> Opler's longhorn moth	IILEE0G040	None	None	G2	S2	
<i>Agelaius tricolor</i> tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S1S2	SSC
<i>Ambystoma californiense pop. 1</i> California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	G2G3T3	S3	WL
<i>Ambystoma macrodactylum croceum</i> Santa Cruz long-toed salamander	AAAAA01082	Endangered	Endangered	G5T1T2	S1S2	FP
<i>Aneides niger</i> Santa Cruz black salamander	AAAAD01070	None	None	G3	S3	SSC
<i>Anniella pulchra</i> Northern California legless lizard	ARACC01020	None	None	G3	S3	SSC
<i>Antrozous pallidus</i> pallid bat	AMACC10010	None	None	G4	S3	SSC
<i>Aquila chrysaetos</i> golden eagle	ABNKC22010	None	None	G5	S3	FP
<i>Arctostaphylos andersonii</i> Anderson's manzanita	PDERI04030	None	None	G2	S2	1B.2
<i>Arctostaphylos hookeri ssp. hookeri</i> Hooker's manzanita	PDERI040J1	None	None	G3T2	S2	1B.2
<i>Arctostaphylos pajoensis</i> Pajaro manzanita	PDERI04100	None	None	G1	S1	1B.1
<i>Astragalus tener var. tener</i> alkali milk-vetch	PDFAB0F8R1	None	None	G2T1	S1	1B.2
<i>Athene cunicularia</i> burrowing owl	ABNSB10010	None	None	G4	S3	SSC
<i>Balsamorhiza macrolepis</i> big-scale balsamroot	PDAST11061	None	None	G2	S2	1B.2
<i>Bombus caliginosus</i> obscure bumble bee	IIHYM24380	None	None	G2G3	S1S2	
<i>Bombus crotchii</i> Crotch bumble bee	IIHYM24480	None	None	G2	S1S2	
<i>Bombus occidentalis</i> western bumble bee	IIHYM24250	None	None	G2G3	S1	



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Buteo swainsoni</i> Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
<i>Campanula exigua</i> chaparral harebell	PDCAM020A0	None	None	G2	S2	1B.2
<i>Castilleja rubicundula var. rubicundula</i> pink creamsacs	PDSCR0D482	None	None	G5T2	S2	1B.2
<i>Central Maritime Chaparral</i> Central Maritime Chaparral	CTT37C20CA	None	None	G2	S2.2	
<i>Centromadia parryi ssp. congdonii</i> Congdon's tarplant	PDAST4R0P1	None	None	G3T1T2	S1S2	1B.1
<i>Chorizanthe pungens var. pungens</i> Monterey spineflower	PDPGN040M2	Threatened	None	G2T2	S2	1B.2
<i>Cirsium fontinale var. campylon</i> Mt. Hamilton thistle	PDAST2E163	None	None	G2T2	S2	1B.2
<i>Coastal Brackish Marsh</i> Coastal Brackish Marsh	CTT52200CA	None	None	G2	S2.1	
<i>Cordylanthus rigidus ssp. littoralis</i> seaside bird's-beak	PDSCR0J0P2	None	Endangered	G5T2	S2	1B.1
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	AMACC08010	None	None	G4	S2	SSC
<i>Deinandra halliana</i> Hall's tarplant	PDAST4R0C0	None	None	G3	S3	1B.2
<i>Delphinium californicum ssp. interius</i> Hospital Canyon larkspur	PDRAN0B0A2	None	None	G3T3	S3	1B.2
<i>Dicamptodon ensatus</i> California giant salamander	AAAAH01020	None	None	G2G3	S2S3	SSC
<i>Dipodomys venustus venustus</i> Santa Cruz kangaroo rat	AMAFD03042	None	None	G4T1	S1	
<i>Dudleya abramsii ssp. setchellii</i> Santa Clara Valley dudleya	PDCRA040Z0	Endangered	None	G4T2	S2	1B.1
<i>Elanus leucurus</i> white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
<i>Emys marmorata</i> western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
<i>Ericameria fasciculata</i> Eastwood's goldenbush	PDAST3L080	None	None	G2	S2	1B.1
<i>Eriogonum nortonii</i> Pinnacles buckwheat	PDPGN08470	None	None	G2	S2	1B.3
<i>Eryngium aristulatum var. hooveri</i> Hoover's button-celery	PDAP10Z043	None	None	G5T1	S1	1B.1
<i>Eumops perotis californicus</i> western mastiff bat	AMACD02011	None	None	G4G5T4	S3S4	SSC



Selected Elements by Scientific Name
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Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Euphydryas editha bayensis</i> Bay checkerspot butterfly	IILEPK4055	Threatened	None	G5T1	S1	
<i>Extriplex joaquinana</i> San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
<i>Falco columbarius</i> merlin	ABNKD06030	None	None	G5	S3S4	WL
<i>Fritillaria liliacea</i> fragrant fritillary	PMLIL0V0C0	None	None	G2	S2	1B.2
<i>Gonidea angulata</i> western ridged mussel	IMBIV19010	None	None	G3	S1S2	
<i>Helminthoglypta sequoicola consors</i> redwood shoulderband	IMGASC2421	None	None	G2T1	S1	
<i>Hesperoleucus venustus subditus</i> southern coastal roach	AFCJB19032	None	None	GNRT2	S2	SSC
<i>Hoita strobilina</i> Loma Prieta hoita	PDFAB5Z030	None	None	G2?	S2?	1B.1
<i>Holocarpha macradenia</i> Santa Cruz tarplant	PDAST4X020	Threatened	Endangered	G1	S1	1B.1
<i>Lasiurus blossevillii</i> western red bat	AMACC05060	None	None	G4	S3	SSC
<i>Lasiurus cinereus</i> hoary bat	AMACC05030	None	None	G3G4	S4	
<i>Lavinia exilicauda harengus</i> Monterey hitch	AFCJB19013	None	None	G4T3	S3	SSC
<i>Legenere limosa</i> legenere	PDCAM0C010	None	None	G2	S2	1B.1
<i>Lessingia micradenia var. glabrata</i> smooth lessingia	PDAST5S062	None	None	G2T2	S2	1B.2
<i>Linderiella occidentalis</i> California linderiella	ICBRA06010	None	None	G2G3	S2S3	
<i>Malacothamnus aboriginum</i> Indian Valley bush-mallow	PDMAL0Q020	None	None	G3	S3	1B.2
<i>Malacothamnus arcuatus</i> arcuate bush-mallow	PDMAL0Q0E0	None	None	G2Q	S2	1B.2
<i>Masticophis flagellum ruddocki</i> San Joaquin coachwhip	ARADB21021	None	None	G5T2T3	S2?	SSC
<i>Monolopia gracilens</i> woodland woollythreads	PDAST6G010	None	None	G3	S3	1B.2
<i>Navarretia prostrata</i> prostrate vernal pool navarretia	PDPLM0C0Q0	None	None	G2	S2	1B.2
<i>Northern Coastal Salt Marsh</i> Northern Coastal Salt Marsh	CTT52110CA	None	None	G3	S3.2	



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Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Oncorhynchus mykiss irideus pop. 9</i> steelhead - south-central California coast DPS	AFCHA0209H	Threatened	None	G5T2Q	S2	
<i>Optioservus canus</i> Pinnacles optioservus riffle beetle	IICOL5E020	None	None	G2	S1	
<i>Penstemon rattanii var. kleei</i> Santa Cruz Mountains beardtongue	PDSCR1L5B1	None	None	G4T2	S2	1B.2
<i>Phrynosoma blainvillii</i> coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
<i>Piperia yadonii</i> Yadon's rein orchid	PMORC1X070	Endangered	None	G1	S1	1B.1
<i>Plagiobothrys diffusus</i> San Francisco popcornflower	PDBOR0V080	None	Endangered	G1Q	S1	1B.1
<i>Plagiobothrys glaber</i> hairless popcornflower	PDBOR0V0B0	None	None	GX	SX	1A
<i>Puccinellia simplex</i> California alkali grass	PMPOA53110	None	None	G3	S2	1B.2
<i>Rallus obsoletus obsoletus</i> California Ridgway's rail	ABNME05011	Endangered	Endangered	G3T1	S1	FP
<i>Rana boylei</i> foothill yellow-legged frog	AAABH01050	None	Endangered	G3	S3	SSC
<i>Rana draytonii</i> California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
<i>Reithrodontomys megalotis distichlis</i> Salinas harvest mouse	AMAFF02032	None	None	G5T1	S1	
<i>Riparia riparia</i> bank swallow	ABPAU08010	None	Threatened	G5	S2	
<i>Rosa pinetorum</i> pine rose	PDROS1J0W0	None	None	G2	S2	1B.2
<i>Spea hammondi</i> western spadefoot	AAABF02020	None	None	G2G3	S3	SSC
<i>Streptanthus albidus ssp. peramoenus</i> most beautiful jewelflower	PDBRA2G012	None	None	G2T2	S2	1B.2
<i>Sycamore Alluvial Woodland</i> Sycamore Alluvial Woodland	CTT62100CA	None	None	G1	S1.1	
<i>Taricha torosa</i> Coast Range newt	AAAAF02032	None	None	G4	S4	SSC
<i>Taxidea taxus</i> American badger	AMAJF04010	None	None	G5	S3	SSC
<i>Trifolium hydrophilum</i> saline clover	PDFAB400R5	None	None	G2	S2	1B.2
<i>Tryonia imitator</i> mimic tryonia (=California brackishwater snail)	IMGASJ7040	None	None	G2	S2	



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Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Vireo bellii pusillus</i> least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S2	
<i>Vulpes macrotis mutica</i> San Joaquin kit fox	AMAJA03041	Endangered	Threatened	G4T2	S2	

Record Count: 82



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Query Criteria: Quad

Ambystoma macrodactylum croceum		Element Code: AAAAA01082	
Santa Cruz long-toed salamander			
Listing Status:	Federal: Endangered	CNDDDB Element Ranks:	Global: G5T1T2
	State: Endangered		State: S1S2
	Other: CDFW_FP-Fully Protected		
Habitat:	General: WET MEADOWS NEAR SEA LEVEL IN A FEW RESTRICTED LOCALES IN SANTA CRUZ AND MONTEREY COUNTIES.		
	Micro: AQUATIC LARVAE PREFER SHALLOW (<12 INCHES) WATER, USING CLUMPS OF VEGETATION OR DEBRIS FOR COVER. ADULTS USE MAMMAL BURROWS.		

Occurrence No.	1	Map Index: 20311	EO Index: 8659	Element Last Seen: 2006-05-18
Occ. Rank:	Poor		Presence: Presumed Extant	Site Last Seen: 2006-05-18
Occ. Type:	Natural/Native occurrence		Trend: Decreasing	Record Last Updated: 2019-07-11

Quad Summary: Prunedale (3612176)
County Summary: Monterey

Lat/Long:	36.79281 / -121.73433	Accuracy:	non-specific area
UTM:	Zone-10 N4072635 E612920	Elevation (ft):	35
PLSS:	T13S, R02E, Sec. 15 (M)	Acres:	94.0

Location: NORTHERN CORNER OF MORO COJO SLOUGH, AT THE INTERSECTION OF CASTROVILLE, DOLAN, AND SHAFFI ROADS, MOSS LANDING.
Detailed Location: LARVAE ABUNDANT UNDER TYPHA MATS WHEN FIRST DISCOVERED IN 1978 IN THE NW CORNER OF THE SLOUGH.
Ecological: HABITAT IS AN EPHEMERAL POND/SLOUGH, DOMINATED BY WILLOWS, CATTAILS, AND SPIKE RUSH; SURROUNDED ON THREE SIDES BY STEEP, GRASSY HILLS WITH SCATTERED OAKS. AMBYSTOMA CALIFORNIENSE ALSO OCCURS HERE.
General: DISCOVERED IN 1978. SITE APPEARED EXTANT IN 1988; NO SALAMANDERS OBSERVED DUE TO TIME OF YEAR (MID-DEC). NONE FOUND BTWN FEB & JUN 1989. 3 LARVAE CAUGHT/RELEASED ON 18 MAY 2006; 8 LARVAE, IDENTIFIED AS AMBYSTOMA SP, ALSO CAPTURED.
Owner/Manager: PVT



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Occurrence No.	12	Map Index: 47467	EO Index: 47467	Element Last Seen:	2009-06-15
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2017-11-13
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-07-11

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.77979 / -121.72872	Accuracy:	non-specific area
UTM:	Zone-10 N4071197 E613440	Elevation (ft):	10
PLSS:	T13S, R02E, Sec. 22 (M)	Acres:	116.0

Location: UPPER MORO COJO SLOUGH, SE OF CASTROVILLE BOULEVARD, NW OF HIGHWAY 156, AND SOUTH OF MERIDIAN ROAD, NE OF CASTROVILLE.

Detailed Location: WETLAND COMPLEX BEHIND NORTH MONTEREY COUNTY HIGH SCHOOL. ONE EASTERN TIGER SALAMDER (AMBYSTOMA TIGRINUM) ALSO CAPTURED AT THIS SITE (1990).

Ecological: SLOUGH SURROUNDED BY GRADED ANNUAL GRASSLAND & RUDERAL GROWTH, STRAWBERRY FIELDS, OAK WOODLANDS & ENCROACHING DEV. WETLAND IN FAIRLY GOOD SHAPE; THREATS MOST LIKELY TO UPLAND HABITAT. HABITAT IMPROVEMENT PROJ OCCURRED IN 2017.

General: 2 JUVS & 2 GRAVID FEMALES, 1990. 1 ADULT & 9 SUBADULTS, 2006. 3 AD, 10 5 JAN 2007. 12 LARVAE APR 2007. 7 JUV MAY 2007. 5 AD, 20 JUV OCT 2007. 3 AD, 19 JUV IN 2008. ~20 IN 2009. NONE IN 2017 VEGETATION PROJ - UNCLEAR IF SURVEYED.

Owner/Manager: PVT, NORTH MONTEREY COUNTY HS

Occurrence No.	15	Map Index: 52999	EO Index: 52999	Element Last Seen:	2012-01-27
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2012-01-27
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-07-16

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.81723 / -121.7306	Accuracy:	non-specific area
UTM:	Zone-10 N4075350 E613219	Elevation (ft):	122
PLSS:	T13S, R02E, Sec. 10, NE (M)	Acres:	15.0

Location: NEXT TO THE ELKHORN SLOUGH NATIONAL ESTUARINE RESEARCH RESERVE HEADQUARTERS.

Detailed Location: 2004 COLLECTION FROM NEAR THE CENTER DIVIDE IN THE VISITOR CENTER PARKING LOT. 2009 SIGHTING IN SHOWER OF RESERCH BUILDING.

Ecological: MOSTLY NATIVE PLANT LANDSCAPE (WHITE ALDER, PINK FLOWERING CURRANT, PACIFIC SILVERWEED, CALIFORNIA ASTER, BLUE WILD RYE, & CALIFORNIA BROME), BUT SOME INVASIVE PLANTS ALSO OBSERVED. SURROUNDING AREA IS OAK WOODLAND & GRASSLAND.

General: INCIDENTAL OBS OF ADULT AT NIGHT, 2003. DOR SALAMANDER COLLECTED IN 2004. 1 FOUND IN SHOWER STALL IN BUILDING & MOVED TO FRESHWATER SOURCE 30M AWAY IN 2009. 1 ADULT FOUND UNDER COVER IN OAK WOODLAND NW OF PARKING AREA IN 2012.

Owner/Manager: DFG-ELKHORN SLOUGH ER



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Occurrence No.	20	Map Index: 70828	EO Index: 71746	Element Last Seen:	2015-05-21
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2015-05-21
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-07-11
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.85836 / -121.71251		Accuracy:	non-specific area	
UTM:	Zone-10 N4079934 E614770		Elevation (ft):	19	
PLSS:	T12S, R02E, Sec. 26, SE (M)		Acres:	25.0	
Location:	ABOUT 0.3 MI WSW OF JOHNSON RD AT HALL RD (G12), 1.7 MI E OF THE N END OF ELKHORN SLOUGH, 4 MI SE OF WATSONVILLE.				
Detailed Location:	PONDS SOUTH OF HALL ROAD AND NW OF LIVE OAK ROAD - FORMER OXBOW OF CARNEROS CREEK. SMALLER PONDS CREATED IN 2012 AS PART OF WETLAND RESTORATION PROJECT.				
Ecological:	SOUTHMOST POND (40X450FT) HAD WATER TEA COLORED, 8-10 INCHES DEEP, WITH THIN FILM OF PEAT OIL? ON SURFACE IN 2007. HYLEA TADPOLES ALSO OBSERVED. ADJACENT CREEK OCCASIONALLY FLOODS POND AREAS. SURROUNDING LANDSCAPE MAINLY AGRICULTURE FIELDS.				
General:	3 LARVAE CAPTURED, 10 MAY 2007, CAPTURE RATE LOW FOR EFFORT. 50+ LARVAE FOUND ON 1 MAY 2013. 1 LARVAE FOUND ON 21 MAY 2015.				
Owner/Manager:	PVT-ALBA/TRIPLE M RANCH				
Occurrence No.	26	Map Index: B3436	EO Index: 115351	Element Last Seen:	2015-06-15
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2015-06-15
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-07-16
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.82055 / -121.73073		Accuracy:	specific area	
UTM:	Zone-10 N4075717 E613202		Elevation (ft):	11	
PLSS:	T13S, R02E, Sec. 10, NE (M)		Acres:	11.0	
Location:	"LOWER CATTAIL SWALE," ELKHORN RD, ABOUT 1 MILE S OF ITS INTERSECTION WITH STRAWBERRY RD, ELKHORN SLOUGH ER.				
Detailed Location:	ON WEST SIDE OF ELKHORN RD.				
Ecological:	SEMI-PERENNIAL POND FED BY RAINFALL. NEXT TO SALT MARSH & MAINTAINED AS FRESHWATER VIA SEALED TIDE GATE. SURROUNDED BY OAK WOODLAND AND SOME EUCALYPTUS STANDS. AMBYSTOMA CALIFORNIENSE & RANA DRAYTONII ALSO OCCUR IN POND.				
General:	SCLTS KNOWN TO BREED IN POND SINCE AT LEAST 1997. ~20 ADULTS & ~20 JUVENILES OBSERVED ON 1 MAY 2006. 1 ADULT FOUND UNDER COVER BOARD EAST OF POND ON 13 APR 2012. 3 LARVAE OBSERVED ON 20 APR, ~20 ON 25 APR AND 20+ ON 15 JUN 2015.				
Owner/Manager:	DFG-ELKHORN SLOUGH ER				



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Occurrence No.	27	Map Index:	68095	EO Index:	115352	Element Last Seen:	2011-03-27
Occ. Rank:	Fair	Presence:	Presumed Extant	Site Last Seen:		2011-03-27	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2019-07-15	
Quad Summary:	Prunedale (3612176)						
County Summary:	Monterey						
Lat/Long:	36.77040 / -121.72964			Accuracy:	specific area		
UTM:	Zone-10 N4070155 E613372			Elevation (ft):	10		
PLSS:	T13S, R02E, Sec. 27 (M)			Acres:	10.0		
Location:	UPPERMOST REACH OF MORO COJO SOUGH SOUTH ARM, ON SOUTH SIDE OF HWY 156. EAST OF CASTROVILLE.						
Detailed Location:							
Ecological:	SEASONAL FRESHWATER MARSH ISOLATED FROM MAIN SLOUGH BY HWY 156, OPEN WATER HABITAT EXTENSIVE WHEN SLOUGH FILLS. CATTAILS, BULRUSH AND DENSE MATS OF SMARTWEED LINE THE SHORELINE. SURROUNDED BY GRASSLAND PATCHES AND AGRICULTURAL FIELDS.						
General:	15 ADULTS AND 63 JUVENILES CAUGHT IN PITFALL TRAP/DRIFT FENCE STUDY BETWEEN 24 OCT AND 30 DEC 2010. 11 JUVENILES AND 15 LARVAE FOUND BETWEEN 2 JAN AND 27 MAR 2011.						
Owner/Manager:	PVT						

<i>Ambystoma californiense pop. 1</i>	Element Code:	AAAAA01181
California tiger salamander - central California DPS		
Listing Status:	Federal:	Threatened
	State:	Threatened
	Other:	CDFW_WL-Watch List, IUCN_VU-Vulnerable
Habitat:	General:	LIVES IN VACANT OR MAMMAL-OCCUPIED BURROWS THROUGHOUT MOST OF THE YEAR; IN GRASSLAND, SAVANNA, OR OPEN WOODLAND HABITATS.
	Micro:	NEED UNDERGROUND REFUGES, ESPECIALLY GROUND SQUIRREL BURROWS, AND VERNAL POOLS OR OTHER SEASONAL WATER SOURCES FOR BREEDING.
CNDBB Element Ranks:	Global:	G2G3T3
	State:	S3

Occurrence No.	42	Map Index:	30823	EO Index:	3816	Element Last Seen:	2005-12-02
Occ. Rank:	Fair	Presence:	Presumed Extant	Site Last Seen:		2005-12-02	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2006-10-05	
Quad Summary:	Mt. Madonna (3712116)						
County Summary:	Santa Clara						
Lat/Long:	37.05103 / -121.62871			Accuracy:	non-specific area		
UTM:	Zone-10 N4101412 E621933			Elevation (ft):	450		
PLSS:	T10S, R03E, Sec. 22 (M)			Acres:	27.4		
Location:	LIONS CREEK, NORTH OF DAY ROAD, ABOUT 5 MILES SOUTH OF MORGAN HILL.						
Detailed Location:							
Ecological:	HABITAT CONSISTS OF A FORMER STOCK POND ON LIONS CREEK, SURROUNDED BY GRAZED, NON-NATIVE GRASSLAND & SCATTERED OAKS ON STEEP SLOPES. STOCK POND DAM MAINTENANCE ACTIVITIES RESULTED IN POOR PONDING CONDITIONS; STREAM FLOWS THROUGH A DAM CUT.						
General:	2 ADULTS OBSERVED IN THE VICINITY OF THE RANCH BUILDINGS IN DEC 1992. 3 ADULTS OBSERVED (2 IN STOCK POND, 1 IN GRASSLAND) ON 8 FEB 1993. 1 FEMALE TRAPPED ON 29 NOV 2005; 20 MALES, 6 FEMALES, AND 3 JUVENILES TRAPPED ON 2 DEC 2005.						
Owner/Manager:	PVT						



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Occurrence No.	76	Map Index: A2440	EO Index: 4112	Element Last Seen:	2016-04-26
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2016-04-26
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-01-12
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.82629 / -121.72849		Accuracy:	specific area	
UTM:	Zone-10 N4076357 E613393		Elevation (ft):	25	
PLSS:	T13S, R02E, Sec. 3, SE (M)		Acres:	33.0	
Location:	FROM ABOUT 0.25 MI SW TO 0.5 MILES ESE OF ELKHORN RD AT STRAWBERRY RD, ABOUT 4 MILES NORTH OF CASTROVILLE.				
Detailed Location:	MAPPED TO PROVIDED COORDINATES. ADULTS MAINLY OBSERVED ALONG STRAWBERRY RD. LARVAE OBSERVED IN HOWELL POND AT (36.82712, -121.73034) AND RANA POND AT (36.82567, -121.73514).				
Ecological:	1988: BREEDING HABITAT IN FRESHWATER MARSH, PART OF ELKHORN SLOUGH ER. 2014: CTS CROSSING ROAD IN MULTIPLE DIRECTIONS ON RAINY NIGHT. 2015: FRESHWATER POND ON PRIVATE LAND S OF ROAD MAY BE BREEDING SITE. 2016: BREEDING PONDS ON RESERVE.				
General:	1 ADULT FOUND DEAD ON ROAD, 16 NOV 1988, DEPOSITED IN MVZ. MIGRATION OBSERVED NOV-DEC 2014; ABOUT 75 OBS ON 11 DEC; 10 DORS SENT TO UCLA FOR DNA ANALYSIS. 10 ADULTS OBS 8 NOV 2015. 2 LARVAE OBS ON 16 APR & 3 ON 26 APR 2016.				
Owner/Manager:	MNT COUNTY, PVT, DFG				
Occurrence No.	77	Map Index: 30882	EO Index: 4131	Element Last Seen:	2008-02-05
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2008-02-05
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2009-05-29
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.05917 / -121.40943		Accuracy:	80 meters	
UTM:	Zone-10 N4102619 E641417		Elevation (ft):	1920	
PLSS:	T10S, R05E, Sec. 15, SE (M)		Acres:	0.0	
Location:	ALONG THE WEST SIDE OF PHLEGLEY RIDGE, HENRY W. COE STATE PARK.				
Detailed Location:	POND SITE C-60 IS LOCATED WEST OF DIRT ROAD. SITE IS IN A NEW ADDITION TO HENRY W. COE STATE PARK - AREA IS STILL GRAZED AND NOT YET OPEN TO THE PUBLIC (1994).				
Ecological:	HABITAT CONSISTS OF A SEASONAL STOCK POND IN NON-NATIVE GRASSLAND WITH OAK WOODLANDS NEARBY. POND RETAINS WATER WELL INTO THE DRY SEASON. IT RETAINS AT LEAST SOME WATER IN ALL BUT THE DRIEST YEARS.				
General:	30+ LARVAE OBSERVED ON 23 MAY 1994. 3 ADULTS AND 100'S OF EGGS OBSERVED IN THE POND ON 5 FEB 2008. RANA DRAYTONII DETECTED AT SITE IN PREVIOUS YEARS, BUT NOT DURING 2008.				
Owner/Manager:	DPR-HENRY W COE SP				



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Occurrence No.	78	Map Index: 30881	EO Index: 4132	Element Last Seen:	2003-04-06
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2003-04-06
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-01-22
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.07268 / -121.40665		Accuracy:	80 meters	
UTM:	Zone-10 N4104122 E641640		Elevation (ft):	1780	
PLSS:	T10S, R05E, Sec. 15, NE (M)		Acres:	0.0	
Location:	AT THE SOUTH EDGE OF VASQUEZ PEAK, HENRY W. COE STATE PARK.				
Detailed Location:	SITE IS LOCATED IN A NEWLY-ACQUIRED ADDITION TO HENRY W. COE STATE PARK - AREA IS GRAZED AND IS NOT YET OPEN TO THE PUBLIC.				
Ecological:	HABITAT CONSISTS OF A SEASONAL STOCK POND IN NON-NATIVE GRASSLAND/OAK SAVANNA.				
General:	10 LARVAE OBSERVED ON 23 MAY 1994. 22 LARVAE OBSERVED ON 6 APR 2003.				
Owner/Manager:	DPR-HENRY W COE SP				
Occurrence No.	79	Map Index: 30880	EO Index: 4133	Element Last Seen:	1994-05-25
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	1994-05-25
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	1995-11-14
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.07778 / -121.43621		Accuracy:	80 meters	
UTM:	Zone-10 N4104644 E639002		Elevation (ft):	2000	
PLSS:	T10S, R05E, Sec. 09, SW (M)		Acres:	0.0	
Location:	BETWEEN BRAEN CANYON AND COON HUNTERS GULCH, 1 MILE NE OF HUNTING HOLLOW, HENRY W. COE STATE PARK.				
Detailed Location:	SITE IS LOCATED A IN A NEW ADDITION TO THE PARK - AREA IS GRAZED AND NOT YET OPEN TO THE PUBLIC.				
Ecological:	HABITAT CONSISTS OF A SEASONAL STOCK POND IN NON-NATIVE GRASSLAND HABITAT.				
General:	<10 LARVAE OBSERVED ON 25 MAY 1994.				
Owner/Manager:	DPR-HENRY W COE SP				
Occurrence No.	93	Map Index: 26005	EO Index: 5062	Element Last Seen:	1991-05-27
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1991-05-27
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2001-11-01
Quad Summary:	San Juan Bautista (3612175)				
County Summary:	San Benito				
Lat/Long:	36.84849 / -121.55052		Accuracy:	specific area	
UTM:	Zone-10 N4079045 E629228		Elevation (ft):	300	
PLSS:	T12S, R04E, Sec. 32 (M)		Acres:	4.4	
Location:	NORTH SIDE OF HWY 156, 0.25 MILE WEST OF THE MONTEREY STREET EXIT, SAN JUAN BAUTISTA.				
Detailed Location:	SITE LOCATED 150 FEET NORTH OF HWY 156.				
Ecological:					
General:	SHAFFER SITE #248. CTS PRESENT ON 27 MAY 1991; NUMBER AND LIFESTAGE UNKNOWN. 18 MAR 1918 CAS RECORD FROM "VICINITY NORTH OF SAN JUAN".				
Owner/Manager:	UNKNOWN				



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Occurrence No.	94	Map Index: 26004	EO Index: 5140	Element Last Seen:	1991-05-27
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1991-05-27
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	1996-04-23
Quad Summary:	San Felipe (3612184)				
County Summary:	San Benito				
Lat/Long:	36.89235 / -121.47269		Accuracy:	specific area	
UTM:	Zone-10 N4084019 E636090		Elevation (ft):	230	
PLSS:	T12S, R04E, Sec. 13 (M)		Acres:	6.5	
Location:	0.2 MILE SOUTH OF THE HUDNER LANE TERMINUS IN THE FLINT HILLS, 5 MILES NW OF HOLLISTER.				
Detailed Location:					
Ecological:					
General:	SHAFFER SITE #250. CTS PRESENT ON 27 MAY 1991; NUMBER AND LIFESTAGE UNKNOWN.				
Owner/Manager:	UNKNOWN				
Occurrence No.	101	Map Index: 25578	EO Index: 5491	Element Last Seen:	1991-05-01
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1991-05-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	1996-01-03
Quad Summary:	San Juan Bautista (3612175)				
County Summary:	Monterey				
Lat/Long:	36.78648 / -121.58920		Accuracy:	1/5 mile	
UTM:	Zone-10 N4072114 E625880		Elevation (ft):	300	
PLSS:	T13S, R03E, Sec. 24 (M)		Acres:	0.0	
Location:	ALONG SAN JUAN GRADE, 1.25 MILES NE OF CRAZY HORSE CANYON ROAD, 5 MILES SW OF SAN JUAN BAUTISTA.				
Detailed Location:					
Ecological:					
General:	SHAFFER SITE #162. CTS PRESENT ON 1 MAY 1991; NUMBER AND LIFESTAGE UNKNOWN.				
Owner/Manager:	UNKNOWN				
Occurrence No.	132	Map Index: 24660	EO Index: 6551	Element Last Seen:	2017-05-27
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2017-05-27
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-02-13
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Clara				
Lat/Long:	36.94156 / -121.55587		Accuracy:	80 meters	
UTM:	Zone-10 N4089363 E628595		Elevation (ft):	175	
PLSS:	T11S, R04E, Sec. 29 (M)		Acres:	0.0	
Location:	ABOUT 0.2 MILE WEST OF HWY 101, SOUTH OF TICK CREEK, 1.4 MILES SOUTH OF THE HWY 25 JUNCTION, 4 MILES SOUTH OF GILROY.				
Detailed Location:	POND #37 IN 2017 REPORT. ACCORDING TO REPORT, THIS POND IS HYDROLOGICALLY CONNECTED TO THE AQUATIC FEATURES ABOUT 0.3 MILES NORTH, AT EOS #405 & 407.				
Ecological:	HABITAT CONSISTED OF A CATTLE POND SURROUNDED BY GRASSLAND AND VALLEY OAKS.				
General:	10 JUVENILES OBSERVED DURING SURVEY, MAR-JUN 1992. DETECTED, 2000-2015. 45 ALMOST FULLY-DEVELOPED METAMORPHS OBS 27 MAY 2017; THEY WERE PRESUMED HYBRIDS BASED ON THE PRESENCE OF A. TIGRINUM BREEDING POND 0.32 MI TO THE NORTH (EO #405).				
Owner/Manager:	PVT				



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Occurrence No.	141	Map Index: 24501	EO Index: 6596	Element Last Seen:	1992-XX-XX
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	1992-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	1993-11-03
Quad Summary:	San Felipe (3612184)				
County Summary:	Santa Clara				
Lat/Long:	36.96395 / -121.39506		Accuracy:	80 meters	
UTM:	Zone-10 N4092076 E642874		Elevation (ft):	350	
PLSS:	T11S, R05E, Sec. 23 (M)		Acres:	0.0	
Location:	NORTH SIDE OF PACHECO PASS HWY, 0.7 MILE WEST OF THE HWY 156 JUNCTION, 7 MILES NORTH OF HOLLISTER.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A CATTLE POND SURROUNDED BY GRASSLAND AND VALLEY OAKS.				
General:	2 YOUNG FOUND AT THIS SITE DURING SURVEYS CONDUCTED MARCH-JUNE 1992.				
Owner/Manager:	PVT				
Occurrence No.	142	Map Index: 24500	EO Index: 6597	Element Last Seen:	1992-XX-XX
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	1992-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	1993-11-03
Quad Summary:	San Felipe (3612184)				
County Summary:	Santa Clara				
Lat/Long:	36.96435 / -121.40269		Accuracy:	80 meters	
UTM:	Zone-10 N4092109 E642194		Elevation (ft):	400	
PLSS:	T11S, R05E, Sec. 22 (M)		Acres:	0.0	
Location:	0.25 MILE NORTH OF PACHECO PASS HWY, 1.1 MILES WEST OF THE HWY 156 JUNCTION, 7 MILES NORTH OF HOLLISTER.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A CATTLE POND SURROUNDED BY GRASSLAND AND VALLEY OAKS.				
General:	10+ YOUNG OBSERVED DURING A 1992 SURVEY CONDUCTED MARCH-JUNE.				
Owner/Manager:	PVT				
Occurrence No.	143	Map Index: 24499	EO Index: 6598	Element Last Seen:	1992-XX-XX
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	1992-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	1993-11-03
Quad Summary:	San Felipe (3612184)				
County Summary:	Santa Clara				
Lat/Long:	36.96566 / -121.40615		Accuracy:	80 meters	
UTM:	Zone-10 N4092249 E641883		Elevation (ft):	310	
PLSS:	T11S, R05E, Sec. 22 (M)		Acres:	0.0	
Location:	0.15 MILE NORTH OF PACHECO PASS HWY, 1.25 MILES WEST OF THE HWY 156 JUNCTION, 7 MILES NORTH OF HOLLISTER.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A CATTLE POND SURROUNDED BY GRASSLAND AND VALLEY OAKS.				
General:	10-20+ YOUNG OBSERVED DURING SURVEYS CONDUCTED MARCH-JUNE 1992.				
Owner/Manager:	PVT				



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Occurrence No.	144	Map Index: 24498	EO Index: 6599	Element Last Seen: 1992-XX-XX
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen: 1992-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 1993-11-03

Quad Summary: San Felipe (3612184)

County Summary: Santa Clara

Lat/Long:	36.97312 / -121.42643	Accuracy:	80 meters
UTM:	Zone-10 N4093047 E640064	Elevation (ft):	160
PLSS:	T11S, R05E, Sec. 16 (M)	Acres:	0.0

Location: NORTH SIDE OF PACHECO PASS HWY, 2.4 MILES WEST OF THE HWY 156 JUNCTION, 9 MILES EAST OF GILROY.

Detailed Location:

Ecological: HABITAT CONSISTS OF A CATTLE POND SURROUNDED BY GRASSLAND AND VALLEY OAKS.

General: 10-20+ YOUNG OBSERVED DURING SURVEYS CONDUCTED MARCH-JUNE 1992.

Owner/Manager: PVT

Occurrence No.	145	Map Index: 24497	EO Index: 6600	Element Last Seen: 1992-XX-XX
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen: 1992-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 1993-11-03

Quad Summary: San Felipe (3612184)

County Summary: Santa Clara

Lat/Long:	36.97429 / -121.43108	Accuracy:	80 meters
UTM:	Zone-10 N4093170 E639647	Elevation (ft):	250
PLSS:	T11S, R05E, Sec. 16 (M)	Acres:	0.0

Location: 0.15 MILE NORTH OF PACHECO PASS HWY, 0.75 MILE WEST OF THE SAN FELIPE ROAD JUNCTION, 9 MILES EAST OF GILROY.

Detailed Location:

Ecological: HABITAT CONSISTS OF A CATTLE POND SURROUNDED BY GRASSLAND AND VALLEY OAKS.

General: 20+ YOUNG OBSERVED DURING A SURVEY CONDUCTED DURING MARCH-JUNE 1992.

Owner/Manager: PVT

Occurrence No.	146	Map Index: 24496	EO Index: 6601	Element Last Seen: 1992-XX-XX
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen: 1992-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 1993-11-03

Quad Summary: San Felipe (3612184)

County Summary: Santa Clara

Lat/Long:	36.99085 / -121.44693	Accuracy:	80 meters
UTM:	Zone-10 N4094984 E638207	Elevation (ft):	200
PLSS:	T11S, R05E, Sec. 08 (M)	Acres:	0.0

Location: 0.2 MILE NORTH OF PACHECO PASS HWY, 2 MILES NW OF THE LOVERS LANE JUNCTION, 8 MILES EAST OF GILROY.

Detailed Location:

Ecological: HABITAT CONSISTS OF A CATTLE POND SURROUNDED BY GRASSLAND AND VALLEY OAKS.

General: 40+ YOUNG OBSERVED DURING A SURVEY CONDUCTED DURING MARCH-JUNE 1992.

Owner/Manager: PVT



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Occurrence No.	147	Map Index: 24495	EO Index: 6602	Element Last Seen: 1992-XX-XX
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen: 1992-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 1995-11-15

Quad Summary: San Felipe (3612184)

County Summary: Santa Clara

Lat/Long:	36.98967 / -121.45298	Accuracy:	80 meters
UTM:	Zone-10 N4094844 E637671	Elevation (ft):	200
PLSS:	T11S, R05E, Sec. 08 (M)	Acres:	0.0

Location: 0.1 MILE NORTH OF PACHECO PASS HWY, 0.5 MILE NE OF SAN FELIPE LAKE, 8 MILES EAST OF GILROY.

Detailed Location:

Ecological: HABITAT CONSISTS OF A CATTLE POND SURROUNDED BY GRASSLAND AND VALLEY OAKS.

General: 20+ YOUNG OBSERVED DURING A SURVEY CONDUCTED MARCH-JUNE 1992.

Owner/Manager: PVT

Occurrence No.	148	Map Index: 24494	EO Index: 6603	Element Last Seen: 1992-XX-XX
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen: 1992-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 1993-11-04

Quad Summary: San Felipe (3612184)

County Summary: Santa Clara

Lat/Long:	36.98430 / -121.46518	Accuracy:	80 meters
UTM:	Zone-10 N4094231 E636594	Elevation (ft):	180
PLSS:	T11S, R05E, Sec. 07 (M)	Acres:	0.0

Location: JUST NORTH OF PACHECO PASS HWY, NW OF SAN FELIPE LAKE, 7 MILES EAST OF GILROY.

Detailed Location:

Ecological: HABITAT CONSISTS OF A CATTLE POND SURROUNDED BY GRASSLAND AND VALLEY OAKS.

General: MANY YOUNG OBSERVED DURING A MARCH-JUNE 1992 SURVEY.

Owner/Manager: PVT

Occurrence No.	149	Map Index: 24493	EO Index: 6604	Element Last Seen: 1992-XX-XX
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen: 1992-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 1993-12-30

Quad Summary: San Felipe (3612184)

County Summary: Santa Clara

Lat/Long:	36.98752 / -121.48703	Accuracy:	80 meters
UTM:	Zone-10 N4094557 E634644	Elevation (ft):	150
PLSS:	T11S, R04E, Sec. 12 (M)	Acres:	0.0

Location: JUST EAST OF THE BLOOMFIELD AVENUE INTERSECTION WITH PACHECO PASS HWY, 6 MILES EAST OF GILROY.

Detailed Location:

Ecological: HABITAT CONSISTS OF A CATTLE POND SURROUNDED BY GRASSLAND AND VALLEY OAKS.

General: 25+ YOUNG OBSERVED DURING A MARCH-JUNE 1992 SURVEY.

Owner/Manager: PVT



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Occurrence No.	186	Map Index:	17384	EO Index:	11941	Element Last Seen:	1990-04-04
Occ. Rank:	Fair	Presence:	Presumed Extant	Site Last Seen:		1990-04-04	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		1991-02-05	

Quad Summary: San Felipe (3612184)

County Summary: San Benito

Lat/Long:	36.95585 / -121.38535	Accuracy:	80 meters
UTM:	Zone-10 N4091192 E643753	Elevation (ft):	250
PLSS:	T11S, R05E, Sec. 23 (M)	Acres:	0.0

Location: JUST WEST OF ROUTE 156, 0.25 SOUTH OF THE BARNHEISEL ROAD JUNCTION, APPROXIMATELY 4.5 MI NNE OF HOLLISTER MUNI AIRPORT.

Detailed Location: 200-300 INDIVIDUALS OBSERVED IN A STOCK POND USED BY CATTLE.

Ecological: SURROUNDING HABITAT IS GRASSLAND/OAK WOODLAND.

General: THE STOCK POND DRIED UP EARLY IN 1990 DUE TO DROUGHT CONDITIONS.

Owner/Manager: PVT

Occurrence No.	190	Map Index:	17099	EO Index:	12082	Element Last Seen:	2002-04-29
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		2002-04-29	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2009-05-13	

Quad Summary: San Juan Bautista (3612175)

County Summary: Monterey

Lat/Long:	36.81080 / -121.62417	Accuracy:	80 meters
UTM:	Zone-10 N4074768 E622721	Elevation (ft):	570
PLSS:	T13S, R03E, Sec. 10, SE (M)	Acres:	0.0

Location: EAST SIDE OF CRAZY HORSE CANYON RD, 0.75 ROAD MILES SE FROM JUNCTION OF HWY 101 & CRAZY HORSE CANYON RD, SALINAS.

Detailed Location: RE-MAPPED TO PROVIDED COORDINATES, MAP, & DISCUSSION OF PREVIOUS LOCATIONS IN SIE01F0002.

Ecological: VERNAL POOL IN GRASSLAND HABITAT AT BASE OF A HILL. MODERATE TO EXTENSIVE COVER OF BUNCH GRASSES & LOW GROWING FORBS. WATER CLEAR & ABOUT 6 INCHES DEEP. DID NOT APPEAR TO BE RECENTLY GRAZED. SQUIRREL BURROWS ON STEEP SLOPE TO EAST.

General: 1 ADULT FOUND DEAD & PARTIALLY EATEN 20 JAN 1990 (MANY PACIFIC TREEFROGS OBS). LARVAE OBS 19 APR & 18 LARVAE OBS 31 MAY 2001. 29 APR 2002: >100 JUV OBS & 20 COLLECTED FOR DNA ANALYSIS; 4 OF 20 COLLECTED HAD NON-NATIVE (A. TIGRINUM) MDNA.

Owner/Manager: PVT



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Occurrence No.	191	Map Index: 17098	EO Index: 12083	Element Last Seen: 2006-06-26
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen: 2006-06-26
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2021-01-06

Quad Summary: Chittenden (3612185)

County Summary: Santa Clara

Lat/Long:	36.98172 / -121.57703	Accuracy:	specific area
UTM:	Zone-10 N4093791 E626643	Elevation (ft):	240
PLSS:	T11S, R04E, Sec. 18, NW (M)	Acres:	17.6

Location: JUST WEST OF THE JUNCTION OF MILLER AVENUE (AKA MESA ROAD) AND THE PRIVATE ROAD INTO FARMAN CANYON, SOUTH OF GILROY.

Detailed Location: EAGLE RIDGE PROJECT (FORMERLY O'CONNELL RANCH POND "B"/O'CONNELL RANCH PROJECT SITE). THIS POND AND LAND TO THE NORTH AND EAST ARE DESIGNATED OPEN SPACE WITH ENCROACHING RESIDENTIAL DEVELOPMENT APPARENT IN 2004-2008 AERIALS.

Ecological: HABITAT CONSISTED OF A STOCK POND (150' X 70'); SPARSE EMERGENT VEGETATION AT NORTH END OF POND, NO SUBMERGENT VEGETATION. BREEDING HAS BEEN DOCUMENTED IN THIS POND. GROUND SQUIRREL BURROWS ARE COMMON IN THE NEARBY SERPENTINE GRASSLAND.

General: EGGS/LARVAE OBS IN 1989-1991, 1993, 1995-1996, 1998-2005. 11 LARVAE OBS 17 APR 1989. UNK NUMBER OBS 12 APR 1990. RECENT EGGS (<1 WK-OLD) OBS 17 NOV 2004. 1 JUV IN BURROW 26 JUL 2005. 1 JUV & 1 AD CAP/RELEASED ON ADJ CONSERVATION SITE, 2006.

Owner/Manager: PVT

Occurrence No.	192	Map Index: 17081	EO Index: 12093	Element Last Seen: 1990-05-02
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen: 1990-05-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 1996-10-30

Quad Summary: San Juan Bautista (3612175), Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.77289 / -121.62857	Accuracy:	1/5 mile
UTM:	Zone-10 N4070555 E622389	Elevation (ft):	240
PLSS:	T13S, R03E, Sec. 27 (M)	Acres:	0.0

Location: ABOUT 2 MILES ESE OF PRUNDALE.

Detailed Location: LOCATED ABOUT 2500 FEET WEST OF RESIDENTIAL UNITS AT END OF HERBERT ROAD AND 800 FEET WEST OF UNPAVED ROAD.

Ecological: SPRING FED STOCK POND/RESERVOIR IN MIDST OF GRASSLAND & COAST LIVE OAK MOSAIC. ABUNDANT & DIVERSE AQUATIC VEG. WATER CLEAR, ABUNDANT Hyla & BUFO LARVAE, SOME TARICHA TOROSA LARVAE, ABUNDANT AQUATIC INVERTS.

General: 1 TIGER SALAMANDER LARVAE FOUND.

Owner/Manager: UNKNOWN



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Occurrence No.	193	Map Index:	17079	EO Index:	12094	Element Last Seen:	1990-05-02
Occ. Rank:	None	Presence:	Possibly Extirpated	Site Last Seen:			1999-03-15
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:			2000-03-13

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.76083 / -121.63801	Accuracy:	1/5 mile
UTM:	Zone-10 N4069205 E621566	Elevation (ft):	100
PLSS:	T13S, R03E, Sec. 33 (M)	Acres:	0.0

Location: ABOUT 2 MILES SOUTHEAST OF PRUNEDALE.

Detailed Location: FOUND APPROXIMATELY 2400 FEET EAST OF THE END OF THE END OF THE HARRISON ROAD EXTENSION, ON THE EAST SIDE OF THE ACCESS.

Ecological: STOCK POND/RESERVOIR IN NON-NATIVE GRASSLAND/COAST LIVE OAK MOSAIC. NO VEG IN POND OR AROUND MARGINS. SANDY SOILS. WATER VERY TURBID; DEPTH ABOUT 1.5 FT. AQUATIC INVERTS PRESENT.

General: 4 LARVAE (4.5 INCHES IN LENGTH) FOUND ON 2 MAY 1990; NO OTHER AMPHIBIAN LARVAE OBSERVED. DIP NET SURVEYS FOR CTS LARVAE YIELDED NO AMPHIBIANS ON 15 MAR 1999. MUCH OF SURROUNDING HABITAT HAS BEEN CONVERTED TO STRAWBERRY FIELDS.

Owner/Manager: UNKNOWN

Occurrence No.	205	Map Index:	33478	EO Index:	15031	Element Last Seen:	2010-07-08
Occ. Rank:	Fair	Presence:	Presumed Extant	Site Last Seen:			2010-07-08
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:			2016-08-02

Quad Summary: Mt. Madonna (3712116)

County Summary: Santa Clara

Lat/Long:	37.0597 / -121.63879	Accuracy:	specific area
UTM:	Zone-10 N4102362 E621023	Elevation (ft):	476
PLSS:	T10S, R03E, Sec. 15 (M)	Acres:	12.0

Location: CORDEVALLE COUNTRY CLUB, ABOUT 0.4 MI NW OF THE LIONS PEAK SUMMIT & 1.3 MI E OF WATSONVILLE RD AT UVAS RD, NW OF GILROY.

Detailed Location: MAPPED TO PROVIDED LOCATIONS.

Ecological: IN 1995, DESCRIBED AS A STOCK POND & RANKED AS GOOD HABITAT. GOLF COURSE WAS DEVELOPED SOME TIME AFTER 1998. IN 2004, DESCRIBED AS A POND WITHIN A GOLF COURSE & RANKED AS FAIR HABITAT. ADULT SALAMANDER FOUND UNDER LOG.

General: MORE THAN 10 LARVAE OBSERVED ON 6 MARCH 1995. 1 ADULT & EGGS OBSERVED 6 & 29 JAN 2004. LARVAE DETECTED ON PROPERTY IN 2005 & 2006, EXACT LOCATIONS NOT KNOWN. 6 LARVAE DETECTED, MAY-JUL 2010.

Owner/Manager: PVT



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Occurrence No.	206	Map Index: 33477	EO Index: 15032	Element Last Seen: 1995-03-06
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen: 1995-03-06
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 1996-09-19
Quad Summary:	Mt. Madonna (3712116)			
County Summary:	Santa Clara			
Lat/Long:	37.06919 / -121.64141		Accuracy: 80 meters	
UTM:	Zone-10 N4103411 E620775		Elevation (ft): 350	
PLSS:	T10S, R03E, Sec. 16 (M)		Acres: 0.0	
Location:	1 MILE EAST OF THE INTERSECTION OF WATSONVILLE ROAD AND SYCAMORE AVENUE, HAYES VALLEY, SOUTH OF MORGAN HILL.			
Detailed Location:				
Ecological:	HABITAT CONSISTS OF A STOCK POND WITHIN THE STREAM CHANNEL OF WEST BRANCH LLAGAS CREEK. CLEMMYS MARMORATA ALSO KNOWN FROM THIS SITE.			
General:	>10 LARVAE OBSERVED ON 6 MARCH 1995.			
Owner/Manager:	PVT			
Occurrence No.	209	Map Index: 33479	EO Index: 16699	Element Last Seen: 2011-06-01
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen: 2011-06-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2016-08-02
Quad Summary:	Gilroy (3712115), Mt. Madonna (3712116)			
County Summary:	Santa Clara			
Lat/Long:	37.07516 / -121.6292		Accuracy: specific area	
UTM:	Zone-10 N4104089 E621852		Elevation (ft): 551	
PLSS:	T10S, R03E, Sec. 10 (M)		Acres: 25.0	
Location:	CORDEVILLE COUNTRY CLUB; 0.5 MI SW OF SANTA TERESA BLVD AT ANN MARIE CT, 4 MI S OF MORGAN HILL.			
Detailed Location:	MAPPED TO LOCATIONS PROVIDED IN FIELD SURVEY FORMS AND SCP REPORTS.			
Ecological:	SMALL STOCK PONDS ON PROPERTY HISTORICALLY USED FOR CATTLE RANCHING; PARTS OF PROPERTY CONVERTED TO VINEYARDS & GOLF COURSE, PART PRESERVED AS OPEN SPACE. CONTAINS NON-NATIVE GRASSLAND & VALLEY OAK WOODLAND & HEADWATERS OF LLAGAS CREEK.			
General:	MORE THAN 10 LARVAE OBSERVED IN 2 PONDS ON 6 MARCH 1995. EGGS & LARVAE OBS IN 2 PONDS JAN-APR 2004. LARVAE OBS IN UP TO 4 POOLS, 2005, & UP TO 1 POOL IN 2006. 29 IN 4 POOLS, 2010. 179 IN 4 POOLS, 2011.			
Owner/Manager:	PVT-CORDEVILLE GOLF COURSE			



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Occurrence No.	270	Map Index:	11014	EO Index:	28393	Element Last Seen:	1973-02-11
Occ. Rank:	None	Presence:	Possibly Extirpated	Site Last Seen:			1973-02-11
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:			2009-05-20

Quad Summary: San Juan Bautista (3612175)
County Summary: San Benito

Lat/Long:	36.86353 / -121.54306	Accuracy:	1/5 mile
UTM:	Zone-10 N4080724 E629868	Elevation (ft):	170
PLSS:	T12S, R04E, Sec. 28, NW (M)	Acres:	0.0

Location: SAN JUAN VALLEY. ALONG SAN JUSTO RD, ABOUT 1.0 MI SOUTHEAST OF SAN JUAN HWY JCT, 1 MI NORTH OF SAN JUAN BAUTISTA.

Detailed Location:

Ecological: 2007 AERIAL PHOTO SHOWS THAT THE ENTIRE SAN JUAN VALLEY AREA HAS BEEN CONVERTED TO AGRICULTURE.
General: OBS BY KENT SMITH (DFG) 11 FEB 1973. 18 MAR 1918 CAS RECORD FROM "VICINITY NORTH OF SAN JUAN".
Owner/Manager: UNKNOWN

Occurrence No.	321	Map Index:	36054	EO Index:	31393	Element Last Seen:	1998-02-20
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:			1998-02-20
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:			2004-07-01

Quad Summary: Chittenden (3612185)
County Summary: Santa Clara

Lat/Long:	36.94718 / -121.55657	Accuracy:	specific area
UTM:	Zone-10 N4089986 E628523	Elevation (ft):	170
PLSS:	T11S, R04E, Sec. 29, SW (M)	Acres:	3.0

Location: BLUESTONE QUARRY. JUST WEST OF OLD MONTEREY ROAD, 0.3 MILE SSW OF THE HWY 101 INTERSECTION, 4 MILES SOUTH OF GILROY.

Detailed Location:

Ecological: QUARRY DEVELOPED BY 2002. HABITAT WAS A STOCK POND, SURROUNDED BY GRAZED GRASSLAND, WITH A FEW SCATTERED COAST LIVE OAKS. MANY CALIFORNIA GROUND SQUIRREL HOLES AROUND POND. CALIF RED-LEGGED FROG ALSO AT THIS SITE. HYBRID CTS POPULATION.
General: 3 LARVAE OBS 25 MAY 1997; 1 COLLECTED (MRJ #1274 & CAS #203266). 2 ADULTS COLLECTED ON 20 FEB 1998; 1 RELEASED & 1 DEPOSITED AT CAS (#MRJ 1354). 10 LARVAE COLLECTED 28 APR 2002 FOR GENETIC ANALYSIS. CTS FOUND TO BE HYBRIDS WITH A. TIGRINUM.
Owner/Manager: PVT



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Occurrence No.	322	Map Index: 36398	EO Index: 31395	Element Last Seen:	1997-05-25
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	1997-05-25
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2002-09-04
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Clara				
Lat/Long:	36.95346 / -121.56472		Accuracy:	specific area	
UTM:	Zone-10 N4090672 E627787		Elevation (ft):	280	
PLSS:	T11S, R04E, Sec. 30, NE (M)		Acres:	1.6	
Location:	1.25 MILES SSW OF THE INTERSECTION OF CASTRO VALLEY ROAD AND HWY 101, 3 MILES SOUTH OF GILROY.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF GRAZED GRASSLAND, WITH COAST LIVE OAKS. A FEW CALIFORNIA GROUND SQUIRREL BURROWS FOUND NEAR THE POND. CLAM SHRIMP ABUNDANT IN THE POND.				
General:	4 LARVAE OBSERVED ON 25 MAY 1997; 1 LARVA COLLECTED (MRJ #1276) AND DEPOSITED AT CAS (CAS #203268).				
Owner/Manager:	PVT				
Occurrence No.	323	Map Index: 36399	EO Index: 31396	Element Last Seen:	1997-05-25
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	1997-05-25
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2002-09-04
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Clara				
Lat/Long:	36.94636 / -121.55834		Accuracy:	80 meters	
UTM:	Zone-10 N4089893 E628366		Elevation (ft):	175	
PLSS:	T11S, R04E, Sec. 29 (M)		Acres:	0.0	
Location:	0.2 MILE WEST OF OLD MONTEREY RD, 0.4 MILE SSW OF INTERSECTION OF OLD MONTEREY RD & HWY 101, 3.6 MILES SOUTH OF GILROY.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POND, PARTLY SHADED BY COAST LIVE OAK. SURROUNDING AREA CONSISTS OF AN OLD FIELD (PLOWED IN THE PAST), WHICH IS NOW MAINLY VEGETATED BY GRASSES AND MUSTARD (GRAZED). CLAM SHRIMP ABUNDANT IN POND.				
General:	1 LARVA COLLECTED (MRJ #1284) ON 25 MAY 1997 AND DEPOSITED AT CAS (CAS #203269).				
Owner/Manager:	PVT				



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Occurrence No.	391	Map Index: 42471	EO Index: 42471	Element Last Seen:	1999-05-06
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	1999-05-06
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-02-26

Quad Summary: Hollister (3612174)

County Summary: San Benito

Lat/Long:	36.81372 / -121.45858	Accuracy:	80 meters
UTM:	Zone-10 N4075316 E637487	Elevation (ft):	380
PLSS:	T13S, R05E, Sec. 07 (M)	Acres:	0.0

Location: 2 MILES SSE OF THE INTERSECTION OF FLINT ROAD AND HIGHWAY 156, SAN JUAN OAKS GOLF COURSE.

Detailed Location:

Ecological: HABITAT IS A LARGE, ARTIFICIALLY-BERMED PERENNIAL RESERVOIR IN A BROAD SWALE. ADJACENT UPLAND IS ANNUAL GRASSLAND/OAK WOODLAND. RESERVOIR WATER IS GREEN/TURBID, 3 FT 7 IN DEEP & 72 DEGREES F AT 1215. NO EMERGENTS AND AQUATICS SPARSE.

General: 1 NEOTENIC CTS COLLECTED (220 MM TOTAL LENGTH, WITH PLUMOSE GILLS, ADULT SPOTTING, AND SWOLLEN VENT-MALE) 6 MAY 1999. CALIFORNIA NEWTS COMMON IN RESERVOIR.

Owner/Manager: PVT-SAN JUAN OAKS GOLF COURSE

Occurrence No.	392	Map Index: 42480	EO Index: 42533	Element Last Seen:	2000-01-18
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2003-11-16
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-10-18

Quad Summary: San Felipe (3612184)

County Summary: Santa Clara

Lat/Long:	36.99028 / -121.39607	Accuracy:	specific area
UTM:	Zone-10 N4094996 E642734	Elevation (ft):	540
PLSS:	T11S, R05E, Sec. 11 (M)	Acres:	13.6

Location: 0.7 MILE WEST OF HIGHWAY 152, 3.5 MILES EAST OF SAN FELIPE LAKE, 8.5 MILES NORTH OF HOLLISTER.

Detailed Location:

Ecological: HABITAT CONSISTS OF TWO ARTIFICIALLY-BERMED, PERENNIAL PONDS, WITH SCIRPUS AND TYPHA AROUND THE MARGINS. PONDS ARE LOCATED WITHIN AN INTERMITTENT DRAINAGE. ADJACENT UPLAND IS GRAZED GRASSLAND/OPEN OAK WOODLAND. RLF ALSO FOUND AT THIS SITE.

General: 2 FEMALES OBSERVED DURING 5 NIGHT NOCTURNAL SURVEY; 1 WAS ~100-200 FT AWAY FROM, AND MOVING TOWARDS POND, WHILE OTHER WAS EMERGING FROM GROUND SQUIRREL BURROW. 1 ADULT CAPTURED ON 18 JAN 2000 IN PITFALL TRAP. SPECIES NOT CAPTURED NOV 2003.

Owner/Manager: PVT-BOURDET RANCH



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*** SENSITIVE ***

Occurrence No.	434	Map Index:	45578	EO Index:	45578	Element Last Seen:	2000-01-11
Occ. Rank:	Fair	Presence:	Presumed Extant	Site Last Seen:		2000-01-11	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2001-08-14	

Quad Summary: Chittenden (3612185)

County Summary: Santa Clara

Lat/Long: Accuracy: 80 meters

UTM: Elevation (ft): 281

PLSS: Acres: 0.0

Location: *SENSITIVE* LOCATION INFORMATION SUPPRESSED.

Detailed Location: PLEASE CONTACT THE CALIFORNIA NATURAL DIVERSITY DATABASE, CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE, FOR MORE INFORMATION: (916) 322-2493

Ecological: HABITAT CONSISTED OF A LARGE PERENNIAL RESERVOIR WITHIN A SEASONAL DRAINAGE SWALE; SURROUNDED BY GRAZED NON-NATIVE GRASSLAND AND OAK WOODLAND AT THE BASE OF THE FOOTHILLS OF THE SANTA CRUZ MOUNTAINS.

General:

Owner/Manager:

Occurrence No.	444	Map Index:	44343	EO Index:	45860	Element Last Seen:	1986-12-19
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		1986-12-19	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2001-09-07	

Quad Summary: Mt. Madonna (3712116), Morgan Hill (3712126)

County Summary: Santa Clara

Lat/Long: 37.12260 / -121.70703 Accuracy: non-specific area

UTM: Zone-10 N4109255 E614861 Elevation (ft): 525

PLSS: T09S, R02E, Sec. 25 (M) Acres: 214.2

Location: CHESBRO RESERVOIR, CHESBRO RESERVOIR COUNTY PARK, OAK GLEN AVE, 3.5 MILES WEST OF MORGAN HILL (SAN PEDRO & MONTEREY RD).

Detailed Location: MAPPED TO THE RESERVOIR, MORE SPECIFIC DETAILS NOT GIVEN.

Ecological: RESERVOIR.

General: 19 DEC 1986: CAS #187404, ADULT, (DOR).

Owner/Manager: SCL COUNTY



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Occurrence No.	458	Map Index: 45916	EO Index: 45916	Element Last Seen:	2004-01-29
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2004-01-29
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2005-02-11

Quad Summary: Mt. Madonna (3712116)
County Summary: Santa Clara

Lat/Long:	37.06712 / -121.63413	Accuracy:	non-specific area
UTM:	Zone-10 N4103191 E621425	Elevation (ft):	380
PLSS:	T10S, R03E, Sec. 15 (M)	Acres:	54.3

Location: HAYES VALLEY, ABOUT 1.6 MILES SW OF SAN MARTIN IN THE VICINITY OF THE WEST BRANCH OF LLAGAS CREEK.
Detailed Location: 1992 CAS RECORDS ARE FROM STOCK PONDS WITH LOCATIONS GIVEN AS 1.5 & 1.7 MILES SW OF SAN MARTIN.
Ecological: IN 2004 THIS AREA IS A RETENTION BASIN WETLAND LOCATED WITHIN A GOLF COURSE AREA.
General: 4/29/92: CAS #197607, LARVA COLLECTED BY M.R. JENNINGS & N. ARESON. 5/7/92: CAS #197606, LARVA COLLECTED BY M.R. JENNINGS & G. BANUELOS. UNKNOWN NUMBER OF EGGS OBSERVED 29 JAN 2004.
Owner/Manager: PVT-CORDEVALLE GOLF COURSE

Occurrence No.	471	Map Index: 20311	EO Index: 46225	Element Last Seen:	2007-04-21
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2007-04-21
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2008-02-29

Quad Summary: Prunedale (3612176)
County Summary: Monterey

Lat/Long:	36.79281 / -121.73433	Accuracy:	non-specific area
UTM:	Zone-10 N4072635 E612920	Elevation (ft):	35
PLSS:	T13S, R02E, Sec. 15 (M)	Acres:	94.0

Location: MORO COJO SLOUGH AREA OFF CASTROVILLE BLVD, MOSS LANDING.
Detailed Location: MUSEUM RECORD GIVES SITE AT "MARO COJA SLOUGH AREA OFF CASTROVILLE BLVD, MOSS LANDING".
Ecological: TEMPORARY POOL WITH BARE GROUND AND NON-NATIVE GRASS ALONG THE FRINGE. UPLAND HABITAT CONSISTS OF WILLOW, OAK, AND NON-NATIVE GRASSES - PROVIDES HABITAT FOR AESTIVATING ADULTS. RESTORATION/PROTECTION WILL INCREASE HABITAT FOR CTS & SCLTS.
General: MVZ #204612 COLLECTED 19 MAY 1978 BY M.S. MARANGIO. 1 ADULT OBSERVED ON 21 APR 2007; POSSIBLE HYBRID - TISSUE SAMPLES AWAITING ANALYSIS. WATER MURKY - NEARBY AG MAY CONTRIBUTE TO POOR WATER QUALITY. LITTLE AQUATIC LIFE PRESENT.
Owner/Manager: PVT



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Occurrence No.	491	Map Index: 46376	EO Index: 46376	Element Last Seen:	1973-06-03
Occ. Rank:	None		Presence: Extirpated	Site Last Seen:	1973-06-03
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2001-11-01

Quad Summary: Mt. Madonna (3712116)

County Summary: Santa Clara

Lat/Long:	37.10600 / -121.65747	Accuracy:	1/10 mile
UTM:	Zone-10 N4107474 E619289	Elevation (ft):	400
PLSS:	T09S, R03E, Sec. 32 (M)	Acres:	0.0

Location: INTERSECTION OF EDMUNDSON RD & SUNNYSIDE AVE. MORGAN HILL, SE OF CHESBRO RESERVOIR. ABOUT 0.9 MI EAST OF LLAGAS CREEK.

Detailed Location:

Ecological:

General: TWO OBSERVATIONS FROM JENNINGS FIELD NOTES. 29 APR & 3 JUN 1973. JENNINGS CONSIDERS THIS SITE EXTIRPATED. HOWEVER, SEE CTS #1234, EONDx 102894 FOR 2016 DETECTIONS ABOUT 0.4 MILES NORTH.

Owner/Manager: UNKNOWN

Occurrence No.	523	Map Index: 46635	EO Index: 46635	Element Last Seen:	1993-XX-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1993-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2001-11-28

Quad Summary: Chittenden (3612185)

County Summary: San Benito

Lat/Long:	36.88725 / -121.54035	Accuracy:	2/5 mile
UTM:	Zone-10 N4083359 E630069	Elevation (ft):	300
PLSS:	T12S, R04E, Sec. 16, SW (M)	Acres:	0.0

Location: ABOUT 1 MILE EAST OF THE JUNCTION OF HWY 101 AND THE SAN BENITO RIVER. EAST OF THE SAN JUAN VALLEY.

Detailed Location:

Ecological:

General: SURVEY DONE BY BIOSEARCH BUT REPORTED BY LSA. UNKNOWN NUMBER OF LARVAE OBSERVED IN 1993.

Owner/Manager: PVT



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Occurrence No.	525	Map Index:	46669	EO Index:	46669	Element Last Seen:	2006-05-03
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		2006-05-03	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2007-03-27	
Quad Summary:	Prunedale (3612176)						
County Summary:	Monterey						
Lat/Long:	36.77711 / -121.68802		Accuracy:	1/10 mile			
UTM:	Zone-10 N4070949 E617077		Elevation (ft):	100			
PLSS:	T13S, R03E, Sec. 30 (M)		Acres:	0.0			
Location:	ALONG BLACKIE ROAD, 1 MILE WEST OF PRUNEDALE.						
Detailed Location:	1997: CTS FOUND AT A LOW SPOT IN THE ROAD; PRESUMED BREEDING POND FOUND APPROXIMATELY 0.1 MILE NORTH OF BLACKIE ROAD. 2006 CAPTURES AT IRRIGATION RESERVOIR ON TOP OF KNOLL.						
Ecological:	1997: WILLOWS TO NORTH & OAK WOODLAND TO SOUTH. 2006: RESERVOIR MARGINS DENSE WITH RUDERAL HERBS. CLEAR WATER UP TO 2 FT DEEP. SANDSTONE SUBSTRATE. SPIKERUSH & SUBMERGENT AQUATIC PLANTS ABUNDANT. SURROUNDING AREA IS STRAWBERRY FIELDS.						
General:	1 SUBADULT OBSERVED ON A DARK, RAINY NIGHT, ON 16 NOV 1997. 1 LARVA CAPTURED ON 17 APR AND 8 ON 3 MAY 2006. TAIL CLIPPINGS SENT TO DR. BRAD SHAFFER AT UC DAVIS.						
Owner/Manager:	UNKNOWN, PVT						
Occurrence No.	584	Map Index:	49030	EO Index:	49030	Element Last Seen:	2001-09-19
Occ. Rank:	Fair	Presence:	Presumed Extant	Site Last Seen:		2001-09-19	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2009-04-21	
Quad Summary:	Gilroy (3712115)						
County Summary:	Santa Clara						
Lat/Long:	37.10924 / -121.58869		Accuracy:	80 meters			
UTM:	Zone-10 N4107923 E625396		Elevation (ft):	338			
PLSS:	T09S, R03E, Sec. 36 (M)		Acres:	0.0			
Location:	EAST SIDE OF FOOTHILL AVENUE, 0.2 MILE SE OF THE INTERSECTION OF FOOTHILL AVENUE AND MIDDLE AVENUE, MORGAN HILL.						
Detailed Location:							
Ecological:	HABITAT CONSISTS OF AN OAK WOODLAND WHICH HAS BEEN CONVERTED TO A GOLF COURSE.						
General:	1 JUVENILE OBSERVED/COLLECTED (MRJ #1533) ON 19 SEP 2001 AND DEPOSITED AT CAS.						
Owner/Manager:	PVT-INSTITUTE GOLF COURSE						



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Occurrence No.	586	Map Index:	49350	EO Index:	49350	Element Last Seen:	2001-12-05
Occ. Rank:	Fair	Presence:	Presumed Extant	Site Last Seen:		2001-12-05	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2002-11-12	

Quad Summary: Mt. Madonna (3712116)

County Summary: Santa Clara

Lat/Long:	37.06296 / -121.66764	Accuracy:	80 meters
UTM:	Zone-10 N4102687 E618453	Elevation (ft):	400
PLSS:	T10S, R03E, Sec. 17 (M)	Acres:	0.0

Location: 0.5 MILE NORTH OF THE CONFLUENCE OF UVAS CREEK AND SYCAMORE CREEK, 1.3 MILES EAST OF UVAS RESERVOIR.

Detailed Location:

Ecological: SURROUNDING HABITAT CONSISTS OF GRASSLAND WITH A FEW OAKS AND SCATTERED HOUSES.

General: 9 EGGS COLLECTED FOR DNA ANALYSIS ON 5 DEC 2001.

Owner/Manager: PVT

Occurrence No.	588	Map Index:	49360	EO Index:	49360	Element Last Seen:	2016-06-16
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		2016-06-16	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2017-09-22	

Quad Summary: Gilroy Hot Springs (3712114)

County Summary: Santa Clara

Lat/Long:	37.04706 / -121.39538	Accuracy:	specific area
UTM:	Zone-10 N4101297 E642690	Elevation (ft):	1951
PLSS:	T10S, R05E, Sec. 23, SW (M)	Acres:	11.0

Location: AT THE SE END OF PHEGLEY RIDGE, 0.6 MILES W TO 0.6 MILES NW OF KICKHAM PEAK, CANADA DE LOS OSOS STATE PARK.

Detailed Location: 2 PONDS REPRESENTED. SOUTH POND: WEST BIG SPRINGS POND (WBSP). NORTH: ROCCI'S POND (RP)

Ecological: FORMERLY GRAZED GRASSLAND, NOW PRESERVED. BOTH PONDS WERE SEASONAL. WBSP: POND DEEPENED IN 2015 BUT LESS THAN 9M DIAMETER. RP: PARTIALLY SURROUNDED BY OAK WOODLAND.

General: WBSP: OVER 100 JUVENILES OBSERVED & 20 COLLECTED FOR DNA ANALYSIS, 24 MAY 2002; 5 JUVENILES & 34 LARVAE OBS MAY-JUN 2016. RP: 6 LARVAE ON 24 MAY 2016.

Owner/Manager: DFG-CANADA DE LOS OSOS ER

Occurrence No.	589	Map Index:	49361	EO Index:	49361	Element Last Seen:	2016-06-16
Occ. Rank:	Excellent	Presence:	Presumed Extant	Site Last Seen:		2016-06-16	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2017-10-12	

Quad Summary: Gilroy Hot Springs (3712114)

County Summary: Santa Clara

Lat/Long:	37.04561 / -121.41828	Accuracy:	80 meters
UTM:	Zone-10 N4101102 E640656	Elevation (ft):	1589
PLSS:	T10S, R05E, Sec. 22, SW (M)	Acres:	5.0

Location: ABOUT 1.2 MILES E OF BILLS HILL & 2.6 MILES SW OF VASQUEZ PEAK, CANADA DE LOS OSOS ER.

Detailed Location: OLD WILLSON ROAD POND.

Ecological: 2002: GRAZED GRASSLAND. 2016: SEASONAL POND IN PREDOMINATELY HILLY, UNGRAZED GRASSLAND.

General: >100 JUVENILES OBSERVED; 20 COLLECTED ON 24 MAY 2002 FOR DNA ANALYSIS. 60 LARVAE & 3 JUVENILES CAUGHT & RELEASED ON 16 JUN 2016.

Owner/Manager: DFG-CANADA DE LOS OSOS ER



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Occurrence No.	590	Map Index: 49362	EO Index: 49362	Element Last Seen:	2002-04-18
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2002-04-18
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2002-11-12
Quad Summary:	Gilroy (3712115)				
County Summary:	Santa Clara				
Lat/Long:	37.06592 / -121.51992		Accuracy:	80 meters	
UTM:	Zone-10 N4103209 E631581		Elevation (ft):	950	
PLSS:	T10S, R04E, Sec. 15 (M)		Acres:	0.0	
Location:	EAST SIDE OF ROOP ROAD, 0.75 MILE SOUTH OF COYOTE CREEK, EAST OF SANTA CLARA VALLEY.				
Detailed Location:					
Ecological:	SURROUNDING HABITAT CONSISTS OF GRAZED GRASSLAND, WITH A FEW OAKS.				
General:	>100 JUVENILES OBSERVED; 20 COLLECTED ON 18 APR 2002 FOR DNA ANALYSIS. 1 OF 20 CONTAINED NON-NATIVE (AMBYSTOMA TIGRINUM) MITOCHONDRIAL DNA.				
Owner/Manager:	PVT				
Occurrence No.	595	Map Index: 48968	EO Index: 49798	Element Last Seen:	2004-06-21
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2004-06-21
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2005-03-28
Quad Summary:	Gilroy (3712115)				
County Summary:	Santa Clara				
Lat/Long:	37.09934 / -121.52056		Accuracy:	80 meters	
UTM:	Zone-10 N4106916 E631467		Elevation (ft):	2030	
PLSS:	T10S, R04E, Sec. 03, NW (M)		Acres:	0.0	
Location:	UPPER TWIN LAKE, PALASSOU RIDGE NATURAL AREA, 1 MILE EAST OF COYOTE LAKE.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A STOCK POND SURROUNDED BY OAK WOODLAND AND GRAZED NON-NATIVE GRASSLAND.				
General:	SURVEYS CONDUCTED ON 14 MAY AND 22 JUL 2002; 60 LARVAE OBSERVED ON 14 MAY 2002. 1 ADULT AND 4 LARVAE OBSERVED, 10 JUN 2003. 2 LARVAE OBSERVED, 21 JUN 2004; POND ALMOST DRY.				
Owner/Manager:	SCL COUNTY				
Occurrence No.	596	Map Index: 49799	EO Index: 49799	Element Last Seen:	2002-12-05
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2002-12-05
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2003-01-07
Quad Summary:	Gilroy (3712115)				
County Summary:	Santa Clara				
Lat/Long:	37.08514 / -121.51675		Accuracy:	80 meters	
UTM:	Zone-10 N4105346 E631830		Elevation (ft):	1600	
PLSS:	T10S, R04E, Sec. 10, NW (M)		Acres:	0.0	
Location:	JUNE LAKE, PALASSOU RIDGE NATURAL AREA, 0.6 MILE EAST OF COYOTE LAKE.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A STOCK POND SURROUNDED BY OAK WOODLAND AND NON-NATIVE GRASSLAND.				
General:	SURVEYS CONDUCTED ON 15 MAY AND 5 DEC 2002; 127 LARVAE OBSERVED ON 15 MAY 2002.				
Owner/Manager:	SCL COUNTY				



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Occurrence No.	612	Map Index: 53638	EO Index: 53638	Element Last Seen:	2003-03-13
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2003-03-13
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2003-12-18
Quad Summary:	Hollister (3612174)				
County Summary:	San Benito				
Lat/Long:	36.75190 / -121.38666		Accuracy:	specific area	
UTM:	Zone-10 N4068563 E644018		Elevation (ft):	1065	
PLSS:	T14S, R05E, Sec. 02 (M)		Acres:	8.0	
Location:	EAST SIDE OF CIENEGA ROAD, 6 MILES SOUTH OF HOLLISTER.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A SECTION OF DAMMED CREEK, SURROUNDED BY SHRUBBERY, GRASS, AND OAK WOODLAND.				
General:	19 JUVENILES OBSERVED ON 13 MAR 2003.				
Owner/Manager:	PVT				
Occurrence No.	618	Map Index: 53674	EO Index: 53674	Element Last Seen:	2003-05-02
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2003-05-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2003-12-22
Quad Summary:	Chittenden (3612185)				
County Summary:	San Benito				
Lat/Long:	36.88464 / -121.56698		Accuracy:	80 meters	
UTM:	Zone-10 N4083034 E627700		Elevation (ft):	175	
PLSS:	T12S, R04E, Sec. 18, SE (M)		Acres:	0.0	
Location:	0.3 MILE NW OF THE INTERSECTION OF SEARLE ROAD AND HIGHWAY 129, WEST OF SAN JUAN VALLEY.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A STOCK POND SURROUNDED BY GRAZED ANNUAL GRASSLAND AND ROW CROPS.				
General:	21 JUVENILES OBSERVED ON 2 MAY 2003.				
Owner/Manager:	PVT				
Occurrence No.	621	Map Index: 53885	EO Index: 54032	Element Last Seen:	2003-04-06
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2003-04-06
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-01-22
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.07982 / -121.40718		Accuracy:	80 meters	
UTM:	Zone-10 N4104914 E641579		Elevation (ft):	1750	
PLSS:	T10S, R05E, Sec. 10, NE (M)		Acres:	0.0	
Location:	0.5 MILE EAST OF WILSON RANCH, HENRY W. COE STATE PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POND SURROUNDED BY OAK SAVANNAH.				
General:	2 LARVAE OBSERVED ON 6 APR 2003.				
Owner/Manager:	DPR-HENRY W COE SP				



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Occurrence No.	622	Map Index: 54033	EO Index: 54033	Element Last Seen:	2003-04-06
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2003-04-06
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-01-22
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.08337 / -121.40731		Accuracy:	80 meters	
UTM:	Zone-10 N4105307 E641561		Elevation (ft):	2000	
PLSS:	T10S, R05E, Sec. 10, NE (M)		Acres:	0.0	
Location:	0.6 MILE ENE OF WILSON RANCH, HENRY W. COE STATE PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POND SURROUNDED BY OAK SAVANNAH.				
General:	7 LARVAE OBSERVED ON 6 APR 2003.				
Owner/Manager:	DPR-HENRY W COE SP				
Occurrence No.	623	Map Index: 54034	EO Index: 54034	Element Last Seen:	2005-05-07
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2005-05-07
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2006-10-10
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.05028 / -121.43037		Accuracy:	80 meters	
UTM:	Zone-10 N4101602 E639571		Elevation (ft):	1100	
PLSS:	T10S, R05E, Sec. 21, SW (M)		Acres:	0.0	
Location:	0.6 MILE NE OF BILLS HILL, HENRY W. COE STATE PARK.				
Detailed Location:	THIS POND WILL LIKELY DRY MOST YEARS BEFORE LARVAE ARE ABLE TO TRANSFORM INTO ADULTS.				
Ecological:	HABITAT CONSISTS OF A TINY, SEASONAL POND SURROUNDED BY OAK WOODLAND.				
General:	1 LARVA OBSERVED ON 27 APR 2003. ON 7 MAY 2005, 1 LARVA (75 MM TL) WAS NETTED AND A SECOND WAS OBSERVED BEING DEVoured BY A GARTER SNAKE.				
Owner/Manager:	DPR-HENRY W COE SP				
Occurrence No.	624	Map Index: 54037	EO Index: 54037	Element Last Seen:	2005-05-07
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2005-05-07
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2006-10-10
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.05994 / -121.41413		Accuracy:	80 meters	
UTM:	Zone-10 N4102698 E640998		Elevation (ft):	2000	
PLSS:	T10S, R05E, Sec. 15, SW (M)		Acres:	0.0	
Location:	WEST SIDE OF PHEGLEY RIDGE, HENRY W. COE STATE PARK.				
Detailed Location:	THIS SMALL POND MAY DRY BEFORE LARVAE ARE ABLE TO TRANSFORM INTO ADULTS.				
Ecological:	HABITAT CONSISTS OF A SMALL, SEASONAL POND SURROUNDED IN GRASSLAND, WITH OAK WOODLAND NEARBY.				
General:	25 LARVAE OBSERVED ON 27 APR 2003. ON 7 MAY 2005, 2 LARVAE (88 MM AND 98 MM TL) WERE NETTED; OTHERS WERE OBSERVED BUT NOT NETTED.				
Owner/Manager:	DPR-HENRY W COE SP				



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Occurrence No.	625	Map Index: 53883	EO Index: 54040	Element Last Seen:	2003-05-03
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2003-05-03
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-01-22
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.08179 / -121.42565		Accuracy:	80 meters	
UTM:	Zone-10 N4105105 E639933		Elevation (ft):	2150	
PLSS:	T10S, R05E, Sec. 09, NE (M)		Acres:	0.0	
Location:	0.5 MILE WEST OF WILSON RANCH, HENRY W. COE STATE PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POND SURROUNDED BY OAK SAVANNAH.				
General:	1 LARVA OBSERVED ON 3 MAY 2003.				
Owner/Manager:	DPR-HENRY W COE SP				
Occurrence No.	626	Map Index: 54043	EO Index: 54043	Element Last Seen:	2005-05-24
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2005-05-24
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2006-10-10
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.07802 / -121.43195		Accuracy:	80 meters	
UTM:	Zone-10 N4104678 E639380		Elevation (ft):	2100	
PLSS:	T10S, R05E, Sec. 09, SW (M)		Acres:	0.0	
Location:	0.8 MILE WSW OF WILSON RANCH, HENRY W. COE STATE PARK.				
Detailed Location:	IN MOST YEARS, THIS POND PROBABLY DRIES BEFORE THE LARVAE ARE ABLE TO TRANSFORM INTO ADULTS.				
Ecological:	HABITAT CONSISTS OF A POND SURROUNDED BY GRASSLAND/OAK WOODLAND.				
General:	9 LARVAE OBSERVED ON 3 MAY 2003. 1 LARVA (~80 MM TL) WAS NETTED IN WATER <1' DEEP ON 24 MAY 2005.				
Owner/Manager:	DPR-HENRY W COE SP				
Occurrence No.	627	Map Index: 54044	EO Index: 54044	Element Last Seen:	2003-05-03
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2003-05-03
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-01-22
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.07150 / -121.44437		Accuracy:	80 meters	
UTM:	Zone-10 N4103936 E638288		Elevation (ft):	1400	
PLSS:	T10S, R05E, Sec. 17, NE (M)		Acres:	0.0	
Location:	0.5 MILE NORTH OF THE JUNCTION OF HUNTING HOLLOW AND COON HUNTERS GULCH, HENRY W. COE STATE PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POND SURROUNDED BY OAK SAVANNAH.				
General:	2 LARVAE OBSERVED ON 3 MAY 2003.				
Owner/Manager:	DPR-HENRY W COE SP				



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Occurrence No.	651	Map Index: 55385	EO Index: 55385	Element Last Seen:	2004-01-29
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2004-01-29
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2008-11-25

Quad Summary: Mt. Madonna (3712116)
County Summary: Santa Clara

Lat/Long:	37.07425 / -121.65751	Accuracy:	non-specific area
UTM:	Zone-10 N4103952 E619335	Elevation (ft):	400
PLSS:	T10S, R03E, Sec. 08 (M)	Acres:	17.8

Location: ALONG WATSONVILLE ROAD, AND IN THE VICINITY OF HAYES CREEK ON THE WEST SIDE OF HAYES VALLEY.
Detailed Location: SITE CONTAINS A BREEDING POND AT CLOS LA CHANCE WINERY. DEAD ADULT FOUND ON DRIVEWAY LEADING TO 13675 WATSONVILLE ROAD PROPERTY 19 NOV 2002. EGGS OBSERVED IN A SEASONAL WETLAND ON 29 JAN 2004.
Ecological: HABITAT CONSISTS OF ANNUAL GRASSLAND WITH ABUNDANT GROUND SQUIRREL BURROWS FOR AESTIVATION. SEASONAL WETLAND IN THE VICINITY OF HAYES CREEK.
General: 1 ADULT FOUND DOR ON 19 NOV 2002. UNKNOWN NUMBER OF EGGS OBSERVED ON 29 JAN 2004.
Owner/Manager: PVT-WILDWOOD LANDS

Occurrence No.	708	Map Index: 56893	EO Index: 63896	Element Last Seen:	2003-08-12
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2003-08-12
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2006-01-26

Quad Summary: Hollister (3612174)
County Summary: San Benito

Lat/Long:	36.76397 / -121.40716	Accuracy:	specific area
UTM:	Zone-10 N4069872 E642166	Elevation (ft):	810
PLSS:	T13S, R05E, Sec. 34 (M)	Acres:	8.1

Location: GARNER LAKE AND AN ADJACENT SEDIMENT BASIN, SOUTH SIDE OF CIENEGA ROAD IN BONANZA GULCH, 5 MILES SOUTH OF HOLLISTER.
Detailed Location: GARNER LAKE BASIN IS 20 M X 8 M X 1 M DEEP; ADJACENT BASIN IS 20 M X 10 M X 1 M DEEP.
Ecological: HABITAT CONSISTS OF A SEDIMENT BASIN, VEGETATED BY DUCKWEED (LEMNA SP) AND LARGE CLUMPS OF ALGAE; COAST LIVE OAK OVERHANGS MARGINS OF BASIN IN PLACES.
General: ON 12 AUG 2003, DURING A DAYTIME SURVEY, 1 LARVAL CTS WAS OBSERVED.
Owner/Manager: DPR-HOLLISTER HILLS SVRA



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Occurrence No.	709	Map Index: 63804	EO Index: 63899	Element Last Seen:	2004-03-31
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2004-03-31
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2006-01-31

Quad Summary: Hollister (3612174)

County Summary: San Benito

Lat/Long:	36.75442 / -121.39210	Accuracy:	1/10 mile
UTM:	Zone-10 N4068836 E643528	Elevation (ft):	1120
PLSS:	T13S, R05E, Sec. 35 (M)	Acres:	0.0

Location: SOUTH SIDE OF CIENAGA ROAD, 1.6 MILES SE OF BONANZA GULCH, 6.5 MILES SOUTH OF HOLLISTER.

Detailed Location: THIS POND DRIES DURING THE SUMMER, AND A FEW VEHICLE TRACKS WERE PRESENT FROM USE DURING THE DRY SEASON.

Ecological: HABITAT CONSISTS OF A MAN-MADE SEDIMENT BASIN (~15 M X 10 M X 0.75 M). SPIKERUSH WAS THICK IN MOST OF THE BASIN, & IT APPEARS TO BE EXCELLENT BREEDING HABITAT. NEARBY UPLAND CONSISTS OF ANNUAL GRASSLAND, LIVE/BLUE OAK FOREST, & CHAPARRAL.

General: 1 ADULT MALE OBSERVED ON 29 DEC 2003, DURING A RAINY NIGHT SURVEY, ~250 M FROM THE SEDIMENT BASIN. SEINE NET SURVEY OF THIS SEDIMENT BASIN PRODUCED 8 CTS LARVAE ON 31 MAR 2004.

Owner/Manager: DPR-HOLLISTER HILLS SVRA

Occurrence No.	710	Map Index: 63826	EO Index: 63921	Element Last Seen:	2003-12-29
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2003-12-29
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2006-01-31

Quad Summary: Hollister (3612174)

County Summary: San Benito

Lat/Long:	36.80971 / -121.39689	Accuracy:	80 meters
UTM:	Zone-10 N4074962 E642997	Elevation (ft):	350
PLSS:	T13S, R05E, Sec. 14 (M)	Acres:	0.0

Location: CIENAGA ROAD, NEAR THE INTERSECTION WITH HOSPITAL ROAD, SOUTH OF HOLLISTER.

Detailed Location:

Ecological: HABITAT CONSISTS OF THE SAN BENITO RIVER, LOCATED ~250 M EAST OF THE OBSERVATION SITE. A POTENTIAL BREEDING POND IS ALSO LOCATED ~1.5 MILES AWAY. ADJACENT UPLAND HABITAT CONSISTS OF ANNUAL GRASSLAND.

General: 1 ADULT MALE OBSERVED CROSSING THE ROAD ON A RAINY NIGHT ON 29 DEC 2003.

Owner/Manager: SBT COUNTY



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Occurrence No.	711	Map Index: 63827	EO Index: 63922	Element Last Seen:	2004-04-13
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2004-04-13
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2006-01-31

Quad Summary: Hollister (3612174)

County Summary: San Benito

Lat/Long:	36.80306 / -121.42285	Accuracy:	80 meters
UTM:	Zone-10 N4074185 E640693	Elevation (ft):	630
PLSS:	T13S, R05E, Sec. 16 (M)	Acres:	0.0

Location: 0.9 MILE WEST OF THE INTERSECTION OF CIENAGA ROAD AND HIDDEN VALLEY ROAD, 3 MILES SSW OF HOLLISTER.

Detailed Location:

Ecological: HABITAT CONSISTS OF A SPRING-FED SAGPOND (8 M X 7 M X 0.5 M), WITH ELEOCHARIS THICK IN HALF THE BASIN. BASIN IS RELATIVELY SHALLOW, BUT FENCED TO KEEP COWS OUT. NEARBY UPLAND HABITAT CONSISTS OF LIGHTLY-GRAZED ANNUAL GRASSLAND.

General: 3 LARVAE OBSERVED DURING A DIP-NET SURVEY ON 13 APR 2004.

Owner/Manager: DPR-HOLLISTER HILLS SVRA

Occurrence No.	712	Map Index: 63829	EO Index: 63924	Element Last Seen:	2004-04-14
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2004-04-14
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2006-01-31

Quad Summary: Hollister (3612174)

County Summary: San Benito

Lat/Long:	36.79962 / -121.43243	Accuracy:	80 meters
UTM:	Zone-10 N4073790 E639845	Elevation (ft):	760
PLSS:	T13S, R05E, Sec. 16 (M)	Acres:	0.0

Location: 1.4 MILES WSW OF THE INTERSECTION OF CIENAGA ROAD AND HIDDEN VALLEY ROAD, ABOUT 3 MILES SSW OF HOLLISTER.

Detailed Location: BASIN IS RELATIVELY SHALLOW, BUT FENCED TO KEEP COWS OUT (ALTHOUGH COWS WERE PRESENT AT THE TIME OF THE SURVEY).

Ecological: HABITAT IS A MAN-MADE STOCK POND (20 M X 1 M X 0.2 M), WITH SPIKERUSH (ELEOCHARIS SP) THICK IN MOST OF BASIN. WATER WAS VERY TURBID. NEARBY UPLAND HABITAT CONSISTS OF LIGHTLY-GRAZED ANNUAL GRASSLAND & LIVE OAK/BLUE OAK WOODLAND.

General: 6 LARVAE OBSERVED DURING A DIP-NET SURVEY ON 14 APR 2004. PACIFIC CHORUS FROG TADPOLES ALSO OBSERVED.

Owner/Manager: DPR-HOLLISTER HILLS SVRA



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Occurrence No.	713	Map Index: 63830	EO Index: 63925	Element Last Seen:	2004-04-14
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2004-04-14
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2006-01-31
Quad Summary:	Hollister (3612174)				
County Summary:	San Benito				
Lat/Long:	36.78680 / -121.42237		Accuracy:	80 meters	
UTM:	Zone-10 N4072383 E640766		Elevation (ft):	930	
PLSS:	T13S, R05E, Sec. 21 (M)		Acres:	0.0	
Location:	1.5 MILES SW OF THE INTERSECTION OF CIENAGA ROAD AND HIDDEN VALLEY ROAD, ABOUT 4 MILES SSW OF HOLLISTER.				
Detailed Location:	PARK UNIT IS USED FOR ORV RECREATION, BUT NO VEHICLES ENTER THIS AREA.				
Ecological:	HABITAT CONSISTS OF A MAN-MADE STOCK POND (20 M X 15 M X 0.6 M), WITH SPIKERUSH (ELEOCHARIS SP) THICK IN MOST OF THE BASIN; WATER TURBID. NEARBY UPLAND HABITAT CONSISTS OF LIGHTLY-GRAZED ANNUAL GRASSLAND AND LIVE OAK/BLUE OAK WOODLAND.				
General:	1 LARVA OBSERVED DURING A DIP-NET SURVEY ON 14 APR 2004.				
Owner/Manager:	DPR-HOLLISTER HILLS SVRA				
Occurrence No.	726	Map Index: 65679	EO Index: 65758	Element Last Seen:	2006-02-28
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2006-02-28
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-02-15
Quad Summary:	Hollister (3612174)				
County Summary:	San Benito				
Lat/Long:	36.83058 / -121.43263		Accuracy:	specific area	
UTM:	Zone-10 N4077225 E639772		Elevation (ft):	320	
PLSS:	T13S, R05E, Sec. 04, SW (M)		Acres:	9.7	
Location:	NE SIDE OF UNION ROAD, 0.75 MILE NW OF THE INTERSECTION OF UNION ROAD AND RIVERSIDE ROAD, NW EDGE OF HOLLISTER.				
Detailed Location:	THE ON-SITE SEASONAL POOL MAY NOT SUPPORT CTS BREEDING DUE TO ITS HIGHLY EPHEMERAL NATURE; HOWEVER, OTHER POOLS ARE FOUND NEARBY.				
Ecological:	HABITAT CONSISTS OF A RUDERAL FIELD THAT IS PARTIALLY USED FOR AGRICULTURE AND CONTAINS A HIGHLY-SEASONAL POOL THAT DRIES BY LATE APRIL. COCKLEBUR DOMINANT PLANT SPECIES. SOILS ARE VERY SANDY AND FRIABLE.				
General:	1 ADULT COLLECTED FROM UNDER A RABBIT PEN ON 21 MAR 2005; RELEASED INTO A GROUND SQUIRREL BURROW AFTER IDENTIFICATION. 3 ADULTS CAPTURED USING A DRIFT FENCE, 2-18 DEC 2005. 1 ADULT CAPTURED ON 28 FEB 2006.				
Owner/Manager:	PVT				



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Occurrence No.	731	Map Index: 66635	EO Index: 66779	Element Last Seen:	2005-12-01
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2005-12-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2006-10-05

Quad Summary: Gilroy (3712115)

County Summary: Santa Clara

Lat/Long:	37.04732 / -121.62140	Accuracy:	80 meters
UTM:	Zone-10 N4101010 E622589	Elevation (ft):	470
PLSS:	T10S, R03E, Sec. 22 (M)	Acres:	0.0

Location: 0.5 MILE EAST OF LIONS CREEK AND 0.5 MILE NORTH OF DAY ROAD, 4 MILES NW OF GILROY.

Detailed Location:

Ecological: HABITAT CONSISTS OF A SMALL PERENNIAL STOCK POND CONSTRUCTED ON A DRAINAGE; SURROUNDED BY GRAZED, NON-NATIVE ANNUAL GRASSLAND WITH SCATTERED OAKS.

General: 3 JUVENILES TRAPPED ON 29 NOV 2005; 1 MALE TRAPPED ON 30 NOV 2005; 1 MALE TRAPPED ON 1 DEC 2005.

Owner/Manager: PVT

Occurrence No.	732	Map Index: 66638	EO Index: 66782	Element Last Seen:	2005-12-23
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2005-12-23
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2006-10-11

Quad Summary: Mt. Madonna (3712116)

County Summary: Santa Clara

Lat/Long:	37.03199 / -121.63637	Accuracy:	specific area
UTM:	Zone-10 N4099290 E621282	Elevation (ft):	470
PLSS:	T10S, R03E, Sec. 27 (M)	Acres:	19.0

Location: 1.3 MILES SE OF THE INTERSECTION OF DAY ROAD AND WATSONVILLE ROAD, 3.5 MILES NW OF GILROY.

Detailed Location:

Ecological: HABITAT CONSISTS OF A PERENNIAL STOCK POND CONSTRUCTED ON A LOW-GRADIENT DRAINAGE; SURROUNDED BY A LARGE, GRAZED SEASONAL WETLAND TO THE NORTH AND A SERPENTINE SLOPE TO THE SOUTH. POND SUPPORTS MOSQUITOFISH AND CRAYFISH.

General: 1 ADULT FEMALE TRAPPED ON 29 NOV 2005; 1 FEMALE TRAPPED ON 30 NOV 2005; 2 JUVENILES TRAPPED ON 2 DEC 2005; 1 ADULT MALE TRAPPED ON 22 DEC 2005; 1 MALE TRAPPED ON 23 DEC 2005.

Owner/Manager: PVT



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Occurrence No.	733	Map Index: 66642	EO Index: 66785	Element Last Seen:	2005-12-02
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2005-12-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2006-10-05

Quad Summary: Mt. Madonna (3712116)
County Summary: Santa Clara

Lat/Long:	37.02759 / -121.62744	Accuracy:	80 meters
UTM:	Zone-10 N4098814 E622083	Elevation (ft):	470
PLSS:	T10S, R03E, Sec. 34 (M)	Acres:	0.0

Location: 1.1 MILES NORTH OF HIGHWAY 152, 3 MILES WNW OF GILROY.

Detailed Location:

Ecological: HABITAT CONSISTS OF A PERENNIAL STOCK POND CONSTRUCTED ON A LOW-GRADIENT DRAINAGE; SURROUNDED BY GRAZED, NON-NATIVE ANNUAL GRASSLAND. POND SUPPORTS BULLFROGS.

General: 1 ADULT MALE TRAPPED ON 29 NOV 2005; 12 MALES, 3 FEMALES, AND 3 JUVENILES TRAPPED ON 2 DEC 2005.

Owner/Manager: PVT

Occurrence No.	734	Map Index: 66645	EO Index: 66791	Element Last Seen:	2005-12-02
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2005-12-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2006-10-05

Quad Summary: Gilroy (3712115)
County Summary: Santa Clara

Lat/Long:	37.04857 / -121.62470	Accuracy:	specific area
UTM:	Zone-10 N4101145 E622293	Elevation (ft):	470
PLSS:	T10S, R03E, Sec. 22 (M)	Acres:	2.0

Location: 0.25 MILE EAST OF LIONS CREEK AND 0.5 MILE NORTH OF DAY ROAD, 4.5 MILES NW OF GILROY.

Detailed Location:

Ecological: HABITAT CONSISTS OF A PERENNIAL STOCK POND CONSTRUCTED ON A DRAINAGE; SURROUNDED BY GRAZED, NON-NATIVE ANNUAL GRASSLAND WITH SCATTERED OAKS. POND SUPPORTS BULLFROGS AND POSSIBLY BASS.

General: 5 ADULT MALES AND 3 ADULT FEMALES TRAPPED ON 2 DEC 2005.

Owner/Manager: PVT



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Occurrence No.	750	Map Index: 68095	EO Index: 68236	Element Last Seen:	2006-05-02
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2006-05-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-03-02
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.77040 / -121.72964		Accuracy:	specific area	
UTM:	Zone-10 N4070155 E613372		Elevation (ft):	10	
PLSS:	T13S, R02E, Sec. 27 (M)		Acres:	10.0	
Location:	UPPER ARM OF MORO COJO SLOUGH, ON THE SOUTH SIDE OF HIGHWAY 156, NE OF CASTROVILLE.				
Detailed Location:	ADJACENT ANNUAL GRASSLANDS APPEAR SUITABLE AS UPLAND CTS HABITAT.				
Ecological:	HABITAT CONSISTS OF A SEASONAL SWALE SURROUNDED BY ANNUAL GRASSLAND/STRAWBERRY FIELDS; WILLOW THICKETS LINE THE LOW FLOW CHANNEL, EMERGENT VEGETATION ALONG THE SLOUGH MARGINS. OPEN WATER IS EXTENSIVE, UP TO 4' DEEP; DRIES BY LATE FALL.				
General:	AQUATIC SURVEYS WERE CONDUCTED ON 18 APR AND 2 MAY 2006; 33 CTS LARVAE WERE CAPTURED ON 2 MAY 2006. TAIL CLIPPINGS SENT TO UC DAVIS.				
Owner/Manager:	PVT				
Occurrence No.	752	Map Index: 68134	EO Index: 68278	Element Last Seen:	2006-05-04
Occ. Rank:	Poor		Presence: Presumed Extant	Site Last Seen:	2006-05-04
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-02-15
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.78148 / -121.67862		Accuracy:	80 meters	
UTM:	Zone-10 N4071446 E617909		Elevation (ft):	90	
PLSS:	T13S, R03E, Sec. 19, SE (M)		Acres:	0.0	
Location:	WEST OF PRUNEDALE, ABOUT 0.8 MI NW OF INTERSECTION OF BLACKIE RD AND HWY 156.				
Detailed Location:					
Ecological:	SUBSTRATE HIGHLY SANDY, TURBID WATER. NO AQUATIC VEGETATION, BERMS LARGELY BARE. SURROUNDING AREA IS STRAWBERRY FIELDS IN VARYING PHASES (E.G. ACTIVE, FALLOW) & OAK WOODLANDS. VIABLE UPLANDS (ANNUAL GRASSLANDS) FRAGMENTED BY AGRICULTURE.				
General:	1 LARVA CAPTURED ON 17 APR AND 2 LARVAE CAPTURED ON 4 MAY 2006. TAIL CLIPPINGS SENT TO DR. BRAD SHAFFER AT UC DAVIS.				
Owner/Manager:	PVT				



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Occurrence No.	763	Map Index: 68237	EO Index: 68385	Element Last Seen: 1999-05-06
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen: 1999-05-06
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2008-03-11

Quad Summary: Hollister (3612174)

County Summary: San Benito

Lat/Long:	36.82646 / -121.46107	Accuracy:	80 meters
UTM:	Zone-10 N4076726 E637242	Elevation (ft):	300
PLSS:	T13S, R05E, Sec. 06, SE (M)	Acres:	0.0

Location: 1.2 MILES SE OF THE INTERSECTION OF FLINT ROAD AND HIGHWAY 156, SAN JUAN OAKS GOLF COURSE.

Detailed Location:

Ecological: HABITAT CONSISTS OF A SEASONAL CATTLE POND (90 FT X 60 FT, 3 FT 5 IN DEEP). WATER TURBID, 62 DEGREES F. POND CONTAINS NO AQUATIC OR EMERGENT VEGETATION, ALGAL MATS SPARSE, MARGIN BARE. SUBSTRATE MUD/SILT. SURROUNDED BY ANNUAL GRASSLAND.

General: 1 ADULT AND 32 JUVENILES OBSERVED 6 MAY 1999. 1 LARVAL CTS OBSERVED (165 MM TOTAL LENGTH WITH MULTIPLE SPOTS, PLUMOSE GILLS) - LARGE FOR CTS THIS EARLY IN THE YEAR. GROUND SQUIRREL BURROWS LOCALLY COMMON.

Owner/Manager: PVT-SAN JUAN OAKS GOLF COURSE

Occurrence No.	764	Map Index: 68238	EO Index: 68386	Element Last Seen: 2006-01-29
Occ. Rank:	Poor		Presence: Presumed Extant	Site Last Seen: 2006-01-29
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2008-03-18

Quad Summary: Hollister (3612174)

County Summary: San Benito

Lat/Long:	36.81925 / -121.46160	Accuracy:	specific area
UTM:	Zone-10 N4075926 E637208	Elevation (ft):	330
PLSS:	T13S, R05E, Sec. 07 (M)	Acres:	27.0

Location: WEST OF SAN JUSTO RESERVOIR, NEAR SAN JUAN OAKS GOLF CLUB.

Detailed Location:

Ecological: ANNUAL GRASSLAND DOMINATED BY LOLIUM AND PATCHES OF RUDERAL CHARACTERIZED BY SILYBUM, HIRSCHFELDIA & CONIUM. SOILS HEAVY WITH CLAY. PONDS 4 & 7 IN SWALE OF ANNUAL GRASSLAND; 7 IS ADJACENT TO GOLF COURSE. CALIFORNIA RED-LEGGED FROG ON SITE.

General: 4 ADULTS, 11 MORPHS & SUBADULTS CAPTURED DURING DRIFT FENCE STUDY, 2005 - ALL EXCEPT 1 CAPTURED IN UPLANDS. 7 ADULT FEMALES, 6 SUBADULTS CAPTURED DURING DRIFT FENCE STUDY, 2006. 1 ADULT CAPTURED IN POND 7, ALL OTHERS CAPTURED IN UPLANDS.

Owner/Manager: PVT



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Occurrence No.	802	Map Index: 69352	EO Index: 70128	Element Last Seen:	2007-05-02
Occ. Rank:	Poor		Presence: Presumed Extant	Site Last Seen:	2007-05-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-05-23
Quad Summary:	San Felipe (3612184)				
County Summary:	San Benito				
Lat/Long:	36.88844 / -121.41590		Accuracy:	80 meters	
UTM:	Zone-10 N4083668 E641156		Elevation (ft):	235	
PLSS:	T12S, R05E, Sec. 15 (M)		Acres:	0.0	
Location:	0.4 MILE ESE OF THE INTERSECTION OF HIGHWAY 25 AND MCCONNELL ROAD, ALONG THE WEST EDGE OF HOLLISTER MUNICIPAL AIRPORT.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A CULTIVATED OAT FIELD CONTAINING NUMEROUS MAMMAL BURROWS. NO BREEDING HABITAT WAS IDENTIFIED NEARBY.				
General:	1 DEAD ADULT FOUND AT THE ENTRANCE TO A MAMMAL BURROW.				
Owner/Manager:	PVT				
Occurrence No.	822	Map Index: 70875	EO Index: 71853	Element Last Seen:	2007-10-11
Occ. Rank:	Poor		Presence: Presumed Extant	Site Last Seen:	2007-10-11
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2008-02-26
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.78250 / -121.73162		Accuracy:	specific area	
UTM:	Zone-10 N4071495 E613178		Elevation (ft):	50	
PLSS:	T13S, R02E, Sec. 22, SE (M)		Acres:	14.0	
Location:	JUST NORTH OF UPPER MORO COJO SLOUGH AND SOUTHEAST OF CASTROVILLE BLVD, NORTH OF HIGHWAY 156, 1.5 MI NE OF CASTROVILLE.				
Detailed Location:	WEST OF THE SEWAGE TREATMENT PONDS.				
Ecological:	ANNUAL GRASSLAND/RUDERAL PATCH. LAND MAY FORMERLY HAVE BEEN ANNUAL GRASSLAND W/SEASONAL WETLANDS. SITE LIKELY SUPPORTED UPLAND HABITAT PRIOR TO GRADING. MORO COJO SLOUGH OR CASTROVILLE SEWAGE TREATMENT PONDS PROVIDE BREEDING HABITAT.				
General:	1 SUBADULT CAPTURED ON 10 FEB AND 1 ADULT MALE CAPTURED ON 11 OCT DURING 2007. BOTH CAPTURES OCCURRED DURING DRIFT FENCE STUDY AND BOTH APPEARED TO BE HYBRIDS BASED ON SPOTTING PATTERN.				
Owner/Manager:	NORTH MONTEREY COUNTY HS				



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Occurrence No.	823	Map Index: 70880	EO Index: 71856	Element Last Seen:	2007-04-03
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2007-04-03
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2008-02-26
Quad Summary:	San Juan Bautista (3612175)				
County Summary:	San Benito				
Lat/Long:	36.86540 / -121.61944		Accuracy:	80 meters	
UTM:	Zone-10 N4080830 E623056		Elevation (ft):	300	
PLSS:	T12S, R03E, Sec. 27, NE (M)		Acres:	0.0	
Location:	NORTHEAST OF THE JUNCTION OF COLE ROAD AND HIGHWAY 101/SR 156, 4.5 MILES WNW OF SAN JUAN BAUTISTA.				
Detailed Location:	0.15 MILE EAST OF COLE ROAD, 0.3 MILE NORTH OF HIGHWAY 101 FROM COLE ROAD.				
Ecological:	HABITAT IS A STOCK POND WITHIN ANNUAL GRASSLAND. POND MARGIN BARREN W/AQUATIC VEGETATION CLUMPED ALONG SHORELINE; NO EMERGENTS. WATER MODERATELY TURBID & UP TO 4 FT+ DEEP. SURROUNDING GRASSLANDS GRAZED, GROUND SQUIRRELS LOCALLY UNCOMMON.				
General:	7 LARVAE RANGING IN SIZE FROM 27-35 MM TL OBSERVED 3 APR 2007. BULLFROG ADULT, SUBADULT, AND 1 LARVA OBS; BUFO LARVAE LOCALLY FAIRLY COMMON. Hyla LARVAE UNCOMMON. CURR/SURROUNDING LAND USE:CATTLE RANCH, RANCHETTE, LIVESTOCK SUPPLY YARD.				
Owner/Manager:	PVT				
Occurrence No.	911	Map Index: 81197	EO Index: 82182	Element Last Seen:	2008-05-17
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2008-05-17
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2010-12-30
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.84989 / -121.73316		Accuracy:	80 meters	
UTM:	Zone-10 N4078970 E612941		Elevation (ft):	350	
PLSS:	T12S, R02E, Sec. 34, NE (M)		Acres:	0.0	
Location:	ABOUT 0.7 MILE NE OF ELKHORN RD AT KIRBY RD, ELKHORN SLOUGH RESERVE (TNC).				
Detailed Location:	MAPPED TO PROVIDED COORDINATES.				
Ecological:	CREATED POND FED FROM LEAKY PIPE AT THE TOP OF A RIDGE SURROUNDED BY CHAPARRAL. DOMINANT VEGETATION WAS CATTAIL AND BULRUSH. DOZENS OF PSEUDACRIS REGILLA TADPOLES WERE OBSERVED.				
General:	9 SUBADULTS WERE DETECTED ON 17 MAY 2008.				
Owner/Manager:	TNC-ELKHORN SLOUGH RESERVE				



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Occurrence No.	920	Map Index: 89490	EO Index: 90478	Element Last Seen:	2013-05-07
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2013-05-07
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2013-06-27

Quad Summary: San Juan Bautista (3612175)
County Summary: San Benito

Lat/Long:	36.85883 / -121.56716	Accuracy:	specific area
UTM:	Zone-10 N4080170 E627727	Elevation (ft):	380
PLSS:	T12S, R04E, Sec. 30, SE (M)	Acres:	10.0

Location: NE SIDE OF HWY 156, FROM ABOUT 0.7 TO 0.9 MILE SE OF THE HWY 101/HWY 156 JUNCTION; NW OF SAN JUAN BAUTISTA.

Detailed Location: FEATURE REPRESENTS TWO POND SITES, ON EITHER SIDE OF AN UNNAMED ROAD CROSSING FROM HWY 156 TO SAN JUAN HWY.

Ecological: NORTH-MOST POND SMALL, EPHEMERAL; ADULT BULLFROGS AND TREE FROG TADPOLES ALSO FOUND. BOTH PONDS WITHIN GRASSLAND GRAZED BY CATTLE. LARVAE CAUGHT IN N POND DISPLAYED MORPHOLOGICAL HYBRID CHARACTERISTICS.

General: ABOUT 100 EGGS WERE OBSERVED IN NORTH POND ON 10 JAN 2013. ABOUT 350 EGGS WERE OBSERVED IN S POND ON 11 JAN 2013. 30 LARVAE CAUGHT IN N POND ON 7 MAY 2013 WERE SUBMITTED FOR DNA & DISEASE TESTING; ESTIMATED POP AT LEAST 150.

Owner/Manager: PVT, UNKNOWN

Occurrence No.	921	Map Index: 89492	EO Index: 90482	Element Last Seen:	2012-10-18
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2012-10-18
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2013-06-19

Quad Summary: Hollister (3612174)
County Summary: San Benito

Lat/Long:	36.86334 / -121.46685	Accuracy:	80 meters
UTM:	Zone-10 N4080809 E636661	Elevation (ft):	240
PLSS:	T12S, R05E, Sec. 30, NW (M)	Acres:	0.0

Location: FLINT HILLS WEST OF HOLLISTER, ABOUT 1 MILE NNE OF FLINT RD AT FREITAS RD & 1.3 MILES WEST OF HWY 156 AT BUENA VISTA RD.

Detailed Location: MAPPED TO LOCATION GIVEN ON FIELD SUREY FORMS. ALONG UNPAVED ROAD BETWEEN THE SAN BENITO RIVER AND THE FLINT HILLS.

Ecological: GRAZED GRASSLAND HABITAT ON RANCHING PROPERTY; MULTIPLE PONDS AND ABUNDANT GROUND SQUIRREL BURROWS IN AREA. OTHER LAND USES INCLUDED LOW-DENSITY HOUSING, AGRICULTURE. POTENTIAL THREAT FROM GROUND SQUIRREL EXTERMINATION.

General: 1 ADULT MALE IN REPRODUCTIVE CONDITION, ABOUT 3 YEARS OF AGE, FOUND IN BURROW ON 18 OCT 2012.

Owner/Manager: PVT



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Occurrence No.	1018	Map Index: A0152	EO Index: 101714	Element Last Seen:	2016-01-26
Occ. Rank:	Poor		Presence: Presumed Extant	Site Last Seen:	2016-01-26
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2016-07-05
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.78343 / -121.64341		Accuracy:	80 meters	
UTM:	Zone-10 N4071706 E621049		Elevation (ft):	231	
PLSS:	T13S, R03E, Sec. 21, SE (M)		Acres:	5.0	
Location:	PRIVATE DRIVE 0.3 MILE NNW OF PESANTE ROAD AT HOLLY HILL DRIVE, 0.3 MILE SE OF COKER ROAD AT EDEN COURT, PRUNEDALE.				
Detailed Location:	MAPPED TO PROVIDED COORDINATES.				
Ecological:	PAVED DRIVEWAY IN RURAL RESIDENTIAL AREA AND GRAZING LAND. NEAREST KNOWN POTENTIAL BREEDING SITE ABOUT 1 MILE SOUTH.				
General:	1 FOUND DEAD ON ROAD ON 26 JAN 2016.				
Owner/Manager:	PVT				
Occurrence No.	1023	Map Index: A1123	EO Index: 102691	Element Last Seen:	2011-06-01
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2011-06-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2016-08-01
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.07257 / -121.65042		Accuracy:	80 meters	
UTM:	Zone-10 N4103775 E619969		Elevation (ft):	401	
PLSS:	T10S, R03E, Sec. 9, SW (M)		Acres:	5.0	
Location:	CORDEVALLE COUNTRY CLUB, ABOUT 0.5 MILES SOUTHWEST OF WATSONVILLE RD AT HAYES LN, W OF SAN MARTIN.				
Detailed Location:	MAPPED TO COORDINATES PROVIDED IN SCP REPORT. EXACT LOCATIONS NOT GIVEN IN LSA REPORTS.				
Ecological:	BROAD VALLEY CONTAINING HEADWATERS OF THE WEST BRANCH OF LLAGAS CREEK. GOLF COURSE, VINEYARDS AND HOUSING IN CLOSE PROXIMITY.				
General:	LARVAE DETECTED ON PROPERTY IN 2005 & 2006, EXACT LOCATION NOT KNOWN. 6 LARVAE DETECTED, APR-JUN 2011.				
Owner/Manager:	PVT-CORDEVALLE GOLF COURSE				



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Occurrence No.	1026	Map Index: A1322	EO Index: 102894	Element Last Seen:	2016-06-02
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2016-06-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2016-07-27
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.11207 / -121.65594		Accuracy:	80 meters	
UTM:	Zone-10 N4108150 E619416		Elevation (ft):	452	
PLSS:	T09S, R03E, Sec. 33, NW (M)		Acres:	5.0	
Location:	ABOUT 0.3 MILES NE OF DEWITT AVE AT ORIGILIA LN AND 0.7 MILES W OF MONTEREY RD AT TENNANT AVE IN MORGAN HILL.				
Detailed Location:	MAPPED TO PROVIDED COORDINATES.				
Ecological:	STOCK POND IN GRAZED OPEN SPACE. SITE OF "POWER CONNECT PROJECT."				
General:	TWO LARVAE CAUGHT AND RELEASED ON 2 JUN 2016; SEVERAL OTHERS WERE OBSERVED AT THE POND'S SURFACE BUT NOT CAPTURED.				
Owner/Manager:	UNKNOWN				
Occurrence No.	1032	Map Index: A2442	EO Index: 104051	Element Last Seen:	2014-12-10
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2014-12-10
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2016-11-14
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.82641 / -121.71091		Accuracy:	specific area	
UTM:	Zone-10 N4076391 E614961		Elevation (ft):	146	
PLSS:	T13S, R02E, Sec. 2, SE (M)		Acres:	10.0	
Location:	STRAWBERRY RD, ABOUT 0.1-0.3 MI W OF THE TUCKER RD JCT & 1.1-1.25 AIR MI ESE OF THE ELKHORN RD JCT, E OF ELKHORN SLOUGH.				
Detailed Location:	MAPPED TO PROVIDED MAP & COORDINATES.				
Ecological:	COUNTY ROAD NEAR WETLANDS USED AS BREEDING SITES. LOW-DENSITY RESIDENTIAL AREA IN OAK WOODLAND.				
General:	1 OBSERVED CROSSING ROAD TOWARDS POTENTIAL BREEDING POND ON 10 DEC 1992. 1 ADULT OBSERVED WALKING ON ROAD ON 10 DEC 2014; PRESUMED TO BE TRAVELING TO BREEDING SITE.				
Owner/Manager:	MNT COUNTY, PVT				



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Occurrence No.	1034	Map Index: A4535	EO Index: 106226	Element Last Seen:	2016-10-19
Occ. Rank:	Poor		Presence: Presumed Extant	Site Last Seen:	2016-10-19
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-06-22

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.77746 / -121.70667	Accuracy:	specific area
UTM:	Zone-10 N4070965 E615413	Elevation (ft):	61
PLSS:	T13S, R02E, Sec. 25, NW (M)	Acres:	10.0

Location: BETWEEN HWY 156 AND BLACKIE RD, FROM ABOUT 0.25 MILES SW TO 0.3 MILES SSE OF HWY 156 AT OAK HILLS DR, NE OF CASTROVILLE.

Detailed Location: MAPPED TO PROVIDED COORDINATES.

Ecological: ACTIVE FARM GROWING MOSTLY STRAWBERRIES ON VERY SANDY SOIL. FREQUENT MAINTENANCE CONDUCTED TO REPAIR EROSION AND SEDIMENTATION DUE TO RUNOFF. AREA IS REGULARLY DISKED.

General: 2 ADULTS FOUND ON 19 OCT 2016 DURING FARM WORK (ONE UNEARTHED FROM BURROW, ONE FOUND ON SURFACE) AND RELOCATED TO AN ADJACENT DETENTION BASIN.

Owner/Manager: PVT

Occurrence No.	1041	Map Index: A6374	EO Index: 108132	Element Last Seen:	2016-11-24
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2016-11-24
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-10-12

Quad Summary: Gilroy Hot Springs (3712114)

County Summary: Santa Clara

Lat/Long:	37.04661 / -121.38259	Accuracy:	specific area
UTM:	Zone-10 N4101267 E643828	Elevation (ft):	2173
PLSS:	T10S, R05E, Sec. 24, SW (M)	Acres:	10.0

Location: ABOUT 0.1 TO 0.3 MI ESE OF KICKHAM PEAK & 2.0 MI SW OF GULNAC PEAK, CANADA DE LOS OSOS ER.

Detailed Location: TWO PONDS REPRESENTED, FOUR CORNERS POND (EAST) & EAST BIG SPRING POND (WEST).

Ecological: EAST BIG SPRING (EBS): SMALL POND W/ASSOCIATED SPRING, DEEPENED BY EXCAVATION IN 2015 & FENCED TO EXCLUDE PIGS; IN UNGRAZED, HILLY GRASSLAND. FOUR CORNERS POND (FCP): EARLY-DRYING POND, DEEPENED IN 2015; IN DRAINAGE W/OAK WOODLAND.

General: FCP: 3 TADPOLES CAUGHT & RELEASED 22 MAY 2016. EBS: 138 LARVAE SEINED ON 24 NOV 2016.

Owner/Manager: DFG-CANADA DE LOS OSOS ER



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Occurrence No.	1042	Map Index: A6367	EO Index: 108171	Element Last Seen:	2016-08-28
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2016-08-28
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2020-07-22

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.05392 / -121.38431	Accuracy:	80 meters
UTM:	Zone-10 N4102074 E643662	Elevation (ft):	1738
PLSS:	T10S, R05E, Sec. 24, NW (M)	Acres:	5.0

Location: NORTH SIDE OF ELEPHANT HEAD RIDGE ABOUT 0.4 MI N OF KICKHAM PEAK & 1.7 MI SW OF GULNAC PEAK, CANADA DE LOS OSOS ER.
Detailed Location: SITE KNOWN AS CORRAL POND OR OLD CORRAL POND.
Ecological: FORMER FARM POND FAR FROM PERENNIAL STREAMS, SUBJECT TO DRYING IN DROUGHT. SEASONAL STREAM W/DENSE VEG PROVIDES UPLAND HABITAT. IN GRASSLAND/BLUE OAK SAVANNA. WAS A RANCH, NOW A PRESERVE. EARLY DRYING 2014-2015 MAY HAVE REDUCED POPULATION.
General: 70 LARVAE & METAMORPHS CAPTURED AND RELEASED IN 2013. 30 LARVAE OBSERVED 28 AUG 2016.
Owner/Manager: DFG-CANADA DE LOS OSOS ER

Occurrence No.	1046	Map Index: A6761	EO Index: 108531	Element Last Seen:	2017-03-16
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2017-03-16
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-10-09

Quad Summary: Hollister (3612174)
County Summary: San Benito

Lat/Long:	36.84038 / -121.43294	Accuracy:	80 meters
UTM:	Zone-10 N4078311 E639727	Elevation (ft):	480
PLSS:	T12S, R05E, Sec. 33, SW (M)	Acres:	5.0

Location: ABOUT 0.6 MILES NE OF UNION RD AT GENEIL CT & 0.9 MILES SW OF SOUTH ST AT SUMMER DR IN HOLLISTER.
Detailed Location: MAPPED TO PROVIDED COORDINATES.
Ecological: CONSTRUCTION SITE SURROUNDED BY GRASSLANDS WITH WETLAND TO NORTH. SURROUNDING AREA AGRICULTURAL (GRAZING, ORCHARDS, FARMLAND). VISIBLE DISTURBANCE FROM CONSTRUCTION OF WATER TREATMENT PLANT.
General: 1 POTENTIALLY GRAVID ADULT OBSERVED DURING PRE-CONSTRUCTION SURVEY ON 16 MAR 2017.
Owner/Manager: SBT COUNTY



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Occurrence No.	1052	Map Index: A8102	EO Index: 109884	Element Last Seen:	2016-05-02
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2016-05-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-01-23
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.85472 / -121.71283		Accuracy:	specific area	
UTM:	Zone-10 N4079529 E614748		Elevation (ft):	142	
PLSS:	T12S, R02E, Sec. 26, SE (M)		Acres:	10.0	
Location:	FROM ABOUT 0.5 TO 0.7 MILES SSW OF HALL RD AT JOHNSON RD & 1.7 MILES NE OF ELKHORN RD AT KIRBY RD, ELKHORN HIGHLANDS.				
Detailed Location:	MAPPED TO PROVIDED COORDINATES. NORTH POND ON AGRICULTURE AND LAND-BASED TRAINING ASSOCIATION (ALBA) FARM. SOUTH POND WITHIN ELKHORN SLOUGH FOUNDATION PRESERVE.				
Ecological:	NORTH POND CREATED AS PART OF WETLAND RESTORATION PROJECT IN 2012; BREEDING FIRST CONFIRMED IN 2015; METAMORPHOSIS LIKELY OCCURRED AS THERE WAS SUFFICIENT WATER. SOUTH POND AN "AG POND." LAND USES INCLUDED AGRICULTURE AND CONSERVATION.				
General:	3 LARVAE CAUGHT IN NORTH POND ON 21 MAY 2015. 18 LARVAE OBSERVED IN SOUTH POND ON 2 MAY 2016.				
Owner/Manager:	PVT, ELKHORN SLOUGH FOUNDATION				
Occurrence No.	1053	Map Index: A8103	EO Index: 109885	Element Last Seen:	2016-05-02
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2016-05-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-01-17
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.84818 / -121.71201		Accuracy:	80 meters	
UTM:	Zone-10 N4078805 E614830		Elevation (ft):	425	
PLSS:	T12S, R02E, Sec. 35, NE (M)		Acres:	5.0	
Location:	ABOUT 0.9 MILES SSW OF HALL RD AT JOHNSON RD & 1.7 MILES ENE OF ELKHORN RD AT KIRBY RD, ELKHORN HIGHLANDS.				
Detailed Location:	MAPPED TO PROVIDED COORDINATES. WITHIN ELKHORN SLOUGH FOUNDATION PRESERVE.				
Ecological:	DESCRIBED AS "ELZAS NON-AGRICULTURAL POND." SURROUNDING LAND USES INCLUDED AGRICULTURE AND CONSERVATION.				
General:	24 LARVAE OBSERVED ON 2 MAY 2016. SURVEYOR NOTED, "ALL CTS WERE YELLOWISH-GREEN; ONE HAD BROKEN OFF TAIL."				
Owner/Manager:	ELKHORN SLOUGH FOUNDATION				



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Occurrence No.	1054	Map Index: A8104	EO Index: 109886	Element Last Seen:	2016-05-02
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2016-05-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-01-17
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.85486 / -121.72187		Accuracy:	80 meters	
UTM:	Zone-10 N4079534 E613941		Elevation (ft):	289	
PLSS:	T12S, R02E, Sec. 26, SW (M)		Acres:	5.0	
Location:	ABOUT 0.9 MILES SW OF HALL RD AT JOHNSON RD & 1.3 MILES NE OF ELKHORN RD AT KIRBY RD, ELKHORN HIGHLANDS.				
Detailed Location:	MAPPED TO PROVIDED COORDINATES. WITHIN ELKHORN SLOUGH FOUNDATION PRESERVE.				
Ecological:	DESCRIBED AS "BROTHERS RESERVOIR." SURROUNDING LAND USES INCLUDED AGRICULTURE AND CONSERVATION.				
General:	2 LARVAE OBSERVED ON 2 MAY 2016.				
Owner/Manager:	ELKHORN SLOUGH FOUNDATION				
Occurrence No.	1059	Map Index: A8397	EO Index: 110182	Element Last Seen:	2015-06-15
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2015-06-15
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-02-08
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.82061 / -121.73118		Accuracy:	specific area	
UTM:	Zone-10 N4075724 E613162		Elevation (ft):	10	
PLSS:	T13S, R02E, Sec. 10, NE (M)		Acres:	9.0	
Location:	LOWER CATTAIL POND, ELKHORN SLOUGH NATIONAL ESTUARINE RESERVE; ABOUT 0.1 MILES W OF ELKHORN RD AT PARADISE VALLEY RD.				
Detailed Location:	MAPPED TO PROVIDED COORDINATES.				
Ecological:	LARGE SEASONAL POND WITH CATTAILS SURROUNDED BY OAK WOODLAND AND EUCALYPTUS, WITH ELKHORN SLOUGH TO WEST. ARTIFICIALLY SEPARATED FROM ELKHORN SLOUGH BY A WATER CONTROL STRUCTURE. POND FORMERLY FED BY AG RUNOFF, NOW ONLY RECEIVES RAINFALL.				
General:	4 LARVAE OBSERVED ON 20 APR 2015. ABOUT 20 LARVAE DIPNETTED ON 25 APR 2015, TAIL CLIPS COLLECTED FOR GENETIC ANALYSIS (SHAFFER, UCLA). 10S OF LARVAE OBSERVED ON 15 JUN 2015.				
Owner/Manager:	DFG-ELKHORN SLOUGH ER				



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Occurrence No.	1071	Map Index: B2311	EO Index: 114237	Element Last Seen:	20XX-XX-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	20XX-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-03-01
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Clara				
Lat/Long:	36.93754 / -121.56429		Accuracy:	1/10 mile	
UTM:	Zone-10 N4088906 E627852		Elevation (ft):	441	
PLSS:	T11S, R04E, Sec. 31, NE (M)		Acres:	18.0	
Location:	ABOUT 2.3 MILES NNW OF US-101 AT EXIT 349 AND 2.9 MILES NE OF CA-129 AT SCHOOL RD, SARGENT RANCH.				
Detailed Location:	MAPPED TO PROVIDED MAP AND COORDINATES.				
Ecological:	EASTERN TIGER SALAMANDERS AND HYBRIDS HAVE BEEN FOUND ELSEWHERE ON THIS PROPERTY (EOS #103, 407). PROPERTY USED FOR CATTLE RANCHING AND OIL EXTRACTION, WITH QUARRY PROPOSED IN 2017.				
General:	DETECTED DURING SURVEYS IN 2000-2001 AND/OR 2005-2015.				
Owner/Manager:	PVT				
Occurrence No.	1072	Map Index: B2312	EO Index: 114238	Element Last Seen:	20XX-XX-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	20XX-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-03-01
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Clara				
Lat/Long:	36.92213 / -121.55735		Accuracy:	1/10 mile	
UTM:	Zone-10 N4087205 E628496		Elevation (ft):	251	
PLSS:	T12S, R04E, Sec. 5, NE (M)		Acres:	18.0	
Location:	ABOUT 1.2 MILES N OF US-101 AT EXIT 349 AND 2.4 MILES NE OF CA-129 AT SCHOOL RD, SARGENT RANCH.				
Detailed Location:	MAPPED TO PROVIDED MAP AND COORDINATES.				
Ecological:	EASTERN TIGER SALAMANDERS AND HYBRIDS HAVE BEEN FOUND ELSEWHERE ON THIS PROPERTY (EOS #103, 407). PROPERTY USED FOR CATTLE RANCHING AND OIL EXTRACTION, WITH QUARRY PROPOSED IN 2017 AT THIS SITE.				
General:	DETECTED DURING SURVEYS IN 2000-2001 AND/OR 2005-2015.				
Owner/Manager:	PVT				
Occurrence No.	1073	Map Index: B2316	EO Index: 114242	Element Last Seen:	20XX-XX-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	20XX-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-03-01
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Clara				
Lat/Long:	36.9366 / -121.579		Accuracy:	1/10 mile	
UTM:	Zone-10 N4088782 E626544		Elevation (ft):	368	
PLSS:	T11S, R04E, Sec. 31, NW (M)		Acres:	18.0	
Location:	ABOUT 2.5 MILES NW OF US-101 AT EXIT 349 AND 2.6 MILES NNE OF CA-129 AT SCHOOL RD, SARGENT RANCH.				
Detailed Location:	MAPPED TO PROVIDED MAP AND COORDINATES.				
Ecological:	EASTERN TIGER SALAMANDERS AND HYBRIDS HAVE BEEN FOUND ELSEWHERE ON THIS PROPERTY (EOS #103, 407). PROPERTY USED FOR CATTLE RANCHING AND OIL EXTRACTION, WITH QUARRY PROPOSED IN 2017.				
General:	DETECTED DURING SURVEYS IN 2000-2001 AND/OR 2005-2015.				
Owner/Manager:	PVT				



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<i>Aneides niger</i>		Element Code: AAAAD01070	
Santa Cruz black salamander			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G3
	State: None		State: S3
	Other: CDFW_SSC-Species of Special Concern		
Habitat:	General: MIXED DECIDUOUS AND CONIFEROUS WOODLANDS AND COASTAL GRASSLANDS IN SAN MATEO, SANTA CRUZ, AND SANTA CLARA COUNTIES.		
	Micro: ADULTS FOUND UNDER ROCKS, TALUS, AND DAMP WOODY DEBRIS.		

Occurrence No.	16	Map Index: A1575	EO Index: 103164	Element Last Seen:	1898-03-31
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1898-03-31
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2016-08-24

Quad Summary: Mt. Madonna (3712116), Loma Prieta (3712117)
County Summary: Santa Clara

Lat/Long:	37.04356 / -121.73493	Accuracy:	non-specific area
UTM:	Zone-10 N4100453 E612499	Elevation (ft):	1009
PLSS:	T10S, R02E, Sec. 22 (M)	Acres:	271.0

Location: MURPHY CANYON, ABOUT 2.75 MI NORTHWEST OF MT. MADONNA, ABOUT 7.4 MI SW OF MORGAN HILL.
Detailed Location: STATED LOCALITY: "MURPHY CREEK N OF MT MADONNA." CANNOT LOCATE MURPHY CREEK, MAPPED TO CREEK AT MURPHY CANYON.
Ecological:
General: ADULT PARATYPE COLLECTED ON 31 MAR 1898.
Owner/Manager: UNKNOWN

Occurrence No.	74	Map Index: A2120	EO Index: 103720	Element Last Seen:	2014-03-23
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2014-03-23
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2016-10-05

Quad Summary: Watsonville East (3612186), Watsonville West (3612187), Mt. Madonna (3712116), Loma Prieta (3712117)
County Summary: Santa Cruz

Lat/Long:	37.00137 / -121.75604	Accuracy:	1 mile
UTM:	Zone-10 N4095747 E610683	Elevation (ft):	350
PLSS:	T11S, R02E, Sec. 4 (M)	Acres:	1987.0

Location: GREEN VALLEY RD, NORTH WATSONVILLE.
Detailed Location: MAPPED TO VICINITY OF GREEN VALLEY RD IN HILLS ABOVE WATSONVILLE. EXACT LOCATION UNKNOWN, MOST LIKELY FOUND AT CREEK PARALLEL TO ROAD.
Ecological:
General: ADULTS PHOTOGRAPHED ON 23 MAR 2014.
Owner/Manager: UNKNOWN



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Occurrence No.	75	Map Index: A2123	EO Index: 103722	Element Last Seen:	1946-06-02
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1946-06-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2016-10-05

Quad Summary: Watsonville East (3612186), Mt. Madonna (3712116)

County Summary: Santa Clara

Lat/Long: 36.99962 / -121.686 **Accuracy:** non-specific area

UTM: Zone-10 N4095637 E616918 **Elevation (ft):** 600

PLSS: T11S, R03E, Sec. 6 (M) **Acres:** 196.0

Location: HECKER PASS HWY (HWY 152) ALONG BODFISH CREEK, MT MADONNA COUNTY PARK.

Detailed Location: EXACT LOCATIONS UNKNOWN. ATTRIBUTED SPECIEMEN COLLECTED "NEAR HECTOR PASS."

Ecological:

General: COLLECTED ON 6 NOV 1938 AMD 2 JUN 1946.

Owner/Manager: SCL COUNTY, PVT



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<i>Taricha torosa</i>		Element Code: AAAAF02032	
Coast Range newt			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G4
	State: None		State: S4
	Other: CDFW_SSC-Species of Special Concern		
Habitat:	General: COASTAL DRAINAGES FROM MENDOCINO COUNTY TO SAN DIEGO COUNTY.		
	Micro: LIVES IN TERRESTRIAL HABITATS AND WILL MIGRATE OVER 1 KM TO BREED IN PONDS, RESERVOIRS AND SLOW MOVING STREAMS.		

Occurrence No.	4	Map Index:	38193	EO Index:	35222	Element Last Seen:	1998-02-24
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		1998-02-24	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		1998-11-19	

Quad Summary: Hollister (3612174)
County Summary: San Benito

Lat/Long:	36.81567 / -121.44934	Accuracy:	80 meters
UTM:	Zone-10 N4075546 E638308	Elevation (ft):	400
PLSS:	T13S, R05E, Sec. 08 (M)	Acres:	0.0

Location: JUST SW OF SAN JUSTO RESERVOIR DAM, 1.9 MILES SSE OF UNION ROAD & HIGHWAY 156, 3.7 MILES SW OF HOLLISTER.
Detailed Location: CEMENT WASTE PILE NEAR TOE DRAIN BELOW SAN JUSTO RESERVOIR DAM.
Ecological: IMMEDIATE VEGETATION IS NON-NATIVE GRASSLAND AND A RIPARIAN AREA IS 20 METERS WEST.
General: 12 SALAMANDERS OBSERVED, 1998.
Owner/Manager: USBOR

Occurrence No.	58	Map Index:	72411	EO Index:	73377	Element Last Seen:	2001-03-06
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		2001-03-06	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2008-09-26	

Quad Summary: San Juan Bautista (3612175)
County Summary: Monterey

Lat/Long:	36.80596 / -121.61321	Accuracy:	specific area
UTM:	Zone-10 N4074244 E623706	Elevation (ft):	517
PLSS:	T13S, R03E, Sec. 14, NW (M)	Acres:	0.0

Location: STOCK POND, 0.25 MILE NNE OF CRAZY HORSE CANYON RD AT DUMP RD.
Detailed Location: WITHIN 250 METERS EAST OF CRAZY HORSE CYN RD. MAPPED TO PROVIDED COORDINATES, DESCRIPTION, & 2007 AERIAL IMAGE.
Ecological: APPEARS TO BE NON-NATIVE GRASSLANDS USED FOR CATTLE GRAZING WITH SCATTERED OAK WOODLANDS (AERIAL IMAGES).
General: 500 BREEDING ADULTS OBSERVED ON 6 MAR 2001.
Owner/Manager: PVT

<i>Dicamptodon ensatus</i>		Element Code: AAAAH01020	
California giant salamander			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G2G3
	State: None		State: S2S3
	Other: CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened		
Habitat:	General: KNOWN FROM WET COASTAL FORESTS NEAR STREAMS AND SEEPS FROM MENDOCINO COUNTY SOUTH TO MONTEREY COUNTY, AND EAST TO NAPA COUNTY.		
	Micro:		



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AQUATIC LARVAE FOUND IN COLD, CLEAR STREAMS, OCCASIONALLY IN LAKES AND PONDS. ADULTS KNOWN FROM WET FORESTS UNDER ROCKS AND LOGS NEAR STREAMS AND LAKES.

Occurrence No.	112	Map Index:	98885	EO Index:	100421	Element Last Seen:	2013-05-01
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		2013-05-01	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2016-01-27	

Quad Summary: Mt. Madonna (3712116)
County Summary: Santa Clara

Lat/Long:	37.00370 / -121.70310	Accuracy:	specific area
UTM:	Zone-10 N4096069 E615389	Elevation (ft):	1300
PLSS:	T11S, R02E, Sec. 01, SE (M)	Acres:	66.0

Location: ABOUT 0.75 MILE OF UPPER BLACKHAWK CANYON, JUST NORTH OF VALLEY VIEW CAMPGROUND, MT MADONNA COUNTY PARK, SANTA CRUZ MTS.
Detailed Location: ACCESSIBLE BY BLACKHAWK TRAIL WHICH FOLLOWS THE CREEK IN THE CANYON.
Ecological:
General: 67 LARVAE FOUND ACROSS ABOUT 3/4 OF A MILE OF CREEK ON 1 MAY 2013.
Owner/Manager: SCL COUNTY

Occurrence No.	113	Map Index:	98886	EO Index:	100422	Element Last Seen:	1939-08-05
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		1939-08-05	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2016-01-22	

Quad Summary: Watsonville East (3612186), Mt. Madonna (3712116)
County Summary: Santa Clara, Santa Cruz

Lat/Long:	36.99563 / -121.71774	Accuracy:	3/5 mile
UTM:	Zone-10 N4095156 E614099	Elevation (ft):	
PLSS:	T11S, R02E, Sec. 11 (M)	Acres:	0.0

Location: HECKER PASS, 8 MILES WEST OF GILROY.
Detailed Location: EXACT LOCATION UNKNOWN; MAPPED NON-SPECIFICALLY TO HECKER PASS. LARVA LIKELY OCCUR IN NEARBY CASSERLY CREEK, GAFFEY CREEK, OR OTHER STREAMS. MASLIN'S FIELD NOTES ARE AT MVZ, BUT NOT SCANNED.
Ecological:
General: SIX COLLECTED ON 5 AUG 1939.
Owner/Manager: UNKNOWN



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Occurrence No.	164	Map Index:	98984	EO Index:	100504	Element Last Seen:	1957-06-25
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	1957-06-25	Record Last Updated:	2016-01-27
Occ. Type:	Natural/Native occurrence		Trend:	Unknown			
Quad Summary:	Mt. Madonna (3712116), Loma Prieta (3712117), Morgan Hill (3712126), Santa Teresa Hills (3712127)						
County Summary:	Santa Clara						
Lat/Long:	37.13052 / -121.76209		Accuracy:	1 mile			
UTM:	Zone-10 N4110069 E609957		Elevation (ft):				
PLSS:	T09S, R02E, Sec. 21 (M)		Acres:	0.0			
Location:	SIX AIR MILES WEST OF MORGAN HILL.						
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATION ONLY STATED AS 6 MI W OF MORGAN HILL. NEEDS FIELD WORK. IT SEEMS POSSIBLE THAT DICAMPTODON MAY EXIST IN TRIBUTARIES OF LITTLE UVAS CREEK AND/OR LLAGAS CREEK.						
Ecological:	FOUND UNDER BOULDER IN CREEK.						
General:	ONE COLLECTED ON 25 JUN 1957.						
Owner/Manager:	SCL COUNTY, UNKNOWN						

<i>Spea hammondii</i>	Element Code: AAABF02020
western spadefoot	
Listing Status:	Federal: None
	State: None
	Other: BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened
Habitat:	General: OCCURS PRIMARILY IN GRASSLAND HABITATS, BUT CAN BE FOUND IN VALLEY-FOOTHILL HARDWOOD WOODLANDS.
	Micro: VERNAL POOLS ARE ESSENTIAL FOR BREEDING AND EGG-LAYING.
	CNDDB Element Ranks: Global: G2G3
	State: S3

Occurrence No.	341	Map Index:	63841	EO Index:	63936	Element Last Seen:	2006-02-28
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:	2006-02-28	Record Last Updated:	2019-03-06
Occ. Type:	Natural/Native occurrence		Trend:	Unknown			
Quad Summary:	Hollister (3612174)						
County Summary:	San Benito						
Lat/Long:	36.83065 / -121.43334		Accuracy:	specific area			
UTM:	Zone-10 N4077231 E639708		Elevation (ft):	320			
PLSS:	T13S, R05E, Sec. 04 (M)		Acres:	10.1			
Location:	NE SIDE OF UNION ROAD, 0.75 MILE NW OF THE INTERSECTION OF UNION ROAD AND RIVERSIDE ROAD, NW EDGE OF HOLLISTER.						
Detailed Location:	POND IS HIGHLY SEASONAL AND WAS NEARLY DRY BY 25 APR 2005, DESPITE ABOVE-AVERAGE RAINFALL DURING WINTER 2004-2005.						
Ecological:	HABITAT CONSISTED OF A RUDERAL FIELD THAT IS PARTIALLY USED FOR AGRICULTURE AND CONTAINS A HIGHLY-SEASONAL POOL; SOILS ARE VERY SANDY AND FRIABLE.						
General:	100 LARVAE WERE CAPTURED IN A MINNOW TRAP ON 12-14 APR 2005. 1 ADULT FEMALE (SVL= 62 MM) WAS CAPTURED (ALONG WITH 3 CTS) ON 18 DEC 2005, DURING A WINTER DRIFT FENCE STUDY. 1 ADULT CAPTURED ON 28 FEB 2006.						
Owner/Manager:	PVT						

<i>Rana draytonii</i>	Element Code: AAABH01022
California red-legged frog	
Listing Status:	Federal: Threatened
	State: None
	Other: CDFW_SSC-Species of Special Concern, IUCN_VU-Vulnerable
Habitat:	General:
	CNDDB Element Ranks: Global: G2G3
	State: S2S3



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LOWLANDS AND FOOTHILLS IN OR NEAR PERMANENT SOURCES OF DEEP WATER WITH DENSE, SHRUBBY OR EMERGENT RIPARIAN VEGETATION.

Micro: REQUIRES 11-20 WEEKS OF PERMANENT WATER FOR LARVAL DEVELOPMENT. MUST HAVE ACCESS TO ESTIVATION HABITAT.

Occurrence No.	29	Map Index:	17130	EO Index:	12067	Element Last Seen:	1999-08-07
Occ. Rank:	Excellent	Presence:	Presumed Extant	Site Last Seen:		1999-08-07	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		1999-08-30	

Quad Summary: San Juan Bautista (3612175)

County Summary: Monterey

Lat/Long:	36.78723 / -121.61869	Accuracy:	80 meters
UTM:	Zone-10 N4072159 E623248	Elevation (ft):	380
PLSS:	T13S, R03E, Sec. 22 (M)	Acres:	0.0

Location: NEAR THE END OF PESANTE CANYON ROAD, IN THE VICINITY OF PRUNEDALE.

Detailed Location:

Ecological: SPRING-FED POND IN MONTEREY PINE-COAST LIVE OAK-EUCALYPTUS WOODLAND. WILLOWS SCATTERED IN AND AROUND POND. HORSETAIL, SEDGES, RUSHES, AND OTHER HERBACEOUS WETLAND PLANTS. GOOD SHADE COVER, (100% DUCKWEED COVER). WATER CLEAR, 2-3 FT DEEP.

General: 4 LARVAE OBSERVED ON 9 MAY 1990. 10 INDIVIDUALS OBSERVED ON 7 AUG 1999.

Owner/Manager: PVT

Occurrence No.	30	Map Index:	20118	EO Index:	9753	Element Last Seen:	2003-07-23
Occ. Rank:	Fair	Presence:	Presumed Extant	Site Last Seen:		2003-07-23	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2009-04-22	

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.77626 / -121.67216	Accuracy:	non-specific area
UTM:	Zone-10 N4070875 E618494	Elevation (ft):	30
PLSS:	T13S, R03E, Sec. 29 (M)	Acres:	71.0

Location: WETLAND AREA W OF PRUNEDALE, MOSTLY W OF HWY 101 FROM JCT OF BLACKIE RD & CROSS RD N ~1 MI ALONG PRUNEDALE SOUTH RD.

Detailed Location:

Ecological: SOUTH SECTION OF DRAINAGE IS WETLAND AREA W/ CATTAIL, SEDGES, RUSHES, & HEMLOCK. WILLOWS SCATTERED. 2 -3 FT DEEP POOLS W/ 100 % DUCKWEED COVER. OAK WOODLAND ADJACENT. NORTH SECTION OF DRAINAGE IN PASTURELAND W/ADJACENT WILLOW GROVE.

General: 3 ADULTS & OVER 100 LARVAE FOUND ON 7 MAY 1990. HYLEA LARVAE ALSO PRESENT IN 1990. 2 ADULT OBSERVED ON 28 AUG 2001. 1 ADULT OBSERVED ON 23 JUL 2003. SEVERAL BULLFROGS WERE OBSERVED IN THIS LOCATION & >100 OBS ~1 MI DOWNSTREAM.

Owner/Manager: UNKNOWN



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Occurrence No.	39	Map Index: 17385	EO Index: 11940	Element Last Seen:	1990-04-10
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	1990-04-10
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	1991-02-05
Quad Summary:	San Felipe (3612184)				
County Summary:	San Benito				
Lat/Long:	36.94533 / -121.44518		Accuracy:	80 meters	
UTM:	Zone-10 N4089937 E638445		Elevation (ft):	150	
PLSS:	T11S, R05E, Sec. 29 (M)		Acres:	0.0	
Location:	TEQUISQUITA SLOUGH, 0.2 MILE NORTH OF SHORE ROAD, 4 MI NNW OF HOLLISTER MUNICIPAL AIRPORT.				
Detailed Location:	APPROXIMATELY 40 ADULTS OBSERVED IN A PONDED AREA ALONG TEQUISQUITA SLOUGH.				
Ecological:	HABITAT IS FRESHWATER MARSH VEGETATED BY TULE AND WILLOWS. SURROUNDING AREA IS MADE UP OF AGRICULTURAL FIELDS.				
General:	SLOUGH DRIED UP EARLY IN 1990 DUE TO DROUGHT CONDITIONS.				
Owner/Manager:	PVT				
Occurrence No.	47	Map Index: 24502	EO Index: 6594	Element Last Seen:	1991-09-25
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	1991-09-25
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	1995-10-24
Quad Summary:	San Felipe (3612184)				
County Summary:	San Benito				
Lat/Long:	36.94403 / -121.38525		Accuracy:	specific area	
UTM:	Zone-10 N4089881 E643785		Elevation (ft):	200	
PLSS:	T11S, R05E, Sec. 26 (M)		Acres:	6.9	
Location:	PACHECO CREEK, AT THE HWY 156 CROSSING, 0.75 MILE NORTH OF FAIRVIEW ROAD, 6 MILES NORTH OF HOLLISTER.				
Detailed Location:	POOL WITH LARVAE FORMED AROUND BOULDERS AND A CONCRETE SLAB, WITH OVERHANGING WILLOWS.				
Ecological:	HABITAT CONSISTS OF A POOL WITHIN PACHECO CREEK WITHIN SYCAMORE ALLUVIAL WOODLAND, DOMINATED BY WILLOWS, LIVE OAKS, VALLEY OAKS, AND SYCAMORES. CATTAILS AND OTHER MARSH PLANTS FOUND IN CREEK CHANNEL.				
General:	6 LARVAE OBSERVED IN 1991.				
Owner/Manager:	PVT-CASA DE FRUTA				
Occurrence No.	97	Map Index: 25579	EO Index: 5490	Element Last Seen:	1989-07-01
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	1989-07-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	1994-02-23
Quad Summary:	Hollister (3612174)				
County Summary:	San Benito				
Lat/Long:	36.76533 / -121.45137		Accuracy:	2/5 mile	
UTM:	Zone-10 N4069958 E638218		Elevation (ft):	1200	
PLSS:	T13S, R05E, Sec. 32 (M)		Acres:	0.0	
Location:	VICINITY OF AZALEA CANYON AND BIRD CREEK, HOLLISTER HILLS STATE VEHICLE RECREATION AREA.				
Detailed Location:	SITE IS PART OF A STATE PARK PRESERVE, LOCATED WITHIN AN ORV PARK.				
Ecological:	HABITAT CONSISTS OF OAK RIPARIAN, DOMINATED BY COAST LIVE OAK, SYCAMORE, AND POISON OAK; NORTH AND EAST ASPECTS, 0-20% SLOPE.				
General:	SEVERAL INDIVIDUALS OBSERVED ON 1 JULY 1989.				
Owner/Manager:	DPR-HOLLISTER HILLS SVRA				



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Occurrence No.	168	Map Index: 33856	EO Index: 1244	Element Last Seen: 2005-05-22
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen: 2005-05-22
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2006-04-13

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.07183 / -121.42069	Accuracy:	non-specific area
UTM:	Zone-10 N4104008 E640392	Elevation (ft):	1360
PLSS:	T10S, R05E, Sec. 16, NE (M)	Acres:	170.1

Location: COON HUNTERS GULCH, HENRY W. COE STATE PARK.

Detailed Location:

Ecological: HABITAT CONSISTS OF POOLS IN AN INTERMITTENT CREEK. EMYS MARMORATA ALSO FOUND IN THIS DRAINAGE.

General: 3+ ADULTS OBSERVED ON 23 MAY 1994. 1 ADULT AND 2 JUVENILES OBSERVED ON 16 MAY 2004. 1 JUVENILE OBSERVED ON 22 MAY 2005.

Owner/Manager: DPR-HENRY W COE SP

Occurrence No.	169	Map Index: 33441	EO Index: 1276	Element Last Seen: 2001-07-07
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen: 2001-07-07
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2004-01-08

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.08447 / -121.41928	Accuracy:	80 meters
UTM:	Zone-10 N4105412 E640495	Elevation (ft):	2320
PLSS:	T10S, R05E, Sec. 10, NW (M)	Acres:	0.0

Location: 0.25 MILE NW OF WILSON RANCH, HENRY W COE STATE PARK.

Detailed Location:

Ecological: HABITAT CONSISTS OF A STOCK POND IN OAK SAVANNAH.

General: 1+ ADULTS OBSERVED ON 25 MAY 1994. 4 ADULTS AND 24 TADPOLES OBSERVED ON 7 JUL 2001.

Owner/Manager: DPR-HENRY W COE SP

Occurrence No.	170	Map Index: 33442	EO Index: 1295	Element Last Seen: 1994-05-25
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen: 1994-05-25
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 1996-09-10

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.08435 / -121.42869	Accuracy:	80 meters
UTM:	Zone-10 N4105384 E639659	Elevation (ft):	2200
PLSS:	T10S, R05E, Sec. 09, NE (M)	Acres:	0.0

Location: UPPER END OF THE SOUTH FORK OF BRAEN CANYON, HENRY W. COE STATE PARK.

Detailed Location:

Ecological: HABITAT CONSISTS OF SPRING-FED STOCK POND.

General: 1+ ADULTS OBSERVED ON 25 MAY 1994.

Owner/Manager: DPR-HENRY W COE SP



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Occurrence No.	171	Map Index: 33443	EO Index: 1259	Element Last Seen: 1994-05-25
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen: 1994-05-25
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 1996-08-27

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.07583 / -121.42925	Accuracy:	80 meters
UTM:	Zone-10 N4104438 E639624	Elevation (ft):	1900
PLSS:	T10S, R05E, Sec. 09, SE (M)	Acres:	0.0

Location: 0.8 MILE SW OF WILSON RANCH, HENRY W COE STATE PARK.

Detailed Location:

Ecological: HABITAT CONSISTS OF A SPRING-FED STOCK POND.

General: 1+ ADULTS OBSERVED ON 25 MAY 1994.

Owner/Manager: DPR-HENRY W COE SP

Occurrence No.	172	Map Index: 33444	EO Index: 1277	Element Last Seen: 2001-06-02
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen: 2001-06-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2004-01-08

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.07676 / -121.40878	Accuracy:	80 meters
UTM:	Zone-10 N4104572 E641442	Elevation (ft):	1760
PLSS:	T10S, R05E, Sec. 10, SE (M)	Acres:	0.0

Location: 0.5 MILE SE OF WILSON RANCH, HENRY W COE STATE PARK.

Detailed Location:

Ecological: HABITAT CONSISTS OF A STOCK POND IN OAK SAVANNAH.

General: 3+ ADULTS AND ABUNDANT LARVAE OBSERVED ON 23 MAY 1994. 5 ADULTS AND 2 TADPOLES OBSERVED ON 2 JUN 2001.

Owner/Manager: DPR-HENRY W COE SP

Occurrence No.	173	Map Index: 33445	EO Index: 1231	Element Last Seen: 2001-06-30
Occ. Rank:	Poor		Presence: Presumed Extant	Site Last Seen: 2001-06-30
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2004-01-08

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.06129 / -121.41269	Accuracy:	80 meters
UTM:	Zone-10 N4102850 E641124	Elevation (ft):	2000
PLSS:	T10S, R05E, Sec. 15, SW (M)	Acres:	0.0

Location: ALONG PHEGLEY RIDGE, HENRY W COE STATE PARK.

Detailed Location: NO BULLFROGS WERE OBSERVED IN THIS POND IN 1994; BY 2001, BULLFROGS HAD COLONIZED THIS POND, MOST LIKELY FROM REDFERN POND, LOCATED ABOUT 0.3 MILE AWAY.

Ecological: HABITAT CONSISTS OF A SPRING-FED STOCK POND; SURROUNDED BY RIDGE-TOP GRASSLAND, WITH OAK WOODLAND NEARBY.

General: ABUNDANT NUMBER OF ADULTS AND LARVAE OBSERVED ON 23 MAY 1994. 6 TADPOLES OBSERVED ON 30 JUN 2001.

Owner/Manager: DPR-HENRY W COE SP



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Occurrence No.	174	Map Index: 33446	EO Index: 1258	Element Last Seen:	1994-05-25
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	1994-05-25
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	1996-08-28
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.07670 / -121.42691		Accuracy:	80 meters	
UTM:	Zone-10 N4104538 E639831		Elevation (ft):	1900	
PLSS:	T10S, R05E, Sec. 09, SE (M)		Acres:	0.0	
Location:	0.65 MILE SW OF WILSON RANCH, HENRY W COE STATE PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A STOCK POND.				
General:	1+ ADULTS AND 1+ LARVAE OBSERVED ON 25 MAY 1994.				
Owner/Manager:	DPR-HENRY W COE SP				
Occurrence No.	175	Map Index: 33447	EO Index: 1294	Element Last Seen:	2003-05-18
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2003-05-18
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-01-12
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.08894 / -121.45539		Accuracy:	80 meters	
UTM:	Zone-10 N4105854 E637277		Elevation (ft):	2100	
PLSS:	T10S, R05E, Sec. 06, SE (M)		Acres:	0.0	
Location:	1.2 MILES WSW OF WILSON PEAK, HENRY W COE STATE PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A STOCK POND IN OAK SAVANNAH.				
General:	1+ ADULTS AND 1+ LARVAE OBSERVED ON 25 MAY 1994. 7 ADULTS AND 1 TADPOLE OBSERVED ON 18 MAY 2003.				
Owner/Manager:	DPR-HENRY W COE SP				
Occurrence No.	176	Map Index: 33448	EO Index: 1302	Element Last Seen:	1994-05-25
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	1994-05-25
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	1996-09-10
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.09502 / -121.44851		Accuracy:	80 meters	
UTM:	Zone-10 N4106539 E637878		Elevation (ft):	2500	
PLSS:	T10S, R05E, Sec. 06, NW (M)		Acres:	0.0	
Location:	0.75 MILE WEST OF WILSON PEAK, HENRY W COE STATE PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A STOCK POND.				
General:	1+ ADULTS AND 1+ JUVENILES OBSERVED ON 25 MAY 1994.				
Owner/Manager:	DPR-HENRY W COE SP				



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Occurrence No.	177	Map Index:	33449	EO Index:	1300	Element Last Seen:	1994-05-25
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		1994-05-25	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		1996-08-28	

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.11454 / -121.45703	Accuracy:	80 meters
UTM:	Zone-10 N4108692 E637085	Elevation (ft):	2000
PLSS:	T09S, R05E, Sec. 32, NW (M)	Acres:	0.0

Location: 1.25 MILES ENE OF GILROY HOT SPRINGS, HENRY W COE STATE PARK.

Detailed Location:

Ecological: HABITAT CONSISTS OF A STOCK POND.

General: 1+ ADULTS AND 1+ JUVENILES OBSERVED ON 25 MAY 1994.

Owner/Manager: DPR-HENRY W COE SP

Occurrence No.	213	Map Index:	36054	EO Index:	31051	Element Last Seen:	1997-03-23
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		1997-03-23	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		1998-05-05	

Quad Summary: Chittenden (3612185)
County Summary: Santa Clara

Lat/Long:	36.94718 / -121.55657	Accuracy:	specific area
UTM:	Zone-10 N4089986 E628523	Elevation (ft):	170
PLSS:	T11S, R04E, Sec. 29, SW (M)	Acres:	3.0

Location: JUST WEST OF OLD MONTEREY ROAD, 0.3 MILE SSW OF THE HWY 101 INTERSECTION, 4 MILES SOUTH OF GILROY.

Detailed Location:

Ecological: HABITAT CONSISTS OF A STOCK POND, SURROUNDED BY GRAZED GRASSLAND, WITH A FEW SCATTERED COAST LIVE OAKS. CALIFORNIA TIGER SALAMANDER ALSO OCCURS AT THIS SITE.

General: 6 JUVENILE FROGS COLLECTED (CAS #MRJ-1241) ON 23 MARCH 1997; 3 ADULT BULLFROGS ALSO OBSERVED. CAS #203719, SVL 64 MM, 26.9 GM.

Owner/Manager: PVT

Occurrence No.	214	Map Index:	36056	EO Index:	31053	Element Last Seen:	1997-03-23
Occ. Rank:	Fair	Presence:	Presumed Extant	Site Last Seen:		1997-03-23	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		1997-07-09	

Quad Summary: Chittenden (3612185)
County Summary: Santa Clara

Lat/Long:	36.95227 / -121.55894	Accuracy:	80 meters
UTM:	Zone-10 N4090547 E628304	Elevation (ft):	240
PLSS:	T11S, R04E, Sec. 29, NW (M)	Acres:	0.0

Location: 0.4 MILE WEST OF THE INTERSECTION OF HWY 101 AND OLD MONTEREY ROAD, 4 MILES SOUTH OF GILROY.

Detailed Location: POND IS LOCATED ALONG THE STREAM, BELOW THE SPRINGS.

Ecological: HABITAT CONSISTS OF AN ARTIFICIAL POND, LOCATED ON A 40-DEGREE SLOPE, SURROUNDED BY GRAZED GRASSLAND AND SCATTERED ROCK OUTCROPS; SOME WILLOWS AND BUNCH GRASSES GROW ALONG THE CREEK, BUT MANY THISTLES ARE PRESENT DUE TO GRAZING ACTIVITIES.

General: 1 ADULT OBSERVED ON 23 MARCH 1997.

Owner/Manager: PVT



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Occurrence No.	215	Map Index: 36059	EO Index: 31056	Element Last Seen:	1997-05-25
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	1997-05-25
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	1997-07-09
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Clara				
Lat/Long:	36.94603 / -121.56687		Accuracy:	80 meters	
UTM:	Zone-10 N4089844 E627607		Elevation (ft):	220	
PLSS:	T11S, R04E, Sec. 30, SE (M)		Acres:	0.0	
Location:	TICK CREEK, 0.65 MILE WEST OF OLD MONTEREY ROAD, 3.5 MILES SOUTH OF GILROY.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POND IN THE TICK CREEK DRAINAGE; SURROUNDED BY GRAZED GRASSLAND, WITH COAST LIVE OAKS ON SURROUNDING HILLSIDES.				
General:	3 ADULT FROGS AND 2 LARVAE OBSERVED ON 25 MAY 1997; 1 LARVA COLLECTED (MRJ #1279 / CAS #203261).				
Owner/Manager:	PVT				
Occurrence No.	216	Map Index: 36060	EO Index: 31057	Element Last Seen:	1997-06-01
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	1997-06-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2002-09-04
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Clara				
Lat/Long:	36.95040 / -121.57014		Accuracy:	80 meters	
UTM:	Zone-10 N4090325 E627309		Elevation (ft):	300	
PLSS:	T11S, R04E, Sec. 30, NE (M)		Acres:	0.0	
Location:	TICK CREEK, 0.95 MILE WEST OF THE INTERSECTION OF HWY 101 AND OLD MONTEREY ROAD, 3 MILES SOUTH OF GILROY.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POND; SURROUNDED BY GRAZED GRASSLAND WITH SOME COAST LIVE OAK ON HILLSIDES.				
General:	9 ADULT FROGS OBSERVED; 1 LARVA (#MRJ 1287) COLLECTED ON 1 JUN 1997 AND DEPOSITED AT CAS (CAS #203277).				
Owner/Manager:	PVT				
Occurrence No.	224	Map Index: 36467	EO Index: 31464	Element Last Seen:	1989-05-16
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	1989-05-16
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	1997-08-20
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.82418 / -121.73497		Accuracy:	80 meters	
UTM:	Zone-10 N4076115 E612818		Elevation (ft):	5	
PLSS:	T13S, R02E, Sec. 03 (M)		Acres:	0.0	
Location:	ELKHORN SLOUGH NATIONAL ESTUARINE RESEARCH PRESERVE, N OF RD TO ELKHORN, 0.3 MI E OF RR TRACKS & 0.3 MI W OF ELKHORN RD.				
Detailed Location:	TEMPORARY FRESH WATER POND ACROSS THE ROAD FROM A BRACKISH WATER INLET.				
Ecological:	LOTS OF DEEP CRACKS WITH WATER ABOUT 67 CM DEEP AND SHALLOWER. SURROUNDING VEGETATION: TULE, EUCALYPTUS, WILLOWS, BUNCH GRASS, BLOOMING HEMLOCK, STINGING NETTLE.				
General:	JUVENILES OBSERVED IN CRACKS MANY WITH TAILS BITTEN OFF. 1 ADULT OBSERVED.				
Owner/Manager:	DFG-ELKHORN SLOUGH ER				



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Occurrence No.	232	Map Index: 38088	EO Index: 33095	Element Last Seen:	1997-04-12
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	1997-04-12
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	1998-02-10
Quad Summary:	Chittenden (3612185)				
County Summary:	San Benito				
Lat/Long:	36.93949 / -121.50976		Accuracy:	80 meters	
UTM:	Zone-10 N4089197 E632705		Elevation (ft):	140	
PLSS:	T11S, R04E, Sec. 34 (M)		Acres:	0.0	
Location:	RANCHO SAN BENITO, 0.6 MILE SSE OF WHERE HIGHWAY 25 CROSSES THE PAJARO RIVER, 4 MILES SE OF GILROY.				
Detailed Location:	LOCATED IN AN IRRIGATION DITCH BEHIND A BARN.				
Ecological:	HABITAT CONSISTS OF AN ARTIFICIALLY-FILLED IRRIGATION POND; SURROUNDED BY AGRICULTURAL FIELDS.				
General:	7 ADULTS AND 14 TADPOLES OBSERVED BETWEEN 4-12 APRIL 1997.				
Owner/Manager:	PVT-RANCHO SAN BENITO				
Occurrence No.	233	Map Index: 38089	EO Index: 33096	Element Last Seen:	1997-04-12
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	1997-04-12
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	1998-02-10
Quad Summary:	Chittenden (3612185)				
County Summary:	San Benito, Santa Clara				
Lat/Long:	36.92256 / -121.53916		Accuracy:	80 meters	
UTM:	Zone-10 N4087278 E630115		Elevation (ft):	115	
PLSS:	T12S, R04E, Sec. 04 (M)		Acres:	0.0	
Location:	PAJARO RIVER, BETWEEN HIGHWAY 101 AND THE HIGHWAY 25 OVERPASS, 5 MILES SOUTH OF GILROY.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF RIPARIAN; SURROUNDED BY AGRICULTURE.				
General:	1 ADULT FROG OBSERVED BETWEEN 4-12 APRIL 1997.				
Owner/Manager:	PVT-RANCHO SAN BENITO				
Occurrence No.	236	Map Index: 38193	EO Index: 33200	Element Last Seen:	1998-01-14
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	1998-01-14
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	1998-03-24
Quad Summary:	Hollister (3612174)				
County Summary:	San Benito				
Lat/Long:	36.81567 / -121.44934		Accuracy:	80 meters	
UTM:	Zone-10 N4075546 E638308		Elevation (ft):	400	
PLSS:	T13S, R05E, Sec. 08 (M)		Acres:	0.0	
Location:	JUST SW OF SAN JUSTO RESERVOIR, 3.7 MILES SW OF HOLLISTER.				
Detailed Location:	TOE DRAIN DISCHARGE CHANNEL AT BASE OF DAM. THIS HABITAT IS ABOUT 260-FT LONG AND DRAINS INTO THE RIPARIAN AREA (CREEKBED), DOMINATED BY POISON OAK, COYOTE BUSH, AND WILD ROSE.				
Ecological:	HABITAT CONSISTS OF FRESHWATER WETLAND, DOMINATED BY TYPHA SP.				
General:	FROGS REPORTEDLY NOT PRESENT IN 1995; FIRST SEEN IN SPRING 1996. 25+ ADULTS SEEN 14 JAN 1998. BY 9 FEB 1998, 1/8 (25-30 FEET) OF THE WETLAND HAD SILTED IN FROM TOE DRAINS AND A MUDSLIDE FROM THE ADJACENT HILL.				
Owner/Manager:	USBOR				



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Occurrence No.	241	Map Index: 30795	EO Index: 33241	Element Last Seen:	1989-06-13
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	1989-06-13
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	1998-02-25
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.82710 / -121.72885		Accuracy:	80 meters	
UTM:	Zone-10 N4076446 E613360		Elevation (ft):	5	
PLSS:	T13S, R02E, Sec. 03 (M)		Acres:	0.0	
Location:	STRAWBERRY ROAD, 0.25 MILE FROM INTERSECTION WITH ELKHORN ROAD, 0.7 MILE ENE OF ELKHORN AT ELKHORN SLOUGH.				
Detailed Location:					
Ecological:	NICE DEEP POND WITH SURROUNDING GRASS, BUSHES. FAIR AMOUNT OF TERRESTRIAL HABITAT AVAILABLE. LOTS OF HYLEA TADPOLES AND AQUATIC INVERTS.				
General:	MANY RED-LEGGED FROG TADPOLES OBSERVED. OWNER KEEPING AREA IN NATURAL STATE, 1989. CALIFORNIA TIGER SALAMANDER FOUND, 1988, MAY BE THE LARVAE SEEN IN 1989.				
Owner/Manager:	PVT				
Occurrence No.	298	Map Index: 41102	EO Index: 41102	Element Last Seen:	2017-07-21
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2017-07-21
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-01-18
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.78164 / -121.69509		Accuracy:	specific area	
UTM:	Zone-10 N4071444 E616440		Elevation (ft):	206	
PLSS:	T13S, R02E, Sec. 24, SE (M)		Acres:	25.0	
Location:	FROM BLACKIE RD TO THE N SIDE OF HWY 156, ABOUT 0.3 MI NE TO 0.6 MI SE OF HWY 156 AT OAK HILLS DR, NE OF CASTROVILLE.				
Detailed Location:	NW-MOST POLYGON MAPPED TO 1999 DETECTION. MIDDLE POLYGON MAPPED TO 2006 & 2013 DETECTIONS & 2017 RELEASE SITE. SE-MOST TWO POLYGONS MAPPED TO 2013 DETECTIONS. SW-MOST POLYGON MAPPED TO 2017 CAPTURE SITE.				
Ecological:	AGRICULTURAL PONDS W/EMERGENT & BANK VEGETATION INCL. SCIRPUS, CYPERUS ESCULENTUS, POLYGONUM SP, CORTADERIA SELLOANA, BACCHARIS PILULARIS. SURROUNDED BY FIELD CROPS. 2017: FOUND IN EROSION CHANNEL AT CONSTRUCTION SITE, RELOCATED TO POND.				
General:	1 ADULT & 1 JUVENILE DETECTED ON 10 MAY 1999. AQUATIC SURVEYS CONDUCTED 17 APR-31 MAY 2006; 2 LARVAE & 2 ADULTS CAPTURED (LOW #S CONSIDERING THE SAMPLING EFFORT). 6 JUVENILES OBSERVED APR-MAY 2013. 1 ADULT CAUGHT & RELEASED 21 JUL 2017.				
Owner/Manager:	UNKNOWN, PVT				



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Occurrence No.	348	Map Index: 42328	EO Index: 42328	Element Last Seen:	1998-04-30
Occ. Rank:	Poor		Presence: Presumed Extant	Site Last Seen:	1998-04-30
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2000-02-02

Quad Summary: Watsonville East (3612186)
County Summary: Santa Clara

Lat/Long:	36.97488 / -121.66666	Accuracy:	80 meters
UTM:	Zone-10 N4092916 E618677	Elevation (ft):	1120
PLSS:	T11S, R03E, Sec. 17 (M)	Acres:	0.0

Location: 1.7 MILES SE OF THE INTERSECTION OF BODFISH CREEK AND HIGHWAY 152, IN THE SANTA CRUZ MOUNTAINS.
Detailed Location:
Ecological: HABITAT CONSISTS OF A MAN-MADE POND IN A GRASSLAND / SHRUB OPENING, SURROUNDED BY REDWOOD / MIXED EVERGREEN FOREST (IN TIMBER PRODUCTION). POND HAS A LARGE BREEDING POPULATION OF BULLFROGS.
General: 3 ADULTS OBSERVED ON 30 APR 1998. CAS #210380.
Owner/Manager: PVT

Occurrence No.	349	Map Index: 42473	EO Index: 42473	Element Last Seen:	1999-05-07
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	1999-05-07
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2000-02-29

Quad Summary: Hollister (3612174)
County Summary: San Benito

Lat/Long:	36.82064 / -121.47093	Accuracy:	80 meters
UTM:	Zone-10 N4076066 E636373	Elevation (ft):	300
PLSS:	T13S, R05E, Sec. 07 (M)	Acres:	0.0

Location: 1.5 MILES SOUTH OF THE INTERSECTION OF FLINT ROAD AND HIGHWAY 156, SAN JUAN OAKS GOLF COURSE.
Detailed Location:
Ecological: HABITAT CONSISTS OF AN ARTIFICIALLY-CREATED POND AT THE EDGE OF A GOLF COURSE (NOT PART OF THE GOLF COURSE LAYOUT). SURROUNDED BY GOLF COURSE, AGRICULTURE, AND CATTLE GRAZING.
General: AN UNKNOWN NUMBER OF ADULTS (NO LARVAE) WERE OBSERVED ON 7 MAY 1999, DURING LARVAL SAMPLING FOR CALIFORNIA TIGER SALAMANDER.
Owner/Manager: PVT-SAN JUAN OAKS GOLF COURSE



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Occurrence No.	350	Map Index: 42474	EO Index: 42474	Element Last Seen:	1999-05-07
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	1999-05-07
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2000-02-29
Quad Summary:	Hollister (3612174)				
County Summary:	San Benito				
Lat/Long:	36.81715 / -121.45526		Accuracy:	80 meters	
UTM:	Zone-10 N4075701 E637777		Elevation (ft):	300	
PLSS:	T13S, R05E, Sec. 07 (M)		Acres:	0.0	
Location:	1.9 MILES SSE OF THE INTERSECTION OF FLINT ROAD AND HIGHWAY 156, SAN JUAN OAKS GOLF COURSE.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF AN ARTIFICIALLY-CREATED POND AT THE EDGE OF A GOLF COURSE (NOT PART OF THE GOLF COURSE LAYOUT), WITHIN SYCAMORE RIPARIAN. SURROUNDED BY GOLF COURSE, AGRICULTURE, AND CATTLE GRAZING.				
General:	AN UNKNOWN NUMBER OF ADULTS (NO LARVAE) WERE OBSERVED ON 7 MAY 1999, DURING LARVAL SAMPLING FOR CALIFORNIA TIGER SALAMANDER.				
Owner/Manager:	PVT-SAN JUAN OAKS GOLF COURSE				
Occurrence No.	351	Map Index: 42476	EO Index: 42476	Element Last Seen:	1999-05-07
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	1999-05-07
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2000-02-29
Quad Summary:	Hollister (3612174)				
County Summary:	San Benito				
Lat/Long:	36.81392 / -121.46057		Accuracy:	specific area	
UTM:	Zone-10 N4075335 E637310		Elevation (ft):	300	
PLSS:	T13S, R05E, Sec. 07 (M)		Acres:	18.5	
Location:	2 MILES SSE OF THE INTERSECTION OF FLINT ROAD AND HIGHWAY 156, SAN JUAN OAKS GOLF COURSE.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF 2 ARTIFICIALLY-CREATED PONDS IN A DRAINAGE AT THE EDGE OF A GOLF COURSE (NOT PART OF THE GOLF COURSE LAYOUT), WITHIN SYCAMORE ALLUVIAL WOODLAND. SURROUNDED BY GOLF COURSE, AGRICULTURE, AND CATTLE GRAZING.				
General:	AN UNKNOWN NUMBER OF ADULTS (NO LARVAE) WERE OBSERVED ON 7 MAY 1999, DURING LARVAL SAMPLING FOR CALIFORNIA TIGER SALAMANDER.				
Owner/Manager:	PVT-SAN JUAN OAKS GOLF COURSE				



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Occurrence No.	352	Map Index: 42480	EO Index: 42480	Element Last Seen:	2001-03-04
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2003-11-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-11-09
Quad Summary:	San Felipe (3612184)				
County Summary:	Santa Clara				
Lat/Long:	36.99028 / -121.39607		Accuracy:	specific area	
UTM:	Zone-10 N4094996 E642734		Elevation (ft):	540	
PLSS:	T11S, R05E, Sec. 11 (M)		Acres:	13.6	
Location:	0.7 MILE WEST OF HIGHWAY 152, 3.5 MILES EAST OF SAN FELIPE LAKE, 8.5 MILES NORTH OF HOLLISTER.				
Detailed Location:	PITFALL TRAPS ARE LOCATED ABOUT 500 FEET AWAY FROM THE PONDS.				
Ecological:	HABITAT CONSISTS OF TWO ARTIFICIALLY-BERMED, PERENNIAL PONDS, WITHIN AN INTERMITTENT DRAINAGE; SCIRPUS AND TYPHA AROUND THE MARGINS. ADJACENT UPLAND HABITAT IS GRAZED GRASSLAND AND OPEN OAK WOODLAND. CTS ALSO FOUND AT THIS SITE.				
General:	2 ADULTS HEARD CHORUSING 18 JAN 1999. 16 FEB 1999: 2 CHORUSING FROGS OBSV'D AT ONE POND & 3 FROGS AT OTHER. 1 ADULT/2 JUV CAPTURED 17 JAN 2001 IN PITFALL TRAPS. 1 SUBADULT CAPTURED IN PITFALL TRAP 4 MAR 2001. SPECIES NOT CAPTURED NOV 2003.				
Owner/Manager:	PVT-BOURDET RANCH				
Occurrence No.	408	Map Index: 44151	EO Index: 44151	Element Last Seen:	2000-05-22
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2000-05-22
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2000-10-26
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.07137 / -121.72589		Accuracy:	80 meters	
UTM:	Zone-10 N4103548 E613261		Elevation (ft):	550	
PLSS:	T10S, R02E, Sec. 11, SW (M)		Acres:	0.0	
Location:	EASTMAN CANYON (CREEK), 1 MILE EAST OF UVAS RESERVOIR, SW OF MORGAN HILL.				
Detailed Location:	SITE IS LOCATED AT THE SECOND UNNAMED TRIBUTARY WEST OF UVAS RESERVOIR.				
Ecological:	HABITAT CONSISTS OF RIPARIAN ASSOCIATED WITH THE CREEK IN EASTMAN CANYON.				
General:	1 JUVENILE OBSERVED ON 22 MAY 2000.				
Owner/Manager:	PVT				



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Occurrence No.	433	Map Index: 45341	EO Index: 45341	Element Last Seen:	2001-03-03
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2001-03-03
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2001-05-14

Quad Summary: Hollister (3612174)
County Summary: San Benito

Lat/Long:	36.81954 / -121.49887	Accuracy:	80 meters
UTM:	Zone-10 N4075904 E633883	Elevation (ft):	400
PLSS:	T13S, R04E, Sec. 11 (M)	Acres:	0.0

Location: POND AT ST FRANCIS RETREAT CENTER, 2.5 MILES SE OF SAN JUAN BAUTISTA.

Detailed Location:

Ecological: HABITAT CONSISTS OF A PERMANENT SAG POND, VEGETATED BY POCKETS OF SCIRPUS. THIS POND WENT DRY SEVERAL YEARS AGO, ELIMINATING THE FISH THAT INHABITED THE POND; REINTRODUCTION IS A POSSIBILITY.

General: SEVERAL MALES HEARD CALLING; 2 ADULTS AND 3 JUVENILES OBSERVED, ON 3 MAR 2001.

Owner/Manager: PVT-ST FRANCIS RETREAT CENTER

Occurrence No.	435	Map Index: 45422	EO Index: 45422	Element Last Seen:	2010-05-13
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2010-05-13
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-05-10

Quad Summary: Gilroy (3712115)
County Summary: Santa Clara

Lat/Long:	37.11328 / -121.591	Accuracy:	specific area
UTM:	Zone-10 N4108368 E625185	Elevation (ft):	351
PLSS:	T09S, R03E, Sec. 36, NE (M)	Acres:	46.0

Location: VICINITY OF INSTITUTE GOLF COURSE, MORGAN HILL.

Detailed Location: FROGS THOUGHT TO BE DISPERSING FROM THE UNNAMED TRIBUTARY TO CORRALITOS CREEK ON THE EAST SIDE OF THE GOLF COURSE, TO THE GOLF COURSE PONDS. INCLUDES SITES IGC-A, IGC-C, IGC-E, IGC-F, IGC-G & IGC-S.

Ecological: 2001: ADULTS OBSERVED IN CREEK CONTAINING INTERMITTENT POOLS, SURROUNDED BY WELL-VEGETATED RIPARIAN. OTHER DETECTIONS IN PONDS ON GOLF COURSE (CONVERTED FROM ORIGINAL OAK WOODLAND HABITAT).

General: 7 ADULTS & 1 LARVA OBSERVED ON 24 APR 2001. 1 JUVENILE OBSERVED ON 19 SEP 2001. LARVAE DETECTED AT 4 SITES DURING AQUATIC AND VISUAL SURVEYS IN MAY 2006. DETECTED AT 6 SITES, 18 MAY 2009 AND 13 MAY 2010.

Owner/Manager: PVT



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Occurrence No.	460	Map Index: 45980	EO Index: 45980	Element Last Seen:	1993-04-05
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2001-10-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2005-11-02
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.02964 / -121.69019		Accuracy:	non-specific area	
UTM:	Zone-10 N4098962 E616498		Elevation (ft):	400	
PLSS:	T10S, R03E, Sec. 30 (M)		Acres:	49.3	
Location:	LITTLE ARTHUR CREEK, 2 MILES ABOVE MOUTH, 2.3 MILES SOUTH OF UVAS RESERVOIR AND NORTH OF MT MADONNA COUNTY PARK.				
Detailed Location:	LOCATED 2 ROAD MILES (ALONG REDWOOD RETREAT ROAD) FROM INTERSECTION OF REDWOOD RETREAT ROAD & WATSONVILLE ROAD. SPECIES HAS BEEN DETECTED IN LITTLE ARTHUR CREEK SINCE 1991 AND ALSO AT OTHER TIMES JUST UPSTREAM OF PROPOSED BRIDGE (NO DATE).				
Ecological:	HABITAT CONSISTS OF A PERENNIAL STREAM SURROUNDED BY NON-NATIVE GRASSLAND, SEASONAL WETLANDS, MIXED-OAK WOODLAND, MIXED RIPARIAN WOODLAND, AND BLUE OAK WOODLAND.				
General:	SPECIES PRESENT DURING 1991 SURVEY. 1 FEMALE SUBADULT COLLECTED (CAS #197580) BY M.R. JENNINGS ON 05 APR 1993. SVL 80 MM, 58.5 GM. CREEK WAS DRY DURING OCTOBER 2001 SURVEY; SPECIES CONSIDERED PRESENT.				
Owner/Manager:	UNKNOWN				
Occurrence No.	465	Map Index: 46007	EO Index: 46007	Element Last Seen:	2001-09-21
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2001-09-21
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2009-04-15
Quad Summary:	Hollister (3612174)				
County Summary:	San Benito				
Lat/Long:	36.85189 / -121.43051		Accuracy:	80 meters	
UTM:	Zone-10 N4079591 E639922		Elevation (ft):	253	
PLSS:	T12S, R05E, Sec. 33 (M)		Acres:	0.0	
Location:	SAN BENITO RIVER, ABOUT 20 METERS DOWNSTREAM OF SAN JUAN HOLLISTER BRIDGE, HOLLISTER.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POOLED AREA WITHIN SAN BENITO RIVER; SURROUNDED BY WILLOWS AND CATTAILS. THE RIVERBED FORMS A WIDE, SANDY FLOODPLAIN THAT IS MOSTLY DRY AND DOMINATED BY M. ALBA & B. VIMINEA.				
General:	1 ADULT AND 1 JUVENILE WERE OBSERVED ON 11 OCT 2000. 1 JUVENILE OBSERVED ON 21 SEP 2001.				
Owner/Manager:	UNKNOWN				



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Occurrence No.	466	Map Index: 46046	EO Index: 46046	Element Last Seen:	2000-06-XX
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2000-06-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2001-10-05

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.09114 / -121.48318	Accuracy:	non-specific area
UTM:	Zone-10 N4106059 E634804	Elevation (ft):	2000
PLSS:	T10S, R04E, Sec. 01 (M)	Acres:	577.2

Location: ALONG PALASSOU RIDGE; 0.4 MILE SSW OF GILROY.
Detailed Location: ALONG UNIMPROVED ROAD LOCATED 1.3 MILES WEST OF INTERSECTION OF GILROY HOT SPRINGS ROAD AND CANADA ROAD. ABOUT 0.9 MILE TO 2.4 MILES (ALONG UNIMPROVED ROAD) NORTH OF GILROY HOT SPRINGS ROAD.
Ecological: HABITAT CONSISTS OF STOCKPONDS SURROUNDED BY (PREVIOUSLY HEAVILY GRAZED) OAK WOODLAND OR OAK SAVANNAH.
General: HUNDREDS OF ADULTS AND HUNDREDS OF JUVENILES OBSERVED.
Owner/Manager: DPR

Occurrence No.	483	Map Index: 47083	EO Index: 47083	Element Last Seen:	2001-02-02
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2001-02-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2013-06-24

Quad Summary: Chittenden (3612185)
County Summary: San Benito

Lat/Long:	36.88565 / -121.54212	Accuracy:	80 meters
UTM:	Zone-10 N4083179 E629914	Elevation (ft):	250
PLSS:	T12S, R04E, Sec. 16, SW (M)	Acres:	0.0

Location: ABOUT 1.6 MILES NORTH OF THE INTERSECTION OF SAN JUSTO ROAD AND PRESCOTT ROAD, JUST NORTH OF SAN JUAN VALLEY.
Detailed Location:
Ecological: HABITAT CONSISTED OF A PERENNIAL STOCKPOND, WITH TULE AND WILLOWS AROUND THE EDGES; LOCATED WITHIN A SEASONAL ARROYO THAT DRAINS TO THE SAN BENITO RIVER. POND WAS SURROUNDED BY OAK WOODLAND / GRASSLAND.
General: 1 SUBADULT OBSERVED ON 2 FEB 2001.
Owner/Manager: PVT



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Occurrence No.	484	Map Index: 47084	EO Index: 47084	Element Last Seen:	2001-02-01
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2001-02-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2013-06-24
Quad Summary:	Chittenden (3612185)				
County Summary:	San Benito				
Lat/Long:	36.88566 / -121.52930		Accuracy:	80 meters	
UTM:	Zone-10 N4083198 E631056		Elevation (ft):	325	
PLSS:	T12S, R04E, Sec. 16, SE (M)		Acres:	0.0	
Location:	1.7 MILES NNE OF THE INTERSECTION OF SAN JUSTO ROAD AND PRESCOTT ROAD, JUST NORTH OF SAN JUAN VALLEY.				
Detailed Location:					
Ecological:	HABITAT CONSISTED OF A PERENNIAL STOCKPOND, WITH TULE AND WILLOWS AROUND THE EDGES; LOCATED WITHIN A SEASONAL ARROYO THAT DRAINS TO THE SAN BENITO RIVER. POND WAS SURROUNDED BY OAK WOODLAND / GRASSLAND.				
General:	1 ADULT OBSERVED ON 1 FEB 2001.				
Owner/Manager:	PVT				
Occurrence No.	506	Map Index: 47468	EO Index: 47468	Element Last Seen:	1990-02-24
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1990-02-24
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2008-11-25
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.78330 / -121.72335		Accuracy:	80 meters	
UTM:	Zone-10 N4071593 E613915		Elevation (ft):	10	
PLSS:	T13S, R02E, Sec. 23 (M)		Acres:	0.0	
Location:	UPPER MORO COJO SLOUGH, SE OF CASTROVILLE BLVD, NW OF HIGHWAY 156 AND SOUTH OF MERIDIAN ROAD.				
Detailed Location:					
Ecological:					
General:	1 ADULT FROG OBSERVED NEAR THE EDGE OF THE POND. TWO DOR FROGS FOUND 25 NOV 1989 SOMEWHERE ON MERIDIAN ROAD.				
Owner/Manager:	PVT				
Occurrence No.	548	Map Index: 44343	EO Index: 48705	Element Last Seen:	1991-02-23
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1991-02-23
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2002-08-30
Quad Summary:	Mt. Madonna (3712116), Morgan Hill (3712126)				
County Summary:	Santa Clara				
Lat/Long:	37.12260 / -121.70703		Accuracy:	non-specific area	
UTM:	Zone-10 N4109255 E614861		Elevation (ft):	525	
PLSS:	T09S, R02E, Sec. 25 (M)		Acres:	214.2	
Location:	CHESBRO RESERVOIR, APPROXIMATELY 3 MILES WEST OF MORGAN HILL.				
Detailed Location:	MAPPED TO THE RESERVOIR, MORE SPECIFIC DETAILS NOT GIVEN.				
Ecological:					
General:	UNKNOWN NUMBER OF INDIVIDUALS OBSERVED ON 23 FEB 1991.				
Owner/Manager:	SCL COUNTY				



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Occurrence No.	590	Map Index: 49780	EO Index: 49780	Element Last Seen:	2005-08-26
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2005-08-26
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2009-03-26

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.09027 / -121.49638	Accuracy:	80 meters
UTM:	Zone-10 N4105944 E633631	Elevation (ft):	1600
PLSS:	T10S, R04E, Sec. 02 (M)	Acres:	0.0

Location: MIDDLE RIDGE POND, PALASSOU RIDGE NATURAL AREA.
Detailed Location: MANMADE POND FORMED BY CONSTRUCTION OF A DAM.
Ecological: HABITAT CONSISTS OF A STOCK POND CONTAINING FILAMENTOUS ALGAE; SURROUNDED BY OAK WOODLAND AND NON-NATIVE GRASSLAND.
General: SURVEYS RUN 23 MAY & 24 JUL 2002; 22 ADS/10 JUVS/84 LARVAE OBS. 1 AD/1 MM/4 LARVAE OBS 18 JUN 2003; 9 ADS/2 MM'S OBS 4 SEP 2003. 2 JUVS/92 LARVAE OBS 21 JUN; 9 ADS/2 JUVS OBS 17 AUG 2004. 15 LARVAE OBS 22 JUN; 4 JUVS/1 LARVA OBS 26 AUG '05.
Owner/Manager: SCL COUNTY

Occurrence No.	591	Map Index: 49782	EO Index: 49782	Element Last Seen:	2002-05-15
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2002-08-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2003-01-06

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.08472 / -121.48365	Accuracy:	80 meters
UTM:	Zone-10 N4105346 E634773	Elevation (ft):	1800
PLSS:	T10S, R04E, Sec. 12, NW (M)	Acres:	0.0

Location: HOLDING FLAT LAKE, PALASSOU RIDGE NATURAL AREA, 2.4 MILES EAST OF COYOTE LAKE.
Detailed Location:
Ecological: HABITAT CONSISTS OF A STOCK POND SURROUNDED BY OAK WOODLAND AND NON-NATIVE GRASSLAND.
General: SURVEYS CONDUCTED ON 8 AND 15 MAY, 22 JUL, AND 2 AUG 2002; 4 TADPOLES OBSERVED ON 15 MAY 2002.
Owner/Manager: SCL COUNTY



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Occurrence No.	592	Map Index: 49783	EO Index: 49783	Element Last Seen:	2005-08-23
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2005-08-23
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2009-03-26

Quad Summary: Gilroy (3712115)

County Summary: Santa Clara

Lat/Long:	37.09938 / -121.52306	Accuracy:	80 meters
UTM:	Zone-10 N4106917 E631244	Elevation (ft):	1990
PLSS:	T10S, R04E, Sec. 03, NW (M)	Acres:	0.0

Location: LOWER TWIN LAKE, PALASSOU RIDGE NATURAL AREA, 0.9 MILE EAST OF COYOTE LAKE.

Detailed Location: POND IS LOCATED IN THE UPPER WATERSHED; DRAINAGE FLOWS WEST TO COYOTE RESERVOIR. POND IS FED BY AN UNKNOWN SPRING.

Ecological: HABITAT CONSISTS OF A STOCK POND SURROUNDED BY OAK WOODLAND AND GRAZED NON-NATIVE GRASSLAND. POND IS FED BY AN UNKNOWN SPRING.

General: SURVEYS RUN IN MAY, JUL, DEC 2002; 5 ADS/60 JUVS/578 LARVAE OBS. 10 LARVAE OBS 10 JUN 2003; 23 ADS/1 MM/10 LARVAE OBS, 27 AUG 2003. 5 JUVS/6 LARVAE OBS 21 JUN; 6 ADS/14 JUVS OBS 17 AUG 2004. 6 LARVAE OBS 16 JUN; 1 TADPOLE OBS 23 AUG 2005.

Owner/Manager: SCL COUNTY

Occurrence No.	593	Map Index: 48968	EO Index: 49784	Element Last Seen:	2002-05-14
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2002-07-22
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2003-01-06

Quad Summary: Gilroy (3712115)

County Summary: Santa Clara

Lat/Long:	37.09934 / -121.52056	Accuracy:	80 meters
UTM:	Zone-10 N4106916 E631467	Elevation (ft):	2030
PLSS:	T10S, R04E, Sec. 03, NW (M)	Acres:	0.0

Location: UPPER TWIN LAKE, PALASSOU RIDGE NATURAL AREA, 1 MILE EAST OF COYOTE LAKE.

Detailed Location:

Ecological: HABITAT CONSISTS OF A STOCK POND SURROUNDED BY OAK WOODLAND AND NON-NATIVE GRASSLAND.

General: SURVEYS CONDUCTED ON 14 MAY AND 22 JUL 2002; 26 TADPOLES OBSERVED ON 14 MAY 2002.

Owner/Manager: SCL COUNTY



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Occurrence No.	619	Map Index: 50233	EO Index: 50233	Element Last Seen:	2002-XX-XX
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2002-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2003-06-11
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Cruz				
Lat/Long:	36.91147 / -121.60714		Accuracy:	80 meters	
UTM:	Zone-10 N4085957 E624078		Elevation (ft):	250	
PLSS:	T12S, R03E, Sec. 02 (M)		Acres:	0.0	
Location:	JUST NORTH OF SODA LAKE, 1 MILE EAST OF PAJARO GAP, 7 MILES SOUTH OF GILROY.				
Detailed Location:	DESIGNATED "POND A." NEARBY SODA LAKE IS A SEDIMENT BASIN FOR THE ADJACENT QUARRY; BASIN ATTRACTS FROGS, BUT IS NOT USED FOR BREEDING.				
Ecological:	HABITAT CONSISTS OF A SMALL BREEDING POND; SURROUNDING VEGETATION CONSISTS OF WILLOWS.				
General:	1-2 FROGS OBSERVED EACH NIGHT DURING SURVEYS CONDUCTED IN LATE MAY-LATE JUN 1998. ABOUT 50 ADULT FROGS OBSERVED IN 2002.				
Owner/Manager:	PVT-GRANITE ROCK				
Occurrence No.	650	Map Index: 51517	EO Index: 51517	Element Last Seen:	1998-06-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1998-06-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2003-06-11
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Cruz				
Lat/Long:	36.91336 / -121.61687		Accuracy:	80 meters	
UTM:	Zone-10 N4086154 E623208		Elevation (ft):	286	
PLSS:	T12S, R03E, Sec. 02 (M)		Acres:	0.0	
Location:	0.5 MILE NW OF SODA LAKE AND 0.5 MILE EAST OF PAJARO GAP, 7 MILES SOUTH OF GILROY.				
Detailed Location:	DESIGNATED "POND B."				
Ecological:	HABITAT CONSISTS OF A MEDIUM-SIZED POND WITH DENSE BULRUSH AND AQUATIC VEGETATION.				
General:	1 ADULT FROG OBSERVED ON 26 JUN 1998.				
Owner/Manager:	PVT-GRANITE ROCK				
Occurrence No.	651	Map Index: 51518	EO Index: 51518	Element Last Seen:	1998-06-26
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1998-06-26
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2003-06-11
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Cruz				
Lat/Long:	36.90607 / -121.60802		Accuracy:	specific area	
UTM:	Zone-10 N4085357 E624008		Elevation (ft):	260	
PLSS:	T12S, R03E, Sec. 11 (M)		Acres:	10.4	
Location:	SOUTH END OF SODA LAKE, 1 MILE SE OF PAJARO GAP, 7 MILES SOUTH OF GILROY.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A 45-ACRE LAKE CONTAINED BY A LEVEE, WITH A MIXTURE OF BARE, DISTURBED AREAS, OPEN WATER, FRESHWATER MARSH, AND WILLOW RIPARIAN.				
General:	2 ADULT FROGS OBSERVED ON 26 JUN 1998.				
Owner/Manager:	PVT-GRANITE ROCK				



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Occurrence No.	654	Map Index: 51815	EO Index: 51815	Element Last Seen:	2003-05-14
Occ. Rank:	Poor		Presence: Presumed Extant	Site Last Seen:	2003-05-14
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2003-07-17

Quad Summary: Watsonville East (3612186)
County Summary: San Benito, Santa Cruz

Lat/Long:	36.91274 / -121.62822	Accuracy:	80 meters
UTM:	Zone-10 N4086071 E622197	Elevation (ft):	100
PLSS:	T12S, R03E, Sec. 03 (M)	Acres:	0.0

Location: PAJARO GAP, ON THE NORTH SIDE OF HIGHWAY 129, 1 MILE WEST OF SODA LAKE.
Detailed Location:
Ecological: HABITAT CONSISTS OF A ROADSIDE DRAINAGE DITCH WITH STANDING WATER AND TYPHA SP; SURROUNDED BY TRAFFIC AND HIGHWAY CONSTRUCTION.
General: 2 ADULTS OBSERVED ON 14 MAY 2003.
Owner/Manager: CALTRANS

Occurrence No.	678	Map Index: 53839	EO Index: 53839	Element Last Seen:	2001-07-07
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2001-07-07
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-01-08

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.07957 / -121.42587	Accuracy:	80 meters
UTM:	Zone-10 N4104858 E639918	Elevation (ft):	1950
PLSS:	T10S, R05E, Sec. 09, SE (M)	Acres:	0.0

Location: 0.5 MILE WSW OF WILSON RANCH, HENRY W COE STATE PARK.
Detailed Location:
Ecological: HABITAT CONSISTS OF A POND SURROUNDED BY OAK SAVANNAH.
General: 25 ADULTS AND 4 TADPOLES OBSERVED ON 7 JUL 2001.
Owner/Manager: DPR-HENRY W COE SP

Occurrence No.	679	Map Index: 53843	EO Index: 53843	Element Last Seen:	2001-06-02
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2001-06-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-01-08

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.07976 / -121.40093	Accuracy:	80 meters
UTM:	Zone-10 N4104917 E642135	Elevation (ft):	2040
PLSS:	T10S, R05E, Sec. 11, NW (M)	Acres:	0.0

Location: JUST SOUTH OF VASQUEZ PEAK, HENRY W COE STATE PARK.
Detailed Location:
Ecological: HABITAT CONSISTS OF A POND SURROUNDED BY OAK SAVANNAH.
General: 15 TADPOLES OBSERVED ON 2 JUN 2001.
Owner/Manager: DPR-HENRY W COE SP



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Occurrence No.	680	Map Index: 53844	EO Index: 53844	Element Last Seen:	2001-06-02
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2001-06-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-01-08
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.08251 / -121.39810		Accuracy:	80 meters	
UTM:	Zone-10 N4105226 E642381		Elevation (ft):	1970	
PLSS:	T10S, R05E, Sec. 11, NW (M)		Acres:	0.0	
Location:	BETWEEN ROCK SPRINGS PEAK AND VASQUEZ PEAK, HENRY W COE STATE PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POND SURROUNDED BY OAK WOODLAND.				
General:	12 ADULTS AND 12+ TADPOLES OBSERVED ON 2 JUN 2001.				
Owner/Manager:	DPR-HENRY W COE SP				
Occurrence No.	681	Map Index: 53845	EO Index: 53845	Element Last Seen:	2001-05-05
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2001-05-05
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-01-08
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.11128 / -121.44055		Accuracy:	80 meters	
UTM:	Zone-10 N4108355 E638555		Elevation (ft):	2050	
PLSS:	T09S, R05E, Sec. 33, NW (M)		Acres:	0.0	
Location:	1 MILE NORTH OF WILSON PEAK, HENRY W COE STATE PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POND SURROUNDED BY OAK SAVANNAH.				
General:	5 ADULTS AND SOME TADPOLES OBSERVED ON 5 MAY 2001.				
Owner/Manager:	DPR-HENRY W COE SP				
Occurrence No.	682	Map Index: 53846	EO Index: 53846	Element Last Seen:	2001-05-05
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2001-05-05
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-01-08
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.11070 / -121.44260		Accuracy:	80 meters	
UTM:	Zone-10 N4108288 E638374		Elevation (ft):	2050	
PLSS:	T09S, R05E, Sec. 33, NW (M)		Acres:	0.0	
Location:	1 MILE NNW OF WILSON PEAK, HENRY W COE STATE PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POND SURROUNDED BY OAK SAVANNAH.				
General:	8 ADULTS AND SOME TADPOLES OBSERVED ON 5 MAY 2001.				
Owner/Manager:	DPR-HENRY W COE SP				



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Occurrence No.	683	Map Index: 53848	EO Index: 53848	Element Last Seen:	2001-05-05
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2001-05-05
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-01-08
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.11635 / -121.45761		Accuracy:	80 meters	
UTM:	Zone-10 N4108893 E637030		Elevation (ft):	2000	
PLSS:	T09S, R05E, Sec. 32, NW (M)		Acres:	0.0	
Location:	1.3 MILES NE OF GILROY HOT SPRINGS, HENRY W COE STATE PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POND SURROUNDED BY OAK WOODLAND / SAVANNAH.				
General:	8 ADULTS AND SOME TADPOLES OBSERVED ON 5 MAY 2001.				
Owner/Manager:	DPR-HENRY W COE SP				
Occurrence No.	684	Map Index: 53850	EO Index: 53850	Element Last Seen:	2001-04-29
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2001-04-29
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-01-08
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.10412 / -121.39967		Accuracy:	80 meters	
UTM:	Zone-10 N4107621 E642201		Elevation (ft):	1700	
PLSS:	T09S, R05E, Sec. 35, SW (M)		Acres:	0.0	
Location:	0.5 MILE SOUTH OF CENTER FLATS, HENRY W COE STATE PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POND SURROUNDED BY OAK WOODLAND.				
General:	10 ADULTS OBSERVED ON 29 APR 2001.				
Owner/Manager:	DPR-HENRY W COE SP				
Occurrence No.	685	Map Index: 53852	EO Index: 53852	Element Last Seen:	2001-04-28
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2001-04-28
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-06-25
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.11882 / -121.44538		Accuracy:	specific area	
UTM:	Zone-10 N4109185 E638113		Elevation (ft):	2240	
PLSS:	T09S, R05E, Sec. 29, SE (M)		Acres:	10.0	
Location:	1 MILE WEST OF KELLY CABIN CANYON, HENRY W COE STATE PARK.				
Detailed Location:	1985 LOCATION GIVEN AS "SMALL POND ON HENRY COE STATE PARK [T9S R5E SE1/4 SEC 29]," ATTRIBUTED HERE. MAPPED TO COORDINATES GIVEN FOR 2001 DETECTIONS.				
Ecological:	HABITAT CONSISTED OF PONDS SURROUNDED BY OAK WOODLAND / SAVANNA.				
General:	DETECTED ON 28 SEP 1985. 4 ADULTS AND 10+ TADPOLES OBSERVED IN NW POND & 5 ADULTS IN SE POND ON 28 APR 2001.				
Owner/Manager:	DPR-HENRY W COE SP				



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Occurrence No.	687	Map Index: 53855	EO Index: 53855	Element Last Seen:	2003-07-06
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2003-07-06
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-05-04
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.12313 / -121.46365		Accuracy:	80 meters	
UTM:	Zone-10 N4109636 E636482		Elevation (ft):	2300	
PLSS:	T09S, R05E, Sec. 30, NE (M)		Acres:	0.0	
Location:	1.3 MILES NE OF GILROY HOT SPRINGS, HENRY W COE STATE PARK.				
Detailed Location:	1986 LOCATION GIVEN AS "SMALL POND ON HENRY COE STATE PARK [T9S R5E SE1/4 SEC 30]," ATTRIBUTED HERE. MAPPED TO COORDINATES GIVEN FOR 2003 DETECTION.				
Ecological:	HABITAT CONSISTED OF A POND SURROUNDED BY OAK WOODLAND.				
General:	DETECTED ON 28 SEP 1986. 2 ADULTS OBSERVED ON 6 JUL 2003.				
Owner/Manager:	DPR-HENRY W COE SP				
Occurrence No.	689	Map Index: 53880	EO Index: 53880	Element Last Seen:	2003-05-25
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2003-05-25
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-01-12
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.04679 / -121.44061		Accuracy:	80 meters	
UTM:	Zone-10 N4101200 E638667		Elevation (ft):	1900	
PLSS:	T10S, R05E, Sec. 20, SE (M)		Acres:	0.0	
Location:	NW EDGE OF BILLS HILL, HENRY W COE STATE PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POND SURROUNDED BY RIDGETOP GRASSLAND / OAK WOODLAND.				
General:	2 ADULTS OBSERVED ON 25 MAY 2003.				
Owner/Manager:	DPR-HENRY W COE SP				
Occurrence No.	690	Map Index: 53881	EO Index: 53881	Element Last Seen:	2003-05-18
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2003-05-18
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-01-12
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.09318 / -121.43938		Accuracy:	80 meters	
UTM:	Zone-10 N4106348 E638692		Elevation (ft):	2400	
PLSS:	T10S, R05E, Sec. 05, SE (M)		Acres:	0.0	
Location:	SW OF WILSON PEAK, HENRY W COE STATE PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POND SURROUNDED BY GRASSLAND / OAK SAVANNAH.				
General:	10 ADULTS AND 4 TADPOLES OBSERVED ON 18 MAY 2003.				
Owner/Manager:	DPR-HENRY W COE SP				



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Occurrence No.	691	Map Index: 53883	EO Index: 53883	Element Last Seen:	2003-05-03
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2003-05-03
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-01-12
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.08179 / -121.42565		Accuracy:	80 meters	
UTM:	Zone-10 N4105105 E639933		Elevation (ft):	2150	
PLSS:	T10S, R05E, Sec. 09, NE (M)		Acres:	0.0	
Location:	0.5 MILE WEST OF WILSON RANCH, HENRY W COE STATE PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POND SURROUNDED BY OAK SAVANNAH.				
General:	2 ADULTS AND 3 TADPOLES OBSERVED ON 3 MAY 2003.				
Owner/Manager:	DPR-HENRY W COE SP				
Occurrence No.	692	Map Index: 53885	EO Index: 53885	Element Last Seen:	2003-04-06
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2003-04-06
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-01-12
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.07982 / -121.40718		Accuracy:	80 meters	
UTM:	Zone-10 N4104914 E641579		Elevation (ft):	1750	
PLSS:	T10S, R05E, Sec. 10, NE (M)		Acres:	0.0	
Location:	0.5 MILE EAST OF WILSON RANCH, HENRY W COE STATE PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POND SURROUNDED BY OAK SAVANNAH.				
General:	1 ADULT OBSERVED ON 6 APR 2003.				
Owner/Manager:	DPR-HENRY W COE SP				
Occurrence No.	694	Map Index: 53968	EO Index: 53968	Element Last Seen:	2003-05-06
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2003-05-06
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-01-20
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.09569 / -121.43786		Accuracy:	80 meters	
UTM:	Zone-10 N4106629 E638822		Elevation (ft):	2420	
PLSS:	T10S, R05E, Sec. 04, NW (M)		Acres:	0.0	
Location:	WEST SIDE OF WILSON PEAK, HENRY W COE STATE PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POND SURROUNDED BY OAK WOODLAND / SAVANNAH.				
General:	4 ADULTS AND SEVERAL TADPOLES OBSERVED ON 6 MAY 2003.				
Owner/Manager:	DPR-HENRY W COE SP				



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Occurrence No.	695	Map Index:	53969	EO Index:	53969	Element Last Seen:	2003-05-06
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		2003-05-06	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2004-01-20	

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.09227 / -121.41764	Accuracy:	80 meters
UTM:	Zone-10 N4106279 E640626	Elevation (ft):	2060
PLSS:	T10S, R05E, Sec. 03, SW (M)	Acres:	0.0

Location: 1 MILE EAST OF WILSON PEAK, HENRY W COE STATE PARK.
Detailed Location:
Ecological: HABITAT CONSISTS OF A POND SURROUNDED BY OAK WOODLAND / SAVANNAH.
General: 6 ADULTS AND 30+ TADPOLES OBSERVED ON 6 MAY 2003.
Owner/Manager: DPR-HENRY W COE SP

Occurrence No.	747	Map Index:	55855	EO Index:	55871	Element Last Seen:	2004-06-12
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		2004-06-12	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2004-06-22	

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.08154 / -121.49176	Accuracy:	specific area
UTM:	Zone-10 N4104982 E634057	Elevation (ft):	870
PLSS:	T10S, R04E, Sec. 11, NE (M)	Acres:	15.5

Location: DEXTER CANYON CREEK, TRIBUTARY TO UPPER COYOTE CREEK, 1.75 MILES EAST OF THE SOUTH END OF COYOTE LAKE.
Detailed Location:
Ecological: HABITAT CONSISTS OF A STREAM CHANNEL WITH A BOULDER / COBBLE SUBSTRATE. ASPECT OF CANYON IS SE; SLOPE IS CLOSE TO 100%. CANYON IS VEGETATED BY LIVE OAK / BAY WOODLAND.
General: 3 ADULTS OBSERVED ON 12 JUN 2004.
Owner/Manager: SANTA CLARA VALLEY OPEN SPACE



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Occurrence No.	759	Map Index: 56893	EO Index: 56909	Element Last Seen:	2003-XX-XX
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2003-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-09-22
Quad Summary:	Hollister (3612174)				
County Summary:	San Benito				
Lat/Long:	36.76397 / -121.40716		Accuracy:	specific area	
UTM:	Zone-10 N4069872 E642166		Elevation (ft):	810	
PLSS:	T13S, R05E, Sec. 34 (M)		Acres:	8.1	
Location:	GARNER LAKE AND AN ADJACENT SEDIMENT BASIN, SOUTH SIDE OF CIENEGA ROAD IN BONANZA GULCH, 5 MILES SOUTH OF HOLLISTER.				
Detailed Location:	GARNER LAKE BASIN IS 20 M X 8 M X 1 M DEEP; ADJACENT BASIN IS 20 M X 10 M X 1 M DEEP.				
Ecological:	HABITAT CONSISTS OF A SEDIMENT BASIN, VEGETATED BY DUCKWEED (LEMNA SP) AND LARGE CLUMPS OF ALGAE; COAST LIVE OAK OVERHANGS MARGINS OF BASIN IN PLACES.				
General:	ON 12 AUG 2003, DURING A DAYTIME SURVEY, 12+ METAMORPHS OBSERVED ON GARNER LAKE; ADJACENT BASIN CONTAINED 10+ METAMORPHS. NO BULLFROGS OBSERVED IN THESE BASINS. LATER, IN 2003, 12+ ADULT FROGS WERE OBSERVED DURING A NIGHTTIME SURVEY.				
Owner/Manager:	DPR-HOLLISTER HILLS SVRA				
Occurrence No.	760	Map Index: 56894	EO Index: 56910	Element Last Seen:	2003-08-12
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2003-08-12
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-09-22
Quad Summary:	Hollister (3612174)				
County Summary:	San Benito				
Lat/Long:	36.77730 / -121.43687		Accuracy:	80 meters	
UTM:	Zone-10 N4071307 E639490		Elevation (ft):	900	
PLSS:	T13S, R05E, Sec. 29 (M)		Acres:	0.0	
Location:	SYCAMORE BASIN, IN NORTH CANYON, 0.5 MILE UPSTREAM FROM THE BIRD CREEK CONFLUENCE, 4.6 MILES SSW OF HOLLISTER.				
Detailed Location:	POND IS 40 M X 20 M X >1 M DEEP.				
Ecological:	HABITAT CONSISTS OF A SEDIMENT BASIN, VEGETATED BY PONDWEED (POTAMOGETON SP) AND LARGE CLUMPS OF ALGAE; SYCAMORE OVERHANGS MARGINS OF BASIN IN PLACES.				
General:	12 METAMORPHS OBSERVED ON 12 AUG 2003, DURING A DAYTIME SURVEY; NO BULLFROGS HEARD OR OBSERVED IN THIS BASIN.				
Owner/Manager:	DPR-HOLLISTER HILLS SVRA				



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Occurrence No.	761	Map Index: 56897	EO Index: 56913	Element Last Seen:	2003-12-29
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2003-12-29
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-09-22

Quad Summary: Mt. Harlan (3612164), Hollister (3612174)

County Summary: San Benito

Lat/Long:	36.75057 / -121.38578	Accuracy:	80 meters
UTM:	Zone-10 N4068418 E644099	Elevation (ft):	1050
PLSS:	T14S, R05E, Sec. 02 (M)	Acres:	0.0

Location: ALONG CIENEGA ROAD, NEXT TO DE ROSE WINERY, 6.25 MILES SOUTH OF HOLLISTER.

Detailed Location:

Ecological: HABITAT CONSISTS OF A WETLAND (CIENEGA), MOST LIKELY ONE THAT OCCURS ABOUT 50 METERS AWAY.

General: 1 ADULT FOUND DOR, AT ABOUT MIDNIGHT ON A RAINY NIGHT, ON 29 DEC 2003; UNKNOWN WHERE THIS FROG MAY HAVE ORIGINATED, AS THERE ARE MANY NATURAL AND MANMADE WETLANDS / POOLS IN THIS AREA.

Owner/Manager: SBT COUNTY

Occurrence No.	762	Map Index: 56898	EO Index: 56914	Element Last Seen:	2004-02-17
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2004-02-17
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-09-22

Quad Summary: Hollister (3612174)

County Summary: San Benito

Lat/Long:	36.76931 / -121.41436	Accuracy:	80 meters
UTM:	Zone-10 N4070454 E641513	Elevation (ft):	1000
PLSS:	T13S, R05E, Sec. 27 (M)	Acres:	0.0

Location: WEST OF CIENEGA ROAD, ALONG THE PARK ENTRANCE ROAD, ON THE NORTH SIDE OF BIRD CREEK, HOLLISTER HILLS SVRA.

Detailed Location:

Ecological: HABITAT (BIRD CREEK) CONSISTS OF AN EPHEMERAL STREAM THAT CROSSES BENEATH THE PARK ENTRANCE ROAD THROUGH A METAL CULVERT; OVERHANGING VEGETATION AND OPEN POOLS ARE FOUND ALONG BIRD CREEK.

General: 1 LARGE ADULT MALE FOUND CROSSING THE ROAD AT NIGHT ON 17 FEB 2004.

Owner/Manager: DPR-HOLLISTER HILLS SVRA

Occurrence No.	787	Map Index: 59221	EO Index: 59257	Element Last Seen:	2004-08-10
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2004-08-10
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2005-01-11

Quad Summary: Watsonville East (3612186)

County Summary: Santa Clara

Lat/Long:	36.96793 / -121.66296	Accuracy:	specific area
UTM:	Zone-10 N4092150 E619017	Elevation (ft):	1180
PLSS:	T11S, R03E, Sec. 17 (M)	Acres:	7.2

Location: BODFISH CREEK, IN THE SANTA CRUZ MOUNTAINS.

Detailed Location:

Ecological: HABITAT CONSISTS OF AN INTERMITTENT STREAM CONTAINING RESIDUAL POOLS; SURROUNDING VEGETATION CONSISTS OF REDWOOD FOREST USED FOR COMMERCIAL TIMBER HARVEST.

General: 1 ADULT IN ONE POOL, AND 1 ADULT AND 1 JUVENILE IN A SECOND POOL, OBSERVED ON 10 AUG 2004.

Owner/Manager: CASTRO VALLEY RANCH



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Occurrence No.	790	Map Index: 59445	EO Index: 59481	Element Last Seen:	2002-02-26
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2002-05-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2005-01-19
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.86288 / -121.65055		Accuracy:	80 meters	
UTM:	Zone-10 N4080511 E620286		Elevation (ft):	130	
PLSS:	T12S, R03E, Sec. 28 (M)		Acres:	0.0	
Location:	UNNAMED DRAINAGE THAT CROSSES CARPENTERIA ROAD, 0.25 MILE NE OF SAN JUAN ROAD, 1.8 MILES SOUTH OF AROMAS.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A DEEP POOL NEAR AN UPSTREAM CULVERT ALONG CARPENTERIA ROAD; DENSE LIVE OAKS AND WILLOWS FORM AN OVERHEAD CANOPY, WITH A DENSE POISON OAK AND BLACKBERRY GROUND COVER ALONG BOTH BANKS.				
General:	1 LARGE ADULT OBSERVED ON 26 FEB 2002, DURING A PRE-CONSTRUCTION SURVEY; BY MAY, THE CREEK WAS DRY AND NO FROGS WERE OBSERVED DURING ADDITIONAL SURVEYS.				
Owner/Manager:	PVT				
Occurrence No.	792	Map Index: 59477	EO Index: 59513	Element Last Seen:	2005-09-08
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2005-09-08
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2006-03-23
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.10625 / -121.44493		Accuracy:	non-specific area	
UTM:	Zone-10 N4107791 E638175		Elevation (ft):	1400	
PLSS:	T09S, R05E, Sec. 32 (M)		Acres:	222.4	
Location:	PORTION OF COYOTE CREEK AND AN INTERMITTENT STREAM IN GRIZZLY GULCH, TRIBUTARY TO COYOTE CREEK, HENRY W. COE STATE PARK.				
Detailed Location:	10 FROGS OBSERVED WITHIN A 2.5 MILE SECTION OF STREAM IN 2004.				
Ecological:	HABITAT CONSISTS OF RIPARIAN SURROUNDING AN INTERMITTENT STREAM.				
General:	5 ADULTS AND 8 JUVENILES OBSERVED DURING 2 SURVEY DATES, 24 APR 2004 AND 11 MAY 2004. 2 LARGE ADULTS OBSERVED ON THE STREAM BOTTOM DURING A NOCTURNAL SURVEY ON 9 AUG 2005.				
Owner/Manager:	DPR-HENRY W COE SP				



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Occurrence No.	793	Map Index:	59490	EO Index:	59526	Element Last Seen:	2004-05-31
Occ. Rank:	Fair	Presence:	Presumed Extant	Site Last Seen:		2004-05-31	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2005-01-20	
Quad Summary:	Gilroy Hot Springs (3712114)						
County Summary:	Santa Clara						
Lat/Long:	37.07265 / -121.45756			Accuracy:	specific area		
UTM:	Zone-10 N4104045 E637114			Elevation (ft):	875		
PLSS:	T10S, R05E, Sec. 07, SE (M)			Acres:	17.9		
Location:	MOUTH OF BRAEN CANYON AND INTO HUNTING HOLLOW, HENRY W COE STATE PARK.						
Detailed Location:							
Ecological:	HABITAT CONSISTS OF AN INTERMITTENT STREAM CONTAINING POOLS; STREAM SURROUNDED BY OAK WOODLAND / SAVANNAH.						
General:	1 JUVENILE OBSERVED ON 16 MAY 2004; 1 ADULT AND 1 JUVENILE OBSERVED ON 31 MAY 2004.						
Owner/Manager:	DPR-HENRY W COE SP						
Occurrence No.	794	Map Index:	30882	EO Index:	59532	Element Last Seen:	2005-05-07
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		2008-02-05	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2009-05-29	
Quad Summary:	Gilroy Hot Springs (3712114)						
County Summary:	Santa Clara						
Lat/Long:	37.05917 / -121.40943			Accuracy:	80 meters		
UTM:	Zone-10 N4102619 E641417			Elevation (ft):	1920		
PLSS:	T10S, R05E, Sec. 15, SE (M)			Acres:	0.0		
Location:	ALONG THE WEST SIDE OF PHLEGLEY RIDGE, HENRY W COE STATE PARK.						
Detailed Location:	POND C-60 IS LOCATED WEST OF DIRT ROAD.						
Ecological:	HABITAT CONSISTS OF A SEASONAL STOCK POND IN NON-NATIVE GRASSLAND WITH OAK WOODLANDS NEARBY. CTS ALSO KNOWN FROM THIS POND.						
General:	1 JUVENILE OBSERVED ON 25 MAY 2004; NO TADPOLES DETECTED DESPITE DIPNETTING EFFORTS. 1 ADULT AND 2 JUVENILE FROGS OBSERVED ON 7 MAY 2005; NO TADPOLES SEEN. FROGS NOT DETECTED DURING VISIT TO SITE ON 5 FEB 2008.						
Owner/Manager:	DPR-HENRY W COE SP						



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Occurrence No.	847	Map Index: 62923	EO Index: 62977	Element Last Seen:	2005-09-06
Occ. Rank:	Poor		Presence: Presumed Extant	Site Last Seen:	2005-09-06
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2005-10-24
Quad Summary:	Hollister (3612174)				
County Summary:	San Benito				
Lat/Long:	36.77106 / -121.43799		Accuracy:	80 meters	
UTM:	Zone-10 N4070614 E639401		Elevation (ft):	1000	
PLSS:	T13S, R05E, Sec. 29 (M)		Acres:	0.0	
Location:	ACROSS FROM BEE CAMP, HOLLISTER HILLS STATE VEHICLE RECREATION AREA.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A SEDIMENT BASIN WITHIN THE MOTORCYCLE / ATV RIDING AREA. POND WAS 20' X 50' X 1' DEEP; POND CONTAINS NO SHADE, NO VEGETATION (EXCEPT ALGAE CLUMPS), AND NO TREE OVERHANG.				
General:	1 ADULT CRLF, ALONG WITH 3 ADULT TREE FROGS, OBSERVED DURING A DAYTIME SURVEY ON 6 SEP 2005.				
Owner/Manager:	DPR-HOLLISTER HILLS SVRA				
Occurrence No.	870	Map Index: 54034	EO Index: 64402	Element Last Seen:	2005-05-07
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2005-05-07
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2006-03-22
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.05028 / -121.43037		Accuracy:	80 meters	
UTM:	Zone-10 N4101602 E639571		Elevation (ft):	1100	
PLSS:	T10S, R05E, Sec. 21, SW (M)		Acres:	0.0	
Location:	0.6 MILE NE OF BILLS HILL, HENRY W COE STATE PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A TINY, SEASONAL POND SURROUNDED BY OAK SAVANNAH.				
General:	3 ADULTS OBSERVED WHILE WALKING THE POOL PERIMETER ON 7 MAY 2005.				
Owner/Manager:	DPR-HENRY W COE SP				
Occurrence No.	871	Map Index: 64324	EO Index: 64403	Element Last Seen:	2005-05-22
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2005-05-22
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2006-03-23
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.07935 / -121.40357		Accuracy:	80 meters	
UTM:	Zone-10 N4104867 E641901		Elevation (ft):	2060	
PLSS:	T10S, R05E, Sec. 10, SE (M)		Acres:	0.0	
Location:	0.2 MILE SW OF VASQUEZ PEAK, HENRY W COE STATE PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POND NEAR THE RIDGETOP; SURROUNDED BY OAK SAVANNAH.				
General:	25 TADPOLES WERE NETTED ON 22 MAY 2005; NO JUVENILE OR ADULT FROGS WERE OBSERVED.				
Owner/Manager:	DPR-HENRY W COE SP				



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Occurrence No.	872	Map Index: 64325	EO Index: 64404	Element Last Seen:	2005-06-07
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2005-06-07
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2006-03-23

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.08056 / -121.46055	Accuracy:	80 meters
UTM:	Zone-10 N4104917 E636833	Elevation (ft):	1360
PLSS:	T10S, R05E, Sec. 07 (M)	Acres:	0.0

Location: 1 MILE NNE OF THE INTERSECTION OF HOT SPRINGS ROAD AND HUNTING HOLLOW, HENRY W COE STATE PARK.
Detailed Location:
Ecological: HABITAT CONSISTS OF A POND; SURROUNDED BY OAK SAVANNAH / WOODLAND.
General: 7 TADPOLES WERE NETTED ON 7 JUN 2005; 1 ADULT FROG WAS OBSERVED.
Owner/Manager: DPR-HENRY W COE SP

Occurrence No.	926	Map Index: 68149	EO Index: 68297	Element Last Seen:	2006-12-12
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2006-12-12
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-02-21

Quad Summary: San Felipe (3612184)
County Summary: San Benito

Lat/Long:	36.90306 / -121.48971	Accuracy:	80 meters
UTM:	Zone-10 N4085183 E634553	Elevation (ft):	300
PLSS:	T12S, R04E, Sec. 12, SW (M)	Acres:	0.0

Location: 1 MILE NW OF THE HUDNER LANE TERMINOUS IN THE FLINT HILLS, 6 MILES NW OF HOLLISTER.
Detailed Location:
Ecological: HABITAT CONSISTS OF A FIELD, COMPOSED OF NON-NATIVE ANNUAL GRASSLAND, PERIODICALLY USED FOR CATTLE GRAZING; LOCATED AT THE BOTTOM OF AN ENE SLOPE.
General: 1 JUVENILE CAPTURED IN A CTS PITFALL TRAP ON 12 DEC 2006.
Owner/Manager: PVT



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Occurrence No.	928	Map Index: 68163	EO Index: 68310	Element Last Seen:	2006-04-19
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2006-04-19
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-02-21
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.78145 / -121.67743		Accuracy:	specific area	
UTM:	Zone-10 N4071445 E618015		Elevation (ft):	90	
PLSS:	T13S, R03E, Sec. 19, SE (M)		Acres:	12.0	
Location:	0.8 MILE NW OF THE INTERSECTION OF BLACKIE ROAD AND HIGHWAY 156, JUST WEST OF PRUNEDALE.				
Detailed Location:	SEDIMENT BASIN APPEARS NOT TO BE USED FOR RED-LEGGED FROG BREEDING, AS NO LARVAE WERE FOUND (2006).				
Ecological:	HABITAT CONSISTS OF A SEDIMENT BASIN THAT IS DREDGED ANNUALLY AND A FRESHWATER MARSH BELOW. SUBSTRATE OF SEDIMENT BASIN IS SANDY AND WATER IS TURBID; NO AQUATIC VEGETATION, BERMS LARGELY BARE. MARSH IS A NATURAL WETLAND ENHANCED BY BERMS.				
General:	AQUATIC SURVEYS WERE CONDUCTED ON 17 APR, 19 APR, 4 MAY, AND 17 MAY 2006; 6 ADULTS CAPTURED ON 17 APR, WHILE SAMPLING FOR CTS IN THE SEDIMENT BASIN, AND NUMEROUS TADPOLES CAPTURED AND SEVERAL ADULTS OBSERVED IN THE MARSH ON 19 APR 2006.				
Owner/Manager:	PVT				
Occurrence No.	929	Map Index: 68157	EO Index: 68311	Element Last Seen:	2006-05-31
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2006-05-31
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-02-20
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.78712 / -121.68420		Accuracy:	80 meters	
UTM:	Zone-10 N4072064 E617402		Elevation (ft):	90	
PLSS:	T13S, R03E, Sec. 19, SE (M)		Acres:	0.0	
Location:	NORTH SIDE OF HWY 156, ABOUT 0.3 MI W OF INTERSECTION WITH MERIDIAN RD. 1 MILE WEST OF HWY 101 & 1 MILE N OF PRUNEDALE.				
Detailed Location:	BREEDING POND; SURROUNDED BY STRAWBERRY FIELDS, OAK WOODLANDS, AND LOW-DENSITY RESIDENTIAL.				
Ecological:	HABITAT CONSISTS OF AN ARTIFICIAL SPRING-FED POND CREATED BY THE ADDITION OF A BERM; POND IS USED BY HORSES. WETLAND VEGETATION IS LARGELY ABSENT AROUND THE POND PERIMETER, EXCEPT FOR A SMALL PATCH OF WILLOW SAPPLINGS AND SCIRPUS SP.				
General:	AQUATIC SURVEYS WERE CONDUCTED FROM 18 APR-31 MAY 2006; 3 ADULTS AND NUMEROUS LARVAE WERE CAPTURED WHILE SAMPLING FOR CTS LARVAE.				
Owner/Manager:	PVT				



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Occurrence No.	930	Map Index: 68095	EO Index: 68308	Element Last Seen:	2006-05-02
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2006-05-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-02-16

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.77040 / -121.72964	Accuracy:	specific area
UTM:	Zone-10 N4070155 E613372	Elevation (ft):	10
PLSS:	T13S, R02E, Sec. 27 (M)	Acres:	10.0

Location: UPPER ARM OF MORO COJO SLOUGH, ON THE SOUTH SIDE OF HIGHWAY 156, NE OF CASTROVILLE.

Detailed Location:

Ecological: HABITAT CONSISTS OF A SEASONAL SWALE SURROUNDED BY ANNUAL GRASSLAND/STRAWBERRY FIELDS; WILLOW THICKETS LINE THE LOW FLOW CHANNEL, EMERGENT VEGETATION ALONG THE SLOUGH MARGINS. OPEN WATER IS EXTENSIVE, UP TO 4' DEEP; DRIES BY LATE FALL.

General: AQUATIC SURVEYS WERE CONDUCTED ON 18 APR AND 2 MAY 2006; SEVERAL RED-LEGGED FROG LARVAE WERE CAPTURED WHILE SAMPLING FOR CTS.

Owner/Manager: PVT

Occurrence No.	931	Map Index: 68158	EO Index: 68312	Element Last Seen:	2007-04-21
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2007-04-21
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-06-27

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.77694 / -121.73778	Accuracy:	specific area
UTM:	Zone-10 N4070871 E612636	Elevation (ft):	10
PLSS:	T13S, R02E, Sec. 27, NW (M)	Acres:	24.0

Location: ARM OF MORO COJO SLOUGH, DOWNSTREAM OF CASTROVILLE BOULEVARD, NNE OF CASTROVILLE.

Detailed Location: AQUATIC SURVEYS WERE CONDUCTED ON 19 APR AND 3 AND 16 MAY 2006; NO EVIDENCE OF BREEDING (PERHAPS TOO BRACKISH). BREEDING OCCURRED DURING 2007 IN THE OLD SETTLING PONDS BELOW THE TRAILER PARK.

Ecological: HABITAT CONSISTS OF AN ARM OF MORO COJO SLOUGH, WHICH CONTAINS SEASONAL POCKETS OF WATER IN DEPRESSIONS IN THE LOW-FLOW CHANNEL AND VARIES FROM FRESH TO BRACKISH SEASONALLY; VEGETATED BY DENSE SPIKE RUSH AND PICKLEWEED.

General: 1 ADULT OBSERVED, APR-MAY 2006. 1 DEAD METAMORPH FOUND ON THE BIKE PATH, 14 NOV 2006. 1 ADULT OBSERVED IN MAIN SLOUGH CHANNEL, NEXT TO ROAD BELOW CULVERT, 3 APR 2007. 6 LARVAE OBSERVED IN SETTLING POND BELOW TRAILER PARK, 21 APR 2007.

Owner/Manager: PVT



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Occurrence No.	937	Map Index: 68683	EO Index: 69110	Element Last Seen:	2007-02-15
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2007-02-15
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-05-04

Quad Summary: Gilroy (3712115)

County Summary: Santa Clara

Lat/Long:	37.11973 / -121.55166	Accuracy:	80 meters
UTM:	Zone-10 N4109136 E628668	Elevation (ft):	700
PLSS:	T09S, R04E, Sec. 29, SE (M)	Acres:	0.0

Location: SPILL POND AT COYOTE CREEK/DAM AT NORTH END OF COYOTE LAKE, 5.5 MILES EAST OF MORGAN HILL.

Detailed Location: 1989 COORDINATES PRESUMED TO BE LOW-ACCURACY, LOCATION DESCRIBED AS "PLUNGE POOL BELOW COYOTE DAM." MAPPED TO LAT-LONG COORDINATES PROVIDED FOR 2007 DETECTION.

Ecological: 1989: PLUNGE POOL BELOW COYOTE DAM. 2007: SEEN ON DIRT PATH AT TOP OF BANK NEAR OUTFALL; HABITAT WAS SPILL POND (95 M X 66 M) AT TOE OF DAM; SOME EMERGENT VEGETATION, BANKS WITH RIPRAP; SURROUNDED BY SAGE SCRUB AND MIXED HARDWOOD.

General: DETECTED BY M. MARANGIO ON 9 NOV 1989. 1 INDIVIDUAL (FIRST YEAR) OBSERVED ON 15 FEB 2007.

Owner/Manager: SANTA CLARA VALLEY WATER DIST

*** SENSITIVE ***

Occurrence No.	942	Map Index: 68842	EO Index: 69435	Element Last Seen:	2007-02-12
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2007-02-12
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-04-19

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:		Accuracy:	80 meters
UTM:		Elevation (ft):	190
PLSS:		Acres:	0.0

Location: *SENSITIVE* LOCATION INFORMATION SUPPRESSED.

Detailed Location: PLEASE CONTACT THE CALIFORNIA NATURAL DIVERSITY DATABASE, CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE, FOR MORE INFORMATION: (916) 322-2493

Ecological: HABITAT CONSISTS OF A SMALL CREEK VEGETATED BY COTTONWOODS, WILLOWS, SEDGES, AND RUSHES, WITH OAK WOODLAND NEARBY.

General:

Owner/Manager:



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Occurrence No.	945	Map Index: 68969	EO Index: 69631	Element Last Seen:	2007-03-31
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2007-03-31
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-04-18
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.11053 / -121.40801		Accuracy:	80 meters	
UTM:	Zone-10 N4108320 E641448		Elevation (ft):	1672	
PLSS:	T09S, R05E, Sec. 34, SE (M)		Acres:	0.0	
Location:	0.2 MILE WEST OF CENTER FLATS AND 1.8 MILES NE OF WILSON PEAK, HENRY W. COE STATE PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POND WITHIN MIXED OAK WOODLAND AND ADJACENT CHAPARRAL; FAIRLY ROUGH TERRAIN SURROUNDS THIS SITE.				
General:	5 (PLUS 3 OTHER POSSIBLE) CRLF ADULTS OBSERVED DURING A NIGHT SURVEY ON 31 MAR 2007. DURING PREVIOUS VISITS, DURING THE DAY, NO FROGS WERE SEEN, AND DIPNET SURVEYS PRODUCED NO TADPOLES.				
Owner/Manager:	DPR-HENRY W COE SP				
Occurrence No.	987	Map Index: 70855	EO Index: 71779	Element Last Seen:	2007-05-11
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2007-05-11
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2008-02-22
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.86308 / -121.72170		Accuracy:	80 meters	
UTM:	Zone-10 N4080446 E613943		Elevation (ft):	13	
PLSS:	T12S, R02E, Sec. 26, NW (M)		Acres:	0.0	
Location:	1 MILE DIRECTLY EAST NORTH END OF ELKHORN SLOUGH AND IMMEDIATELY SOUTH OF HALL ROAD, 4 MILES SE OF WATSONVILLE.				
Detailed Location:	MAPPED ACCORDING TO LOCATION PROVIDED ON MAP AND COORDINATES.				
Ecological:	HABITAT CONSISTS OF AN AGRICULTURE DITCH ABOUT 15 FT WIDE. SEASONAL POOLING IN CHANNEL ABOUT 2 FT AT TIME OF SURVEY. WATER TURBID, SURFACE WATER OPEN. WHEN FULL, WATER OVERFLOWS ONTO ANNUAL GRASSLAND/PASTURE TO THE NORTH. WILLOWS TO SOUTH.				
General:	78 LARVAE CAPTURED ON 11 MAY 2007 WHHILE SAMPLING FOR CTS/SCLTS LARVAE. BULLFROG ADULT AND LOUISIANA CRAYFISH ALSO OBSERVED. SURROUNDING LAND CONSISTS OF AGRICULTURAL AND RURAL RESIDENTIAL LAND.				
Owner/Manager:	PVT-TRIPLE M/ALBA				



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Occurrence No.	988	Map Index: 70856	EO Index: 71836	Element Last Seen:	2007-05-10
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2007-05-10
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2008-02-26
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.86145 / -121.71366		Accuracy:	80 meters	
UTM:	Zone-10 N4080275 E614663		Elevation (ft):	14	
PLSS:	T12S, R02E, Sec. 26, NE (M)		Acres:	0.0	
Location:	CARNEROS CREEK, 1.5 MILES DIRECTLY EAST OF THE NORTH END OF ELKHORN SLOUGH AND SOUTH OF HALL RD, 4 MI SE OF WATSONVILLE.				
Detailed Location:	MAPPED ACCORDING TO COORDINATES PROVIDED. LOCATION ON MAP PROVIDED SHOWN TO BE JUST TO THE WEST (ABOUT 250 METERS) OF COORDINATES.				
Ecological:	HABITAT CONSISTS OF SEASONAL INTERMITTENT STREAM. SAMPLE SITE: 300 FT X 10 FT POOL MORE THAN 4 FT DEEP. SURFACE COVERED BY DUCKWEED, MOSQUITOFERN; STEEP SIDED BANKS. RIPARIAN CORRIDOR W/CANOPY OF WILLOWS; UNDERSTORY SMARTWEED, BLACKBERRY.				
General:	1 SUBADULT OBSERVED ON BANK WHILE SAMPLING FOR CALIFORNIA TIGER SALAMANDER, SANTA CRUZ LONG-TOED SALAMANDER LARVAE. ALSO, 1 YR+ BULLFROG LARVAE PRESENT, BUT UNCOMMON. SURROUNDING LAND CONSISTS OF AGRICULTURAL AND RURAL RESIDENTIAL LAND.				
Owner/Manager:	PVT-TRIPLE M/ALBA				
Occurrence No.	990	Map Index: 70926	EO Index: 71876	Element Last Seen:	2007-08-25
Occ. Rank:	Poor		Presence: Presumed Extant	Site Last Seen:	2007-08-25
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2008-02-28
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Clara				
Lat/Long:	36.92769 / -121.54151		Accuracy:	80 meters	
UTM:	Zone-10 N4087844 E629896		Elevation (ft):	124	
PLSS:	T11S, R04E, Sec. 33, SW (M)		Acres:	0.0	
Location:	CARNADERO CREEK, APPROXIMATELY 0.25 KM UP STREAM OF CONFLUENCE WITH THE PAJARO RIVER, 5.5 MILES SOUTH OF GILROY.				
Detailed Location:	EAST BANK OF CREEK. LOCATION MAPPED ACCORDING TO COORDINATES GIVEN.				
Ecological:	HABITAT CONSISTS OF A STREAM/UPLAND HABITAT. AREA MOST LIKELY FUNCTIONS AS SUITABLE UPLAND HABITAT.				
General:	1 ADULT OBS ON 25 AUG 2007. SUCCESSFUL BREEDING MAY BE LIMITED BY HIGH NUMBERS OF FISH. PRODUCTIVITY WOULD LIKELY BE ENHANCED IN LOCAL AREA IF NEARBY RESTORATION EFFORTS CREATE LONG-LIVED ISOLATED PONDS/POOLS.				
Owner/Manager:	UNKNOWN				



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Occurrence No.	993	Map Index: 71344	EO Index: 72250	Element Last Seen:	2003-11-XX
Occ. Rank:	Poor		Presence: Presumed Extant	Site Last Seen:	2003-11-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2008-05-20
Quad Summary:	Chittenden (3612185)				
County Summary:	San Benito				
Lat/Long:	36.91870 / -121.51523		Accuracy:	1/5 mile	
UTM:	Zone-10 N4086883 E632253		Elevation (ft):	230	
PLSS:	T12S, R04E, Sec. 03 (M)		Acres:	0.0	
Location:	PASTURE/GRASSLAND AREA ABOUT 3.4 MILES SSE OF THE INTERSECTION OF HWY 101 AND HWY 20. SOUTH OF GILROY.				
Detailed Location:	FROGS FOUND IN SMALL WET SPOT BELOW DRIPPING FAUCET NEXT TO HOUSE WITH A SMALL ARTIPLEX BUSH FOR COVER.				
Ecological:	AREA IS RURAL RESIDENTIAL WITH GRAZING. MICROTUS BURROWS IN THE VICINITY.				
General:	INCIDENTAL SIGHTING OF 1 FROG ON 21 JULY 2003, 2 OTHERS OBSERVED 15 AUG. ALL 3 REMAINED IN THE AREA UNTIL LATE NOVEMBER, THEN DISAPPEARED.				
Owner/Manager:	UNKNOWN				
Occurrence No.	1009	Map Index: 73922	EO Index: 74917	Element Last Seen:	2008-05-08
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2008-05-08
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2009-03-25
Quad Summary:	San Juan Bautista (3612175)				
County Summary:	San Benito				
Lat/Long:	36.84202 / -121.60478		Accuracy:	specific area	
UTM:	Zone-10 N4078256 E624400		Elevation (ft):	410	
PLSS:	T12S, R03E, Sec. 35, SE (M)		Acres:	6.0	
Location:	ROCKS RANCH, 3.7 MILES WEST OF SAN JUAN BATISTA.				
Detailed Location:	IN STOCK POND/RESERVOIR IN S1/2 OF SE1/4 SEC 35.				
Ecological:	PERENNIAL RESERVOIR/STOCK POND WITHIN GRASSLAND SWALE. POND ROUGHLY 300' X 150' AND DEEPER THAN 4'. MARGIN OF SMARTWEED ALONG LITTORAL ZONE & PATCHES OF SPIKE RUSH, OTHERWISE LACKING IN EMERGENTS.				
General:	3 ADULTS AND 11 LARVAE WERE OBSERVED AT SITE. THE ADULT FROGS WERE OBSERVED DURING A NOCTURNAL SURVEY ON MARCH 5, 2008, WHILE THE LARVAE WERE CAPTURED BETWEEN 22 APR -8 MAY 2008.				
Owner/Manager:	PVT				



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Occurrence No.	1022	Map Index: 74080	EO Index: 75071	Element Last Seen:	2017-03-16
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2017-03-16
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-10-09
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.81505 / -121.72585		Accuracy:	specific area	
UTM:	Zone-10 N4075112 E613646		Elevation (ft):	36	
PLSS:	T13S, R02E, Sec. 11, SW (M)		Acres:	10.0	
Location:	0.24 MI SE OF THE ELKHORN SLOUGH NATIONAL ESTUARINE RESEARCH RESERVE HEADQUARTERS.				
Detailed Location:	2004: IN SMALL POND JUST S OF ELKHORN RD IN NW1/4 OF SW1/4 ESTIMATED SEC 11. 2017: ABOUT 0.15 MILES ENE OF 2004 DETECTION, ON ROAD; MAPPED TO PROVIDED COORDINATES.				
Ecological:	2004: SMALL POND IN WILLOW GROVE WITHIN GRASSLAND AND OAK WOODLAND; AGRICULTURAL FIELD AND ONE RESIDENCE NEXT TO POND. 2017: VEGETATED DRAINAGE DITCH ON NORTH SIDE OF ELKHORN ROAD; DETECTED DURING EMERGENCY ROAD REPAIR.				
General:	5 ADULTS OBSERVED; OBSERVATION DATE GIVEN AS "4 JUN 2004- PRESENT," FORM RECEIVED ON 2 NOV 2007. 1 ADULT OBSERVED DURING PRE-CONSTRUCTION MONITORING ON 16 MAR 2017.				
Owner/Manager:	DFG-ELKHORN SLOUGH ER				
Occurrence No.	1024	Map Index: 74120	EO Index: 75113	Element Last Seen:	2001-06-22
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2001-06-22
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2009-03-25
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.83619 / -121.62999		Accuracy:	80 meters	
UTM:	Zone-10 N4077576 E622162		Elevation (ft):	275	
PLSS:	T13S, R03E, Sec. 03, NW (M)		Acres:	0.0	
Location:	JUST SSE OF THE JUNCTION OF HWY 101 & DUNBARTON RD, 4.49 MI NNE OF PRUNDALE.				
Detailed Location:					
Ecological:	RIPARIAN OAK WOODLAND AND GRASSLAND. THE SEASONAL STREAM IS VEGETATED WITH WILLOWS AND COAST LIVE OAKS. THE STREAM RUNS THROUGH RANGE LAND THAT IS USED FOR CATTLE GRAZING.				
General:	1 ADULT WAS OBSERVED IN A SMALL POOL THAT DRIED UP LATER IN THE SUMMER ON 1 JUN 2001 AND ON 22 JUN 2001.				
Owner/Manager:	PVT				



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Occurrence No.	1025	Map Index: 74125	EO Index: 75119	Element Last Seen:	2001-06-01
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2001-06-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2009-03-25

Quad Summary: San Juan Bautista (3612175)
County Summary: Monterey

Lat/Long:	36.82641 / -121.62437	Accuracy:	specific area
UTM:	Zone-10 N4076499 E622679	Elevation (ft):	410
PLSS:	T13S, R03E, Sec. 03, SE (M)	Acres:	10.0

Location: 0.50 AIR MI NE OF THE JUNCTION OF HWY 101 & ECHO VALLEY RD, 4.1 MI NNE OF PRUNDALE.
Detailed Location: IN SEASONAL STREAM IN SE1/4 ESTIMATED SEC 3.
Ecological: THE SEASONAL STREAM IS VEGETATED WITH WILLOWS AND COAST LIVE OAKS. THE STREAM RUNS THROUGH RANGE LAND THAT IS USED FOR CATTLE GRAZING.
General: 8 ADULTS OBSERVED IN SMALL POOLS THAT DRIED UP LATER IN THE SUMMER.
Owner/Manager: PVT

Occurrence No.	1026	Map Index: 74133	EO Index: 75124	Element Last Seen:	2004-06-01
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2004-06-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2009-03-26

Quad Summary: Prunedale (3612176)
County Summary: Monterey

Lat/Long:	36.82055 / -121.73115	Accuracy:	80 meters
UTM:	Zone-10 N4075717 E613164	Elevation (ft):	15
PLSS:	T13S, R02E, Sec. 10, NE (M)	Acres:	0.0

Location: ELKHORN SLOUGH NATIONAL ESTUARINE RESEARCH PRESERVE, 0.18 MI W OF THE INTERSECTION OF ELKHORN RD & PARADISE VALLEY RD.
Detailed Location:
Ecological: THE HABITAT SURROUNDING THE PONDS IS COMPRISED OF MIXED OAK WOODLAND, HEAVILY INVADING GRASSLAND AND SOME STANDS OF EUCALYPTUS. THIS IS A RESERVE WITH A NETWORK OF 9 PONDS, 5 OF WHICH REGULARLY CONTAIN BREEDING FROGS.
General: ~100 ADULTS, ~200 JUVENILES, "MANY" LARVAE AND "SEVERAL" EGG MASSES OBSERVED. DATE RECORDED AS "1 JUN 2004- PRESENT", FIELD SURVEY FORM RECEIVED AT THE CNDDDB ON 2 NOV 2007.
Owner/Manager: DFG-ELKHORN SLOUGH ER



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Occurrence No.	1032	Map Index:	75915	EO Index:	75131	Element Last Seen:	2005-06-01
Occ. Rank:	Fair	Presence:	Presumed Extant	Site Last Seen:		2005-06-01	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2009-07-22	

Quad Summary: Watsonville East (3612186)

County Summary: Monterey

Lat/Long:	36.88085 / -121.74330	Accuracy:	80 meters
UTM:	Zone-10 N4082392 E611992	Elevation (ft):	50
PLSS:	T12S, R02E, Sec. 22, NW (M)	Acres:	0.0

Location: NORTH SIDE OF WARNER LAKE, 1 MILE SOUTH OF WATSONVILLE JUNCTION.

Detailed Location: MAPPED TO PROVIDED COORDINATES ON NORTH SIDE OF LAKE.

Ecological: THE EDGE OF THE LAKE IS RINGED BY WILLOWS (SALIX SPP.) & TULE (SCIRPUS SPP.). THE UPLAND IS GRASSLAND WITH 2 RESIDENTIAL PARCELS. LAKE MAY NOT STAY WET LONG ENOUGH FOR BREEDING IN MOST YEARS.

General: 3 ADULTS AND 2 JUVENILES OBSERVED. LOW POPULATION COUNTS. SEDIMENT ANALYSIS REVEALED PESTICIDE RESIDUES THAT MAY BE PROBLEMATIC.

Owner/Manager: TNC-ELKHORN SLOUGH RESERVE

Occurrence No.	1033	Map Index:	74140	EO Index:	75137	Element Last Seen:	2006-06-01
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		2006-06-01	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2009-03-24	

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.84984 / -121.73222	Accuracy:	80 meters
UTM:	Zone-10 N4078965 E613025	Elevation (ft):	350
PLSS:	T12S, R02E, Sec. 34, NE (M)	Acres:	0.0

Location: ON RIDGELINE EAST OF ELKHORN SLOUGH & NORTH OF SWISS CANYON, LOS CARNEROS, WATSONVILLE.

Detailed Location: 0.7 AIR MILES NE OF ELKHORN RD AT KIRBY RD.

Ecological: ARTIFICIAL POND ON A RIDGELINE WITH EXTENSIVE TULE (SCIRPUS CALIFORNICUS) RINGING THE POND. THE UPLAND HABITAT IS CHAPARRAL.

General: 2 ADULTS AND "MANY" LARVAE OBSERVED.

Owner/Manager: TNC-ELKHORN SLOUGH RES, ESF



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Occurrence No.	1035	Map Index: 74147	EO Index: 75147	Element Last Seen:	2001-03-19
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2001-03-19
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2009-03-26

Quad Summary: San Juan Bautista (3612175)
County Summary: Monterey

Lat/Long:	36.80547 / -121.61315	Accuracy:	specific area
UTM:	Zone-10 N4074190 E623713	Elevation (ft):	485
PLSS:	T13S, R03E, Sec. 14, NW (M)	Acres:	10.0

Location: EAST OF CRAZY HORSE CANYON RD, 1.45 MI SE OF HWY 101, PRUNDALE.
Detailed Location: OBSERVED AT STOCK POND ABOUT 250 METERS EAST OF CRAZY HORSE CYN RD AND ALONG DRAINAGE ABOUT 230 METERS SOUTH OF STOCK POND. MAPPED TO PROVIDED COORDINATES. GUS SETTRINI PROPERTY.
Ecological: COAST LIVE OAK WOODLAND AND GRASSLAND. RANGELAND USED FOR CATTLE GRAZING AND TREE CUTTING (EUCALYPTUS).
General: 5 ADULTS OBSERVED BREEDING IN SMALL DRAINAGE ON 6 MAR 2001. 5 ADULTS OBSERVED BREEDING IN STOCK POND ON 19 MAR 2001. COAST RANGE NEWTS (TARICHA TORROSA) ABUNDANT IN STOCK POND.
Owner/Manager: PVT

Occurrence No.	1036	Map Index: 74151	EO Index: 75152	Element Last Seen:	2001-08-29
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2001-08-29
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2009-03-25

Quad Summary: San Juan Bautista (3612175)
County Summary: Monterey

Lat/Long:	36.77317 / -121.61690	Accuracy:	specific area
UTM:	Zone-10 N4070602 E623430	Elevation (ft):	360
PLSS:	T13S, R03E, Sec. 26 (M)	Acres:	4.0

Location: 0.75 MI WEST OF THE INTERSECTION OF CRAZY HORSE CANYON RD & SAN JUAN GRADE RD, 2.77 MI ESE OF PRUNDALE.
Detailed Location:
Ecological: LARGE HOLDING POND SURROUNDED BY STRAWBERRY FIELDS.
General: 1 BREEDING ADULT OBSERVED NEAR NORTHWEST CORNER OF POND.
Owner/Manager: PVT



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Occurrence No.	1063	Map Index: 74857	EO Index: 75857	Element Last Seen:	2008-08-19
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2008-08-19
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2009-04-24

Quad Summary: Hollister (3612174)

County Summary: San Benito

Lat/Long:	36.77862 / -121.44285	Accuracy:	80 meters
UTM:	Zone-10 N4071446 E638954	Elevation (ft):	1040
PLSS:	T13S, R05E, Sec. 29, NE (M)	Acres:	0.0

Location: SEDIMENT BASIN, IN NORTH CANYON, 0.77 MILE UPSTREAM FROM THE BIRD CREEK CONFLUENCE, HOLLISTER HILLS SVRA.

Detailed Location:

Ecological: SEDIMENT BASIN, ALSO FED BY GROUNDWATER (HOLDING WATER INTO SUMMER), SURROUNDED BY COAST LIVE OAK WOODLAND. LOCATION IS IN AN OFF-ROAD VEHICLE PARK.

General: 14 JUVENILES AND 1 LARVA OBSERVED ON 19 AUG 2008.

Owner/Manager: DPR-HOLLISTER HILLS SVRA

Occurrence No.	1064	Map Index: 74866	EO Index: 75874	Element Last Seen:	2008-08-19
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2008-08-19
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2009-04-24

Quad Summary: Hollister (3612174)

County Summary: San Benito

Lat/Long:	36.77406 / -121.46921	Accuracy:	80 meters
UTM:	Zone-10 N4070901 E636609	Elevation (ft):	2090
PLSS:	T13S, R05E, Sec. 30, NE (M)	Acres:	0.0

Location: POOL IN THE UPPER PART OF NORTH CANYON AT HOLLISTER HILLS SVRA, 2.3 MI NE OF FREMONT PEAK IN FREMONT PEAK STATE PARK.

Detailed Location: ABOUT 1.3 MILES SSW OF BENCH MARK 1284 ON SAN JUAN CYN RD AT HILLSIDE RD. MAPPED TO PROVIDED COORDINATES.

Ecological: SMALL SPRING-FED POOL (A SEEP) IN THE UPPER REACHES OF A RAVINE. COAST LIVE OAK WOODLAND IN RAVINE, SURROUNDED BY MIXED CHAPARRAL. WATER QUALITY IS POOR (MUCH ORGANIC MATTER). LOCATION IS IN AN ORV PARK.

General: 2 ADULTS OBSERVED ON 19 AUG 2008.

Owner/Manager: DPR-HOLLISTER HILLS SVRA



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Occurrence No.	1081	Map Index: 74983	EO Index: 75992	Element Last Seen:	2008-08-19
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2008-08-19
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2009-05-07
Quad Summary:	Hollister (3612174)				
County Summary:	San Benito				
Lat/Long:	36.77146 / -121.46281		Accuracy:	80 meters	
UTM:	Zone-10 N4070622 E637185		Elevation (ft):	2035	
PLSS:	T13S, R05E, Sec. 30, SE (M)		Acres:	0.0	
Location:	LAKE ON NORTH RIDGE OF AZALEA CANYON, 2.5 MI NE OF FREMONT PEAK (FREMONT PEAK STATE PARK), HOLLISTER HILLS SVRA.				
Detailed Location:	LAKE IS 1.16 MILE ENE OF THE JCT OF SAN JUAN CANYON RD & THE SAN BENITO/MONTEREY COUNTY LINE.				
Ecological:	SMALL, DEEP, SPRING-FED LAKE. SHORE IS RINGED BY TULE/CATTAILS. LAKE LOCATED IN UPPER HILLS OF PARK. COAST LIVE OAK WOODLAND AND CHANISE DOMINATED CHAPARRAL. LOCATION IS IN AN ORV PARK WITH RIDING TRAILS AND PICNIC AREAS.				
General:	3 ADULTS AND 3 JUVENILES OBSERVED ON 19 AUG 2008. MANY MOSQUITO FISH IN THE LAKE.				
Owner/Manager:	DPR-HOLLISTER HILLS SVRA				
Occurrence No.	1082	Map Index: 74984	EO Index: 75993	Element Last Seen:	2008-10-21
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2008-10-21
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2009-07-27
Quad Summary:	Watsonville East (3612186)				
County Summary:	Santa Cruz				
Lat/Long:	36.92448 / -121.63825		Accuracy:	80 meters	
UTM:	Zone-10 N4087361 E621285		Elevation (ft):	1090	
PLSS:	T12S, R03E, Sec. 04, NE (M)		Acres:	0.0	
Location:	0.60 MI WEST OF MT PAJARO, ABOUT 2 MILES NORTH OF AROMAS.				
Detailed Location:					
Ecological:	BREEDING POND.				
General:	3 JUVENILES OBSERVED ON 21 OCT 2008.				
Owner/Manager:	UNKNOWN				



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Occurrence No.	1225	Map Index: 75946	EO Index: 76950	Element Last Seen:	2004-06-01
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2004-06-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2009-08-28
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.83215 / -121.74983		Accuracy:	80 meters	
UTM:	Zone-10 N4076982 E611481		Elevation (ft):	100	
PLSS:	T13S, R02E, Sec. 04, NE (M)		Acres:	0.0	
Location:	ELKHORN NATIVE PLANT NURSERY, ELKHORN RANCH.				
Detailed Location:	PONDS ARE JUST EAST OF THE NURSERY. OUTSIDE OF THE BREEDING SEASON, MANY OF THESE FROGS ARE IN THE UPLAND HABITAT RATHER THAN THE PONDS.				
Ecological:	THIS IS A NETWORK OF 15 PONDS (1 AT THIS LOCATION) WHICH ARE SURROUNDED BY GRASSLANDS, OAKS, AND SMALL PATCHES OF ORGANIC FARMING. THE PONDS ARE MAN-MADE & ALL CONTAIN R. DRAYTONII & LOW R. CATESBEIANA DENSITIES.				
General:	20 ADULTS OBSERVED AT 2 SMALL PONDS AT THE NURSERY. "MANY" LARVAE & EGG MASSES OBS IN AREA. DATE RECORDED AS "1 JUN 2004- PRESENT," FIELD SURVEY FORM RECEIVED AT CNDDDB ON 2 NOV 2007.				
Owner/Manager:	PVT-ELKHORN RANCH				
Occurrence No.	1420	Map Index: 99076	EO Index: 100602	Element Last Seen:	2016-01-20
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2016-01-20
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2016-02-03
Quad Summary:	Gilroy (3712115)				
County Summary:	Santa Clara				
Lat/Long:	37.05737 / -121.56966		Accuracy:	80 meters	
UTM:	Zone-10 N4102193 E627173		Elevation (ft):	230	
PLSS:	T10S, R04E, Sec. 18, SE (M)		Acres:	0.0	
Location:	LLAGAS CREEK JUST S OF THE RUCKER AVE BRIDGE AND ABOUT 0.8 MILE ESE OF HWY 101 AT MASTEN AVE, 2 MILES N OF GILROY.				
Detailed Location:	MAPPED TO PROVIDED LOCATION.				
Ecological:	IN-CHANNEL OF LLAGAS CREEK COMPOSED OF SAND, GRAVEL, AND COBBLE SUBSTRATE. THE CREEK WAS NOT FLOWING AT THE TIME OF SURVEY, AND WAS COMPOSED OF INTER-CONNECTED AND ISOLATED POOLS ALONG CREEK CORRIDOR. IN RURAL RESIDENTIAL AREA.				
General:	1 ADULT OBSERVED ON 20 JAN 2016.				
Owner/Manager:	SANTA CLARA VALLEY WATER DIST				



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Occurrence No.	1463	Map Index:	A4536	EO Index:	106227	Element Last Seen:	2016-09-07
Occ. Rank:	Fair	Presence:	Presumed Extant	Site Last Seen:		2016-09-07	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2017-05-04	
Quad Summary:	Prunedale (3612176)						
County Summary:	Monterey						
Lat/Long:	36.77645 / -121.71168			Accuracy:	specific area		
UTM:	Zone-10 N4070848 E614967			Elevation (ft):	38		
PLSS:	T13S, R02E, Sec. 26, NE (M)			Acres:	10.0		
Location:	BETWEEN BLACKIE RD AND HWY 156, ABOUT 0.5 MILES SW OF HWY 156 AT OAK HILLS DR, NE OF CASTROVILLE.						
Detailed Location:	MAPPED TO PROVIDED COORDINATES.						
Ecological:	FLOODED CATCHMENT WITH SCIRPUS, WILLOW, DUCKWEED, GRASSES & FORBS ON ACTIVE FARM GROWING PRIMARILY STRAWBERRIES ON VERY SANDY SOIL. FARM CONDUCTS FREQUENT MAINTENANCE ACTIVITIES TO REPAIR EROSION AND SEDIMENTATION DUE TO RUNOFF.						
General:	1 JUVENILE OBSERVED ON 12 JUN 2013. 1 ADULT OBSERVED LOAFING ON BANK DURING NIGHTTIME PRE-ACTIVITY SURVEY ON 7 SEP 2016.						
Owner/Manager:	PVT						
Occurrence No.	1467	Map Index:	A6367	EO Index:	108129	Element Last Seen:	2018-08-06
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		2019-08-31	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2020-07-14	
Quad Summary:	Gilroy Hot Springs (3712114)						
County Summary:	Santa Clara						
Lat/Long:	37.05392 / -121.38431			Accuracy:	80 meters		
UTM:	Zone-10 N4102074 E643662			Elevation (ft):	1738		
PLSS:	T10S, R05E, Sec. 24, NW (M)			Acres:	5.0		
Location:	NORTH SIDE OF ELEPHANT HEAD RIDGE ABOUT 0.4 MI N OF KICKHAM PEAK & 1.7 MI SW OF GULNAC PEAK, CANADA DE LOS OSOS ER.						
Detailed Location:	SITE KNOWN AS CORRAL POND OR OLD CORRAL POND. MAPPED TO PROVIDED COORDINATES.						
Ecological:	FORMER FARM POND FAR FROM PERENNIAL STREAMS, SUBJECT TO DRYING IN DROUGHT. SEASONAL STREAM W/DENSE VEG PROVIDES UPLAND HABITAT. IN GRASSLAND/BLEUE OAK SAVANNA. WAS A RANCH, NOW A PRESERVE. EARLY DRYING 2014-2015 MAY HAVE REDUCED POPULATION.						
General:	~100 METAMORPHS & TADPOLES FOUND JUL 2013. NONE SEEN IN AUG 2016; LIKELY METAMORPHOSED EARLIER AND ADULTS WERE SEEN ALONG THE SHORE EARLIER THAT SUMMER. 15 ADULTS SEEN 25 APR-19 AUG 2017. 74 LARVAE FOUND 20 JUN-6 AUG 2018. NONE IN 2019.						
Owner/Manager:	DFG-CANADA DE LOS OSOS ER						



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Occurrence No.	1468	Map Index: A6374	EO Index: 108133	Element Last Seen:	2019-08-31
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2019-08-31
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2020-07-13

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.04661 / -121.38259	Accuracy:	specific area
UTM:	Zone-10 N4101267 E643828	Elevation (ft):	2173
PLSS:	T10S, R05E, Sec. 24, SW (M)	Acres:	10.0

Location: ABOUT 0.1 TO 0.3 MI ESE OF KICKHAM PEAK & 2.0 MI SW OF GULNAC PEAK, CANADA DE LOS OSOS ER.
Detailed Location: TWO PONDS REPRESENTED, FOUR CORNERS POND (EAST) & EAST BIG SPRING POND (WEST).
Ecological: EAST BIG SPRING (EBS): SMALL POND W/ASSOCIATED SPRING, DEEPENED BY EXCAVATION IN 2015 & FENCED TO EXCLUDE PIGS; IN UNGRAZED, HILLY GRASSLAND. FOUR CORNERS POND (FCP): EARLY-DRYING POND, DEEPENED IN 2015; IN DRAINAGE W/OAK WOODLAND.
General: EBS: 3 FROGS & NO LARVAE IN 2016; 3+ ADULTS, 2 JUVENILES & 32 LARV IN 2017; 1 ADULT, 20-30 METAMORPHS & LARV COMMON IN 2018; 20 JUV & 109 LARV IN 2019. FCP: 1 YEARLING ON 22 MAY 2016; 2 ADULTS IN 2017; NONE IN 2018; 8 JUV IN 2019.
Owner/Manager: DFG-CANADA DE LOS OSOS ER

Occurrence No.	1469	Map Index: A6377	EO Index: 108135	Element Last Seen:	2016-05-24
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2019-08-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2020-07-13

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.05083 / -121.39472	Accuracy:	specific area
UTM:	Zone-10 N4101716 E642742	Elevation (ft):	2009
PLSS:	T10S, R05E, Sec. 23, SW (M)	Acres:	8.0

Location: ABOUT 0.6 MILES NW OF KICKHAM PEAK & 2.2 MILES SW OF GULNAC PEAK, CANADA DE LOS OSOS ER.
Detailed Location: ROCCI'S POND. MAPPED TO PROVIDED COORDINATES.
Ecological: RELATIVELY LONG-LASTING POND SURROUNDED BY OAK WOODLAND WITH GRASSLAND UPSLOPE. FORMER RANCH, NOW AN UNGRAZED PRESERVE.
General: 1 YEARLING RED-LEGGED FROG CAPTURED ON 24 MAY 2016; NO TADPOLES CAPTURED BY SEINING. NONE FOUND ON 27 APR AND 5 JUL 2017, 11 APR AND 20 JUN 2018, AND 13 MAY AND 1 AUG 2019.
Owner/Manager: DFG-CANADA DE LOS OSOS ER



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Occurrence No.	1537	Map Index: A9243	EO Index: 111084	Element Last Seen: 1982-10-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen: 1982-10-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2018-05-02

Quad Summary: Mt. Madonna (3712116)
County Summary: Santa Clara

Lat/Long:	37.0045 / -121.68184	Accuracy:	1/10 mile
UTM:	Zone-10 N4096183 E617281	Elevation (ft):	477
PLSS:	T11S, R03E, Sec. 6, SE (M)	Acres:	18.0

Location: SPRIG LAKE, NEAR JUNCTION OF HIGHWAY 152 AND BLACKHAWK CANYON ROAD, MOUNT MADONNA COUNTY PARK, WEST OF GILROY.

Detailed Location:

Ecological: POPULATION PRESUMED EXTANT BY JENNINGS IN 1997 REPORT, BASED ON UNKNOWN QUANTITY OF FIELDWORK. FROM GOOGLE EARTH AERIALS AND ONLINE TRAIL MAPS, SPRIG LAKE HAS APPARENTLY BEEN DRY FOR YEARS, AND A RECREATION TRAIL NOW RUNS THROUGH THE SITE.

General: OBSERVED BY J. BOUNDY. APR 1970 - OCT 1982.

Owner/Manager: SCL COUNTY

Occurrence No.	1546	Map Index: A9282	EO Index: 111126	Element Last Seen: 1986-09-13
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen: 1986-09-13
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2018-05-03

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.09062 / -121.46845	Accuracy:	non-specific area
UTM:	Zone-10 N4106023 E636114	Elevation (ft):	917
PLSS:	T10S, R05E, Sec. 6, SW (M)	Acres:	115.0

Location: COYOTE CREEK, ABOUT 1.1-2 MILES SOUTH OF GILROY HOT SPRINGS.

Detailed Location: MAPPED TO INCLUDE GIVEN COORDINATES (~1.1 MI S OF HOT SPRINGS) AND LOCATION DESCRIPTION "COYOTE CREEK, ABOUT 2 MILES SOUTH OF GILROY HOT SPRINGS."

Ecological:

General: OBSERVED BY J. BOUNDY ON 13 SEP 1986.

Owner/Manager: DPR-HENRY W COE SP



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Occurrence No.	1552	Map Index: A9314	EO Index: 111158	Element Last Seen:	2017-05-21
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2017-05-21
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-02-22
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Clara				
Lat/Long:	36.93733 / -121.57892		Accuracy:	non-specific area	
UTM:	Zone-10 N4088863 E626549		Elevation (ft):	439	
PLSS:	T11S, R04E, Sec. 31, NW (M)		Acres:	27.0	
Location:	NORTH SIDE OF TAR CREEK, ABOUT 2.1 MILES NW OF SARGENT & 2.9-3.2 MILES NE OF PAJARO GAP, SARGENT HILLS.				
Detailed Location:	1992 DETECTION LOCATION DESCRIBED AS "TAR CREEK DRAINAGE, JUST SOUTHWEST OF GILROY;" ATTRIBUTED HERE. MAPPED TO COORDINATES GIVEN FOR 2017 DETECTIONS (SW-MOST 2 POLYGONS) & 2000-2015 DETECTIONS (ALL 3 POLYGONS) ON SARGENT RANCH.				
Ecological:	2000-2015: BULLFROGS AND FISH ALSO PRESENT AT SW-MOST POND. 2017: STOCK PONDS IN AREA USED FOR CATTLE RANCHING. PONDS WERE RELATIVELY CLEAR AND DEEP (4.5 FEET OR DEEPER).				
General:	DETECTED BY LSA ASSOCIATES IN VICINITY, IN OR PRIOR TO 1992. DETECTED DURING SURVEYS CONDUCTED BETWEEN 2000 & 2015. 5 ADULTS, 1 JUVENILE & 45 LARVAE FOUND IN PONDS #17 & 19 ON 21 MAY 2017.				
Owner/Manager:	UNKNOWN				
Occurrence No.	1553	Map Index: A9315	EO Index: 111159	Element Last Seen:	20XX-XX-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	20XX-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-03-01
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Clara				
Lat/Long:	36.94518 / -121.59643		Accuracy:	1/10 mile	
UTM:	Zone-10 N4089711 E624978		Elevation (ft):	933	
PLSS:	T11S, R03E, Sec. 25, SW (M)		Acres:	18.0	
Location:	SPRING ON W SIDE OF CARLYLE HILLS, 1.6 MI NE OF THE STAR CK & PESCADERO CK CONFLUENCE & 2.7 MI SW OF HWY 101 AT HWY 25.				
Detailed Location:	MAPPED TO SPRING ON USGS TOPO, ADJACENT TO PROVIDED COORDINATES. ON SARGENT RANCH PROPERTY.				
Ecological:	PROPERTY USED FOR CATTLE RANCHING AND OIL EXTRACTION, WITH QUARRY PROPOSED IN 2017.				
General:	DETECTED IN OR PRIOR TO 1992 BY LSA ASSOCIATES. DETECTED IN 2000-2001 AND/OR 2005-2015 SURVEYS, ACCORDING TO 2017 REPORT.				
Owner/Manager:	UNKNOWN, PVT				



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Occurrence No.	1573	Map Index:	66642	EO Index:	113162	Element Last Seen:	2017-06-16
Occ. Rank:	Fair	Presence:	Presumed Extant	Site Last Seen:		2017-06-16	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2018-10-29	
Quad Summary:	Mt. Madonna (3712116)						
County Summary:	Santa Clara						
Lat/Long:	37.02759 / -121.62744			Accuracy:	80 meters		
UTM:	Zone-10 N4098814 E622083			Elevation (ft):	470		
PLSS:	T10S, R03E, Sec. 34 (M)			Acres:	0.0		
Location:	ABOUT 0.3 MILES WNW OF OLEA CT AT LINARIA ST AND 1.1 MILES N OF SR 152 AT BURCHELL RD, GILROY.						
Detailed Location:	MAPPED TO PROVIDED COORDINATES. PROPERTY KNOWN AS LUCKY DAY RANCH.						
Ecological:	POND AT THE CONFLUENCE OF TWO EPHEMERAL DRAINAGES ON ACTIVE CATTLE RANCH. ABOUT 15% EMERGENT BULRUSH COVER AT MARGIN OF POND. WITHIN SPARSE OAK SAVANNAH, SERPENTINE & ANNUAL GRASSLANDS ON PROPOSED MITIGATION BANK (2017).						
General:	2 LARVAE OBSERVED ON 16 JUN 2017. THIS WAS THE FIRST TIME THE SPECIES HAD BEEN DETECTED HERE IN OVER 10 YEARS OF SPORADIC SURVEYS. THE SURVEYOR HYPOTHESIZED THAT DROUGHT HAD PROMPTED DISPERSAL TO THIS SITE.						
Owner/Manager:	PVT						
Occurrence No.	1577	Map Index:	B2280	EO Index:	114204	Element Last Seen:	2017-05-21
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		2017-05-21	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2019-02-11	
Quad Summary:	Chittenden (3612185)						
County Summary:	Santa Clara						
Lat/Long:	36.90572 / -121.56063			Accuracy:	80 meters		
UTM:	Zone-10 N4085381 E628231			Elevation (ft):	147		
PLSS:	T12S, R04E, Sec. 8, NW (M)			Acres:	5.0		
Location:	POND ABOUT 0.2 MI NW OF US-101 AT THE EXIT 349 OVERPASS & 1.7 MI NE OF CA-129 AT SCHOOL RD, SARGENT RANCH.						
Detailed Location:	MAPPED TO PROVIDED COORDINATES. AQUATIC FEATURE #1 FROM 2017 REPORT.						
Ecological:	50' X 90' X 3' HIGHLY TURBID, 20% VEGETATED CATTLE POND IN RANGELAND. TREE FROG LARVAE AND ADULTS AND ABUNDANT PACIFIC NEWT METAMORPHS ALSO OBSERVED (2017). IN PROPOSED MITIGATION AREA FOR PROPOSED QUARRY, JUST SE OF QUARRY SITE.						
General:	1 TADPOLE CAUGHT AND RELEASED ON 21 MAY 2017.						
Owner/Manager:	PVT						



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Occurrence No.	1578	Map Index: B2291	EO Index: 114214	Element Last Seen:	2017-05-21
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2017-05-21
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-02-15
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Clara				
Lat/Long:	36.9118 / -121.56519		Accuracy:	non-specific area	
UTM:	Zone-10 N4086049 E627815		Elevation (ft):	264	
PLSS:	T12S, R04E, Sec. 6, SE (M)		Acres:	32.0	
Location:	PONDS ABOUT 0.7-0.9 MI NNW OF US-101 AT THE EXIT 349 OVERPASS & 1.6-1.9 MI NE OF CA-129 AT SCHOOL RD, SARGENT RANCH.				
Detailed Location:	MAPPED TO PROVIDED COORDINATES AND LOCATIONS FROM 2017 REPORT. FOUR AQUATIC FEATURES REPRESENTED, FROM NORTH: POND #4, #6, UNNAMED FEATURE, & POND #2.				
Ecological:	HIGHLY TURBID CATTLEPONDS ON PROPERTY USED FOR CATTLE RANCHING AND OIL EXTRACTION, WITH QUARRY PROPOSED IN 2017.				
General:	DETECTED AT ALL FOUR AQUATIC FEATURES DURING SURVEYS 2000-2015. 20-30 TADPOLES & 1 METAMORPH OBSERVED IN POND #4, ABOUT 10 TADPOLES OBSERVED IN POND #6 ON 21 MAY 2017.				
Owner/Manager:	PVT				
Occurrence No.	1579	Map Index: B2298	EO Index: 114222	Element Last Seen:	2017-05-27
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2017-05-27
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-02-13
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Clara				
Lat/Long:	36.92712 / -121.57573		Accuracy:	non-specific area	
UTM:	Zone-10 N4087734 E626850		Elevation (ft):	898	
PLSS:	T11S, R04E, Sec. 31, SE (M)		Acres:	40.0	
Location:	POND ABOUT 1.8 MI NNE OF CA-129 AT SCHOOL RD & 2.0 MI NW OF US-101 AT THE EXIT 349 OVERPASS, SARGENT RANCH.				
Detailed Location:	MAPPED TO PROVIDED COORDINATES. WEST POLYGON: 2017 DETECTION AT AQUATIC FEATURE #13 FROM 2017 REPORT. EAST POLYGONS: 2000-2001/2005-2015 DETECTION LOCATIONS FROM 2017 REPORT.				
Ecological:	2000-2015: ONLY FISH FOUND AT POND #13. 2017: TURBID CATTLE POND IN RANCLAND, PORTIONS HEAVILY VEGETATED WITH CAREX, BRASS BUTTONS, & CURLY DOCK. ABUNDANT PACIFIC NEWT METAMORPHS AND TREE FROG TADPOLES ALSO PRESENT.				
General:	DETECTED IN TWO PONDS DURING 2000-2001/2005-2015 SURVEYS. FOUR LARGE TADPOLES OBSERVED ON 27 MAY 2017.				
Owner/Manager:	PVT				



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Occurrence No.	1580	Map Index: B2300	EO Index: 114224	Element Last Seen:	2017-05-27
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2017-05-27
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-02-22
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Clara				
Lat/Long:	36.93641 / -121.59296		Accuracy:	non-specific area	
UTM:	Zone-10 N4088743 E625301		Elevation (ft):	544	
PLSS:	T11S, R03E, Sec. 36, SW (M)		Acres:	22.0	
Location:	POND ABOUT 2.2 MI NNW OF CA-129 AT SCHOOL RD & 2.8 MI NW OF US-101 AT THE EXIT 349 OVERPASS, SARGENT RANCH.				
Detailed Location:	S-MOST POLYGON MAPPED TO COORDINATES PROVIDED FOR AQUATIC FEATURE #15 FROM 2017 REPORT. 2000-2001/2005-2015 DETECTIONS AROUND POND #15 AND AT UNNAMED FEATURE ABOUT 0.25 MILES NORTH (NORTH-MOST POLYGON).				
Ecological:	2000-2015: BULLFROGS AND FISH ALSO FOUND. 2017: TURBID CATTLE POND, 100' X 117' X >4.5' IN RANCLAND, W/ EMERGENT & SUBSURFACE VEGETATION. PACIFIC NEWT, TREE FROG, & WESTERN TOAD ALSO PRESENT. OIL EXTRACTION IN AREA.				
General:	DETECTED DURING SURVEYS 2000-2001 AND/OR 2005-2015. 20-30 ADULTS OBSERVED ON 27 MAY 2017; THE FROGS JUMPED INTO THE POND WHEN APPROACHED. NO ADULTS OR OTHER LIFE STAGES WERE CAPTURED.				
Owner/Manager:	PVT				

Occurrence No.	1581	Map Index: B2308	EO Index: 114231	Element Last Seen:	20XX-XX-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	20XX-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-03-01
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Clara				
Lat/Long:	36.93259 / -121.60206		Accuracy:	1/10 mile	
UTM:	Zone-10 N4088307 E624496		Elevation (ft):	423	
PLSS:	T11S, R03E, Sec. 35, SE (M)		Acres:	18.0	
Location:	SARGENT RANCH, ABOUT 2.1 MILES NE OF PAJARO GAP & 2.3 MILES NNW OF CA-129 AT SCHOOL RD.				
Detailed Location:	MAPPED TO PROVIDED COORDINATES AND MAP.				
Ecological:	PROPERTY USED FOR CATTLE RANCHING AND OIL EXTRACTION, WITH QUARRY PROPOSED IN 2017.				
General:	DETECTED DURING SURVEYS 2000-2001 AND/OR 2005-2015.				
Owner/Manager:	PVT				



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Occurrence No.	1582	Map Index: B2307	EO Index: 114232	Element Last Seen:	20XX-XX-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	20XX-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-03-01
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Clara				
Lat/Long:	36.92943 / -121.5637		Accuracy:	non-specific area	
UTM:	Zone-10 N4088008 E627918		Elevation (ft):	523	
PLSS:	T11S, R04E, Sec. 31, SE (M)		Acres:	35.0	
Location:	SARGENT RANCH, ABOUT 2.1 - 2.5 MILES NE OF CA-129 AT SCHOOL RD & 1.4 - 1.8 MILES NNW OF US-101 AT EXIT 349.				
Detailed Location:	MAPPED TO PROVIDED COORDINATES AND MAP.				
Ecological:	PROPERTY USED FOR CATTLE RANCHING AND OIL EXTRACTION, WITH QUARRY PROPOSED IN 2017.				
General:	DETECTED DURING SURVEYS 2000-2001 AND/OR 2005-2015.				
Owner/Manager:	PVT				
Occurrence No.	1583	Map Index: B2540	EO Index: 114469	Element Last Seen:	2017-08-02
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2017-08-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-03-12
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Clara				
Lat/Long:	36.93793 / -121.54185		Accuracy:	80 meters	
UTM:	Zone-10 N4088980 E629850		Elevation (ft):	133	
PLSS:	T11S, R04E, Sec. 33, NW (M)		Acres:	5.0	
Location:	ALONG CARNADERO CREEK ABOUT 0.9 MILES N OF THE PAJARO RIVER CONFLUENCE & 1.7 MILES SSE OF HWY 101 AT CA-25.				
Detailed Location:	MAPPED TO PROVIDED COORDINATES.				
Ecological:	SHALLOW PORTION OF CHANNEL ADJACENT TO UVAS CARNADERO CREEK. FLOWING WATER, CATTAIL PRESENT. SURROUNDING LAND USED FOR AGRICULTURE, WITH AG ACTIVITY AND DIRT ROADS DIRECTLY ADJACENT TO CHANNEL.				
General:	1 ADULT OBSERVED ON 2 AUG 2017.				
Owner/Manager:	SANTA CLARA VALLEY WATER DIST				



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Occurrence No.	1634	Map Index: B5873	EO Index: 118877	Element Last Seen:	2019-XX-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2019-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2020-07-13
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.05731 / -121.39164		Accuracy:	non-specific area	
UTM:	Zone-10 N4102440 E643003		Elevation (ft):	1639	
PLSS:	T10S, R05E, Sec. 23, NE (M)		Acres:	22.0	
Location:	0.8 MILE NW OF KICKHAM PEAK, ELEPHANT HEAD RIDGE, 6 MILES N OF HWY 152 AND 156 JUNCTION, 14 MILES N OF HOLLISTER.				
Detailed Location:	ALONG "TURTLE CREEK." MAPPED TO COORDINATES FOR STREAM REACH PROVIDED.				
Ecological:	SEASONAL STREAM DOWNSTREAM OF OLD CORRAL POND.				
General:	ADULT AND SUBADULTS WERE SOMEWHAT COMMON IN 2017 AND 2018. SEVERAL WERE OBSERVED IN 2019; NO EVIDENCE OF REPRODUCTION OBSERVED.				
Owner/Manager:	DFG-CANADA DE LOS OSO ER				
Occurrence No.	1635	Map Index: B5874	EO Index: 118878	Element Last Seen:	2019-XX-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2019-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2020-07-13
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.05994 / -121.40348		Accuracy:	80 meters	
UTM:	Zone-10 N4102714 E641946		Elevation (ft):	1538	
PLSS:	T10S, R05E, Sec. 15, SE (M)		Acres:	5.0	
Location:	1.4 MILES NW OF KICKHAM PEAK, SOUTH END OF PHEGLEY RIDGE, 6 MILES N OF HWY 152 & 156 JUNCTION, 14 MILES N OF HOLLISTER.				
Detailed Location:	COON HUNTER'S GULCH STREAM. MAPPED TO COORDINATES PROVIDED.				
Ecological:	SEASONAL STREAM. 2019 SURVEY OCCURRED IN VICINITY OF A 55 FOOT HIGH MULTI-STEP FALLS.				
General:	DETECTED IN 2018 AND 2019, BUT NO TADPOLES OBSERVED.				
Owner/Manager:	DPR-HENRY COE SP				



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Occurrence No.	1636	Map Index: B5876	EO Index: 118879	Element Last Seen: 20XX-XX-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen: 2017-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2020-07-14

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.04141 / -121.39669	Accuracy:	specific area
UTM:	Zone-10 N4100668 E642584	Elevation (ft):	1612
PLSS:	T10S, R05E, Sec. 26, NW (M)	Acres:	10.0

Location: 0.7 MILE SW OF KICKHAM PEAK, 5 MILES N OF HWY 152 AND 156 JUNCTION, 13 MILES N OF HOLLISTER.
Detailed Location: UPPER, MIDDLE AND LOWER SLUMP POND. MAPPED TO COORDINATES PROVIDED.
Ecological: PONDS IN OPEN GRASSLAND AT THE BOTTOM OF A MAJOR LANDSLIDE. TREEFROG TADPOLES WERE ABUNDANT AND NEWT LARVAE PRESENT DURING SURVEYS IN 2017. THE PONDS WERE DRY AND PLOWED BY PIGS BY AUGUST 2017.
General: AUTHOR NOTED RANA DRAYTONII HAVE BEEN OBSERVED IN THE PAST, BUT NO DATE GIVEN. NONE WERE OBSERVED ON 2 APR 2017.
Owner/Manager: DFG-CANADA DE LOS OSO ER

Occurrence No.	1638	Map Index: B5880	EO Index: 118884	Element Last Seen: 2019-07-29
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen: 2019-07-29
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2020-07-14

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.06903 / -121.39916	Accuracy:	80 meters
UTM:	Zone-10 N4103729 E642313	Elevation (ft):	1498
PLSS:	T10S, R05E, Sec. 14, NW (M)	Acres:	5.0

Location: POND, 0.8 MILE S OF VASQUEZ PEAK, 7 MILES N OF HWY 152 & 156 JUNCTION, 15 MILES N OF HOLLISTER.
Detailed Location: WILSON RANCH POND #2. MAPPED TO COORDINATES PROVIDED.
Ecological: SEASONAL POND THAT MAY LAST YEAR ROUND IN WET YEARS. SURROUNDED BY GRASSLAND AND OAK WOODLAND. BULLFROG TADPOLES WERE THREE TIMES AS ABUNDANT AS RED-LEGGED FROG TADPOLES. LARVAL NEWTS WERE VERY ABUNDANT AND SOME ADULTS WERE PRESENT.
General: 1 ADULT, 5 JUVENILES, AND 25-30 LARVAE OBSERVED ON 29 JUL 2019.
Owner/Manager: PVT



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Occurrence No.	1639	Map Index:	B5881	EO Index:	118886	Element Last Seen:	2016-06-23
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	2019-07-15	Record Last Updated:	2020-07-14
Occ. Type:	Natural/Native occurrence		Trend:	Unknown			
Quad Summary:	Gilroy Hot Springs (3712114)						
County Summary:	Santa Clara						
Lat/Long:	37.08486 / -121.37875			Accuracy:	80 meters		
UTM:	Zone-10 N4105516 E644097			Elevation (ft):	1696		
PLSS:	T10S, R05E, Sec. 12, NW (M)			Acres:	5.0		
Location:	POND, 0.7 MILE E OF ROCK SPRINGS PEAK AND 1 MILE NW OF GULNAC PEAK, 5 MILES NW OF BELL STATION, 16 MILES N OF HOLLISTER.						
Detailed Location:	KELLY LAKE. MAPPED TO COORDINATES PROVIDED.						
Ecological:	LARGE RESERVOIR. RECIEVED PERIODIC STOCKING OF RESCUED STEELHEAD/RAINBOW TROUT DECADES AGO. GOLDEN SHINERS WERE LIKELY INTRODUCED AS FORAGE FISH. TROUT UNABLE TO REPRODUCE AND DISAPPEARED AFTER STOCKING DISCONTINUED.						
General:	ADULTS WERE OBSERVED IN PERENNIAL POOLS DOWNSTREAM OF DAM ON 23 JUN 2016. NONE DETECTED ON 20 AUG 2018 AND 15 JUL 2019.						
Owner/Manager:	DFG-CANADA DE LOS OSO ER						

Occurrence No.	1739	Map Index:	B7966	EO Index:	121044	Element Last Seen:	1978-05-XX
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	1978-05-XX	Record Last Updated:	2021-11-29
Occ. Type:	Natural/Native occurrence		Trend:	Unknown			
Quad Summary:	Prunedale (3612176)						
County Summary:	Monterey						
Lat/Long:	36.80287 / -121.73491			Accuracy:	1/5 mile		
UTM:	Zone-10 N4073751 E612855			Elevation (ft):	50		
PLSS:	T13S, R02E, Sec. 15, N (M)			Acres:	70.0		
Location:	VICINITY OF LONG CANYON SOUTH OF ELKHORN SLOUGH, ABOUT 1 MILE WNW OF ELKHORN RD AT DOLAN RD, 3 MILES E OF MOSS LANDING.						
Detailed Location:	MAPPED WITH RESPECT TO PROVIDED MAPS (FIGURE 21).						
Ecological:	ADULTS AND TADPOLES WERE PREVALENT IN THE CHANNELS OF THE SLOUGH TRIBUTARY ON MR. WELLS' PROPERTY, POSSIBLY NOW OWNED BY THE STATE.						
General:	ADULTS AND TADPOLES WERE FOUND IN THIS AREA DURING DIP NET SURVEYS IN MAY 1978.						
Owner/Manager:	DFG, PVT						

<i>Rana boylei</i>	Element Code: AAABH01050						
foothill yellow-legged frog							
Listing Status:	Federal:	None	CNDDB Element Ranks:	Global:	G3	State:	S3
	State:	Endangered					
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened, USFS_S-Sensitive					
Habitat:	General:	PARTLY-SHADED, SHALLOW STREAMS AND RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.					
	Micro:	NEEDS AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEEDS AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.					



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Occurrence No.	168	Map Index:	40615	EO Index:	35622	Element Last Seen:	2016-04-20
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		2016-04-20	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2018-07-12	
Quad Summary:	Gilroy Hot Springs (3712114), Mississippi Creek (3712124)						
County Summary:	Santa Clara						
Lat/Long:	37.13489 / -121.48356		Accuracy:	non-specific area			
UTM:	Zone-10 N4110912 E634692		Elevation (ft):	1060			
PLSS:	T09S, R04E, Sec. 24 (M)		Acres:	489.0			
Location:	7 MILE STRETCH OF COYOTE CREEK, HENRY W COE STATE PARK.						
Detailed Location:	FROM EAST FORK COYOTE CREEK, 0.8 MILE UPSTREAM OF CONFLUENCE WITH MIDDLE FORK, DOWNSTREAM ALONG MAINSTEM COYOTE CREEK TO THE POINT 1.5 MILES UPSTREAM OF CANADA DE LOS OSOS. INCLUDES FELLERS SITE ID #S-723, S-723B, AND S-732.						
Ecological:	WARM, SPARSELY SHADED STREAM WITH COBBLE/GRAVEL/SAND SUBSTRATE & SYCAMORE/WILLOW RIPARIAN OVERSTORY. STREAM DRIES EXCEPT FOR A FEW POOLS IN SUMMER. CALIFORNIA ROACH, SACRAMENTO SUCKER, SACRAMENTO SQUAWFISH & WESTERN POND TURTLE ALSO FOUND.						
General:	MULTIPLE COLLECTIONS AND OBSERVATIONS MADE ALONG SECTIONS OF DRAINAGE, OF BETWEEN SEVERAL AND HUNDREDS OF INDIVIDUALS (INCLUDING ALL LIFE STAGES) IN 1966, 1986, 1992, 1993, 1994, 1995, 1998, 2003, 2004, 2006, 2010, 2012, 2013, 2015 & 2016.						
Owner/Manager:	DPR-HENRY W COE SP						
Occurrence No.	195	Map Index:	42131	EO Index:	42131	Element Last Seen:	2015-05-03
Occ. Rank:	Fair	Presence:	Presumed Extant	Site Last Seen:		2015-05-03	
Occ. Type:	Natural/Native occurrence	Trend:	Decreasing	Record Last Updated:		2018-07-12	
Quad Summary:	Gilroy Hot Springs (3712114), Gilroy (3712115)						
County Summary:	Santa Clara						
Lat/Long:	37.07766 / -121.49372		Accuracy:	non-specific area			
UTM:	Zone-10 N4104548 E633891		Elevation (ft):	800			
PLSS:	T10S, R04E, Sec. 11 (M)		Acres:	220.0			
Location:	DEXTER CANYON AND COYOTE CREEK, PALASSOU RIDGE OPEN SPACE PRESERVE, NE OF GILROY.						
Detailed Location:	INCLUDES COYOTE CREEK BETWEEN COYOTE LAKE AND CANADA DE LOS OSOS AND THE LOWER 1.4 MILES OF DEXTER CANYON CREEK.						
Ecological:	RIVERINE/RIPARIAN; ADJACENT TO COASTAL OAK WOODLAND. STREAM BARS GRAVEL WITH FEW SYCAMORES; CHANNEL EDGED WITH WILLOW. LAND USED FOR CATTLE GRAZING. OBSERVED DECLINE IN BREEDING FROGS ATTRIBUTED TO MARIJUANA OPERATION EXPANSION OR DROUGHT.						
General:	COLLECTED IN 1953 & 2002. SEEN IN 1999. 20+ ADULTS, 50+ JUVENILES IN 2000. 100 EGG MASSES, 29 JUVENILES, 32 ADULTS IN 2004-2005. 96 SEEN IN 2006-2007. 8 ADULTS, 12 JUVENILES, 45 EGG MASSES IN 2010-15.						
Owner/Manager:	SCL COUNTY, SCVWD, DPR						



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Occurrence No.	366	Map Index: 51232	EO Index: 51232	Element Last Seen:	2003-04-11
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2003-04-11
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-07-10

Quad Summary: Mt. Madonna (3712116), Morgan Hill (3712126)
County Summary: Santa Clara

Lat/Long:	37.13739 / -121.73614	Accuracy:	non-specific area
UTM:	Zone-10 N4110861 E612253	Elevation (ft):	571
PLSS:	T09S, R02E, Sec. 22 (M)	Acres:	144.0

Location: LLAGAS CREEK, FROM ITS MOUTH IN CHESBRO RESERVOIR TO ABOUT 2 MILES UPSTREAM.
Detailed Location: SOUTHERN POLYGON MAPPED TO COORDINATES GIVEN FOR 2003 DETECTIONS. NORTHERN POLYGON MAPPED TO '70S-80S LOCATIONS FROM 1999 REPORT, DESCRIBED AS LLAGAS CREEK 0.5-2 MILE ABOVE HEAD OF RESERVOIR.
Ecological: 2003: OAK RIPARIAN WITHIN 15 METERS OF THE CREEK CHANNEL; CREEK BED DOMINATED BY COBBLE SUBSTRATE; FROGS WERE OBSERVED IN ASSOCIATION WITH RIFFLES IN AN AREA WITH AN OPEN CANOPY.
General: COLLECTED IN VICINITY IN 1922. OBSERVED IN MID-1970S AND 1986. 1 COLLECTED ON 12 SEP 1986. 2 ADULTS OBSERVED ON 22 MAR 2003. 1 ADULT OBSERVED ON 23 MAR 2003, ON 30 MAR 2003, AND ON 11 APR 2003.
Owner/Manager: SANTA CLARA VALLEY WATER DIST

Occurrence No.	419	Map Index: 59689	EO Index: 59725	Element Last Seen:	2004-09-18
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2004-09-18
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2005-01-27

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.10608 / -121.45496	Accuracy:	specific area
UTM:	Zone-10 N4107757 E637284	Elevation (ft):	1250
PLSS:	T09S, R05E, Sec. 32, SW (M)	Acres:	13.4

Location: GRIZZLY GULCH CREEK, TRIBUTARY TO COYOTE CREEK, HENRY W COE STATE PARK.
Detailed Location:
Ecological: UPPER AND LOWER POOLS AT A WATERFALL ALONG AN INTERMITTENT CREEK, IN A STEEP, WOODED CANYON. CALIFORNIA RED-LEGGED FROG AND WESTERN POND TURTLE ALSO KNOWN FROM THIS SITE.
General: 1 ADULT AND ABOUT 10 METAMORPHS OBSERVED ON 18 SEP 2004.
Owner/Manager: DPR-HENRY W COE SP



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Occurrence No.	2075	Map Index: A1575	EO Index: 111806	Element Last Seen:	1898-03-31
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1898-03-31
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-07-09

Quad Summary: Mt. Madonna (3712116), Loma Prieta (3712117)

County Summary: Santa Clara

Lat/Long:	37.04356 / -121.73493	Accuracy:	non-specific area
UTM:	Zone-10 N4100453 E612499	Elevation (ft):	1000
PLSS:	T10S, R02E, Sec. 22 (M)	Acres:	271.0

Location: MURPHY CANYON, 3 MILES NW OF MOUNT MADONNA, WEST OF GILROY.

Detailed Location: STATED LOCALITY: "MURPHY CREEK N OF MT MADONNA." CANNOT LOCATE MURPHY CREEK, MAPPED TO CREEK AT MURPHY CANYON.

Ecological:

General: COLLECTED ON 31 MAR 1898. ACCORDING TO JENNINGS 1999, RANA BOYLII CONSIDERED EXTANT AT THIS SITE.

Owner/Manager: UNKNOWN

Occurrence No.	2076	Map Index: A9958	EO Index: 111808	Element Last Seen:	2006-06-29
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2006-06-29
Occ. Type:	Natural/Native occurrence		Trend: Decreasing	Record Last Updated:	2018-07-09

Quad Summary: Gilroy (3712115)

County Summary: Santa Clara

Lat/Long:	37.09437 / -121.51385	Accuracy:	80 meters
UTM:	Zone-10 N4106374 E632072	Elevation (ft):	1818
PLSS:	T10S, R04E, Sec. 3, E (M)	Acres:	5.0

Location: TRIBUTARY TO COYOTE CREEK, BETWEEN TIMBER RIDGE AND SHEEP RIDGE, PALASSOU RIDGE OPEN SPACE PRESERVE, EAST OF SAN MARTIN.

Detailed Location: MAPPED TO PROVIDED 2006 COORDINATES ALONG TRIBUTARY, 1.5 MILES NW OF CONFLUENCE WITH COYOTE CREEK.

Ecological: MARIJUANA CULTIVATION IN 2004 CONSISTED OF 2 GARDENS AND 1 WATER IMPOUNDMENT. EXPANDED IN 2005 TO 7 GARDENS WITH 6500 PLANTS AND 3 IMPOUNDMENTS. GONSOLIN ATTRIBUTED RANA BOYLII DECLINE FROM 2004 TO 2005 TO THIS EXPANSION.

General: 6 TO 13 ADULTS CONSISTENTLY OBSERVED DURING 2004 SURVEYS. 4 FROGS OBSERVED AND 2 CAUGHT AND RELEASED IN 2005. 1 CAUGHT AND RELEASED ON 29 JUN 2006.

Owner/Manager: SANTA CLARA VALLEY OPEN SPACE



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Occurrence No.	2077	Map Index: A9243	EO Index: 111810	Element Last Seen:	1971-XX-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1971-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-07-09

Quad Summary: Mt. Madonna (3712116)

County Summary: Santa Clara

Lat/Long:	37.0045 / -121.68184	Accuracy:	1/10 mile
UTM:	Zone-10 N4096183 E617281	Elevation (ft):	477
PLSS:	T11S, R03E, Sec. 6, SE (M)	Acres:	18.0

Location: SPRIG LAKE, NEAR JUNCTION OF HIGHWAY 152 AND BLACKHAWK CANYON ROAD, MOUNT MADONNA COUNTY PARK, WEST OF GILROY.

Detailed Location:

Ecological:

General: OBSERVED BY J. BOUNDY IN 1970 OR 1971.

Owner/Manager: SCL COUNTY

Occurrence No.	2088	Map Index: A9977	EO Index: 111830	Element Last Seen:	1909-07-08
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1909-07-08
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-07-10

Quad Summary: Mt. Madonna (3712116)

County Summary: Santa Clara

Lat/Long:	37.05961 / -121.67264	Accuracy:	1 mile
UTM:	Zone-10 N4102310 E618014	Elevation (ft):	361
PLSS:	T10S, R03E, Sec. 17 (M)	Acres:	1987.0

Location: UVAS CREEK, NORTHWEST OF GILROY.

Detailed Location: GIVEN LOCATION: "UVAS CREEK," EXACT LOCATION ALONG CREEK UNKNOWN. 1915 TOPO SHOWS PRESENT DAY UVAS CREEK BETWEEN GILROY AND LITTLE ARTHUR CREEK AS CARNADERO CREEK. MOST LIKELY COLLECTED UPSTREAM OF LITTLE ARTHUR CONFLUENCE.

Ecological:

General: COLLECTED ON 8 JUL 1909. ACCORDING TO JENNINGS, RANA BOYLII IS EXTANT AT THIS SITE.

Owner/Manager: UNKNOWN



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Occurrence No.	2093	Map Index: A9997	EO Index: 111849	Element Last Seen:	2006-06-29
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2006-06-29
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-07-11

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.07945 / -121.46767	Accuracy:	non-specific area
UTM:	Zone-10 N4104784 E636203	Elevation (ft):	850
PLSS:	T10S, R05E, Sec. 7, W (M)	Acres:	47.0

Location: COYOTE CREEK AT HUNTING HOLLOW, 2 AIR MILES SOUTH OF GILROY HOT SPRINGS, WEST EDGE OF HENRY W COE STATE PARK.

Detailed Location:

Ecological: EPHEMERAL STRETCH OF CREEK. SURFACE FLOWS NOT OBSERVED AFTER JULY IN 2003-2006. NO SUITABLE BREEDING HABITAT. RIPARIAN, ROCKY STREAMCOURSE WITH WHITE ALDER, BAY, SYCAMORE, AND BIGLEAF MAPLE.

General: 10 ADULTS AND 31 JUVENILES OBSERVED ON 10 AUG 1992. 1 ADULT CAUGHT AND RELEASED IN 2004. 1 INDIVIDUAL OBSERVED ON 29 JUN 2006.

Owner/Manager: DPR, SCL COUNTY

Occurrence No.	2095	Map Index: 98886	EO Index: 111851	Element Last Seen:	1939-08-05
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1939-08-05
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-07-11

Quad Summary: Watsonville East (3612186), Mt. Madonna (3712116)
County Summary: Santa Clara, Santa Cruz

Lat/Long:	36.99563 / -121.71774	Accuracy:	3/5 mile
UTM:	Zone-10 N4095156 E614099	Elevation (ft):	
PLSS:	T11S, R02E, Sec. 11 (M)	Acres:	0.0

Location: VICINITY OF HECKER PASS, ABOUT 8 AIR MILES WEST OF GILROY.

Detailed Location:

Ecological: ACCORDING TO JENNINGS, RANA BOYLII IS CONSIDERED EXTANT AT THIS SITE.

General: 3 COLLECTED ON 5 AUG 1939.

Owner/Manager: UNKNOWN

<i>Elanus leucurus</i>		Element Code: ABNKC06010
white-tailed kite		
Listing Status:	Federal: None	CNDDB Element Ranks: Global: G5
	State: None	State: S3S4
	Other: BLM_S-Sensitive, CDFW_FP-Fully Protected, IUCN_LC-Least Concern	
Habitat:	General: ROLLING FOOTHILLS AND VALLEY MARGINS WITH SCATTERED OAKS AND RIVER BOTTOMLANDS OR MARSHES NEXT TO DECIDUOUS WOODLAND.	
	Micro: OPEN GRASSLANDS, MEADOWS, OR MARSHES FOR FORAGING CLOSE TO ISOLATED, DENSE-TOPPED TREES FOR NESTING AND PERCHING.	



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Occurrence No.	63	Map Index: 49429	EO Index: 49429	Element Last Seen:	2002-06-14
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2002-06-14
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2002-11-19
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.81804 / -121.73697		Accuracy:	80 meters	
UTM:	Zone-10 N4075431 E612649		Elevation (ft):	20	
PLSS:	T13S, R02E, Sec. 10 (M)		Acres:	0.0	
Location:	0.5 MILE WEST OF ELKHORN ROAD, BETWEEN THE MOUTHS OF STRAWBERRY CANYON AND LONG CANYON, ELKHORN SLOUGH ECO RESERVE.				
Detailed Location:					
Ecological:	NEST TREE IS A COAST LIVE OAK, WITHIN COASTAL OAK WOODLAND, ADJACENT TO WEEDY, ANNUAL GRASSLAND; ESTUARY NEARBY.				
General:	FEMALE OBSERVED SITTING ON NEST, WITH MALES NEARBY, ON 14 JUN 2002.				
Owner/Manager:	DFG-ELKHORN SLOUGH ER				
Occurrence No.	84	Map Index: 62241	EO Index: 62277	Element Last Seen:	1994-05-28
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	1994-05-28
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2005-08-08
Quad Summary:	Gilroy (3712115)				
County Summary:	Santa Clara				
Lat/Long:	37.02526 / -121.61110		Accuracy:	1/5 mile	
UTM:	Zone-10 N4098576 E623540		Elevation (ft):	250	
PLSS:	T10S, R03E, Sec. 35 (M)		Acres:	0.0	
Location:	JUST WEST OF RANCHO HILLS DRIVE, NORTH OF MANTELLI & SOUTH OF LONGMEADOW DR. NORTHWEST OF GILROY.				
Detailed Location:					
Ecological:	OAK SAVANNAH WITH VALLEY, BLUE, COAST LIVE, AND BLACK OAKS.				
General:	ONE ADULT OBSERVED DEFENDING TERRITORY FROM RED-TAILED & RED-SHOULDERED HAWKS. NESTING IS PROBABLE.				
Owner/Manager:	PVT				
Occurrence No.	156	Map Index: 78446	EO Index: 79368	Element Last Seen:	2001-06-20
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2001-06-20
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2010-03-25
Quad Summary:	San Juan Bautista (3612175)				
County Summary:	Monterey				
Lat/Long:	36.78583 / -121.60416		Accuracy:	1/10 mile	
UTM:	Zone-10 N4072023 E624546		Elevation (ft):	502	
PLSS:	T13S, R03E, Sec. 23, SE (M)		Acres:	0.0	
Location:	ABOUT 0.4 MI ESE OF HIDDEN CYN RD AT CRAZY HORSE CYN RD, SALINAS.				
Detailed Location:	SOUTH END OF G. SETTRINI PROPERTY. MAPPED TO VICINITY OF COORDINATES WITHOUT STATED DAUTM.				
Ecological:	HABITAT CONSISTED OF GRASSLAND, COAST LIVE OAK WOODLAND, & MIXED CHAPARRAL. SURROUNDING LAND USED FOR CATTLE GRAZING.				
General:	2 ADULTS AND 1 JUVENILE OBSERVED ON 20 JUN 2001.				
Owner/Manager:	PVT				



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<i>Buteo swainsoni</i>		Element Code: ABNKC19070	
Swainson's hawk			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G5
	State: Threatened		State: S3
	Other: BLM_S-Sensitive, IUCN_LC-Least Concern		
Habitat:	General: BREEDS IN GRASSLANDS WITH SCATTERED TREES, JUNIPER-SAGE FLATS, RIPARIAN AREAS, SAVANNAHS, AND AGRICULTURAL OR RANCH LANDS WITH GROVES OR LINES OF TREES.		
	Micro: REQUIRES ADJACENT SUITABLE FORAGING AREAS SUCH AS GRASSLANDS, OR ALFALFA OR GRAIN FIELDS SUPPORTING RODENT POPULATIONS.		

Occurrence No.	2831	Map Index: B8117	EO Index: 121233	Element Last Seen:	2022-04-17
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2022-04-17
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2022-04-21

Quad Summary:	San Felipe (3612184)				
County Summary:	Santa Clara				
Lat/Long:	36.96959 / -121.41609	Accuracy:	specific area		
UTM:	Zone-10 N4092671 E640991	Elevation (ft):	181		
PLSS:	T11S, R05E, Sec. 15, SW (M)	Acres:	10.0		
Location:	ALONG HWY 152 (PACHECO PASS HWY) ABOUT 0.2 MILES ESE OF SAN FELIPE RD/DUNNE ST, COMMUNITY OF SAN FELIPE.				
Detailed Location:	MAPPED TO PROVIDED COORDINATES AS A 2-PART POLYGON FOR 2018 NEST ON NORTH SIDE OF HIGHWAY AND 2019 - 2022 NEST RIGHT ALONG SOUTH SIDE OF HIGHWAY.				
Ecological:	NEST IN VALLEY OAK. SURROUNDING AREA DESCRIBED AS OAK SAVANNA NEAR FARM FIELDS (INCLUDING VINEYARDS) ADJACENT TO BUSY HIGHWAY WITH SEASONAL DISCING/MOWING IN THE AREA.				
General:	2 ADULTS SEEN PERCHING & FOOD EXCHANGE ON 3 AUG 2018; PRESUMED ON TERRITORY. NEST FLEDGED 1 YOUNG IN 2019. NEST FLEDGED 2 YOUNG IN 2020. NEST FLEDGED 3 YOUNG IN 2021. 2 ADULTS SEEN AT NEST, POSSIBLY INCUBATING, ON 17 APR 2022.				
Owner/Manager:	PVT				

Occurrence No.	2832	Map Index: B8118	EO Index: 121234	Element Last Seen:	2020-06-12
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2020-06-12
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2022-04-21

Quad Summary:	San Felipe (3612184)				
County Summary:	San Benito				
Lat/Long:	36.9825 / -121.45391	Accuracy:	80 meters		
UTM:	Zone-10 N4094048 E637601	Elevation (ft):	145		
PLSS:	T11S, R05E, Sec. 18, NE (M)	Acres:	5.0		
Location:	E SIDE OF SAN FELIPE LAKE (SOAP LAKE) AND S OF HWY 152, ABOUT 2 MILES WNW OF SAN FELIPE RD AT HWY 152, W OF SAN FELIPE.				
Detailed Location:	MAPPED TO PROVIDED COORDINATES.				
Ecological:	NEST TREE APPEARS TO BE A WILLOW, IN A LINE A WILLOWS NEAR ORTEGA CREEK.				
General:	2 ADULTS NEST BUILDING IN APR 2020. 1 ADULT (PRESUMED MALE) SEEN PERCHED IN NEST TREE ON 12 JUN 2020; NEST SUCCESS UNKNOWN.				
Owner/Manager:	PVT				



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Occurrence No.	2833	Map Index: B8119	EO Index: 121235	Element Last Seen:	2020-07-26
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2020-07-26
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2022-04-21

Quad Summary:	San Felipe (3612184)				
County Summary:	San Benito				

Lat/Long:	36.90423 / -121.39906	Accuracy:	3/5 mile		
UTM:	Zone-10 N4085445 E642629	Elevation (ft):	200		
PLSS:	T12S, R05E, Sec. 11, W (M)	Acres:	776.0		

Location:	VICINITY OF SANTA ANA CREEK JUST SOUTH OF HWY 156, ABOUT 5.75 NORTH OF CENTRAL HOLLISTER.				
Detailed Location:	TERRITORY. MAPPED NON-SPECIFICALLY WITH RESPECT TO VARIOUS COORDINATES REPRESENTING FORAGING, PREY EXCHANGE, COURTSHIP DISPLAYS, AND POSSIBLE CHICK FEEDING AND RECENT FLEDGLING.				
Ecological:	NEEDS FIELD INVESTIGATION TO DETERMINE NEST SITE. SUSPECTED NEST TREE ALONG SANTA ANA CREEK SSE OF HWY 156 AT SAN FELIPE ROAD.				
General:	ANECDOTALLY NOTED IN AREA DURING 2019 BREEDING SEASON. ADULT COURTSHIP DISPLAY, 6 MAY 2020. PREY EXCHANGE BETWEEN ADULTS & POSSIBLE CHICK FEEDING FORAY TO TREE ALONG SANTA ANA CRK, 29 MAY 2020. 2 ADULTS, 1 JUV FORAGING, 26 JUL 2020.				
Owner/Manager:	PVT				



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Aquila chrysaetos		Element Code: ABNKC22010	
golden eagle			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G5
	State: None		State: S3
Habitat:	Other: BLM_S-Sensitive, CDF_S-Sensitive, CDFW_FP-Fully Protected, CDFW_WL-Watch List, IUCN_LC-Least Concern		
	General: ROLLING FOOTHILLS, MOUNTAIN AREAS, SAGE-JUNIPER FLATS, AND DESERT.		
	Micro: CLIFF-WALLED CANYONS PROVIDE NESTING HABITAT IN MOST PARTS OF RANGE; ALSO, LARGE TREES IN OPEN AREAS.		

Occurrence No.	134	Map Index:	73780	EO Index:	74751	Element Last Seen:	2001-07-18
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:			2001-07-18
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:			2009-03-04

Quad Summary: San Juan Bautista (3612175)
County Summary: Monterey

Lat/Long:	36.79002 / -121.60998	Accuracy:	80 meters
UTM:	Zone-10 N4072480 E624020	Elevation (ft):	300
PLSS:	T13S, R03E, Sec. 23, NW (M)	Acres:	0.0

Location: CRAZY HORSE CANYON, 1.65 MI NNW OF SUGARLOAF PEAK.
Detailed Location:
Ecological: RANGELAND.
General: 1 ADULT OBSERVED NEAR A NEST SITE.
Owner/Manager: SAN JUAN RANCH

Occurrence No.	328	Map Index:	A8667	EO Index:	110460	Element Last Seen:	1967-04-XX
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:			1967-04-XX
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:			2018-03-27

Quad Summary: Mt. Madonna (3712116), Loma Prieta (3712117), Morgan Hill (3712126), Santa Teresa Hills (3712127)
County Summary: Santa Clara

Lat/Long:	37.13565 / -121.74238	Accuracy:	1 mile
UTM:	Zone-10 N4110661 E611701	Elevation (ft):	976
PLSS:	T09S, R02E, Sec. 22 (M)	Acres:	1987.0

Location: "BECHTEL RANCH," VICINITY OF UVAS ROAD WEST OF MORGAN HILL AND ABOUT 4 MILES SOUTH OF SANTA TERESA COUNTY PARK.
Detailed Location: DFW TERRITORY CA-SC-02-GE. EXACT LOCATION OF 1967 NEST UNKNOWN, ATTEMPTS TO RELOCATE NEST IN SUBSEQUENT YEARS WERE UNSUCCESSFUL.
Ecological: OAK WOODLAND.
General: PAIR NESTED ON BECHTEL RANCH IN 1967. ACTIVE NEST DETECTED ON UNKNOWN DATE, LIKELY PRIOR TO 1970. NEST NOT FOUND IN 1970. INACTIVE IN 1971. ADULT BIRDS BUT NO NESTING OBSERVED IN 1972. LONE ADULT OBSERVED IN 1974.
Owner/Manager: PVT



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<i>Falco columbarius</i>		Element Code: ABNKD06030	
merlin			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G5
	State: None		State: S3S4
	Other: CDFW_WL-Watch List, IUCN_LC-Least Concern		
Habitat:	General: SEACOAST, TIDAL ESTUARIES, OPEN WOODLANDS, SAVANNAHS, EDGES OF GRASSLANDS AND DESERTS, FARMS AND RANCHES.		
	Micro: CLUMPS OF TREES OR WINDBREAKS ARE REQUIRED FOR ROOSTING IN OPEN COUNTRY.		

Occurrence No.	14	Map Index:	71847	EO Index:	72722	Element Last Seen:	2004-02-02
Occ. Rank:	Excellent	Presence:	Presumed Extant	Site Last Seen:		2004-02-02	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2008-07-30	

Quad Summary: Hollister (3612174)
County Summary: San Benito

Lat/Long:	36.76419 / -121.40760	Accuracy:	80 meters
UTM:	Zone-10 N4069896 E642126	Elevation (ft):	820
PLSS:	T13S, R05E, Sec. 34, NE (M)	Acres:	0.0

Location: SAN ANDREAS RIFT ZONE, BONANZA GULCH, ALONG CIENEGA ROAD, HOLLISTER.
Detailed Location: HOLLISTER HILLS SVRA CAMPGROUND. MAPPED TO PROVIDED COORDINATES.
Ecological:
General: 1 WINTING ADULT OBSERVED ON 2 FEB 2004.
Owner/Manager: DPR-HOLLISTER HILLS SVRA



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<i>Rallus obsoletus obsoletus</i>		Element Code: ABNME05011	
California Ridgway's rail			
Listing Status:	Federal: Endangered	CNDDDB Element Ranks:	Global: G3T1
	State: Endangered		State: S1
	Other: CDFW_FP-Fully Protected, NABCI_RWL-Red Watch List		
Habitat:	General: SALT WATER AND BRACKISH MARSHES TRAVERSED BY TIDAL SLOUGHS IN THE VICINITY OF SAN FRANCISCO BAY.		
	Micro: ASSOCIATED WITH ABUNDANT GROWTHS OF PICKLEWEED, BUT FEEDS AWAY FROM COVER ON INVERTEBRATES FROM MUD-BOTTOMED SLOUGHS.		

Occurrence No.	53	Map Index:	33858	EO Index:	25842	Element Last Seen:	1978-03-XX
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		1978-03-XX	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2005-01-31	

Quad Summary: Prunedale (3612176), Moss Landing (3612177)
County Summary: Monterey

Lat/Long:	36.81742 / -121.74310	Accuracy:	non-specific area
UTM:	Zone-10 N4075356 E612102	Elevation (ft):	
PLSS:	T13S, R02E, Sec. 10, NW (M)	Acres:	1668.4

Location: ELKHORN SLOUGH.
Detailed Location: BETWEEN KIRBY PARK AND HWY 1.
Ecological:
General: SEVERAL OBSERVED 1966-1969, NORTH OF KIRBY PARK (INCLUDES ADULTS WITH YOUNG). NONE NORTH OF KIRBY PARK IN 1972. RESIDENT POPULATION ESTIMATED TO BE 14 IN 1972. NONE OBS AT HIGH TIDE DURNG DEC '77 AND APR '78. 1 BIRD OBS IN MARCH 1978.
Owner/Manager: UNKNOWN

<i>Athene cunicularia</i>		Element Code: ABNSB10010	
burrowing owl			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G4
	State: None		State: S3
	Other: BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern		
Habitat:	General: OPEN, DRY ANNUAL OR PERENNIAL GRASSLANDS, DESERTS, AND SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.		
	Micro: SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.		



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Occurrence No.	69	Map Index:	10589	EO Index:	25451	Element Last Seen:	1983-02-11
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		1983-02-11	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2007-07-12	
Quad Summary:	Prunedale (3612176), Moss Landing (3612177)						
County Summary:	Monterey						
Lat/Long:	36.79641 / -121.75042			Accuracy:	non-specific area		
UTM:	Zone-10 N4073017 E611480			Elevation (ft):	60		
PLSS:	T13S, R02E, Sec. 16 (M)			Acres:	233.0		
Location:	DOLAN ROAD, ABOUT 2 MILES NORTH OF CASTROVILLE.						
Detailed Location:	UNKNOWN WHERE SEEN ALONG ROAD, SO ENTIRE ROAD MAPPED AT CNDDDB.						
Ecological:							
General:	8 IN ONE GROUP OBSERVED ON 11 FEB 1983; OWLS ARE FREQUENTLY OBSERVED HERE, BUT PREVIOUSLY NEVER MORE THAN 4 AT ONE TIME.						
Owner/Manager:	UNKNOWN						
Occurrence No.	277	Map Index:	39735	EO Index:	34737	Element Last Seen:	1991-02-12
Occ. Rank:	Poor	Presence:	Presumed Extant	Site Last Seen:		1991-02-12	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		1998-09-17	
Quad Summary:	San Felipe (3612184)						
County Summary:	San Benito						
Lat/Long:	36.90097 / -121.45240			Accuracy:	80 meters		
UTM:	Zone-10 N4085005 E637882			Elevation (ft):	200		
PLSS:	T12S, R05E, Sec. 08 (M)			Acres:	0.0		
Location:	0.1 MILE NW OF THE INTERSECTION OF SPRR TRACKS AND HUDNER LANE, 2 MILES WNW OF HOLLISTER AIRPORT.						
Detailed Location:	BURROW IS LOCATED IN A BERM ALONG THE RAILROAD TRACKS.						
Ecological:	BERM WHERE BURROW IS LOCATED IS SPARSELY VEGETATED; ADJACENT TO CULTIVATED ROW CROPS. MOST OF SURROUNDING AREA IS DOMINATED BY CULTIVATED AGRICULTURAL FIELDS.						
General:	1 ADULT OBSERVED AT THE BURROW SITE ON 12 FEBRUARY 1991, AND AGAIN ON 17 FEBRUARY 1991.						
Owner/Manager:	PVT-SPRR						
Occurrence No.	278	Map Index:	39736	EO Index:	34738	Element Last Seen:	1992-09-XX
Occ. Rank:	None	Presence:	Extirpated	Site Last Seen:		2007-06-21	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2008-03-05	
Quad Summary:	San Felipe (3612184), Chittenden (3612185)						
County Summary:	San Benito						
Lat/Long:	36.92410 / -121.50141			Accuracy:	80 meters		
UTM:	Zone-10 N4087501 E633475			Elevation (ft):	760		
PLSS:	T12S, R04E, Sec. 02 (M)			Acres:	0.0		
Location:	1.75 MILES SSE OF HWY 25 CROSSING OVER THE PAJARO RIVER, SSE OF GILROY.						
Detailed Location:	BURROW SITE FOUND ALONG THE DRAINAGE DITCH BETWEEN THE CULTIVATED FIELD AND IRRIGATED PASTURE.						
Ecological:	BURROW SITE IS SURROUNDED BY AGRICULTURAL CROPS (HAY) AND GRAZED FIELDS.						
General:	BURROW SITE APPEARED ACTIVE IN SEPTEMBER 1992. BURROW HABITAT AT THIS SITE IS DESTROYED FROM AG DISKING UP THE EDGE OF THE IRRIGATION DITCH & TO THE ROAD, 21 JUN 2007.						
Owner/Manager:	PVT						



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Occurrence No.	279	Map Index:	39737	EO Index:	34739	Element Last Seen:	1994-03-10
Occ. Rank:	None	Presence:	Extirpated	Site Last Seen:			2007-06-21
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:			2008-03-05

Quad Summary: Chittenden (3612185)

County Summary: San Benito

Lat/Long:	36.93144 / -121.51345	Accuracy:	80 meters
UTM:	Zone-10 N4088298 E632390	Elevation (ft):	760
PLSS:	T11S, R04E, Sec. 34 (M)	Acres:	0.0

Location: 1.2 MILES SOUTH OF HWY 25 CROSSING OVER THE PAJARO RIVER, SSE OF GILROY.

Detailed Location: BURROW IS LOCATED ALONG THE WEST SIDE OF THE ROAD.

Ecological: BURROW SITE IS SURROUNDED BY AGRICULTURAL CROPS (HAY) AND GRAZED FIELDS.

General: 1 ADULT BIRD OBSERVED USING THE BURROW ON 1 MARCH 1994 AND AGAIN ON 10 MARCH 1994, BUT NEVER SEEN AFTER THAT. BURROW HABITAT AT THIS SITE IS DESTROYED FROM AG DISKING UP THE THE EDGE OF THE IRRIGATION DITCH AND TO THE ROAD, 21 JUN 2007.

Owner/Manager: PVT

Occurrence No.	280	Map Index:	39739	EO Index:	34741	Element Last Seen:	2009-11-30
Occ. Rank:	Fair	Presence:	Presumed Extant	Site Last Seen:			2009-11-30
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:			2009-12-15

Quad Summary: Gilroy (3712115), Mt. Madonna (3712116)

County Summary: Santa Clara

Lat/Long:	37.03436 / -121.62945	Accuracy:	specific area
UTM:	Zone-10 N4099563 E621894	Elevation (ft):	320
PLSS:	T10S, R03E, Sec. 27 (M)	Acres:	44.0

Location: VICINITY OF THE SOUTH END OF JEAN ELLEN DR AND, UNDEVELOPED AREA TO THE WEST, APPROXIMATELY 3 MILES WNW OF GILROY.

Detailed Location: CENTER OF SEC 27. IN 1993 THE LOCATION WAS STATED AS "VASQUEZ RANCH" & SPECIFICALLY OBSERVED ABOUT 570 FT EAST OF SOUTH END JEAN ELLEN DR. IN 2009 THE LOCATION WAS STATED AS "LUCKY DAY RANCH GROUP" & OBSERVED THROUGHOUT GRAPHIC FEATURE.

Ecological: HABITAT CONSISTED OF GRAZED GRASSLAND WITH ROCK OUTCROPPINGS AND "A HEALTHY GROUND SQUIRREL POPULATION." OTHER SPECIES INCLUDE AMERICAN BADGER (2ND HAND), LOGGERHEAD SHRIKE, YELLOW-BILLED MAGPIE, SAY'S PHOEBE, GOLDEN EAGLE, & AM. KESTREL.

General: 2 ADULTS OBSERVED AT A BURROW SITE ON 16 JAN 1993. 5 INDIVIDUALS WERE OBSERVED AT BURROWS AND FORAGING ON 30 NOV 2009.

Owner/Manager: PVT



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Occurrence No.	281	Map Index: 39740	EO Index: 34742	Element Last Seen:	1992-12-24
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	1992-12-24
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	1998-09-17
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.05335 / -121.62963		Accuracy:	80 meters	
UTM:	Zone-10 N4101668 E621848		Elevation (ft):	600	
PLSS:	T10S, R03E, Sec. 22 (M)		Acres:	0.0	
Location:	LUCKY DAY RANCH, 0.6 MILE NORTH OF DAY ROAD AND 0.3 MILE SE OF LIONS PEAK, SOUTH OF MORGAN HILL.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF NON-NATIVE GRASSLAND, DOMINATED BY FILAREE, FOXTAIL, AVENA, ETC, ON A 15-DEGREE SOUTH SLOPE.				
General:	1 ADULT OBSERVED AT THE BURROW SITE ON 24 DECEMBER 1992.				
Owner/Manager:	PVT				
Occurrence No.	435	Map Index: 46635	EO Index: 47125	Element Last Seen:	2001-02-02
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2001-02-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2002-01-30
Quad Summary:	Chittenden (3612185)				
County Summary:	San Benito				
Lat/Long:	36.88725 / -121.54035		Accuracy:	2/5 mile	
UTM:	Zone-10 N4083359 E630069		Elevation (ft):	242	
PLSS:	T12S, R04E, Sec. 16 (M)		Acres:	0.0	
Location:	ABOUT 1 MILE EAST OF THE JUNCTION OF HIGHWAY 101 AND THE SAN BENITO RIVER, EAST OF THE SAN JUAN VALLEY.				
Detailed Location:	SITE IS LOCATED ON THE O'CONNELL RANCH, 0.25 MILE EAST ON BETABEL ROAD, OFF HIGHWAY 101.				
Ecological:	HABITAT CONSISTS OF GRAZED OAK WOODLAND/GRASSLAND, INTERSPESED BY SEASONAL ARROYOS WHICH DRAIN INTO THE SAN BENITO RIVER ON THE SOUTH BORDER OF THE SITE. THOUSANDS OF GROUND SQUIRREL BURROWS ARE PRESENT.				
General:	1 ADULT OBSERVED ON 1 FEB 2001, AND A SECOND ADULT OBSERVED ON 2 FEB 2001, ALONG WITH MANY BURROWS.				
Owner/Manager:	PVT				
Occurrence No.	622	Map Index: 51854	EO Index: 51854	Element Last Seen:	2002-08-08
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2002-08-08
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2003-07-28
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.11100 / -121.65484		Accuracy:	80 meters	
UTM:	Zone-10 N4108033 E619515		Elevation (ft):	440	
PLSS:	T09S, R03E, Sec. 33, NW (M)		Acres:	0.0	
Location:	0.4 MILE NNE OF THE INTERSECTION OF EDMUNDSON AVENUE AND SUNNYSIDE AVENUE, MORGAN HILL.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF GRAZED NON-NATIVE GRASSLAND.				
General:	6 BURROWS WITH EVIDENCE OF RECENT BURROWING OWL USE (FEATHERS, AND WHITEWASH) OBSERVED ON 8 AUG 2002; PRESUMABLY, THESE BURROWS WERE USED FOR BREEDING IN 2002.				
Owner/Manager:	UNKNOWN				



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Occurrence No.	648	Map Index: 53662	EO Index: 53662	Element Last Seen:	2003-07-03
Occ. Rank:	Poor		Presence: Presumed Extant	Site Last Seen:	2008-07-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2009-09-28
Quad Summary:	San Felipe (3612184)				
County Summary:	San Benito				
Lat/Long:	36.93397 / -121.44131		Accuracy:	80 meters	
UTM:	Zone-10 N4088682 E638810		Elevation (ft):	160	
PLSS:	T11S, R05E, Sec. 32, E (M)		Acres:	0.0	
Location:	0.9 MILE ESE OF THE INTERSECTION OF SHORE RD & FRAZIER LAKE RD, JUST W OF TEQUISQUITA SLOUGH, 7 MILES NW OF HOLLISTER.				
Detailed Location:	SITE AT NE END OF DIRT ROAD ON EAST SIDE OF FRAZIER LAKE RD. MAPPED TO COORDINATES PROVIDED FROM 2008.				
Ecological:	SPARSE GRASSES (BERMUDA), MIXED HERBACEOUS VEGETATION, & SCATTERED SHRUBS (BACCHARIS SP) LOCATED IN A HABITAT PATCH BETWEEN A CULTIVATED AG FIELD, A GAS PIPELINE R-O-W, & WETLANDS. SITE QUALITY CONSIDERED "GOOD" IN 2003, & "POOR" IN 2008.				
General:	3 ADULTS & 4 JUVENILES OBSERVED ON 4 JUL 2003; 1 FAMILY GROUP WITH JUVENILES 5+ WEEKS-OLD & FULLY CAPABLE OF FLIGHT. SITE REVISITED ON 1 JUL 2008 & NO OWLS OBSERVED; ABSENCE OF GRAZING HAS REDUCED HABITAT SUITABILITY COMPARED TO 2003.				
Owner/Manager:	UNKNOWN				
Occurrence No.	773	Map Index: 64210	EO Index: 64305	Element Last Seen:	2009-06-17
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2009-06-17
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2009-12-23
Quad Summary:	San Felipe (3612184)				
County Summary:	San Benito				
Lat/Long:	36.94436 / -121.44911		Accuracy:	specific area	
UTM:	Zone-10 N4089823 E638096		Elevation (ft):	160	
PLSS:	T11S, R05E, Sec. 29, SW (M)		Acres:	11.0	
Location:	ALONG WEST SIDE OF LAKE RD WEST TO PRIVATE ROAD (PIPELINE), ABOUT 0.2 MI NORTH OF SHORE RD AND 8 MI SOUTHEAST OF GILROY.				
Detailed Location:	BURROWS WITHIN 50 FEET OF PRIVATE ROAD (LIKELY THE DIRT DOUBLE TRACK IN AERIALS & PIPELINE ON TOPO). OCCURRENCE MAPPED TO LOCATION ON MAP (2000) AND DISTANCE (525 FT WEST) FROM COORDINATES ON LAKE RD (2009).				
Ecological:	HABITAT CONSISTS OF LEVEL ANNUAL GRASSLAND THAT IS CATTLE GRAZED. NUMEROUS GROUND SQUIRREL COLONIES IN AREA. SURROUNDING LAND CONSISTED OF: GRAZING, AGRICULTURE, AND LOW DENSITY RURAL HOUSING.				
General:	1 ADULT AND 7 JUVENILES OBSERVED ON 6 JUL 2000; SOME JUV SEEN EMERGING FROM 2 BURROWS, OTHERS ABOVE GROUND. 2 ADULTS OBSERVED FROM ROADWAY ON 17 JUN 2009; UNABLE TO DETERMINE BURROWS & JUVENILES DUE TO PRIVATE PROPERTY.				
Owner/Manager:	PVT				



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Occurrence No.	1030	Map Index: 70994	EO Index: 71912	Element Last Seen:	2006-02-02
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2006-02-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2008-03-05
Quad Summary:	Hollister (3612174)				
County Summary:	San Benito				
Lat/Long:	36.81947 / -121.46389		Accuracy:	80 meters	
UTM:	Zone-10 N4075947 E637003		Elevation (ft):	370	
PLSS:	T13S, R05E, Sec. 07 (M)		Acres:	0.0	
Location:	1.65 MILES SSE OF THE INTERSECTION OF FLINT ROAD AND HIGHWAY 156, SAN JUAN OAKS GOLF COURSE.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF UNGRAZED ANNUAL GRASSLAND WITH RUDERAL PATCHES.				
General:	1 OWL OBS BETWEEN 31 JAN & 2 FEB USING GROUND SQUIRREL BURROW ADJACENT TO DIRT ACCESS ROAD & 1 BURROW UNDER A SMALL OAK, AT EDGE OF GOLF COURSE FAIRWAY. BIRD NOT SEEN AFTER 2 FEB 2006.				
Owner/Manager:	PVT-SAN JUAN OAKS GOLF COURSE				
Occurrence No.	1223	Map Index: 76432	EO Index: 77388	Element Last Seen:	2009-06-17
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2009-06-17
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2009-09-08
Quad Summary:	San Felipe (3612184)				
County Summary:	San Benito				
Lat/Long:	36.97298 / -121.46535		Accuracy:	specific area	
UTM:	Zone-10 N4092976 E636599		Elevation (ft):	145	
PLSS:	T11S, R05E, Sec. 18, SW (M)		Acres:	9.0	
Location:	ABOUT 0.5 MILE SSW OF SAN FELIPE LAKE ALONG DIRT ACCESS ROAD EAST OF LAKE RD, 2.5 MI WEST OF SAN FELIPE.				
Detailed Location:	MAPPED TO PROVIDED COORDINATES JUST EAST OF LAKE RD AND 0.7 MI SOUTH OF BM160 ALONG PACHECO PASS HWY (SR 152).				
Ecological:	GRAZED GRASSLAND.				
General:	ONE ADULT AT BURROW ON 18 JUL 2008. TWO ADULT PAIRS (ONE WITH AT LEAST 3 JUV) OBSERVED ON 17 JUN 2009.				
Owner/Manager:	PVT				
Occurrence No.	1224	Map Index: 76438	EO Index: 77391	Element Last Seen:	2008-07-18
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2008-07-18
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2009-09-08
Quad Summary:	San Felipe (3612184)				
County Summary:	San Benito				
Lat/Long:	36.96802 / -121.46677		Accuracy:	80 meters	
UTM:	Zone-10 N4092424 E636482		Elevation (ft):	145	
PLSS:	T11S, R05E, Sec. 19, NW (M)		Acres:	0.0	
Location:	JUST WEST OF LAKE RD ABOUT 1 MILE SOUTH OF BM160 ALONG PACHECO PASS HWY (SR 152), 2.6 MILES WEST OF SAN FELIPE.				
Detailed Location:	MAPPED TO PROVIDED COORDINATES.				
Ecological:	GRAZED GRASSLAND LESS THAN 4 INCHES TALL.				
General:	TWO ADULTS OBSERVED ON PRIVATE LAND (UNABLE TO CONFIRM EXACT BURROW LOCATION) ON TWO VISITS, 1 & 18 JUL 2008.				
Owner/Manager:	PVT				



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Occurrence No.	1225	Map Index:	76441	EO Index:	77393	Element Last Seen:	2008-06-27
Occ. Rank:	Excellent	Presence:	Presumed Extant	Site Last Seen:		2008-06-27	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2009-09-09	
Quad Summary:	San Felipe (3612184)						
County Summary:	San Benito						
Lat/Long:	36.94943 / -121.45107			Accuracy:	80 meters		
UTM:	Zone-10 N4090384 E637912			Elevation (ft):	155		
PLSS:	T11S, R05E, Sec. 29, NW (M)			Acres:	0.0		
Location:	ALONG LAKE RD 0.5 MI NNW OF SHORE RD, JUST WEST OF TEQUISQUITA SLOUGH AND 2.2 MI WNW OF DUNNEVILLE.						
Detailed Location:	NEST BURROW ABOUT 130 FEET WEST OF LAKE RD (COORDINATES ALONG ROAD PROVIDED); MAPPED AS BEST AS POSSIBLE TO TRUE LOCATION.						
Ecological:	GRAZED GRASSLAND LESS THAN 4 INCHES TALL.						
General:	TWO ADULTS AND 3 JUVENILES OBSERVED ON 27 JUN 2008.						
Owner/Manager:	UNKNOWN						

<i>Riparia riparia</i>	Element Code: ABPAU08010						
bank swallow							
Listing Status:	Federal:	None	CNDDDB Element Ranks:	Global:	G5		
	State:	Threatened		State:	S2		
	Other:	BLM_S-Sensitive, IUCN_LC-Least Concern					
Habitat:	General:	COLONIAL NESTER; NESTS PRIMARILY IN RIPARIAN AND OTHER LOWLAND HABITATS WEST OF THE DESERT.					
	Micro:	REQUIRES VERTICAL BANKS/CLIFFS WITH FINE-TEXTURED/SANDY SOILS NEAR STREAMS, RIVERS, LAKES, OCEAN TO DIG NESTING HOLE.					

Occurrence No.	121	Map Index:	10978	EO Index:	25174	Element Last Seen:	1931-06-06
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		1931-06-06	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2011-11-23	
Quad Summary:	Chittenden (3612185)						
County Summary:	San Benito, Santa Clara						
Lat/Long:	36.89741 / -121.56320			Accuracy:	1 mile		
UTM:	Zone-10 N4084456 E628015			Elevation (ft):	125		
PLSS:	T12S, R04E, Sec. 07 (M)			Acres:	0.0		
Location:	BETABEL, SANTA CLARA COUNTY.						
Detailed Location:	COLLECTED FROM NEST IN "BANK OF RAILROAD CUT."						
Ecological:							
General:	TWO EGG SETS COLLECTED BY W.E. UNGLISH ON 28 MAY AND 6 JUN 1931. EGG SETS LOCATED AT WFVZ.						
Owner/Manager:	UNKNOWN						



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Occurrence No.	176	Map Index:	87730	EO Index:	88694	Element Last Seen:	1962-XX-XX
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		Record Last Updated:	2012-12-21
Occ. Type:	Natural/Native occurrence		Trend:	Unknown			

Quad Summary: Watsonville East (3612186), Watsonville West (3612187)

County Summary: Monterey, Santa Cruz

Lat/Long:	36.91050 / -121.75519	Accuracy:	1 mile
UTM:	Zone-10 N4085667 E610890	Elevation (ft):	30
PLSS:	T12S, R02E, Sec. 04 (M)	Acres:	0.0

Location: WATSONVILLE.

Detailed Location: LOCATION ONLY STATED "WATSONVILLE." MAPPED TO WATSONVILLE POST OFFICE. EXACT LOCATION UNKNOWN. COLONY MAY HAVE BEEN LOCATED ALONG THE PAJARO RIVER OR OTHER CREEK/SLOUGH IN AREA. SINCE COLONY ID WAS #SZ02, PROBABLY SANTA CRUZ CO SIDE.

Ecological:

General: DFG COLONY #SZ02. COLONY NOTED FOR SUMMER OF 1954. COLONY WITH 25 BIRDS NOTED FOR SUMMER OF 1962. FURTHER RESEARCH/INVESTIGATION NEEDED TO DETERMINE IF EXTANT OR EXTIRPATED.

Owner/Manager: UNKNOWN

Occurrence No.	290	Map Index:	84349	EO Index:	85380	Element Last Seen:	1922-06-03
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		Record Last Updated:	2011-11-23
Occ. Type:	Natural/Native occurrence		Trend:	Unknown			

Quad Summary: Hollister (3612174)

County Summary: San Benito

Lat/Long:	36.84376 / -121.42390	Accuracy:	1 mile
UTM:	Zone-10 N4078700 E640526	Elevation (ft):	270
PLSS:	T12S, R05E, Sec. 33 (M)	Acres:	0.0

Location: SAN BENITO RIVER, NEAR HOLLISTER.

Detailed Location: LOCATION STATED AS "SAN BENITO RIVER; HOLLISTER; NEAR." EXACT LOCATION UNKNOWN; MAPPED TO THE AREA OF THE SAN BENITO RIVER NEAR HOLLISTER.

Ecological:

General: SIX EGG SETS COLLECTED ON 20 MAY 1922. FOUR EGG SETS COLLECTED ON 3 JUN 1922. RESEARCH NEEDED.

Owner/Manager: UNKNOWN

<i>Vireo bellii pusillus</i>		Element Code: ABPBW01114
least Bell's vireo		
Listing Status:	Federal: Endangered	CNDDB Element Ranks: Global: G5T2
	State: Endangered	State: S2
Other:	IUCN_NT-Near Threatened, NABCI_YWL-Yellow Watch List	
Habitat:	General: SUMMER RESIDENT OF SOUTHERN CALIFORNIA IN LOW RIPARIAN IN VICINITY OF WATER OR IN DRY RIVER BOTTOMS; BELOW 2000 FT.	
	Micro: NESTS PLACED ALONG MARGINS OF BUSHES OR ON TWIGS PROJECTING INTO PATHWAYS, USUALLY WILLOW, BACCHARIS, MESQUITE.	



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Occurrence No.	198	Map Index: 44352	EO Index: 44352	Element Last Seen:	2001-05-18
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2001-05-18
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2002-01-23

Quad Summary: Chittenden (3612185), Gilroy (3712115)

County Summary: San Benito, Santa Clara

Lat/Long:	36.98371 / -121.52283	Accuracy:	non-specific area
UTM:	Zone-10 N4094085 E631465	Elevation (ft):	170
PLSS:	T11S, R04E, Sec. 10 (M)	Acres:	217.3

Location: LLAGAS CREEK, FROM HIGHWAY 152 TO THE PAJARO RIVER CONFLUENCE, EAST OF GILROY.

Detailed Location: DATA NOT SPECIFIC AS TO WHERE THE BIRDS WERE SEEN, SO ENTIRE REACH WAS MAPPED.

Ecological: HABITAT CONSISTS OF DENSE, MULTI-STORY VALLEY FOOTHILL RIPARIAN, DOMINATED BY WILLOWS.

General: 1-2 OBSERVED DURING 9-13 JUN 1997 SURVEY. WEEKLY SITE VISITS MADE, FROM 17 MAY-10 JUL 2001; 3 ADULTS OBSERVED ON 17-18 MAY 2001.

Owner/Manager: SANTA CLARA VALLEY WATER DIST

Occurrence No.	503	Map Index: 91503	EO Index: 92581	Element Last Seen:	2001-06-12
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2001-06-12
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2014-02-10

Quad Summary: San Juan Bautista (3612175)

County Summary: Monterey

Lat/Long:	36.83000 / -121.61999	Accuracy:	1/5 mile
UTM:	Zone-10 N4076902 E623063	Elevation (ft):	630
PLSS:	T13S, R03E, Sec. 03, SE (M)	Acres:	0.0

Location: ABOUT 1.1 MILES NE OF HWY 101 AT CRAZY HORSE CANYON RD, 4.7 MILES W OF SAN JUAN BAUTISTA, LOS CARNEROS.

Detailed Location: MAPPED GENERALLY TO PROVIDED COORDINATES. NO DATUM WAS PROVIDED FOR COORDINATES. DETECTION WAS MADE ABOUT 0.25 MILE N OF NEAREST DRAINAGE (UNNAMED) IN UPLAND HABITAT. LOCATION AT THE WESTERN EDGE OF EXPECTED RANGE.

Ecological: HABITAT WAS RIPARIAN FOREST DOMINATED BY WILLOWS AND SURROUNDED BY GRASSLAND, CHAPARRAL, AND COAST LIVE OAK WOODLAND. COOPER'S HAWK, YELLOW WARBLER, AND CALIFORNIA RED-LEGGED FROG ALSO DETECTED IN THE VICINITY.

General: 2 BREEDING ADULTS AND 1 JUVENILE OBSERVED MULTIPLE TIMES ON 12 JUN 2001.

Owner/Manager: PVT



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Occurrence No.	504	Map Index:	91508	EO Index:	92584	Element Last Seen:	1932-04-29
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		1932-04-29	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2014-02-18	
Quad Summary:	Chittenden (3612185)						
County Summary:	San Benito, Santa Clara						
Lat/Long:	36.92240 / -121.54299		Accuracy:	1 mile			
UTM:	Zone-10 N4087256 E629774		Elevation (ft):	120			
PLSS:	T12S, R04E, Sec. 04 (M)		Acres:	0.0			
Location:	SARGENT, PAJARO RIVER, NEAR HWY 101 INTERSECTION, ABOUT 5.3 MILES S OF GILROY, SE END OF SANTA CRUZ MOUNTAINS.						
Detailed Location:	MAPPED GENERALLY TO PROVIDED LOCATION DESCRIPTION. WFVZ EGG COLLECTION STATED AS "PAJARO RIVER, GILROY." CONDOR ARTICLE STATED "...TAKEN NEAR SARGENT, SANTA CLARA COUNTY..."						
Ecological:	NEST CONSTRUCTED IN DENSE WILLOW THICKET ABOUT 18 INCHES ABOVE GROUND. NEST MATERIALS INCLUDED LIGHT-COLORED BLADES OF GRASS AND PLANT WITH FINE PIECES OF FIBRE.						
General:	EGG SET CONSISTING OF 4 EGGS COLLECTED (WFVZ #31088) ON 19 OR 29 APR 1932 BY W.E. UNGLISH; EGG INCUBATION DESCRIBED AS "HEAVY."						
Owner/Manager:	UNKNOWN						
<i>Agelaius tricolor</i> Element Code: ABPBXB0020							
tricolored blackbird							
Listing Status:	Federal:	None		CNDDB Element Ranks:	Global:	G1G2	
	State:	Threatened			State:	S1S2	
Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_EN-Endangered, NABCI_RWL-Red Watch List, USFWS_BCC-Birds of Conservation Concern						
Habitat:	General:	HIGHLY COLONIAL SPECIES, MOST NUMEROUS IN CENTRAL VALLEY AND VICINITY. LARGELY ENDEMIC TO CALIFORNIA.					
	Micro:	REQUIRES OPEN WATER, PROTECTED NESTING SUBSTRATE, AND FORAGING AREA WITH INSECT PREY WITHIN A FEW KM OF THE COLONY.					
Occurrence No.	169	Map Index:	10980	EO Index:	24673	Element Last Seen:	1989-04-15
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		2000-04-22	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2016-11-01	
Quad Summary:	Chittenden (3612185)						
County Summary:	Santa Clara						
Lat/Long:	36.9178 / -121.5632		Accuracy:	80 meters			
UTM:	Zone-10 N4086718 E627982		Elevation (ft):	320			
PLSS:	T12S, R04E, Sec. 5, SW (M)		Acres:	5.0			
Location:	SARGENT CREEK, 1.5 MI N OF CONFLUENCE OF SAN BENITO RIVER & PAJARO RIVER.						
Detailed Location:	LOCATION DESCRIBED AS "ALONG SARGENT CREEK, 1.45 MILES NORTH OF THE CONFLUENCE OF THE PAJARO RIVER AND THE SAN BENITO RIVER." MAPPED ACCORDING TO PROVIDED MAP.						
Ecological:	TULE MARSH WITH APPROXIMATELY 30 PERCENT OPEN WATER (STOCK POND), SURROUNDED BY GRASSLANDS. HABITAT CONVERTED TO ARTICHOKE FIELD.						
General:	AN ESTIMATED 700 MALES AND 450 FEMALES OBSERVED ON 15 APR 1989; MANY FEMALES CARRYING NEST MATERIAL, MALES WERE DISPLAYING. 0 BIRDS OBSERVED ON 24 APR 1994, 23 APR 1995, AND 22 APR 2000.						
Owner/Manager:	UNKNOWN						



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Occurrence No.	170	Map Index:	10977	EO Index:	24672	Element Last Seen:	1989-04-15
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		2000-04-22	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2016-11-01	
Quad Summary:	Chittenden (3612185)						
County Summary:	Santa Clara						
Lat/Long:	36.9146 / -121.5642			Accuracy:	80 meters		
UTM:	Zone-10 N4086361 E627898			Elevation (ft):	293		
PLSS:	T12S, R04E, Sec. 6, SW (M)			Acres:	5.0		
Location:	SARGENT CREEK, 1.25 MI N OF CONFLUENCE OF SAN BENITO RIVER & PAJARO RIVER.						
Detailed Location:	LOCATION DESCRIBED AS "SARGENT CREEK, 1.25 MILES NORTH OF THE CONFLUENCE OF THE PAJARO RIVER AND THE SAN BENITO RIVER." MAPPED ACCORDING TO PROVIDED MAP.						
Ecological:	CATTAIL MARSH WITH A FEW WILLOWS SURROUNDED BY GRASSLAND; NO OPEN WATER. HABITAT CONVERTED TO ARTICHOKE FIELD.						
General:	AN ESTIMATED 150 MALES AND 200 FEMALES OBSERVED ON 15 APR 1989; MANY FEMALES CARRYING NEST MATERIAL, MALES WERE DISPLAYING. 0 BIRDS OBSERVED ON 24 APR 1994, 23 APR 1995, AND 22 APR 2000.						
Owner/Manager:	UNKNOWN						
Occurrence No.	284	Map Index:	24441	EO Index:	6590	Element Last Seen:	2000-06-27
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		2014-04-20	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2016-10-06	
Quad Summary:	San Juan Bautista (3612175)						
County Summary:	Monterey						
Lat/Long:	36.7751 / -121.6028			Accuracy:	1/10 mile		
UTM:	Zone-10 N4070834 E624686			Elevation (ft):	234		
PLSS:	T13S, R03E, Sec. 26, NE (M)			Acres:	18.0		
Location:	AREA JUST NE OF SAN JUAN GRADE RD & CRAZY HORSE CANYON RD INTERSECTION, 3.5 MI E OF PRUNEDALE.						
Detailed Location:	LOCATION GENERALLY DESCRIBED AS NE OF JUNCTION OF OLD SAN JUAN GRADE AND CRAZY HORSE ROAD. COLONY DATA STORED IN THE UC DAVIS TRICOLORED BLACKBIRD PORTAL; SITE NAME WAS "CRAZY HORSE POND."						
Ecological:	HABITAT IN 1971 DESCRIBED ONLY AS "MARSH." POND DRY IN 1994. DAM WAS BLOWN OUT IN WINTER OF 1995, SEEMED TO HOLD MORE WATER AFTERWARD.						
General:	1K OBS IN 1971. 0 OBS IN 1994. 0 OBS 1995 & 1996. 55 OBS 6 MAY 1999; PRESUMED NESTING. 0 OBS ON 21 APR, 300-500 OBS 27 JUN 2000; CARRYING FOOD & FLEDGLINGS OUT OF NESTS. 60 OBS 26 APR 2008; NESTING UNK. 0 OBS 20 APR 2014.						
Owner/Manager:	UNKNOWN						



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Occurrence No.	285	Map Index: 24445	EO Index: 6577	Element Last Seen:	1960-04-30
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2014-04-20
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2016-10-10
Quad Summary:	Watsonville East (3612186)				
County Summary:	Monterey				
Lat/Long:	36.88071 / -121.74169		Accuracy:	non-specific area	
UTM:	Zone-10 N4082378 E612136		Elevation (ft):	20	
PLSS:	T12S, R02E, Sec. 22, NW (M)		Acres:	34.8	
Location:	ABOUT 0.3 MI ENE OF ELKHORN RD & WERNER RD INTERSECTION, 0.7 MI WSW OF GARLIN RD & LEWIS RD INTXN, WARNER LAKE.				
Detailed Location:	1960 LOCATION DESCRIBED ONLY AS "WARNER LAKE (1.6 MI S BY E OF PAJARO IN THE EXTREME NORTHERN PORTION OF MONTEREY COUNTY)." COLONY DATA STORED IN THE UC DAVIS TRICOLORED BLACKBIRD PORTAL; SITE NAME WAS "WARNER LAKE."				
Ecological:	HABITAT IN 1960 WAS A WIDE BELT OF TALL TULE MARSH BORDERING POND OF SEVERAL ACRES. WATER PRESENT IN LAKE, MANY REEDS BUT NO TRBL IN 2014. COLONY PRESUMED EXTIRPATED BY BEEDY (1991).				
General:	1K'S OF BIRDS OBS FLYING TO & FROM COLONY ON 30 APR 1960; M MORE EVIDENT THAN F IN FLOCKS COMMUTING TO LOW GRASSY HILLS TO S, MANY M IN MARSH WERE SINGING. 0 ON 22 JUN 1963, 21 APR & 20 MAY 1995, 20 APR 1996, 23 APR 2000, & 20 APR 2014.				
Owner/Manager:	UNKNOWN				
Occurrence No.	392	Map Index: 53963	EO Index: 53963	Element Last Seen:	2003-06-13
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2014-04-19
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2016-06-06
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Cruz				
Lat/Long:	36.90608 / -121.60845		Accuracy:	specific area	
UTM:	Zone-10 N4085358 E623970		Elevation (ft):	152	
PLSS:	T12S, R03E, Sec. 11, NW (M)		Acres:	13.0	
Location:	SOUTH END OF SODA LAKE, 1 MILE SE OF PAJARO GAP, 7 MILES SOUTH OF GILROY.				
Detailed Location:	MAPPED ACCORDING TO PROVIDED MAP AND COORDINATES. COLONY DATA STORED IN THE UC DAVIS TRICOLORED BLACKBIRD PORTAL; SITE NAME WAS "SODA LAKE." PRIVATE PROPERTY INACCESSIBLE IN 2014; NOT VIEWABLE FROM PUBLIC ROADS.				
Ecological:	HABITAT CONSISTED OF A FORMER WETLAND THAT IS NOW FUNCTIONING AS A SEDIMENT BASIN FOR A QUARRY OPERATION; THE SOUTHERN EDGE CONTAINED A DENSE GROWTH OF CATTAILS AND BULRUSH, AND PATCHY WILLOW THICKETS. WATER LEVEL VARIABLE, BUT USUALLY >2'.				
General:	~1000 BIRDS IN VARIOUS STAGES OF NESTING OBSERVED ON 13 JUN 2003; MALES SINGING/DEFENDING TERRITORIES, FEMALES FEEDING FLEDGLINGS AND CARRYING NEST MATERIAL. 0 OBSERVED ON 19 APR 2014.				
Owner/Manager:	PVT-GRANITE ROCK, PVT				



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Occurrence No.	729	Map Index:	98553	EO Index:	100005	Element Last Seen:	2013-04-28
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		2013-04-28	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2015-12-17	
Quad Summary:	Gilroy Hot Springs (3712114)						
County Summary:	Santa Clara						
Lat/Long:	37.04030 / -121.42099			Accuracy:	80 meters		
UTM:	Zone-10 N4100508 E640424			Elevation (ft):	1160		
PLSS:	T10S, R05E, Sec. 28, NE (M)			Acres:	0.0		
Location:	ABOUT 1.9 MI ENE OF CANADA RD & JAMIESON RD INTERSECTION, 2 MI WSW OF KICKHAM PEAK.						
Detailed Location:	MAPPED ACCORDING TO PROVIDED COORDINATES. ONLY MINOR NATURAL DISTURBANCES/THREATS. POND LIES IN AREA BETWEEN HENRY W. COE STATE PARK AND CANADA DE LOS OSOS ECOLOGICAL RESERVE.						
Ecological:	POND (TOOTH LAKE). CATTAILS, COYOTE BRUSH, WILLOWS, AND GRASSES AROUND POND. OAK GRASSLAND SURROUNDING. LARGEMOUTH BASS AND BLUEGILLS IN POND. RED-WINGED BLACKBIRDS ALSO NEST HERE. DEER AND PIGS USE SITE EXTENSIVELY & VARIOUS WATERFOWL.						
General:	UNKNOWN NUMBER OF BIRDS NESTED AT THE POND FOR THE FIRST TIME IN 2012. AT LEAST 150 ADULTS AND 300 JUVENILES OBSERVED ON 28 APR 2013, NESTING.						
Owner/Manager:	DFG						
Occurrence No.	852	Map Index:	A0341	EO Index:	101900	Element Last Seen:	1963-06-22
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		1963-06-22	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2016-06-30	
Quad Summary:	Prunedale (3612176), Moss Landing (3612177)						
County Summary:	Monterey						
Lat/Long:	36.8526 / -121.7478			Accuracy:	1 mile		
UTM:	Zone-10 N4079253 E611633			Elevation (ft):	96		
PLSS:	T12S, R02E, Sec. 33 (M)			Acres:	1987.0		
Location:	ELKHORN SLOUGH, 1.3 MI E OF HWY 1 & JOHNSON RD INTERSECTION.						
Detailed Location:	1963 LOCATION DESCRIBED ONLY AS "HALL AND VICINITY, NORTHEAST OF ELKHORN SLOUGH." COLONY DATA STORED IN THE UC DAVIS TRICOLORED BLACKBIRD PORTAL; SITE NAME WAS "ELKHORN SLOUGH." MAPPED AT NE CORNER OF ELKHORN SLOUGH, NEAR LAS LOMAS.						
Ecological:	HABITAT INFORMATION NOT PROVIDED. COLONY PRESUMED EXTIRPATED BY BEEDY (1991).						
General:	AN ESTIMATED 300 BIRDS OBSERVED ON 22 JUN 1963 (COGSWELL PERS. COMM.); MALES AND FEMALES FLYING TO AND FROM PRESUMED NESTING COLONY ON LAS LOMAS RANCH.						
Owner/Manager:	UNKNOWN						



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Occurrence No.	853	Map Index:	A0342	EO Index:	101902	Element Last Seen:	1932-05-21
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	1932-05-21	Record Last Updated:	2016-06-06
Occ. Type:	Natural/Native occurrence		Trend:	Unknown			
Quad Summary:	Prunedale (3612176)						
County Summary:	Monterey						
Lat/Long:	36.8069 / -121.725		Accuracy:	1 mile			
UTM:	Zone-10 N4074210 E613733		Elevation (ft):	70			
PLSS:	T13S, R02E, Sec. 14 (M)		Acres:	1987.0			
Location:	ABOUT 3.4 MI NE OF HWY 1 & HWY 156 INTERSECTION, 3.4 MI WNW OF HWY 101 & HWY 156 INTERSECTION, NE OF CASTROVILLE.						
Detailed Location:	1932 COLONY LOCATION DESCRIBED ONLY AS "3.5 MILES NORTHEAST OF CASTROVILLE." MAPPED CLOSER TO 3.5 MILES NNE OF HISTORIC CASTROVILLE WHERE POTENTIAL SLOUGHS WERE PRESENT. UNCLEAR IF 2014 SURVEY WAS AT THE SAME LOCATION AS 1932 LOCATION.						
Ecological:	1932 HABITAT WAS DESCRIBED AS TULE ALONG SLOUGH. 0 OBSERVED ON 18 APR 2014, LOCATION SURVEYED WAS ABOUT 3.5 MI NE OF CATROVILLE NEAREST THE ONLY POTENTIAL HABITAT.						
General:	A COLONY COMPOSED OF ABOUT 3,000 NESTS OBSERVED ON 21 MAY 1932 (NEFF 1937).						
Owner/Manager:	UNKNOWN						
Occurrence No.	854	Map Index:	A0344	EO Index:	101905	Element Last Seen:	2000-05-28
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	2014-04-19	Record Last Updated:	2016-06-06
Occ. Type:	Natural/Native occurrence		Trend:	Unknown			
Quad Summary:	Hollister (3612174), San Juan Bautista (3612175)						
County Summary:	San Benito						
Lat/Long:	36.8613 / -121.5014		Accuracy:	1/5 mile			
UTM:	Zone-10 N4080534 E633586		Elevation (ft):	199			
PLSS:	T12S, R04E, Sec. 26, W (M)		Acres:	70.0			
Location:	S SIDE OF SAN BENITO RIVER, 0.5 MI NE OF LUCY BROWN LN & DUNCAN AVE INTXN, 0.7 MI NW OF DUNCAN AVE & BIXBY RD INTXN.						
Detailed Location:	2000 LOCATION DESCRIBED AS "E OF SJB (SAN JUAN BAUTISTA) ON HWY 156 TO LUCY BROWN LN N TO DUNCAN AVE, EAST 0.4 MI, THEN NORTH." COLONY DATA STORED IN THE UC DAVIS TRICOLORED BLACKBIRD PORTAL; SITE NAME WAS "DUNCAN AVENUE."						
Ecological:	HABITAT COMPOSED OF CATTAILS. THE OCCUPIED AREA ROUGHLY RECTANGULAR, SOUTH SIDE OF SAN BENITO RIVER.						
General:	FORAGING FLOCK FIRST OBSERVED ON 2 MAY 2000. AN ESTIMATED 400 BIRDS OBSERVED ON 28 MAY 2000; SOME ADULTS CARRYING NEST MATERIAL, PRESUMED NESTING. 0 BIRDS OBSERVED ON 19 APR 2014.						
Owner/Manager:	UNKNOWN						



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Occurrence No.	855	Map Index:	A0349	EO Index:	101909	Element Last Seen:	2000-04-19
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	2014-04-19	Record Last Updated:	2016-10-20
Occ. Type:	Natural/Native occurrence		Trend:	Unknown			
Quad Summary:	Hollister (3612174)						
County Summary:	San Benito						
Lat/Long:	36.83369 / -121.45277			Accuracy:	non-specific area		
UTM:	Zone-10 N4077540 E637971			Elevation (ft):	258		
PLSS:	T13S, R05E, Sec. 5, NW (M)			Acres:	38.0		
Location:	0.6 AIR MILES SSE OF HWY 156 & UNION RD INTERSECTION, 3 AIR MILES WSW OF HOLLISTER POST OFFICE.						
Detailed Location:	LOCATIONS DESCRIBED AS "WEST SIDE OF UNION ROAD, 0.5 MILE SOUTH OF 156 (HWY)" & "UNION RD NEAR INTERSECTION W/ HWY 156, MCCORMICK SELPH, INC... 3601 UNION RD." COLONY DATA STORED IN THE UCD TRBL PORTAL; SITE NAME WAS "TELEDYNE POND."						
Ecological:	CATTAIL POND. POND WAS BUILT IN APPROXIMATELY 1971 BY THE COMPANY "TELEDYNE" WHICH MANUFACTURED SEPARATION DEVICES FOR ROCKETS TO REDUCE THEIR FIRE INSURANCE. ACCESS LIMITED.						
General:	ABOUT 25 BIRDS OBSERVED ON 15 MAY 1996; BIRDS OBS FLYING IN THE DIRECTION OF POND, POSSIBLY CARRYING FOOD. 18 FEMALES OBSERVED NEST BUILDING ON 19 APR 2000; FLOCKS OF MALES (6-42 BIRDS) ALSO OBS FLYING FROM POND. 0 OBS ON 19 APR 2014.						
Owner/Manager:	PVT						
Occurrence No.	856	Map Index:	A0350	EO Index:	101910	Element Last Seen:	2000-04-24
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	2014-04-19	Record Last Updated:	2016-10-19
Occ. Type:	Natural/Native occurrence		Trend:	Unknown			
Quad Summary:	San Felipe (3612184)						
County Summary:	San Benito, Santa Clara						
Lat/Long:	36.98165 / -121.46084			Accuracy:	non-specific area		
UTM:	Zone-10 N4093944 E636986			Elevation (ft):	144		
PLSS:	T11S, R05E, Sec. 18, NE (M)			Acres:	161.0		
Location:	ON S SIDE OF HWY 152, ABOUT 1.7 MILES E OF BLOOMFIELD AVE INTERSECTION, SAN FELIPE LAKE.						
Detailed Location:	1987 LOCATION GIVEN ONLY AS "SAN FELIPE LAKE," EXACT LOCATION UNKNOWN. 2000 LOCATION WAS AT THE N BORDER OF LAKE, ADJACENT TO HWY 152. COLONY DATA STORED IN THE UC DAVIS TRICOLORED BLACKBIRD PORTAL; SITE NAME WAS "SAN FELIPE LAKE (#2)."						
Ecological:	HABITAT IN 2000 COMPOSED OF BULRUSHES. SITE VISITED ON 21 APR 2014 BUT TOO WINDY TO NOTICE BIRDS. MAPPED TO THE ENTIRETY OF HISTORIC LAKE BOUNDARY.						
General:	5+ OBSERVED ON 5 MAR AND 2,000 OBSERVED ON 14 APR 1987; SINGING MALES ON TERRITORY, BREEDING UNKNOWN. 0 OBSERVED ON 20 APR 1995 & 24 APR 1996. 54 OBSERVED ON 24 APR 2000; MALES SINGING AND DISPLAYING. 0 OBSERVED ON 19 APR 2014.						
Owner/Manager:	UNKNOWN						



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Occurrence No.	857	Map Index: A0351	EO Index: 101911	Element Last Seen:	1997-04-27
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2000-04-24
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2016-10-05
Quad Summary:	San Felipe (3612184)				
County Summary:	Santa Clara				
Lat/Long:	36.9825 / -121.4689		Accuracy:	1/10 mile	
UTM:	Zone-10 N4094026 E636267		Elevation (ft):	162	
PLSS:	T11S, R05E, Sec. 18, NW (M)		Acres:	18.0	
Location:	ON S SIDE OF HWY 152, ABOUT 1.3 MI E OF BLOOMFIELD AVE INTERSECTION, BETTENCOURT DAIRY, W OF SAN FELIPE LAKE.				
Detailed Location:	1997 LOCATION DESCRIBED AS "BETTENCOURT DAIRY, 152 (HWY), JUST NW OF SAN FELIPE LAKE, OBSERVED FROM GATED ROAD JUST E OF DAIRY, SOUTH OF 152." COLONY DATA STORED IN THE UCD TRICOLORED BLACKBIRD PORTAL; SITE NAME WAS "BETTENCOURT DAIRY."				
Ecological:	NESTING SUBSTRATE WAS WATER HEMLOCK/POISON HEMLOCK. PLENTY OF WATER IN LAKE 0.25 MILES E. POTENTIAL HEMLOCK VISIBLE IN GOOGLE STREET VIEW, NEAR GATE ON E SIDE OF DAIRY.				
General:	ABOUT 250 FEMALES & 300 MALES OBS ON 27 APR 1997; PRESUMED NESTING, NO BEHAVIOR NOTES SUBMITTED, BUT SURVEYOR DID FILL OUT THE "NESTING" SECTION OF THE FIELD SURVEY FORM VERSUS THE "NON-NESTING SECTION." 0 BIRDS OBS ON 21 & 24 APR 2000.				
Owner/Manager:	PVT				
Occurrence No.	858	Map Index: A0352	EO Index: 101912	Element Last Seen:	1997-04-27
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2014-04-19
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2016-06-07
Quad Summary:	San Felipe (3612184)				
County Summary:	San Benito				
Lat/Long:	36.9334 / -121.4233		Accuracy:	1/5 mile	
UTM:	Zone-10 N4088645 E640416		Elevation (ft):	174	
PLSS:	T11S, R05E, Sec. 33, E (M)		Acres:	70.0	
Location:	ABOUT 0.5 MI SSE OF SHORE RD & FRYE LN INTERSECTION, 0.8 MI SW OF SHORE RD & SAN FELIPE RD INTXN, SW OF DUNNEVILLE.				
Detailed Location:	1997 LOCATION WAS "E SIDE FRYE LANE, 0.5 MI S OF SHORE RD, DIRECTLY ACROSS FROM PIGSTY." COLONY DATA STORED IN THE UC DAVIS TRICOLORED BLACKBIRD PORTAL; SITE NAME WAS "FRYE LANE."				
Ecological:	HABITAT APPEARED TO BE BULRUSHES; SOME OPEN WATER AMID TULE. RED-WINGED BLACKBIRDS NESTING IN THE AREA IN 2000.				
General:	ANECDOTALLY REPORTED AS NESTING IN 1996. AN ESTIMATED 150 FEMALES & 250 MALES OBSERVED ON 27 APR 1997; SINGING AND CARRYING NEST MATERIAL. 1 MALE OBSERVED BETWEEN 21-24 APR 2000. 0 BIRDS OBSERVED ON 19 APR 2014.				
Owner/Manager:	PVT				



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Occurrence No.	864	Map Index:	A0373	EO Index:	101931	Element Last Seen:	2000-04-21
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		2014-04-20	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2016-10-06	
Quad Summary:	San Juan Bautista (3612175)						
County Summary:	Monterey						
Lat/Long:	36.7637 / -121.6192		Accuracy:	1/10 mile			
UTM:	Zone-10 N4069548 E623241		Elevation (ft):	212			
PLSS:	T13S, R03E, Sec. 34, NE (M)		Acres:	18.0			
Location:	ABOUT 0.3 MI NNW OF SAN JUAN GRADE RD & HEBERT RD INTERSECTION, N OF GABILAN ACRES.						
Detailed Location:	MAPPED ACCORDING TO PROVIDED MAPS AND GENERAL LOCATION DESCRIPTION OF 0.1 MI E OF HEBERT RD, AND N SIDE OF SAN JUAN GRADE RD. COLONY DATA STORED IN THE UC DAVIS TRICOLORED BLACKBIRD PORTAL; SITE NAME WAS "HEBERT ROAD POND."						
Ecological:	NESTING SUBSTRATE WAS CATTAIL AND BULRUSH/TULE. PRIVATE POND TOTALLY SURROUNDED BY AGRICULTURE, FORAGING AREAS IN GRASSLANDS 1-3 MI DISTANT.						
General:	800 OBS NESTING ON 23 APR 1994. 400 OBS NESTING ON 21 APR 1995; 10 OBS ON 20 MAY. 0 OBS IN APR & 15 MAY 1996. 650 OBS NESTING ON 6 MAY 1999. 35 OBS NESTING ON 21 APR 2000; CARRYING FOOD. 0 OBS ON 22 APR 2000, 24 APR 2011, AND 20 APR 2014.						
Owner/Manager:	UNKNOWN						

Occurrence No.	992	Map Index:	A2297	EO Index:	103906	Element Last Seen:	1996-XX-XX
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		2000-04-24	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2016-10-20	
Quad Summary:	Hollister (3612174)						
County Summary:	San Benito						
Lat/Long:	36.8137 / -121.3855		Accuracy:	2/5 mile			
UTM:	Zone-10 N4075422 E644007		Elevation (ft):	322			
PLSS:	T13S, R05E, Sec. 11, SE (M)		Acres:	280.0			
Location:	ABOUT 1 MI S OF SOUTHSIDE RD & UNION RD INTERSECTION, 1.2 MI W OF HWY 25 & FAIRVIEW RD ITNERSECTION, RIDGEMARK.						
Detailed Location:	LOCATION DESCRIBED AS "SOUTHSIDE ROAD, ~0.9 MILE FROM INTERSECTION WITH UNION RD." COLONY DATA STORED IN THE UC DAVIS TRICOLORED BLACKBIRD PORTAL; SITE NAME WAS "GRANITE ROCK POND." MAPPED TO THE LOCATION IN THE PORTAL.						
Ecological:	EXTENSIVE MARSH IN 1996. HABITAT CHANGED BY HEAVY RAINS IN 1997 AND 1998; MARSH FLOODED. NESTING HABITAT NO LONGER PRESENT.						
General:	REPORTED AS NESTING IN 1996. 0 BIRDS OBSERVED ON 24 APR 2000.						
Owner/Manager:	PVT						

<i>Oncorhynchus mykiss irideus pop. 9</i>			Element Code: AFCHA0209H	
steelhead - south-central California coast DPS				
Listing Status:	Federal:	Threatened	CNDDB Element Ranks:	Global: G5T2Q
	State:	None		State: S2
	Other:	AFS_TH-Threatened		
Habitat:	General:	FEDERAL LISTING REFERS TO RUNS IN COASTAL BASINS FROM THE PAJARO RIVER SOUTH TO, BUT NOT INCLUDING, THE SANTA MARIA RIVER.		
	Micro:	<input type="checkbox"/>		



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Occurrence No.	20	Map Index: 41525	EO Index: 41525	Element Last Seen:	1998-06-10
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1998-06-10
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	1999-08-26
Quad Summary:	Gilroy (3712115), Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.01348 / -121.63039		Accuracy:	non-specific area	
UTM:	Zone-10 N4097244 E621844		Elevation (ft):	240	
PLSS:	T10S, R03E, Sec. 34 (M)		Acres:	247.4	
Location:	UVAS & BODFISH CREEKS, 1 MILE UP & DOWNSTREAM OF HWY 152, ABOUT 3.5 MILES WEST OF GILROY AT JCT OF HIGHWAYS 152 & 101.				
Detailed Location:	UVAS CREEK SAMPLED 1 MILE U/S & D/S OF HWY 152 CROSSING. BODFISH CREEK, 1 MILE U/S OF 152. SAMPLES PREVENTED FROM GOING FURTHER DUE TO DENIED ACCESS.				
Ecological:	RIPARIAN OVERSTORY: LIVE AND VALLEY OAK, MULEFAT, COYOTE BUSH, SYCAMORE, ELDERBERRY. STREAMBED: SAND, GRAVEL, COBBLE, BOULDER. PRIMARY AQUATIC VEG, ALGAE. TYPE: RUN, RIFFLE (DEEP CUT CHANNEL SIDES).				
General:	THE AREA WAS INDICATED AS A SALMONID REARING AREA, WITH 1000'S SAMPLED IN BODFISH CREEK, AND OVER 30 IN UVAS CREEK.				
Owner/Manager:	UNKNOWN				
Occurrence No.	28	Map Index: 63065	EO Index: 63138	Element Last Seen:	1996-XX-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1996-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2005-11-02
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.02963 / -121.68577		Accuracy:	specific area	
UTM:	Zone-10 N4098967 E616891		Elevation (ft):	400	
PLSS:	T10S, R03E, Sec. 30, S (M)		Acres:	14.8	
Location:	LITTLE ARTHUR CREEK, 2 MILES ABOVE MOUTH; SOUTH OF UVAS RESERVOIR AND NORTH OF MT. MADONNA COUNTY PARK.				
Detailed Location:	SITE OF PROPOSED LITTLE ARTHUR CREEK COUNTY PARK EQUESTRIAN STAGING AREA. STEELHEAD REARING HABITAT EXISTS BETWEEN BOULDER FALLS (1/2 MILE UPSTREAM OF THE END OF REDWOOD RETREAT RD) AND PICKEL RESERVOIR.				
Ecological:	HABITAT CONSISTS OF A PERENNIAL STREAM.				
General:	SOME ADULT STEELHEAD WERE OBSERVED ABOVE DAM DURING SUMMER OF 1993; HOWEVER, NO JUVENILE STEELHEAD WERE OBSERVED AT PARK SITE (OR 3 BRIDGES UPSTREAM) DURING AUGUST 1993. JUVENILE STEELHEAD WERE OBSERVED AT THE PARK SITE DURING 1996.				
Owner/Manager:	UNKNOWN				



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Occurrence No.	29	Map Index: 70922	EO Index: 71875	Element Last Seen:	2007-08-25
Occ. Rank:	Poor		Presence: Presumed Extant	Site Last Seen:	2007-08-25
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2008-02-28

Quad Summary: Chittenden (3612185)

County Summary: Santa Clara

Lat/Long:	36.92845 / -121.54674	Accuracy:	80 meters
UTM:	Zone-10 N4087922 E629429	Elevation (ft):	144
PLSS:	T11S, R04E, Sec. 32, SE (M)	Acres:	0.0

Location: JUNCTION OF TAR CREEK AND HIGHWAY 101, 5.5 MILES SOUTH OF GILROY.

Detailed Location: POND LOCATED 100 M DOWN STREAM FROM CULVERT. LOCATION MAPPED ACCORDING TO COORDINATES GIVEN.

Ecological: HABITAT CONSISTS OF AN ISOLATED POND IN TAR CREEK.

General: 1 ADULT STEELHEAD (0.75 M IN LENGTH) OBSERVED ON 25 AUG 2007. ADIPOSE FIN INTACT.

Owner/Manager: UNKNOWN

Occurrence No.	39	Map Index: B5862	EO Index: 118866	Element Last Seen:	2017-11-19
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2017-11-19
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2020-07-10

Quad Summary: Three Sisters (3612183), San Felipe (3612184), Pacheco Peak (3712113)

County Summary: San Benito, Santa Clara

Lat/Long:	36.98615 / -121.38274	Accuracy:	non-specific area
UTM:	Zone-10 N4094558 E643929	Elevation (ft):	264
PLSS:	T11S, R05E, Sec. 12 (M)	Acres:	1077.0

Location: 16 MI OF LOWER PACHECO CREEK FROM SAN FELIPE LAKE GENERALLY NE TO BELOW NORTH FORK DAM (PACHECO LAKE), N OF HOLLISTER.

Detailed Location: MAPPED TO ABOUT 16 MILES OF CREEK IN SANTA CLARA AND HOLLISTER VALLEYS AND ALONG HIGHWAY 152 (PACHECO PASS HWY) NEAR CASA DE FRUTA WITH RESPECT TO NMFS SURVEY SEGMENTS 103, 104, 105, 106, AND 107.

Ecological: SPAWNING HABITAT WAS PRESENT THROUGHOUT AND VARIED FROM POOR TO GOOD CONDITION. REARING HABITAT WAS PRESENT IN 4 OF 5 SEGMENTS IN POOR TO FAIR CONDITION. MIGRATION HABITAT WAS PRESENT THROUGHOUT AND IN FAIR TO GOOD CONDITION.

General: SURVEYD BY NMFS BIOLOGIST "WLS" ON 27 JAN 2004. 4 JUVENILES REARING IN STREAM DETECTED BY NMFS BIOLOGIST DURING A 0.2 MILE SURVEY STRETCH JUST SOUTH OF BELL STATION ON 19 NOV 2017.

Owner/Manager: UNKNOWN



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Occurrence No.	40	Map Index: B5865	EO Index: 118869	Element Last Seen:	2004-01-27
Occ. Rank:	Poor		Presence: Presumed Extant	Site Last Seen:	2004-01-27
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2020-07-10

Quad Summary: San Felipe (3612184)
County Summary: San Benito

Lat/Long:	36.94014 / -121.44284	Accuracy:	non-specific area
UTM:	Zone-10 N4089364 E638663	Elevation (ft):	157
PLSS:	T11S, R05E, Sec. 32 (M)	Acres:	418.0

Location: TEQUISQUITA SLOUGH FROM SAN FELIPE LAKE SOUTH TO HIGHWAY 156, NORTH OF HOLLISTER.
Detailed Location: MAPPED TO 6 MILES OF TEQUISQUITA SLOUGH WITH RESPECT TO NMFS SURVEY SEGMENT 120.
Ecological: SPAWNING HABITAT AND REARING HABITAT ABSENT. MIGRATION HABITAT WAS PRESENT IN POOR CONDITION.
General: SURVEYD BY NMFS BIOLOGIST "WLS" ON 27 JAN 2004.
Owner/Manager: UNKNOWN

Occurrence No.	41	Map Index: B5866	EO Index: 118870	Element Last Seen:	2004-01-29
Occ. Rank:	Poor		Presence: Presumed Extant	Site Last Seen:	2004-01-29
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2020-07-10

Quad Summary: Mariposa Peak (3612182), Three Sisters (3612183), San Felipe (3612184)
County Summary: San Benito

Lat/Long:	36.88623 / -121.31202	Accuracy:	non-specific area
UTM:	Zone-10 N4083581 E650419	Elevation (ft):	557
PLSS:	T12S, R06E, Sec. 16 (M)	Acres:	761.0

Location: ARROYO DOS PICACHOS FROM HWY 156 UPSTREAM (EAST) TO ITS HEADWATERS NEAR THREE SISTERS, NE OF HOLLISTER.
Detailed Location: MAPPED TO 11 MILES OF ARROYO DOS PICACHOS FROM HWY 156 UPSTREAM (EAST) TO ITS HEADWATERS NEAR THREE SISTERS. NMFS SURVEY SEGMENTS 237 AND 238.
Ecological: BELOW (WEST) LONE TREE CREEK SPAWNING HABITAT AND REARING HABITAT WERE ABSENT, AND MIGRATORY HABITAT WAS FAIR. ABOVE (EAST) LONE TREE CREEK SPAWNING AND REARING HABITAT WAS GOOD AND MIGRATORY HABITAT WAS POOR.
General: SURVEYD BY NMFS BIOLOGIST "WLS" ON 29 JAN 2004.
Owner/Manager: UNKNOWN



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<i>Lavinia exilicauda harengus</i>		Element Code: AFCJB19013	
Monterey hitch			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G4T3
	State: None		State: S3
	Other: CDFW_SSC-Species of Special Concern		
Habitat:	General: <input type="checkbox"/>		
	Micro: <input type="checkbox"/>		
Occurrence No.	2	Map Index: B6467	EO Index: 119478
Occ. Rank:	Unknown	Presence: Presumed Extant	Element Last Seen: 2018-09-05
Occ. Type:	Natural/Native occurrence	Trend: Unknown	Site Last Seen: 2018-09-05
			Record Last Updated: 2020-11-17
Quad Summary:	San Benito (3612151), Bickmore Canyon (3612152), Cherry Peak (3612162), Paicines (3612163), Tres Pinos (3612173), Hollister (3612174), San Juan Bautista (3612175), Moss Landing (3612177), Three Sisters (3612183), San Felipe (3612184), Chittenden (3612185), Watsonville East (3612186), Watsonville West (3612187), Pacheco Peak (3712113), Gilroy (3712115), Mt. Madonna (3712116)		
County Summary:	Monterey, San Benito, Santa Clara, Santa Cruz		
Lat/Long:	36.84736 / -121.42611	Accuracy:	non-specific area
UTM:	Zone-10 N4079096 E640323	Elevation (ft):	250
PLSS:	T12S, R05E, Sec. 33 (M)	Acres:	7851.0
Location:	PAJARO RIVER, UVAS CREEK, LLAGAS CREEK, PACHECO CREEK, TRES PINOS CREEK, AND SAN BENITO RIVER.		
Detailed Location:	MAPPED NON-SPECIFICALLY ALONG 135 MILES OF THESE DRAINAGES FROM THE HIGHEST CONFIRMED DETECTION POINTS DOWNSTREAM TO THE MOUTH OF THE PAJARO RIVER.		
Ecological:			
General:	MANY HISTORIC DETECTIONS HAVE BEEN MADE IN THIS DRAINAGES. MORE RECENTLY, HITCH HAVE BEEN FOUND IN 1997, 2000, 2005, AND 2018.		
Owner/Manager:	UNKNOWN		



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<i>Hesperoleucus venustus subditus</i>		Element Code: AFCJB19032	
southern coastal roach			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: GNRT2
	State: None		State: S2
	Other: CDFW_SSC-Species of Special Concern		
Habitat:	General: FOUND IN THE DRAINAGES OF TOMALES BAY AND NORTHERN SAN FRANCISCO BAY IN THE NORTH, AND DRAINAGES OF MONTEREY BAY IN THE SOUTH.		
	Micro: <input type="checkbox"/>		

Occurrence No.	6	Map Index:	A8820	EO Index:	110614	Element Last Seen:	2000-09-02
Occ. Rank:	Fair	Presence:	Presumed Extant	Site Last Seen:			2000-09-02
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:			2018-03-28

Quad Summary: Mt. Madonna (3712116), Morgan Hill (3712126)
County Summary: Santa Clara

Lat/Long:	37.13679 / -121.73608	Accuracy:	non-specific area
UTM:	Zone-10 N4110795 E612259	Elevation (ft):	570
PLSS:	T09S, R02E, Sec. 22 (M)	Acres:	233.0

Location: LLAGAS CREEK, ABOVE (NW OF) CHESBRO RESERVOIR.
Detailed Location: MAPPED TO INCLUDE AREAS HIGHLIGHTED ON TOPO MAPS ATTACHED TO FIELD SURVEY FORMS. SPECIMEN LOCALITIES GIVEN AS "UPPER LLAGAS CR.; ISOLATED POOL" AND "UPSTREAM OF LLAGAS RES."
Ecological: SEPTEMBER 2000: CREEK BED WAS DRY WITH ISOLATED POOLS, SOME CONTAINING LOTS OF FILAMENTOUS ALGAE.
General: 27 TRAPPED AND COLLECTED ON 21 FEB 2000. 371 COLLECTED (AT LEAST SOME SALVAGED) ON 2 SEP 2000.
Owner/Manager: UNKNOWN

<i>Lasiurus cinereus</i>		Element Code: AMACC05030	
hoary bat			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G3G4
	State: None		State: S4
	Other: IUCN_LC-Least Concern, WBWG_M-Medium Priority		
Habitat:	General: PREFERS OPEN HABITATS OR HABITAT MOSAICS, WITH ACCESS TO TREES FOR COVER AND OPEN AREAS OR HABITAT EDGES FOR FEEDING.		
	Micro: ROOSTS IN DENSE FOLIAGE OF MEDIUM TO LARGE TREES. FEEDS PRIMARILY ON MOTHS. REQUIRES WATER.		

Occurrence No.	92	Map Index:	68528	EO Index:	68855	Element Last Seen:	1945-04-22
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:			1945-04-22
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:			2007-03-19

Quad Summary: San Juan Bautista (3612175)
County Summary: Monterey, San Benito

Lat/Long:	36.84046 / -121.59302	Accuracy:	1 mile
UTM:	Zone-10 N4078098 E625451	Elevation (ft):	
PLSS:	T12S, R03E, Sec. 36 (M)	Acres:	0.0

Location: 3 MILES WEST OF SAN JUAN BATISTA.
Detailed Location: MAPPED ACCORDING TO LAT/LONG COORDINATES PROVIDED BY MANIS, WITH UNCERTAINTY OF 12207.008 M.
Ecological:
General: 2 MALE SPECIMENS (MVZ #102049-102050) COLLECTED BY WALTER W. DALQUEST ON 22 APR 1945.
Owner/Manager: UNKNOWN



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Occurrence No.	93	Map Index: 46517	EO Index: 68856	Element Last Seen:	1938-03-17
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1938-03-17
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-03-19
Quad Summary:	Chittenden (3612185), Gilroy (3712115)				
County Summary:	Santa Clara				
Lat/Long:	37.00911 / -121.57151		Accuracy:	1 mile	
UTM:	Zone-10 N4096836 E627089		Elevation (ft):		
PLSS:	T11S, R04E, Sec. 06 (M)		Acres:	0.0	
Location:	GILROY.				
Detailed Location:	MAPPED TO INCLUDE COORDINATES PROVIDED BY MANIS, WITH UNCERTAINTY OF 1609.344 M.				
Ecological:					
General:	1 MALE SPECIMEN (MVZ #108034) COLLECTED BY H.R.E. ON 17 MAR 1938.				
Owner/Manager:	UNKNOWN				
Occurrence No.	94	Map Index: 68529	EO Index: 68857	Element Last Seen:	1937-04-14
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1937-04-14
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-03-21
Quad Summary:	San Felipe (3612184), Chittenden (3612185), Gilroy Hot Springs (3712114), Gilroy (3712115)				
County Summary:	Santa Clara				
Lat/Long:	37.01179 / -121.50722		Accuracy:	1 mile	
UTM:	Zone-10 N4097222 E632804		Elevation (ft):		
PLSS:	T11S, R04E, Sec. 02 (M)		Acres:	0.0	
Location:	3 MILES EAST OF GILROY.				
Detailed Location:	MAPPED ACCORDING TO LAT/LONG COORDINATES PROVIDED BY MANIS, WITH UNCERTAINTY OF 1609.344 M.				
Ecological:					
General:	1 MALE SPECIMEN (MVZ #108035) COLLECTED BY G. BREM JR. ON 14 APR 1937.				
Owner/Manager:	UNKNOWN				



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<i>Lasiurus blossevillii</i>		Element Code: AMACC05060	
western red bat			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G4
	State: None		State: S3
	Other: CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, WBWG_H-High Priority		
Habitat:	General: ROOSTS PRIMARILY IN TREES, 2-40 FT ABOVE GROUND, FROM SEA LEVEL UP THROUGH MIXED CONIFER FORESTS.		
	Micro: PREFERS HABITAT EDGES AND MOSAICS WITH TREES THAT ARE PROTECTED FROM ABOVE AND OPEN BELOW WITH OPEN AREAS FOR FORAGING.		

Occurrence No.	83	Map Index:	24659	EO Index:	69772	Element Last Seen:	1998-06-25
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		1998-06-25	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2007-04-19	
Quad Summary:	Hollister (3612174)						
County Summary:	San Benito						
Lat/Long:	36.84822 / -121.40233		Accuracy:	1 mile			
UTM:	Zone-10 N4079226 E642441		Elevation (ft):				
PLSS:	T12S, R05E, Sec. 34 (M)		Acres:	0.0			
Location:	HOLLISTER.						
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED IN GENERAL VICINITY OF HOLLISTER.						
Ecological:							
General:	BAT(S) DETECTED ON 25 JUN 1998.						
Owner/Manager:	UNKNOWN						



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Corynorhinus townsendii

Element Code: AMACC08010

Townsend's big-eared bat

Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G4
	State: None		State: S2
Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive, WBWG_H-High Priority		
Habitat:	General: THROUGHOUT CALIFORNIA IN A WIDE VARIETY OF HABITATS. MOST COMMON IN MESIC SITES.		
	Micro: ROOSTS IN THE OPEN, HANGING FROM WALLS AND CEILINGS. ROOSTING SITES LIMITING. EXTREMELY SENSITIVE TO HUMAN DISTURBANCE.		

Occurrence No.	359	Map Index:	92261	EO Index:	93363	Element Last Seen:	1990-09-23
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		1990-09-23	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2014-06-25	

Quad Summary: Hollister (3612174), San Juan Bautista (3612175)

County Summary: Monterey, San Benito

Lat/Long:	36.75728 / -121.50431	Accuracy:	2/5 mile
UTM:	Zone-10 N4068990 E633505	Elevation (ft):	2900
PLSS:	T13S, R04E, Sec. 35, SW (M)	Acres:	0.0

Location: FREMONT PEAK. ABOUT 3.2 MI S OF SAN JUAN CANYON ROAD AT QUINN CANYON ROAD AND ABOUT 5.1 MI ESE OF SUGARLOAF PEAK.

Detailed Location: LOCALITY ON SPECIMEN RECORDS AND IN FIELD NOTES INDICATE A CAVE AT FREMONT PEAK ON THE N END OF GABILAN RANGE; MAPPED GENERALLY TO FREMONT PEAK TO INCLUDE TUNNELS JUST TO THE WSW ON TOPO MAPS.

Ecological:

General: 1939: 1 COLLECTED 16 APR, 2 COLLECTED 17 MAY, 1 COLLECTED 28 OCT (MVZ #107963-107966). 1940: 1 COLLECTED ON 11 FEB (MVZ #107967). 1949: 2 COLLECTED 25 AUG (MVZ #114541, 114542). 1990: 2 MALES OBSERVED ON 23 SEP.

Owner/Manager: DPR-SP

Occurrence No.	360	Map Index:	92263	EO Index:	93366	Element Last Seen:	1946-03-28
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		1946-03-28	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2014-10-31	

Quad Summary: San Felipe (3612184)

County Summary: San Benito, Santa Clara

Lat/Long:	36.98800 / -121.45379	Accuracy:	1/5 mile
UTM:	Zone-10 N4094658 E637601	Elevation (ft):	160
PLSS:	T11S, R05E, Sec. 08, SW (M)	Acres:	0.0

Location: ABOUT 0.9 MI ENE OF HWY 152 (PACHECO PASS HWY) AT LAKE ROAD AND ABOUT 2.25 MI NW OF SAN FELIPE.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED TO LOCALITY IN SPECIMEN RECORDS AND FIELD NOTES OF 2.25 MI NW OF SAN FELIPE (ON THE TOPO MAP) JUST PAST SAN FELIPE LAKE, COMING FROM GILROY ON PACHECO PASS ROAD.

Ecological: COLLECTED FROM AN ADBANDONED BUILDING WHICH DOESN'T APPEAR TO EXIST ANY LONGER.

General: 1 MALE COLLECTED ON 13 JUN 1945 BY W, DALQUEST IN OLD ABANDONED HOUSE ATTIC (MVZ #103188). 1 MALE COLLECTED ON 28 MAR 1946 FROM THE SAME HOUSE BY S. BENSON (MVZ #105190).

Owner/Manager: UNKNOWN



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<i>Antrozous pallidus</i>		Element Code: AMACC10010	
pallid bat			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G4
	State: None		State: S3
Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive, WBWG_H-High Priority		
Habitat:	General:	DESERTS, GRASSLANDS, SHRUBLANDS, WOODLANDS AND FORESTS. MOST COMMON IN OPEN, DRY HABITATS WITH ROCKY AREAS FOR ROOSTING.	
	Micro:	ROOSTS MUST PROTECT BATS FROM HIGH TEMPERATURES. VERY SENSITIVE TO DISTURBANCE OF ROOSTING SITES.	

Occurrence No.	246	Map Index:	66575	EO Index:	66712	Element Last Seen:	1949-08-28
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	1949-08-28	Record Last Updated:	2006-10-03
Occ. Type:	Natural/Native occurrence	Trend:	Unknown				

Quad Summary:	San Juan Bautista (3612175)						
County Summary:	San Benito						
Lat/Long:	36.86068 / -121.60912		Accuracy:	non-specific area			
UTM:	Zone-10 N4080320 E623983		Elevation (ft):	250			
PLSS:	T12S, R03E, Sec. 26 (M)		Acres:	67.0			
Location:	1.4 MI NE MONTEREY COUNTY LINE, HIGHWAY 101.						
Detailed Location:	MAPPED ACCORDING TO LOCATION DESCRIPTION, AS LAT/LONG COORDINATES GIVEN ARE ABOUT 0.25 MI NORTH OF HWY 101. MAPPED ALONG HWY 101 JUST E OF VICINITY OF PINECATE PEAK.						
Ecological:							
General:	1 MALE SPECIMEN COLLECTED BY ANITA K. PEARSON ON 28 AUG 1949, MVZ #114547.						
Owner/Manager:	UNKNOWN						

Occurrence No.	252	Map Index:	46517	EO Index:	66719	Element Last Seen:	1938-06-20
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	1938-06-20	Record Last Updated:	2006-10-04
Occ. Type:	Natural/Native occurrence	Trend:	Unknown				
Quad Summary:	Chittenden (3612185), Gilroy (3712115)						
County Summary:	Santa Clara						
Lat/Long:	37.00911 / -121.57151		Accuracy:	1 mile			
UTM:	Zone-10 N4096836 E627089		Elevation (ft):	200			
PLSS:	T11S, R04E, Sec. 06 (M)		Acres:	0.0			
Location:	GILROY.						
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED IN THE VICINITY OF GILROY.						
Ecological:							
General:	1 FEMALE SPECIMEN COLLECTED BY W.E. ENGLISH ON 20 JUN 1938, CAS #11033.						
Owner/Manager:	UNKNOWN						



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<i>Eumops perotis californicus</i>		Element Code: AMACD02011	
western mastiff bat			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G4G5T4
	State: None		State: S3S4
	Other: BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, WBWG_H-High Priority		
Habitat:	General: MANY OPEN, SEMI-ARID TO ARID HABITATS, INCLUDING CONIFER AND DECIDUOUS WOODLANDS, COASTAL SCRUB, GRASSLANDS, CHAPARRAL, ETC.		
	Micro: ROOSTS IN CREVICES IN CLIFF FACES, HIGH BUILDINGS, TREES AND TUNNELS.		

Occurrence No.	242	Map Index:	24659	EO Index:	69773	Element Last Seen:	1998-06-25
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:			1998-06-25
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:			2007-04-19

Quad Summary: Hollister (3612174)
County Summary: San Benito

Lat/Long:	36.84822 / -121.40233	Accuracy:	1 mile
UTM:	Zone-10 N4079226 E642441	Elevation (ft):	
PLSS:	T12S, R05E, Sec. 34 (M)	Acres:	0.0

Location: HOLLISTER.
Detailed Location: EXACT LOCATION UNKNOWN. SOURCE GIVES LOCALITY ONLY AS "HOLLISTER," SO MAPPED IN GENERAL VICINITY OF HOLLISTER.
Ecological:
General: BAT(S) DETECTED ON 25 JUN 1998.
Owner/Manager: UNKNOWN

<i>Dipodomys venustus venustus</i>		Element Code: AMAFD03042	
Santa Cruz kangaroo rat			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G4T1
	State: None		State: S1
	Other:		
Habitat:	General: SILVERLEAF MANZANITA MIXED CHAPARRAL IN THE ZAYANTE SAND HILLS ECOSYSTEM OF THE SANTA CRUZ MOUNTAINS.		
	Micro: NEEDS SOFT, WELL-DRAINED SAND.		



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Occurrence No.	25	Map Index: B1847	EO Index: 113761	Element Last Seen: 1985-08-04
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen: 1985-08-04
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2019-01-25
Quad Summary:	Mt. Harlan (3612164), Natividad (3612165), Hollister (3612174), San Juan Bautista (3612175)			
County Summary:	Monterey, San Benito			
Lat/Long:	36.75723 / -121.50423		Accuracy: 1 mile	
UTM:	Zone-10 N4068985 E633514		Elevation (ft): 3151	
PLSS:	T13S, R04E, Sec. 35 (M)		Acres: 1987.0	
Location:	VICINITY OF FREMONT PEAK.			
Detailed Location:	SPECIMEN LOCALITIES INCLUDING "FREMONT PEAK" (1907, 1940, 1955), "FREMONT PEAK RD, 7 MI S SAN JUAN" (1940), "7 MI SW HOLLISTER, N SIDE FREMONT PEAK" (1954), & " 7.7 MI S BY ROAD OF ROUTE 156 ON SAN JUAN CANYON ROAD" (1983, 1985).			
Ecological:	SOME SPECIMENS IDED AS D. ELEPHANTINUS. THE FREMONT PEAK/N GABILANS AREA IS BELIEVED TO BE THE SOUTHERN EXTENT OF SSP. VENUSTUS BASED ON GRINNELL (1922), WHO ALSO THOUGHT THIS COULD BE AN AREA OF INTERGRADE; FURTHER GENETIC WORK IS NEEDED.			
General:	1 COLLECTED ON 2 NOV, 4 ON 3 NOV 1907. 6 COLLECTED ON 21 JUL, 5 ON 23 JUL, & 1 ON 24 JUL 1940. 1 ON 3 DEC 1954. 1 ON 26 AUG 1955. 2 ON 4 APR 1983. 3 COLLECTED ON 13 JUL, 2 ON 18 JUL, 1 ON 28 JUL, & 2 ON 4 AUG 1985.			
Owner/Manager:	UNKNOWN			
Occurrence No.	26	Map Index: B1850	EO Index: 113769	Element Last Seen: 2013-XX-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen: 2013-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2019-01-07
Quad Summary:	Hollister (3612174)			
County Summary:	San Benito			
Lat/Long:	36.77742 / -121.46708		Accuracy: 80 meters	
UTM:	Zone-10 N4071277 E636795		Elevation (ft): 2097	
PLSS:	T13S, R05E, Sec. 30, NW (M)		Acres: 5.0	
Location:	ABOUT 2.4 MILES NE OF FREMONT PEAK & 3.8 MILES SW OF CIENEGA RD AT HIDDEN VALLEY RD, HOLLISTER HILLS SVRA.			
Detailed Location:	MAPPED TO PROVIDED COORDINATES. THE FREMONT PEAK/N GABILANS AREA IS CURRENTLY BELIEVED TO BE THE SOUTHERN EXTENT OF SSP VENUSTUS BASED ON GRINNELL (1922), WHO ALSO THOUGHT THIS COULD BE AN AREA OF INTERGRADE; FURTHER GENETIC WORK IS NEEDED.			
Ecological:	TRAPPED IN A HIGH CHAPARRAL PORTION OF HOLLISTER HILLS SVRA.			
General:	UNKNOWN NUMBER CAPTURED IN SHERMAN TRAPLINE IN 2013.			
Owner/Manager:	DPR-HOLLISTER HILLS SVRA			



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Occurrence No.	27	Map Index: B1854	EO Index: 113773	Element Last Seen:	1998-05-29
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2000-06-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-01-07
Quad Summary:	Hollister (3612174)				
County Summary:	San Benito				
Lat/Long:	36.78479 / -121.45163		Accuracy:	80 meters	
UTM:	Zone-10 N4072117 E638160		Elevation (ft):	1540	
PLSS:	T13S, R05E, Sec. 20, SW (M)		Acres:	5.0	
Location:	ABOUT 2.8 MILES SW OF CIENEGA RD AT HIDDEN VALLEY RD & 3.4 MILES NE OF FREMONT PEAK, HOLLISTER HILLS SVRA.				
Detailed Location:	MAPPED TO COORDINATES GIVEN FOR PLOT 14 (1989-2000 SURVEY SITE). SPECIMENS W/ LOCALITIES "4.25 MI S & 4.75 MI E SAN JUAN BATISTA" (1958) & "HOLLISTER, 4-1/3 MI S, 3 MI W, FREMONT PEAK ROAD" (1980) ATTRIBUTED HERE, EXACT LOCATIONS UNKNOWN.				
Ecological:	SITE NOTES: "SE, SW CHAPARRAL (GRANITE)." THE FREMONT PEAK/N GABILANS AREA IS BELIEVED TO BE THE SOUTHERN EXTENT OF SSP VENUSTUS BASED ON GRINNELL (1922), WHO ALSO THOUGHT THIS COULD BE AN AREA OF INTERGRADE; FURTHER GENETIC WORK IS NEEDED.				
General:	COLLECTED IN VICINITY IN 1958 AND 1980. AT LEAST 14 CAPTURES IN 1989. 14 CAPTURES IN MAY 1997. 13 CAPTURES IN MAY 1998. NONE CAUGHT IN 2000. THESE TOTALS MAY INCLUDE RECAPTURES.				
Owner/Manager:	DPR-HOLLISTER HILLS SVRA				
Occurrence No.	28	Map Index: B1856	EO Index: 113774	Element Last Seen:	1998-05-29
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2000-06-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-02-12
Quad Summary:	Hollister (3612174)				
County Summary:	San Benito				
Lat/Long:	36.76871 / -121.45623		Accuracy:	specific area	
UTM:	Zone-10 N4070326 E637778		Elevation (ft):	1749	
PLSS:	T13S, R05E, Sec. 30, SW (M)		Acres:	10.0	
Location:	ABOUT 2.5-2.7 MILES NE OF FREMONT PEAK & 3.6-3.9 MILES SW OF CIENEGA RD AT HIDDEN VALLEY RD, HOLLISTER HILLS SVRA.				
Detailed Location:	MAPPED TO COORDINATES GIVEN FOR PLOTS 27 (SW POLYGON) & 35 (NE POLYGON). SITE NOTES FOR PLOT 35: "NE, SW CHAPARRAL (NATURE AREA)."				
Ecological:	THE FREMONT PEAK/N GABILANS AREA IS BELIEVED TO BE THE SOUTHERN EXTENT OF SSP. VENUSTUS BASED ON GRINNELL (1922), WHO ALSO THOUGHT THIS COULD BE AN AREA OF INTERGRADE; FURTHER GENETIC WORK IS NEEDED.				
General:	PLOT 27: AT LEAST 3 CAPTURES IN 1989. PLOT 35: AT LEAST 16 CAPTURES IN 1989. AT LEAST 13 CAPTURES IN MAY 1997. 13 CAPTURES IN MAY 1998. NONE CAUGHT IN 2000. THESE TOTALS MAY INCLUDE RECAPTURES.				
Owner/Manager:	DPR-HOLLISTER HILLS SVRA				



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<i>Reithrodontomys megalotis distichlis</i>		Element Code: AMAFF02032	
Salinas harvest mouse			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G5T1
	State: None		State: S1
	Other:		
Habitat:	General: KNOWN ONLY FROM THE MONTEREY BAY REGION.		
	Micro: OCCURS IN FRESH AND BRACKISH WATER WETLANDS AND PROBABLY IN THE ADJACENT UPLANDS AROUND THE MOUTH OF THE SALINAS RIVER.		

Occurrence No.	3	Map Index:	10655	EO Index:	23882	Element Last Seen:	1937-06-03
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		1937-06-03	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2006-01-30	
Quad Summary:	Prunedale (3612176)						
County Summary:	Monterey						
Lat/Long:	36.82783 / -121.73105			Accuracy:	non-specific area		
UTM:	Zone-10 N4076525 E613161			Elevation (ft):	200		
PLSS:	T13S, R02E, Sec. 03 (M)			Acres:	218.3		
Location:	STRAWBERRY CANYON.						
Detailed Location:	LAT-LONG GIVEN BY MVZ IS AT THE MOUTH OF STRAWBERRY CANYON WITH A 1 KM MAXIMUM ERROR.						
Ecological:							
General:	MVZ #108423 (MALE) COLLECTED 3 JUN 1937.						
Owner/Manager:	UNKNOWN						



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<i>Vulpes macrotis mutica</i>		Element Code: AMAJA03041	
San Joaquin kit fox			
Listing Status:	Federal: Endangered	CNDDB Element Ranks:	Global: G4T2
	State: Threatened		State: S2
	Other:		
Habitat:	General: ANNUAL GRASSLANDS OR GRASSY OPEN STAGES WITH SCATTERED SHRUBBY VEGETATION.		
	Micro: NEED LOOSE-TEXTURED SANDY SOILS FOR BURROWING, AND SUITABLE PREY BASE.		

Occurrence No.	605	Map Index: 67354	EO Index: 67522	Element Last Seen: 1992-05-15
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen: 1992-05-15
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2007-01-22
Quad Summary:	Hollister (3612174)			
County Summary:	San Benito			
Lat/Long:	36.84176 / -121.44138		Accuracy: 3/5 mile	
UTM:	Zone-10 N4078452 E638970		Elevation (ft): 250	
PLSS:	T12S, R05E, Sec. 32, NW (M)		Acres: 0.0	
Location:	ABOUT 2.3 ROAD MI WEST OF HOLLISTER ON HWY 156.			
Detailed Location:	MAPPED ACCORDING TO LOCATION GIVEN AS "4660 SAN JUAN-HOLLISTER RD, HOLLISTER, CA 95023, IN HILLS, ON MAIN RANCH SIDE." ADDRESS DOES NOT MATCH MAP ATTACHED, WHICH PUTS LOCATION AT 1.9 MI SSW OF FEATURE.			
Ecological:	CURRENTLY USED FOR RANCHING.			
General:	1-2 JUVENILES OBSERVED ON 15 MAY 1992. REPORTED MOTHER APPEARED TO HAVE DIED, LEAVING 4-5 JUVENILES BUT 3 DIED.			
Owner/Manager:	PVT			

Occurrence No.	1029	Map Index: 67978	EO Index: 68128	Element Last Seen: 1975-07-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen: 1975-07-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2007-01-30
Quad Summary:	Pacheco Peak (3712113), Gilroy Hot Springs (3712114)			
County Summary:	Santa Clara			
Lat/Long:	37.02969 / -121.37904		Accuracy: 2/5 mile	
UTM:	Zone-10 N4099394 E644175		Elevation (ft): 1720	
PLSS:	T10S, R05E, Sec. 25 (M)		Acres: 0.0	
Location:	ABOUT 2.3 MI N OF HWY 152, JUST W OF ELEPHANT HEAD CREEK.			
Detailed Location:				
Ecological:				
General:	SIGHTING SOMETIME FROM 1972 THROUGH JUL 1975.			
Owner/Manager:	UNKNOWN			

<i>Taxidea taxus</i>		Element Code: AMAJF04010	
American badger			
Listing Status:	Federal: None	CNDDB Element Ranks:	Global: G5
	State: None		State: S3
	Other: CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern		
Habitat:	General: MOST ABUNDANT IN DRIER OPEN STAGES OF MOST SHRUB, FOREST, AND HERBACEOUS HABITATS, WITH FRIABLE SOILS.		
	Micro:		



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NEEDS SUFFICIENT FOOD, FRIABLE SOILS AND OPEN, UNCULTIVATED GROUND. PREYS ON BURROWING RODENTS. DIGS BURROWS.

Occurrence No.	121	Map Index:	24659	EO Index:	56778	Element Last Seen:	XXXX-XX-XX
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		XXXX-XX-XX	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:	2004-09-14		

Quad Summary: Hollister (3612174)
County Summary: San Benito

Lat/Long:	36.84822 / -121.40233	Accuracy:	1 mile
UTM:	Zone-10 N4079226 E642441	Elevation (ft):	290
PLSS:	T12S, R05E, Sec. 34 (M)	Acres:	0.0

Location: HOLLISTER, SAN BENITO COUNTY.
Detailed Location:
Ecological:
General: CAS #4982. DATE OF COLLECTION UNKNOWN.
Owner/Manager: UNKNOWN

Occurrence No.	187	Map Index:	57202	EO Index:	57218	Element Last Seen:	1995-03-09
Occ. Rank:	Excellent	Presence:	Presumed Extant	Site Last Seen:		1995-03-09	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:	2004-10-04		

Quad Summary: Gilroy (3712115)
County Summary: Santa Clara

Lat/Long:	37.02514 / -121.61360	Accuracy:	1/5 mile
UTM:	Zone-10 N4098559 E623318	Elevation (ft):	300
PLSS:	T10S, R03E, Sec. 35 (M)	Acres:	0.0

Location: WEST OF RANCHO HILLS DRIVE, NORTH OF MANTELLI DRIVE, NW GILROY.
Detailed Location:
Ecological: HABITAT CONSISTS OF OAK SAVANNAH, DOMINATED BY VALLEY OAK, BLUE OAK, COAST LIVE OAK, AND BLACK OAK; NON-NATIVE GRASSLAND DOMINATED BY BROME, FOXTAIL, AND WILD OATS. SITE HAS BEEN GRAZED IN THE PAST.
General: NUMEROUS BURROWS WITH BADGER CLAW MARKS THROUGHOUT THE SITE OBSERVED ON 28 MAY 1994. 1 ADULT OBSERVED EMERGING FROM BURROW, DURING A NOCTURNAL CTS SURVEY, ON 9 MAR 1995.
Owner/Manager: PVT



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Occurrence No.	188	Map Index: 57203	EO Index: 57219	Element Last Seen:	1995-08-15
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	1995-08-15
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-10-04
Quad Summary:	San Juan Bautista (3612175)				
County Summary:	San Benito				
Lat/Long:	36.85002 / -121.56118		Accuracy:	1/5 mile	
UTM:	Zone-10 N4079201 E628275		Elevation (ft):	300	
PLSS:	T12S, R04E, Sec. 32 (M)		Acres:	0.0	
Location:	HIGHWAY 156, ABOUT 1 MILE NORTH OF SAN JUAN BAUTISTA.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF GRAZED ANNUAL GRASSLANDS, SURROUNDED BY RURAL RESIDENTIAL.				
General:	1 ROAD-KILLED JUVENILE OBSERVED ON 15 AUG 1995.				
Owner/Manager:	UNKNOWN				
Occurrence No.	389	Map Index: 70074	EO Index: 70932	Element Last Seen:	2007-09-26
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2007-09-26
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-10-01
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Clara				
Lat/Long:	36.92809 / -121.54694		Accuracy:	1/10 mile	
UTM:	Zone-10 N4087881 E629412		Elevation (ft):	161	
PLSS:	T11S, R04E, Sec. 32 (M)		Acres:	0.0	
Location:	ALONG NORTHBOUND HIGHWAY 1, 5 MILES SOUTH OF GILROY.				
Detailed Location:					
Ecological:	SURROUNDING HABITAT CONSISTS OF GRASSLAND, AGRICULTURE, AND VALLEY FOOTHILL RIPARIAN.				
General:	1 DOR ADULT OBSERVED ON 26 SEP 2007.				
Owner/Manager:	PVT				
Occurrence No.	426	Map Index: 73780	EO Index: 74798	Element Last Seen:	2001-02-28
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2001-02-28
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2009-03-10
Quad Summary:	San Juan Bautista (3612175)				
County Summary:	Monterey				
Lat/Long:	36.79002 / -121.60998		Accuracy:	80 meters	
UTM:	Zone-10 N4072480 E624020		Elevation (ft):	340	
PLSS:	T13S, R03E, Sec. 23, NW (M)		Acres:	0.0	
Location:	CRAZY HORSE CANYON, ABOUT 1.1 NNW OF LAGUNITA LAKE, ABOUT 4.6 MI NE OF HWY 101 AT RUSSEL RD, SALINAS.				
Detailed Location:	MAPPED TO PROVIDED COORDINATES.				
Ecological:	HABITAT CONSISTED OF COAST LIVE OAK WOODLAND, MIXED CHAPARRAL, AND GRASSLAND. COAST RANGE NEWTS (TARICHA TOROSA) & RED-LEGGED FROGS (RANA AURORA DRAYTONII) ABUNDANT IN NEARBY STOCK POND. RANGELAND USED FOR CATTLE GRAZING.				
General:	ON 28 FEB 2001 ONE INDIVIDUAL IN BURROW OBSERVED AND FRESH TRACKS DETECTED. DIGITAL PHOTOS AVAILABLE (BADGER001.JPG AND BADGER002.JPG).				
Owner/Manager:	PVT				



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Occurrence No.	561	Map Index: B1256	EO Index: 113151	Element Last Seen:	2017-06-28
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2017-06-28
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-10-26
Quad Summary:	San Felipe (3612184)				
County Summary:	Santa Clara				
Lat/Long:	36.9661 / -121.39043		Accuracy:	80 meters	
UTM:	Zone-10 N4092322 E643282		Elevation (ft):	295	
PLSS:	T11S, R05E, Sec. 23, NE (M)		Acres:	5.0	
Location:	ALONG SR 152 ABOUT 0.4 MI W OF THE JUNCTION WITH SR 156 & 1.6 MI NE OF SAN FELIPE RD AT PACHECO CREEK, N OF HOLLISTER.				
Detailed Location:	MAPPED TO PROVIDED COORDINATES.				
Ecological:	STATE HIGHWAY WITH OPEN GRAZING LAND TO NORTH AND SOUTH. ROAD SHOULDERS DOMINATED BY NON-NATIVE GRASS AND THISTLES. DISTURBANCE FROM TRASH, INVASIVE PLANTS, AND TRAFFIC NOTED.				
General:	1 ADULT FOUND DEAD ON THE SIDE OF THE ROAD ON 28 JUN 2017.				
Owner/Manager:	CALTRANS				
Occurrence No.	562	Map Index: B1257	EO Index: 113152	Element Last Seen:	2009-06-16
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2009-06-16
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-10-26
Quad Summary:	San Felipe (3612184)				
County Summary:	Santa Clara				
Lat/Long:	36.96848 / -121.38395		Accuracy:	80 meters	
UTM:	Zone-10 N4092595 E643855		Elevation (ft):	249	
PLSS:	T11S, R05E, Sec. 24, NW (M)		Acres:	5.0	
Location:	EAST-BOUND LANE OF SR 152 JUST WEST OF THE JUNCTION WITH SR 156, NORTH OF HOLLISTER.				
Detailed Location:	MAPPED TO PROVIDED COORDINATES.				
Ecological:	ROADKILL FOUND AT TOP OF RAMP IN NEWLY-CONSTRUCTED ELEVATED PORTION OF HIGHWAY.				
General:	1 ADULT FOUND DEAD ON ROAD ON 16 JUN 2009.				
Owner/Manager:	CALTRANS				
Occurrence No.	564	Map Index: B1353	EO Index: 113260	Element Last Seen:	2017-07-04
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2017-07-04
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-11-08
Quad Summary:	San Felipe (3612184)				
County Summary:	Santa Clara				
Lat/Long:	36.98965 / -121.38406		Accuracy:	specific area	
UTM:	Zone-10 N4094944 E643805		Elevation (ft):	290	
PLSS:	T11S, R05E, Sec. 12, SW (M)		Acres:	10.0	
Location:	ALONG HWY 152 ON EITHER SIDE OF THE CASA DE FRUTA EXIT, FROM ABOUT 0.5 TO 0.75 MILES NNW OF THE WALNUT AVE JUNCTION.				
Detailed Location:	MAPPED TO PROVIDED COORDINATES.				
Ecological:	HIGHWAY THROUGH GRASSLAND AND OAK SAVANNA USED FOR GRAZING, WITH SOME AGRICULTURE AND COMMERCIAL DEVELOPMENT AT CASA DE FRUTA.				
General:	1 ADULT FOUND DEAD ON ROAD ON 11 MAY 2009. 1 ADULT FOUND DEAD ON ROAD ON 4 JUL 2017.				
Owner/Manager:	CALTRANS, PVT				



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Occurrence No.	591	Map Index: B3074	EO Index: 114996	Element Last Seen:	2017-09-20
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2017-09-20
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-05-15
Quad Summary:	Chittenden (3612185)				
County Summary:	San Benito				
Lat/Long:	36.88909 / -121.56576		Accuracy:	80 meters	
UTM:	Zone-10 N4083529 E627802		Elevation (ft):	171	
PLSS:	T12S, R04E, Sec. 18, E (M)		Acres:	5.0	
Location:	ALONG CA-129 ABOUT 0.5 MI NNW OF THE US-101 UNDERPASS & 1.4 MI SE OF THE CONFLUENCE OF THE PAJARO RIVER & PESCADERO CRK.				
Detailed Location:	MAPPED TO PROVIDED COORDINATES.				
Ecological:	HIGHWAY THROUGH GRASSLANDS AND OAK WOODLAND, SOUTH OF THE PAJARO RIVER. SURROUNDING LAND USES INCLUDED CATTLE GRAZING, RURAL HOUSING. HIGHWAY IS HAZARD TO WILDLIFE; DOR BOBCAT ALSO OBSERVED NEARBY.				
General:	OLD/DRIED REMAINS OF ROAD-KILLED JUVENILE FOUND ON ROAD ON 20 SEP 2017.				
Owner/Manager:	SBT COUNTY				

<i>Emys marmorata</i>	Element Code: ARAAD02030
western pond turtle	
Listing Status: Federal: None	CNDDDB Element Ranks: Global: G3G4
State: None	State: S3
Other: BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_VU-Vulnerable, USFS_S-Sensitive	
Habitat: General: A THOROUGHLY AQUATIC TURTLE OF PONDS, MARSHES, RIVERS, STREAMS AND IRRIGATION DITCHES, USUALLY WITH AQUATIC VEGETATION, BELOW 6000 FT ELEVATION.	
Micro: NEEDS BASKING SITES AND SUITABLE (SANDY BANKS OR GRASSY OPEN FIELDS) UPLAND HABITAT UP TO 0.5 KM FROM WATER FOR EGG-LAYING.	

Occurrence No.	31	Map Index: 24659	EO Index: 595	Element Last Seen:	XXXX-XX-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	XXXX-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	1996-01-10
Quad Summary:	Hollister (3612174)				
County Summary:	San Benito				
Lat/Long:	36.84822 / -121.40233		Accuracy:	1 mile	
UTM:	Zone-10 N4079226 E642441		Elevation (ft):	290	
PLSS:	T12S, R05E, Sec. 34 (M)		Acres:	0.0	
Location:	HOLLISTER.				
Detailed Location:					
Ecological:					
General:	CALIFORNIA ACADEMY OF SCIENCES, SPECIMEN #53943, DATE AND NUMBER OF SPECIMENS UNKNOWN.				
Owner/Manager:	UNKNOWN				



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Occurrence No.	61	Map Index: 32816	EO Index: 21804	Element Last Seen: XXXX-XX-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen: XXXX-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 1996-01-16

Quad Summary: Gilroy (3712115), Mt. Madonna (3712116)

County Summary: Santa Clara

Lat/Long:	37.01139 / -121.62626	Accuracy:	1/5 mile
UTM:	Zone-10 N4097018 E622215	Elevation (ft):	250
PLSS:	T11S, R03E, Sec. 03 (M)	Acres:	0.0

Location: 3.5 MILES WEST OF GILROY ON HIGHWAY 152.

Detailed Location:

Ecological:

General: LOS ANGELES COUNTY MUSEUM, SPECIMEN #105320, DATE UNKNOWN.

Owner/Manager: UNKNOWN

Occurrence No.	92	Map Index: 32894	EO Index: 5896	Element Last Seen: 1988-09-19
Occ. Rank:	Poor		Presence: Presumed Extant	Site Last Seen: 1988-09-19
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 1996-03-22

Quad Summary: Chittenden (3612185)

County Summary: San Benito

Lat/Long:	36.88932 / -121.60132	Accuracy:	specific area
UTM:	Zone-10 N4083507 E624632	Elevation (ft):	350
PLSS:	T12S, R03E, Sec. 14 (M)	Acres:	2.4

Location: ANZAR LAKE, EAST OF AROMAS, JUST SOUTHEAST OF ANZAR ROAD X COLE ROAD.

Detailed Location:

Ecological: PERENNIAL LAKE WITH WETLAND HABITAT AND LIMITED WILLOW RIPARIAN; LAKE WAS DRY ON THIS VISIT (9/19/1988), APPARENTLY A RARE CONDITION AT THIS SITE.

General: 1 TURTLE SHELL WAS COLLECTED BY D.L. SUDDJIAN ON DRY LAKE BED.

Owner/Manager: PVT-GRANITE ROCK

Occurrence No.	107	Map Index: 34677	EO Index: 326	Element Last Seen: 1992-06-22
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen: 1992-06-22
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 1996-02-28

Quad Summary: Chittenden (3612185), Gilroy (3712115)

County Summary: Santa Clara

Lat/Long:	37.00463 / -121.60537	Accuracy:	non-specific area
UTM:	Zone-10 N4096295 E624084	Elevation (ft):	220
PLSS:	T11S, R03E, Sec. 02 (M)	Acres:	368.8

Location: UVAS CREEK, UVAS CREEK PARK, IMMEDIATELY WEST OF GILROY AND SOUTH OF HIGHWAY 152.

Detailed Location: CREEK TO BE RESTORED PER PROPOSED MASTER PLAN.

Ecological: FORMER GRAVEL PIT; IN-CHANNEL IMPOUNDMENT. EMERGENT VEGETATION AND WILLOW SURROUNDING IMPOUNDMENT; CREEK DEGRADED DUE TO PAST QUARRYING ACTIVITIES; SAND/GRAVEL SUBSTRATE; MATURE TREES ABSENT FROM CORRIDOR; WATER IS GREENISH COLOR.

General: 1 ADULT OBSERVED BY B. MORI.

Owner/Manager: CITY OF GILROY



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Occurrence No.	167	Map Index: 44152	EO Index: 44152	Element Last Seen:	2003-06-15
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2003-06-15
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-05-11
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.07128 / -121.70664		Accuracy:	specific area	
UTM:	Zone-10 N4103562 E614972		Elevation (ft):	450	
PLSS:	T10S, R02E, Sec. 12, SW (M)		Acres:	16.1	
Location:	EASTMAN CANYON (CREEK), WHERE IT BECOMES PART OF UVAS RESERVOIR, SW OF MORGAN HILL.				
Detailed Location:	SITE IS LOCATED WITHIN UVAS RESERVOIR, EAST OF UVAS ROAD.				
Ecological:	HABITAT CONSISTS OF RIPARIAN ASSOCIATED WITH THE CREEK AND RESERVOIR IN EASTMAN CANYON.				
General:	3 ADULTS OBSERVED ON 22 MAY 2000. 2 ADULTS OBSERVED ON 15 JUN 2003.				
Owner/Manager:	PVT				

Occurrence No.	168	Map Index: 44153	EO Index: 44153	Element Last Seen:	2016-04-18
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2016-04-18
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2016-10-24
Quad Summary:	Gilroy Hot Springs (3712114), Gilroy (3712115), Mississippi Creek (3712124)				
County Summary:	Santa Clara				
Lat/Long:	37.11068 / -121.47797		Accuracy:	non-specific area	
UTM:	Zone-10 N4108234 E635232		Elevation (ft):	977	
PLSS:	T09S, R04E, Sec. 36 (M)		Acres:	1391.0	
Location:	COYOTE CK FROM THE RESERVOIR TO THE FORKS & 4 MI ON E FORK COYOTE CK, 2 MI ON KELLY CABIN CK & 3 MI ON GRIZZLY GULCH CK.				
Detailed Location:	JUL 1995 LOCATIONS: FELLERS SITE S-723 & 723B. 11 MAY 2004 TURTLE OBSERVED IN THE VICINITY OF THE POOL AT THE BASE OF THE FALLS ON GRIZZLY GULCH CREEK. 2011-2012 STUDY IN COYOTE CREEK FROM RESERVOIR TO 5 MI UPSTREAM.				
Ecological:	INTERMITTENT STREAM IN VALLEY FOOTHILL RIPARIAN DOMINATED BY SYCAMORES; BOULDER/GRAVEL CHANNEL W/EMERGENT VEG. CREEK DRIES ANNUALLY EXCEPT FOR DEEPEST POOLS. ONGOING DROUGHT LINKED TO DECLINE IN JUVENILE RECRUITMENT & MORTALITIES (2014-15).				
General:	OBSERVED, 1980-89. 13 OBS, JUL 1995. 2 OBS MAR 2000. 1 OBS MAY 2001. 1 OBS MAY 2002. 25 OBS MAY 2003. UP TO 45 OBS APR-MAY 2004. 8 OBS MAY 2005. 175 CAPTURES, MANY OBS 2011-13. 39 DEAD/MANY LIVE OBS 2014. 36 CAUGHT, 2015. 3 OBS 18 APR 2016.				
Owner/Manager:	SCL COUNTY, DPR				



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Occurrence No.	177	Map Index: 44343	EO Index: 44343	Element Last Seen:	1998-03-10
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1998-03-10
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2000-11-20
Quad Summary:	Mt. Madonna (3712116), Morgan Hill (3712126)				
County Summary:	Santa Clara				
Lat/Long:	37.12260 / -121.70703		Accuracy:	non-specific area	
UTM:	Zone-10 N4109255 E614861		Elevation (ft):	525	
PLSS:	T09S, R02E, Sec. 25 (M)		Acres:	214.2	
Location:	CHESBRO RESERVOIR, CHESBRO RESERVOIR COUNTY PARK, OAK GLEN AVE, 3.5 MILES W OF MORGAN HILL (SAN PEDRO & MONTEREY RD).				
Detailed Location:	MAPPED TO THE RESERVOIR, MORE SPECIFIC DETAILS NOT GIVEN.				
Ecological:	RESERVOIR.				
General:	7 OBSERVED IN 1998.				
Owner/Manager:	SCL COUNTY				
Occurrence No.	181	Map Index: 36056	EO Index: 44865	Element Last Seen:	2000-05-05
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2000-05-05
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2001-02-01
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Clara				
Lat/Long:	36.95227 / -121.55894		Accuracy:	80 meters	
UTM:	Zone-10 N4090547 E628304		Elevation (ft):	240	
PLSS:	T11S, R04E, Sec. 29, NW (M)		Acres:	0.0	
Location:	0.4 MILE WEST OF THE INTERSECTION OF HWY 101 AND OLD MONTEREY ROAD, 4 MILES SOUTH OF GILROY.				
Detailed Location:	POND IS LOCATED ALONG THE STREAM, BELOW THE SPRINGS.				
Ecological:	HABITAT CONSISTS OF AN ARTIFICIAL POND, WITH SURROUNDING VEGETATION OF CATTAILS AND OTHER POND VEGETATION.				
General:	1 ADULT OBSERVED ON 5 MAY 2000.				
Owner/Manager:	PVT				
Occurrence No.	188	Map Index: 46007	EO Index: 46397	Element Last Seen:	2001-09-21
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2001-09-21
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2001-11-06
Quad Summary:	Hollister (3612174)				
County Summary:	San Benito				
Lat/Long:	36.85189 / -121.43051		Accuracy:	80 meters	
UTM:	Zone-10 N4079591 E639922		Elevation (ft):	253	
PLSS:	T12S, R05E, Sec. 33 (M)		Acres:	0.0	
Location:	SAN BENITO RIVER, ABOUT 20 METERS DOWNSTREAM OF SAN JUAN HOLLISTER BRIDGE, HOLLISTER.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POOLED AREA WITHIN SAN BENITO RIVER; SURROUNDED BY WILLOWS AND CATTAILS.				
General:	1 ADULT OBSERVED ON 21 SEP 2001.				
Owner/Manager:	UNKNOWN				



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Occurrence No.	199	Map Index: 47907	EO Index: 47907	Element Last Seen:	2000-07-13
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2000-07-13
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2002-05-14
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.00441 / -121.68181		Accuracy:	80 meters	
UTM:	Zone-10 N4096173 E617283		Elevation (ft):	500	
PLSS:	T11S, R03E, Sec. 06 (M)		Acres:	0.0	
Location:	SPRIG LAKE, ON BLACKHAWK CANYON CREEK, ON THE NORTH SIDE OF HIGHWAY 152, MOUNT MADONNA COUNTY PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POND FORMED BY A SMALL DAM ON BLACKHAWK CREEK, WHICH SUPPORTS CATTAILS, RUSHES, AND EMERGENT VEGETATION ON THE WEST SHORELINE.				
General:	2 TURTLES OBSERVED BASKING ON LOGS ALONG THE SHORELINE ON 13 JUL 2000.				
Owner/Manager:	SCL COUNTY-MT MADONNA PARK				

Occurrence No.	224	Map Index: 48546	EO Index: 48546	Element Last Seen:	1989-04-17
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1989-04-17
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2002-08-13
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Clara				
Lat/Long:	36.98746 / -121.59147		Accuracy:	80 meters	
UTM:	Zone-10 N4094408 E625349		Elevation (ft):	400	
PLSS:	T11S, R03E, Sec. 12 (M)		Acres:	0.0	
Location:	RESERVOIR CANYON POND, 0.2 MI WEST OF INTERSECTION OF MILLER AVE AND SANTA TERESA BLVD. SOUTH OF GILROY.				
Detailed Location:	O'CONNEL RANCH PROJECT SITE. POND "A".				
Ecological:	CLEAR, DEEP POND SURROUNDED BY COAST LIVE OAK WOODLAND AND SAVANNA. SUBMERGENT VEGETATION AND ALGAE PRESENT.				
General:	ONE 4-5 INCH POND TURTLE OBSERVED DURING A SURVEY FOR CALIFORNIA TIGER SALAMANDERS.				
Owner/Manager:	PVT				



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Occurrence No.	254	Map Index: 53086	EO Index: 53086	Element Last Seen:	2003-04-03
Occ. Rank:	Poor		Presence: Presumed Extant	Site Last Seen:	2003-04-03
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2003-10-28
Quad Summary:	San Juan Bautista (3612175)				
County Summary:	San Benito				
Lat/Long:	36.85442 / -121.54573		Accuracy:	80 meters	
UTM:	Zone-10 N4079710 E629644		Elevation (ft):	180	
PLSS:	T12S, R04E, Sec. 29 (M)		Acres:	0.0	
Location:	UNNAMED TRIBUTARY TO SAN JUAN CREEK, 0.4 MLE NW OF SAN JUAN BAUTISTA.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A TRIBUTARY TO SAN JUAN CREEK THAT FUNCTIONS AS A ROADSIDE DITCH, WITH ABUNDANT WETLAND VEGETATION - TYPHA LATIFOLIA & SCIRPUS ROBUSTUS. TO THE EAST LIES AN ORCHARD & IRRIGATED ROW CROPS. GRAZED PASTURE TO THE WEST.				
General:	1 ADULT OBSERVED ON 3 APR 2003.				
Owner/Manager:	UNKNOWN				
Occurrence No.	255	Map Index: 53908	EO Index: 53908	Element Last Seen:	2003-03-05
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2003-03-05
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-01-13
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Clara				
Lat/Long:	36.93692 / -121.55034		Accuracy:	80 meters	
UTM:	Zone-10 N4088856 E629095		Elevation (ft):	145	
PLSS:	T11S, R04E, Sec. 32 (M)		Acres:	0.0	
Location:	TICK CREEK, BETWEEN HIGHWAY 101 AND THE SPRR TRACKS, 5 MILES SOUTH OF GILROY.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF WILLOW RIPARIAN WITH AN HERBACEOUS UNDERSTORY; SURROUNDED BY AGRICULTURE, RAILROAD TRACKS, AND A MAJOR HIGHWAY.				
General:	1 ADULT OBSERVED ON 5 MAR 2003.				
Owner/Manager:	UNKNOWN				
Occurrence No.	258	Map Index: 54240	EO Index: 54240	Element Last Seen:	2001-06-30
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2001-06-30
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-02-03
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.06380 / -121.44691		Accuracy:	80 meters	
UTM:	Zone-10 N4103078 E638076		Elevation (ft):	980	
PLSS:	T10S, R05E, Sec. 17, SE (M)		Acres:	0.0	
Location:	WEST SIDE OF HUNTING HOLLOW, 0.25 MILE WEST OF THE MOUTH OF COON HUNTERS GULCH, HENRY W. COE STATE PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POND SURROUNDED BY OAK WOODLAND.				
General:	20 ADULTS OBSERVED ON 30 JUN 2001.				
Owner/Manager:	DPR-HENRY W COE SP				



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Occurrence No.	259	Map Index: 54241	EO Index: 54241	Element Last Seen:	2002-06-09
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2002-06-09
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-02-03
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.07694 / -121.46406		Accuracy:	80 meters	
UTM:	Zone-10 N4104511 E636528		Elevation (ft):	890	
PLSS:	T10S, R05E, Sec. 07, SW (M)		Acres:	0.0	
Location:	POND WITHIN A TRIBUTARY TO HUNTING HOLLOW, 0.25 MILE WEST OF THE CONFLUENCE OF COYOTE CREEK, HENRY W. COE STATE PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POND SURROUNDED BY OAK WOODLAND.				
General:	1 ADULT OBSERVED ON 9 JUN 2002.				
Owner/Manager:	DPR-HENRY W COE SP				
Occurrence No.	265	Map Index: 53969	EO Index: 54250	Element Last Seen:	2003-05-06
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2003-05-06
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-02-03
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.09227 / -121.41764		Accuracy:	80 meters	
UTM:	Zone-10 N4106279 E640626		Elevation (ft):	2060	
PLSS:	T10S, R05E, Sec. 03, SW (M)		Acres:	0.0	
Location:	1 MILE EAST OF WILSON PEAK, HENRY W. COE STATE PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POND SURROUNDED BY OAK WOODLAND/SAVANNAH.				
General:	12 ADULTS OBSERVED ON 6 MAY 2003.				
Owner/Manager:	DPR-HENRY W COE SP				
Occurrence No.	266	Map Index: 54253	EO Index: 54253	Element Last Seen:	2003-06-22
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2003-06-22
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-02-03
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.12129 / -121.42786		Accuracy:	specific area	
UTM:	Zone-10 N4109484 E639664		Elevation (ft):	1880	
PLSS:	T09S, R05E, Sec. 28, SE (M)		Acres:	6.0	
Location:	RESERVOIR IN KELLY CABIN CANYON, HENRY W. COE STATE PARK.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A RESERVOIR SURROUNDED BY OAK WOODLAND.				
General:	2 ADULTS AND 1 JUVENILE OBSERVED ON 22 JUN 2003.				
Owner/Manager:	DPR-HENRY W COE SP				



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Occurrence No.	285	Map Index: 59222	EO Index: 59258	Element Last Seen:	2004-08-10
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2004-08-10
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2005-01-11
Quad Summary:	Watsonville East (3612186)				
County Summary:	Santa Clara				
Lat/Long:	36.95504 / -121.63447		Accuracy:	80 meters	
UTM:	Zone-10 N4090756 E621573		Elevation (ft):	510	
PLSS:	T11S, R03E, Sec. 27 (M)		Acres:	0.0	
Location:	RESERVOIR NORTH OF HATFIELD CANYON, IN THE SANTA CRUZ MOUNTAINS.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A RESERVOIR (12' DEEP AT MAXIMUM); SURROUNDED BY GRAZED GRASSLAND.				
General:	3 ADULTS OBSERVED ON 10 AUG 2004.				
Owner/Manager:	CASTRO VALLEY RANCH				
Occurrence No.	290	Map Index: 62217	EO Index: 62253	Element Last Seen:	2004-05-31
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2004-05-31
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2005-08-05
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.07313 / -121.45566		Accuracy:	80 meters	
UTM:	Zone-10 N4104101 E637281		Elevation (ft):	880	
PLSS:	T10S, R05E, Sec. 07, SE (M)		Acres:	0.0	
Location:	MOUTH OF BRAEN CANYON, TRIBUTARY TO HUNTING HOLLOW CREEK, EAST OF COYOTE LAKE.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A POOL IN A SECTION OF INTERMITTENT STREAM AT THE MOUTH OF BRAEN CANYON.				
General:	1 ADULT AND 3 JUVENILES OBSERVED ON 31 MAY 2004.				
Owner/Manager:	DPR-HENRY W COE SP				
Occurrence No.	295	Map Index: 33856	EO Index: 62261	Element Last Seen:	2005-05-22
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2005-05-22
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-09-13
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.07183 / -121.42069		Accuracy:	non-specific area	
UTM:	Zone-10 N4104008 E640392		Elevation (ft):	1360	
PLSS:	T10S, R05E, Sec. 16, NE (M)		Acres:	170.1	
Location:	COON HUNTERS GULCH, HENRY W. COE STATE PARK.				
Detailed Location:	MAPPED TO PROVIDED MAPS.				
Ecological:	HABITAT CONSISTS OF POOLS IN AN INTERMITTENT CREEK IN A STEEP, WOODED CANYON. RANA DRAYTONII ALSO FOUND HERE.				
General:	DETECTED ON 23 MAY 1994. 5 ADULTS AND 3 JUVENILES OBSERVED ON 16 MAY 2004. 1 JUVENILE (39 MM TOTAL LENGTH) OBSERVED ON 22 MAY 2005.				
Owner/Manager:	DPR-HENRY W COE SP				



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Occurrence No.	297	Map Index: 62377	EO Index: 62414	Element Last Seen:	2004-05-04
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2004-05-04
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2005-08-24

Quad Summary: Mt. Madonna (3712116)
County Summary: Santa Clara

Lat/Long:	37.06814 / -121.63269	Accuracy:	80 meters
UTM:	Zone-10 N4103306 E621551	Elevation (ft):	330
PLSS:	T10S, R03E, Sec. 15 (M)	Acres:	0.0

Location: NORTH OF WEST BRANCH OF LLAGAS CREEK, CORDEVILLE GOLF COURSE, SOUTH OF MORGAN HILL.

Detailed Location:

Ecological: SITE WAS HISTORICALLY USED FOR CATTLE RANCHING (INCLUDING 8 STOCK PONDS). SITE HAS CURRENTLY BEEN DEVELOPED INTO A GOLF COURSE, WITH REMNANTS OF FRAGMENTED NON-NATIVE GRASSLAND AND VALLEY OAK WOODLAND.

General: 1 OF 4 GOLF COURSE PONDS WHERE MAINLY ADULT TURTLES WERE OBSERVED ON 26 MAR, 27 APR, AND 4 MAY 2004.

Owner/Manager: PVT-CORDEVILLE GOLF COURSE

Occurrence No.	298	Map Index: 62378	EO Index: 62415	Element Last Seen:	2004-05-04
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2004-05-04
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2005-08-24

Quad Summary: Mt. Madonna (3712116)
County Summary: Santa Clara

Lat/Long:	37.06603 / -121.63262	Accuracy:	80 meters
UTM:	Zone-10 N4103072 E621561	Elevation (ft):	320
PLSS:	T10S, R03E, Sec. 15 (M)	Acres:	0.0

Location: SOUTH OF WEST BRANCH OF LLAGAS CREEK, CORDEVILLE GOLF COURSE, SOUTH OF MORGAN HILL.

Detailed Location:

Ecological: SITE WAS HISTORICALLY USED FOR CATTLE RANCHING (INCLUDING 8 STOCK PONDS). SITE HAS CURRENTLY BEEN DEVELOPED INTO A GOLF COURSE, WITH REMNANTS OF FRAGMENTED NON-NATIVE GRASSLAND AND VALLEY OAK WOODLAND.

General: 1 OF 4 GOLF COURSE PONDS WHERE MAINLY ADULT TURTLES WERE OBSERVED ON 26 MAR, 27 APR, AND 4 MAY 2004.

Owner/Manager: PVT-CORDEVILLE GOLF COURSE



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Occurrence No.	299	Map Index: 62379	EO Index: 62416	Element Last Seen:	2004-05-04
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2004-05-04
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2005-08-24
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.06914 / -121.64058		Accuracy:	specific area	
UTM:	Zone-10 N4103406 E620849		Elevation (ft):	320	
PLSS:	T10S, R03E, Sec. 16 (M)		Acres:	10.0	
Location:	1 MILE EAST OF THE INTERSECTION OF WATSONVILLE ROAD AND SYCAMORE AVENUE, CORDEVILLE GOLF COURSE, SOUTH OF MORGAN HILL.				
Detailed Location:					
Ecological:	SITE WAS HISTORICALLY USED FOR CATTLE RANCHING (INCLUDING 8 STOCK PONDS). SITE HAS CURRENTLY BEEN DEVELOPED INTO A GOLF COURSE, WITH REMNANTS OF FRAGMENTED NON-NATIVE GRASSLAND AND VALLEY OAK WOODLAND. CTS ALSO FOUND AT THIS SITE IN 1995.				
General:	AN UNSPECIFIED NUMBER OF TURTLES OBSERVED ON 6 MAR 1995. 1 OF 4 GOLF COURSE PONDS WHERE MAINLY ADULT TURTLES WERE OBSERVED ON 26 MAR, 27 APR, AND 4 MAY 2004.				
Owner/Manager:	PVT-CORDEVILLE GOLF COURSE				
Occurrence No.	306	Map Index: 63065	EO Index: 63151	Element Last Seen:	1991-XX-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2001-10-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2005-11-02
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.02963 / -121.68577		Accuracy:	specific area	
UTM:	Zone-10 N4098967 E616891		Elevation (ft):	400	
PLSS:	T10S, R03E, Sec. 30, S (M)		Acres:	14.8	
Location:	LITTLE ARTHUR CREEK, 2 MILES ABOVE MOUTH; 2.3 MILES SOUTH OF UVAS RESERVOIR AND NORTH OF MT. MADONNA COUNTY PARK.				
Detailed Location:	LOCATED 2 ROAD MILES (ALONG REDWOOD RETREAT ROAD) FROM INTERSECTION OF REDWOOD RETREAT ROAD AND WATSONVILLE ROAD.				
Ecological:	HABITAT CONSISTS OF A PERENNIAL STREAM SURROUNDED BY NON-NATIVE GRASSLAND, SEASONAL WETLANDS, MIXED-OAK WOODLAND, MIXED RIPARIAN WOODLAND, AND BLUE OAK WOODLAND.				
General:	SPECIES PRESENT DURING 1991 SURVEY. THE CREEK WAS DRY DURING THE OCTOBER 2001 SURVEY; SPECIES CONSIDERED PRESENT.				
Owner/Manager:	UNKNOWN				



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Occurrence No.	336	Map Index: 69695	EO Index: 70481	Element Last Seen:	2007-07-10
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2007-07-10
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-07-26

Quad Summary: Mt. Madonna (3712116)
County Summary: Santa Clara

Lat/Long:	37.06514 / -121.68834	Accuracy:	specific area
UTM:	Zone-10 N4102903 E616609	Elevation (ft):	425
PLSS:	T10S, R03E, Sec. 18 (M)	Acres:	10.0

Location: UVAS RESERVOIR DAM SPILLWAY CHANNEL, 7 MILES NW OF GILROY.

Detailed Location:

Ecological: HABITAT CONSISTS OF THE DAM SPILLWAY CHANNEL, CONTAINING POOLS, LARGE ROCKS FOR BASKING, AND EMERGENT VEGETATION. OTHER NATIVE AND NON-NATIVE FISH, AMPHIBIANS, AND REPTILES ALSO PRESENT.

General: 1 ADULT POND TURTLE (AS WELL AS 1 PAINTED TURTLE) OBSERVED ON 10 JUL 2007.

Owner/Manager: SANTA CLARA VALLEY WATER DIST

Occurrence No.	353	Map Index: 54034	EO Index: 71665	Element Last Seen:	2005-05-07
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2005-05-07
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2008-02-25

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.05028 / -121.43037	Accuracy:	80 meters
UTM:	Zone-10 N4101602 E639571	Elevation (ft):	1100
PLSS:	T10S, R05E, Sec. 21 (M)	Acres:	0.0

Location: 0.6 MILE NE OF BILLS HILL, HENRY W. COE STATE PARK.

Detailed Location:

Ecological: HABITAT CONSISTS OF A TINY, SEASONAL POND SURROUNDED BY OAK WOODLAND.

General: 2 ADULTS OBS ON 7 MAY 2005.

Owner/Manager: DPR-HENRY W COE SP

Occurrence No.	354	Map Index: 70756	EO Index: 71667	Element Last Seen:	2004-05-02
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2004-05-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2008-02-25

Quad Summary: Pacheco Peak (3712113), Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.09425 / -121.37487	Accuracy:	specific area
UTM:	Zone-10 N4106564 E644424	Elevation (ft):	1200
PLSS:	T10S, R05E, Sec. 01 (M)	Acres:	151.0

Location: CANADA DE LA DORMIDA, HEADWATERS OF CEDAR CREEK, HENRY W. COE STATE PARK.

Detailed Location:

Ecological: HABITAT CONSISTS OF A HEAVILY-WOODED, STEEP CANYON, CONTAINING AN INTERMITTENT STREAM WHICH EVENTUALLY BECOMES THE HEADWATERS OF CEDAR CREEK.

General: 5 ADULTS & 3 JUVENILES (SMALLEST MEASURED 30 MM IN LENGTH) OBSERVED IN VARIOUS LOCATIONS ALONG THIS SECTION OF STREAM ON 2 MAY 2004.

Owner/Manager: DPR-HENRY W COE SP



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Occurrence No.	534	Map Index:	46140	EO Index:	46140	Element Last Seen:	2000-07-06
Occ. Rank:	Excellent	Presence:	Presumed Extant	Site Last Seen:		2000-07-06	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2001-10-15	

Quad Summary: San Felipe (3612184)

County Summary: San Benito

Lat/Long:	36.94760 / -121.44530	Accuracy:	80 meters
UTM:	Zone-10 N4090188 E638430	Elevation (ft):	150
PLSS:	T11S, R05E, Sec. 29, SW (M)	Acres:	0.0

Location: SE OF GILROY & NE OF HOLLISTER AIRPORT. TEQUISQUITA SLOUGH, 0.3 AIR MILE NORTH OF SHORE RD.

Detailed Location:

Ecological: TEQUISQUITA SLOUGH IS ABOUT 70 FT WIDE & 9 FT DEEP. WILLOW RIPARIAN & FRESHWATER MARSH VEGETATION LINE BANKS OF CHANNEL; TURBID WATER. AGRICULTURE & GRAZING IN SURROUNDING AREA.

General: 2 ADULTS OBSERVED BASKING ON WOODY DEBRIS.

Owner/Manager: PVT

Occurrence No.	1164	Map Index:	72498	EO Index:	69633	Element Last Seen:	2006-05-17
Occ. Rank:	Excellent	Presence:	Presumed Extant	Site Last Seen:		2006-05-17	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2008-10-09	

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.78134 / -121.67682	Accuracy:	80 meters
UTM:	Zone-10 N4071432 E618070	Elevation (ft):	90
PLSS:	T13S, R03E, Sec. 19, SE (M)	Acres:	0.0

Location: 0.8 MILE NW OF THE INTERSECTION OF BLACKIE ROAD AND HIGHWAY 156, JUST WEST OF PRUNEDALE.

Detailed Location: NATURAL WETLANDS ARE LIKELY ENHANCED BY BERMS AT THE DOWNSTREAM END.

Ecological: HABITAT CONSISTS OF A LARGE FRESHWATER MARSH WITH OPEN-WATER; WATER DEPTH <4'. WILLOWS GROW ALONG THE SHORELINE, SUBMERGENT AQUATICS ABUNDANT, AND RUDERAL SPECIES ARE DENSE ALONG BERMS.

General: AQUATIC SURVEYS WERE CONDUCTED ON 17 APR, 19 APR, 4 MAY, AND 17 MAY 2006; ONE TURTLE OBSERVED DURING RECONNAISSANCE ON 5 MAY AND ONE ON 17 MAY 2006 DURING CTS SAMPLING.

Owner/Manager: PVT



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Occurrence No.	1189	Map Index:	70796	EO Index:	71708	Element Last Seen:	2007-05-16
Occ. Rank:	Fair	Presence:	Presumed Extant	Site Last Seen:		2007-05-16	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2008-02-08	

Quad Summary: Prunedale (3612176)

County Summary: San Benito

Lat/Long:	36.86433 / -121.63111	Accuracy:	80 meters
UTM:	Zone-10 N4080697 E622017	Elevation (ft):	220
PLSS:	T12S, R03E, Sec. 27, NW (M)	Acres:	0.0

Location: 0.6 MI NORTH OF THE JUNCTION OF SAN JUAN ROAD AND HIGHWAY 101, 5 MILES WNW OF SAN JUAN BAUTISTA.

Detailed Location:

Ecological: ARTIFICIAL POND BERMED IN SWALE. 50X185 FT, 3.5 FT DEEP. WATER TURBID. OPEN WATER HABITAT PROMINENT. EMERGENT VEGETATION: SMALL PATCH OF SCIRPUS, FEW PATCHES OF POLYGONUM. UPLAND HABITAT MOSAIC OF OAK WOODLANDS, FEW PATCHES ANNUAL GRASSLAND.

General: ONE 5 INCH POND TURTLE OBSERVED ON 16 MAY 2007. LOUISIANA CRAYFISH AND GAMBUSIA ABUNDANT. ABOUT 1 DOZEN BULLFROG SUBADULTS PRESENT - NO TADPOLES CAPTURED. CURRENT/SURROUNDING LAND USE IS MAINLY RANCHETTES.

Owner/Manager: PVT

Occurrence No.	1190	Map Index:	70862	EO Index:	71747	Element Last Seen:	2001-07-17
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		2001-07-17	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2008-02-26	

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.79611 / -121.66666	Accuracy:	80 meters
UTM:	Zone-10 N4073084 E618954	Elevation (ft):	120
PLSS:	T13S, R03E, Sec. 17, SW (M)	Acres:	0.0

Location: ALONG STREAM, 0.25 MILE SOUTH THE JUNCTION OF SAN MIGUEL CANYON RD AND HIGHWAY 101, WEST OF HIGHWAY 101, N OF PRUNEDALE.

Detailed Location: LOCATION MAPPED ACCORDING TO COORDINATES.

Ecological: HABITAT CONSISTS OF A STREAMBED WITH RIPARIAN VEGETATION. CURRENT SURROUNDING LAND USE IS URBAN AND COMMERCIAL.

General: 1 ADULT OBSERVED ON 17 JUL 2001.

Owner/Manager: CITY OF PRUNEDALE



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Occurrence No.	1191	Map Index: 70864	EO Index: 71845	Element Last Seen:	2001-07-17
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2001-07-17
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2010-08-12
Quad Summary:	San Juan Bautista (3612175)				
County Summary:	Monterey				
Lat/Long:	36.78055 / -121.60888		Accuracy:	80 meters	
UTM:	Zone-10 N4071431 E624134		Elevation (ft):	250	
PLSS:	T13S, R03E, Sec. 23, S (M)		Acres:	0.0	
Location:	POND JUST WEST OF CRAZY HORSE CANYON ROAD, 0.6 MILE NNW OF SAN JUAN GRADE ROAD, 3.2 MILES EAST OF PRUNDALE.				
Detailed Location:					
Ecological:	HABITAT CONSISTS OF A LARGE POND SURROUNDED BY GRASSLAND, COAST LIVE OAK WOODLAND, AND MIXED CHAPARRAL. CURRENT/SURROUNDING LAND USE IS CATTLE GRAZING.				
General:	3 ADULTS OBSERVED ON 27 FEB AND 1 OBSERVED ON 17 JUL 2001. TARICHA TOROSA TOROSA ALSO IN VICINITY.				
Owner/Manager:	PVT				
Occurrence No.	1268	Map Index: 99501	EO Index: 101048	Element Last Seen:	2015-03-23
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2015-03-23
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2016-03-28
Quad Summary:	Hollister (3612174)				
County Summary:	San Benito				
Lat/Long:	36.81750 / -121.46082		Accuracy:	80 meters	
UTM:	Zone-10 N4075733 E637280		Elevation (ft):	360	
PLSS:	T13S, R05E, Sec. 07, NE (M)		Acres:	0.0	
Location:	SAN JUAN OAKS GOLF CLUB; ABOUT 1.7 MI SSW OF SR156 AT UNION RD & 2.0 MI ESE OF ST FRANCIS RETREAT, SW OF HOLLISTER.				
Detailed Location:	MAPPED TO PROVIDED COORDINATES. OBSERVATION ON DIRT ROAD LABELED IN GOOGLE EARTH AS "NOTHING RD."				
Ecological:	ANNUAL GRASSLAND ON ROLLING HILLS SURROUNDED BY GOLF COURSE; ARTIFICIAL PONDS NEARBY ON GOLF COURSE CONTAIN RED-EARED SLIDERS.				
General:	SMALL ADULT MALE OBSERVED CROSSING DIRT ROAD FROM UPLAND HABITAT TOWARDS POOLS ON 23 MAR 2015. FIRST CONFIRMED RECORD OF WESTERN POND TURTLE ON THE PROPERTY.				
Owner/Manager:	PVT				



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Occurrence No.	1369	Map Index: A6367	EO Index: 108126	Element Last Seen:	2016-08-22
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2016-08-22
Occ. Type:	Natural/Native occurrence		Trend: Stable	Record Last Updated:	2017-09-14

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.05392 / -121.38431	Accuracy:	80 meters
UTM:	Zone-10 N4102074 E643662	Elevation (ft):	1738
PLSS:	T10S, R05E, Sec. 24, NW (M)	Acres:	5.0

Location: NORTH SIDE OF ELEPHANT HEAD RIDGE ABOUT 0.4 MI N OF KICKHAM PEAK & 1.7 MI SW OF GULNAC PEAK, CANADA DE LOS OSOS ER.

Detailed Location: KNOWN AS CORRAL POND OR OLD CORRAL POND. MAPPED TO PROVIDED COORDINATES.

Ecological: FORMER FARM POND FAR FROM PERENNIAL STREAMS, SUBJECT TO DRYING IN DROUGHT. IN GRASSLAND & BLUE OAK SAVANNA. FORMER RANCH, NOW UNGRAZED PRESERVE. UNKNOWN HOW TURTLES GOT TO THIS ISOLATED POND. 2016: POPULATION APPEARS ROBUST AND SECURE.

General: AT LEAST 33 TURTLES, INCLUDING GRAVID FEMALE & 12+ JUVENILES, CAUGHT & RELEASED IN JULY 2013. 30 ADULTS & 11 JUVENILES CAUGHT IN 2016. 63 DIFFERENT TURTLES WERE CAUGHT BETWEEN THE 2013 & 2016 SAMPLINGS.

Owner/Manager: DFG-CANADA DE LOS OSOS ER

Occurrence No.	1473	Map Index: B1241	EO Index: 113135	Element Last Seen:	2016-11-10
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2016-11-10
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-10-24

Quad Summary: San Felipe (3612184)
County Summary: Santa Clara

Lat/Long:	36.98761 / -121.38191	Accuracy:	80 meters
UTM:	Zone-10 N4094721 E644000	Elevation (ft):	267
PLSS:	T11S, R05E, Sec. 12, SW (M)	Acres:	5.0

Location: POND AT CASA DE FRUTA REST STOP, E SIDE OF HWY 152 ABOUT 0.6 MILES N OF THE WALNUT AVE JCT & 2.3 MILES NE OF SAN FELIPE.

Detailed Location: MAPPED TO PROVIDED COORDINATES.

Ecological: ARTIFICIAL POND IN DEVELOPED RESORT/REST STOP ADJACENT TO PACHECO CREEK. AGRICULTURAL LAND USE TO EAST, HIGHWAY & DISTURBED GRASSLAND TO WEST. DISTURBANCES FROM FOOT AND VEHICLE TRAFFIC AND TRASH NOTED.

General: 1 ADULT OBSERVED OBN 10 NOV 2016.

Owner/Manager: PVT



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Occurrence No.:	1483	Map Index: B2319	EO Index: 114244	Element Last Seen:	20XX-XX-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	20XX-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-03-01

Quad Summary: Chittenden (3612185)

County Summary: Santa Clara

Lat/Long:	36.92184 / -121.54855	Accuracy:	1/10 mile
UTM:	Zone-10 N4087185 E629280	Elevation (ft):	141
PLSS:	T12S, R04E, Sec. 5, NE (M)	Acres:	18.0

Location: W SIDE US-101 ABOUT 0.3 MI N OF THE PAJARO RIVER CROSSING AND 2.6 MILES NNE OF CA-129 AT SCHOOL RD, SARGENT RANCH.

Detailed Location: MAPPED TO PROVIDED MAP AND COORDINATES.

Ecological: PROPERTY USED FOR CATTLE RANCHING AND OIL EXTRACTION, WITH QUARRY PROPOSED IN 2017.

General: DETECTED DURING SURVEYS IN 2000-2001 AND/OR 2005-2015.

Owner/Manager: PVT

<i>Anniella pulchra</i>	Element Code: ARACC01020
Northern California legless lizard	
Listing Status:	Federal: None
	State: None
	Other: CDFW_SSC-Species of Special Concern, USFS_S-Sensitive
Habitat:	General: SANDY OR LOOSE LOAMY SOILS UNDER SPARSE VEGETATION.
	Micro: SOIL MOISTURE IS ESSENTIAL. THEY PREFER SOILS WITH A HIGH MOISTURE CONTENT.

Occurrence No.:	379	Map Index: B1999	EO Index: 113922	Element Last Seen:	2018-08-15
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2018-08-15
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-01-16

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.81872 / -121.71746	Accuracy:	80 meters
UTM:	Zone-10 N4075530 E614388	Elevation (ft):	203
PLSS:	T13S, R02E, Sec. 11, NE (M)	Acres:	5.0

Location: 0.3 AIR MILES NE OF THE INTERSECTION OF ELKHORN RD & WALKER VALLEY RD, EAST OF MOSS LANDING, NE OF CASTROVILLE.

Detailed Location: MAPPED TO PROVIDED COORDINATES.

Ecological: AREA APPEARS TO BE LOW DENSITY RESIDENTIAL IN OAK WOODLAND.

General: ONE FOUND AND PHOTOGRAPHED ON 15 AUG 2018.

Owner/Manager: PVT



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<i>Phrynosoma blainvillii</i>		Element Code: ARACF12100	
coast horned lizard			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G3G4
	State: None		State: S3S4
	Other: BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern		
Habitat:	General: FREQUENTS A WIDE VARIETY OF HABITATS, MOST COMMON IN LOWLANDS ALONG SANDY WASHES WITH SCATTERED LOW BUSHES.		
	Micro: OPEN AREAS FOR SUNNING, BUSHES FOR COVER, PATCHES OF LOOSE SOIL FOR BURIAL, AND ABUNDANT SUPPLY OF ANTS AND OTHER INSECTS.		

Occurrence No.	614	Map Index:	42253	EO Index:	42253	Element Last Seen:	1994-05-25
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		1994-05-25	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2000-01-24	
Quad Summary:	Gilroy Hot Springs (3712114)						
County Summary:	Santa Clara						
Lat/Long:	37.09441 / -121.43254		Accuracy:	2/5 mile			
UTM:	Zone-10 N4106495 E639298		Elevation (ft):	2500			
PLSS:	T10S, R05E, Sec. 04 (M)		Acres:	0.0			
Location:	NEAR WILSON PEAK, 2 MILES ESE OF GILROY HOT SPRINGS.						
Detailed Location:							
Ecological:	HABITAT CONSISTS OF A MIXTURE OF SCRUB, GRASSLAND, AND WOODLAND.						
General:	1 ADULT OBSERVED IN AN OPEN AREA OF GRASSLAND.						
Owner/Manager:	DPR						

Occurrence No.	900	Map Index:	98859	EO Index:	110569	Element Last Seen:	1894-05-02
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		1894-05-02	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2018-03-27	
Quad Summary:	Mt. Madonna (3712116), Morgan Hill (3712126)						
County Summary:	Santa Clara						
Lat/Long:	37.12941 / -121.65562		Accuracy:	1 mile			
UTM:	Zone-10 N4110074 E619417		Elevation (ft):	350			
PLSS:	T09S, R03E, Sec. 28 (M)		Acres:	0.0			
Location:	VICINITY OF MORGAN HILL.						
Detailed Location:	MAPPED TO PROVIDED LOCALITY.						
Ecological:							
General:	1 COLLECTED 2 MAY 1894.						
Owner/Manager:	UNKNOWN						



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<i>Masticophis flagellum ruddocki</i>		Element Code: ARADB21021
San Joaquin coachwhip		
Listing Status:	Federal: None	CNDDDB Element Ranks: Global: G5T2T3
	State: None	State: S2?
	Other: CDFW_SSC-Species of Special Concern	
Habitat:	General: OPEN, DRY HABITATS WITH LITTLE OR NO TREE COVER. FOUND IN VALLEY GRASSLAND AND SALTBUSH SCRUB IN THE SAN JOAQUIN VALLEY.	
	Micro: NEEDS MAMMAL BURROWS FOR REFUGE AND OVIPOSITION SITES.	

Occurrence No.	1	Map Index: 33714	EO Index: 29903	Element Last Seen: 1996-04-23
Occ. Rank:	Poor	Presence: Presumed Extant	Site Last Seen: 1996-04-23	
Occ. Type:	Natural/Native occurrence	Trend: Unknown	Record Last Updated: 1997-03-17	

Quad Summary: Hollister (3612174)
County Summary: San Benito

Lat/Long:	36.84543 / -121.42534	Accuracy:	1/5 mile
UTM:	Zone-10 N4078882 E640395	Elevation (ft):	250
PLSS:	T12S, R05E, Sec. 33 (M)	Acres:	0.0

Location: SAN BENITO RIVER CHANNEL, 0.5 MILE SOUTH OF HWY 156, WEST OF HOLLISTER.
Detailed Location:
Ecological: HABITAT CONSISTS OF DEGRADED RIPARIAN SCRUB, CONSISTING OF COYOTE BUSH, MULEFAT, TREE TOBACCO, BLUE ELDERBERRY, AND ATRIPLEX, WITH AN UNDERSTORY OF ANNUAL RUDERAL SPECIES.
General: ON 23 APRIL 1996, ONE ADULT WAS OBSERVED ON THE SURFACE BRIEFLY BEFORE IT ENTERED A BURROW.
Owner/Manager: PVT



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Central Maritime Chaparral		Element Code: CTT37C20CA	
Central Maritime Chaparral			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G2
	State: None		State: S2.2
	Other:		
Habitat:	General: <input type="checkbox"/>		
	Micro: <input type="checkbox"/>		
Occurrence No.	1	Map Index: 10718	EO Index: 25356
Occ. Rank:	Unknown	Presence: Presumed Extant	Element Last Seen: 1980-XX-XX
Occ. Type:	Natural/Native occurrence	Trend: Unknown	Site Last Seen: 1980-XX-XX
			Record Last Updated: 1998-07-14
Quad Summary:	Prunedale (3612176)		
County Summary:	Monterey		
Lat/Long:	36.82105 / -121.70093	Accuracy:	1 mile
UTM:	Zone-10 N4075808 E615859	Elevation (ft):	200
PLSS:	T13S, R02E, Sec. 12 (M)	Acres:	0.0
Location:	LONG VALLEY, 5 MILES NORTHEAST OF CASTROVILLE OR 1 MILE EAST OF ELKHORN.		
Detailed Location:	MAPPED NEAR THE MIDDLE OF LONG CANYON.		
Ecological:	GOOD STANDS OF THE ENDEMICS, ARCTOSTAPHYLOS PAJAROENSIS, A. HOOKERI AND CEANOTHUS RIGIDUS.		
General:	WORTHY OF PRESERVATION PER GRIGGS. SOME OF THIS OCCURRENCE IS WITHIN MANZANITA REGIONAL PARK. SEE HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.		
Owner/Manager:	UNKNOWN		



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Northern Coastal Salt Marsh		Element Code: CTT52110CA	
Northern Coastal Salt Marsh			
Listing Status:	Federal: None	CNDDB Element Ranks:	Global: G3
	State: None		State: S3.2
	Other:		
Habitat:	General: <input type="checkbox"/>		
	Micro: <input type="checkbox"/>		

Occurrence No.	29	Map Index:	10600	EO Index:	16139	Element Last Seen:	1972-11-XX
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	1972-11-XX	Record Last Updated:	1998-07-20
Occ. Type:	Natural/Native occurrence	Trend:	Unknown				

Quad Summary: Prunedale (3612176), Moss Landing (3612177)
County Summary: Monterey

Lat/Long:	36.83503 / -121.74406	Accuracy:	specific area
UTM:	Zone-10 N4077307 E611992	Elevation (ft):	
PLSS:	T13S, R02E, Sec. 03 (M)	Acres:	1199.3

Location: ELKHORN SLOUGH AT MOSS LANDING.
Detailed Location: ONLY USFWS E2EMN WETLAND WAS MAPPED.
Ecological: 312 HA SALT MARSH DOMINATED BY SALICORNIA; ASSOC W/EUSALINE LAGOON.
General: PARTIALLY OWNED BY STATE; ESTUARINE SANCTUARY. SEE [HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES](https://wildlife.ca.gov/Data/VegCamp/Natural-Communities) TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.
Owner/Manager: STATE?



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Coastal Brackish Marsh

Element Code: CTT52200CA

Coastal Brackish Marsh

Listing Status: **Federal:** None

CNDDDB Element Ranks: **Global:** G2

State: None

State: S2.1

Other:

Habitat: **General:**

Micro:

Occurrence No. 26 **Map Index:** 10594 **EO Index:** 16095 **Element Last Seen:** 1985-11-16

Occ. Rank: Unknown **Presence:** Presumed Extant **Site Last Seen:** 1985-11-16

Occ. Type: Natural/Native occurrence **Trend:** Unknown **Record Last Updated:** 1998-07-16

Quad Summary: Prunedale (3612176), Moss Landing (3612177)

County Summary: Monterey

Lat/Long: 36.78776 / -121.75319

Accuracy: specific area

UTM: Zone-10 N4072053 E611246

Elevation (ft): 15

PLSS: T13S, R02E, Sec. 21 (M)

Acres: 449.4

Location: MORO COJO SLOUGH, 2 MILES NORTH OF CASTROVILLE.

Detailed Location:

Ecological: SCIRPUS, TYPHA & JUNCUS DOMINANT W/TRANSITION FROM SALT MARSH IN LOWER PORTION; SOME SEASONAL MARSH.

General: SEE [HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES](https://wildlife.ca.gov/Data/VegCamp/Natural-Communities) TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.

Owner/Manager: PVT



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Sycamore Alluvial Woodland

Element Code: CTT62100CA

Sycamore Alluvial Woodland

Listing Status: Federal: None

CNDDDB Element Ranks: Global: G1

State: None

State: S1.1

Other:

Habitat: General:

Micro:

Occurrence No. 12 **Map Index:** 22649 **EO Index:** 8241 **Element Last Seen:** 1992-11-11

Occ. Rank: Good **Presence:** Presumed Extant **Site Last Seen:** 1992-11-11

Occ. Type: Natural/Native occurrence **Trend:** Unknown **Record Last Updated:** 1998-07-21

Quad Summary: Gilroy Hot Springs (3712114)

County Summary: Santa Clara

Lat/Long: 37.07341 / -121.48133 **Accuracy:** specific area

UTM: Zone-10 N4104094 E634999 **Elevation (ft):** 836

PLSS: T10S, R04E, Sec. 12, S (M) **Acres:** 49.2

Location: UPPER COYOTE CK AT SOUTH END OF PALASSOU RIDGE; AT INTERSECTION OF GILROY HOT SPRINGS RD AND CANADA RD, SANTA CLARA CO.

Detailed Location: SEVEN POLYGONS ALONG COYOTE CREEK EXTENDING FROM THE SW CORNER OF SECTION 7 NEAR INTERSECTION OF UNPAVED RD AND GILROY HOT SPRINGS RD TO CONFLUENCE OF COYOTE AND BEAR CREEKS.

Ecological: PLATANUS RACEMOSA DOMINATED ALLUVIAL TERRACE & STREAMSIDE COMMUNITY ALONG INTERMITTENT CREEK W/ VARIABLE MIXTURE OF SUBDOMINANTS. PRESENCE OF UMBELLULARIA & QUERCUS AGRIFOLIA INDICATES COASTAL-MESIC INFLUENCE. SURR BY Q. AGRIFOLIA WOODLAND.

General: SYCAMORE STEMS OF VARIABLE SIZE; RECENT DISTURBANCE LIKELY. ALLUVIUM DERIVED FROM FRANCISCAN SEDIMENTARY ROCKS. SEE [HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES](https://wildlife.ca.gov/Data/VegCamp/Natural-Communities) TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.

Owner/Manager: PVT



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<i>Linderiella occidentalis</i>		Element Code: ICBRA06010	
California linderiella			
Listing Status:	Federal: None	CNDDB Element Ranks:	Global: G2G3
	State: None		State: S2S3
	Other: IUCN_NT-Near Threatened		
Habitat:	General: SEASONAL POOLS IN UNPLOWED GRASSLANDS WITH OLD ALLUVIAL SOILS UNDERLAIN BY HARDPAN OR IN SANDSTONE DEPRESSIONS.		
	Micro: WATER IN THE POOLS HAS VERY LOW ALKALINITY, CONDUCTIVITY, AND TOTAL DISSOLVED SOLIDS.		

Occurrence No.	173	Map Index:	42474	EO Index:	42516	Element Last Seen:	1999-05-06
Occ. Rank:	Fair	Presence:	Presumed Extant	Site Last Seen:		1999-05-06	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2000-03-09	

Quad Summary: Hollister (3612174)
County Summary: San Benito

Lat/Long:	36.81715 / -121.45526	Accuracy:	80 meters
UTM:	Zone-10 N4075701 E637777	Elevation (ft):	370
PLSS:	T13S, R05E, Sec. 07 (M)	Acres:	0.0

Location: 1.9 MILES SSE OF THE INTERSECTION OF FLINT ROAD AND HIGHWAY 156, SAN JUAN OAKS GOLF COURSE.
Detailed Location:
Ecological: HABITAT IS AN ARTIFICIALLY-CREATED POND AT THE EDGE OF A GOLF COURSE (NOT PART OF THE GOLF COURSE LAYOUT), DENSE AQUATIC VEG IN SHALLOWS, WATER DEPTH 1 FT 4 INCHES, SURFACE TEMP 60 F. SURROUNDED BY GOLF COURSE, AGRICULTURE & CATTLE GRAZING.
General: 2 ADULTS WERE OBSERVED ON 6 MAY 1999, DURING DIPNET SAMPLING FOR CALIFORNIA TIGER SALAMANDER.
Owner/Manager: PVT-SAN JUAN OAKS GOLF COURSE

Occurrence No.	174	Map Index:	42517	EO Index:	42517	Element Last Seen:	1999-05-06
Occ. Rank:	Fair	Presence:	Presumed Extant	Site Last Seen:		1999-05-06	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2000-03-09	

Quad Summary: Hollister (3612174)
County Summary: San Benito

Lat/Long:	36.81870 / -121.46270	Accuracy:	80 meters
UTM:	Zone-10 N4075862 E637111	Elevation (ft):	370
PLSS:	T13S, R05E, Sec. 07 (M)	Acres:	0.0

Location: 1.65 MILES SSE OF THE INTERSECTION OF FLINT ROAD AND HIGHWAY 156, SAN JUAN OAKS GOLF COURSE.
Detailed Location:
Ecological: HABITAT CONSISTS OF A SEASONAL POND, BERMED BY A ROAD BED, AT THE EDGE OF A GOLF COURSE (NOT PART OF THE GOLF COURSE LAYOUT); SURROUNDED BY GOLF COURSE, AGRICULTURE, AND CATTLE GRAZING.
General: 2 ADULTS WERE OBSERVED ON 6 MAY 1999, DURING SAMPLING FOR CALIFORNIA TIGER SALAMANDER.
Owner/Manager: PVT-SAN JUAN OAKS GOLF COURSE



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<i>Optioservus canus</i>		Element Code: IICOL5E020	
Pinnacles optioservus riffle beetle			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G2
	State: None		State: S1
	Other:		
Habitat:	General: AQUATIC.		
	Micro: FOUND ON ROCKS AND IN GRAVEL OF RIFFLES IN COOL, SWIFT, CLEAR STREAMS.		

Occurrence No.	3	Map Index: 58240	EO Index: 58276	Element Last Seen:	198X-XX-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	198X-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-11-29
Quad Summary:	Hollister (3612174), San Juan Bautista (3612175), Chittenden (3612185)				
County Summary:	San Benito				
Lat/Long:	36.86143 / -121.49395		Accuracy:	specific area	
UTM:	Zone-10 N4080559 E634249		Elevation (ft):	120	
PLSS:	T12S, R04E, Sec. 26 (M)		Acres:	637.1	
Location:	SAN BENITO RIVER.				
Detailed Location:					
Ecological:					
General:	OBSERVED BY SHEPARD, BUT NO OTHER INFORMATION GIVEN. BASED ON DATE OF PUBLICATION, COLLECTION WAS SOMETIME BETWEEN 1985 & 1989.				
Owner/Manager:	UNKNOWN				

<i>Bombus occidentalis</i>		Element Code: IIHYM24250	
western bumble bee			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G2G3
	State: None		State: S1
	Other: USFS_S-Sensitive		
Habitat:	General: ONCE COMMON AND WIDESPREAD, SPECIES HAS DECLINED PRECIPITOUSLY FROM CENTRAL CA TO SOUTHERN B.C., PERHAPS FROM DISEASE.		
	Micro: <input type="checkbox"/>		

Occurrence No.	256	Map Index: 98859	EO Index: 100365	Element Last Seen:	1940-07-11
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1940-07-11
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2016-01-21
Quad Summary:	Mt. Madonna (3712116), Morgan Hill (3712126)				
County Summary:	Santa Clara				
Lat/Long:	37.12941 / -121.65562		Accuracy:	1 mile	
UTM:	Zone-10 N4110074 E619417		Elevation (ft):	350	
PLSS:	T09S, R03E, Sec. 28 (M)		Acres:	0.0	
Location:	MORGAN HILL.				
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED BY CNDDDB IN THE VICINITY OF THE CITY OF MORGAN HILL, IN SANTA CLARA VALLEY.				
Ecological:					
General:	COLLECTED 11 JUL 1940.				
Owner/Manager:	UNKNOWN				



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Occurrence No.	267	Map Index: 87730	EO Index: 100381	Element Last Seen: 1959-08-31
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen: 1959-08-31
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2016-01-21
Quad Summary:	Watsonville East (3612186), Watsonville West (3612187)			
County Summary:	Monterey, Santa Cruz			
Lat/Long:	36.91050 / -121.75519		Accuracy: 1 mile	
UTM:	Zone-10 N4085667 E610890		Elevation (ft): 40	
PLSS:	T12S, R02E, Sec. 04 (M)		Acres: 0.0	
Location:	WATSONVILLE.			
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED BY CNDDDB AT THE CITY OF WATSONVILLE.			
Ecological:				
General:	COLLECTED 31 AUG 1959.			
Owner/Manager:	UNKNOWN			
Occurrence No.	304	Map Index: B6731	EO Index: 119793	Element Last Seen: 1994-03-17
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen: 1994-03-17
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2020-12-17
Quad Summary:	Watsonville East (3612186), Watsonville West (3612187)			
County Summary:	Santa Cruz			
Lat/Long:	36.94667 / -121.7475		Accuracy: 1 mile	
UTM:	Zone-10 N4089689 E611522		Elevation (ft): 51	
PLSS:	T11S, R02E, Sec. 28 (M)		Acres: 1987.0	
Location:	VICINITY OF COLLEGE LAKE IN WATSONVILLE.			
Detailed Location:	SPECIMEN LOCALITY GIVEN AS "COLLEGE LK, WATSONVILLE." EXACT COLLECTION LOCATION UNKNOWN.			
Ecological:	FOUND IN URBAN HABITAT.			
General:	1 QUEEN COLLECTED ON 17 MAR 1994.			
Owner/Manager:	UNKNOWN			
Occurrence No.	305	Map Index: B6733	EO Index: 119795	Element Last Seen: 1994-10-02
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen: 1994-10-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2020-12-17
Quad Summary:	Watsonville East (3612186)			
County Summary:	Monterey, Santa Cruz			
Lat/Long:	36.92397 / -121.69693		Accuracy: 1 mile	
UTM:	Zone-10 N4087231 E616061		Elevation (ft): 56	
PLSS:	T12S, R02E, Sec. 1 (M)		Acres: 1987.0	
Location:	KELLY-THOMPSON RANCH, NEAR THE INTERSECTION OF CARLTON ROAD AND HIGHWAY 129, EAST OF WATSONVILLE.			
Detailed Location:	SPECIMEN LOCALITIES PROVIDED AS "KELLY-THOMPSON RANCH" OR SIMILAR. MAPPED GENERALLY BASED ON RESULTS OF GOOGLE MAPS AND PARCEL SEARCHES; EXACT COLLECTION LOCATION UNKNOWN.			
Ecological:	FOUND ON FLOWERS OF ERIOGONUM NUDUM, ADENOSTOMA FASCICULATUM, AND ERICAMERIA ERICOIDES IN GRASSLAND HABITAT.			
General:	3 WORKERS COLLECTED ON 30 JUL 1994. 2 MALES AND 1 WORKER COLLECTED ON 9 SEP 1994. 1 MALE COLLECTED ON 2 OCT 1994.			
Owner/Manager:	PVT			



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<i>Bombus caliginosus</i>		Element Code: IIHYM24380	
obscure bumble bee			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G2G3
	State: None		State: S1S2
	Other: IUCN_VU-Vulnerable		
Habitat:	General: COASTAL AREAS FROM SANTA BARBARA COUNTY TO NORTH TO WASHINGTON STATE.		
	Micro: FOOD PLANT GENERA INCLUDE BACCHARIS, CIRSIUM, LUPINUS, LOTUS, GRINDELIA AND PHACELIA.		

Occurrence No.	137	Map Index:	96763	EO Index:	97976	Element Last Seen:	1935-07-22
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		1935-07-22	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2015-07-15	

Quad Summary: Chittenden (3612185)
County Summary: San Benito, Santa Clara

Lat/Long:	36.91940 / -121.54799	Accuracy:	1 mile
UTM:	Zone-10 N4086915 E629334	Elevation (ft):	150
PLSS:	T12S, R04E, Sec. 05 (M)	Acres:	0.0

Location: SARGENT.
Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDDB IN GENERAL VICINITY OF SARGENT, SOUTH OF GILROY.
Ecological:
General: COLLECTED 22 JUL 1935.
Owner/Manager: UNKNOWN

<i>Bombus crotchii</i>		Element Code: IIHYM24480	
Crotch bumble bee			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G2
	State: None		State: S1S2
	Other:		
Habitat:	General: COASTAL CALIFORNIA EAST TO THE SIERRA-CASCADE CREST AND SOUTH INTO MEXICO.		
	Micro: FOOD PLANT GENERA INCLUDE ANTIRRHINUM, PHACELIA, CLARKIA, DENDROMECON, ESCHSCHOLZIA, AND ERIOGONUM.		

Occurrence No.	25	Map Index:	79153	EO Index:	98638	Element Last Seen:	1959-04-26
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		1959-04-26	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2015-08-27	

Quad Summary: Gilroy (3712115)
County Summary: Santa Clara

Lat/Long:	37.08584 / -121.60654	Accuracy:	1 mile
UTM:	Zone-10 N4105303 E623848	Elevation (ft):	300
PLSS:	T10S, R03E, Sec. 02 (M)	Acres:	0.0

Location: SAN MARTIN.
Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDDB IN THE GENERAL VICINITY OF SAN MARTIN.
Ecological:
General: COLLECTED 26 APR 1959.
Owner/Manager: UNKNOWN



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Adela oplerella		Element Code: IILEE0G040	
Opler's longhorn moth			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G2
	State: None		State: S2
	Other:		
Habitat:	General:	FROM MARIN COUNTY AND THE OAKLAND AREA ON THE INNER COAST RANGES SOUTH TO SANTA CLARA COUNTY. ONE RECORD FROM SANTA CRUZ COUNTY.	
	Micro:	ALL BUT SANTA CRUZ SITE IS ON SERPENTINE GRASSLAND. LARVAE FEED ON PLATYSTEMON CALIFORNICUS.	

Occurrence No.	7	Map Index:	42584	EO Index:	42584	Element Last Seen:	1993-XX-XX
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	1993-XX-XX		
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:	2012-10-26		
Quad Summary:	Gilroy (3712115), Mt. Madonna (3712116)						
County Summary:	Santa Clara						
Lat/Long:	37.07231 / -121.62794		Accuracy:	specific area			
UTM:	Zone-10 N4103774 E621968		Elevation (ft):	500			
PLSS:	T10S, R03E, Sec. 10, S (M)		Acres:	103.7			
Location:	"HAYES VALLEY" SITE, NORTH SIDE OF HAYES VALLEY, 1 MILE SW OF SAN MARTIN, SOUTH OF MORGAN HILL.						
Detailed Location:	ESSIG MUSEUM RECORD FROM "WEST OF SAN MARTIN" (EXACT LOCATION UNKNOWN). MAPPED TO FIELD SURVEY FORM MAP FROM 1990-1993 SW OF SAN MARTIN.						
Ecological:	HABITAT CONSISTS OF SERPENTINE GRASSLAND. UNDEVELOPED IN 2012 AIR PHOTO; APPEARS TO BE OAK WOODLAND & GRASSLAND WITH A GOLF COURSE TO THE SOUTH.						
General:	ESSIG MUSEUM OF ENTOMOLOGY #EMEC70680 COLLECTED 14 MAR 1986. ACTIVE SITE 1990-93.						
Owner/Manager:	PVT						



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<i>Euphydryas editha bayensis</i>		Element Code: IILEPK4055	
Bay checkerspot butterfly			
Listing Status:	Federal: Threatened	CNDDDB Element Ranks:	Global: G5T1
	State: None		State: S1
Other:			
Habitat:	General: RESTRICTED TO NATIVE GRASSLANDS ON OUTCROPS OF SERPENTINE SOIL IN THE VICINITY OF SAN FRANCISCO BAY.		
	Micro: PLANTAGO ERECTA IS THE PRIMARY HOST PLANT; ORTHOCARPUS DENSIFLORUS AND O. PURPURSCENS ARE THE SECONDARY HOST PLANTS.		

Occurrence No.	14	Map Index: 38606	EO Index: 33613	Element Last Seen: 2015-03-21
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen: 2015-03-21
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2018-03-05

Quad Summary:	Gilroy (3712115)			
County Summary:	Santa Clara			
Lat/Long:	37.10863 / -121.55346	Accuracy:	non-specific area	
UTM:	Zone-10 N4107902 E628527	Elevation (ft):	1100	
PLSS:	T09S, R04E, Sec. 32 (M)	Acres:	141.5	

Location:	ALONG THE RIDGE WEST OF COYOTE RESERVOIR, JUST SW OF THE DAM ON COYOTE RESERVOIR, 6 MILES NORTH OF GILROY.			
Detailed Location:	COYOTE LAKE-HARVEY BEAR RANCH COUNTY PARK. 2015 DETECTION ALONG CALAVERAS TRAIL, EXACT LOCATION UNKNOWN. MAPPED TO AREA INDICATED ON MAPS ATTACHED TO 1990S FIELD SURVEY FORMS.			
Ecological:	1999: SERPENTINE GRASSLAND LOCATED IN A SERIES OF SERPENTINE PATCHES ALONG THE EAST-FACING SLOPE OF THE RIDGE. 2015: DETECTED IN ABUNDANT WILDFLOWERS ON SERPENTINE SOIL, INCLUDING DWARF PLANTAIN, GOLDFIELDS & TIDYTIPS.			
General:	PRESUMED EXTIRPATED IN 1977 DUE TO OVERGRAZING & DROUGHT. 1000S OF ADULTS OBSERVED IN 1994. 6 ADULTS OBS 25 MARCH 1997. 1 ADULT OBS 14 APR 1999. NONE DETECTED DURING ANNUAL MONITORING 1999-2008. MANY ADULTS OBS 21 MAR 2015.			
Owner/Manager:	SCL COUNTY			

Occurrence No.	19	Map Index: 10859	EO Index: 22984	Element Last Seen: 1985-XX-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen: 1985-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 1989-08-11

Quad Summary:	Mt. Madonna (3712116)			
County Summary:	Santa Clara			
Lat/Long:	37.07050 / -121.64439	Accuracy:	1 mile	
UTM:	Zone-10 N4103552 E620508	Elevation (ft):	500	
PLSS:	T10S, R03E, Sec. 09 (M)	Acres:	0.0	

Location:	2.5 MI WSW OF SAN MARTIN, S OF MORGAN HILL.			
Detailed Location:				
Ecological:	SERPENTINE GRASSLAND HABITAT CONTAINING THE TWO LARVAL FOODPLANTS, PLANTAGO ERECTA AND ORTHOCARPUS DENSIFLORUS.			
General:	SMALL OUTCROP DISCOVERED BY ARNOLD IN 1985. "SATELLITE" COLONY; POSSIBLY A RECOLONIZATION FROM THE MORGAN HILL COLONY, RESULTING FROM THE SEVERE DROUGHT OF 1977.			
Owner/Manager:	UNKNOWN			



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Gonidea angulata		Element Code: IMBIV19010	
western ridged mussel			
Listing Status:	Federal: None	CNDDB Element Ranks:	Global: G3
	State: None		State: S1S2
Other:			
Habitat:	General: PRIMARILY CREEKS AND RIVERS AND LESS OFTEN LAKES. ORIGINALLY IN MOST OF STATE, NOW EXTIRPATED FROM CENTRAL AND SOUTHERN CALIFORNIA.		
	Micro: <input type="checkbox"/>		

Occurrence No.	139	Map Index: B5978	EO Index: 119002	Element Last Seen: XXXX-XX-XX
Occ. Rank:	None		Presence: Possibly Extirpated	Site Last Seen: 2009-08-29
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2020-08-21

Quad Summary: Watsonville East (3612186)
County Summary: Monterey, San Benito, Santa Cruz

Lat/Long:	36.89411 / -121.64405	Accuracy:	2/5 mile
UTM:	Zone-10 N4083984 E620817	Elevation (ft):	62
PLSS:	T12S, R03E, Sec. 16 (M)	Acres:	280.0

Location: PAJARO RIVER AT THE ROGGE LANE CROSSING.
Detailed Location: MAPPED TO COORDINATES GIVEN FOR 2009 HOWARD SITE JKH09-043, "PAJARO RIVER ROGGE LANE OFF CA 129, UNDER BRIDGE NEAR AROMAS- ABOUT 100 FT FROM MONTEREY COUNTY LINE." EXACT LOCATION OF HISTORICAL OCCURRENCE UNKNOWN.
Ecological: ANODONTA AND MARGARITIFERA WERE ALSO HISTORICALLY FOUND HERE; ONLY ANODONTA FOUND IN 2009.
General: HISTORICAL LOCALITY, PER HOWARD 2010 REPORT. LOCALITY LISTED IN TAYLOR (1981). NONE FOUND IN SURVEY ON 29 AUG 2009.
Owner/Manager: UNKNOWN

Occurrence No.	148	Map Index: B5862	EO Index: 119043	Element Last Seen: XXXX-XX-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen: 2009-08-29
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2020-08-21

Quad Summary: Three Sisters (3612183), San Felipe (3612184), Pacheco Peak (3712113)
County Summary: San Benito, Santa Clara

Lat/Long:	36.98615 / -121.38274	Accuracy:	non-specific area
UTM:	Zone-10 N4094558 E643929	Elevation (ft):	264
PLSS:	T11S, R05E, Sec. 12 (M)	Acres:	1077.0

Location: PACHECO CREEK.
Detailed Location: HISTORICAL SPECIMEN LOCALITY GIVEN ONLY AS "PACHECO CREEK," EXACT LOCATION UNKNOWN. MAPPED TO CREEK BELOW LAKE. 2009 HOWARD SITE JKH09-044 SURVEY LOCATION GIVEN AS "PACHECO CREEK, WALNUT AVE EXIT OFF 152 ABOUT 1/4 MI E OF CASA DE FRUTA."
Ecological:
General: 7 VALVES COLLECTED FROM PACHECO CREEK ON UNKNOWN DATE. NO MUSSELS FOUND DURING 2009 SURVEY.
Owner/Manager: UNKNOWN



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<i>Helminthoglypta sequoicola consors</i>		Element Code: IMGASC2421	
redwood shoulderband			
Listing Status:	Federal: None	CNDDB Element Ranks:	Global: G2T1
	State: None		State: S1
	Other: IUCN_DD-Data Deficient		
Habitat:	General: KNOWN ONLY FROM SOUTH SLOPE OF SAN JUAN GRADE, NEAR FOOT, 8 MILES NW OF SALINAS.		
	Micro: <input type="checkbox"/>		

Occurrence No.	1	Map Index:	10911	EO Index:	23084	Element Last Seen:	XXXX-XX-XX
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		Record Last Updated:	2005-11-29
Occ. Type:	Natural/Native occurrence		Trend:	Unknown			
Quad Summary:	San Juan Bautista (3612175)						
County Summary:	Monterey						
Lat/Long:	36.77495 / -121.60134		Accuracy:	1 mile			
UTM:	Zone-10 N4070819 E624816		Elevation (ft):	275			
PLSS:	T13S, R03E, Sec. 26 (M)		Acres:	0.0			
Location:	SOUTH SLOPE OF SAN JUAN GRADE, 8 MILES NE OF SALINAS.						
Detailed Location:							
Ecological:							
General:							
Owner/Manager:	PVT						

<i>Tryonia imitator</i>		Element Code: IMGASJ7040	
mimic tryonia (=California brackishwater snail)			
Listing Status:	Federal: None	CNDDB Element Ranks:	Global: G2
	State: None		State: S2
	Other: IUCN_DD-Data Deficient		
Habitat:	General: INHABITS COASTAL LAGOONS, ESTUARIES AND SALT MARSHES, FROM SONOMA COUNTY SOUTH TO SAN DIEGO COUNTY.		
	Micro: FOUND ONLY IN PERMANENTLY SUBMERGED AREAS IN A VARIETY OF SEDIMENT TYPES; ABLE TO WITHSTAND A WIDE RANGE OF SALINITIES.		

Occurrence No.	17	Map Index:	10618	EO Index:	23210	Element Last Seen:	2007-XX-XX
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		Record Last Updated:	2012-03-07
Occ. Type:	Natural/Native occurrence		Trend:	Unknown			
Quad Summary:	Prunedale (3612176)						
County Summary:	Monterey						
Lat/Long:	36.80987 / -121.74227		Accuracy:	1/5 mile			
UTM:	Zone-10 N4074519 E612187		Elevation (ft):	4			
PLSS:	T13S, R02E, Sec. 10 (M)		Acres:	0.0			
Location:	PARSONS SLOUGH, ON THE SOUTHEAST EDGE OF ELKHORN SLOUGH, ABOUT 3 MILES NORTH OF CASTROVILLE.						
Detailed Location:							
Ecological:	WELL FLUSHED WETLAND WITH NO CULVERTS CONSTRAINING TIDAL FLOW.						
General:	1982: LIVING POPULATION FOUND IN KELLOGG'S STUDY. ONE FOUND AT 1 OF 4 SAMPLING STATIONS DURING 14 AUG TO 4 SEP 2007 SAMPLING PERIOD; NONE FOUND DURING FOLLOWING SAMPLING PERIOD IN APRIL 2008.						
Owner/Manager:	DFG-ELKHORN SLOUGH ER						



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Occurrence No.	19	Map Index: 10583	EO Index: 23209	Element Last Seen:	2008-04-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2008-04-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2012-02-23

Quad Summary: Prunedale (3612176), Moss Landing (3612177)

County Summary: Monterey

Lat/Long:	36.85573 / -121.75337	Accuracy:	1/5 mile
UTM:	Zone-10 N4079593 E611131	Elevation (ft):	10
PLSS:	T12S, R02E, Sec. 28, S (M)	Acres:	0.0

Location: PORTER MARSH, AKA ELKHORN SLOUGH HUDSONS LANDING, ABOUT 4 MI NNE OF MOSS LANDING.

Detailed Location:

Ecological: HABITAT IS BRACKISH-WATER MARSH DOMINATED BY SALICORNIA. VERY RESTRICTED TIDAL REGIME.

General: 1979: ONLY EMPTY, BUT FRESH-APPEARING SHELLS FOUND. ONE FOUND AT 1 OF 4 STATIONS DURING 14 AUG TO 4 SEP 2007 SAMPLING PERIOD; 7 FOUND AT 3 OF 4 STATIONS DURING 4-24 APR 2008 SAMPLING PERIOD.

Owner/Manager: TNC, UNKNOWN

Occurrence No.	37	Map Index: 85159	EO Index: 86179	Element Last Seen:	2007-XX-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2007-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2012-12-05

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.83853 / -121.73856	Accuracy:	specific area
UTM:	Zone-10 N4077703 E612477	Elevation (ft):	12
PLSS:	T12S, R02E, Sec. 34, SW (M)	Acres:	10.0

Location: ESTRADA MARSH, BETWEEN ELKHORN SLOUGH AND ELKHORN RD AND SOUTH OF KIRBY RD. ELKHORN SLOUGH ECOLOGICAL RESERVE.

Detailed Location: SAMPLES TAKEN FROM THE SOUTHERN END OF THE MARSH.

Ecological: SALINITY WAS 47% IN SUMMER 2007. WATER WAS ONLY 30 CM DEEP. EXTENSIVE PATCHES OF DECAYING GREEN ALGAL MATS IN A MOSAIC OF PICKLEWEED WHICH FRINGED THE ENTIRE MARSH. VERY RESTRICTED TIDAL REGIME.

General: 5 COLLECTED AT 1 OF 4 STATIONS BETWEEN 14 AUG & 4 SEP 2007; NONE COLLECTED IN APR 2008 OF SAME STUDY.

Owner/Manager: DFG-ELKHORN SLOUGH ER

Eryngium aristulatum var. hooveri

Element Code: PDAPI0Z043

Hoover's button-celery

Listing Status: Federal: None

CNDDB Element Ranks: Global: G5T1

State: None

State: S1

Other: Rare Plant Rank - 1B.1, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden

Habitat: General: VERNAL POOLS.

Micro: ALKALINE DEPRESSIONS, VERNAL POOLS, ROADSIDE DITCHES AND OTHER WET PLACES NEAR THE COAST. 1-50 M.



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Occurrence No.	3	Map Index: 49791	EO Index: 56042	Element Last Seen:	2007-06-13
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2007-06-13
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2013-09-06
Quad Summary:	San Felipe (3612184)				
County Summary:	San Benito, Santa Clara				
Lat/Long:	36.98398 / -121.46356		Accuracy:	non-specific area	
UTM:	Zone-10 N4094198 E636739		Elevation (ft):	160	
PLSS:	T11S, R05E, Sec. 07, S (M)		Acres:	52.0	
Location:	SAN FELIPE LAKE, 2.9 MILES WEST OF HWY 152 INTERSECTION WITH SAN FELIPE ROAD.				
Detailed Location:	3 POLYGONS. NORTHERN POLYGON MAPPED ACCORDING TO 1978 COLLECTION FROM "N END OF SAN FELIPE LAKE, ON HIGHWAY 152." 2 SOUTH POLYGONS MAPPED ACCORDING TO A MAP FROM A 2007 SURVEY FOR NAVARRETIA PROSTRATA WITH ERYNGIUM MENTIONED AS ASSOCIATE.				
Ecological:	SLIGHTLY ALKALINE DEPRESSIONS IN LACUSTRINE PLAIN; PLANTS SCATTERED IN REMNANTS OF VERNAL POOLS. ASSOCIATED WITH NAVARRETIA PROSTRATA, POLYGONUM SP., CRYPISIS SCHOENOIDES, PASPALUM DISTICHUM, SCIRPUS CALIFORNICUS, XANTHIUM STRUMARIUM, ETC.				
General:	TYPE LOCALITY. UNKNOWN NUMBER OF PLANTS SEEN IN 1978. ABOUT 200 PLANTS IN GOOD CONDITION SEEN IN 1996. UNKNOWN NUMBER OF PLANTS SEEN IN 2004, 2005, AND 2007. NEEDS MAP DETAIL.				
Owner/Manager:	PVT, UNKNOWN				
Occurrence No.	4	Map Index: 56027	EO Index: 56043	Element Last Seen:	1933-08-16
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1933-08-16
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2013-09-11
Quad Summary:	San Felipe (3612184), Chittenden (3612185)				
County Summary:	San Benito				
Lat/Long:	36.93608 / -121.48603		Accuracy:	non-specific area	
UTM:	Zone-10 N4088853 E634823		Elevation (ft):		
PLSS:	T11S, R04E, Sec. 36 (M)		Acres:	136.0	
Location:	LA BOLSA ROAD BETWEEN GILROY AND HOLLISTER, 7 MILES NORTH OF HOLLISTER.				
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDDB AROUND 7 ROAD MILES NW OF HOLLISTER ALONG BOLSA RD/SR 25 BASED ON COLLECTIONS FROM "LOS BOLSA ROAD BETWEEN GILROY AND HOLLISTER" AND "7 MILES NORTH OF HOLLISTER."				
Ecological:	ALKALINE FLATS.				
General:	OCCURRENCE IS BASED ON A 1917 COLLECTION BY ABRAMS AND TWO 1933 COLLECTIONS BY ROSE. NEEDS FIELDWORK.				
Owner/Manager:	UNKNOWN				



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Occurrence No.	14	Map Index:	90288	EO Index:	91321	Element Last Seen:	2009-07-09
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		2009-07-09	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2013-09-11	
Quad Summary:	Gilroy (3712115), Mt. Madonna (3712116)						
County Summary:	Santa Clara						
Lat/Long:	37.02813 / -121.63289		Accuracy:	1 mile			
UTM:	Zone-10 N4098866 E621598		Elevation (ft):				
PLSS:	T10S, R03E, Sec. 27 (M)		Acres:	0.0			
Location:	1 MILE WEST OF GILROY.						
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDDB IN VICINITY OF POTENTIAL VERNAL POOL HABITAT JUST WEST OF GILROY.						
Ecological:	IN VERNAL SWALE AND POOL COMPLEX IMMEDIATELY WEST OF GILROY. ASSOCIATED WITH HORDEUM MARINUM, LOLIUM MULTIFLORUM, AND POLYPOGON MONSPELIENSIS.						
General:	SITE BASED ON 2009 PHOTOS BY ARTHUR IN CALPHOTOS. NEEDS MAP DETAIL.						
Owner/Manager:	UNKNOWN						

<i>Balsamorhiza macrolepis</i>		Element Code: PDAST11061					
big-scale balsamroot							
Listing Status:	Federal:	None	CNDDB Element Ranks:	Global:	G2		
	State:	None		State:	S2		
	Other:	Rare Plant Rank - 1B.2, BLM_S-Sensitive, USFS_S-Sensitive					
Habitat:	General:	CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND.					
	Micro:	SOMETIMES ON SERPENTINE. 35-1465 M.					

Occurrence No.	4	Map Index:	30911	EO Index:	22817	Element Last Seen:	2013-04-06
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		2013-04-06	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2017-11-28	
Quad Summary:	Gilroy (3712115)						
County Summary:	Santa Clara						
Lat/Long:	37.1177 / -121.55647		Accuracy:	specific area			
UTM:	Zone-10 N4108904 E628245		Elevation (ft):	900			
PLSS:	T09S, R04E, Sec. 29, S (M)		Acres:	1.0			
Location:	HARVEY BEAR TRAIL, WEST OF COYOTE LAKE DAM, 3.6 AIR MILES ENE OF SAN MARTIN.						
Detailed Location:	2 POLYGONS MAPPED ACCORDING TO 2013 CORELLI COORDINATES, IN THE SOUTH 1/2 OF SECTION 29. 1990 OBSERVATION FROM THIS VICINITY REPORTS PLANTS FROM "WHERE THE PAVED PARK ROAD GIVES WAY TO A DIRT PARKING AREA, ADJACENT TO THE PARK FENCE."						
Ecological:	SITE IS A GRASSLAND WITHIN A MIXED OAK WOODLAND WITH PERIDERIDIA, LOLIUM PERENNE, ORTHOCARPUS, AVENA BARBATA, CHLOROGALUM POMERIDIANUM.						
General:	<100 PLANTS SEEN IN THIS AREA IN 1990. 26 PLANTS SEEN IN WESTERN POLYGON AND 10 PLANTS SEEN IN EASTERN POLYGON IN 2013; HEALTHY, VIGOROUS POPULATIONS.						
Owner/Manager:	SCL COUNTY PARKS & REC						



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Occurrence No.	48	Map Index: A7279	EO Index: 109046	Element Last Seen:	2014-05-19
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2014-05-19
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-11-28
Quad Summary:	Gilroy (3712115)				
County Summary:	Santa Clara				
Lat/Long:	37.07597 / -121.53413		Accuracy:	specific area	
UTM:	Zone-10 N4104305 E630301		Elevation (ft):	1300	
PLSS:	T10S, R04E, Sec. 9, SE (M)		Acres:	1.0	
Location:	MUMMY MOUNTAIN TRAIL, COYOTE LAKE/HARVEY BEAR RANCH COUNTY PARK, ABOUT 0.3 AIR MILE SOUTHEAST OF COYOTE LAKE CAMPGROUND.				
Detailed Location:	2 POLYGONS MAPPED ACCORDING TO 2014 COLLINS COORDINATES, WITHIN THE NW 1/4 OF THE SE 1/4 OF SECTION 9.				
Ecological:	LOW ROCKY OUTCROPPINGS IN OPEN GRASSLAND AND IN GRASSY MEADOW PARTIALLY SURROUNDED BY LIVE OAK WOODLAND. SOIL TYPES: INKS ROCKY CLAY LOAM AND GILROY CLAY LOAM. ASSOC W/ PHACELIA IMBRICATA SSP. IMBRICATA, TOXICODENDRON DIVERSILOBUM, ETC.				
General:	UNKNOWN NUMBER OBSERVED IN 2013. 158 PLANTS SEEN IN WESTERN POLYGON AND 84 PLANTS SEEN IN EASTERN POLYGON IN 2014.				
Owner/Manager:	SCL COUNTY PARKS & REC				
Occurrence No.	49	Map Index: A7296	EO Index: 109068	Element Last Seen:	2014-05-19
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2014-05-19
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-11-29
Quad Summary:	Gilroy (3712115)				
County Summary:	Santa Clara				
Lat/Long:	37.07096 / -121.52792		Accuracy:	specific area	
UTM:	Zone-10 N4103758 E630862		Elevation (ft):	1100	
PLSS:	T10S, R04E, Sec. 16, NE (M)		Acres:	3.0	
Location:	MUMMY MOUNTAIN TRAIL AND COYOTE RIDGE TRAIL, COYOTE LAKE/HARVEY BEAR RANCH COUNTY PARK.				
Detailed Location:	4 POLYGONS MAPPED ACCORDING TO 2014 COLLINS COORDINATES, WITHIN THE SE 1/4 OF THE SE 1/4 OF SECTION 9 AND THE NE 1/4 OF THE NE 1/4 OF SECTION 16.				
Ecological:	ROCKY OUTCROPPINGS IN GRASSLAND AND IN OAK WOODLAND. SOIL TYPE: GILROY CLAY LOAM. ASSOC W/ CARDUUS PYCNOCEPHALUS SSP. PYCNOCEPHALUS, FESTUCA PERENNIS, AVENA FATUA, VICIA VILLOSA, TRIFOLIUM HIRTUM, TRITELEIA LAXA, STIPA PULCHRA, ETC.				
General:	SEEN IN SOUTHERN POLYGON IN 2010. SEEN IN NORTHERN POLYGON IN 2013. 2014 POPULATION NUMBERS FOR POLYGONS FROM EAST TO WEST: 61, 1, 56, AND 101 PLANTS.				
Owner/Manager:	SCL COUNTY PARKS & REC				



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Occurrence No.	50	Map Index: A7300	EO Index: 109070	Element Last Seen:	2017-04-18
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2017-04-18
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-11-29
Quad Summary:	Gilroy (3712115)				
County Summary:	Santa Clara				
Lat/Long:	37.10885 / -121.56038		Accuracy:	specific area	
UTM:	Zone-10 N4107917 E627913		Elevation (ft):	1150	
PLSS:	T09S, R04E, Sec. 32, W (M)		Acres:	3.0	
Location:	COYOTE RIDGE TRAIL, ABOUT 0.9 AIR MILE SOUTHWEST OF COYOTE LAKE DAM, COYOTE LAKE/HARVEY BEAR RANCH COUNTY PARK.				
Detailed Location:	2 POLYGONS MAPPED ACCORDING TO 2013 CORELLI DIGITAL DATA AND 2017 ROSENTHAL COORDINATES, NEAR THE CENTER OF THE WEST 1/2 OF SECTION 32.				
Ecological:	ROCKY AREAS IN OPEN GRASSLAND SURROUNDED BY LIVE OAK WOODLAND, AND OPEN NON-NATIVE AND NATIVE GRASSLAND. W-FACING SLOPES. ASSOC W/ ANNUAL POACEAE, CALYSTEGIA SUBACALIS SSP. SUBACALIS, CHLOROGALUM POMERIDIANUM, ELYMUS GLAUCUS, ETC.				
General:	NORTHERN POLYGON: 75 PLANTS SEEN IN 2013. SOUTHERN POLYGON: 300 PLANTS SEEN IN 2013, 100+ PLANTS IN 2017.				
Owner/Manager:	SCL COUNTY PARKS & REC				
Occurrence No.	51	Map Index: A7302	EO Index: 109072	Element Last Seen:	2013-04-06
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2013-04-06
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-11-29
Quad Summary:	Gilroy (3712115), Mt. Sizer (3712125)				
County Summary:	Santa Clara				
Lat/Long:	37.12708 / -121.56631		Accuracy:	specific area	
UTM:	Zone-10 N4109932 E627355		Elevation (ft):	1400	
PLSS:	T09S, R04E, Sec. 30, NE (M)		Acres:	1.0	
Location:	ED WILSON TRAIL, ABOUT 1 AIR MILE NORTHWEST OF COYOTE LAKE DAM, COYOTE LAKE/HARVEY BEAR RANCH COUNTY PARK.				
Detailed Location:	2 POLYGONS MAPPED ACCORDING TO 2013 CORELLI DIGITAL DATA, IN THE EAST 1/2 OF THE NE 1/4 OF SECTION 30.				
Ecological:	ROCKY AREAS IN OPEN GRASSLAND SURROUNDED BY LIVE OAK WOODLAND, AND OPEN NON-NATIVE AND NATIVE GRASSLAND. W-FACING SLOPES. ASSOC W/ ANNUAL POACEAE, CALYSTEGIA SUBACALIS SSP. SUBACALIS, CHLOROGALUM POMERIDIANUM, ELYMUS GLAUCUS, ETC.				
General:	14 PLANTS IN NORTHERN POLYGON AND 50 PLANTS IN SOUTHERN POLYGON IN 2013.				
Owner/Manager:	SCL COUNTY PARKS & REC				



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<i>Cirsium fontinale var. campylon</i>		Element Code: PDAST2E163	
Mt. Hamilton thistle			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G2T2
	State: None		State: S2
	Other: Rare Plant Rank - 1B.2, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden		
Habitat:	General: CISMONTANE WOODLAND, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
	Micro: IN SEASONAL AND PERENNIAL DRAINAGES ON SERPENTINE. 75-890 M.		

Occurrence No.	60	Map Index:	A8371	EO Index:	110155	Element Last Seen:	2016-07-21
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		2016-07-21	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2018-02-08	

Quad Summary: Mt. Madonna (3712116)
County Summary: Santa Clara

Lat/Long:	37.08612 / -121.72692	Accuracy:	specific area
UTM:	Zone-10 N4105184 E613148	Elevation (ft):	800
PLSS:	T10S, R02E, Sec. 2, SW (M)	Acres:	2.0

Location: MELCHOR RANCH, SANTA CLARA VALLEY OPEN SPACE AUTHORITY.
Detailed Location: MAPPED ACCORDING TO 2016 SLAKEY COORDINATES, IN THE SOUTH 1/2 OF THE SW 1/4 OF SECTION 2.
Ecological: SERPENTINE SEEPS AT THE TRANSITION FROM SERPENTINE CHAPARRAL (ABOVE) TO SERPENTINE GRASSLAND (BELOW). ASSOCIATED WITH ARCTOSTAPHYLOS GLAUCA, FRANGULA CALIFORNICA, AQUILEGIA EXIMIA, HOITA STROBILINA, MIMULUS GUTTATUS, STACHYS, ETC.
General: ~250 PLANTS IN 2 COLONIES OBSERVED IN 2015.
Owner/Manager: SANTA CLARA VALLEY OPEN SPACE

<i>Ericameria fasciculata</i>		Element Code: PDAST3L080	
Eastwood's goldenbush			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G2
	State: None		State: S2
	Other: Rare Plant Rank - 1B.1, BLM_S-Sensitive, SB_UCSC-UC Santa Cruz		
Habitat:	General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL (MARITIME), COASTAL SCRUB, COASTAL DUNES.		
	Micro: IN SANDY OPENINGS. 30-215 M.		



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Occurrence No.	14	Map Index:	10753	EO Index:	16529	Element Last Seen:	1987-09-27
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	1987-09-27	Record Last Updated:	2007-01-29
Occ. Type:	Natural/Native occurrence		Trend:	Unknown			
Quad Summary:	Prunedale (3612176)						
County Summary:	Monterey						
Lat/Long:	36.79988 / -121.68521			Accuracy:	specific area		
UTM:	Zone-10 N4073479 E617293			Elevation (ft):	260		
PLSS:	T13S, R03E, Sec. 18, SW (M)			Acres:	4.0		
Location:	MANZANITA COUNTY PARK, APPROXIMATELY 1 AIR MILE NNW OF THE JUNCTION OF CA-156 AND MCGUFFIE RD, NW OF PRUNEDALE.						
Detailed Location:	6 PLANTS S OF CASTROVILLE BLVD, 0.9 AIR MI SW OF INTERSECTION WITH SAN MIGUEL CANYON RD.						
Ecological:	ON VERY SANDY SOIL IN MARITIME CHAPARRAL ASSOCIATED WITH ARCTOSTAPHYLOS, CEANOTHUS AND ADENOSTOMA.						
General:	6 PLANTS OBSERVED IN 1987.						
Owner/Manager:	MNT COUNTY						
Occurrence No.	19	Map Index:	10773	EO Index:	16525	Element Last Seen:	1987-09-27
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	1987-09-27	Record Last Updated:	2017-10-25
Occ. Type:	Natural/Native occurrence		Trend:	Unknown			
Quad Summary:	Prunedale (3612176)						
County Summary:	Monterey						
Lat/Long:	36.80577 / -121.67483			Accuracy:	specific area		
UTM:	Zone-10 N4074145 E618209			Elevation (ft):	420		
PLSS:	T13S, R03E, Sec. 18, NE (M)			Acres:	5.0		
Location:	MANZANITA COUNTY PARK, APPROXIMATELY 1 & 1.2 AIR MILES NORTH OF THE JUNCTION OF CA-156 AND MCGUFFIE RD, NW OF PRUNEDALE.						
Detailed Location:	5 PLANTS S OF CASTROVILLE BLVD, 0.2 AIR MI SW OF INTERSECTION WITH SAN MIGUEL CANYON RD.						
Ecological:	ON VERY SANDY SOIL IN MARITIME CHAPARRAL ASSOCIATED WITH ARCTOSTAPHYLOS, CEANOTHUS, AND ADENOSTOMA.						
General:	5 PLANTS OBSERVED IN 2 SUBPOPULATIONS IN 1987. 1975 GRIFFIN COLLECTIONS FROM "MANZANITA CIRCLE NEAR SUMMIT OF CASTROVILLE BLVD" ALSO ATTRIBUTED TO THIS SITE.						
Owner/Manager:	MNT COUNTY						



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Occurrence No.	20	Map Index: 10775	EO Index: 16523	Element Last Seen: 1987-09-27
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen: 1987-09-27
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2017-10-25

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.79837 / -121.67450	Accuracy:	80 meters
UTM:	Zone-10 N4073325 E618250	Elevation (ft):	340
PLSS:	T13S, R03E, Sec. 18, SE (M)	Acres:	0.0

Location: MANZANITA COUNTY PARK; APPROXIMATELY 0.7 AIR MILE NORTH OF THE JUNCTION OF CA-156 AND MCGUFFIE RD, NW OF PRUNEDALE.

Detailed Location:

Ecological: IN VERY SANDY SOIL IN MARITIME CHAPARRAL ASSOCIATED WITH ARCTOSTAPHYLOS, CEANOTHUS, AND ADENOSTOMA.

General: 5 PLANTS OBSERVED IN 1987. COLLECTIONS FROM THE 1960S AND 1970S FROM THE END OF MCGUFFIE ROAD ARE ALSO ATTRIBUTED TO THIS SITE.

Owner/Manager: MNT COUNTY

Occurrence No.	21	Map Index: 67927	EO Index: 68072	Element Last Seen: 2005-12-09
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen: 2005-12-09
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2007-02-14

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.78690 / -121.65714	Accuracy:	specific area
UTM:	Zone-10 N4072074 E619817	Elevation (ft):	321
PLSS:	T13S, R03E, Sec. 20, SE (M)	Acres:	7.0

Location: 0.7 MILE NORTHEAST OF PRUNEDALE.

Detailed Location: 2 COLONIES: ONE POPULATION SOUTH OF BERTA RIDGE COURT, NORTH OF CARLSON RD. ANOTHER POPULATION WEST OF EDEN PATH.

Ecological: MARITIME CHAPARRAL ON SANDSTONE OUTCROPPINGS ALONG RIDGELINES AND S-FACING SLOPES. DOMINANT SPECIES IS THE RARE ARCTOSTAPHYLOS PAJAROENSIS.

General: 15 PLANTS OBSERVED IN 2005.

Owner/Manager: PVT



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Occurrence No.	25	Map Index: 67836	EO Index: 68144	Element Last Seen:	2001-06-01
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2001-06-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-02-14

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.85396 / -121.73960	Accuracy:	1/5 mile
UTM:	Zone-10 N4079413 E612361	Elevation (ft):	
PLSS:	T12S, R02E, Sec. 27, SW (M)	Acres:	0.0

Location: ON RIDGE NORTH OF BLOHM RANCH, 0.8 MILE SOUTH OF LAS LOMAS.
Detailed Location: BLOHM RANCH IS LOCATED AT 695 ELKHORN RD, S OF INTERSECTION OF ELKHORN RD. AND HALL RD.
Ecological: MARITIME CHAPARRAL WITH ARCTOSTAPHYLOS PAJAROENSIS, ARCTOSTAPHYLOS HOOKERI SSP. HOOKERI, PIPERIA YADONII, CEANOETHUS CUNEATUS VAR. RIGIDUS.
General: UNKNOWN NUMBER OF PLANTS OBSERVED IN 2001. NEEDS FIELDWORK.
Owner/Manager: TNC-ELKHORN SLOUGH RES, ESF

Occurrence No.	26	Map Index: A6972	EO Index: 108763	Element Last Seen:	2001-04-22
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2001-04-22
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-10-30

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.78143 / -121.6376	Accuracy:	2/5 mile
UTM:	Zone-10 N4071492 E621571	Elevation (ft):	150
PLSS:	T13S, R03E, Sec. 21 (M)	Acres:	280.0

Location: PESANTE CANYON; ABOUT 1.5 TO 1.9 MILES EAST OF PRUNEDALE.
Detailed Location: MAPPED TO INCLUDE A 2001 LOWE MAP AND LOCATION DESCRIPTIONS FROM: "S OF PESANTE RD, 1.5 AIR MI E OF PRUNEDALE," "1.8 AIR MI ESE OF PRUNEDALE," AND "ON TELEPHONE CABLE EASEMENT ON RIDGE E OF HOLLY HILL DR, 1.9 AIR MI ENE OF PRUNEDALE."
Ecological: MARITIME CHAPARRAL WITH SALVIA MELLIFERA, ADEONSTOMA FASCICULATUM, RHAMNUS CALIFORNICA, ARCTOSTAPHYLOS TOMENTOSA CRUSTACEA, CEANOETHUS RIGIDA, A. PAJARENSIS, HELIANTHEMUM SCOPARIUM, TOXICODENDRON DIVERSILOBUM, ERICAMERIA ERICOIDES, ETC.
General: OBSERVED IN THIS AREA IN 1985 AND 2001. NEED MAP DETAIL.
Owner/Manager: PVT



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Occurrence No.	27	Map Index: A6973	EO Index: 108764	Element Last Seen:	1990-02-21
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1990-02-21
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-10-25
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.80666 / -121.63377		Accuracy:	2/5 mile	
UTM:	Zone-10 N4074296 E621873		Elevation (ft):		
PLSS:	T13S, R03E, Sec. 15 (M)		Acres:	280.0	
Location:	ON RIDGE JUST SOUTH OF MALLORY CANYON ROAD, PRUNEDALE.				
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS AROUND THE RIDGE JUST SOUTH OF MALLORY CANYON ROAD.				
Ecological:	WITH ARCTOSTAPHYLOS PAJAROENSIS.				
General:	"A FEW" PLANTS OBSERVED IN 1990.				
Owner/Manager:	PVT?				
Occurrence No.	28	Map Index: A6976	EO Index: 108766	Element Last Seen:	1985-07-24
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1985-07-24
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-10-25
Quad Summary:	San Juan Bautista (3612175), Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.8181 / -121.62906		Accuracy:	1/5 mile	
UTM:	Zone-10 N4075570 E622274		Elevation (ft):	550	
PLSS:	T13S, R03E, Sec. 10, NW (M)		Acres:	70.0	
Location:	WEST OF EXECUTIVE DRIVE, NORTH OF CRAZY HORSE ROAD, ~1000 FEET EAST OF HWY 101, EAST OF PRUNEDALE.				
Detailed Location:	MAPPED AS BEST GUESS AROUND THE NORTH SIDE OF CRAZY HORSE ROAD BETWEEN EXECUTIVE DRIVE AND EL CAMINO REAL/HWY 101. GIVEN ELEVATION IS 550 FEET.				
Ecological:	RIDGETOP. IN YOUNG, OPEN STAND OF MARITIME CHAPARRAL. ASSOCIATED WITH ARCTOSTAPHYLOS PAJAROENSIS, CEANOTHUS RIGIDUS, MIMULUS AURANTIACUS, PTERIDIUM AQUILINUM, HAPLOPAPPUS ERICOIDES, HELIANTHEMUM SCOPARIUM.				
General:	WIDELY SCATTERED INDIVIDUALS OBSERVED IN 1985.				
Owner/Manager:	PVT?				



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Occurrence No.	29	Map Index: A6977	EO Index: 108767	Element Last Seen:	1985-07-24
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1985-07-24
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-11-14

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.7965 / -121.6442	Accuracy:	1/5 mile
UTM:	Zone-10 N4073155 E620958	Elevation (ft):	450
PLSS:	T13S, R03E, Sec. 16, S (M)	Acres:	70.0

Location: ALONG DIRT FIRE ROAD WEST AND EAST OF REAVIS ROAD, 1.9 TO 2.1 AIR MILES NE OF PRUNEDALE.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS AROUND THE PORTION OF REAVIS ROAD THAT BISECTS RIDGE AND INCLUDES GIVEN ELEVATIONS OF 440 AND 460 FEET.

Ecological: IN MARITIME CHAPARRAL. OPEN AREAS ALONG ROAD. ASSOCIATED WITH ARCTOSTAPHYLOS PAJAROENSIS, CEANOTHUS RIGIDUS, RHAMNUS CALIFORNICA, SALVIA MELLIFERA, PTERIDIUM AQUILINUM, HORKELIA CUNEATA, AND HELIANTHEMUM SCOPARIUM.

General: SITE BASED ON TWO 1985 MARTZ COLLECTIONS. NEEDS FIELDWORK.

Owner/Manager: PVT?

Occurrence No.	30	Map Index: A6978	EO Index: 108769	Element Last Seen:	2017-06-12
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2017-06-12
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-10-25

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.80639 / -121.6867	Accuracy:	specific area
UTM:	Zone-10 N4074199 E617151	Elevation (ft):	300
PLSS:	T13S, R03E, Sec. 18, NW (M)	Acres:	5.0

Location: ELKHORN HIGHLANDS PRESERVE, JUST NORTH OF MANZANITA REGIONAL PARK, NW OF PRUNEDALE.

Detailed Location: MAPPED AS 4 POLYGONS ACCORDING TO 2017 NEUBAUER DIGITAL DATA.

Ecological: EDGES OF OAK WOODLAND/MARITIME CHAPARRAL. ASSOCIATED WITH QUERCUS AGRIFOLIA, ARCTOSTAPHYLOS PAJAROENSIS, BACCHARIS PILULARIS SSP. CONSANGUINEA, DIPLACUS AURANTIACUS, ACMISPON GLABER VAR. GLABER, PTERIDIUM AQUILINUM SSP. PUBESCENS, ETC.

General: APPROXIMATELY 90 PLANTS OBSERVED IN 2017.

Owner/Manager: UNKNOWN



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Occurrence No.	31	Map Index: A6982	EO Index: 108771	Element Last Seen:	2003-09-23
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2003-09-23
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-10-25
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.82329 / -121.70791		Accuracy:	80 meters	
UTM:	Zone-10 N4076048 E615233		Elevation (ft):	400	
PLSS:	T13S, R02E, Sec. 12, NW (M)		Acres:	5.0	
Location:	RIDGE DIVIDING LONG CANYON FROM STRAWBERRY CANYON, GROWING UNDER PG&E HIGH VOLTAGE TRANSMISSION LINE.				
Detailed Location:	MAPPED ACCORDING TO 2003 TAYLOR COORDINATES, IN THE NW 1/4 OF THE NW 1/4 OF SECTION 12.				
Ecological:	MARITIME CHAPARRAL, ON SANDY SUBSTRATE WITH ARCTOSTAPHYLOS PAJAROENSIS, A. TOMENTOSA, A. HOOKERI, AND CEANOTHUS RIGIDUS.				
General:	ONLY SOURCE OF INFORMATION FOR THIS SITE IS 2003 TAYLOR COLLECTION.				
Owner/Manager:	UNKNOWN				

<i>Deinandra halliana</i>	Element Code: PDAST4R0C0				
Hall's tarplant					
Listing Status:	Federal: None		CNDDB Element Ranks:	Global: G3	
	State: None			State: S3	
	Other:	Rare Plant Rank - 1B.2, BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden			
Habitat:	General:	CISMONTANE WOODLAND, CHENOPOD SCRUB, VALLEY AND FOOTHILL GRASSLAND.			
	Micro:	REPORTED FROM A VARIETY OF SUBSTRATES INCLUDING CLAY, SAND, AND ALKALINE SOILS. 155-975 M.			

Occurrence No.	67	Map Index: B5632	EO Index: 118613	Element Last Seen:	2019-05-03
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2019-05-03
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2020-06-03
Quad Summary:	Tres Pinos (3612173), Hollister (3612174)				
County Summary:	San Benito				
Lat/Long:	36.76137 / -121.37635		Accuracy:	specific area	
UTM:	Zone-10 N4069630 E644922		Elevation (ft):	1100	
PLSS:	T13S, R05E, Sec. 36, NW (M)		Acres:	4.0	
Location:	EAST OF THE SAN ANDREAS RIFT ZONE, APPROXIMATELY 2.8 AIR MILES NORTHWEST OF THE MOUTH OF SULPHUR CANYON.				
Detailed Location:	5 POLYGONS MAPPED ACCORDING TO 2019 O'DELL COORDINATES.				
Ecological:	VERTIC CLAY SOIL.				
General:	5 PLANTS OBSERVED IN 2019. ID SUSPECTED, BUT NOT CONFIRMED, BASED ON PROXIMITY TO CONFIRMED PRESENCE OF SPECIES AT HUDNER RANCH.				
Owner/Manager:	UNKNOWN				



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Occurrence No.	68	Map Index: B5633	EO Index: 118614	Element Last Seen:	2019-05-03
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2019-05-03
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2020-06-03

Quad Summary: Hollister (3612174)

County Summary: San Benito

Lat/Long:	36.77051 / -121.38685	Accuracy:	specific area
UTM:	Zone-10 N4070628 E643967	Elevation (ft):	1000
PLSS:	T13S, R05E, Sec. 26 (M)	Acres:	14.0

Location: HUDNER RANCH UNIT, HOLLISTER HILLS SVRA, APPROXIMATELY 3.25 TO 4 AIR MILES NORTHWEST OF THE MOUTH OF SULPHUR CANYON.

Detailed Location: SEVERAL POLYGONS MAPPED ACCORDING TO 2018 AND 2019 O'DELL COORDINATES.

Ecological: VERTIC CLAY SOIL. PORTIONS OF POPULATION ON VERY STEEP S-FACING SLOPES.

General: POPULATION NUMBERS FOR PORTIONS OF OCCURRENCE: 560+ PLANTS OBSERVED IN 2018, 1800+ PLANTS OBSERVED IN 2019. ID FOR PLANTS IN THE 6 SOUTHEASTERN POLYGONS IS SUSPECTED, BUT NOT CONFIRMED, BASED ON PROXIMITY TO CONFIRMED PLANTS.

Owner/Manager: DPR-HOLLISTER HILLS SVRA, UNK

Occurrence No.	69	Map Index: B5637	EO Index: 118619	Element Last Seen:	2019-05-03
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2019-05-03
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2020-06-03

Quad Summary: Hollister (3612174)

County Summary: San Benito

Lat/Long:	36.78995 / -121.38515	Accuracy:	specific area
UTM:	Zone-10 N4072788 E644083	Elevation (ft):	800
PLSS:	T13S, R05E, Sec. 23, NE (M)	Acres:	3.0

Location: ALONG A TRIBUTARY TO BIRD CREEK, ~1.25 AIR MILES SOUTHWEST OF SOUTHSIDE SCHOOL, NORTHEAST OF HOLLISTER HILLS SVRA.

Detailed Location: 4 POLYGONS MAPPED ACCORDING TO 2019 O'DELL COORDINATES, IN THE SE 1/4 OF THE NE 1/4 OF PROJECTED SECTION 23.

Ecological: VERTIC CLAY SOIL.

General: 4 PLANTS OBSERVED IN 2019. ID SUSPECTED, BUT NOT CONFIRMED, BASED ON PROXIMITY TO CONFIRMED PRESENCE OF SPECIES AT HUDNER RANCH.

Owner/Manager: UNKNOWN



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Occurrence No.	70	Map Index: B5639	EO Index: 118620	Element Last Seen:	2019-05-03
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2019-05-03
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2020-06-03

Quad Summary: Hollister (3612174)

County Summary: San Benito

Lat/Long:	36.79719 / -121.40186	Accuracy:	specific area
UTM:	Zone-10 N4073565 E642578	Elevation (ft):	550
PLSS:	T13S, R05E, Sec. 15, SE (M)	Acres:	1.0

Location: ABOUT 0.45 & 0.55 AIR MILE SSE OF THE JUNCTION OF HIDDEN VALLEY RD AND CIENEGA RD, JUST NE OF HOLLISTER HILLS SVRA.

Detailed Location: 2 POLYGONS MAPPED ACCORDING TO 2019 O'DELL COORDINATES, IN THE SE 1/4 OF THE SE 1/4 OF PROJECTED SECTION 15.

Ecological: VERTIC CLAY SOIL.

General: 2 PLANTS OBSERVED IN 2019. ID SUSPECTED, BUT NOT CONFIRMED, BASED ON PROXIMITY TO CONFIRMED PRESENCE OF SPECIES AT HUDNER RANCH.

Owner/Manager: UNKNOWN

Centromadia parryi ssp. congdonii

Element Code: PDAST4R0P1

Congdon's tarplant

Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G3T1T2
	State: None		State: S1S2
	Other: Rare Plant Rank - 1B.1, BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden		
Habitat:	General: VALLEY AND FOOTHILL GRASSLAND.		
	Micro: ALKALINE SOILS, SOMETIMES DESCRIBED AS HEAVY WHITE CLAY. 0-245 M.		

Occurrence No.	15	Map Index: 10659	EO Index: 6094	Element Last Seen:	1909-10-10
Occ. Rank:	None		Presence: Possibly Extirpated	Site Last Seen:	1998-10-16
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2010-12-22

Quad Summary: Watsonville East (3612186)

County Summary: Santa Cruz

Lat/Long:	36.94034 / -121.73097	Accuracy:	1 mile
UTM:	Zone-10 N4089006 E613003	Elevation (ft):	80
PLSS:	T11S, R02E, Sec. 27 (M)	Acres:	0.0

Location: FIELD NEAR KELLYS LAKE, NEAR WATSONVILLE.

Detailed Location:

Ecological:

General: MAIN SOURCE OF INFORMATION FOR THIS SITE IS 1909 COLLECTION BY MCMURPHY. AREA SEARCHED IN 1998, BUT NO PLANTS COULD BE FOUND.

Owner/Manager: PVT



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Occurrence No.	25	Map Index: 35107	EO Index: 17	Element Last Seen:	1994-06-05
Occ. Rank:	None		Presence: Possibly Extirpated	Site Last Seen:	1994-06-05
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	1996-03-11
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.82253 / -121.69573		Accuracy:	80 meters	
UTM:	Zone-10 N4075978 E616320		Elevation (ft):	220	
PLSS:	T13S, R02E, Sec. 12, NE (M)		Acres:	0.0	
Location:	ALONG ROAD THROUGH LONG CANYON, 1.5 MI EAST OF ELKHORN ROAD, NORTHEAST OF CASTROVILLE.				
Detailed Location:	ALONG SIDE OF ROAD IN BOTTOM OF CANYON.				
Ecological:	OPEN, SANDY, COMPACTED SOIL.				
General:	10 PLANTS IN 1994. POSSIBLY EXTIRPATED AT THIS SITE (R. PRESTON 1999).				
Owner/Manager:	PVT				
Occurrence No.	38	Map Index: 42344	EO Index: 42344	Element Last Seen:	1933-11-03
Occ. Rank:	None		Presence: Possibly Extirpated	Site Last Seen:	1998-10-15
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2000-02-07
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.78172 / -121.67202		Accuracy:	1 mile	
UTM:	Zone-10 N4071480 E618498		Elevation (ft):		
PLSS:	T13S, R03E, Sec. 20 (M)		Acres:	0.0	
Location:	7.3 MILES NORTH OF SALINAS (PRUNEDALE).				
Detailed Location:	MAPPED NORTH OF SALINAS ALONG HWY 101, NEAR JUNCTION WITH HWY 156.				
Ecological:					
General:	SITE BASED UPON 1933 COLLECTION BY D. KECK AS REPORTED BY R. PRESTON. POTENTIAL HABITAT ALONG HWY 101 NEAR BLACKIE ROAD SEARCHED IN 1998, BUT NO PLANTS SEEN.				
Owner/Manager:	UNKNOWN				
Occurrence No.	39	Map Index: 22088	EO Index: 42345	Element Last Seen:	1909-08-23
Occ. Rank:	None		Presence: Extirpated	Site Last Seen:	1998-10-15
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-03-25
Quad Summary:	Prunedale (3612176), Moss Landing (3612177)				
County Summary:	Monterey				
Lat/Long:	36.76738 / -121.75664		Accuracy:	1 mile	
UTM:	Zone-10 N4069788 E610968		Elevation (ft):		
PLSS:	T13S, R02E, Sec. 28 (M)		Acres:	0.0	
Location:	CASTROVILLE.				
Detailed Location:					
Ecological:					
General:	SITE BASED ON A 1909 COLLECTION BY J. MCMURPHY. RUDERAL HABITAT ALONG RAILROAD R-O-W AND IN RESIDENTIAL AREAS SEARCHED IN 1998 BUT NO CENTROMADIA OBSERVED.				
Owner/Manager:	UNKNOWN				



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<i>Holocarpha macradenia</i>		Element Code: PDAST4X020	
Santa Cruz tarplant			
Listing Status:	Federal: Threatened	CNDDB Element Ranks:	Global: G1
	State: Endangered		State: S1
Other:	Rare Plant Rank - 1B.1, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley		
Habitat:	General: COASTAL PRAIRIE, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
	Micro: LIGHT, SANDY SOIL OR SANDY CLAY; OFTEN WITH NONNATIVES. 10-275 M.		

Occurrence No.	4	Map Index: 10648	EO Index: 15187	Element Last Seen: 1984-09-12
Occ. Rank:	None		Presence: Possibly Extirpated	Site Last Seen: 1986-08-09
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2008-08-19

Quad Summary: Watsonville East (3612186)
County Summary: Santa Cruz

Lat/Long:	36.94704 / -121.73709	Accuracy:	specific area
UTM:	Zone-10 N4089742 E612448	Elevation (ft):	100
PLSS:	T11S, R02E, Sec. 27 (M)	Acres:	27.0

Location: WEST SIDE OF EAST LAKE AVE (HIGHWAY 152), JUST SW OF SANTA CRUZ FAIRGROUNDS, COLLEGE LAKE.
Detailed Location: MAPPED AS 2 POLYGONS ACCORDING TO A 1977 MORGAN MAP AND A 1978 HALL MAP. SOUTHERN POLYGON IS IN VICINITY OF PG&E POWER LINES. A 1909 MCMURPHY COLLECTION FROM "FIELD NEAR KELLY'S LAKE" ALSO ATTRIBUTED HERE.
Ecological: PLANTS FOUND IN UNMOWED STRIP WITH HEMIZONIA LUZULAEFOLIA, NAVARRETIA SQUARROSA, CONYZA CANADENSIS, ASTER CHILENSIS, SOLIDAGO OCCIDENTALIS, LOTUS PURSHIANUS, AND VARIOUS NON-NATIVE WEEDS.
General: SW POLYGON: "LARGE POP" IN 1977 & 1978, 1 IN 1980, <50 IN 1984, NONE IN 1986; EXTIRPATED BY AG? NE POLYGON: 1 PLANT IN 1976, "FEW PLANTS" IN 1977, NONE IN 1986; EXTIRP BY AQUATIC PARK? INCLUDES FORMER OCCURRENCES #8, 10, 12, AND 17.
Owner/Manager: PVT

Occurrence No.	19	Map Index: 10623	EO Index: 15192	Element Last Seen: 1993-XX-XX
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen: 1993-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Stable	Record Last Updated: 2008-08-19

Quad Summary: Prunedale (3612176)
County Summary: Monterey

Lat/Long:	36.87086 / -121.74264	Accuracy:	specific area
UTM:	Zone-10 N4081284 E612066	Elevation (ft):	100
PLSS:	T12S, R02E, Sec. 22, SW (M)	Acres:	17.1

Location: PORTER RANCH, 2 MILES SOUTH OF PAJARO ON EAST SIDE OF JUNCTION AT HALL ROAD AND ELKHORN ROAD.
Detailed Location:
Ecological: IN DRY, MOSTLY ANNUAL GRASSLAND IN MARINE TERRACE SOIL. MOSTLY W/ NON-NATIVE ANNUALS, BUT ALSO W/ NATIVE COASTAL PRAIRIE SPECIES. SITE IS UNUSUAL IN THAT PLANTS ARE MOSTLY IN THE BOTTOM OF A SMALL CANYON, RATHER THAN ON A COASTAL TERRACE.
General: LARGE POPULATION OVER AN APPROXIMATELY 10 ACRE AREA WITH 3 OTHER TARPLANT SPECIES. 1500-2500 PLANTS IN 1984, 18,000 IN 1986, SEVERAL 1000 IN 1988, 43,000 IN 1989, 35,000 IN 1990, 3200 IN 1993.
Owner/Manager: PVT



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Occurrence No.	41	Map Index: 24090	EO Index: 7402	Element Last Seen:	1990-XX-XX
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	1990-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Stable	Record Last Updated:	1995-11-03

Quad Summary: Watsonville East (3612186), Watsonville West (3612187)
County Summary: Santa Cruz

Lat/Long:	36.98256 / -121.75423	Accuracy:	specific area
UTM:	Zone-10 N4093662 E610871	Elevation (ft):	180
PLSS:	T11S, R02E, Sec. 09 (M)	Acres:	13.2

Location: SPRING HILLS GOLF COURSE.

Detailed Location:

Ecological: SLOPES OF DISSECTED COASTAL TERRACES WITH HARD-PACKED SOIL, IN LOCAL GRASSY OPENINGS DOMINATED BY WEEDY NON-NATIVE SPECIES. IN NON-LANDSCAPED AREAS BETWEEN FAIRWAYS OF GOLF COURSE.

General: 5 SUBPOPULATIONS: 2000-3000 PLANTS IN LARGEST SUBPOPULATION IN 1989 AND 1990, 100-400 PLANTS EACH IN OTHER 4 SUBPOPULATIONS; SAME NUMBERS IN 1990.

Owner/Manager: PVT-SPRING HILLS GOLF COURSE

<i>Lessingia micradenia var. glabrata</i>		Element Code: PDAST5S062
smooth lessingia		
Listing Status:	Federal: None	CNDDDB Element Ranks: Global: G2T2
	State: None	State: S2
Other:	Rare Plant Rank - 1B.2, SB_BerrySB-Berry Seed Bank, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	
Habitat:	General: CHAPARRAL, CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.	
	Micro: SERPENTINE; OFTEN ON ROADSIDES. 90-490 M.	

Occurrence No.	1	Map Index: 26558	EO Index: 1699	Element Last Seen:	1936-09-05
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1936-09-05
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	1995-10-25

Quad Summary: Gilroy (3712115), Mt. Madonna (3712116)
County Summary: Santa Clara

Lat/Long:	37.07051 / -121.63056	Accuracy:	2/5 mile
UTM:	Zone-10 N4103571 E621737	Elevation (ft):	400
PLSS:	T10S, R03E, Sec. 10 (M)	Acres:	0.0

Location: 1.5 MILES SOUTHWEST OF SAN MARTIN.

Detailed Location: MAPPED ABOUT 1 MILE NORTH OF LIONS PEAK.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS 1936 COLLECTION BY WILSON.

Owner/Manager: UNKNOWN



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Occurrence No.	12	Map Index: 44287	EO Index: 44287	Element Last Seen: 1996-09-17
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen: 1996-09-17
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2000-11-17

Quad Summary: Mt. Madonna (3712116)

County Summary: Santa Clara

Lat/Long:	37.02977 / -121.64694	Accuracy:	1/10 mile
UTM:	Zone-10 N4099030 E620345	Elevation (ft):	320
PLSS:	T10S, R03E, Sec. 28 (M)	Acres:	0.0

Location: BURCHELL ROAD ABOUT 0.5 MILE EAST OF JUNCTION WITH ROAD G8, NORTH OF UVAS CREEK, SE OF UVAS RESERVOIR, WEST OF GILROY.

Detailed Location: ON BURCHELL ROAD 0.5 MILE EAST OF INTERSECTION WITH ROAD G8 (WATSONVILLE ROAD).

Ecological: SERPENTINE AREA IN GRAZED PASTURE.

General: FEWER THAN 100 PLANTS OBSERVED IN 1996.

Owner/Manager: PVT?

Occurrence No.	16	Map Index: 67516	EO Index: 60459	Element Last Seen: 2003-10-21
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen: 2003-10-21
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2007-02-02

Quad Summary: Mt. Madonna (3712116)

County Summary: Santa Clara

Lat/Long:	37.03246 / -121.66534	Accuracy:	80 meters
UTM:	Zone-10 N4099307 E618704	Elevation (ft):	470
PLSS:	T10S, R03E, Sec. 29, SE (M)	Acres:	0.0

Location: NEAR MOUTH OF ARTHUR CREEK, UNDER HIGH-VOLTAGE POWERLINES NORTH OF REDWOOD RETREAT ROAD, 5 AIR MILES WNW OF GILROY.

Detailed Location: UNDER POWERLINE RIGHT-OF-WAY FOR 230 KV STEEL TOWER TRANSMISSION LINE, SPAN FROM TOWER 41/184 TO 41/183. NEAR WOOD POLE CIRCUIT.

Ecological: SERPENTINE AREA, SERPENTINE OUTCROPS IN QUERCUS DOUGLASII WOODLAND. SPARSELY VEGETATED, WITH HEMIZONIA LUZULIFOLIA IN BLOOM, ON HEAVY CLAY SOILS, SOUTHERLY FACING SLOPE.

General: L. MICRADENIA VAR. GLABRATA WAS THE DOMINANT PLANT IN THIS GRASSLAND IN OCTOBER 2003.

Owner/Manager: UNKNOWN



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Occurrence No.	19	Map Index: 58885	EO Index: 63332	Element Last Seen:	2005-09-25
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2005-09-25
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2006-02-24

Quad Summary: Mt. Madonna (3712116)

County Summary: Santa Clara

Lat/Long:	37.02000 / -121.68731	Accuracy:	specific area
UTM:	Zone-10 N4097897 E616769	Elevation (ft):	1000
PLSS:	T10S, R03E, Sec. 31, SW (M)	Acres:	6.8

Location: BOTH SIDES OF MERRY-GO-ROUND TRAIL, ON EAST SIDE OF INTERSECTION WITH OLD MINE TRAIL, MOUNT MADONNA COUNTY PARK.

Detailed Location: NORTHEAST EDGE OF MOUNT MADONNA COUNTY PARK BOUNDARY. WITHIN THE NE 1/4 OF SW 1/4 OF SECTION 31.

Ecological: SERPENTINE GRASSLAND. FOUND WITH BROMUS HORDEACEUS, HEMIZONIA CONGESTA SSP. LUZULIFOLIA, ERIGONUM NUDUM, EPILOBIUM BRACHYCARPUM, BRACHYPODIUM DISTACHYON, CALOCHORTUS SPP, AND PLANTAGO ERECTA.

General: UNKNOWN NUMBER OF PLANTS SEEN BY COCHRANE IN 2005. 2005 TAYLOR SURVEY FOR DUDLEYA SETCHELLII (WITH NOTE OF THIS LESSINGIA) FOUND "EAST OF JUNCTION OF MERRY-GO-ROUND TRAIL AND TIE CAMP TRAIL" ALSO ATTRIBUTED TO THIS SITE.

Owner/Manager: SCL COUNTY-MT MADONNA PARK

Occurrence No.	23	Map Index: 64074	EO Index: 64169	Element Last Seen:	2005-09-25
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2005-09-25
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2006-02-27

Quad Summary: Mt. Madonna (3712116)

County Summary: Santa Clara

Lat/Long:	37.00718 / -121.68692	Accuracy:	specific area
UTM:	Zone-10 N4096474 E616824	Elevation (ft):	580
PLSS:	T11S, R03E, Sec. 06, N (M)	Acres:	11.7

Location: MOUNT MADONNA COUNTY PARK, ALONG BLACKHAWK, RIDGE, AND MERRY-GO-ROUND TRAILS, NORTHWEST OF SPRIG RECREATION AREA.

Detailed Location: SIX COLONIES ALONG TRAILS, NORTH OF HIGHWAY 152 AND BLACKHAWK CANYON. WITHIN THE NORTH HALF OF SECTION 6, MOSTLY IN THE NW 1/4.

Ecological: SERPENTINE GRASSLAND. FOUND WITH BROMUS HORDEACEUS, HEMIZONIA CONGESTA SSP. LUZULIFOLIA, ERIGONUM NUDUM, EPILOBIUM BRACHYCARPUM, BRACHYPODIUM DISTACHYON, CALOCHORTUS SPP, AND PLANTAGO ERECTA.

General: UNKNOWN NUMBER OF PLANTS SEEN IN 2005.

Owner/Manager: SCL COUNTY-MT MADONNA PARK



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Occurrence No.	25	Map Index: 68026	EO Index: 68177	Element Last Seen:	2006-08-28
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2006-08-28
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-02-02

Quad Summary: Mt. Madonna (3712116)

County Summary: Santa Clara

Lat/Long:	37.11487 / -121.69411	Accuracy:	specific area
UTM:	Zone-10 N4108414 E616020	Elevation (ft):	500
PLSS:	T09S, R03E, Sec. 30, SW (M)	Acres:	0.0

Location: CHESBRO RESERVOIR SPILLWAY, MORGAN HILL.

Detailed Location: TWO COLONIES ON THE SOUTHWEST SIDE OF THE SPILLWAY.

Ecological: OPEN, STEEP, CRUMBLY SERPENTINE WITH POLYPOGON MONSPELIENSIS, ELYMUS GLAUCUS, AND HEMIZONIA CONGESTA SSP. LUZULIFOLIA. ARCTOSTAPHYLOS GLAUCA ADJACENT.

General: 3600 PLANTS OBSERVED IN 2006.

Owner/Manager: SANTA CLARA VALLEY WATER DIST

Occurrence No.	26	Map Index: 67515	EO Index: 68178	Element Last Seen:	2003-10-20
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2003-10-20
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-02-02

Quad Summary: Mt. Madonna (3712116)

County Summary: Santa Clara

Lat/Long:	37.11428 / -121.66866	Accuracy:	80 meters
UTM:	Zone-10 N4108379 E618282	Elevation (ft):	800
PLSS:	T09S, R03E, Sec. 32, NW (M)	Acres:	0.0

Location: 0.5 AIR MILE SOUTHEAST OF THE SUMMIT OF EL TORO, NEAR MORGAN HILL.

Detailed Location: UNDER STEEL TOWER TRANSMISSION LINE.

Ecological: SERPENTINE GRASSLAND.

General: L. MICRADENIA SSP. GLABRATA WAS THE DOMINANT PLANT AT THIS SITE IN OCTOBER 2003. THE RARE DUDLEYA SETCHELLII AND STREPTANTHUS ALBIDUS SSP. PERAMOENUS ALSO OCCUR AT THIS SITE.

Owner/Manager: UNKNOWN



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Occurrence No.	35	Map Index:	79559	EO Index:	80545	Element Last Seen:	2007-09-27
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		2007-09-27	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2010-08-06	

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.07777 / -121.46892	Accuracy:	80 meters
UTM:	Zone-10 N4104596 E636094	Elevation (ft):	920
PLSS:	T10S, R05E, Sec. 07, SW (M)	Acres:	0.0

Location: WEST SIDE OF COYOTE CREEK, WEST OF GILROY HOT SPRINGS RD ABOUT 0.8 MILE EAST OF CANADA RD, WEST OF HENRY COE STATE PARK.
Detailed Location: IN THE NW 1/4 OF THE SW 1/4 OF SECTION 7.
Ecological: SERPENTINE GRASSLAND SURROUNDED BY ARCTOSTAPHYLOS GLAUCA, PINUS SABINIANA, QUERCUS AGRIFOLIA, Q. DOUGLASII, Q. LOBATA. ASSOC WITH EPIOLOBIUM BRACHYCARPUM, AVENA, BROMUS HORDEACEUS, TRITELEIA LAXA, CORDYLANTHUS RIGIDUS. 20% SE-FACING SLOPE.
General: A POPULATION COVERING APPROXIMATELY 30 METERS BY 50 METERS WAS OBSERVED IN 2007.
Owner/Manager: SCL COUNTY OPEN SPACE

Occurrence No.	43	Map Index:	A6897	EO Index:	108678	Element Last Seen:	2016-07-21
Occ. Rank:	Excellent	Presence:	Presumed Extant	Site Last Seen:		2016-07-21	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2017-10-20	

Quad Summary: Mt. Madonna (3712116)
County Summary: Santa Clara

Lat/Long:	37.09142 / -121.72058	Accuracy:	specific area
UTM:	Zone-10 N4105780 E613703	Elevation (ft):	575
PLSS:	T10S, R02E, Sec. 2, E (M)	Acres:	8.0

Location: MECHOR RANCH/UVAS CREEK OPEN SPACE PRESERVE; JUST NW OF THE JUNCTION OF UVAS ROAD AND WALLACE PLACE.
Detailed Location: FLAT AREA ROUGHLY 400 FEET WEST OF UVAS ROAD. MAPPED ACCORDING TO 2015 BASSON COORDINATES AND 2016 SLAKEY COORDINATES; POPULATION LIKELY MORE EXTENSIVE THAN SURVEYED/MAPPED.
Ecological: FLAT SERPENTINE GRASSLAND. ASSOCIATED WITH GASTRIDIMUM PHLEOIDES, TRICHOSTEMA LANCEOLATUM, HEMIZONIA CONGESTA SSP. LUZULIFOLIA, AND HORDEUM SP.
General: 1000 PLANTS OBSERVED IN 2015. 1000S OF PLANTS OBSERVED IN 2016.
Owner/Manager: SCL COUNTY OPEN SPACE



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Occurrence No.	44	Map Index: A6898	EO Index: 108679	Element Last Seen:	2016-07-21
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2016-07-21
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-10-20

Quad Summary: Mt. Madonna (3712116)
County Summary: Santa Clara

Lat/Long:	37.08583 / -121.72876	Accuracy:	specific area
UTM:	Zone-10 N4105150 E612985	Elevation (ft):	900
PLSS:	T10S, R02E, Sec. 2, SW (M)	Acres:	29.0

Location: MECHOR RANCH/UVAS CREEK OPEN SPACE PRESERVE; 0.4-0.8 AIR MILE WEST OF THE JUNCTION OF UVAS ROAD AND WALLACE PLACE.
Detailed Location: ON SLOPES NORTH OF UNNAMED CREEK. MAPPED ACCORDING TO 2016 SLAKEY COORDINATES.
Ecological: SERPENTINE GRASSLANDS WITH 15 TO 30 DEGREE SOUTH-FACING SLOPES. ASSOCIATED WITH AVENA BARBATA, BRACHYPODIUM DISTACHYON, HEMIZONIA CONGESTA SSP. LUZULIFOLIA, MONARDELLA DOUGLASII, ACMISPON AMERICANUS VAR. AMERICANUS, AND FESTUCA PERENNIS.
General: ABOUT 56,600 PLANTS OBSERVED IN 2016.
Owner/Manager: SCL COUNTY OPEN SPACE

Occurrence No.	47	Map Index: B2151	EO Index: 114077	Element Last Seen:	2018-07-12
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2018-07-12
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-01-31

Quad Summary: Mt. Madonna (3712116)
County Summary: Santa Clara

Lat/Long:	37.11905 / -121.70574	Accuracy:	specific area
UTM:	Zone-10 N4108863 E614981	Elevation (ft):	600
PLSS:	T09S, R02E, Sec. 25, SW (M)	Acres:	37.0

Location: ALONG CHESBRO LAKE DRIVE ON THE SOUTH SIDE OF CHESBRO RESERVOIR.
Detailed Location: MAPPED AS 2 POLYGONS ACCORDING TO A 2018 TANNOURJI MAP.
Ecological: SERPENTINE GRASSLANDS AND ROCK OUTCROPS ON EAST-FACING SLOPES. ASSOCIATED WITH BROMUS HORDEACEUS, AVENA FATUA, STREPTANTHUS ALBIDUS SSP. PERAMOENUS, ESCHSCHOLZIA CALIFORNICA, HEMIZONIA CONGESTA SSP. LUZULIFOLIA, PLAGIOBOTHRYIS, ETC.
General: IN 2018: TEN QUADRATS IN VARYING DENSITIES ACROSS 15 ACRES AVERAGED ABOUT 28 PLANTS PER SQUARE METER.
Owner/Manager: PVT



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Occurrence No.	48	Map Index: B2153	EO Index: 114078	Element Last Seen:	2017-07-11
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2017-07-11
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2019-01-31

Quad Summary: Mt. Madonna (3712116)
County Summary: Santa Clara

Lat/Long:	37.12253 / -121.73993	Accuracy:	specific area
UTM:	Zone-10 N4109208 E611938	Elevation (ft):	670
PLSS:	T09S, R02E, Sec. 27, NE (M)	Acres:	2.0

Location: ALONG UVAS ROAD AT THE SOUTH END OF MANZANITA RIDGE, WEST OF CHESBRO RESERVOIR.
Detailed Location: MAPPED ACCORDING TO A 2017 SPROULL MAP, IN THE SW 1/4 OF THE NE 1/4 OF SECTION 27.
Ecological: RUDERAL CALIFORNIA ANNUAL GRASSLAND AND SERPENTINE ROCK OUTCROP/BARRENS HABITAT.
General: 7600 PLANTS OBSERVED IN 2017. LIKELY ADDITIONAL PLANTS OUTSIDE OF SURVEY AREA.
Owner/Manager: SCL COUNTY

<i>Monolopia gracilens</i>		Element Code: PDAST6G010	
woodland woollythreads			
Listing Status:	Federal: None	CNDDB Element Ranks:	Global: G3
	State: None		State: S3
	Other: Rare Plant Rank - 1B.2		
Habitat:	General:	CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, BROADLEAFED UPLAND FOREST, NORTH COAST CONIFEROUS FOREST.	
	Micro:	GRASSY SITES, IN OPENINGS; SANDY TO ROCKY SOILS. OFTEN SEEN ON SERPENTINE AFTER BURNS, BUT MAY HAVE ONLY WEAK AFFINITY TO SERPENTINE. 120-975 M.	

Occurrence No.	7	Map Index: 79146	EO Index: 80112	Element Last Seen:	1951-06-24
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1951-06-24
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2014-07-02

Quad Summary: Watsonville East (3612186), Mt. Madonna (3712116)
County Summary: Santa Clara, Santa Cruz

Lat/Long:	36.99469 / -121.72418	Accuracy:	2/5 mile
UTM:	Zone-10 N4095044 E613527	Elevation (ft):	
PLSS:	T11S, R02E, Sec. 11, N (M)	Acres:	0.0

Location: ON EAST-FACING BANK JUST WEST OF SUMMIT OF HECKER PASS.
Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDDB IN VICINITY OF SLOPES JUST WEST OF HECKER PASS SUMMIT, INCLUDING THE STEEP EAST-FACING SLOPE OF BANKS CANYON.
Ecological: STEEP EAST-FACING 1/2 SHADED BANK.
General: MAIN SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1937 KECK COLLECTION. A 1931 HALL COLLECTION FROM "HECKER PASS. WATSONVILLE-GILROY RD" AND A 1951 BROWNE COLLECTION FROM "HECKER PASS" ARE ALSO ATTRIBUTED HERE. NEEDS FIELDWORK.
Owner/Manager: UNKNOWN



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Occurrence No.	8	Map Index: 79147	EO Index: 80113	Element Last Seen: 1952-04-26
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen: 1952-04-26
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2010-06-23

Quad Summary: Watsonville East (3612186)
County Summary: Santa Cruz

Lat/Long:	36.98448 / -121.71502	Accuracy:	non-specific area
UTM:	Zone-10 N4093922 E614358	Elevation (ft):	
PLSS:	T11S, R02E, Sec. 11, SE (M)	Acres:	30.0

Location: 1.3 MILES BELOW HECKER PASS SUMMIT, ON WATSONVILLE SIDE.
Detailed Location: MAPPED BY CNDDDB AROUND 1.3 ROAD MILES SOUTH OF HECKER PASS SUMMIT ALONG HECKER PASS HIGHWAY.
Ecological: IN ROCKS OF ROADCUT, SHADED BY SEQUOIA SEMPERVIRENS.
General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1952 COLLECTION BY CARLQUIST. NEEDS FIELDWORK.
Owner/Manager: UNKNOWN

Occurrence No.	11	Map Index: 56382	EO Index: 80121	Element Last Seen: 1903-06-01
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen: 1903-06-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2010-06-23

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.10899 / -121.47868	Accuracy:	4/5 mile
UTM:	Zone-10 N4108046 E635171	Elevation (ft):	
PLSS:	T09S, R04E, Sec. 36 (M)	Acres:	0.0

Location: TOWARD GILROY HOT SPRINGS, GILROY.
Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDDB IN VICINITY OF GILROY HOT SPRINGS. THIS MAY NOT BE THE SITE OF THIS HISTORICAL LOCATION.
Ecological:
General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1903 COLLECTION BY ELMER. NEEDS FIELDWORK.
Owner/Manager: UNKNOWN

Occurrence No.	12	Map Index: 79153	EO Index: 80122	Element Last Seen: 1901-03-30
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen: 1901-03-30
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2010-06-23

Quad Summary: Gilroy (3712115)
County Summary: Santa Clara

Lat/Long:	37.08584 / -121.60654	Accuracy:	1 mile
UTM:	Zone-10 N4105303 E623848	Elevation (ft):	
PLSS:	T10S, R03E, Sec. 02 (M)	Acres:	0.0

Location: SAN MARTIN.
Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDDB IN VICINITY OF SAN MARTIN.
Ecological:
General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1901 COLLECTION BY CHANDLER. NEEDS FIELDWORK.
Owner/Manager: UNKNOWN



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Occurrence No.	13	Map Index: 79154	EO Index: 80123	Element Last Seen:	1941-06-08
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1941-06-08
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2010-06-23
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.00937 / -121.71067		Accuracy:	non-specific area	
UTM:	Zone-10 N4096689 E614707		Elevation (ft):	1500	
PLSS:	T11S, R02E, Sec. 01, NW (M)		Acres:	33.0	
Location:	1.4 MILES NORTHEAST OF HECKER PASS SUMMIT, SANTA CRUZ MOUNTAINS.				
Detailed Location:	MAPPED AS BEST GUESS BY CNDDDB AROUND 1.4 ROAD MILES NNE OF HECKER PASS SUMMIT ON POLE LINE RD. ELEVATION GIVEN AS 1500 FT, BUT MEASURED DISTANCES PLACES THIS OCCURRENCE AT ~1800 FT.				
Ecological:	STEEP, PARTLY SHADED SLOPE. DISTURBED SOIL.				
General:	ONLY SOURCES OF INFORMATION FOR THIS OCCURRENCE ARE TWO CRUM COLLECTIONS FROM 1939 AND 1941. NEEDS FIELDWORK.				
Owner/Manager:	SCL COUNTY-MT MADONNA PARK				
Occurrence No.	14	Map Index: 79155	EO Index: 80124	Element Last Seen:	1936-05-25
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1936-05-25
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2010-06-23
Quad Summary:	Mt. Madonna (3712116), Loma Prieta (3712117)				
County Summary:	Santa Cruz				
Lat/Long:	37.01552 / -121.75375		Accuracy:	2/5 mile	
UTM:	Zone-10 N4097320 E610865		Elevation (ft):	1000	
PLSS:	T10S, R02E, Sec. 33 (M)		Acres:	0.0	
Location:	HAZELDELL SCHOOL, PLOT 4.				
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDDB AT HISTORIC LOCATION OF HAZELDELL SCHOOL.				
Ecological:					
General:	ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1936 COLLECTION BY BELSHAW. NEEDS FIELDWORK.				
Owner/Manager:	UNKNOWN				
Occurrence No.	51	Map Index: 93075	EO Index: 94225	Element Last Seen:	1915-04-05
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1915-04-05
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2014-07-09
Quad Summary:	Moss Landing (3612177), Watsonville East (3612186), Watsonville West (3612187)				
County Summary:	Monterey, San Benito, Santa Cruz				
Lat/Long:	36.90941 / -121.73263		Accuracy:	non-specific area	
UTM:	Zone-10 N4085573 E612901		Elevation (ft):		
PLSS:	T12S, R02E, Sec. 10 (M)		Acres:	954.0	
Location:	PAJARO RIVER, MONTEREY COUNTY.				
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS ALONG THE PAJARO RIVER, MOSTLY ALONG THE MONTEREY/SANTA CRUZ COUNTY LINE.				
Ecological:					
General:	ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1915 EASTWOOD COLLECTION. NEEDS FIELDWORK.				
Owner/Manager:	UNKNOWN				



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<i>Plagiobothrys diffusus</i>		Element Code: PDBOR0V080		
San Francisco popcornflower				
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G1Q	
	State: Endangered		State: S1	
	Other: Rare Plant Rank - 1B.1, SB_UCSC-UC Santa Cruz			
Habitat:	General: VALLEY AND FOOTHILL GRASSLAND, COASTAL PRAIRIE.			
	Micro: HISTORICALLY FROM GRASSY SLOPES WITH MARINE INFLUENCE. 45-360 M.			
Occurrence No.	16	Map Index: 95773	EO Index: 96910	Element Last Seen: 2013-03-25
Occ. Rank:	Good	Presence: Presumed Extant		Site Last Seen: 2013-03-25
Occ. Type:	Natural/Native occurrence	Trend: Unknown		Record Last Updated: 2015-03-27
Quad Summary:	San Juan Bautista (3612175)			
County Summary:	San Benito			
Lat/Long:	36.86645 / -121.60795	Accuracy:	80 meters	
UTM:	Zone-10 N4080962 E624078	Elevation (ft):	400	
PLSS:	T12S, R03E, Sec. 26, N (M)	Acres:	0.0	
Location:	NORTH SIDE OF US-101 BETWEEN CANNON ROAD AND COLE ROAD, SOUTH OF MUERTOS CANYON, WEST OF SAN JUAN VALLEY.			
Detailed Location:	MAPPED BY CNDDDB ACCORDING TO 2013 HALEY COORDINATES.			
Ecological:	GROWING ON A LEVEL, SCRAPED ROAD CUT WITH PSILOCARPUS TENELLUS, ADJACENT TO NATIVE PERENNIAL GRASSLAND/VALLEY NEEDLE GRASSLAND HABITAT. THE NATIVE GRASSLAND IS DOMINATED BY STIPA PULCHRA, ACAENA CALIFORNICA, CALYSTEGIA SUBCAULIS, ETC.			
General:	ABOUT 700 PLANTS IN 2013. PORTIONS OF CANYON ARE PROPOSED FOR FILL FROM QUARRY OPERATIONS BUT FILL SOIL WILL BE ~700 FT AWAY FROM THE PLAGIOBOTHRYIS POPULATION AREA. PLANTS KEYED IN JEPSON MANUAL & COMPARED TO GRAHAM HILL RD POPULATION.			
Owner/Manager:	PVT			



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<i>Plagiobothrys glaber</i>		Element Code: PDBOR0V0B0	
hairless popcornflower			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: GX
	State: None		State: SX
	Other: Rare Plant Rank - 1A		
Habitat:	General: MEADOWS AND SEEPS, MARSHES AND SWAMPS.		
	Micro: COASTAL SALT MARSHES AND ALKALINE MEADOWS. 5-125 M.		

Occurrence No.	1	Map Index: 28361	EO Index: 29533	Element Last Seen:	1954-05-01
Occ. Rank:	None		Presence: Possibly Extirpated	Site Last Seen:	1954-05-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-02-03
Quad Summary:	San Felipe (3612184)				
County Summary:	San Benito				
Lat/Long:	36.89050 / -121.40706		Accuracy:	1 mile	
UTM:	Zone-10 N4083909 E641941		Elevation (ft):	220	
PLSS:	T12S, R05E, Sec. 15 (M)		Acres:	0.0	
Location:	HOLLISTER AIRPORT, NORTH OF HOLLISTER.				
Detailed Location:	INCLUDES ALL KNOWN COLLECTIONS FROM VICINITY OF HOLLISTER.				
Ecological:	GRASSY ALKALINE FLAT.				
General:	SITE BASED ON 1938 COLLECTIONS FROM "HOLLISTER AIRPORT" AND "NEAR HOLLISTER" AND 1954 COLLECTION FROM "NORTH OF HOLLISTER." A SINGLE PLANT OBSERVED IN 1954.				
Owner/Manager:	UNKNOWN				

<i>Streptanthus albidus ssp. peramoenus</i>		Element Code: PDBRA2G012	
most beautiful jewelflower			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G2T2
	State: None		State: S2
	Other: Rare Plant Rank - 1B.2, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley, USFS_S-Sensitive		
Habitat:	General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND.		
	Micro: SERPENTINE OUTCROPS, ON RIDGES AND SLOPES. 90-1040 M.		

Occurrence No.	5	Map Index: 17200	EO Index: 20650	Element Last Seen:	1992-05-XX
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	1992-05-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	1993-07-02
Quad Summary:	Gilroy (3712115), Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.07188 / -121.62450		Accuracy:	specific area	
UTM:	Zone-10 N4103731 E622274		Elevation (ft):	500	
PLSS:	T10S, R03E, Sec. 10 (M)		Acres:	65.5	
Location:	SOUTHWEST OF SAN MARTIN, AT END OF HIGHLAND AVENUE, JUST WEST OF JUNCTION WITH TURLOCK AVENUE.				
Detailed Location:					
Ecological:	ON HILL IN ROCKY, RATHER BARREN SERPENTINE SOIL. ASSOCIATED WITH PLANTAGO ERECTA, PLATYSTEMON CALIFORNICUM, AND THE RARE DUDLEYA SETCHELLII. AREA BURNED IN 1989.				
General:	ABOUT 400 PLANTS IN 1990, OVER 10,000 IN 1992.				
Owner/Manager:	PVT				



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Occurrence No.	17	Map Index: 30508	EO Index: 26360	Element Last Seen:	1992-06-01
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	1992-06-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	1996-11-14
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Clara				
Lat/Long:	36.94851 / -121.59636		Accuracy:	80 meters	
UTM:	Zone-10 N4090080 E624978		Elevation (ft):	950	
PLSS:	T11S, R03E, Sec. 25, NW (M)		Acres:	0.0	
Location:	CARLYLE HILLS, ABOUT 3.5 MILES SSW OF GILROY, 0.25 MILE NORTH OF SPRING IN SECTION 25.				
Detailed Location:					
Ecological:	DRY SERPENTINE OUTCROP WITH BROMUS MOLLIS, NASSELLA PULCHRA, KOELARIA CRISTATA, SITANION JUBATUM, PLANTAGO ERECTA, AND VULPIA.				
General:	FEWER THAN 50 PLANTS IN 1992.				
Owner/Manager:	UNKNOWN				
Occurrence No.	28	Map Index: 40920	EO Index: 40920	Element Last Seen:	2007-06-05
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2007-06-05
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2010-08-25
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.11665 / -121.69304		Accuracy:	specific area	
UTM:	Zone-10 N4108612 E616112		Elevation (ft):	450	
PLSS:	T09S, R03E, Sec. 30, SW (M)		Acres:	0.0	
Location:	NE SIDE OF CHESBRO RESERVOIR DAM, IMMEDIATELY WEST OF OAK GLEN AVE, MORGAN HILL.				
Detailed Location:					
Ecological:	OPENINGS IN CHAPARRAL. SW-FACING SLOPE. SERPENTINE SOILS. ASSOC WITH ANTIRRHINUM VEXILLO-CALYCVLATUM SSP. VEXILLO-CALYCVLATUM, ERIOGONUM ROSEUM, SALVIA COLUMBARIAE, PELLAEA ANDROMEDIFOLIA, & CORDYLANTHUS SP. ARCTOSTAPHYLOS GLAUCA ADJACENT.				
General:	40 PLANTS OBSERVED IN 2007.				
Owner/Manager:	UNKNOWN				



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Occurrence No.	63	Map Index:	63122	EO Index:	63266	Element Last Seen:	2010-04-26
Occ. Rank:	Excellent	Presence:	Presumed Extant	Site Last Seen:		2010-04-26	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2017-12-19	
Quad Summary:	Mt. Madonna (3712116)						
County Summary:	Santa Clara						
Lat/Long:	37.01794 / -121.69195	Accuracy:	80 meters				
UTM:	Zone-10 N4097662 E616361	Elevation (ft):	1000				
PLSS:	T10S, R03E, Sec. 31, SW (M)	Acres:	5.0				
Location:	MOUNT MADONNA COUNTY PARK, JUST DOWNSLOPE AND EAST OF THE JUNCTION OF MERRY-GO-ROUND TRAIL AND TIE CAMP TRAIL.						
Detailed Location:	MAPPED ACCORDING TO 2010 O'DELL COORDINATES, IN THE NW 1/4 OF THE SW 1/4 OF SECTION 31.						
Ecological:	GRAVELLY/ROCKY SERPENTINE BARREN SLOPES AT THE EDGE OF THE GRASSLAND. ASSOCIATED WITH THE RARE DUDLEYA SETCHELLII AND LESSINGIA MICRADENIA SSP. GLABRATA.						
General:	UNKNOWN NUMBER OF PLANTS SEEN IN THIS VICINITY IN 2005. HUNDREDS OF PLANTS OBSERVED IN 2010.						
Owner/Manager:	SCL COUNTY-MT MADONNA PARK						
Occurrence No.	78	Map Index:	67515	EO Index:	68299	Element Last Seen:	2003-10-20
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		2003-10-20	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2007-02-27	
Quad Summary:	Mt. Madonna (3712116)						
County Summary:	Santa Clara						
Lat/Long:	37.11428 / -121.66866	Accuracy:	80 meters				
UTM:	Zone-10 N4108379 E618282	Elevation (ft):	800				
PLSS:	T09S, R03E, Sec. 32, NW (M)	Acres:	0.0				
Location:	0.5 AIR MILE SOUTHEAST OF THE SUMMIT OF EL TORO, NEAR MORGAN HILL.						
Detailed Location:	UNDER STEEL TOWER TRANSMISSION LINE.						
Ecological:	SERPENTINE GRASSLAND DOMINATED BY THE RARE LESSINGIA MICRADENIA SSP. GLABRATA.						
General:	POPULATION SIZE UNKNOWN. S. ALIBDUS SSP. PERAMOENUS WAS LISTED AS AN ASSOCIATE HERE DURING A 2003 SURVEY FOR DUDLEYA SETCHELLII.						
Owner/Manager:	UNKNOWN						



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Occurrence No.	79	Map Index: 67516	EO Index: 68300	Element Last Seen:	2003-10-21
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2003-10-21
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-02-27

Quad Summary: Mt. Madonna (3712116)
County Summary: Santa Clara

Lat/Long:	37.03246 / -121.66534	Accuracy:	80 meters
UTM:	Zone-10 N4099307 E618704	Elevation (ft):	470
PLSS:	T10S, R03E, Sec. 29, S (M)	Acres:	0.0

Location: NEAR MOUTH OF ARTHUR CREEK, UNDER HIGH-VOLTAGE POWERLINES NORTH OF REDWOOD RETREAT ROAD, 5 AIR MILES WNW OF GILROY.

Detailed Location: UNDER POWER LINE RIGHT OF WAY FOR 230 KV STEEL TOWER TRANSMISSION LINE, SPAN FROM TOWER 41/184 TO 41/183. NEAR WOOD POLE CIRCUIT.

Ecological: SERPENTINE GRASSLAND DOMINATED BY LESSINGIA MICRADENIA SSP. GLABRATA.

General: POPULATION SIZE UNKNOWN. S. ALIBDUS SSP. PERAMOENUS WAS LISTED AS AN ASSOCIATE HERE DURING A 2003 SURVEY FOR DUDLEYA SETCHELLII.

Owner/Manager: UNKNOWN

Occurrence No.	86	Map Index: 79802	EO Index: 80799	Element Last Seen:	2007-06-06
Occ. Rank:	Poor		Presence: Presumed Extant	Site Last Seen:	2007-06-06
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2010-09-01

Quad Summary: Gilroy (3712115)
County Summary: Santa Clara

Lat/Long:	37.12015 / -121.54802	Accuracy:	specific area
UTM:	Zone-10 N4109188 E628990	Elevation (ft):	900
PLSS:	T09S, R04E, Sec. 29, SE (M)	Acres:	1.0

Location: NORTHEAST SIDE OF COYOTE LAKE DAM, NORTH OF GILROY.

Detailed Location: ON HILLSIDE ABOVE SPILLWAY.

Ecological: STEEP, OPEN, ROCKY SW-FACING SLOPE. ASSOCIATED WITH AVENA FATUA, BRACHYPODIUM DISTACHYON, DUDLEYA SETCHELLII, AND SALVIA COLUMBARIAE.

General: 1 PLANT OBSERVED IN 2007.

Owner/Manager: SANTA CLARA VALLEY WATER DIST



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Occurrence No.	104	Map Index: A7798	EO Index: 109584	Element Last Seen:	2018-04-26
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2018-04-26
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2022-03-22
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.11731 / -121.70595		Accuracy:	specific area	
UTM:	Zone-10 N4108669 E614965		Elevation (ft):	753	
PLSS:	T09S, R02E, Sec. 25, SW (M)		Acres:	30.0	
Location:	SLOPES ABOVE CHESBRO LAKE DRIVE AND RESERVOIR SHORELINE, ABOUT 0.7 AIR MILE WNW OF ELMER J CHESBRO DAM.				
Detailed Location:	2 POLYGONS MAPPED IN THE EAST 1/2 OF THE SW 1/4 OF SECTION 25, BASED ON 2016 & 2018 FIELD SURVEYS.				
Ecological:	SERPENTINE GRASSLANDS AND ROCK OUTCROPS ON EAST-FACING SLOPES. ASSOCIATES INCLUDE BROMUS HORDEACEUS, AVENA FATUA, ESCHSCHOLZIA CALIFORNICA, LESSINGIA MICRADENIA VAR. GLABRATA, HEMIZONIA CONGESTA SSP. LUZULIFOLIA, PLAGIOBOTHRYUS, ELYMUS, ETC.				
General:	72 PLANTS OBSERVED IN 2016. 1,500 PLANTS OBSERVED IN 2018.				
Owner/Manager:	PVT				
Occurrence No.	105	Map Index: A7803	EO Index: 109590	Element Last Seen:	2016-06-01
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2016-06-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-12-26
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.09169 / -121.72111		Accuracy:	specific area	
UTM:	Zone-10 N4105809 E613657		Elevation (ft):	600	
PLSS:	T10S, R02E, Sec. 2, NE (M)		Acres:	5.0	
Location:	WEST OF UVAS ROAD, ABOUT 3.1 AIR MILES NORTHWEST OF UVAS DAM, UVAS CREEK OPEN SPACE PRESERVE.				
Detailed Location:	SCATTERED COLONIES ON HILL ABOUT 600 FEET WEST OF UVAS ROAD. 3 POLYGONS MAPPED IN THE SW 1/4 OF THE NE 1/4 OF SECTION 2.				
Ecological:	SEMI-BARREN SERPENTINE ROCK OUTCROPS WITHIN SERPENTINE CHAPARRAL; VARIABLE SLOPES AND ASPECTS. ASSOCIATED WITH PINUS SABINIANA, ARCTOSTAPHYLOS GLAUCA, LEPTOSIPHON AMBIGUUS, AND DUDLEYA ABRAMSII SSP. SETCHELLII.				
General:	FEWER THAN 50 PLANTS OBSERVED IN 2015. ~240 PLANTS OBSERVED IN 2016.				
Owner/Manager:	SCL COUNTY OPEN SPACE				



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Campanula exigua		Element Code: PDCAM020A0	
chaparral harebell			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G2
	State: None		State: S2
	Other: Rare Plant Rank - 1B.2, BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden		
Habitat:	General: CHAPARRAL.		
	Micro: ROCKY SITES, USUALLY ON SERPENTINE IN CHAPARRAL. 90-1375 M.		
Occurrence No.	6	Map Index: 56382	EO Index: 56398
Occ. Rank:	Unknown	Presence: Presumed Extant	Element Last Seen: 1895-05-31
Occ. Type:	Natural/Native occurrence	Trend: Unknown	Site Last Seen: 1895-05-31
			Record Last Updated: 2004-08-17
Quad Summary:	Gilroy Hot Springs (3712114)		
County Summary:	Santa Clara		
Lat/Long:	37.10899 / -121.47868	Accuracy:	4/5 mile
UTM:	Zone-10 N4108046 E635171	Elevation (ft):	2200
PLSS:	T09S, R04E, Sec. 36 (M)	Acres:	0.0
Location:	ON TRAIL, HALF MILE ABOVE GILROY HOT SPRINGS, COYOTE CREEK.		
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDDB IN THE VICINITY OF GILROY HOT SPRINGS.		
Ecological:			
General:	OCCURRENCE KNOWN ONLY FROM AN 1895 COLLECTION BY DUDLEY. UNKNOWN IF "HALF MILE ABOVE GILROY HOT SPRINGS" REFERS TO TRAILS ON PALASSOU RIDGE, WEST OF GILROY HOT SPRINGS, OR TRAILS N OF GILROY HOT SPRINGS. SITE MAPPED TO ENCOMPASS BOTH AREAS.		
Owner/Manager:	UNKNOWN		



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<i>Legenere limosa</i>		Element Code: PDCAM0C010	
legenere			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G2
	State: None		State: S2
	Other: Rare Plant Rank - 1B.1, BLM_S-Sensitive, SB_UCBG-UC Botanical Garden at Berkeley		
Habitat:	General: VERNAL POOLS.		
	Micro: IN BEDS OF VERNAL POOLS. 1-1005 M.		

Occurrence No.	54	Map Index:	67508	EO Index:	48968	Element Last Seen:	2004-05-04
Occ. Rank:	Fair	Presence:	Presumed Extant	Site Last Seen:		2004-05-04	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2014-04-16	
Quad Summary:	Gilroy (3712115)						
County Summary:	Santa Clara						
Lat/Long:	37.09940 / -121.52082		Accuracy:	specific area			
UTM:	Zone-10 N4106923 E631443		Elevation (ft):	2000			
PLSS:	T10S, R04E, Sec. 03, NW (M)		Acres:	1.0			
Location:	UPPER AND LOWER TWIN LAKES, NORTH END OF TIMBER RIDGE, EAST OF COYOTE LAKE, NNE OF GILROY.						
Detailed Location:							
Ecological:	AT EDGE OF EPHEMERAL STOCK PONDS UNDER SEMI-SHADE OF QUERCUS LOBATA AND AROUND DRIED BACK POND MARGIN. GROWING IN AREA OF LOW VEGETATIVE COVER WITH LILAEA SCILLOIDES, RORIPPA CURVISILIQUA, ELEOCHARIS MACROSTACHYA, AND PLAGIOBOTHRYIS SPP.						
General:	APPROXIMATELY 455 PLANTS OBSERVED IN 2002 IN UPPER TWIN LAKE. 12 PLANTS IN 2004 IN LOWER TWIN LAKE.						
Owner/Manager:	SCL COUNTY						

<i>Extriplex joaquinana</i>		Element Code: PDCHE041F3	
San Joaquin spearscale			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G2
	State: None		State: S2
	Other: Rare Plant Rank - 1B.2, BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden		
Habitat:	General: CHENOPOD SCRUB, ALKALI MEADOW, PLAYAS, VALLEY AND FOOTHILL GRASSLAND.		
	Micro: IN SEASONAL ALKALI WETLANDS OR ALKALI SINK SCRUB WITH DISTICHLIS SPICATA, FRANKENIA, ETC. 0-800 M.		



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Occurrence No.	20	Map Index: 28361	EO Index: 9590	Element Last Seen:	1938-05-28
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1938-05-28
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2006-12-15
Quad Summary:	San Felipe (3612184)				
County Summary:	San Benito				
Lat/Long:	36.89050 / -121.40706		Accuracy:	1 mile	
UTM:	Zone-10 N4083909 E641941		Elevation (ft):		
PLSS:	T12S, R05E, Sec. 15 (M)		Acres:	0.0	
Location:	HOLLISTER AIRPORT.				
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED BY CNDDDB AS BEST GUESS.				
Ecological:					
General:	OCCURRENCE IS BASED ON 1938 HOOVER COLLECTION FROM HOLLISTER AIRPORT AND HOWELL COLLECTION TAKEN THE SAME DAY FROM "NEAR HOLLISTER." 1897 SETCHELL COLLECTION FROM HOLLISTER ALSO ATTRIBUTED HERE. INCLUDES FORMER OCCURRENCE #21.				
Owner/Manager:	UNKNOWN				
Occurrence No.	34	Map Index: 24868	EO Index: 6765	Element Last Seen:	2012-07-09
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2012-07-09
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2014-04-18
Quad Summary:	Hollister (3612174)				
County Summary:	San Benito				
Lat/Long:	36.77918 / -121.40251		Accuracy:	80 meters	
UTM:	Zone-10 N4071566 E642553		Elevation (ft):	650	
PLSS:	T13S, R05E, Sec. 27, NE (M)		Acres:	0.0	
Location:	BIRD CREEK, JUST NORTH OF THE SAN ANDREAS FAULT, SOUTH OF HOLLISTER.				
Detailed Location:	MAPPED ALONG BIRD CREEK, BETWEEN CREEK AND CIENEGA ROAD WHERE ROAD CURVES NORTH TOWARDS HOLLISTER.				
Ecological:	ALKALI SEEP WITHIN NONNATIVE GRASSLAND. ASSOCIATED WITH HORDEUM MARINUM SSP. GUSSONEANUM, HORDEUM DEPRESSUM, POLYPOGON MONSPELIENSIS, BRODIAEA ELEGANS, MALVELLA LEPROSA, AND LOLIUM MULTIFLORUM.				
General:	25 PLANTS IN 1993, 400 ESTIMATED IN 1995. BLM OHV AREA IS ON OPPOSITE SIDE OF CIENEGA ROAD FROM SITE. 2012 WINCHELL PHOTOS FROM "HOLLISTER HILLS" WITH COORDINATES AT THIS SITE ARE ATTRIBUTED TO THIS OCCURRENCE. NOTED AS "UNCOMMON" IN 2012.				
Owner/Manager:	DPR				



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Occurrence No.	48	Map Index: 28839	EO Index: 30319	Element Last Seen:	2017-06-24
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2017-06-24
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-12-08

Quad Summary: Hollister (3612174)
County Summary: San Benito

Lat/Long:	36.78791 / -121.4071	Accuracy:	specific area
UTM:	Zone-10 N4072528 E642128	Elevation (ft):	620
PLSS:	T13S, R05E, Sec. 22, E (M)	Acres:	8.0

Location: ABOUT 4 MILES SOUTH OF HOLLISTER, ALONG UNNAMED CREEK, 0.7 TO 1 MILE NORTH OF CROSSING OF CIENEGA ROAD AND BIRD CREEK.
Detailed Location: MAPPED AS 4 POLYGONS ACCORDING TO 2017 O'DELL COORDINATES, IN THE EAST 1/2 OF SECTION 22.
Ecological: ON BANKS OF DEEPLY INCISED CHANNEL OF UNNAMED CREEK FLOWING THROUGH NONNATIVE GRASSLAND. IN SILTY, ALKALINE CLAY. WITH DISTICHLIS SPICATA, LOLIUM MULTIFLORUM, AND MENTZELIA SP.
General: 150 PLANTS IN 1995. 1200+ PLANTS OBSERVED IN 2017.
Owner/Manager: DPR-HOLLISTER HILLS SVRA

Occurrence No.	64	Map Index: 49794	EO Index: 49794	Element Last Seen:	2013-07-10
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2013-07-10
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2014-04-18

Quad Summary: San Felipe (3612184)
County Summary: San Benito

Lat/Long:	36.97267 / -121.46708	Accuracy:	80 meters
UTM:	Zone-10 N4092938 E636446	Elevation (ft):	148
PLSS:	T11S, R05E, Sec. 18, SW (M)	Acres:	0.0

Location: SAN FELIPE LAKE, OFF OF LAKE RD AND FRAZIER LAKE RD, SAN BENITO COUNTY, NEAR COUNTY LINE WITH SANTA CLARA.
Detailed Location: GROWING AT LOW DENSITY, SCATTERED ACROSS A LARGE EXPANSE OF GRASSLAND. IN THE CENTER OF THE SW 1/4 OF SECTION 18.
Ecological: ALKALINE GRASSLAND NEAR LAKE. WITH EXOTIC ANNUAL GRASSES SUCH AS LOLIUM MULTIFLORUM, HORDEUM MARINUM SSP. GUSSONEANUM; BETA VULGARIS, MALVELLA LEPROSA, FRANKENIA SALINA, ETC. ERYNGIUM ARISTULATUM VAR. HOOVERI OCCURS CLOSER TO THE LAKE.
General: ~200 PLANTS OBSERVED IN A 1 ACRE SUB-SAMPLE AREA IN 2013. THE POP. COULD BE SCATTERED ACROSS AN EST. 247 ACRES. TWO 1896 JEPSON COLLECTIONS FROM "HOLLISTER RD NEAR SOAP LAKE (SAN FELIPE LAKE)" & "GILROY VALLEY" ARE ATTRIBUTED TO THIS SITE.
Owner/Manager: PVT



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Occurrence No.	129	Map Index: A7486	EO Index: 109255	Element Last Seen:	2017-06-24
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2017-06-24
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-12-11
Quad Summary:	Hollister (3612174)				
County Summary:	San Benito				
Lat/Long:	36.79604 / -121.40643		Accuracy:	specific area	
UTM:	Zone-10 N4073431 E642173		Elevation (ft):	500	
PLSS:	T13S, R05E, Sec. 15, S (M)		Acres:	5.0	
Location:	EAST SIDE OF CIENEGA ROAD, ABOUT 0.5 ROAD MILE SOUTH OF ITS JUNCTION WITH HIDDEN VALLEY ROAD, SOUTH OF HOLLISTER.				
Detailed Location:	MAPPED AS 5 POLYGONS ACCORDING TO 2017 O'DELL COORDINATES, IN THE SOUTH 1/2 OF SECTION 15 AND THE NE 1/4 OF THE NE 1/4 OF SECTION 22.				
Ecological:	VERTIC CLAY.				
General:	170+ PLANTS OBSERVED IN 2017.				
Owner/Manager:	DPR-HOLLISTER HILLS SVRA				

Occurrence No.	130	Map Index: A7487	EO Index: 109256	Element Last Seen:	2017-07-23
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2017-07-23
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-12-11
Quad Summary:	Hollister (3612174)				
County Summary:	San Benito				
Lat/Long:	36.79785 / -121.41555		Accuracy:	specific area	
UTM:	Zone-10 N4073619 E641355		Elevation (ft):	500	
PLSS:	T13S, R05E, Sec. 15, SW (M)		Acres:	2.0	
Location:	WEST OF CIENEGA RD, ABOUT 0.6 AIR MILE SSW OF THE JUNCTION OF HIDDEN VALLEY RD AND CIENEGA RD, SOUTH OF HOLLISTER.				
Detailed Location:	MAPPED AS 2 POLYGONS ACCORDING TO 2017 O'DELL COORDINATES, IN THE SW 1/4 OF THE SW 1/4 OF SECTION 15.				
Ecological:	VERTIC CLAY SOIL.				
General:	IN 2017, WESTERN POLYGON HAD FEWER THAN 10 PLANTS AND EASTERN POLYGON HAD FEWER THAN 100 PLANTS.				
Owner/Manager:	DPR-HOLLISTER HILLS SVRA				

<i>Dudleya abramsii ssp. setchellii</i>			Element Code: PDCRA040Z0		
Santa Clara Valley dudleya					
Listing Status:	Federal:	Endangered	CNDDB Element Ranks:	Global:	G4T2
	State:	None		State:	S2
	Other:	Rare Plant Rank - 1B.1, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden			
Habitat:	General:	VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND.			
	Micro:	ON ROCKY SERPENTINE OUTCROPS AND ON ROCKS WITHIN GRASSLAND OR WOODLAND. 60-455 M.			



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Occurrence No.	9	Map Index:	17200	EO Index:	22072	Element Last Seen:	1992-05-XX
Occ. Rank:	Excellent	Presence:	Presumed Extant	Site Last Seen:	1992-05-XX	Record Last Updated:	2010-07-21
Occ. Type:	Natural/Native occurrence		Trend:	Unknown			
Quad Summary:	Gilroy (3712115), Mt. Madonna (3712116)						
County Summary:	Santa Clara						
Lat/Long:	37.07188 / -121.62450			Accuracy:	specific area		
UTM:	Zone-10 N4103731 E622274			Elevation (ft):	500		
PLSS:	T10S, R03E, Sec. 10, SE (M)			Acres:	65.5		
Location:	AT END OF HIGHLAND AVENUE JUST WEST OF JUNCTION WITH TURLOCK AVENUE, SOUTHWEST OF SAN MARTIN.						
Detailed Location:	1200 ACRES TO BE SET ASIDE IN OPEN SPACE (INCLUDING 40-50 ACRES OF SERPENTINE).						
Ecological:	IN ROCKY, BARREN SERPENTINE OUTCROPS. BURNED IN 1989. WITH GILIA SPP., PLANTAGO ERECTA, SALVIA COLUMBARIÆ, PLATYSTEMON CALIFORNICUM, AND STREPTANTHUS ALBIDUS PERAMOENUS (ALSO RARE).						
General:	APPROXIMATELY 400 PLANTS OBSERVED IN 1990. APPROXIMATELY 150 PLANTS OBSERVED IN 1992, BUT ENTIRE OCCURRENCE PROBABLY NOT SEARCHED.						
Owner/Manager:	PVT						

Occurrence No.	18	Map Index:	23717	EO Index:	16708	Element Last Seen:	1991-08-09
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:	1991-08-09	Record Last Updated:	1996-11-14
Occ. Type:	Natural/Native occurrence		Trend:	Unknown			
Quad Summary:	Mt. Madonna (3712116)						
County Summary:	Santa Clara						
Lat/Long:	37.10998 / -121.69090			Accuracy:	specific area		
UTM:	Zone-10 N4107875 E616313			Elevation (ft):	700		
PLSS:	T09S, R03E, Sec. 31 (M)			Acres:	18.1		
Location:	SOUTH OF JUNCTION OF LLAGAS CREEK AND PARADISE CREEK, ABOUT 0.4 MILE SSE OF CHESBRO RESERVOIR DAM, MORGAN HILL.						
Detailed Location:	MAPPED ABOUT 0.2 MILE SOUTH OF GAGING STATION ALONG LLAGAS CREEK.						
Ecological:	ASSOCIATED WITH NASSELLA PULCHRA, MELICA SP., SITANION SP., PLANTAGO ERECTA, AND PLATYSTEMON CALIFORNICA.						
General:	260 ROSETTES IN 1991.						
Owner/Manager:	PVT						



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Occurrence No.	23	Map Index: 41773	EO Index: 41773	Element Last Seen:	2020-05-11
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2020-05-11
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2020-07-20
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.07813 / -121.64304		Accuracy:	specific area	
UTM:	Zone-10 N4104401 E620617		Elevation (ft):	715	
PLSS:	T10S, R03E, Sec. 9, NE (M)		Acres:	7.0	
Location:	HAYES LANE, RIDGE SOUTH OF LLAGAS CREEK AND NORTHEAST OF HAYES VALLEY, SOUTH OF MORGAN HILL.				
Detailed Location:	MAPPED AS 3 POLYGONS ON SUMMIT OF RIDGE ALONG BOTH SIDES OF HAYES LANE.				
Ecological:	ON WEATHERED SERPENTINE OUTCROPS NEAR SUMMIT OF HILL. VALLEY OAK SAVANNA WITH STREPTANTHUS ALBIDUS SSP. PERAMOENUS, ESCHSCHOLZIA CALIFORNICA, STIPA PULCHRA, CHLOROGALUM POMERIDIANUM, AVENA BARBATA, PHACELIA IMBRICATA, ETC.				
General:	EASTERN POLYGON: 50-100 PLANTS OBSERVED IN 1999; NO OTHER RARE SPECIES OBSERVED AT THIS SITE, BUT FAVORABLE HABITAT EXISTS FOR OTHER RARE PLANTS. TWO WESTERN POLYGONS: 29 PLANTS OBSERVED IN 2020.				
Owner/Manager:	PVT				
Occurrence No.	43	Map Index: 93106	EO Index: 63214	Element Last Seen:	2013-05-16
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2013-05-16
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2014-07-10
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.01760 / -121.69190		Accuracy:	specific area	
UTM:	Zone-10 N4097625 E616365		Elevation (ft):	1000	
PLSS:	T10S, R03E, Sec. 31, SW (M)		Acres:	10.0	
Location:	MOUNT MADONNA COUNTY PARK, JUST DOWNSLOPE AND EAST OF THE JUNCTION OF MERRY-GO-ROUND TRAIL AND TIE CAMP TRAIL.				
Detailed Location:	SMALL COLONY OF ROUGHLY 50 METERS BY 200 METERS IN 2005. ON THE FAR NORTHWESTERN PART OF THE LOCAL SERPENTINE EXPOSURE. MAPPED BY CNDDDB BASED ON GPS COORDINATES FROM TAYLOR IN 2005 AND O'DELL IN 2013.				
Ecological:	GROWING IN CREVICES OF PROMINENT LANDSLIDE ESCARPMENT ON VIRTUALLY BARREN SERPENTINE. ASSOCIATED WITH THE RARE LESSINGIA MICRADENIA SSP. GLABRATA AND STREPTANTHUS ALBIDUS VAR. PERAMOENUS.				
General:	288 PLANTS OBSERVED IN 2005. FEWER THAN 50 PLANTS OBSERVED IN 2013.				
Owner/Manager:	SCL COUNTY-MT MADONNA PARK				



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Occurrence No.	47	Map Index: 67514	EO Index: 67675	Element Last Seen:	2015-04-27
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2015-04-27
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2020-07-15
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.10421 / -121.47399		Accuracy:	non-specific area	
UTM:	Zone-10 N4107522 E635597		Elevation (ft):	1000	
PLSS:	T09S, R04E, Sec. 36, SE (M)		Acres:	30.0	
Location:	GILROY HOT SPRINGS ROAD, 0.5 MILE SOUTH OF SPRINGS AT COYOTE CREEK.				
Detailed Location:	MAPPED BY CNDDDB ACCORDING TO LOCATION DESCRIPTION IN 2001 HELMKAMP COLLECTION; GIVEN ELEVATION IS 600 FEET BUT ELEVATION IN MAPPED AREA IS CLOSER TO 1000 FEET.				
Ecological:	RIPARIAN, STEEP, ROCKY BANK. IN 2015, GROWING ON ROCKY OUTCROP OVERLOOKING SEASONAL STREAM IN FULL SUN, SOIL VERY DRY, WITH PELLAEA ANDROMEDIFOLIA.				
General:	SITE BASED ON A 2001 COLLECTION BY HELMKAMP; MENTIONED AS "OCCASIONAL" IN 2001. A 2015 CORKILL COLLECTION FROM "GILROY HOT SPRINGS ROAD, GILROY" IS ALSO ATTRIBUTED TO THIS SITE. NEEDS FIELDWORK.				
Owner/Manager:	DPR-HENRY W COE SP				
Occurrence No.	48	Map Index: 67515	EO Index: 67676	Element Last Seen:	2003-10-20
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2003-10-20
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2014-07-10
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.11428 / -121.66866		Accuracy:	80 meters	
UTM:	Zone-10 N4108379 E618282		Elevation (ft):	800	
PLSS:	T09S, R03E, Sec. 32, NW (M)		Acres:	0.0	
Location:	0.5 AIR MILE SSE OF THE SUMMIT OF EL TORO, WEST OF MORGAN HILL.				
Detailed Location:	UNDERNEATH TRANSMISSION LINE.				
Ecological:	SERPENTINE GRASSLAND DOMINATED BY LESSINGIA MICRADENIA SSP. GLABRATA. STREPTANTHUS ALBIDUS SSP. PERAMOENUS ALSO PRESENT.				
General:	250 PLANTS OBSERVED IN 2003. A 1918 KIMBER COLLECTION FROM "EL TORO NEAR MORGAN HILL" IS ALSO ATTRIBUTED TO THIS SITE.				
Owner/Manager:	UNKNOWN				



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Occurrence No.	49	Map Index: 67516	EO Index: 67677	Element Last Seen:	2003-10-21
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2003-10-21
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-01-05
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.03246 / -121.66534		Accuracy:	80 meters	
UTM:	Zone-10 N4099307 E618704		Elevation (ft):	470	
PLSS:	T10S, R03E, Sec. 29, SE (M)		Acres:	0.0	
Location:	0.7 AIR MILE NW OF THE INTERSECTION OF REDWOOD RETREAT ROAD AND WATSONVILLE ROAD, ON HILLS NORTH OF LITTLE ARTHUR CREEK.				
Detailed Location:	WITHIN TRANSMISSION LINE RIGHT-OF-WAY.				
Ecological:	SERPENTINE GRASSLAND DOMINATED BY LESSINGIA MICRADENIA SSP. GLABRATA. STREPTANTHUS ALBIDUS SSP. PERAMOENUS ALSO PRESENT.				
General:	44 PLANTS OBSERVED IN 2003.				
Owner/Manager:	PVT				
Occurrence No.	50	Map Index: 67517	EO Index: 67678	Element Last Seen:	2004-05-12
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2004-05-12
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2006-12-29
Quad Summary:	Gilroy Hot Springs (3712114), Mississippi Creek (3712124)				
County Summary:	Santa Clara				
Lat/Long:	37.12779 / -121.42805		Accuracy:	specific area	
UTM:	Zone-10 N4110206 E639635		Elevation (ft):	2000	
PLSS:	T09S, R05E, Sec. 28, NE (M)		Acres:	10.0	
Location:	ALONG COIT ROAD, NORTH OF KELLY LAKE, IN HENRY WILLARD COE STATE PARK.				
Detailed Location:	BOTH ABOVE AND BELOW THE ROAD. TWO COLONIES.				
Ecological:	ASSOCIATED WITH TOXICODENDRON DIVERSILOBUM, ARTEMISIA CALIFORNICA, BACCHARIS PILULARIS, QUERCUS DOUGLASII, AVENA BARBATA, ERIOPHYLLUM SP, ERIOGONUM SP, LOMATIUM SP, AND LOTUS SP. WEST-FACING SLOPES.				
General:	APPROXIMATELY 45 PLANTS OBSERVED IN 2004.				
Owner/Manager:	DPR-HENRY W COE SP				



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Occurrence No.	55	Map Index: 71887	EO Index: 72750	Element Last Seen:	2007-06-06
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2007-06-06
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2008-08-07

Quad Summary: Gilroy (3712115)

County Summary: Santa Clara

Lat/Long:	37.12014 / -121.54813	Accuracy:	specific area
UTM:	Zone-10 N4109186 E628981	Elevation (ft):	850
PLSS:	T09S, R04E, Sec. 29, SE (M)	Acres:	2.0

Location: COYOTE RESERVOIR ABOVE NE END OF DAM AND AT BASE OF CONCRETE SPILLWAY ALONG NORTH SIDE, EAST OF SAN MARTIN.

Detailed Location:

Ecological: STEEP OPEN ROCKY SW-FACING SLOPE AND EMBANKMENTS CUT DURING DAM CONSTRUCTION. WITH ARTEMISIA CALIFORNICA, TOXICODENDRON DIVERSILOBUM, STREPTANTHUS ALBIDUS PERAMOENUS, AND ACANTHOMINTHA LANCEOLATA.

General: 52 PLANTS OBSERVED IN 2007 IN 2 COLONIES.

Owner/Manager: SANTA CLARA VALLEY WATER DIST

Occurrence No.	58	Map Index: 79486	EO Index: 80469	Element Last Seen:	2009-04-22
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2009-04-22
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2010-07-28

Quad Summary: Mt. Madonna (3712116)

County Summary: Santa Clara

Lat/Long:	37.11470 / -121.69869	Accuracy:	80 meters
UTM:	Zone-10 N4108389 E615613	Elevation (ft):	650
PLSS:	T09S, R02E, Sec. 25, SE (M)	Acres:	0.0

Location: ALONG CHESBRO LAKE DRIVE, 0.3 ROAD MILE EAST OF INTERSECTION WITH HAWKINS LANE, SOUTH OF CHESBRO RESERVOIR, MORGAN HILL.

Detailed Location: ON THE SOUTH SIDE OF THE ROAD.

Ecological: SERPENTINE ROCK OUTCROP.

General: APPROXIMATELY 150 PLANTS OBSERVED IN 2009.

Owner/Manager: PVT



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Occurrence No.	59	Map Index: 93107	EO Index: 94248	Element Last Seen:	2014-05-25
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2014-05-25
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2014-07-10

Quad Summary: Gilroy Hot Springs (3712114)
County Summary: Santa Clara

Lat/Long:	37.07523 / -121.46225	Accuracy:	80 meters
UTM:	Zone-10 N4104324 E636692	Elevation (ft):	865
PLSS:	T10S, R05E, Sec. 07, SE (M)	Acres:	0.0

Location: HUNTING HOLLOW TRAIL EAST OF HUNTING HOLLOW PARKING LOT, HENRY W. COE STATE PARK.
Detailed Location: "ABOVE SECOND CREEK CROSSING." MAPPED BY CNDDDB ACCORDING TO COORDINATES FROM A 2014 KING OBSERVATION IN THE SW 1/4 OF THE SE 1/4 OF SECTION 7.
Ecological: SW-FACING SERPENTINE OUTCROP.
General: APPROXIMATELY 250 PLANTS OBSERVED IN 2014.
Owner/Manager: DPR-HENRY W COE SP

Occurrence No.	68	Map Index: A8416	EO Index: 110201	Element Last Seen:	2016-04-29
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2016-04-29
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-02-09

Quad Summary: Mt. Madonna (3712116)
County Summary: Santa Clara

Lat/Long:	37.11783 / -121.70607	Accuracy:	specific area
UTM:	Zone-10 N4108727 E614954	Elevation (ft):	719
PLSS:	T09S, R02E, Sec. 25, SW (M)	Acres:	1.0

Location: WEST SIDE OF CHESBRO LAKE DRIVE, ABOUT 0.65 AIR MILE WNW OF CHESBRO DAM, SOUTHWEST SIDE OF CHESBRO RESERVOIR.
Detailed Location: MAPPED IN THE EAST 1/2 OF THE SW 1/4 OF SECTION 25.
Ecological: ON ROCK OUTCROP ON NORTHEAST FACING SLOPE. SERPENTINE GRASSLAND / WILDFLOWER FIELDS WITH SERPENTINE ROCK OUTCROP.
General: 35 INDIVIDUALS OBSERVED IN 2016.
Owner/Manager: PVT



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Occurrence No.	69	Map Index: A8417	EO Index: 110204	Element Last Seen:	2016-06-01
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2016-06-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-02-09
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.09216 / -121.72164		Accuracy:	specific area	
UTM:	Zone-10 N4105860 E613608		Elevation (ft):	650	
PLSS:	T10S, R02E, Sec. 2 (M)		Acres:	7.0	
Location:	UVAS CREEK OPEN SPACE PRESERVE, ABOUT 2.5 AIR MILES NORTHWEST OF UVAS DAM.				
Detailed Location:	SCATTERED COLONIES ON HILL ABOUT 600 FEET WEST OF UVAS ROAD. 3 POLYGONS MAPPED ACCORDING TO 2016 SLAKEY DIGITAL DATA, NEAR THE CENTER OF SECTION 2.				
Ecological:	SEMI-BARREN SERPENTINE ROCK OUTCROPS WITHIN SERPENTINE CHAPARRAL. VARIABLE SLOPES AND ASPECTS. ASSOCIATED WITH PINUS SABINIANA, ARCTOSTAPHYLOS GLAUCA, LEPTOSIPHON AMBIGUUS, AND STREPTANTHUS ALBIDUS SSP. PERAMOENUS.				
General:	100 PLANTS OBSERVED IN 2015. ~247 PLANTS IN 7 COLONIES OBSERVED IN 2016.				
Owner/Manager:	SCL COUNTY OPEN SPACE				

Occurrence No.	70	Map Index: A8420	EO Index: 110206	Element Last Seen:	2015-08-06
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2015-08-06
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-02-09
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.03016 / -121.63779		Accuracy:	specific area	
UTM:	Zone-10 N4099085 E621159		Elevation (ft):	395	
PLSS:	T10S, R03E, Sec. 27, SW (M)		Acres:	2.0	
Location:	NORTH OF BURCHELL ROAD, ABOUT 1 AIR MILE EAST OF WATSONVILLE ROAD, NORTHWEST OF GILROY.				
Detailed Location:	MAPPED IN THE SW 1/4 OF THE SW 1/4 OF SECTION 27.				
Ecological:	SERPENTINE ROCK OUTCROP.				
General:	502 PLANTS OBSERVED IN 2015.				
Owner/Manager:	PVT				

Arctostaphylos andersonii		Element Code: PDERI04030	
Anderson's manzanita			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G2
	State: None		State: S2
	Other: Rare Plant Rank - 1B.2, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCSC-UC Santa Cruz		
Habitat:	General: BROADLEAFED UPLAND FOREST, CHAPARRAL, NORTH COAST CONIFEROUS FOREST.		
	Micro: OPEN SITES, REDWOOD FOREST. 95-765 M.		



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Occurrence No.	1	Map Index: 26623	EO Index: 1374	Element Last Seen:	1989-06-25
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1989-06-25
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2015-01-14
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.01397 / -121.69577		Accuracy:	non-specific area	
UTM:	Zone-10 N4097217 E616026		Elevation (ft):		
PLSS:	T10S, R02E, Sec. 36, SE (M)		Acres:	65.0	
Location:	TIE CAMP TRAIL, MOUNT MADONNA PARK.				
Detailed Location:	EXACT LOCATION UNKNOWN, MAPPED BY CNDDDB ALONG TIE CAMP TRAIL.				
Ecological:	WITH ARCTOSTAPHYLOS CRUSTACEA AND NOT FAR FROM A. CANESCENS.				
General:	"A FEW" INDIVIDUALS SEEN IN 1989.				
Owner/Manager:	SCL COUNTY-MT MADONNA PARK				
Occurrence No.	26	Map Index: 63980	EO Index: 64075	Element Last Seen:	2015-09-03
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2015-09-03
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-08-06
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara, Santa Cruz				
Lat/Long:	37.02044 / -121.72511		Accuracy:	specific area	
UTM:	Zone-10 N4097900 E613406		Elevation (ft):	1850	
PLSS:	T10S, R02E, Sec. 35 (M)		Acres:	15.5	
Location:	ALONG SUMMIT ROAD, ABOUT 1 TO 1.6 AIR MILES NORTHWEST OF MOUNT MADONNA, ON SANTA CRUZ/SANTA CLARA COUNTY LINE.				
Detailed Location:	MANY COLONIES SCATTERED ALONG BOTH SIDES OF THE ROAD FROM 0.3 MI NORTHWEST OF MT MADONNA COUNTY PARK BOUNDARY TO ABOUT 1 MILE NORTHWEST. INCLUDES 2015 KRAMER PHOTOS FROM "SUMMIT RD, ~ 1/4 MILE N OF MT MADONNA RD."				
Ecological:	CHAPARRAL AND COASTAL SCRUB. FOUND WITH QUERCUS WISLIZENI, KNOBCONE PINE, BRITTLE LEAF MANZANITA, CHAMISE, CHAPARRAL PEA, AND COAST REDWOOD.				
General:	35+ PLANTS TOTAL IN 2004 FOR EOS 26 AND 27. SEEN IN 2015. A 1922 JEPSON COLLECTION FROM "HEAD OF LITTLE ARTHUR CREEK, MT MADONNA, 1850 FT ELEV" AND 1992 COLLINS COLLECTION FROM "SUMMIT RD, 1 MI N OF JCT OF MT/MADONNA RDS" ATTRIB HERE.				
Owner/Manager:	SCL COUNTY, PVT				



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Occurrence No.	27	Map Index: 63991	EO Index: 64086	Element Last Seen:	2016-03-25
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2016-03-25
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-08-06

Quad Summary: Mt. Madonna (3712116)
County Summary: Santa Clara, Santa Cruz

Lat/Long:	37.03137 / -121.74223	Accuracy:	specific area
UTM:	Zone-10 N4099091 E611867	Elevation (ft):	2081
PLSS:	T10S, R02E, Sec. 27, S (M)	Acres:	26.2

Location: ALONG SUMMIT ROAD, ABOUT 2 TO 3 AIR MILES NORTHWEST OF MOUNT MADONNA, ON SANTA CRUZ/SANTA CLARA COUNTY LINE.

Detailed Location: MANY COLONIES SCATTERED ALONG BOTH SIDES OF THE ROAD FROM 1.4 MI NORTHWEST OF MT MADONNA COUNTY PARK BOUNDARY TO ABOUT 2.6 MI NORTHWEST. WITHIN NE 1/4 OF SECTION 34, S 1/2 OF SECTION 27, AND NE 1/4 OF SECTION 28 (SOUTH OF SUMMIT ROAD).

Ecological: CHAPARRAL AND COASTAL SCRUB. FOUND WITH QUERCUS WISLIZENI, KNOBCONE PINE, BRITTLE LEAF MANZANITA, CHAMISE, CHAPARRAL PEA, COAST REDWOOD, ARBUTUS MENZIESII, AND NOTHOLITHOCARPUS DENSIFLORA.

General: IN 2004, 35+ PLANTS TOTAL SEEN FOR OCCS 26 AND 27 (COLONIES IN SEC 27), AND 30 PLANTS SEEN IN SEC 28. SEEN IN 2016. TWO 1965 GANKIN COLLECTIONS FOR "SUMMIT ROAD, 2 MI NORTH OF MT MADONNA COUNTY PARK" AND "2.6 MI NORTH" ATTRIBUTED HERE.

Owner/Manager: UNKNOWN

Occurrence No.	47	Map Index: 94954	EO Index: 96075	Element Last Seen:	1972-02-18
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1972-02-18
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2015-01-22

Quad Summary: Watsonville East (3612186)
County Summary: Santa Clara, Santa Cruz

Lat/Long:	36.99647 / -121.71569	Accuracy:	non-specific area
UTM:	Zone-10 N4095252 E614280	Elevation (ft):	1300
PLSS:	T11S, R02E, Sec. 11, NE (M)	Acres:	66.0

Location: HIGHWAY 152 AT HECKER PASS AND JUST EAST OF WEST ENTRANCE OF MT MADONNA COUNTY PARK.

Detailed Location: MAPPED AS BEST GUESS BY CNDDDB ALONG HWY 152 (HECKER PASS RD) AROUND HECKER PASS AND JCT W/ POLE LINE RD BASED ON COLLECTIONS FROM "TOWARD SUMMIT OF WATSONVILLE RD," "ALONG HWY 152, JUST E OF W ENTRANCE OF MT MADONNA PARK," & HECKER PASS.

Ecological:

General: SITE IS BASED ON A 1901 DUDLEY COLLECTION, 1959 GANKIN COLLECTION, AND A 1972 HOWE COLLECTION. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN



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Occurrence No.	48	Map Index:	94957	EO Index:	96078	Element Last Seen:	2004-05-08
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		2004-05-08	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2015-01-22	
Quad Summary:	Mt. Madonna (3712116)						
County Summary:	Santa Clara						
Lat/Long:	37.01893 / -121.68514		Accuracy:	80 meters			
UTM:	Zone-10 N4097781 E616964		Elevation (ft):	1100			
PLSS:	T10S, R03E, Sec. 31, S (M)		Acres:	0.0			
Location:	RIDGETOP 1 AIR MILE NORTH OF SPRIG LAKE, ON FIRE ROAD ABOUT 0.3 MILE EAST OF BOUNDARY OF MOUNT MADONNA COUNTY PARK.						
Detailed Location:	MAPPED JUST SOUTH OF THE CENTER OF SECTION 31 ACCORDING TO 2004 TAYLOR COORDINATES.						
Ecological:	SHRUB DOMINATED SITE WITH A. TOMENTOSA SSP. CRINITA, A. CANESCENS SSP. CANESCENS, CEANOTHUS PAPILLOSUS, ERIODICTYON CALIFORNICUM, RHAMNUS CALIFORNICA, DENDROMECON RIGIDA, TOXICODENDRON DIVERSILOBUM, PINUS ATTENUATA ON WHITE SAND.						
General:	10 PLANTS OBSERVED IN 2004.						
Owner/Manager:	PVT						

Occurrence No.	49	Map Index:	94958	EO Index:	96080	Element Last Seen:	2017-12-17
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		2017-12-17	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2018-08-07	
Quad Summary:	Mt. Madonna (3712116)						
County Summary:	Santa Clara						
Lat/Long:	37.0026 / -121.70831		Accuracy:	specific area			
UTM:	Zone-10 N4095941 E614928		Elevation (ft):	1600			
PLSS:	T11S, R02E, Sec. 1, SW (M)		Acres:	6.0			
Location:	HEADQUARTERS OF MOUNT MADONNA COUNTY PARK, ~0.65 AIR MILE SSW AND 0.8 AIR MILE SOUTH OF THE SUMMIT OF MOUNT MADONNA.						
Detailed Location:	3 POLYGONS MAPPED BY CNDDDB. NW POLYGON IS BASED ON 2004 TAYLOR COORDINATES, 2 SE POLYGONS ARE BASED ON 2017 O'DELL COORDINATES.						
Ecological:							
General:	NW POLYGON IS BASED ON COORDINATES/MAP PROVIDED ON A 2004 SURVEY FORM FOR OCCURRENCE #48; UNCLEAR IF THIS OBSERVATION IS ALSO FROM 2004 SITE VISIT, OR A PREVIOUS SITE VISIT. 20+ PLANTS SEEN IN 2 SE POLYGONS IN 2017.						
Owner/Manager:	SCL COUNTY-MT MADONNA PARK						

Arctostaphylos hookeri ssp. hookeri		Element Code: PDERI040J1
Hooker's manzanita		
Listing Status:	Federal: None	CNDDDB Element Ranks: Global: G3T2
	State: None	State: S2
	Other: Rare Plant Rank - 1B.2, BLM_S-Sensitive	
Habitat:	General: CHAPARRAL, COASTAL SCRUB, CLOSED-CONE CONIFEROUS FOREST, CISMONTANE WOODLAND.	
	Micro: SANDY SOILS, SANDY SHALES, SANDSTONE OUTCROPS. 30-550 M.	



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Occurrence No.	19	Map Index: 67836	EO Index: 66307	Element Last Seen:	2001-06-01
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2001-06-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-06-04

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.85396 / -121.73960	Accuracy:	1/5 mile
UTM:	Zone-10 N4079413 E612361	Elevation (ft):	150
PLSS:	T12S, R02E, Sec. 27, SW (M)	Acres:	0.0

Location: ON RIDGE (NORTH) OF BLOHM RANCH, 0.8 AIR MILE SOUTH OF LAS LOMAS.

Detailed Location: BLOHM RANCH IS LOCATED AT 695 ELKHORN ROAD, S OF INTERSECTION OF ELKHORN RD AND HALL RD. MAPPED ON RIDGE AT N SIDE OF BLOHM RANCH, ACCORDING TO MAP PROVIDED BY HOLTE.

Ecological: MARITIME CHAPARRAL. ARCTOSTAPHYLOS DOMINANT. OTHER RARE SPECIES INCLUDE CHORIZANTHE PUNGENS VAR. PUNGENS, ERICAMERIA FASCICULATA, A. PAJAROENSIS, PIPERIA YADONII, AND CEANOTHUS CUNEATUS VAR. RIGIDUS.

General: LISTED AS AN ASSOCIATE DURING A SURVEY FOR CHORIZANTHE PUNGENS VAR. PUNGENS. UNKNOWN NUMBER OF PLANTS OBSERVED IN 2001.

Owner/Manager: TNC-ELKHORN SLOUGH RES, ESF

Occurrence No.	20	Map Index: 28457	EO Index: 66310	Element Last Seen:	1973-05-22
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1973-05-22
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-01-17

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.82357 / -121.70386	Accuracy:	non-specific area
UTM:	Zone-10 N4076084 E615594	Elevation (ft):	500
PLSS:	T13S, R02E, Sec. 12 (M)	Acres:	984.3

Location: RIDGE BETWEEN LONG CANYON AND STRAWBERRY CANYON, ABOUT 5 MILES SW OF AROMAS.

Detailed Location: EXACT LOCATION AND EXTENT OF POPULATION UNKNOWN. MAPPED ACCORDING TO BOUNDARIES OF PROPOSED MARITIME CHAPARRAL PRESERVE WHICH LISTS A. HOOKERI AS AN ASSOCIATE.

Ecological: ROCKY AND SANDY SOILS OF SANDSTONE AREA. CENTRAL MARITIME CHAPARRAL DOMINATED BY A. PAJAROENSIS, A. HOOKERI, AND CEANOTHUS RIGIDUS.

General: SEVERAL OLD COLLECTIONS FROM "LONG CANYON" AND "SANDY HILLS E OF ELKHORN" ALSO ATTRIBUTED TO THIS OCCURRENCE.

Owner/Manager: UNKNOWN



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Occurrence No.	21	Map Index: 28460	EO Index: 66312	Element Last Seen:	2010-07-29
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2010-07-29
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-01-13
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.79872 / -121.67945		Accuracy:	non-specific area	
UTM:	Zone-10 N4073358 E617808		Elevation (ft):	300	
PLSS:	T13S, R03E, Sec. 18 (M)		Acres:	462.3	
Location:	MANZANITA REGIONAL PARK, NNW OF PRUNEDALE.				
Detailed Location:	MAPPED AS BEST GUESS BY CNDDDB AROUND THE ENTIRE MANZANITA REGIONAL PARK. ACCORDING TO A 2007 OBSERVATION, PART OF SITE IS ALSO ON ADJACENT PRIVATE PROPERTY.				
Ecological:	MARITIME CHAPARRAL WITH ARCTOSTAPHYLOS CRUSTACEA SSP. CRUSTACEA, A. PAJAROENSIS, CEANOTHUS DENTATUS, CONIUM MACULATUM, ERODIUM MOSCHATUM, OXALIS PILOSA, AND RUBUS URSINUS. THE RARE PIPERIA YADONII IS ALSO AT THIS SITE.				
General:	OBSERVED JUST OUTSIDE OF PARK BOUNDARY ON PRIVATE PROPERTY IN 2007. WIDESPREAD WITHIN PARK IN 2008. OBSERVED AT NE END OF PARK IN 2010. COLLECTIONS FROM "PRUNEDALE" AND "SAND HILLS WEST OF PRUNEDALE" ALSO ATTRIBUTED HERE. NEED MAP DETAIL.				
Owner/Manager:	MNT COUNTY, PVT				
Occurrence No.	25	Map Index: A3337	EO Index: 104969	Element Last Seen:	2008-06-26
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2008-06-26
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-01-11
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.79851 / -121.63799		Accuracy:	specific area	
UTM:	Zone-10 N4073386 E621508		Elevation (ft):	490	
PLSS:	T13S, R03E, Sec. 16, SE (M)		Acres:	1.0	
Location:	19260 REAVIS WAY, OFF THE SOUTH SIDE OF VIERRA CANYON ROAD, PRUNEDALE.				
Detailed Location:	MAPPED ACCORDING TO A 2008 FERREIRA MAP SHOWING THE LOCATION OF PIPERIA YADONII WITH ARCTOSTAPHYLOS HOOKERI MENTIONED AS AN ASSOCIATE.				
Ecological:	MARITIME CHAPARRAL. ASSOCIATES IN IMMEDIATE AREA INCLUDE PIPERIA YADONII AND ADENOSTOMA FASCICULATUM. MOST OF THE PARCEL IS DOMINATED BY ARCTOSTAPHYLOS PAJAROENSIS.				
General:	UNKNOWN NUMBER OF PLANTS OBSERVED IN 2008. EXTENT OF THIS SPECIES ON PARCEL IS UNKNOWN; PIPERIA YADONII MENTIONED AS GROWING UNDER ARCTOSTAPHYLOS HOOKERI AT THIS SITE.				
Owner/Manager:	PVT				



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Occurrence No.:	26	Map Index:	99226	EO Index:	104970	Element Last Seen:	2008-05-17
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		Record Last Updated:	2017-01-11
Occ. Type:	Natural/Native occurrence		Trend:	Unknown			

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.84381 / -121.71341	Accuracy:	non-specific area
UTM:	Zone-10 N4078319 E614712	Elevation (ft):	385
PLSS:	T12S, R02E, Sec. 35, SE (M)	Acres:	39.0

Location: SALA PROPERTY, ELKHORN SLOUGH FOUNDATION.
Detailed Location: EXACT LOCATION UNKNOWN, MAPPED AS BEST GUESS BY CNDDDB AROUND PRESUMED LOCATION OF SALA PROPERTY.
Ecological: ARCTOSTAPHYLOS PAJAROENSIS ALSO AT THIS SITE.
General: UNKNOWN NUMBER OF PLANTS OBSERVED IN 2008. POPULATION INFORMATION AND MAP DETAIL IS NEEDED FOR THIS SITE.
Owner/Manager: ELKHORN SLOUGH FOUNDATION

Arctostaphylos pajaroensis		Element Code: PDERI04100
Pajaro manzanita		
Listing Status:	Federal: None	CNDDDB Element Ranks: Global: G1
	State: None	State: S1
	Other: Rare Plant Rank - 1B.1, BLM_S-Sensitive	
Habitat:	General: CHAPARRAL.	
	Micro: SANDY SOILS. 30-170 M.	

Occurrence No.:	1	Map Index:	67882	EO Index:	29653	Element Last Seen:	2001-04-22
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		Record Last Updated:	2016-02-16
Occ. Type:	Natural/Native occurrence		Trend:	Unknown			

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.78401 / -121.63694	Accuracy:	specific area
UTM:	Zone-10 N4071779 E621624	Elevation (ft):	200
PLSS:	T13S, R03E, Sec. 21, SE (M)	Acres:	3.0

Location: NORTH SIDE OF PESANTE CANYON ROAD, BETWEEN HOLLY HILL DRIVE AND WOODLAND HEIGHTS PLACE, PRUNEDALE.
Detailed Location: MAPPED BY CNDDDB ACCORDING TO 2001 MAP AND COORDINATES FOR CHORIZANTHE PUNGENS VAR. PUNGENS WHERE ARCTOSTAPHYLOS IS LISTED AS AN ASSOCIATE.
Ecological: SANDY SOILS AT EDGES AND OPENINGS OF COASTAL SAGE SCRUB OR MIXED MARITIME CHAPARRAL/COAST LIVE OAK WOODLAND. RARE SPECIES INCLUDE CHORIZANTHE PUNGENS VAR. PUNGENS, CEANOTHUS CUNEATUS RIGIDUS, AND ERICAMERIA FASCICULATA.
General: UNKNOWN NUMBER OF PLANTS SEEN DURING A 2001 SURVEY FOR CHORIZANTHE PUNGENS VAR. PUNGENS. A 1959 GANKIN COLLECTION FROM "0.5 MI FROM PESANTE ROAD ON HOLLY HILL DR" IS ALSO ATTRIBUTED TO THIS SITE. NEEDS FIELDWORK.
Owner/Manager: PVT



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Occurrence No.	3	Map Index: 28463	EO Index: 29654	Element Last Seen:	1938-10-16
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1938-10-16
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2016-02-23
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.76913 / -121.68185		Accuracy:	1 mile	
UTM:	Zone-10 N4070072 E617641		Elevation (ft):	200	
PLSS:	T13S, R03E, Sec. 30 (M)		Acres:	1987.0	
Location:	1 MILE SOUTHWEST OF PRUNEDALE.				
Detailed Location:	EXACT LOCATION UNKNOWN, MAPPED BY CNDDDB AS A BEST GUES. SITE IS BASED ON HISTORIC COLLECTIONS FROM "1 MI SW OF PRUNEDALE" AND "1 MI SSW OF PRUNEDALE" AT ELEVATIONS OF 175 AND 200 FT.				
Ecological:	GROWING ON ROUGH BANK IN CHAPARRAL IN ASSOCIATION WITH ARCTOSTAPHYLOS CRUSTACEA. SUBSTRATE IS SANDSTONE.				
General:	SITE IS BASED ON 1936 BELSHAW COLLECTIONS AND A 1938 SCHREIBER COLLECTION. THOUGH MOST OF HABITAT IN AREA HAS BEEN ALTERED, SOME POCKETS OF HABITAT REMAIN BASED ON AERIAL IMAGERY. NEEDS FIELDWORK.				
Owner/Manager:	UNKNOWN				
Occurrence No.	4	Map Index: 28460	EO Index: 29651	Element Last Seen:	2016-09-14
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2016-09-14
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-01-09
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.79872 / -121.67945		Accuracy:	non-specific area	
UTM:	Zone-10 N4073358 E617808		Elevation (ft):	300	
PLSS:	T13S, R03E, Sec. 18 (M)		Acres:	462.3	
Location:	MANZANITA COUNTY PARK, JUST NORTHWEST OF INTERSECTION OF HIGHWAYS 101 AND 156; PRUNEDALE.				
Detailed Location:	EXACT LOCATION UNKNOWN; MAPPED BY CNDDDB AROUND PERIMETER OF MANZANITA PARK. THERE ARE SPECIFIC OBSERVATIONS FROM N EDGE AND E PORTION OF PARK, THOUGH THE ABUNDANCE OF SOURCES INDICATE THAT IT MAY OCCUR THROUGHOUT PARK. HYBRIDS ALSO IN AREA.				
Ecological:	GROWING IN SANDY SOIL, IN CHAPARRAL AND COASTAL SCRUB WITH ARCTOSTAPHYLOS HOOKERI, A. CRUSTACEA, BACCHARIS, CEANOTHUS DENTATUS, C. FOLIOSUS, C. THYRSIFLORUS, PICKERINGIA MONTANA, HETEROMELES ARBUTIFOLIA, AND QUERCUS AGRIFOLIA.				
General:	TYPE LOCALITY. MOST RECENTLY SEEN IN 2016, POP SIZE UNKNOWN. NUMEROUS COLL/OBS ATTRIBUTED HERE FROM 1934-2008, INCLUDING HISTORIC COLLECTIONS FROM "WEST PRUNEDALE," "SAND HILLS W OF PRUNEDALE," "END OF MCGUFFIE ST," ETC. NEEDS FIELDWORK.				
Owner/Manager:	SCR COUNTY-MANZANITA CP				



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Occurrence No.	5	Map Index: 28458	EO Index: 8925	Element Last Seen:	2017-06-28
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2017-06-28
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-01-10

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.80687 / -121.68877	Accuracy:	specific area
UTM:	Zone-10 N4074250 E616965	Elevation (ft):	300
PLSS:	T13S, R03E, Sec. 18, NW (M)	Acres:	68.0

Location: ELKHORN HIGHLANDS RESERVE, NW OF PRUNEDALE.

Detailed Location: MAPPED AS 6 POLYGONS ACCORDING TO 2017 ENDRIS DIGITAL DATA.

Ecological: DENSE MARITIME CHAPARRAL. ARCTOSTAPHYLOS HOOKERI VAR. HOOKERI DOMINANT ON RIDGE AND MIXED WITH A. PAJAROENSIS WHICH IS DOMINANT ON LOWER SLOPES AND OCCURS DOWN TO EDGES OF QUERCUS AGRIFOLIA WOODLAND/NON-NATIVE ANNUAL GRASSLAND.

General: 1000+ PLANTS OBSERVED IN 2017. 1936 AXELROD COLLECTIONS FROM "1 MILE NE OF ELKHORN SCHOOL" AND "1 1/4 MILE NE OF ELKHORN SCHOOL" ARE ALSO ATTRIBUTED TO THIS SITE.

Owner/Manager: STATE

Occurrence No.	6	Map Index: 28459	EO Index: 5011	Element Last Seen:	1999-08-04
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	1999-08-04
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2016-02-10

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.81283 / -121.66704	Accuracy:	specific area
UTM:	Zone-10 N4074938 E618894	Elevation (ft):	300
PLSS:	T13S, R03E, Sec. 08, SW (M)	Acres:	33.2

Location: NORTH RIM OF LANGLEY CANYON, JUST SOUTH OF NORTHWOOD PLACE, ABOUT 0.4 MI EAST OF SAN MIGUEL CANYON RD; PRUNEDALE.

Detailed Location: 26 ACRE LOT. MAPPED BASED ON 1999 MAP PROVIDED BY KJELDSSEN. ELEVATION ON FIELD SURVEY FORM GIVEN AS 300 FEET BUT SITE APPEARS TO BE CLOSER TO 400 FEET BASED ON MAP.

Ecological: A. PAJAROENSIS IS THE DOMINANT SPECIES OF THE CHAPARRAL/DISTURBED QUERCUS AGRIFOLIA WOODLAND COMMUNITY.

General: "MANY" INDIVIDUALS OBSERVED IN 1999.

Owner/Manager: PVT



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Occurrence No.	7	Map Index:	99175	EO Index:	12293	Element Last Seen:	2001-06-01
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		2001-06-01	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2018-01-10	
Quad Summary:	Prunedale (3612176)						
County Summary:	Monterey						
Lat/Long:	36.82782 / -121.68469			Accuracy:	3/5 mile		
UTM:	Zone-10 N4076579 E617298			Elevation (ft):			
PLSS:	T13S, R03E, Sec. 6 (M)			Acres:	776.0		
Location:	RIDGE BETWEEN UPPER LONG CANYON AND STRAWBERRY CANYON, WEST OF SAN MIGUEL CANYON ROAD.						
Detailed Location:	EXACT LOCATIONS UNKNOWN. MAPPED BY CNDDDB TO ENCOMPASS COLLECTIONS FROM "STRAWBERRY CYN RD, 0.5 MI SW OF JCT W/ SAN MIGUEL CYN RD," "RIDGE BETW LONG & STRAWBERRY CYNS," A 2001 MAP FROM LONG CANYON (A. PAJAROENSIS GIVEN AS AN ASSOCIATE), ETC.						
Ecological:	CENTRAL MARITIME CHAPARRAL DOMINATED BY ARCTOSTAPHYLOS PAJAROENSIS, A. HOOKERI, AND CEANOTHUS RIGIDUS.						
General:	GRIGGS REPORTS "GOOD STANDS OF ARCTOSTAPHYLOS PAJARONSIS" IN LONG VALLEY (1980). SITE IS BASED ON COLLECTIONS FROM 1959, 1963, 1971, 1973, AND 1985 AS WELL AS A 2001 SURVEY FOR CHORIZANTHE PUNGENS VAR. PUNGENS.						
Owner/Manager:	ELKHORN SLOUGH FOUNDATION, UNK						
Occurrence No.	8	Map Index:	28456	EO Index:	26893	Element Last Seen:	1966-10-29
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		1966-10-29	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2016-02-11	
Quad Summary:	Prunedale (3612176)						
County Summary:	Monterey						
Lat/Long:	36.84064 / -121.6613			Accuracy:	2/5 mile		
UTM:	Zone-10 N4078030 E619364			Elevation (ft):			
PLSS:	T12S, R03E, Sec. 32 (M)			Acres:	280.0		
Location:	ON THE HILL TO THE EAST IN ROYAL OAKS PARK BEYOND PRUNEDALE.						
Detailed Location:	EXACT LOCATION UNKNOWN. COLLECTION LOCALITY INDICATES THAT PLANTS WERE FOUND INSIDE THE PARK, THOUGH THERE ARE SEVERAL SMALL HILLTOPS TO THE E JUST OUTSIDE PARK BOUNDARY. MAPPED BY CNDDDB AROUND E END OF PARK AND AREAS JUST OUTSIDE OF PARK.						
Ecological:	DRY, SANDY, OPEN PLACE.						
General:	SITE IS BASED ON 1966 HOWITT COLLECTIONS. NEEDS FIELDWORK.						
Owner/Manager:	MNT COUNTY-ROYAL OAKS PARK?						



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Occurrence No.	14	Map Index: 63158	EO Index: 63250	Element Last Seen: 1962-02-19
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen: 1962-02-19
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2016-02-12
Quad Summary:	Prunedale (3612176)			
County Summary:	Monterey			
Lat/Long:	36.81315 / -121.64342		Accuracy: non-specific area	
UTM:	Zone-10 N4075003 E621001		Elevation (ft):	
PLSS:	T13S, R03E, Sec. 09, SE (M)		Acres: 51.0	
Location:	ALONG MORO ROAD, 0.3 AND 0.4 MILE WEST OF JUNCTION OF THIS ROAD AND HIGHWAY 101, VICINITY NORTH OF PRUNEDALE.			
Detailed Location:	MAPPED AS BEST GUESS BY CNDDDB ALONG MORO ROAD JUST WEST OF ITS JUNCTION WITH HIGHWAY 101.			
Ecological:	IN SANDY SOIL, ASSOCIATED WITH QUERCUS AGRIFOLIA, SALVIA MELLIFERA, AND RHUS DIVERSILOBA.			
General:	MAIN SOURCES OF INFORMATION FOR THIS SITE ARE 1959 GANKIN COLLECTIONS. A 1962 GANKIN COLLECTION FROM "MORO RD, PRUNEDALE" IS ALSO ATTRIBUTED TO THIS SITE. NEEDS FIELDWORK.			
Owner/Manager:	UNKNOWN			

Occurrence No.	15	Map Index: 59012	EO Index: 63253	Element Last Seen: 2007-02-14
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen: 2007-02-14
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2018-01-09
Quad Summary:	Prunedale (3612176)			
County Summary:	Monterey			
Lat/Long:	36.78263 / -121.65918		Accuracy: specific area	
UTM:	Zone-10 N4071598 E619642		Elevation (ft): 260	
PLSS:	T13S, R03E, Sec. 20 (M)		Acres: 18.0	
Location:	BETWEEN BERTA CANYON AND PESANTE CANYON, APPROX 0.5 MI E OF HIGHWAY 101; PRUNEDALE.			
Detailed Location:	SEVERAL COLONIES MAPPED ALONG EAST-WEST TENDING RIDGES BASED ON MAPS AND COORDINATES PROVIDED FOR PIPERIA YADONII WHERE ARCTOSTAPHYLOS PAJAROENSIS IS LISTED AS AN ASSOCIATE.			
Ecological:	MARITIME CHAPARRAL ON SANDSTONE OUTCROPPINGS ON RIDGELINES; S-FACING. A. PAJAROENSIS IS DOMINANT. OTHER RARE SPP: A. HOOKERI (SSP UNKNOWN), CEANOTHUS RIGIDUS, ERICAMERIA FASCICULATA, LOMATIUM PARVIFOLIUM, PIPERIA MICHAELII.			
General:	UNKNOWN NUMBER OF PLANTS SEEN IN VICINITY IN 2002, 2004, 2005, AND 2007; ARCTOSTAPHYLOS OBSERVED DURING SURVEYS FOR PIPERIA YADONII. MORE FIELDWORK IS NEEDED TO DETERMINE EXTENT OF ARCTOSTAPHYLOS PAJAROENSIS IN THIS AREA.			
Owner/Manager:	PVT-PGE			



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Occurrence No.	17	Map Index: A8013	EO Index: 63259	Element Last Seen:	1994-01-01
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	1994-01-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-01-09
Quad Summary:	Watsonville East (3612186)				
County Summary:	Monterey				
Lat/Long:	36.88527 / -121.72154		Accuracy:	specific area	
UTM:	Zone-10 N4082908 E613926		Elevation (ft):	295	
PLSS:	T12S, R02E, Sec. 14, SW (M)		Acres:	18.0	
Location:	NORTH SIDE OF RIDGECREST ROAD, SOUTH OF VEGA ROAD, SOUTHEAST OF WATSONVILLE.				
Detailed Location:	MAPPED ACCORDING TO 1994 ELLIS MAP.				
Ecological:	SANDSTONE RIDGETOP.				
General:	APPROXIMATELY 20 PLANTS OBSERVED IN 1994.				
Owner/Manager:	UNKNOWN				
Occurrence No.	20	Map Index: 67836	EO Index: 70243	Element Last Seen:	2001-06-01
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2001-06-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2016-02-16
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.85396 / -121.73960		Accuracy:	1/5 mile	
UTM:	Zone-10 N4079413 E612361		Elevation (ft):		
PLSS:	T12S, R02E, Sec. 27, SW (M)		Acres:	0.0	
Location:	ON RIDGE NORTH OF BLOHM RANCH, 0.8 MILE SOUTH OF LAS LOMAS.				
Detailed Location:	MAPPED IN GENERAL VICINITY OF RIDGE INDICATED ON A MAP FOR CHORIZANTHE PUNGENS VAR. PUNGENS, PAJARO MANZANITA LISTED AS AN ASSOCIATED SPECIES.				
Ecological:	MARITIME CHAPARRAL IN OPEN AREAS THROUGHOUT RIDGE IN SANDY SOILS. ARCTOSTAPHYLOS DOMINANT. RARE SPP INCLUDE CHORIZANTHE PUNGENS VAR PUNGENS, ERICAMERIA FASCICULATA, A. HOOKERI SSP. HOOKERI, PIPERIA YADONII, CEANOTHUS CUNEATUS VAR RIDGIDUS.				
General:	UNKNOWN NUMBER OF PLANTS OBSERVED IN 2001. A 1991 MORGAN COLLECTION FROM BLOHM RANCH IS ALSO ATTRIBUTED TO THIS SITE. NEEDS FIELDWORK.				
Owner/Manager:	TNC-ELKHORN SLOUGH RES, ESF				



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Occurrence No.	22	Map Index: 99222	EO Index: 100752	Element Last Seen: 1981-04-19
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen: 1981-04-19
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2016-02-16

Quad Summary: Hollister (3612174)

County Summary: San Benito

Lat/Long:	36.774 / -121.4504	Accuracy:	4/5 mile
UTM:	Zone-10 N4070922 E638289	Elevation (ft):	
PLSS:	T13S, R05E, Sec. 29 (M)	Acres:	1312.0

Location: HOLLISTER HILLS STATE PARK ABOUT 2 MILES UP ORCHID RUN ROAD.

Detailed Location: EXACT LOCATION UNKNOWN, UNABLE TO LOCATE "ORCHID RUN ROAD." POSSIBLY REFERENCING "OLIVE ORCHARD RETURN" TRAIL, MAPPED AS BEST GUESS BY CNDDDB IN THIS GENERAL VICINITY.

Ecological: CHAPARRAL, DRY SOIL.

General: SITE IS BASED ON 1981 BOONE COLLECTION. ID OF THIS COLLECTION NEEDS VERIFICATION; DESCRIBES THIS AS A "COMMON, WEEDY PLANT" WHICH SEEMS UNLIKELY FOR THIS SPECIES, AND THIS FLOWERING SPECIMEN COLLECTED AFTER THE KNOWN BLOOM PERIOD (DEC-MAR).

Owner/Manager: DPR-HOLLISTER HILLS SVRA

Occurrence No.	23	Map Index: 99226	EO Index: 100754	Element Last Seen: 2008-05-17
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen: 2008-05-17
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2016-02-16

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.84381 / -121.71341	Accuracy:	non-specific area
UTM:	Zone-10 N4078319 E614712	Elevation (ft):	385
PLSS:	T12S, R02E, Sec. 35, SE (M)	Acres:	39.0

Location: SALA PROPERTY, ELKHORN SLOUGH FOUNDATION.

Detailed Location: EXACT LOCATION UNKNOWN, MAPPED AS BEST GUESS BY CNDDDB AROUND PRESUMED LOCATION OF SALA PROPERTY.

Ecological:

General: UNKNOWN NUMBER OF PLANTS OBSERVED IN 2008. POPULATION INFORMATION AND MAP DETAIL IS NEEDED FOR THIS SITE.

Owner/Manager: ELKHORN SLOUGH FOUNDATION



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Occurrence No.	24	Map Index: 99227	EO Index: 100755	Element Last Seen:	2001-05-18
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2001-05-18
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-01-09
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.82157 / -121.63457		Accuracy:	specific area	
UTM:	Zone-10 N4075949 E621777		Elevation (ft):	500	
PLSS:	T13S, R03E, Sec. 10, NW (M)		Acres:	37.0	
Location:	BOTH SIDES OF HIGHWAY 101 AT INTERSECTION WITH ECHO VALLEY ROAD AND CRAZY HORSE ROAD, NORTHEAST OF PRUNEDALE.				
Detailed Location:	2 POLYGONS MAPPED MOSTLY WITHIN THE NW 1/4 OF SECTION 10 ACCORDING TO A 2001 ROBISON MAP. COLLECTIONS FROM "END OF EXECUTIVE DR, N SIDE OF CRAZY HORSE CYN RD" & "ECHO VALLEY ROAD ~1/2 MILE W OF US 101" ALSO ATTRIBUTED HERE.				
Ecological:	ON TOP OF MESA AS MAJOR COMPONENT OF MARITIME CHAPARRAL IN AREA. INTERSPERSED WITH COAST LIVE OAK WOODLAND AND EXTENSIVE STANDS OF TOXICODENDRON DIVERSILOBUM. RARE SPECIES NEARBY: CHORIZANTHE PUNGENS VAR. PUNGENS, CEANOETHUS RIGIDUS, ETC.				
General:	20 PLANTS SCATTERED IN WESTERN POLYGON AND 10 PLANTS IN EASTERN POLYGON IN 2001; SITE ALSO SURVEYED IN 2002 AND 2004, UNCLEAR IF PLANTS ALSO OBSERVED ON THOSE DATES. 1962-1996 COLLECTIONS ALSO ATTRIBUTED HERE.				
Owner/Manager:	PVT				
Occurrence No.	25	Map Index: 99228	EO Index: 100756	Element Last Seen:	2008-06-26
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2008-06-26
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-01-09
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.79858 / -121.63755		Accuracy:	non-specific area	
UTM:	Zone-10 N4073394 E621548		Elevation (ft):		
PLSS:	T13S, R03E, Sec. 16 (M)		Acres:	354.0	
Location:	VICINITY OF REAVIS WAY AND ON RIDGE JUST SOUTH OF MALLORY CANYON ROAD, NE PRUNEDALE.				
Detailed Location:	MAPPED BY CNDDB AS 3 POLYGONS: MIDDLE POLYGON MAPPED TO ENCOMPASS GIVEN PARCEL, THOUGH POPULATION LIKELY EXTENDS BEYOND PARCEL BOUNDARIES; NE AND SW POLYGONS BASED ON COLLECTIONS FOR ERICAMERIA WITH A. PAJAROENSIS MENTIONED AS ASSOCIATE.				
Ecological:	MARITIME CHAPARRAL. MIDDLE POLYGON: MOST OF THE PARCEL IS DOMINATED BY ARCTOSTAPHYLOS PAJAROENSIS; ASSOCIATED WITH PIPERIA YADONII, ARCTOSTAPHYLOS HOOKERI, AND ADENOSTOMA FASCICULATUM.				
General:	NE POLYGON BASED ON A 1990 MORGAN COLLECTION. SW POLYGON BASED ON 1985 MARTZ COLLECTIONS. MIDDLE POLYGON: UNKNOWN NUMBER OF PLANTS SEEN IN 2008, THOUGH A. PAJAROENSIS REPORTED AS DOMINANT SPECIES FOR MOST OF THIS 5.1 ACRE PARCEL.				
Owner/Manager:	PVT				



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Occurrence No.	26	Map Index: 99229	EO Index: 100757	Element Last Seen:	1993-09-07
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1993-09-07
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2016-02-16
Quad Summary:	Watsonville East (3612186)				
County Summary:	Monterey				
Lat/Long:	36.88066 / -121.69908		Accuracy:	1/5 mile	
UTM:	Zone-10 N4082423 E615934		Elevation (ft):	360	
PLSS:	T12S, R02E, Sec. 24, N (M)		Acres:	70.0	
Location:	AROUND LEWIS ROAD DISPOSAL SITE, SOUTHEAST OF PAJARO, PAJARO HILLS.				
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDDB AROUND LEWIS ROAD LANDFILL.				
Ecological:	CHAPARRAL.				
General:	SITE IS BASED ON 1993 KEELEY COLLECTIONS. NEEDS FIELDWORK.				
Owner/Manager:	UNKNOWN				
Occurrence No.	29	Map Index: A8034	EO Index: 109825	Element Last Seen:	2017-05-12
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2017-05-12
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-01-10
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.8307 / -121.63846		Accuracy:	specific area	
UTM:	Zone-10 N4076957 E621416		Elevation (ft):	550	
PLSS:	T13S, R03E, Sec. 4, SE (M)		Acres:	1.0	
Location:	NORTH SIDE OF ECHO VALLEY ROAD, ABOUT 5.6 AIR MILES WEST OF SAN JUAN BAUTISTA.				
Detailed Location:	MAPPED AS 2 POLYGONS ACCORDING TO 2017 KRAMER COORDINATES, IN THE NE 1/4 OF THE SE 1/4 OF SECTION 4.				
Ecological:	OPENING IN QUERCUS AGRIFOLIA WOODLAND, GENTLE SW SLOPE, LOAMY SAND SOILS. ASSOCIATED WITH DANTHONIA CALIFORNICA, CROCANTHEMUM SCOPARIUM, HORKELIA CUNEATA VAR. SERICEA, NAVARRETIA HAMATA, FESTUCA MYUROS, MADIA EXIGUA, ETC.				
General:	IN 2017, NE POLYGON HAD 3 PLANTS AND SW POLYGON HAD 1 PLANT. A 2011 KELCH COLLECTION FROM "ECHO VALLEY ROAD, 1.8 KM WEST OF HIGHWAY 101" IS ALSO ATTRIBUTED TO THIS SITE.				
Owner/Manager:	UNKNOWN				



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Occurrence No.	30	Map Index: A6982	EO Index: 109826	Element Last Seen:	2003-09-23
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2003-09-23
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-01-10
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.82329 / -121.70791		Accuracy:	80 meters	
UTM:	Zone-10 N4076048 E615233		Elevation (ft):	400	
PLSS:	T13S, R02E, Sec. 12, NW (M)		Acres:	5.0	
Location:	RIDGE DIVIDING LONG CANYON FROM STRAWBERRY CANYON, GROWING UNDER PG&E HIGH VOLTAGE TRANSMISSION LINE.				
Detailed Location:	MAPPED ACCORDING TO 2003 TAYLOR COORDINATES FOR AN ERICAMERIA FASCICULATA COLLECTION WITH ARCTOSTAPHYLOS PAJAROENSIS MENTIONED AS AN ASSOCIATE. IN THE NW 1/4 OF THE NW 1/4 OF SECTION 12.				
Ecological:	MARITIME CHAPARRAL, ON SANDY SUBSTRATE WITH ERICAMERIA FASCICULATA, ARCTOSTAPHYLOS TOMENTOSA, A. HOOKERI, AND CEANOETHUS RIGIDUS.				
General:	ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 2003 TAYLOR COLLECTION FOR ERICAMERIA FASCICULATA WITH ARCTOSTAPHYLOS PAJAROENSIS MENTIONED AS AN ASSOCIATE.				
Owner/Manager:	UNKNOWN				
Occurrence No.	31	Map Index: A8035	EO Index: 109827	Element Last Seen:	1994-01-01
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	1994-01-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-01-10
Quad Summary:	Watsonville East (3612186)				
County Summary:	Monterey				
Lat/Long:	36.89361 / -121.71755		Accuracy:	specific area	
UTM:	Zone-10 N4083838 E614269		Elevation (ft):	280	
PLSS:	T12S, R02E, Sec. 14, N (M)		Acres:	20.0	
Location:	RIDGE JUST WEST OF END OF EAGLE HILL ROAD, NORTH SIDE OF VEGA ROAD, SE OF WATSONVILLE.				
Detailed Location:	MAPPED ACCORDING TO 1994 ELLIS MAP.				
Ecological:	SANDSTONE RIDGE.				
General:	APPROXIMATELY 20 PLANTS OBSERVED IN 1994.				
Owner/Manager:	PVT				



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<i>Astragalus tener var. tener</i>		Element Code: PDFAB0F8R1	
alkali milk-vetch			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G2T1
	State: None		State: S1
	Other: Rare Plant Rank - 1B.2		
Habitat:	General: ALKALI PLAYA, VALLEY AND FOOTHILL GRASSLAND, VERNAL POOLS.		
	Micro: LOW GROUND, ALKALI FLATS, AND FLOODED LANDS; IN ANNUAL GRASSLAND OR IN PLAYAS OR VERNAL POOLS. 0-170 M.		

Occurrence No.	2	Map Index:	24659	EO Index:	594	Element Last Seen:	1897-04-14
Occ. Rank:	None	Presence:	Possibly Extirpated	Site Last Seen:			1897-04-14
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:			2011-02-22

Quad Summary: Hollister (3612174)
County Summary: San Benito

Lat/Long:	36.84822 / -121.40233	Accuracy:	1 mile
UTM:	Zone-10 N4079226 E642441	Elevation (ft):	290
PLSS:	T12S, R05E, Sec. 34 (M)	Acres:	0.0

Location: HOLLISTER.
Detailed Location:
Ecological:
General: ONLY SOURCE OF INFORMATION IS 1897 COLLECTION BY W. SETCHELL. WITHAM REVIEWED MAPS AND SPOT IMAGERY FOR THIS VICINITY IN 2002 & FOUND AREA COMPLETELY URBANIZED. PROBABLY EXTIRPATED.
Owner/Manager: UNKNOWN

<i>Trifolium hydrophilum</i>		Element Code: PDFAB400R5	
saline clover			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G2
	State: None		State: S2
	Other: Rare Plant Rank - 1B.2		
Habitat:	General: MARSHES AND SWAMPS, VALLEY AND FOOTHILL GRASSLAND, VERNAL POOLS.		
	Micro: MESIC, ALKALINE SITES. 1-335 M.		



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Occurrence No.	5	Map Index: 49390	EO Index: 49390	Element Last Seen:	1995-XX-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1995-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2011-08-17
Quad Summary:	Chittenden (3612185)				
County Summary:	San Benito, Santa Clara				
Lat/Long:	36.95221 / -121.50910		Accuracy:	2/5 mile	
UTM:	Zone-10 N4090609 E632741		Elevation (ft):		
PLSS:	T11S, R04E, Sec. 27, E (M)		Acres:	0.0	
Location:	OFF HIGHWAY 25 BETWEEN MILLER CANAL AND THE PAJARO RIVER, SAN BENITO COUNTY ON SANTA CLARA COUNTY LINE.				
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDDB ON THE NORTH SIDE OF HIGHWAY 25 IN VICINITY OF THE CONFLUENCE OF MILLERS CANAL WITH THE PAJARO RIVER.				
Ecological:					
General:	MAIN SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1995 MORGAN OBSERVATION. NEEDS FIELDWORK.				
Owner/Manager:	UNKNOWN				
Occurrence No.	19	Map Index: 98719	EO Index: 60345	Element Last Seen:	2006-05-03
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2006-05-03
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2020-04-17
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Cruz				
Lat/Long:	36.90766 / -121.60417		Accuracy:	2/5 mile	
UTM:	Zone-10 N4085538 E624349		Elevation (ft):	200	
PLSS:	T12S, R03E, Sec. 11, NE (M)		Acres:	280.0	
Location:	SODA LAKE AND IN VALLEY TO THE EAST OF SODA LAKE.				
Detailed Location:	MAPPED AS BEST GUESS BY CNDDDB AROUND SODA LAKE AND OPEN AREA JUST TO THE EAST. BASED ON AN OBSERVATION FROM SODA LAKE AND A COLLECTION FROM "VALLEY EAST OF SODA LAKE."				
Ecological:	IN A WET ALKALI GRASSLAND.				
General:	UNKNOWN NUMBER OF PLANTS SEEN IN 2004. PLANTS NOTED AS "ABUNDANT" IN 2006. MINING COMPANY IS EXPANDING AND HAS PROPOSED OFFSITE MITIGATION FOR THIS SITE.				
Owner/Manager:	PVT				
Occurrence No.	21	Map Index: 24659	EO Index: 84573	Element Last Seen:	1897-04-14
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1897-04-14
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2011-08-18
Quad Summary:	Hollister (3612174)				
County Summary:	San Benito				
Lat/Long:	36.84822 / -121.40233		Accuracy:	1 mile	
UTM:	Zone-10 N4079226 E642441		Elevation (ft):		
PLSS:	T12S, R05E, Sec. 34 (M)		Acres:	0.0	
Location:	HOLLISTER.				
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED BY CNDDDB IN GENERAL VICINITY OF HOLLISTER.				
Ecological:					
General:	ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS AN 1897 COLLECTION BY SETCHELL. NEEDS FIELDWORK.				
Owner/Manager:	UNKNOWN				



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Occurrence No.	23	Map Index: 83550	EO Index: 84577	Element Last Seen:	2006-05-03
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2006-05-03
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2020-04-20
Quad Summary:	San Felipe (3612184)				
County Summary:	San Benito				
Lat/Long:	36.93663 / -121.48907		Accuracy:	non-specific area	
UTM:	Zone-10 N4088909 E634553		Elevation (ft):	150	
PLSS:	T11S, R04E, Sec. 36 (M)		Acres:	73.0	
Location:	ALONG SOUTH SIDE OF ROUTE 25, 0.5 MILE WEST OF SHORE ROAD AND 1 MILE EAST OF PAJARO RIVER, NW OF HILLSIDE.				
Detailed Location:	EXACT LOCATION(S) UNKNOWN. MAPPED BY CNDDDB BASED ON COLLECTIONS FROM "S SIDE OF ROUTE 25, 0.5 MILES WEST OF SHORE RD," "S SIDE OF HWY 25, WEST OF SHORE RD," & "JUST PAST THE MUSHROOM PLANT ON THE S SIDE OF HWY 25, ~1 MI E OF PAJARO RIVER."				
Ecological:	DISKED NATIVE FIELD. ASSOCIATED WITH TRIFOLIUM AMPLECTINS, T. STENOPHYLLUM, ETC.				
General:	OCCURRENCE IS BASED ON COLLECTIONS FROM 1996, 1998, AND 2006. SINGLE PLANT SEEN IN 1996. SCATTERED PLANTS SEEN IN 1998. PLANTS NOTED AS COMMON IN 2006. FIELD GRAZED IN 1997 BUT NOT IN 1998.				
Owner/Manager:	UNKNOWN				
Occurrence No.	24	Map Index: 83552	EO Index: 84578	Element Last Seen:	1998-04-28
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1998-04-28
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2011-08-18
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Clara				
Lat/Long:	36.92333 / -121.54885		Accuracy:	1/10 mile	
UTM:	Zone-10 N4087351 E629250		Elevation (ft):	150	
PLSS:	T12S, R04E, Sec. 05, NE (M)		Acres:	0.0	
Location:	POND ADJACENT TO RAILROAD TRACKS ON WEST SIDE OF US 101, ABOUT 0.5 MILE N OF THE PAJARO RIVER, AT SARGENT SIDING.				
Detailed Location:	EXACT LOCATION UNKNOWN, MAPPED AS BEST GUESS BY CNDDDB IN VICINITY OF POOL ON WEST SIDE OF RR TRACKS AND HWY 101 WITHIN GIVEN NE 1/4 NE 1/4 SECTION 5.				
Ecological:	ELEOCHARIS MACROSTACHYA STRAND ALONG SHORE.				
General:	ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1998 COLLECTION BY TAYLOR. NEEDS POPULATION INFORMATION.				
Owner/Manager:	UNKNOWN				



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Occurrence No.	51	Map Index: B5330	EO Index: 118292	Element Last Seen:	1997-04-15
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1997-04-15
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2020-04-21
Quad Summary:	San Felipe (3612184)				
County Summary:	San Benito				
Lat/Long:	36.95051 / -121.4833		Accuracy:	non-specific area	
UTM:	Zone-10 N4090456 E635042		Elevation (ft):	150	
PLSS:	T11S, R04E, Sec. 25, N (M)		Acres:	36.0	
Location:	ON NW SIDE OF (AND 1/2 MILE DOWN) LONG DRIVEWAY GOING SW FROM FRASER LAKE RD, ~1 1/4 MILES NW OF SHORE RD.				
Detailed Location:	EXACT LOCATION UNKNOWN, MAPPED BY CNDDDB AS A BEST GUESS.				
Ecological:	NORTH END OF A VERY RANKLY WEEDY FIELD. GROWING WITH JUNCUS BUFONIUS, CHENOPODIUM, SPERGULARIA, SCATTERED LOLIUM MULTIFLORUM, AND HORDEUM HYSTRIX ALONG TOPS OF FURROWS (WEEDS IN THIS PART OF FIELD ARE LESS DENSE THAN ELSEWHERE).				
General:	ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1997 MORGAN COLLECTION. NEEDS FIELDWORK.				
Owner/Manager:	PVT				

<i>Hoita strobilina</i>	Element Code: PDFAB5Z030
Loma Prieta hoita	
Listing Status:	Federal: None
	State: None
	Other: Rare Plant Rank - 1B.1
Habitat:	General: CHAPARRAL, CISMONTANE WOODLAND, RIPARIAN WOODLAND.
	Micro: SERPENTINE; MESIC SITES. 60-975 M.
CNDDDB Element Ranks:	Global: G2?
	State: S2?

Occurrence No.	2	Map Index: 46517	EO Index: 50132	Element Last Seen:	1918-07-30
Occ. Rank:	None		Presence: Possibly Extirpated	Site Last Seen:	1918-07-30
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2003-02-12
Quad Summary:	Chittenden (3612185), Gilroy (3712115)				
County Summary:	Santa Clara				
Lat/Long:	37.00911 / -121.57151		Accuracy:	1 mile	
UTM:	Zone-10 N4096836 E627089		Elevation (ft):		
PLSS:	T11S, R04E, Sec. 06 (M)		Acres:	0.0	
Location:	GILROY.				
Detailed Location:	MAPPED AS BEST GUESS AT GILROY BY CNDDDB.				
Ecological:					
General:	NEEDS FIELDWORK. ONLY SOURCE OF INFORMATION IS COLLECTION FROM 1918 BY C. MILLER. AREA HAS SINCE BEEN HEAVILY DEVELOPED.				
Owner/Manager:	UNKNOWN				



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Occurrence No.	3	Map Index: 50133	EO Index: 50133	Element Last Seen:	2020-09-21
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2020-09-21
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2021-11-17
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.02411 / -121.70291		Accuracy:	80 meters	
UTM:	Zone-10 N4098333 E615376		Elevation (ft):	1058	
PLSS:	T10S, R02E, Sec. 36, NE (M)		Acres:	5.0	
Location:	TRIBUTARY OF LITTLE ARTHUR CREEK, APPROXIMATELY 0.8 AIR MILE NNE OF MOUNT MADONNA, SANTA CRUZ MOUNTAINS.				
Detailed Location:	MAPPED ACCORDING TO 2020 HYLAND COORDINATES, IN THE NW 1/4 OF THE NE 1/4 OF SECTION 36.				
Ecological:	TWO SEASONALLY MOIST SWALES IN SERPENTINE CHAPARRAL. SWALES DOMINATED BY T. DIVERSILOBUM, Q. AGRIFOLIA. IMMEDIATELY ADJACENT TO SWALE DOMINATED BY Q. DURATA, ARCTOSTAPHYLOS SP., FESTUCA IDAHOENSIS. N TO NE ASPECT, 20-30% SLOPE.				
General:	20 PLANTS OBSERVED IN 2020. A 1922 JEPSON COLLECTION FROM "ON LITTLE ARTHUR CREEK, GREENINGER CANYON, WEST OF GILROY" IS ALSO ATTRIBUTED TO THIS SITE.				
Owner/Manager:	SCL COUNTY-MT MADONNA PARK				
Occurrence No.	32	Map Index: A8429	EO Index: 110219	Element Last Seen:	2019-05-04
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2019-05-04
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2021-11-16
Quad Summary:	Mt. Madonna (3712116)				
County Summary:	Santa Clara				
Lat/Long:	37.09238 / -121.7252		Accuracy:	specific area	
UTM:	Zone-10 N4105880 E613292		Elevation (ft):	625	
PLSS:	T10S, R02E, Sec. 2, NW (M)		Acres:	1.0	
Location:	UVAS CREEK OPEN SPACE, ABOUT 2.6 AIR MILES NORTHWEST OF UVAS DAM.				
Detailed Location:	ALONG BANKS OF UNNAMED CREEK ABOUT 0.4 MILE WEST OF UVAS ROAD. MAPPED WITHIN THE SE 1/4 OF THE NW 1/4 OF SECTION 2.				
Ecological:	EPHEMERAL CREEKBED AND SURROUNDING STEEP BANKS, IN RIPARIAN WOODLAND. ASSOCIATED WITH PINUS SABINIANA, QUERCUS AGRIFOLIA, SALIX LAEVIGATA, MELICA TORREYANA, TRITELEIA LAXA, PERIDERIDIA KELLOGGII, BACCHARIS PILULARIS, ETC.				
General:	2 PLANTS OBSERVED IN 2015. ~300 PLANTS OBSERVED IN 2016. UNKNOWN NUMBER OF PLANTS OBSERVED IN 2019.				
Owner/Manager:	SCL COUNTY OPEN SPACE				



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Occurrence No.	33	Map Index:	A8430	EO Index:	110220	Element Last Seen:	2016-07-21
Occ. Rank:	Excellent	Presence:	Presumed Extant	Site Last Seen:		2016-07-21	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2018-02-12	
Quad Summary:	Mt. Madonna (3712116)						
County Summary:	Santa Clara						
Lat/Long:	37.0863 / -121.72553			Accuracy:	specific area		
UTM:	Zone-10 N4105206 E613272			Elevation (ft):	800		
PLSS:	T10S, R02E, Sec. 2, S (M)			Acres:	10.0		
Location:	UVAS CREEK OPEN SPACE PRESERVE, ~2.3 AIR MILES NW OF UVAS DAM, ALONG DRAINAGE FROM 0.2 TO 1 MI WSW OF UVAS RD.						
Detailed Location:	SEVERAL POLYGONS MAPPED IN THE SOUTH 1/2 OF SECTION 2.						
Ecological:	SERPENTINE RIPARIAN WOODLAND. GROWING ON SHADED TO SUNNY STREAMBANKS AND STREAMBEDS. ASSOC W/ UMBELLULARIA CALIFORNICA, QUERCUS AGRIFOLIA, HETEROMELES ARBUTIFOLIA, AESCULUS CALIFORNICA, FRANGULA CALIFORNICA, AQUILEGIA EXIMA, ETC.						
General:	~1130 PLANTS OBSERVED IN 2016.						
Owner/Manager:	SCL COUNTY OPEN SPACE						

<i>Malacothamnus aboriginum</i>	Element Code: PDMAL0Q020
Indian Valley bush-mallow	
Listing Status:	Federal: None
	State: None
	Other: Rare Plant Rank - 1B.2, BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden
Habitat:	General: CISMONTANE WOODLAND, CHAPARRAL.
	Micro: GRANITIC OUTCROPS AND SANDY BARE SOIL, OFTEN IN DISTURBED SOILS. 150-1130 M.
CNDDDB Element Ranks: Global: G3	
State: S3	

Occurrence No.	25	Map Index:	28926	EO Index:	30522	Element Last Seen:	1963-04-19
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		1963-04-19	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		1997-03-19	
Quad Summary:	Hollister (3612174)						
County Summary:	San Benito						
Lat/Long:	36.76957 / -121.41216			Accuracy:	non-specific area		
UTM:	Zone-10 N4070486 E641709			Elevation (ft):	800		
PLSS:	T13S, R05E, Sec. 27 (M)			Acres:	59.1		
Location:	NEAR HOLLISTER. SAN ANDREAS RIFT ZONE, ALONG CIENEGA ROAD ABOUT 5.1 MILES NORTH OF CIENEGA SCHOOL.						
Detailed Location:	MAPPED NEAR WHERE CIENEGA ROAD ENTERS BIRD CANYON FROM THE SAN ANDREAS RIFT ZONE.						
Ecological:	BURNED AREA WITH SALVIA MELLIFERA AND ARTEMISIA CALIFORNICA.						
General:	MAIN SOURCE OF INFORMATION FOR THIS SITE IS 1963 COLLECTION BY RAVEN. COLLECTION FROM GENERAL AREA OF "NEAR HOLLISTER" BY O'CONNOR (SN CAS) IS ALSO ATTRIBUTED TO THIS SITE.						
Owner/Manager:	UNKNOWN						

<i>Malacothamnus arcuatus</i>	Element Code: PDMAL0Q0E0
arcuate bush-mallow	
Listing Status:	Federal: None
	State: None
	Other: Rare Plant Rank - 1B.2, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden
Habitat:	General: CHAPARRAL, CISMONTANE WOODLAND.
CNDDDB Element Ranks: Global: G2Q	
State: S2	



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Micro: GRAVELLY ALLUVIUM. 1-735 M.

Occurrence No.	3	Map Index: 55893	EO Index: 55909	Element Last Seen:	1981-11-02
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1981-11-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2004-06-24

Quad Summary: Mt. Madonna (3712116)
County Summary: Santa Clara

Lat/Long:	37.02471 / -121.63928	Accuracy:	1/10 mile
UTM:	Zone-10 N4098480 E621034	Elevation (ft):	270
PLSS:	T10S, R03E, Sec. 33, NE (M)	Acres:	0.0

Location: ADJACENT TO VINEYARDS AT EDGE OF UVAS CREEK FLOODPLAIN, N OF HECKER PASS HWY (HWY 152).
Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS PER SOURCE, IN THE VICINITY OF UVAS CREEK, APPROXIMATELY 0.7 MILE NORTH OF HWY 152, AND 0.9 MILE EAST OF WATSONVILLE ROAD.
Ecological: PLANT IS NOT (APPARENTLY) IN TYPICAL HABITAT; PLANT PRESUMABLY ESTABLISHED WHEN SEED WASHED DOWN CREEK. WITH ANNUAL GRASSES, CEANOETHUS CUNEATUS, BACCHARIS VIMINEA AND SALIX HINDSIANA.
General: ONE PLANT SEEN IN 1981.
Owner/Manager: UNKNOWN

Occurrence No.	24	Map Index: 68926	EO Index: 69550	Element Last Seen:	2006-08-28
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2006-08-28
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2015-06-03

Quad Summary: Mt. Madonna (3712116)
County Summary: Santa Clara

Lat/Long:	37.11524 / -121.69358	Accuracy:	80 meters
UTM:	Zone-10 N4108455 E616066	Elevation (ft):	450
PLSS:	T09S, R03E, Sec. 30, SW (M)	Acres:	0.0

Location: CHESBRO RESERVOIR SPILLWAY.
Detailed Location: 20 FEET ABOVE PONDED WATER ON NORTH BANK JUST BELOW BASE OF SPILLWAY.
Ecological: ASSOCIATED WITH ARTEMISIA CALIFORNICA, CENTAUREA SOLSTITIALIS, AND BACCHARIS PILULARIS.
General: 2 PLANTS OBSERVED IN 2006. A 1909 DUDLEY COLLECTION FROM "BANK BY NEW ROAD FROM MADRONE TO LLAGAS CREEK" IS ALSO ATTRIBUTED TO THIS SITE; COLLECTION ANNOTATED BY SLOTTA TO M. HALLII BUT LIKELY M. ARCUATUS BASED ON LOCATION.
Owner/Manager: SANTA CLARA VALLEY WATER DIST



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Occurrence No.	34	Map Index:	96245	EO Index:	97405	Element Last Seen:	1998-07-31
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		1998-07-31	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2015-06-03	

Quad Summary: Mt. Madonna (3712116)
County Summary: Santa Clara

Lat/Long:	37.12149 / -121.68066	Accuracy:	80 meters
UTM:	Zone-10 N4109164 E617205	Elevation (ft):	840
PLSS:	T09S, R03E, Sec. 30, E (M)	Acres:	0.0

Location: WEST SLOPE OF EL TORO HILL, ABOUT 3000 FEET NE OF INTERSECTION OF LLAGAS AND OAK GLEN AVENUES, MORGAN HILL.
Detailed Location: EAST OF LLAGAS AVENUE ON A PARCEL OFF OF DEER RUN COURT/CIRCLE.
Ecological: WITHIN STAND OF DIABLAN SAGE SCRUB DOMINATED BY SALVIA MELLIFERA. ALSO WITH ARTEMISIA CALIFORNICA, TOXICODENDRON DIVERSILOBUM, MIMULUS AURANTIACUS, AND BACCHARIS PILULARIS. ON SOUTH-FACING SLOPE.
General: ABOUT 100-200 PLANTS OBSERVED IN 1998. A 1921 CLEMENS COLLECTION FROM "MORGAN HILL" IS ALSO ATTRIBUTED TO THIS SITE.
Owner/Manager: PVT

<i>Chorizanthe pungens var. pungens</i>		Element Code: PDPGN040M2
Monterey spineflower		
Listing Status:	Federal: Threatened	CNDDDB Element Ranks: Global: G2T2
	State: None	State: S2
Other:	Rare Plant Rank - 1B.2, BLM_S-Sensitive, SB_SBBG-Santa Barbara Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley	
Habitat:	General: COASTAL DUNES, CHAPARRAL, CISMONTANE WOODLAND, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.	
	Micro: SANDY SOILS IN COASTAL DUNES OR MORE INLAND WITHIN CHAPARRAL OR OTHER HABITATS. 3-270 M.	

Occurrence No.	7	Map Index:	10764	EO Index:	8274	Element Last Seen:	2017-05-22
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		2017-05-22	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2018-04-24	

Quad Summary: Prunedale (3612176)
County Summary: Monterey

Lat/Long:	36.80109 / -121.67764	Accuracy:	specific area
UTM:	Zone-10 N4073623 E617966	Elevation (ft):	300
PLSS:	T13S, R03E, Sec. 18, E (M)	Acres:	31.0

Location: MANZANITA PARK NEAR PRUNEDALE.
Detailed Location: 2 POLYGONS MAPPED ACCORDING TO A 1989 YADON MAP (SOUTHERN POLYGON) AND 2009 PRESTON COORDINATES (NORTHERN POLYGON).
Ecological: ON SANDY SOIL. MARITIME CHAPARRAL. ASSOCIATED WITH CHORIZANTHE DIFFUSA AND PUTATIVE HYBRIDS IN OPEN AREAS BETWEEN THICKETS OF ARCTOSTAPHYLOS PAJAROENSIS, A. HOOKERI, ETC.
General: SEEN IN SOUTHERN POLYGON IN 1984. NORTHERN POLYGON: FEWER THAN 100 PLANTS OBSERVED IN 2009 (LIKELY MORE THAN MAPPED), 100+ PLANTS OBSERVED IN 2017.
Owner/Manager: MNT COUNTY



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Occurrence No.	14	Map Index: 63167	EO Index: 20946	Element Last Seen: 1936-05-19
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen: 1936-05-19
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2015-08-14

Quad Summary: Watsonville East (3612186)
County Summary: Monterey

Lat/Long:	36.88706 / -121.71808	Accuracy:	non-specific area
UTM:	Zone-10 N4083111 E614230	Elevation (ft):	200
PLSS:	T12S, R02E, Sec. 14 (M)	Acres:	557.0

Location: 1.5 MILES EAST OF WATSONVILLE JUNCTION.
Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDDB TO ENCOMPASS GIVEN TRS OF SECTION 14.
Ecological: VEG TYPE: GRASS. 20% SLOPE.
General: BASED ON A 1936 BELSHAW COLLECTION; REVIEWED BY ERTTER ET AL. IN 1999 AND WAS DETERMINED TO BE CLOSER TO C. PUNGENS THAN ROBUSTA. FORMERLY MAPPED AS C. ROBUSTA VAR. ROBUSTA EO #11.
Owner/Manager: UNKNOWN

Occurrence No.	20	Map Index: 22088	EO Index: 8275	Element Last Seen: 1929-06-09
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen: 1929-06-09
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 1992-12-28

Quad Summary: Prunedale (3612176), Moss Landing (3612177)
County Summary: Monterey

Lat/Long:	36.76738 / -121.75664	Accuracy:	1 mile
UTM:	Zone-10 N4069788 E610968	Elevation (ft):	15
PLSS:	T13S, R02E, Sec. 28 (M)	Acres:	0.0

Location: CASTROVILLE.
Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDDB IN THE GENERAL VICINITY OF CASTROVILLE.
Ecological:
General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1929 DEARING COLLECTION. NEEDS FIELDWORK.
Owner/Manager: UNKNOWN

Occurrence No.	37	Map Index: 67836	EO Index: 67984	Element Last Seen: 2001-06-01
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen: 2001-06-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2007-02-07

Quad Summary: Prunedale (3612176)
County Summary: Monterey

Lat/Long:	36.85396 / -121.73960	Accuracy:	1/5 mile
UTM:	Zone-10 N4079413 E612361	Elevation (ft):	300
PLSS:	T12S, R02E, Sec. 27, SW (M)	Acres:	0.0

Location: ON RIDGE NORTH OF BLOHM RANCH, 0.8 MILE SOUTH OF LAS LOMAS.
Detailed Location: BLOHM RANCH IS LOCATED AT 695 ELKHORN ROAD.
Ecological: MARITIME CHAPARRAL IN OPEN AREAS THROUGHOUT RIDGE IN SANDY SOILS. ARCTOSTAPHYLOS DOMINANT. RARE SPECIES INCLUDE ERICAMERIA FASCICULATA, A PAJAROENSIS, A. HOOKERI SSP. HOOKERI, PIPERIA YADONII, CEANOTHUS CUNEATUS VAR. RIDGIDUS.
General: 100S TO 1000S OF PLANTS OBSERVED IN 2001.
Owner/Manager: TNC-ELKHORN SLOUGH RES, ESF



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Occurrence No.	38	Map Index: 67844	EO Index: 67991	Element Last Seen:	2004-08-01
Occ. Rank:	Poor		Presence: Presumed Extant	Site Last Seen:	2004-08-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2015-09-28
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.84293 / -121.69116		Accuracy:	80 meters	
UTM:	Zone-10 N4078247 E616697		Elevation (ft):	160	
PLSS:	T12S, R02E, Sec. 36, SE (M)		Acres:	0.0	
Location:	1 AIR MILE NW OF JUNCTION OF STRAWBERRY CANYON RD. AND SAN MIGUEL CANYON RD, EAST OF SWISS CANYON.				
Detailed Location:	ON WEST SIDE OF SAN MIGUEL CANYON RD. TAYLOR COLLECTION FROM "HILLS BORDERED BY HIDDEN VALLEY RD ON THE WEST, STRAWBERRY CANYON RD ON THE SOUTH, & SAN MIGUEL CANYON RD ON THE EAST; ROAD BED SERVING TRANSMISSION LINE, 450FT" ATTRIBUTED HERE.				
Ecological:	IN DISTURBED, OPEN HABITAT OF GRASSES AND FORBS IN SANDY SOIL. ADJACENT HABITATS INCLUDE ROW-CROP AGRICULTURE, COASTAL SCRUB, MARITIME CHAPARRAL, ANNUAL GRASSLAND, AND OAK WOODLAND.				
General:	ABOUT 100 PLANTS OBSERVED IN 2001. A 2004 TAYLOR COLLECTION IS ALSO ATTRIBUTED TO THIS SITE. SITE WAS FARMED FOR STRAWBERRIES FOR 20+ YEARS, THEN INACTIVE FOR 15 YEARS, PRIOR TO RESUMPTION OF FARMING.				
Owner/Manager:	ELKHORN SLOUGH FOUNDATION				
Occurrence No.	39	Map Index: 67846	EO Index: 67993	Element Last Seen:	2001-06-01
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2001-06-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2015-08-18
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.82323 / -121.69959		Accuracy:	non-specific area	
UTM:	Zone-10 N4076052 E615974		Elevation (ft):	250	
PLSS:	T13S, R02E, Sec. 12, NE (M)		Acres:	32.0	
Location:	LONG VALLEY PRESERVE AND TUCKER ROAD, NEAR EAST END OF LONG CANYON.				
Detailed Location:	3 POLYGONS MAPPED BY CNDDDB. 2 SOUTHERN POLYGONS ARE SPECIFIC, BASED ON 2001 HOLTE MAP. NORTHERN POLYGON IS NON-SPECIFIC, BASED ON A 1989 MORGAN COLLECTION FROM "CHAPARRAL EDGES AT 185 TUCKER ROAD, PRUNEDALE/WATSONVILLE."				
Ecological:	SOUTHERN POLYGONS: IN OPEN TRAIL AREAS IN ECOTONE BETWEEN OAK WOODLAND AND MARITIME CHAPARRAL. DOMINANTS INCLUDE BLACK SAGE AND MANZANITAS. NORTH POLYGON: CHAPARRAL EDGES WITH ARTEMISIA CALIFORNICA, SALVIA, ARCTOSTAPHYLOS PAJAROENSIS, ETC.				
General:	SEEN IN NORTHERN POLYGON IN 1989. 100 TO 1000S OF PLANTS OBSERVED IN 2 SOUTHERN POLYGONS IN 2001.				
Owner/Manager:	ELKHORN SLOUGH FOUNDATION, PVT				



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Occurrence No.	40	Map Index: 67882	EO Index: 67997	Element Last Seen:	2001-04-22
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2001-04-22
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-01-24

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.78401 / -121.63694	Accuracy:	specific area
UTM:	Zone-10 N4071779 E621624	Elevation (ft):	200
PLSS:	T13S, R03E, Sec. 21, SE (M)	Acres:	3.0

Location: APPROX. 2 ROAD MILES WEST OF PRUNEDALE ON N SIDE OF PESANTE CANYON RD, EAST OF N. KING RD.

Detailed Location: MAPPED ACCORDING TO COORDINATES (NO DATUM) AND MAP PROVIDED BY LOWE. IN SE1/4 SEC 21 AND SW1/4 SEC 22.

Ecological: SANDY SOILS AT EDGES AND OPENINGS OF COASTAL SAGE SCRUB OR MIXED MARITIME CHAPARRAL/COAST LIVE OAK WOODLAND. RARE SPECIES INCLUDE ARCTOSTAPHYLOS PAJAROENSIS, CEANOTHUS CUNEATUS RIGIDUS, AND ERICAMERIA FASCICULATA.

General: ABOUT 2000 PLANTS OBSERVED IN 2001.

Owner/Manager: PVT

Occurrence No.	43	Map Index: 67887	EO Index: 68035	Element Last Seen:	2004-07-13
Occ. Rank:	Fair		Presence: Presumed Extant	Site Last Seen:	2004-07-13
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2015-08-18

Quad Summary: Watsonville East (3612186)

County Summary: Monterey

Lat/Long:	36.88264 / -121.67801	Accuracy:	specific area
UTM:	Zone-10 N4082669 E617808	Elevation (ft):	120
PLSS:	T12S, R03E, Sec. 18, SE (M)	Acres:	5.0

Location: DIRT ROAD E OF SAN MIGUEL CANYON RD, 0.5 ROAD MI N OF JUNCTION WITH LEWIS RD, 3.6 AIR MI ESE OF WATSONVILLE JUNCTION.

Detailed Location: ON NORTH SIDE OF DIRT ROAD, AND AT END OF DIRT ROAD. THE ROAD IS NOT MARKED ON TOPOGRAPHIC MAPS BUT IS VISIBLE IN AERIAL PHOTOGRAPHS.

Ecological: OPEN SANDY PATCHES IN UNDERSTORY OF COAST LIVE OAK WOODLAND. UNDERSTORY COMPOSED PRIMARILY OF NON-NATIVE ANNUAL GRASSES, SCATTERED SHRUBS. REMNANTS OF AN OLD APRICOT ORCHARD ARE PRESENT.

General: 1500-2000 PLANTS OBSERVED IN 2004 ON 103-ACRE PARCEL. ILLEGAL ROAD GRADING IN 2004 IMPACTED 9,000 SQ FT; 27,000 SQ FT WILL BE ENHANCED.

Owner/Manager: PVT



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Occurrence No.	51	Map Index:	97260	EO Index:	98523	Element Last Seen:	2009-06-10
Occ. Rank:	Poor	Presence:	Presumed Extant	Site Last Seen:		2009-06-10	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2015-09-25	
Quad Summary:	San Juan Bautista (3612175)						
County Summary:	Monterey						
Lat/Long:	36.79404 / -121.62329			Accuracy:	specific area		
UTM:	Zone-10 N4072909 E622826			Elevation (ft):	400		
PLSS:	T13S, R03E, Sec. 22, NE (M)			Acres:	1.0		
Location:	378 CRAZY HORSE CANYON ROAD, EAST SIDE OF PESANTE CANYON, SALINAS.						
Detailed Location:	MAPPED IN THE NW 1/4 OF THE NE 1/4 OF SECTION 22 ACCORDING TO A 2009 SIEPEL MAP.						
Ecological:	UNDEVELOPED PORTION OF THE PARCEL HAS COAST LIVE OAK WOODLAND MIXED WITH CENTRAL MARITIME CHAPARRAL. SCATTERED IN OPEN AREAS WITHIN THE CHAPARRAL ON THE SLOPE BELOW THE HOUSE.						
General:	TWO SMALL PATCHES OF PLANTS OBSERVED IN 2009.						
Owner/Manager:	CALTRANS						
Occurrence No.	52	Map Index:	97261	EO Index:	98524	Element Last Seen:	2001-05-18
Occ. Rank:	Fair	Presence:	Presumed Extant	Site Last Seen:		2001-05-18	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2015-08-19	
Quad Summary:	Prunedale (3612176)						
County Summary:	Monterey						
Lat/Long:	36.82162 / -121.63509			Accuracy:	specific area		
UTM:	Zone-10 N4075953 E621729			Elevation (ft):	500		
PLSS:	T13S, R03E, Sec. 10, NW (M)			Acres:	44.0		
Location:	WEST SIDE OF HIGHWAY 101 AT INTERSECTION WITH ECHO VALLEY ROAD AND CRAZY HORSE CANYON ROAD, NORTHEAST OF PRUNEDALE.						
Detailed Location:	MAPPED MOSTLY WITHIN THE WEST 1/2 OF THE NW 1/4 OF SECTION 10 ACCORDING TO A 2001 ROBISON MAP.						
Ecological:	DISTURBED SANDY SOILS IN A PARTIALLY CLEARED AREA AND ALONG A TRAIL THROUGH MARITIME CHAPARRAL. PLANTS ARE SPORADIC AT THE EDGE OF CHAPARRAL AND OAK WOODLAND. ASSOCIATES ARE BROMUS DIANDRUS AND OTHER NON-NATIVE GRASSES.						
General:	2000+ PLANTS IN 2001; SITE ALSO SURVEYED IN 2002 AND 2004, UNCLEAR IF PLANTS OBSERVED ON THOSE DATES. 1989 AND 1994 MORGAN COLLECTIONS FROM "PRUNEDALE BYPASS NORTH" AND "ALONG ROUTE OF PROPOSED PRUNEDALE BYPASS" ARE ATTRIBUTED HERE.						
Owner/Manager:	PVT						



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Occurrence No.	54	Map Index:	97263	EO Index:	98526	Element Last Seen:	2004-04-12
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		2004-04-12	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2015-08-19	

Quad Summary: Watsonville East (3612186)
County Summary: Santa Cruz

Lat/Long:	36.93734 / -121.68829	Accuracy:	2/5 mile
UTM:	Zone-10 N4088725 E616808	Elevation (ft):	
PLSS:	T11S, R03E, Sec. 31 (M)	Acres:	0.0

Location: BEHIND KELLY-THOMPSON RANCH HEADQUARTERS.
Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDDB AROUND HILLS BEHIND PRESUMED LOCATION OF KELLY-THOMPSON RANCH HEADQUARTERS BUILDINGS.
Ecological: AROUND SHRUBS AND AMONG SPARSE GRASSES, ON SAND SLOPE BEHIND HEADQUARTERS.
General: SITE IS BASED ON MORGAN COLLECTIONS FROM 1994 AND 1998, PLANTS NOTED AS "ABUNDANT" IN 1994. A 2004 MORGAN COLLECTION FROM PORTER-COOLEY RANCH IS ATTRIBUTED HERE; COOLEY RANCH IS ADJACENT TO KELLY-THOMPSON RANCH. NEEDS FIELDWORK.
Owner/Manager: PVT

Occurrence No.	55	Map Index:	97264	EO Index:	98528	Element Last Seen:	2004-08-01
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:		2004-08-01	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2018-04-05	

Quad Summary: Prunedale (3612176), Watsonville East (3612186)
County Summary: Monterey

Lat/Long:	36.8744 / -121.67447	Accuracy:	80 meters
UTM:	Zone-10 N4081759 E618137	Elevation (ft):	410
PLSS:	T12S, R03E, Sec. 19, E (M)	Acres:	5.0

Location: RIDGETOP 0.5 MILE NORTH OF TARPEY ROAD AND WEST OF THE TERMINUS OF TIERRA WAY, VICINITY OF AROMAS.
Detailed Location: MAPPED ACCORDING TO 2003 TAYLOR COORDINATES. ALSO INCLUDES 2004 TAYLOR COLLECTION FROM "HILLS BORDERED BY SAN MIGUEL CYN RD ON THE WEST, TARPEY RD ON THE SOUTH, & G11 ON THE EAST, GROWING EXACTLY AT BASE OF PG&E TRANSMISSION TOWER 53/228."
Ecological: SAND OF POWER LINE ACCESS DIRT ROAD, GROWING IN THE MIDDLE OF THE ROAD AND ON THE SIDES. UPSLOPE VEGETATION WITH MARITIME CHAPARRAL OF ARCTOSTAPHYLOS PAJAROENSIS, A. TOMENTOSA, TOXICODENDRON DIVERSILOBUM, AND BACCHARIS PILULARIS.
General: SITE IS BASED ON A 2003 TAYLOR PHOTO AND A 2004 TAYLOR COLLECTION.
Owner/Manager: UNKNOWN



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Occurrence No.	62	Map Index:	A8931	EO Index:	110725	Element Last Seen:	2017-05-20
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		2017-05-20	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2018-04-06	
Quad Summary:	Prunedale (3612176)						
County Summary:	Monterey						
Lat/Long:	36.80624 / -121.68853			Accuracy:	specific area		
UTM:	Zone-10 N4074181 E616988			Elevation (ft):	250		
PLSS:	T13S, R03E, Sec. 18, NW (M)			Acres:	13.0		
Location:	NORTH OF CASTROVILLE BLVD, ~0.7 TO 1.2 AIR MI WEST OF ITS INTERSECTION WITH SAN MIGUEL CANYON ROAD, NORTH OF PRUNEDALE.						
Detailed Location:	5 POLYGONS MAPPED IN THE NORTH 1/2 OF THE NW 1/4 OF SECTION 18 AND THE NE 1/4 OF THE NE 1/4 OF SECTION 13.						
Ecological:	EDGES OF OAK WOODLAND/MARITIME CHAPARRAL AND NON-NATIVE ANNUAL GRASSLAND, IN OPENINGS OR UNDER SHRUBS, GENERALLY IN SHELTERED, S-FACING LOCATIONS. ASSOC W/ QUERCUS AGRIFOLIA VAR. AGRIFOLIA, ARCTOSTAPHYLOS PAJAROENSIS, SALVIA MELLIFERA, ETC.						
General:	ROBUST POPULATIONS OBSERVED IN THIS AREA ACCORDING TO A 2010 REPORT; OBSERVATION DATE UNKNOWN, POSSIBLY SEEN IN 2009. APPROXIMATELY 1740 PLANTS OBSERVED IN 2017.						
Owner/Manager:	CALTRANS						

<i>Eriogonum nortonii</i>	Element Code: PDPGN08470
Pinnacles buckwheat	
Listing Status:	Federal: None
	State: None
	Other: Rare Plant Rank - 1B.3, BLM_S-Sensitive
Habitat:	General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.
	Micro: SANDY SOILS; OFTEN ON RECENT BURNS; WESTERN SANTA LUCIAS. 90-975 M.
CNDDB Element Ranks:	Global: G2
	State: S2

Occurrence No.	15	Map Index:	11222	EO Index:	20997	Element Last Seen:	2008-05-17
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		2008-05-17	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2018-10-04	
Quad Summary:	Hollister (3612174)						
County Summary:	San Benito						
Lat/Long:	36.76443 / -121.45001			Accuracy:	80 meters		
UTM:	Zone-10 N4069860 E638341			Elevation (ft):	1470		
PLSS:	T13S, R05E, Sec. 32, NW (M)			Acres:	5.0		
Location:	AT EDGE OF MADRONE TRAIL JUST EAST OF INTERSECTION WITH CATHEDRAL ROCKS AND HIDDEN SPRINGS TRAILS, AZALEA CANYON.						
Detailed Location:	MAPPED ACCORDING TO 2008 MORTON COORDINATES, IN THE NW 1/4 OF THE NW 1/4 OF SECTION 32.						
Ecological:	CHAPARRAL BORDERED POPULATION UP AND DOWN-SLOPE OF TRAIL. SHRUBS APPEARED TO HAVE BEEN RECENTLY CUT BACK FROM THE TRAIL. POPULATION AT EDGE OF TRAIL WHERE GRAVEL HAS ERODED AND DEPOSITED AT BASE OF SLOPE. GRANITIC SOILS.						
General:	UNKNOWN NUMBER OF PLANTS OBSERVED IN 2008. A 1956 CRAMPTON COLLECTION FROM "UPPER DRAINAGE OF BIRD CREEK, GABILAN RANGE, 8-9 MILES SOUTH OF HOLLISTER" IS ALSO ATTRIBUTED TO THIS SITE.						
Owner/Manager:	DPR-HOLLISTER HILLS SVRA						



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Occurrence No.	16	Map Index:	11116	EO Index:	20999	Element Last Seen:	1975-06-09
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	1975-06-09	Record Last Updated:	2018-10-03
Occ. Type:	Natural/Native occurrence	Trend:	Unknown				
Quad Summary:	Mt. Harlan (3612164), Natividad (3612165), Hollister (3612174), San Juan Bautista (3612175)						
County Summary:	Monterey, San Benito						
Lat/Long:	36.75745 / -121.50855	Accuracy:	1 mile				
UTM:	Zone-10 N4069003 E633127	Elevation (ft):					
PLSS:	T13S, R04E, Sec. 35 (M)	Acres:	0.0				
Location:	WEST SLOPE OF FREMONT PEAK, GABILAN RANGE.						
Detailed Location:	GROWING IN ROADWAY. EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDDB IN THE VICINITY OF FREMONT PEAK.						
Ecological:	IN DECOMPOSED GRANITE.						
General:	SITE BASED ON A 1966 STEPHENSON COLLECTION FROM "WEST SLOPE OF FREMONT PEAK" AND 1975 YADON COLLECTION FROM "FREMONT PEAK W SIDE, IN ROADWAY JAMES BARDIN RANCH PRIVATE ROAD." NEEDS FIELDWORK.						
Owner/Manager:	PVT						
Occurrence No.	24	Map Index:	60723	EO Index:	60759	Element Last Seen:	1989-05-21
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	1989-05-21	Record Last Updated:	2005-03-29
Occ. Type:	Natural/Native occurrence	Trend:	Unknown				
Quad Summary:	Hollister (3612174)						
County Summary:	San Benito						
Lat/Long:	36.78441 / -121.42243	Accuracy:	1 mile				
UTM:	Zone-10 N4072118 E640765	Elevation (ft):					
PLSS:	T13S, R05E, Sec. 21 (M)	Acres:	0.0				
Location:	5 MI SOUTH OF HOLLISTER IN HILLS, ALONG ROADSIDE AT ORV PARK.						
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED IN VICINITY OF HOLLISTER HILLS STATE VEHICULAR RECREATION AREA.						
Ecological:	CHAPARRAL, WITH DISTRUBED, DECOMPOSED GRANITE SOIL.						
General:	1989 KELCH COLLECTION IS THE ONLY SOURCE FOR THIS SITE. NEEDS FIELDWORK.						
Owner/Manager:	UNKNOWN						
Occurrence No.	38	Map Index:	B0966	EO Index:	112854	Element Last Seen:	2018-06-08
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	2018-06-08	Record Last Updated:	2018-10-03
Occ. Type:	Natural/Native occurrence	Trend:	Unknown				
Quad Summary:	Hollister (3612174)						
County Summary:	San Benito						
Lat/Long:	36.78479 / -121.46356	Accuracy:	specific area				
UTM:	Zone-10 N4072100 E637095	Elevation (ft):	1765				
PLSS:	T13S, R05E, Sec. 19, SW (M)	Acres:	11.0				
Location:	HIGH ROAD AT LIZARD TRAIL, SAN JUAN CANYON, HOLLISTER HILLS VEHICLE RECREATION AREA.						
Detailed Location:	MAPPED ACCORDING TO 2015 AND 2018 OVERTREE COORDINATES. IN THE SE 1/4 OF THE SW 1/4 OF SECTION 19.						
Ecological:	ROADSIDE/WASTE AREA.						
General:	UNKNOWN NUMBER SEEN IN 2015. JUST 1 PLANT SEEN IN 2018.						
Owner/Manager:	DPR-HOLLISTER HILLS SVRA						



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Navarretia prostrata		Element Code: PDPLM0C0Q0	
prostrate vernal pool navarretia			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G2
	State: None		State: S2
	Other: Rare Plant Rank - 1B.2		
Habitat:	General: COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND, VERNAL POOLS, MEADOWS AND SEEPS.		
	Micro: ALKALINE SOILS IN GRASSLAND, OR IN VERNAL POOLS. MESIC, ALKALINE SITES. 3-1235 M.		
Occurrence No.	56	Map Index: 83376	EO Index: 84388
Occ. Rank:	Good	Presence: Presumed Extant	Element Last Seen: 2014-07-02
Occ. Type:	Natural/Native occurrence	Trend: Unknown	Site Last Seen: 2014-07-02
			Record Last Updated: 2020-06-01
Quad Summary:	San Felipe (3612184)		
County Summary:	San Benito		
Lat/Long:	36.97730 / -121.45993	Accuracy:	non-specific area
UTM:	Zone-10 N4093463 E637074	Elevation (ft):	140
PLSS:	T11S, R05E, Sec. 18 (M)	Acres:	20.0
Location:	SAN FELIPE LAKE; JUNCTION WITH TEQUISQUITA SLOUGH, JUNCTION WITH PACHECO CREEK, AND 0.25 MI SE OF LAKE.		
Detailed Location:	3 POLYGONS MAPPED BY CNDDDB. 2 WESTERN POLYGONS ARE SPECIFIC, BASED ON A 2007 HILLMAN MAP. EASTERN POLYGON IS NON-SPECIFIC, BASED ON 2014 GOKLANY PHOTO FROM "0.25 MI SE OF SAN FELIPE LAKE, NEAR TEQUISQUITA SLOUGH AND ALONG MAINTENANCE RD."		
Ecological:	E POLYGON IN PERENNIAL MARSH WITH ARTIFICIAL HYDROLOGY. W POLYGONS WITH POLYGONUM SP., CRYPISIS SCHOENOIDES, PASPALUM DISTICHUM, SCIRPUS CALIFORNICUS, XANTHIUM STRUMARIUM, POLYPOGON MONSPELIENSIS, AND ERYNGIUM ARISTULATUM VAR. HOOVERI.		
General:	~150 PLANTS SEEN IN 2 WESTERN POLYGONS IN 2007. UNKNOWN NUMBER OF PLANTS SEEN IN EASTERN POLYGON IN 2014.		
Owner/Manager:	PVT		



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<i>Delphinium californicum ssp. interius</i>		Element Code: PDRAN0B0A2	
Hospital Canyon larkspur			
Listing Status:	Federal: None	CNDDB Element Ranks:	Global: G3T3
	State: None		State: S3
	Other: Rare Plant Rank - 1B.2, BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden		
Habitat:	General: CISMONTANE WOODLAND, CHAPARRAL, COASTAL SCRUB.		
	Micro: IN WET, BOGGY MEADOWS, OPENINGS IN CHAPARRAL AND IN CANYONS. 195-1095 M.		

Occurrence No.	21	Map Index: 89706	EO Index: 90709	Element Last Seen:	2005-06-02
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2005-06-02
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2013-07-17
Quad Summary:	Gilroy Hot Springs (3712114)				
County Summary:	Santa Clara				
Lat/Long:	37.05427 / -121.38654		Accuracy:	80 meters	
UTM:	Zone-10 N4102110 E643462		Elevation (ft):	1650	
PLSS:	T10S, R05E, Sec. 23, NE (M)		Acres:	0.0	
Location:	NORTH SIDE OF KICKHAM PEAK, APPROXIMATELY 3.5 AIR MILES NORTHWEST OF PACHECO RANGER STATION.				
Detailed Location:	MAPPED IN THE EAST HALF OF THE NE 1/4 OF SECTION 23 ACCORDING TO A 2005 VEGETATION SURVEY.				
Ecological:	SEDIMENTARY SOIL. ASSOCIATED WITH RHAMNUS CROCEA, PRUNUS ILICIFOLIA, MARAH FABACEUS, RIBES CALIFORNICUM, TOXICODENDRON DIVERSILOBUM, UMBELLULARIA CALIFORNICA, LONICERA SUBSPICATA VAR. DENUDATA, AESCULUS CALIFORNICA, QUERCUS DOUGLASII, ETC.				
General:	0.2% COVER OF DELPHINIUM OBSERVED OVER 1-5 ACRE AREA IN 2005.				
Owner/Manager:	DFG-CANADA DE LOS OSOS ER				

<i>Rosa pinetorum</i>		Element Code: PDROS1J0W0	
pine rose			
Listing Status:	Federal: None	CNDDB Element Ranks:	Global: G2
	State: None		State: S2
	Other: Rare Plant Rank - 1B.2		
Habitat:	General: CLOSED-CONE CONIFEROUS FOREST, CISMONTANE WOODLAND.		
	Micro: 5-1090 M.		

Occurrence No.	5	Map Index: 28460	EO Index: 46104	Element Last Seen:	1993-06-10
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1993-06-10
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2015-12-22
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.79872 / -121.67945		Accuracy:	non-specific area	
UTM:	Zone-10 N4073358 E617808		Elevation (ft):		
PLSS:	T13S, R03E, Sec. 18 (M)		Acres:	462.3	
Location:	MANZANITA (COUNTY) PARK.				
Detailed Location:	ALONG TRAIL. MAPPED NON-SPECIFICALLY AROUND THE BOUNDARY OF MANZANITA REGIONAL PARK.				
Ecological:	AT EDGE OF DRAINAGE, WET LOCATION, FULL SUN.				
General:	1993 YADON COLLECTION IS THE ONLY SOURCE OF INFORMATION FOR THIS SITE. NEEDS FIELDWORK.				
Owner/Manager:	MNT COUNTY				



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Castilleja rubicundula var. rubicundula		Element Code: PDSCR0D482	
pink creamsacs			
Listing Status:	Federal: None	CNDDDB Element Ranks:	Global: G5T2
	State: None		State: S2
	Other: Rare Plant Rank - 1B.2, BLM_S-Sensitive		
Habitat:	General: CHAPARRAL, CISMONTANE WOODLAND, MEADOWS AND SEEPS, VALLEY AND FOOTHILL GRASSLAND.		
	Micro: OPENINGS IN CHAPARRAL OR GRASSLANDS. ON SERPENTINE. 20-915 M.		

Occurrence No.	18	Map Index: 53706	EO Index: 53706	Element Last Seen: 1992-04-08
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen: 1992-04-08
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2016-01-07

Quad Summary: Chittenden (3612185)
County Summary: Santa Clara

Lat/Long:	36.93168 / -121.5874	Accuracy:	2/5 mile
UTM:	Zone-10 N4088226 E625804	Elevation (ft):	340
PLSS:	T11S, R03E, Sec. 36 (M)	Acres:	280.0

Location: NORTH OF TAR CREEK, ABOUT 4.5 MILES SOUTH OF GILROY, SANTA CRUZ MOUNTAINS.
Detailed Location: MAPPED MOSTLY WITHIN THE SE 1/4 OF SECTION 36 ACCORDING TO A VAGUE 1992 PRESTON MAP.
Ecological: IN SEEP/SPRING WITH HORDEUM DEPRESSUM, PUCCINELLIA SIMPLEX, AND ELEOCHARIS.
General: UNKNOWN NUMBER OF PLANTS SEEN BY PRESTON IN 1992.
Owner/Manager: PVT



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Cordylanthus rigidus ssp. littoralis

Element Code: PDSCROJ0P2

seaside bird's-beak

Listing Status:	Federal: None	CNDDB Element Ranks:	Global: G5T2
	State: Endangered		State: S2
Other:	Rare Plant Rank - 1B.1, BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden		
Habitat:	General:	CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, CISMONTANE WOODLAND, COASTAL SCRUB, COASTAL DUNES.	
	Micro:	SANDY, OFTEN DISTURBED SITES, USUALLY WITHIN CHAPARRAL OR COASTAL SCRUB. 30-520 M.	

Occurrence No.	8	Map Index:	97639	EO Index:	98970	Element Last Seen:	1930-09-XX
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	1930-09-XX		
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:	2015-09-25		

Quad Summary: Prunedale (3612176), Moss Landing (3612177)

County Summary: Monterey

Lat/Long:	36.85053 / -121.75269	Accuracy:	1 mile
UTM:	Zone-10 N4079017 E611199	Elevation (ft):	
PLSS:	T12S, R02E, Sec. 33 (M)	Acres:	0.0

Location: UPPER END OF ELKHORN SLOUGH, BETWEEN WATSONVILLE AND CASTROVILLE.
Detailed Location: EXACT LOCATION UNKNOWN, MAPPED BY CNDDB AS A BEST GUESS.
Ecological: LOW HILLS.
General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1930 MASON COLLECTION. NEEDS FIELDWORK.
Owner/Manager: UNKNOWN

Occurrence No.	40	Map Index:	22088	EO Index:	68394	Element Last Seen:	1908-06-XX
Occ. Rank:	Unknown	Presence:	Presumed Extant	Site Last Seen:	1908-06-XX		
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:	2007-02-26		

Quad Summary: Prunedale (3612176), Moss Landing (3612177)

County Summary: Monterey

Lat/Long:	36.76738 / -121.75664	Accuracy:	1 mile
UTM:	Zone-10 N4069788 E610968	Elevation (ft):	
PLSS:	T13S, R02E, Sec. 28 (M)	Acres:	0.0

Location: CASTROVILLE.
Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDB IN THE VICINITY OF CASTROVILLE.
Ecological:
General: THE ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS 1908 BRANDEGEE COLLECTION. NEEDS FIELDWORK.
Owner/Manager: UNKNOWN



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<i>Penstemon rattanii var. kleei</i>		Element Code: PDSCR1L5B1	
Santa Cruz Mountains beardtongue			
Listing Status:	Federal: None	CNDDB Element Ranks:	Global: G4T2
	State: None		State: S2
	Other: Rare Plant Rank - 1B.2		
Habitat:	General: CHAPARRAL, LOWER MONTANE CONIFEROUS FOREST, NORTH COAST CONIFEROUS FOREST.		
	Micro: SANDY SHALE SLOPES; SOMETIMES IN THE TRANSITION BETWEEN FOREST AND CHAPARRAL. 455-915 M.		

Occurrence No.	1	Map Index:	35527	EO Index:	30683	Element Last Seen:	2019-06-27
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		2019-06-27	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2020-01-22	

Quad Summary: Mt. Madonna (3712116)
County Summary: Santa Clara

Lat/Long:	37.00252 / -121.70723	Accuracy:	specific area
UTM:	Zone-10 N4095933 E615024	Elevation (ft):	1608
PLSS:	T11S, R02E, Sec. 1, SW (M)	Acres:	2.0

Location: APPROXIMATELY 0.25 AIR MILE SSE OF THE JUNCTION OF POLE LINE ROAD AND BLACKHAWK TRAIL, MT MADONNA COUNTY PARK.
Detailed Location: GROWING UNDER TRANSMISSION LINE. MAPPED ACCORDING TO 2019 MOSHER DATA.
Ecological: CHAPARRAL. GROWING UNDER ARCTOSTAPHYLOS ANDERSONII, A. GLANDULOSA, CEANOTHUS PAPILLOSUS, ERIODICTYON CALIFORNICUM, AND PICKERINGIA MONTANA. VERY LIGHT SOIL.
General: 31 PLANTS OBSERVED IN 2019; PLANTS MOST ABUNDANT IN AREAS WHERE ARCTOSTAPHYLOS AND CEANOTHUS INDIVIDUALS HAD BEEN THINNED. 1936 STOCKTON AND 1937 KECK COLLECTIONS ARE ALSO ATTRIBUTED TO THIS SITE.
Owner/Manager: SCL COUNTY-MT MADONNA PARK

<i>Fritillaria liliacea</i>		Element Code: PMLILOV0C0	
fragrant fritillary			
Listing Status:	Federal: None	CNDDB Element Ranks:	Global: G2
	State: None		State: S2
	Other: Rare Plant Rank - 1B.2, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive		
Habitat:	General: COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND, COASTAL PRAIRIE, CISMONTANE WOODLAND.		
	Micro: OFTEN ON SERPENTINE; VARIOUS SOILS REPORTED THOUGH USUALLY ON CLAY, IN GRASSLAND. 3-385 M.		



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Occurrence No.	29	Map Index: 25089	EO Index: 6095	Element Last Seen:	1993-XX-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1993-XX-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-03-30

Quad Summary: Prunedale (3612176)
County Summary: Monterey, San Benito

Lat/Long:	36.86394 / -121.64197	Accuracy:	non-specific area
UTM:	Zone-10 N4080639 E621050	Elevation (ft):	200
PLSS:	T12S, R03E, Sec. 28 (M)	Acres:	508.7

Location: 1 MILE SOUTH OF AROMAS.
Detailed Location: GENERAL VICINITY OF THE POPULATION IS BOUNDED BY THE SBT/MNT COUNTY LINE TO THE NORTHEAST, SAN JUAN RD AND HWY 101 TO THE SOUTH, AND BY CARPENTERIA RD TO THE NORTHWEST.

Ecological:
General: SITE MANAGED INFORMALLY FOR THE PLANT. 1973 YADON COLLECTIONS FROM "THE ROCKS HWY 101 S SAN BENITO CO...ON W SIDE OF S BOUND LANE" AND "AROMAS AREA, 19180 EL CERRITO WAY.." ATTRIBUTED TO THIS SITE. NEED BETTER LOCATION INFO.
Owner/Manager: PVT

Occurrence No.	64	Map Index: 68765	EO Index: 69250	Element Last Seen:	2002-06-XX
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2002-06-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2007-03-30

Quad Summary: Natividad (3612165), Salinas (3612166), San Juan Bautista (3612175), Prunedale (3612176)
County Summary: Monterey

Lat/Long:	36.75832 / -121.63391	Accuracy:	1 mile
UTM:	Zone-10 N4068933 E621935	Elevation (ft):	
PLSS:	T13S, R03E, Sec. 34 (M)	Acres:	0.0

Location: RANCHO SAN JUAN AREA, ABOUT 2 AIR MILES SE OF PRUNEDALE.
Detailed Location: "...DISTRIBUTED OVER APPROXIMATELY 3 ACRES...IN THE CENTRAL PORTION OF THE [RANCH SAN JUAN] SPECIFIC PLAN AREA." EXACT LOCATION OF RANCHO SAN JUAN UNKNOWN. MAPPED AS BEST GUESS BY CNDDDB ACCORDING TO THE "VICINITY MAP" OF THE PLAN.
Ecological: MIXED NATIVE/NON-NATIVE GRASSLAND.
General: FEWER THAN 20 PLANTS WERE OBSERVED IN 1998, AND AGAIN IN APRIL AND JUNE OF 2002. NEEDS FIELDWORK TO DETERMINE EXACT LOCATION.
Owner/Manager: UNKNOWN



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Occurrence No.	85	Map Index: A0898	EO Index: 102431	Element Last Seen:	1967-03-21
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1967-03-21
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2016-07-19

Quad Summary: Chittenden (3612185), Watsonville East (3612186)
County Summary: San Benito

Lat/Long:	36.89165 / -121.62287	Accuracy:	3/5 mile
UTM:	Zone-10 N4083738 E622708	Elevation (ft):	700
PLSS:	T12S, R03E, Sec. 15 (M)	Acres:	776.0

Location: 1000 YARDS NORTH OF COLE ROAD, NORTHWEST OF SAN JUAN BAUTISTA, WEST OF HWY 101.
Detailed Location: EXACT LOCATION UNKNOWN. COLE ROAD RUNS NORTH-SOUTH. MAPPED AS BEST GUESS AROUND NORTH END OF COLE RD AND AREAS WEST OF ROAD TO INCLUDE GIVEN ELEVATION OF 700 FT.
Ecological: SCATTERED ON NORTH FACING HILLSIDE, GRASSY SLOPES.
General: ONLY SOURCE OF INFORMATION FOR THIS SITE ARE TWO 1967 KEEFE COLLECTIONS. NEEDS FIELDWORK.
Owner/Manager: UNKNOWN

Occurrence No.	89	Map Index: A8525	EO Index: 110316	Element Last Seen:	1967-02-26
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1967-02-26
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-02-20

Quad Summary: San Juan Bautista (3612175)
County Summary: San Benito

Lat/Long:	36.86277 / -121.61668	Accuracy:	non-specific area
UTM:	Zone-10 N4080542 E623307	Elevation (ft):	250
PLSS:	T12S, R03E, Sec. 26 (M)	Acres:	93.0

Location: ON HWY 101, 1 MILE EAST OF MONTEREY COUNTY LINE.
Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDDB ALONG HIGHWAY ABOUT 1 ROAD MILE EAST OF COUNTY LINE, BASED ON A 1967 RODERICK COLLECTION.
Ecological: EAST-FACING SLOPE IN STIFF CLAY.
General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1967 RODERICK COLLECTION. NEEDS FIELDWORK.
Owner/Manager: UNKNOWN.

<i>Piperia yadonii</i>		Element Code: PMORC1X070
Yadon's rein orchid		
Listing Status:	Federal: Endangered	CNDDDB Element Ranks: Global: G1
	State: None	State: S1
	Other: Rare Plant Rank - 1B.1	
Habitat:	General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL BLUFF SCRUB.	
	Micro: ON SANDSTONE AND SANDY SOIL, BUT POORLY DRAINED AND OFTEN DRY. 10-505 M.	



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Occurrence No.	10	Map Index: 23613	EO Index: 7359	Element Last Seen: 1991-07-21
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen: 1996-07-21
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2017-02-06

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.80721 / -121.64337	Accuracy:	non-specific area
UTM:	Zone-10 N4074345 E621015	Elevation (ft):	325
PLSS:	T13S, R03E, Sec. 16, N (M)	Acres:	29.0

Location: BEATRICE DRIVE, BETWEEN VIERRA CANYON AND HIGHWAY 101, WEST OF CRAZY HORSE CANYON ROAD, NORTHEAST OF PRUNEDALE.

Detailed Location: MAPPED BY CNDDDB NON-SPECIFICALLY ALONG THE LENGTH OF BEATRICE DRIVE.

Ecological: MARITIME CHAPARRAL.

General: OVER 10 PLANTS REPORTED, PROBABLY REFERENCING 1991 MORGAN COLLECTION. FLOWERING PIPERIA ELONGATA SPECIMENS WERE OBSERVED ON "RIDGE NORTH ABOVE VIERRA CANYON ROAD" IN 1996, NO FLOWERING P. YADONII WERE OBSERVED.

Owner/Manager: PVT

Occurrence No.	11	Map Index: 23612	EO Index: 12672	Element Last Seen: 2017-01-XX
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen: 2017-01-XX
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated: 2018-10-25

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.79997 / -121.67338	Accuracy:	specific area
UTM:	Zone-10 N4073503 E618349	Elevation (ft):	350
PLSS:	T13S, R03E, Sec. 18 (M)	Acres:	164.0

Location: MANZANITA PARK, NORTH OF PRUNEDALE.

Detailed Location: NEAR BALLFIELDS AND RIDGES TO EAST WITHIN MANZANITA PARK. MAPPED AS 3 POLYGONS BASED ON MAPS FROM 1996-2013, AND 2010 PRESTON COORDINATES.

Ecological: MARITIME CHAPARRAL. SPIKES OF PLANTS WERE EXPOSED TO FULL SUN, GROWING UP THROUGH PROSTRATE MATS OF ARCTOSTAPHYLOS HOOKERI AND A. PAJAROENSIS. ALSO ASSOCIATED WITH ADENOSTOMA FASCICULATUM, SPIRANTHES ROMANZOFFIANA, AND DUDLEYA LANCEOLATA.

General: 30+ PLANTS REPORTED PRIOR TO 1992; 3,080 PLANTS ACROSS SITE IN 1996; 100+ PLANTS IN SMALL PORTION IN 2007; <100 PLANTS AT NE END IN 2010; OBSERVED IN 2013 & "ABOVE THE POND" IN 2017. INCLUDES FORMER EO #30.

Owner/Manager: MNT COUNTY, PVT



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Occurrence No.	12	Map Index: A3454	EO Index: 7361	Element Last Seen:	2001-06-01
Occ. Rank:	Excellent		Presence: Presumed Extant	Site Last Seen:	2001-06-01
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-02-07
Quad Summary:	Prunedale (3612176), Moss Landing (3612177)				
County Summary:	Monterey				
Lat/Long:	36.85064 / -121.73138		Accuracy:	non-specific area	
UTM:	Zone-10 N4079055 E613100		Elevation (ft):	350	
PLSS:	T12S, R02E, Sec. 34 (M)		Acres:	561.0	
Location:	BLOHM, RENTERIA, AND BROTHERS RANCHES, SOUTH OF LAS LOMAS.				
Detailed Location:	MAPPED AS 3 POLYGONS. TWO WESTERN POLYGONS (BLOHM RANCH) ARE SPECIFIC AND BASED ON 1996 ALLEN MAPS. EASTERN CIRCULAR POLYGON IS NON-SPECIFIC BASED ON A 2005 NOTE WHICH INDICATES P. YADONII OCCURS ON THE RENTERIA AND BROTHERS RANCHES.				
Ecological:	MARITIME CHAPARRAL. OTHER RARE SPECIES INCLUDE ARCTOSTAPHYLOS PAJAROENSIS, A. HOOKERI SSP. HOOKERI, CHORIZANTHE PUNGENS VAR. PUNGENS, ERICAMERIA FASCICULATA, AND CEANOTHUS CUNEATUS VAR. RIGIDUS.				
General:	OVER 50 PLANTS SEEN CIRCA 1992. 0 PLANTS IN 1994, 1000 PLANTS IN 1995. ABOUT 9500 VEGETATIVE PLANTS ON BLOHM RANCH AND RIDGES SOUTH OF BLOHM RANCH IN 1996. UNKNOWN NUMBER IN 2001. BETTER LOCATION INFO NEEDED. INCLUDES FORMER OCCURRENCE #32.				
Owner/Manager:	TNC-ELKHORN SLOUGH RES, ESF				
Occurrence No.	13	Map Index: 23611	EO Index: 12670	Element Last Seen:	1996-07-21
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1996-07-21
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-02-06
Quad Summary:	Prunedale (3612176)				
County Summary:	Monterey				
Lat/Long:	36.82944 / -121.68689		Accuracy:	specific area	
UTM:	Zone-10 N4076756 E617099		Elevation (ft):	550	
PLSS:	T13S, R03E, Sec. 6, W (M)		Acres:	119.0	
Location:	BETWEEN THE EAST END OF TUCKER ROAD AND SAN MIGUEL CANYON, NORTHWEST OF PRUNEDALE.				
Detailed Location:	MAPPED AS TWO POLYGONS ACCORDING TO A 1996 ALLEN MAP.				
Ecological:	CHAPARRAL.				
General:	OVER 150 PLANTS WITH FLOWERING STALKS REPORTED IN 1993 COMMUNICATION (DATE OF OBSERVATION UNKNOWN). 2241 PLANTS OBSERVED IN 1996. A 1992 MORGAN COLLECTION FROM "LONG VALLEY" IS ALSO ATTRIBUTED TO THIS SITE.				
Owner/Manager:	PVT				



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Occurrence No.	22	Map Index: A3399	EO Index: 59069	Element Last Seen:	2014-07-03
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2014-07-03
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2017-01-27

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.78288 / -121.65929	Accuracy:	specific area
UTM:	Zone-10 N4071625 E619633	Elevation (ft):	250
PLSS:	T13S, R03E, Sec. 20 (M)	Acres:	30.0

Location: JUST NE OF PRUNEDALE, BETWEEN PESANTE CANYON AND BERTA CANYON.

Detailed Location: SEVERAL COLONIES MAPPED ALONG EAST-WEST TENDING RIDGES JUST NE OF PRUNEDALE, DUE EAST OF 101 AND SOUTH OF BERTA CANYON.

Ecological: MARITIME CHAPARRAL ON SANDSTONE ROCK OUTCROP AND S-FACING SLOPES. OTHER RARE SPP INCLUDE ARCTOSTAPHYLOS HOOKERI, A. PAJAROENSIS, CHORIZANTHE PUNGENS, ERICAMERIA FASCICULATA, LOMATIUM PARVIFLORUM, AND PIPERIA MICHAELII.

General: POPULATION NUMBERS FOR PORTIONS OF OCCURRENCES: 3500+ PLANTS SEEN IN 2004, 15 PLANTS IN 2005, 2000 PLANTS SEEN IN 2007, UNKNOWN NUMBER IN 2013 AND 2014.

Owner/Manager: PVT

Occurrence No.	31	Map Index: B1247	EO Index: 113142	Element Last Seen:	2017-06-12
Occ. Rank:	Good		Presence: Presumed Extant	Site Last Seen:	2017-06-12
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2018-10-25

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long:	36.80707 / -121.69112	Accuracy:	specific area
UTM:	Zone-10 N4074269 E616755	Elevation (ft):	350
PLSS:	T13S, R02E, Sec. 13, NE (M)	Acres:	15.0

Location: WHITEHEAD PROPERTY, JUST NORTH OF MANZANITA REGIONAL PARK.

Detailed Location: MAPPED AS 2 POLYGONS ACCORDING TO 2017 NEUBAUER COORDINATES, IN THE NE 1/4 OF THE NE 1/4 OF SECTION 13 AND THE NORTH 1/2 OF THE NW 1/4 OF SECTION 18.

Ecological: GENERALLY IN OPENINGS IN ARCTOSTAPHYLOS HOOKERI SSP. HOOKERI MARITIME CHAPARRAL OR UNDER QUERCUS AGRIFOLIA VAR. AGRIFOLIA. ASSOCIATED WITH ADENOSTOMA FASCICULATUM, HETEROMELES ARBUTIFOLIA, ERIOPHYLLUM CONFERTIFLORUM, ETC.

General: REPORTED FROM THE WHITEHEAD PROPERTY BY VAN DYKE (2005). IN 2017, EASTERN POLYGON HAD ABOUT 7 PLANTS AND WESTERN POLYGON HAD ABOUT 76 PLANTS.

Owner/Manager: PVT?



Multiple Occurrences per Page
California Department of Fish and Wildlife
California Natural Diversity Database



Occurrence No.	36	Map Index:	A3337	EO Index:	105039	Element Last Seen:	2008-06-26
Occ. Rank:	Good	Presence:	Presumed Extant	Site Last Seen:		2008-06-26	
Occ. Type:	Natural/Native occurrence	Trend:	Unknown	Record Last Updated:		2017-01-18	

Quad Summary: Prunedale (3612176)

County Summary: Monterey

Lat/Long: 36.79851 / -121.63799

Accuracy: specific area

UTM: Zone-10 N4073386 E621508

Elevation (ft): 490

PLSS: T13S, R03E, Sec. 16, SE (M)

Acres: 1.0

Location: 19260 REAVIS WAY, OFF THE SOUTH SIDE OF VIERRA CANYON ROAD, PRUNEDALE.

Detailed Location:

Ecological: MARITIME CHAPARRAL. ASSOCIATES IN IMMEDIATE AREA INCLUDE ARCTOSTAPHYLOS HOOKERI AND ADENOSTOMA FASCICULATUM. MOST OF THE PARCEL IS DOMINATED BY ARCTOSTAPHYLOS PAJAROENSIS.

General: ABOUT 250 VEGETATIVE PLANTS OBSERVED IN MARCH OF 2008, FEWER THAN 10 OF THOSE PLANTS WERE OBSERVED BLOOMING IN JUNE OF 2008.

Owner/Manager: PVT



Multiple Occurrences per Page
California Department of Fish and Wildlife
California Natural Diversity Database



<i>Puccinellia simplex</i>		Element Code: PMPOA53110	
California alkali grass			
Listing Status:	Federal: None	CNDDB Element Ranks:	Global: G3
	State: None		State: S2
	Other: Rare Plant Rank - 1B.2, BLM_S-Sensitive		
Habitat:	General: MEADOWS AND SEEPS, CHENOPOD SCRUB, VALLEY AND FOOTHILL GRASSLANDS, VERNAL POOLS.		
	Micro: ALKALINE, VERNALLY MESIC. SINKS, FLATS, AND LAKE MARGINS. 1-915 M.		


Occurrence No.	31	Map Index: 53706	EO Index: 100183	Element Last Seen:	1992-04-09
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	1992-04-09
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2016-01-08
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Clara				
Lat/Long:	36.93168 / -121.5874		Accuracy:	2/5 mile	
UTM:	Zone-10 N4088226 E625804		Elevation (ft):	340	
PLSS:	T11S, R03E, Sec. 36 (M)		Acres:	280.0	
Location:	NORTH OF TAR CREEK, ABOUT 4.5 MILES SOUTH OF GILROY, SANTA CRUZ MOUNTAINS.				
Detailed Location:	MAPPED MOSTLY WITHIN THE SE 1/4 OF SECTION 36 ACCORDING TO A VAGUE 1992 PRESTON MAP.				
Ecological:	IN SEEP/SPRING WITH HORDEUM DEPRESSUM AND ELEOCHARIS. THE RARE CASTILLEJA RUBICUNDULA VAR. RUBICUNDULA ALSO SEEN AT THIS SITE.				
General:	UNKNOWN NUMBER OF PLANTS OBSERVED IN 1992.				
Owner/Manager:	PVT				



Occurrence No.	32	Map Index: 98719	EO Index: 100185	Element Last Seen:	2006-05-03
Occ. Rank:	Unknown		Presence: Presumed Extant	Site Last Seen:	2006-05-03
Occ. Type:	Natural/Native occurrence		Trend: Unknown	Record Last Updated:	2016-01-07
Quad Summary:	Chittenden (3612185)				
County Summary:	Santa Cruz				
Lat/Long:	36.90766 / -121.60417		Accuracy:	2/5 mile	
UTM:	Zone-10 N4085538 E624349		Elevation (ft):	200	
PLSS:	T12S, R03E, Sec. 11, NE (M)		Acres:	280.0	
Location:	SODA LAKE AND IN VALLEY TO THE EAST OF SODA LAKE.				
Detailed Location:	MAPPED AS BEST GUESS BY CNDDDB AROUND SODA LAKE AND OPEN AREA JUST TO THE EAST. BASED ON TWO COLLECTIONS FROM SODA LAKE AND "IN VALLEY EAST OF SODA LAKE."				
Ecological:	GROWING WITH P. NUTTALLIANA. HABITAT IS "FULL OF LOCAL RARITIES."				
General:	SITE IS BASED ON 2004 AND 2006 COLLECTIONS BY MORGAN.				
Owner/Manager:	UNKNOWN				







Search Results


38 matches found. Click on scientific name for details

Search Criteria: [CRPR](#) is one of [1A:1B:2A:2B] [Fed List](#) is one of [FE:FT:FC:FD:None] or [State List](#) is one of [CE:CT:CR:CE:CT:4:None] , [Quad](#) is one of [3612185:3712116:3712115:3712114:3612184:3612186:3612176:3612175:3612174]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	PHOTO
<u><i>Arctostaphylos andersonii</i></u>	Anderson's manzanita	Ericaceae	perennial evergreen shrub	Nov-May	None	None	G2	S2	1B.2	 © 2018 Jason Matthias Mills
<u><i>Arctostaphylos hookeri ssp. hookeri</i></u>	Hooker's manzanita	Ericaceae	perennial evergreen shrub	Jan-Jun	None	None	G3T2	S2	1B.2	 © 2011 Chris Winchell
<u><i>Arctostaphylos pajaroensis</i></u>	Pajaro manzanita	Ericaceae	perennial evergreen shrub	Dec-Mar	None	None	G1	S1	1B.1	No Photo Available
<u><i>Astragalus tener</i> var. <i>tener</i></u>	alkali milk-vetch	Fabaceae	annual herb	Mar-Jun	None	None	G2T1	S1	1B.2	No Photo Available
<u><i>Balsamorhiza macrolepis</i></u>	big-scale balsamroot	Asteraceae	perennial herb	Mar-Jun	None	None	G2	S2	1B.2	 ©1998 Dean Wm. Taylor
<u><i>Campanula exigua</i></u>	chaparral harebell	Campanulaceae	annual herb	May-Jun	None	None	G2	S2	1B.2	No Photo Available
<u><i>Castilleja rubicundula</i> var. <i>rubicundula</i></u>	pink creamsacs	Orobanchaceae	annual herb (hemiparasitic)	Apr-Jun	None	None	G5T2	S2	1B.2	 ©2010 Vernon Smith
<u><i>Centromadia parryi ssp. congdonii</i></u>	Congdon's tarplant	Asteraceae	annual herb	May-Oct(Nov)	None	None	G3T1T2	S1S2	1B.1	No Photo Available
<u><i>Chorizanthe pungens</i> var. <i>pungens</i></u>	Monterey spineflower	Polygonaceae	annual herb	Apr-Jun(Jul-Aug)	FT	None	G2T2	S2	1B.2	No Photo Available

<u><i>Cirsium fontinale</i></u> var. <u><i>campylon</i></u>	Mt. Hamilton thistle	Asteraceae	perennial herb	(Feb)Apr-Oct	None	None	G2T2	S2	1B.2	No Photo Available
<u><i>Collinsia multicolor</i></u>	San Francisco collinsia	Plantaginaceae	annual herb	(Feb)Mar-May	None	None	G2	S2	1B.2	No Photo Available
<u><i>Cordylanthus rigidus</i></u> ssp. <u><i>littoralis</i></u>	seaside bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Apr-Oct	None	CE	G5T2	S2	1B.1	No Photo Available
<u><i>Deinandra halliana</i></u>	Hall's tarplant	Asteraceae	annual herb	(Mar)Apr-May	None	None	G3	S3	1B.1	No Photo Available
<u><i>Delphinium californicum</i></u> ssp. <u><i>interius</i></u>	Hospital Canyon larkspur	Ranunculaceae	perennial herb	Apr-Jun	None	None	G3T3	S3	1B.2	No Photo Available
<u><i>Dudleya abramsii</i></u> ssp. <u><i>setchellii</i></u>	Santa Clara Valley dudleya	Crassulaceae	perennial herb	Apr-Oct	FE	None	G4T2	S2	1B.1	No Photo Available
<u><i>Ericameria fasciculata</i></u>	Eastwood's goldenbush	Asteraceae	perennial evergreen shrub	Jul-Oct	None	None	G2	S2	1B.1	No Photo Available
<u><i>Eriogonum nortonii</i></u>	Pinnacles buckwheat	Polygonaceae	annual herb	(Apr)Aug(Sep)May-Jun	None	None	G2	S2	1B.3	No Photo Available
<u><i>Eryngium aristulatum</i></u> var. <u><i>hooveri</i></u>	Hoover's button-celery	Apiaceae	annual/perennial herb	(Jun)Jul(Aug)	None	None	G5T1	S1	1B.1	No Photo Available
<u><i>Extriplex joaquinana</i></u>	San Joaquin spearscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G2	S2	1B.2	No Photo Available
<u><i>Fritillaria liliacea</i></u>	fragrant fritillary	Liliaceae	perennial bulbiferous herb	Feb-Apr	None	None	G2	S2	1B.2	 © 2004 Carol W. Witham
<u><i>Hoita strobilina</i></u>	Loma Prieta hoita	Fabaceae	perennial herb	May-Jul(Aug-Oct)	None	None	G2?	S2?	1B.1	 © 2004 Janel Hillman
<u><i>Holocarpha macradenia</i></u>	Santa Cruz tarplant	Asteraceae	annual herb	Jun-Oct	FT	CE	G1	S1	1B.1	 © 2011 Dylan

<u><i>Horkelia cuneata</i></u> var. <u><i>sericea</i></u>	Kellogg's horkelia	Rosaceae	perennial herb	Apr-Sep	None	None	G4T1?	S1?	1B.1	 © 2018 Neal Kramer
<u><i>Legenere limosa</i></u>	legenere	Campanulaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.1	 ©2000 John Game
<u><i>Lessingia micradenia</i></u> var. <u><i>glabrata</i></u>	smooth lessingia	Asteraceae	annual herb	(Apr-Jun)Jul-Nov	None	None	G2T2	S2	1B.2	 © 2015 Aaron Schusteff
<u><i>Malacothamnus aboriginum</i></u>	Indian Valley bush-mallow	Malvaceae	perennial deciduous shrub	Apr-Oct	None	None	G3	S3	1B.2	 © 2009 Keir Morse
<u><i>Malacothamnus arcuatus</i></u>	arcuate bush-mallow	Malvaceae	perennial deciduous shrub	Apr-Sep	None	None	G2Q	S2	1B.2	 © 2017 Keir Morse
<u><i>Monolopia gracilens</i></u>	woodland woollythreads	Asteraceae	annual herb	(Feb)Mar-Jul	None	None	G3	S3	1B.2	 © 2016 Richard Spellenberg
<u><i>Navarretia prostrata</i></u>	prostrate vernal pool navarretia	Polemoniaceae	annual herb	Apr-Jul	None	None	G2	S2	1B.2	No Photo Available
<u><i>Penstemon rattanii</i></u> var. <u><i>kleei</i></u>	Santa Cruz Mountains beardtongue	Plantaginaceae	perennial herb	May-Jun	None	None	G4T2	S2	1B.2	No Photo Available
<u><i>Pinus radiata</i></u>	Monterey pine	Pinaceae	perennial evergreen tree		None	None	G1	S1	1B.1	No Photo Available
<u><i>Piperia yadonii</i></u>	Yadon's rein orchid	Orchidaceae	perennial herb	(Feb)May-Aug	FE	None	G1	S1	1B.1	No Photo Available
<u><i>Plagiobothrys diffusus</i></u>	San Francisco popcornflower	Boraginaceae	annual herb	Mar-Jun	None	CE	G1Q	S1	1B.1	No Photo Available
<u><i>Plagiobothrys</i></u>	hairless	Boraginaceae	annual herb	Mar-May	None	None	GX	SX	1A	

<i>glaber</i>	popcornflower										No Photo Available
<i>Puccinellia simplex</i>	California alkali grass	Poaceae	annual herb	Mar-May	None	None	G3	S2	1B.2		No Photo Available
<i>Rosa pinetorum</i>	pine rose	Rosaceae	perennial shrub	May-Jul	None	None	G2	S2	1B.2		No Photo Available
<i>Streptanthus albidus ssp. peramoenus</i>	most beautiful jewelflower	Brassicaceae	annual herb	(Mar)Apr-Sep(Oct)	None	None	G2T2	S2	1B.2		© 1994 Robert E. Preston, Ph.D.
<i>Trifolium hydrophilum</i>	saline clover	Fabaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.2		No Photo Available

Showing 1 to 38 of 38 entries

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Send questions and comments to rareplants@cnps.org.

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Developed by
Rincon Consultants, Inc.

Appendix D – Energy Supporting Information

Contains:

- 2022 Power Use Comparison: CASP and eASP versus CTI Composting (ECS)



engineered**COMPOST**systems

Estimated Power Use Comparison: ECS Primary CASP & Secondary ASP versus CTI Bags

Model Date 11/16/2022
By Chris Hibbard, Tim O'Neill
Project Name Z-Best, Zanker Recycling
Client Contact John Doyle

	Retention Time	Throughput (7 day basis)	Total Air Delivered During Retention Time	Air Delivery Ratio	Est. Annual Power Consumption	kWhr/ton Ratio	Power Consumption per Daily Tonnage
System	days	tons/day	cubic ft air / ton feedstock	ECS : CTI	kWh/Year	ECS : CTI	kWh/tons/day
CTI Bag System	98	625	45,075	9 : 1	851,862	4 : 1	1,400
ECS CASP Primary & Curing	38	1578	389,000		8,151,000		5,165

Appendix E – Hydrology and Water Quality Supporting Information

Contains:

- 2020 Peer Review of Selected Water Quality and Hydrology Reports (Tetra Tech)
- 2022 Updated Floodplain Storage Analysis for Z-Best Compost Facility (Schaaf & Wheeler)
- 2022 Clarification of Previous Hydrology and Water Supply Analyses (Golder)
- 2022 Further Clarification of Previous Hydrology and Water Supply Analyses (Golder) and 2022 Water Supply Evaluation (Golder)
- 2022 Groundwater Drawdown Evaluation Memorandum (Golder)
- 2023 Detention Basin Evaluation (AECOM)
- 2023 Flood Frequency Evaluation (AECOM)

To: Ron Sissem, EMC Planning

From: Sujoy Roy, Ph.D. and Michael Unga

Date: 3/13/2020

Subject: Peer Review of Select Hydrology and Water Quality Technical Analyses from the Z-Best Project Applicant

The Z-Best Compositing Facility in Gilroy, CA is in the process of obtaining permits to expand their operations by converting the existing Municipal Solid Waste (MSW) composting system to an Engineered Compost System (ECS) using an aerated floor technology. They are in ongoing negotiations with the Santa Clara County Planning and County Land Development Engineering to address outstanding issues, which include those involving surface and groundwater hydrology and water quality. Tetra Tech has been tasked to assist in reviewing these issues by performing six tasks, listed below, that will be described and addressed in this memorandum.

1. Evaluate the proposed modified holding capacity of Detention Basin #1 based on the proposed as-built dimensions and elevations of the basin and ascertain whether it will be of sufficient volume to accommodate runoff from the project site under design storm conditions pursuant to the 2015 SWQCB Compost Order;
2. Review the proposed ECS CASP composting system specifications/design and proposed increase in feedstock input volume to ascertain whether the project has potential to increase leachate volume or leachate concentration in improved Detention Pond #1 relative to existing operations. Discuss potential environment effects of such increases, if any;
3. Review the project plans/ECS system design to determine adequacy of storm water runoff and leachate collection improvements planned for delivering both from the ECS system pad location to Detention Basin #1 in terms of volume and potential effects on surface and groundwater quality;
4. Qualitatively discuss the change in potential for groundwater contamination under existing Detention Basin #1 conditions (unlined) and under post Detention Pond #1 improvement conditions where the pond will be lined as required by the 2015 Compost Order;
5. Evaluate the future effect of sediment accumulation on the holding capacity of modified Detention Basin #1 and discuss maintenance activities that may be required to maintain holding capacity. Discuss disposal needs/requirements for excavated sediment as needed;
6. Review the applicant's specifications for the proposed new flood water storage facility located at the northern boundary of Area 2. Evaluate the applicant's revised No Net Fill/No Rise Certification to verify the adequacy of the flood storage facility design. Identify any other design issues for the storage facility which should be investigated to assess potential environmental impacts, if any; and
7. Prepare letter report with conclusions of document review and additional analysis. (This letter.)

The following table of acronyms and abbreviations are provided to clarify specific terms and to make the report easier to read by decreasing the repetition of lengthy expressions.

Acronyms and Abbreviations

BAAQMD	Bay Area Air Quality Management District
BGS	Below Ground Surface
Basin 1	Proposed Detention Basin #1 to be constructed with a liner
BFE	Base Flood Elevation based on NAVD88
BOD	Biological Oxygen Demand
CASP	Covered Aerated Static Pile
CCR	California Code of Regulations
CTI	Composite Technology International
eASP	Extended bed Aerated Static Pile
ECS	Engineered Compost Systems
EGWCA	Existing Green Waste Composting Area
Green Material	Defined in 14 CCR §17852(v) as any plant material that is separated at the point of generation, contains no greater than 1 percent of physical contaminants by weight, and meets the requirements of section 17868.5.
MSW	Mixed Solid Waste
NAVD88	North American Vertical Datum of 1988
NOP	Notice Of Preparation
SCCGOV	Santa Clara County <i>Department of Planning and Development</i>
TDS	Total Dissolved Solids
TPD	Tons Per Day
Z-Best	Z-Best Composting Facility

A description of each task is listed in italicized text, followed by a summary of the conclusions, and a detailed discussion and response to the Task.

Task 1. *Evaluate the proposed modified holding capacity of Detention Basin #1 based on the proposed as-built dimensions and elevations of the basin and ascertain whether it will be of sufficient volume to accommodate runoff from the project site under design storm conditions pursuant to the 2015 SWQCB Compost Order;*

Conclusion-Tetra Tech’s volume estimate for new Basin 1 is virtually identical to that given in Golder (2019, Drawing 12), of 12,264,500 gallons. The 100-year and 25-year storm event volume calculations are consistent with estimates reported by Golder, and if the detention basin is empty, storm runoff from both storms can be contained, as required by the 2015 State Board Compost Order.

Detention Basin 1 receives stormwater from Area 1, identified to be 70.2 acres (2016 Golder Technical Report, Appendix B). The 2015 State Board Compost Order requires a “detention pond, containment berm, and drainage conveyance systems to contain a 25-year, 24-hour peak storm event.” For the specific location of the facility (36.9520° Latitude; -121.5268° Longitude), NOAA Atlas 14 estimates a 24-hour 25-year rainfall of 4.78 inches, and a 100-year rainfall of 6.3 inches (https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html). The runoff coefficient estimated by Golder (of 0.72) is reasonable for the mix of surfaces in the facility. Based on the rainfall magnitudes and receiving water area of Area 1 and direct precipitation to an area equal to the original Detention Pond 1 (6.5 acres), the stormwater volumes are estimated as follows:

- 100-year event: 9.76 million gallons
- 25-year event: 7.34 million gallons

This is consistent with the 100-year estimate provided in Golder 2018 memorandum titled “Detention Basin 1 Water Balance Calculations-100 year, 24-hour Storm Event.”

The proposed Basin 1 is stated in Golder (2019, Drawing 12) to have a holding capacity of 12,264,500 gallons for leachate and stormwater. The bottom elevation is given as 134.5 feet and the upper water level elevation is given as 148.5 feet, which corresponds to the BFE of 148.4 feet. The Basin is also shown to be constructed with an additional 2 feet of freeboard above the BFE value.

Tetra Tech independently estimated the holding capacity of the new Basin 1 by digitizing the one-foot contour lines from the basin diagram shown in Golder (2019, Drawing 12) and re-scaled using the scale bar located in the lower right corner of the drawing. These digitized areas were multiplied by the differences in elevation between each contoured layer and then summed to give the total volume. This estimate was within 2 percent of the 12,264,500-gallon volume listed in the comment field of the drawing. Tetra Tech concludes that the new Basin 1 drawing from in Golder (2019, Drawing 12) has the capacity to hold 12,264,000 gallons.

Based on the above calculations, Tetra Tech independently estimates that the proposed Detention Basin 1, if empty, can store runoff from a 100-year or a 25-year storm event. This is the design basis required in the 2015 State Board Compost Order

(https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2015/wqo2015_0121_dwq.pdf).

However, it is important to confirm that the basin is empty following the proposed lining for this project. Observations from 16 years of archived Google Earth images of the old Basin 1 indicate that the basin surface remained 100 percent covered with liquid during the months of Nov 2002, July 2003, July 2004, Nov 2004, Aug 2005, Dec 2005, Aug 2006, June 2007, Oct 2007, Sept 2010, Nov 2010, Sept 2011, Nov 2016, and Sept 2017. These photographic observations are contrary to the Golder (2016) water balance prediction that the old Basin 1 would be empty in May and remain dry until January of the following year due to the high potential evaporation rate. In part, this discrepancy is attributed not to rainfall but to groundwater seepage, which occurred because of the unlined nature of the historical pond and the relatively high groundwater table. In future, with the lining of Detention Basin 1, it is expected that this seepage will be minimized and that the pond will be dry during several months of the year when minimal rainfall and high potential evaporation rates occur.

Task 2. *Review the proposed ECS CASP composting system specifications/design and proposed increase in feedstock input volume to ascertain whether the project has potential to increase leachate volume or leachate concentration in improved Detention Pond #1 relative to existing operations. Discuss potential environment effects of such increases, if any;*

Conclusion-Tetra Tech concurs there will be substantially less leachate volume entering the new Basin 1 per ton of processed compost. The increased tonnage capacity of the facility will be countered by the lower per ton leachate volume, such that the total leachate generation may not be higher than produced in the present facility. The final effect on leachate concentration in Basin 1 is not very clear but the concentrations will most likely increase over time as the leachate evaporates and is recycled for dust control and compost moisturization. Regardless of change in water quality, the lining of Detention Pond 1 will prevent the release of these liquids into groundwater.

It appears there will be substantially less leachate volume going into the new Basin 1 per ton of compost processed. This is based on the proposed changes listed above for the CASP portion of Area 1. Golder (2016) states that Z-Best is currently permitted to accept a maximum of 1,500 tons/day (TPD) with a total permitted capacity of 576,000 cubic yards. The proposed project seeks to increase the maximum daily throughput from 1,500 to 2,750 TPD. In terms of leachate collection, the ECS system produces a composting process that is more aerated than the current CTI system being used. Golder (2019, Drawing 9) illustrates the design for a negative aeration system along the undersurface of every CASP bunker and below grade floor details of the eASP section in Area 1. Furthermore, Golder (2019, Drawing 7) illustrates the construction of a French drain, storm drain pipelines, collection sumps, drainage pump stations, and concrete curbs throughout the CASP region of Area 1. This will result in the generation of leachate with a lower volume of runoff liquid (from 25 to 75% less). The specific volume of leachate will depend on the total composted materials and the actual gain in efficiency of leachate generation, but assuming an approximate halving of the leachate generation and an approximate doubling of throughput and capacity, it is possible that there is not much net change in the leachate volume produced.

The water quality of the leachate is another aspect to be considered once the new project is implemented. The only known set of leachate samples taken from the old Basin 1 were collected on July 2, 2014, analyzed, and reported by BC LAB (2014). The leachate samples clearly indicate elevated concentrations in water analysis for general chemistry constituents (e.g., BOD, Ca, Cl, K, Na, P, & TDS). It should be obvious that the mass of chemicals leached out from the compost will increase approximately in proportion to the mass of compost being processed by the facility. Leachate is generated during the complex process of adding moisture to the compost, collecting excess

moisture generated during the digestion process, capture and adding the stormwater runoff from approximately 45 acres of surface soils, dust, and compost particulate in Area 1, and from the concentration of non-volatile chemicals by atmospheric evaporation from pooled leachate in the new basin. This is further complicated by the addition of rainfall directly into the approximate 3.5-acre surface area of the basin and the mixing of fresh groundwater and recycled leachate pumped from the basin before its use in Area 1 of the facility. There is no simple way to predict the change in leachate concentration over time in the old Basin 1 because the leachate flowing into the basin could become diluted with the addition of direct rainfall over its six acre surface area; recycled when pumped out for plant reuse in dust control and compost moisturization; and become more concentrated when its water content evaporates to the atmosphere. The impact on leachate concentration in Basin 1 is not very clear but it is reasonable to expect that it will increase over time as leachate evaporates and is recycled for dust control and compost moisturization. However, even if the concentrations are higher, the construction of the lined Detention Pond 1 will prevent the release of these liquids into groundwater.

Task 3. *Review the project plans/ECS system design to determine adequacy of storm water runoff and leachate collection improvements planned for delivering both from the ECS system pad location to Detention Basin #1 in terms of volume and potential effects on surface and groundwater quality;*

Conclusion-Stormwater and excess leachate from the project area is intercepted and conveyed to Detention Basin 1. The capacity of this basin is adequate to handle storm flows and minimize the potential of water quality impacts to the Pajaro River. Tetra Tech discovered an oversight issue in the most recent Golder (2019) drawings such that no conveyance or pump system is shown within the EGWCA portion of Area 1 to capture stormwater runoff or leachate and transfer it to the new Basin 1.

Currently, all stormwater runoff from Area 1 is intercepted and routed along ditches its southern boundary and discharged through a culvert into the northwest corner of the old Basin 1. During the wet season, the volumetric capacity of Detention Pond 1 is sufficient to handle large storm flows (25-year and 100-year storms) as well as excess leachate created during the composting process. During the dry season, water may need to be applied to the compost, from Detention Pond 1 or from groundwater. In terms of water quality, additional adverse effects to surface water and groundwater in future are not expected because of the construction of an adequately sized and lined detention basin. (See caveat below for EGWCA area, where no changes are planned, but there is a need for a pump to transfer water to the new Detention Pond 1.) Note that this comment specifically addresses impacts as consequences of future changes to the facility, and not to legacy impacts to groundwater, which are not addressed through this project.

For the future of Basin 1, Golder (2019, Drawings 4 and 7) shows no French drains, storm drains, drainage pipes, or pump stations extending into or within the EGWCA. As a result, all stormwater and leachate runoff from EGWCA will simply flow downgradient along the 20-foot access roads and overland to the southeast corner of the EGWCA. The ground surface in the southeastern corner of the EGWCA is at least five feet below the top of the berm for both the new Basin 1 and the existing Detention Basin 2. Hence, overland stormflow and leachate will bypass both basins and discharge directly into the southern border of the property boundary. Z-Best responded in SCCGOV (2019) to the apparent oversight to intercept stormwater runoff from the Green Waste portion of Area 1. They state that a pump system would be installed to deliver stormwater up and over the proposed berm of the new Basin 1. However, this pump system or any other conveyance system to intercept stormwater in EGWCA are not yet shown in the most recent Golder (2019) drawings.

Task 4. *Qualitatively discuss the change in potential for groundwater contamination under existing Detention Basin #1 conditions (unlined) and under post Detention Pond #1 improvement conditions where the pond will be lined as required by the 2015 Compost Order.;*

Conclusion- The lining of Detention Pond 1 will stop the percolation of leachate into groundwater, and thus minimize future new groundwater quality impacts from the facility. Tetra Tech concludes that simply removing 1/3 the length of the old Basin 1 sediment will have little impact on the legacy concentration of leachate chemicals in the local groundwater and their movement. This project does not address legacy contamination present in groundwater at the site.

Golder (2015, 2016) states “The site is situated on Holocene-age alluvial deposits from modern stream flow and floodplain processes. The site is mapped as underlain by Medium-grained Alluvium [labeled as a type Qham soil] which is described as unconsolidated, moderately sorted, moderately permeable fine sand, silt, and clayey silt with occasional thin beds of sand.” However, five test pits in Area 2 reveal soils in the top six feet to be more fine-grained and clay-rich than “Qham” soils.

When the old Basin 1 was first constructed, it had a surface area of approximately 6.3 acres and a capacity to hold approximately 1.34 million gallons (Golder, 2017). The basin has been used to store stormwater runoff, intercepted surface eroded materials, and recycled compost leachate for more than 19 years. As shown in Golder (2017, Drawing 3), Basin 1 was constructed without a liner. The most western end of the basin was dug to an approximate elevation of 134 feet compared to the local ground surface of 145 feet. There is no apparent reference for the sloping sides of Basin 1 having been treated by any special method that would have limited the horizontal flow through those portions of the basin sides that are below the local ground surface. Hence, there always has been the potential for horizontal seepage both out of and back into the basin. According to Golder (2016), the local groundwater table was encountered at depths between 6 and 8 feet BGS in May 2013 and between 5 and 8 feet BGS in May 2016. In comparison, the bottom of Basin 1 lies between 8 and 10 feet BGS. This suggests there has been the potential for leachate to escape horizontally into the water table and that the basin bottom lies below the water table during portions of the year. In confirmation of this hypothesis, it should be noted from the discussion related to Task 2 above that archived Google Earth images clearing indicate the bottom of Basin 1 to be 100% covered with liquid during the May-to-January period for many years despite being subjected to high potential evaporation rates.

In the future, approximately a 1/3 length of the current Basin 1 will be dug up and replaced with a new lined basin that is both deeper and higher. Sediment in the remaining 2/3 length of the current basin will be left in place, the basin filled with dirt to the local ground surface, and the top surface planted with grass. *Going forward*, this will effectively block the percolation of liquid from the pond into the surrounding groundwater.

Legacy contamination in bottom section of the pond to be filled in, and in the groundwater will remain, and not be affected by this project. Because of the long-term exposure to leachate runoff, one should expect the soil sediment along the bottom of the basin to have soil concentrations for non-volatile chemicals that are in equilibrium with the maximum leachate concentrations. These contaminated sediments will leach out their chemical concentrations into the bottom of the old basin and ultimately into the local groundwater if the contaminated sediment is exposed to either rainstorm water or to re-circulating groundwater. There are no published records of groundwater samples

having been taken near Basin 1. Because of close proximity of the local water table to the bottom of Basin 1 and the 19-year period in which Basin 1 was used, the potential for two-way flow of liquids into and out of the basin, the large acreage of the source, and small seepage velocity of the groundwater, one would also expect to find shallow groundwater concentrations to approach those of the leachate concentrations in Basin 1.

Task 5. *Evaluate the future effect of sediment accumulation on the holding capacity of modified Detention Basin #1 and discuss maintenance activities that may be required to maintain holding capacity. Discuss disposal needs/requirements for excavated sediment as needed;*

Conclusion-Sediments will accumulate at the bottom of the Detention Pond 1, although a low rate because of the nature of compost leachate (high dissolved solids and organic materials) and because significant changes in water holding capacity in the existing pond have not been reported. However, some sediment may accumulate and will need to be tracked over time. Sediment removal, if needed, must be performed with hand tools to not damage the line. Sediment disposal must be performed after a chemical analysis of the sediment to test the presence of any contaminants at hazardous levels.

The lined Detention Pond 1 will continue to accumulate sediments present in its inflow at the pond bottom. In theory, the accumulated sediment could reduce effective volume of the pond, and thus its capacity for preventing releases during large storm events. Although the specific depth of sediment accumulated has not been documented, the previous unlined pond has operated for several years without loss of notable storage capacity being reported in any of the project documents made available. This fact, and given the nature of compost leachate with high dissolved solids and organic matter (Chatterjee et al., 2013), suggests that inorganic sediment buildup is expected to occur at a gradual rate. Over time, however, it is possible that the buildup is sufficient and that removal is needed. Because of the need to protect the lined bottom, we are in agreement with the Golder approach of using hand tools to excavate sediments. Further, these sediments need to be analyzed for chemical contaminants, especially trace metals, prior to identifying a suitable location for final disposal.

Task 6. *Review the applicant's specifications for the proposed new flood water storage facility located at the northern boundary of Area 2. Evaluate the applicant's revised No Net Fill/No Rise Certification to verify the adequacy of the flood storage facility design. Identify any other design issues for the storage facility which should be investigated to assess potential environmental impacts, if any;*

Conclusion-Tetra Tech verified that the proposed Flood Storage Basin can indeed hold 34 acre-feet of flood water that is mentioned by Golder (2019, Drawing 5B), and that this is adequate to address the change in capacity noted in the updated Schaaf and Wheeler Floodplain Impact Analysis (2018).

The Z-Best facility lies in the floodplain of the Pajaro River, and Santa Clara County has a no-net fill policy in place for construction activities in the floodplain. To mitigate for the loss of floodplain storage on account of grading activities at the site, Schaaf and Wheeler prepared a Floodplain Impact Analysis and estimated the need for 29 acre-feet of new flood storage at a location north of Highway 25 (2017). They revised their calculations for a new location of the flood water storage of 34 acre-feet, south of Highway 25 contiguous to the Z-Best property (to avoid the need for a highway crossing). This amount of storage was shown to have no net change in the water surface elevation of the Pajaro River, computed using the standard Army Corps of Engineers HEC-RAS model. Tetra Tech is in agreement with the general approach and the calculations.

Golder (2019, Drawing 5B) states in a comment field that the Flood Storage Basin capacity is 34 acre-feet. To compute the flood holding capacity, diagrams from the more detailed illustrations of Golder (2019, Drawing 10C) show the bottom of the Flood Basin with an elevation of 138 feet and the top set at 148.48 feet. The Basin is shown to have a simple rectangular shape and its sides drawn with a 1V/2H slope. Tetra Tech digitized the diagram for Basin 2 given in Golder (2019, Drawing 10C), scaled the measurements, and calculated the volume to be within 1.3 percent of the 34 acre-feet value listed in the comment field of Golder (2019, Drawing 5B). Tetra Tech's independent analysis verifies that the proposed Flood Storage Basin illustrated in Golder (2019) can hold 34 acre-feet of floodwater.

References

BAAQMD, 2018, Notice of Preparation on Z-Best Composting Modifications, received by David Rader, Department of Planning and Development, San Jose, CA, dated Nov 15, 2018.

BC Lab, 2014, Doc "Detention Pond WQ Tests 2014.pdf" giving laboratory results for leachate samples collected from Z-Best Products Detention Pond, sampled on 7/2/2014 and reported on 7/14/2014; 22 pages, by BC Laboratories, Inc., Bakersfield CA.

Chatterjee, N., Flury, M., Hinman, C. and Cogger, C.G., 2013. "Chemical and physical characteristics of compost leachates." A Review Report prepared for the Washington State Department of Transportation. Washington State University.

Edgar, 2008, "Drainage Study and Floodplain Analysis for the Z-Best Composting Facility", 97 pages, prepared by Edgar & Associates, Inc, dated August 29, 2008

Golder, 2015, Doc "GW Monitoring Plan - See Appendix_1-27-16.pdf", 26 pages long. Within this document there is a 24-page report titled "Groundwater Protection Monitoring Plan, Z-Best Composting Facility, Gilroy, California"; dated December 2015, by Golder Associates.

Golder, 2016, Doc "2016-10-11_Technical Report_FINAL-Golder.pdf" labeled Technical Report, Z-Best Composting Facility, dated October 2016, 110 pages. The PDF contains a 13-page document with the subject titled: "Detention Basin 1 and 2 Water Balance Calculation, Revision 1", dated 10/11/2016 by Golder Associates.

Golder, 2017, document titled "Aerated Static Pile Composting Permit Drawings, Z-Best Products, Santa Clara County, Gilroy, California, June 2017", 12 pages, prepared by Golder Associates Inc., Sunnyvale, CA.

Drawing 3, titled: "Existing Site Plan".

Golder, 2019, document labeled the “Aerated Static Pile Composting Preliminary Grading Plan, Z-Best Products, Santa Clara County, Gilroy, California, September 2018”, 15 pages, stamped 3/31/2019; prepared by Golder Associates Inc., Sunnyvale, CA.

Drawing 4, titled: “Existing Site Plan”;

Drawing 5B, titled: “Area 2 Flood Storage Basin”;

Drawing 7, titled: “Grading and Drainage Plan”;

Drawing 9, titled: “Details [for both primary CASP bunkers and secondary eASP piles]”;

Drawing 10C, titled: “Area2 Flood Storage Basin Sections”;

Drawing 12, titled: “Proposed Detention Basin 1- Plan and Section”.

SCCGOV, 2018, “Doc 2A ECS Memo Responses to ZBest EIR Questions_R3.PDF”, has the email subject: “Z-Best Use Permit/ASA EIR Data Needs List (6498-16P), dated July 11, 2018”. This document presents on July 25, 2018 the ECS response to question Q3 from Ron Sisseem concerning ECS Section 36e-Management of Contact Water, 8 pages.

SCCGOV, 2019, “Z-Best Memo 1, Responses to 12-12-18 email re NOP.pdf”, County of Santa Clara, Department of Planning and Development, dated 4/15/2019, Zbest Input/Responses to NOP Comment Period 12-12-18 email request, 8 pages.

Schaaf and Wheeler, 2017, “Floodplain Impact Analysis for Z-Best Compost Facility Expansion near Gilroy” Memo dated, 2/7/2017.

Schaaf and Wheeler, 2017, “Z-Best Compost Facility Phase 2 Expansion” Memo dated, 9/14/2018.

MEMORANDUM

TO: John Doyle
Zanker Road Landfill

DATE: October 25, 2022

FROM: Charles D. Anderson, PE

JOB#: ZANK.04.21

SUBJECT: Updated Floodplain Storage Analysis for Z-Best Compost Facility

Introduction

The Z-Best Compost Facility Expansion Project (Project) consists of two phases. The first phase of work involved grading to provide a level pad for composting operations and balancing excavation to provide a no net fill below the base flood (100-year) elevation. The first phase of the project was analyzed for impacts to the regulatory floodplain in 2012.¹ FEMA issued a Conditional Letter of Map Revision (CLOMR) for the work based on that analysis on January 17, 2013.²

The second phase of work analyzed herein. Phase 2 of the expansion includes additional grading to the west of the Phase 1 area to create a level pad for composting operations (Figure 1). Work also includes, as shown in Figure 2, modifications to the Detention Basin 1 storm water quality basin and berm, the creation of additional floodplain storage between Highway 25 and "Area 1", and the widening of Highway 25 by the State for safer truck operations at the Z-Best site.

Potential impacts to net 100-year floodplain storage and conveyance are analyzed for the complete Project. That is, the post Phase 2 condition is compared to the pre-existing condition before Phase 1 to be sure that floodplain storage below the base flood elevation is no less than before the Project began and that the net placement of Project fill and excavation has not created blockage to flood flows sufficient to cause a significant rise in the base flood elevation.

This analysis supersedes the *No Net Fill/No Rise Certification* memorandum prepared September 14, 2018 to reflect the then-final permit drawings prepared by Golder Associates.

Base Flood Elevation

The Project site location is mapped as Special Flood Hazard Zone A (base flood elevations undetermined) on the effective Flood Insurance Rate Map (FIRM for unincorporated Santa Clara County that has an effective date of May 18, 2009). The referenced CLOMR approved in January 2013 establishes base flood elevations (BFEs) in the area as detailed in the referenced January 18, 2012 report. An effective Flood Insurance Study (FIS) peak discharge of 30,500 cfs was used to model the 100-year flood event on the Pajaro River. Based on this model, which also the basis for the flood impact analyses documented herein, the BFE at the Project site is 148.5 feet NAVD. The model is based on the NGVD datum. The Santa Clara County FIS adds 2.85 feet to elevations on NGVD to obtain elevations on NAVD.

¹ Schaaf & Wheeler, "Z-Best Compost Facility Expansion Flood Impact Certification, Grading, and Flood Study Summary Report," January 18, 2012.

² Case No. 12-09-62641R



Figure 1. Project Phasing

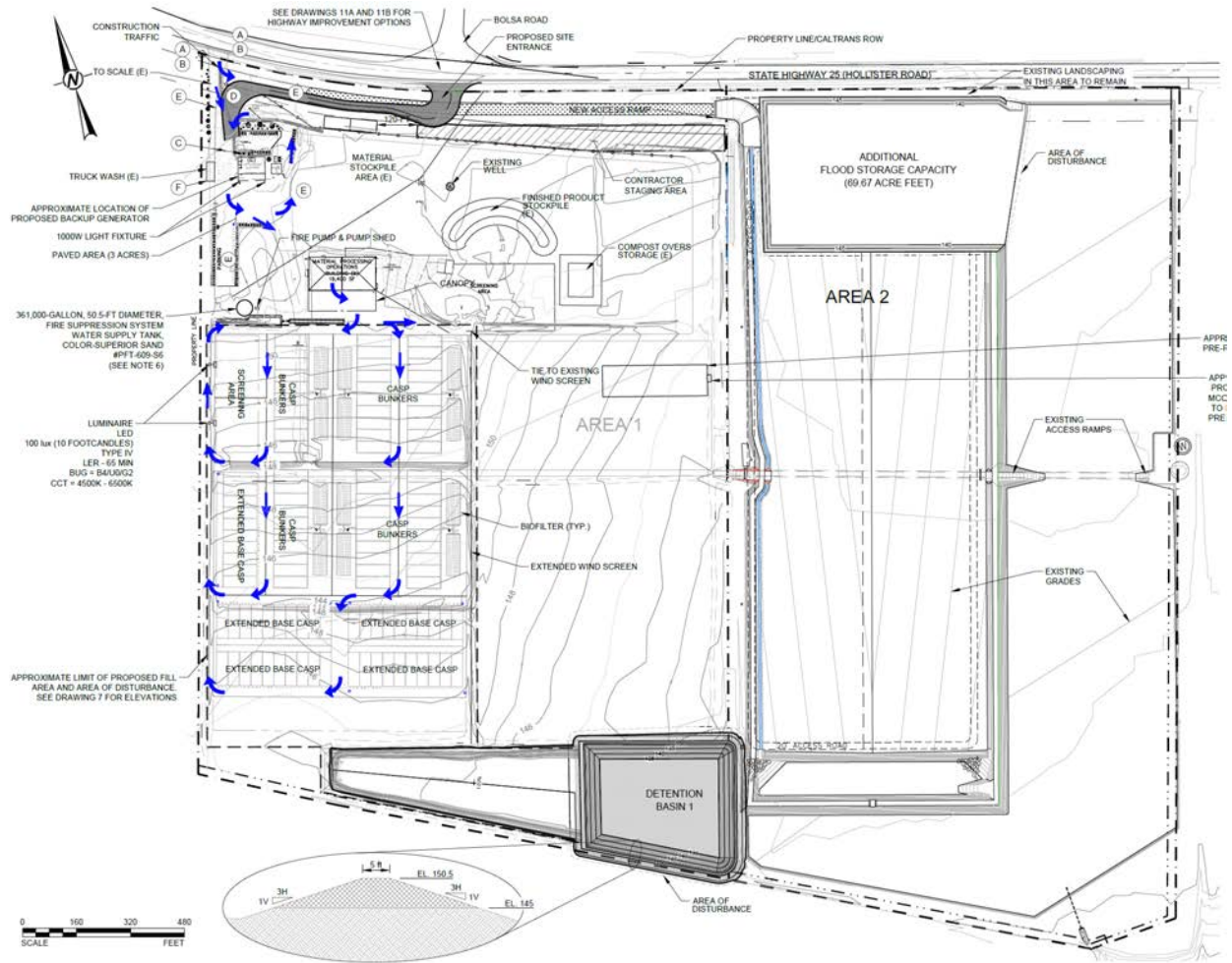


Figure 2. Proposed Site Development Showing Floodplain Storage Areas

Floodplain Storage

Golder Associates used their grading plan and Civil 3D program to calculate the volume of floodplain storage below the base flood elevation displaced by fill or by the bermed area of Detention Basin 1 and the amount of new floodplain storage created below the base flood elevation in Phase 2.

The affected floodplain encompasses both phases of the Z-best facility expansion. In addition, the State of California (Caltrans) will place fill within the same floodplain to complete improvements to California Highway 25 that mitigate for operational changes at the facility. Therefore, volumetric floodplain storage impacts are examined for both phases of the facility expansion and the work on Highway 25 as a net total. That is, the total Project impact with both phases completed compared to the pre-existing floodplain storage. The phasing indicated in Table 1 serves only to describe when the actions are taken.

As indicated by the summary provided as Table 1, there is no net loss of 100-year floodplain storage that would result from the two phases of Project construction and the associated Highway 25 improvements.

Table 1: Net Impact of Z-Best Project on Floodplain Storage

Floodplain storage below BFE removed by Phase 1 fill ³	163.3 acre-feet
Fill placed below BFE for Phase 2 compost pad	23.5 acre-feet
Area removed from 100-year floodplain below BFE due to Detention Basin 1 berms constructed in Phase 2	46.0 acre-feet
Highway 25 fill placed below BFE in Phase 2 (2,435 CY) ⁴	1.5 acre-feet
Floodplain Storage Lost	234.3 acre-feet
On-site excavation below BFE completed in Phase 1 ¹	171.2 acre-feet
Additional Phase 2 excavation proposed below BFE in Area 2	69.7 acre-feet
Additional Floodplain Storage Provided	240.9 acre-feet
Net Additional Floodplain Storage after Project Complete	6.6 acre-feet

Hydraulic Impact Analysis

A steady state hydraulic model of the Pajaro River and its overbanks, representing the pre-existing flood condition was used as the basis for FEMA's Conditional Letter of Map Revision. That same model has been updated to reflect all project changes, both Phase 1 and Phase 2, including modifications to Highway 25 and is used for this updated flood study to evaluate potential floodplain impacts from the Project. Cross sections and ineffective flow areas have been added to the model geometry to capture the changes in topography and flow blockage that results from fill placed below the base flood elevation. Figures 3 through 7 show the changes made to model cross sections caused by the Phase 1 and Phase 2 work, which are taken in combination. Figure 8 shows the ineffective flow areas caused by the placement of previously placed and new fill relative to the pre-existing ground conditions. Area 1, which is ungraded, is the same in both the pre-existing conditions model and post-Project model, noting that some of this cross-sectional flow area is already above the base flood elevation and is effectively blocked in both cases.

³ Schaaf & Wheeler, "Z-Best Compost Facility Expansion; Floodplain Impact Certification, Grading and Flood Study Summary Report," January 18, 2012.

⁴ Email from Richard Haughey, PE, Golder Associates, September 29, 2022.

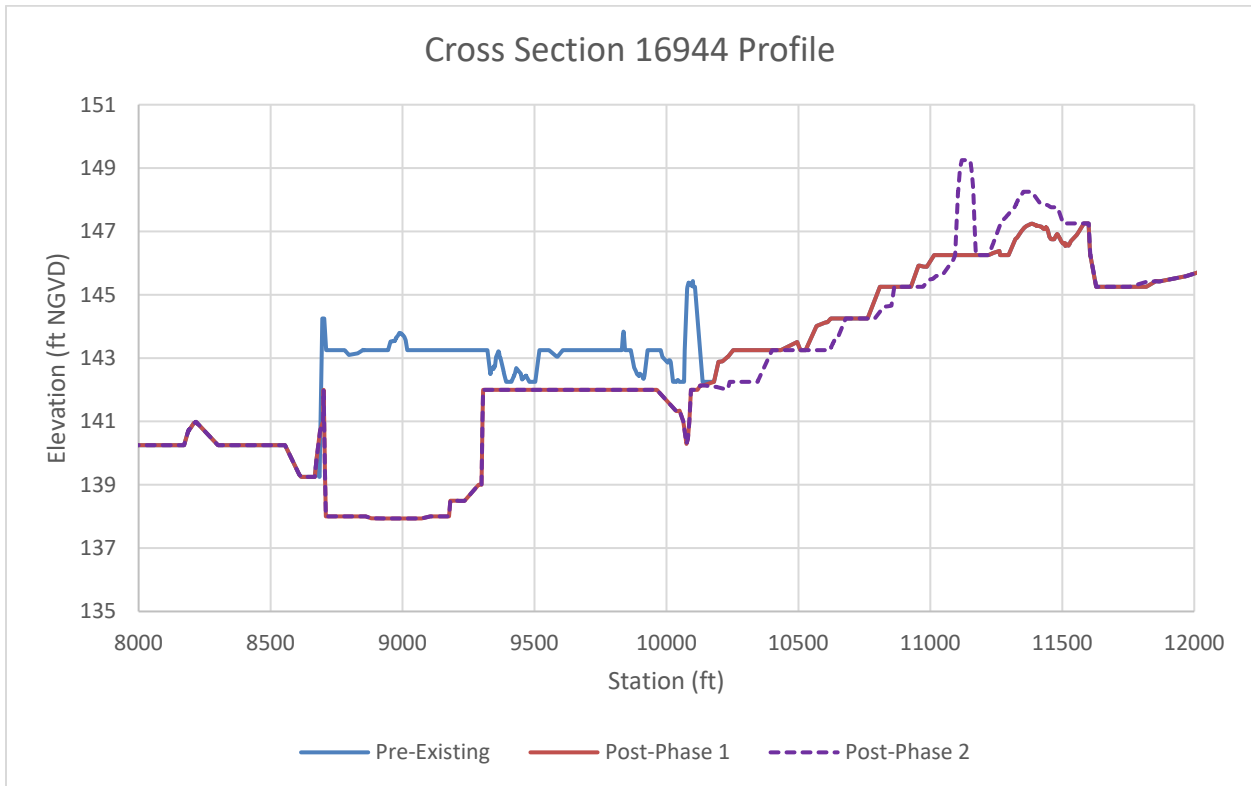
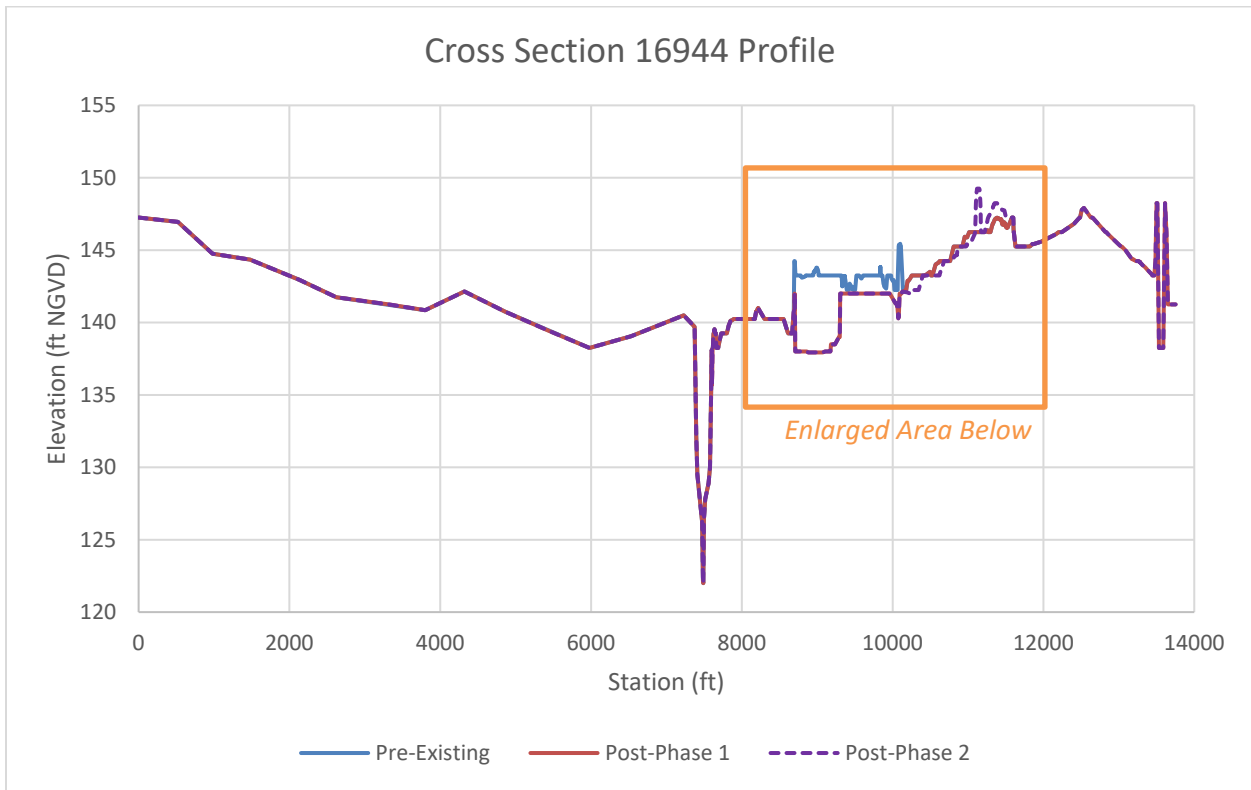


Figure 3. Cross Section Changes to Model Project Improvements

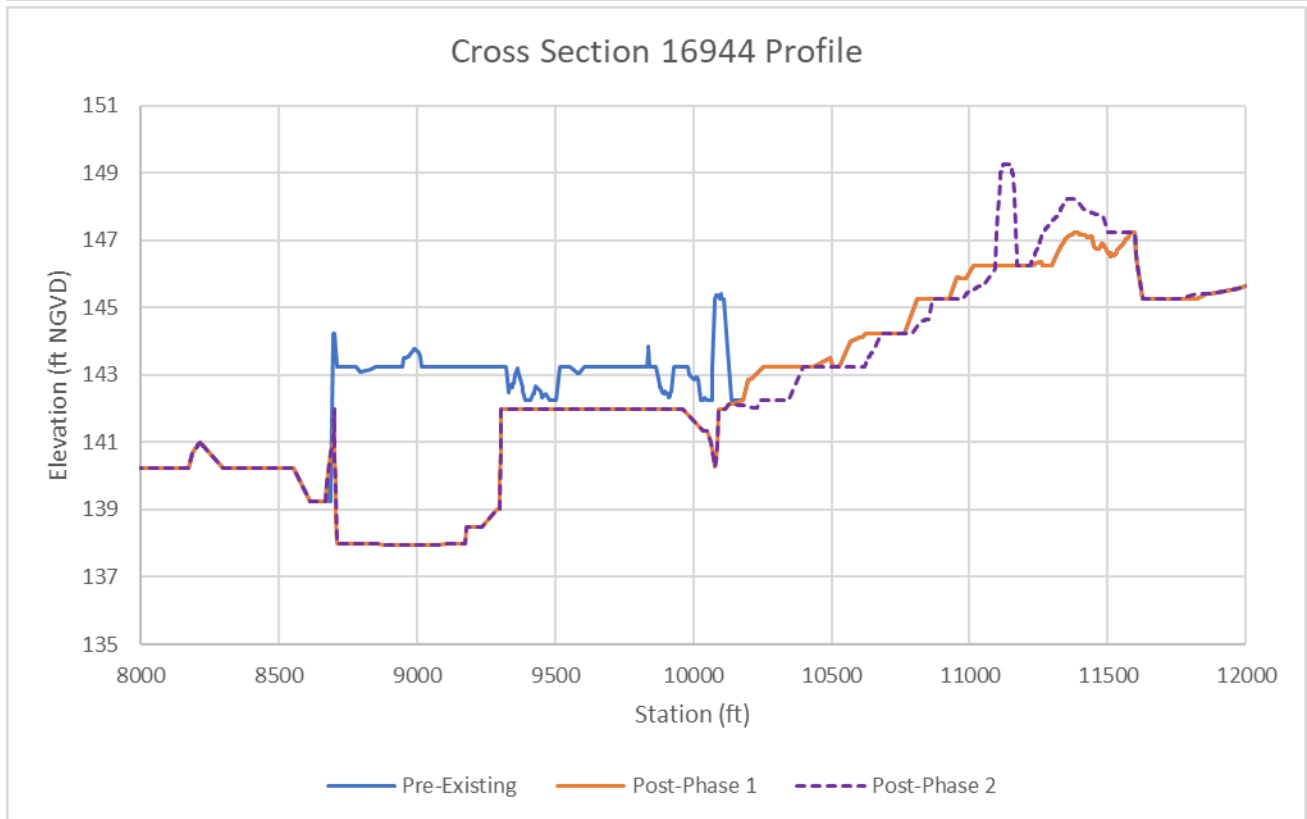
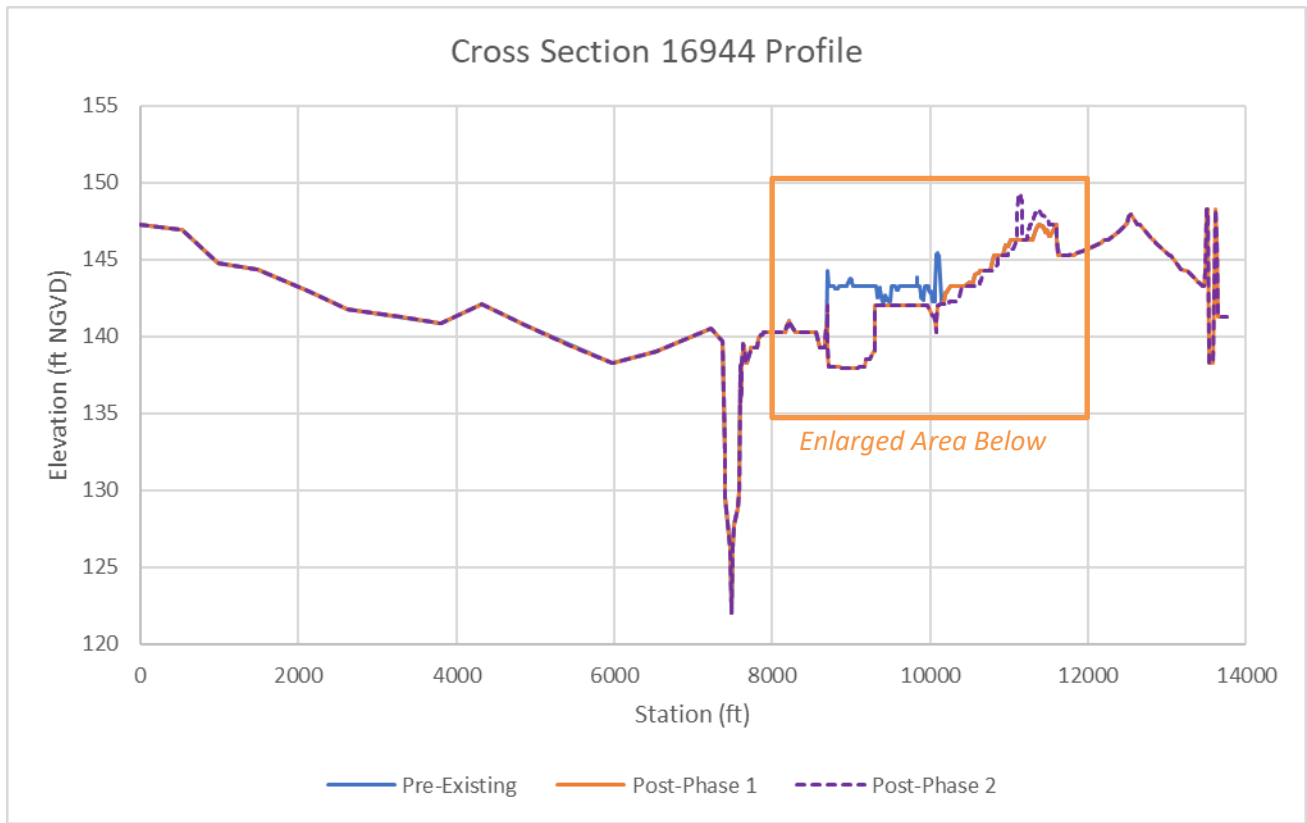


Figure 4. Cross Section Changes to Model Project Improvements

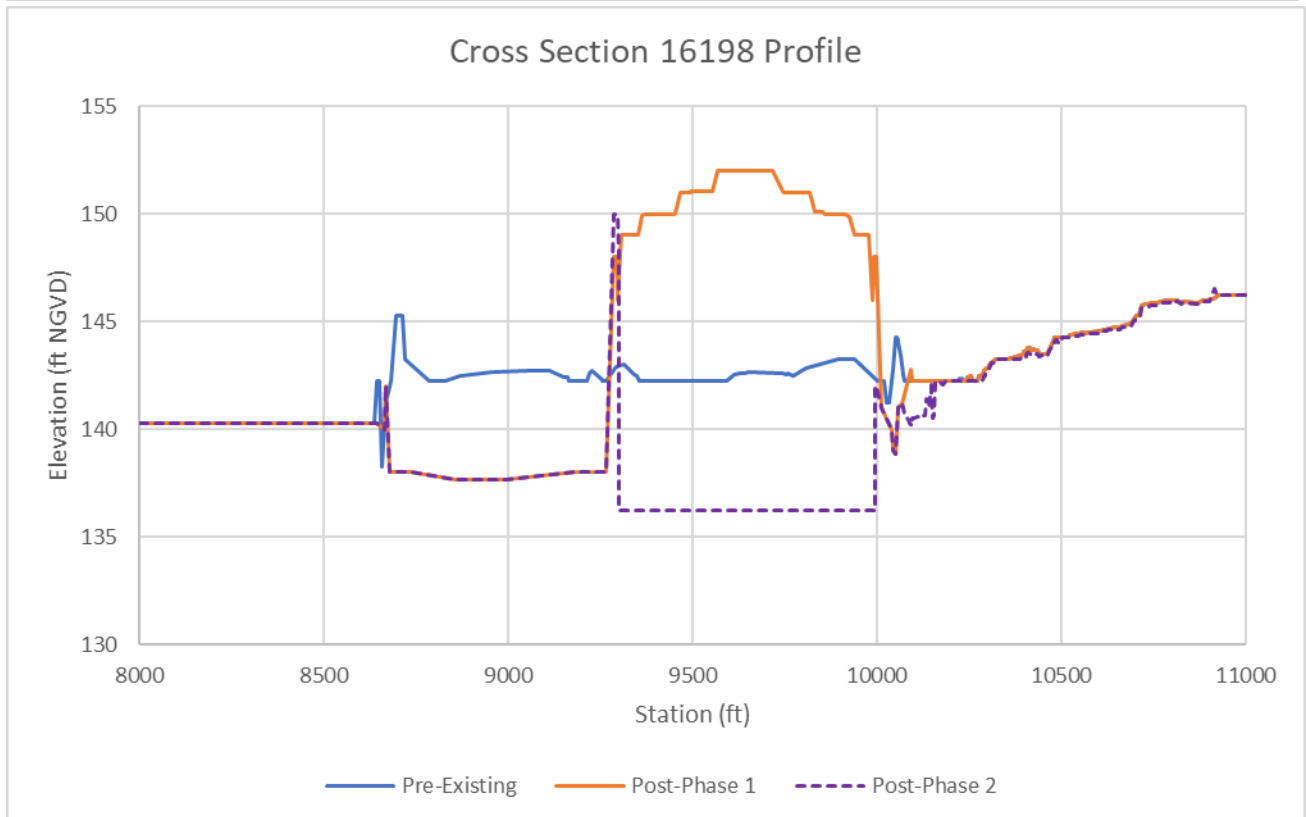
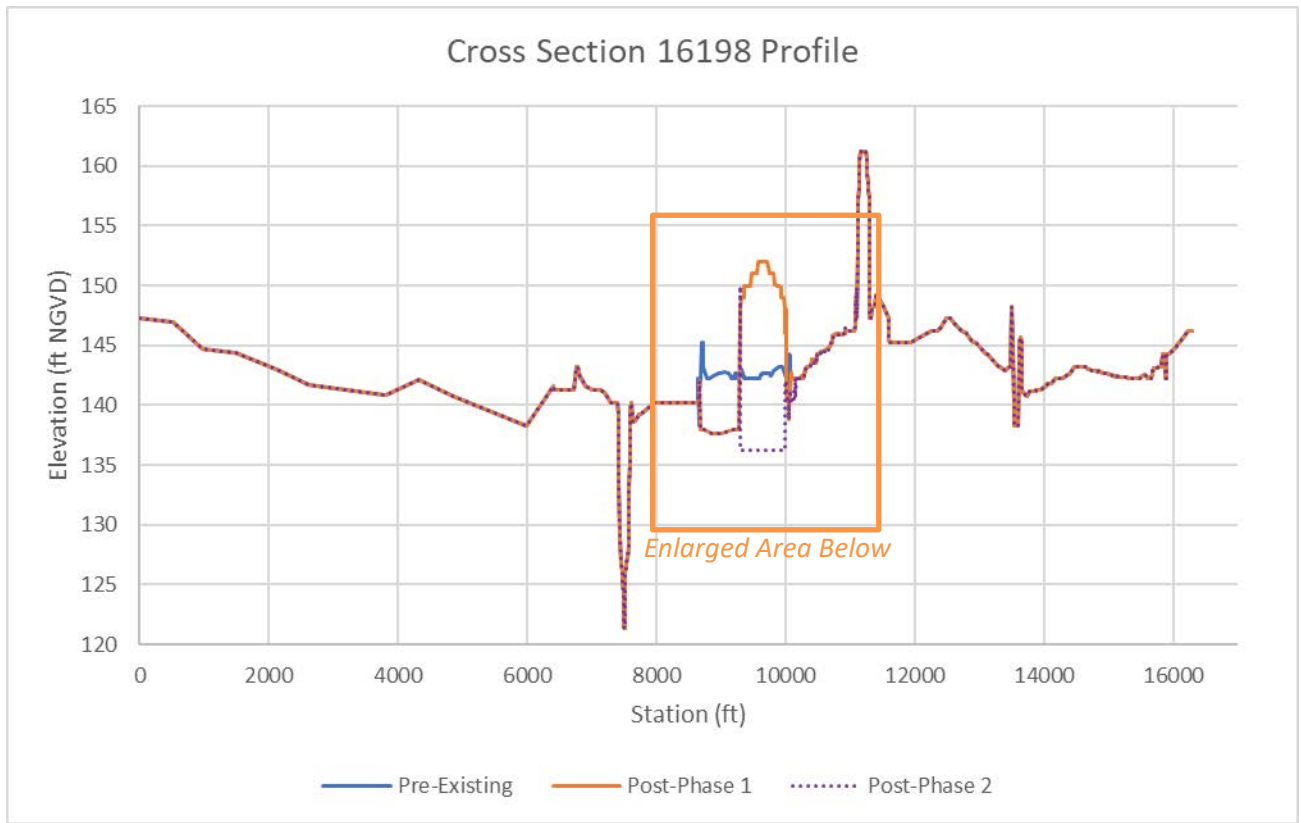


Figure 5. Cross Section Changes to Model Project Improvements

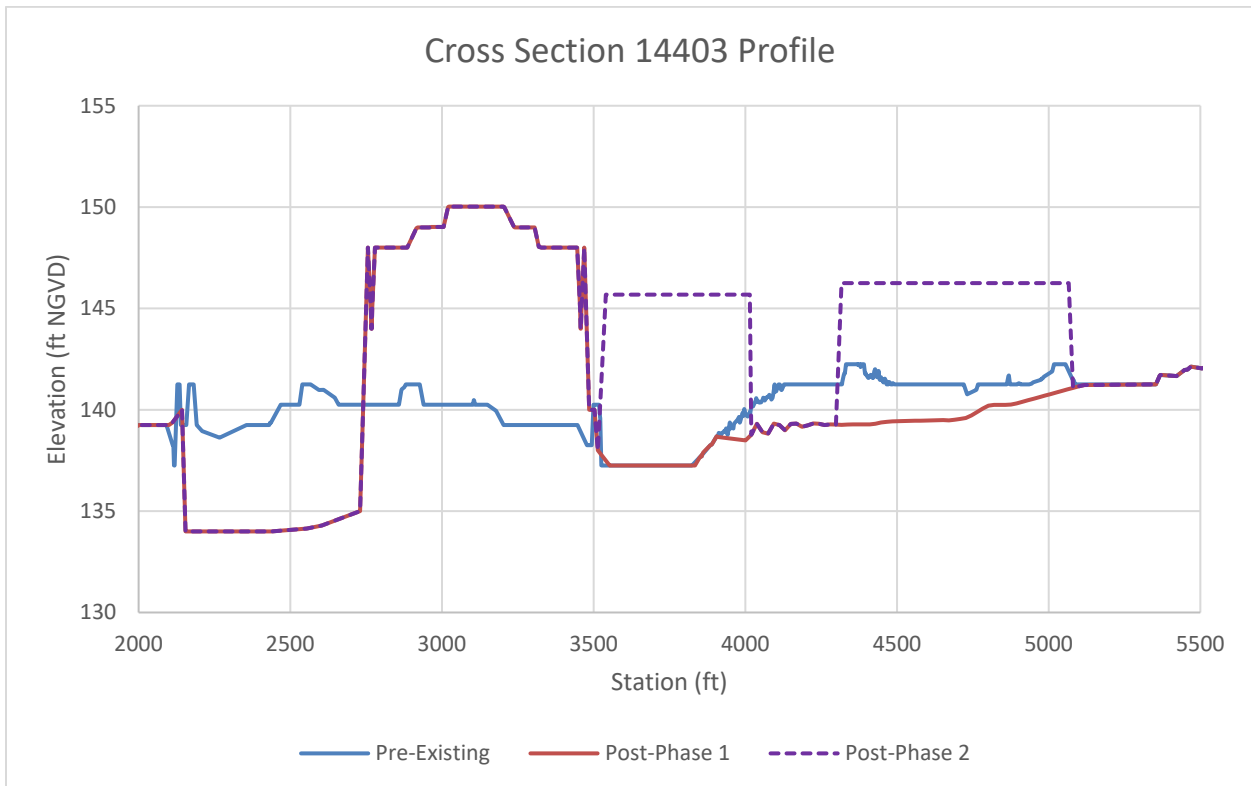
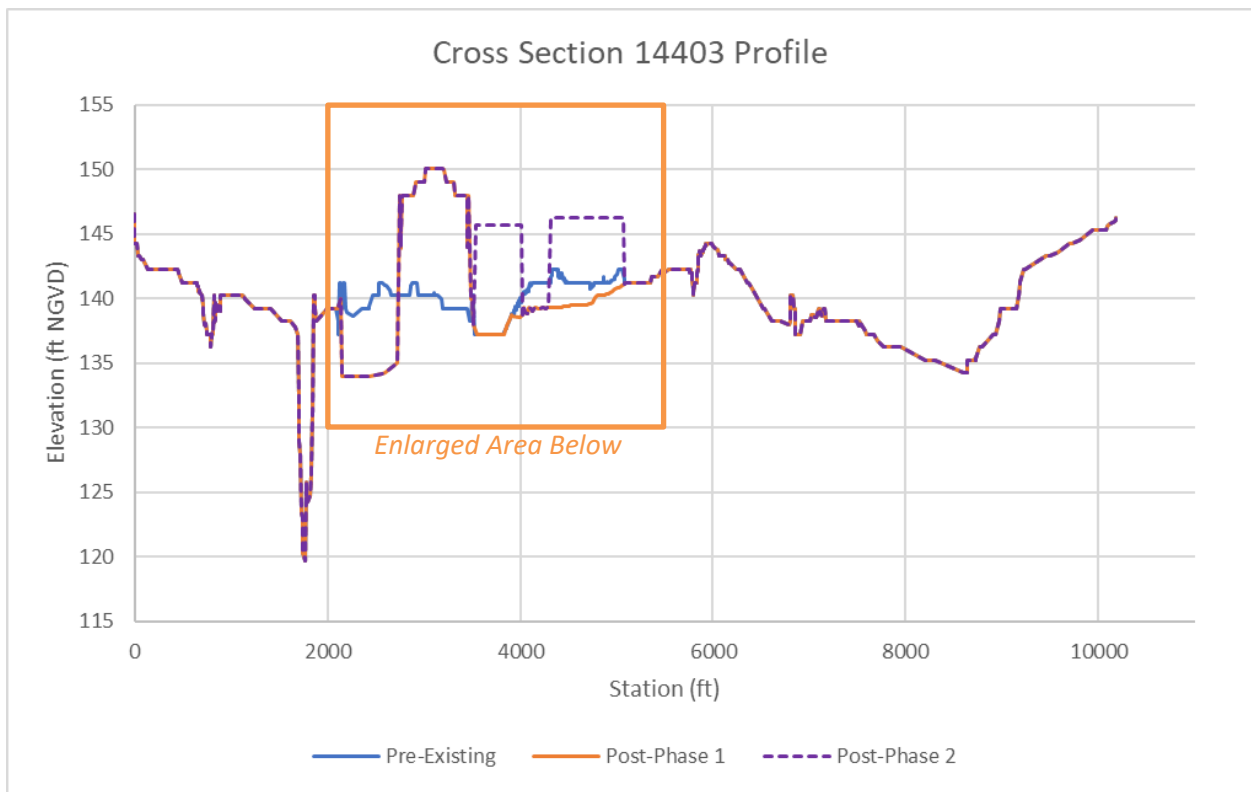


Figure 6. Cross Section Changes to Model Project Improvements

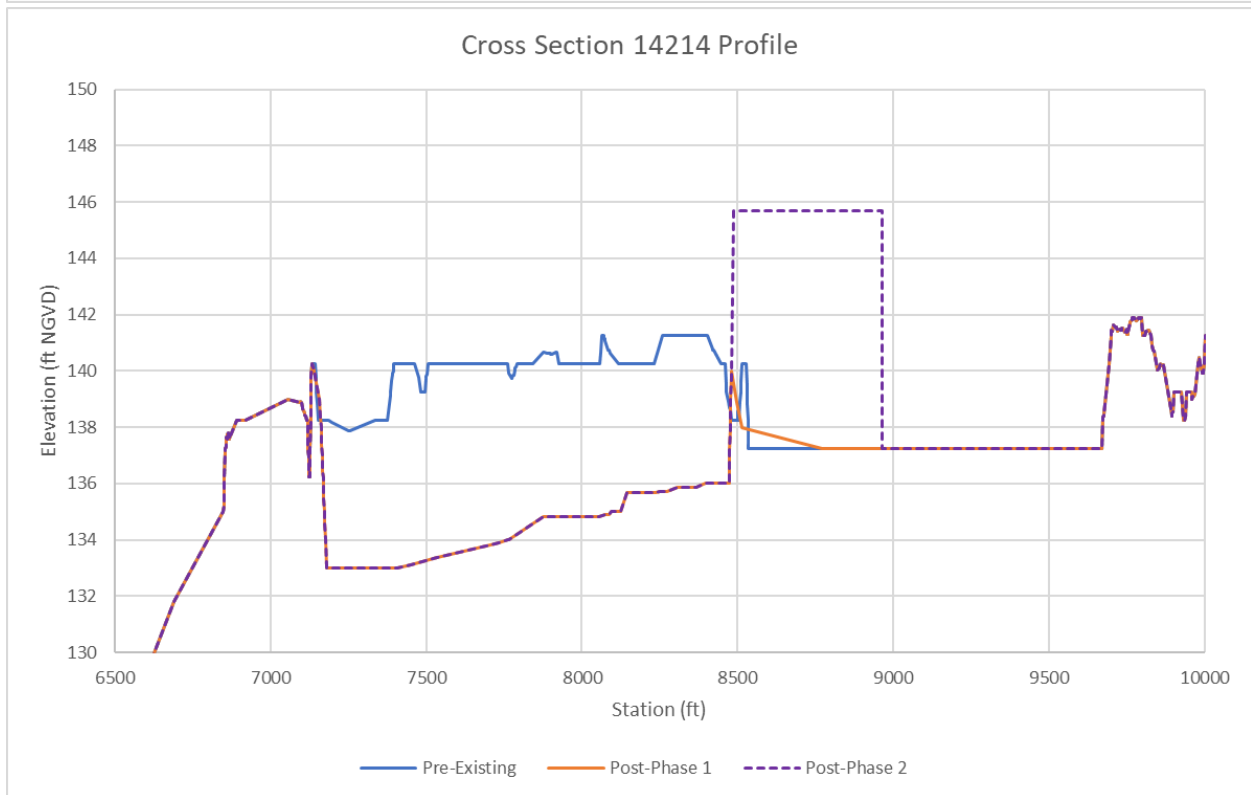
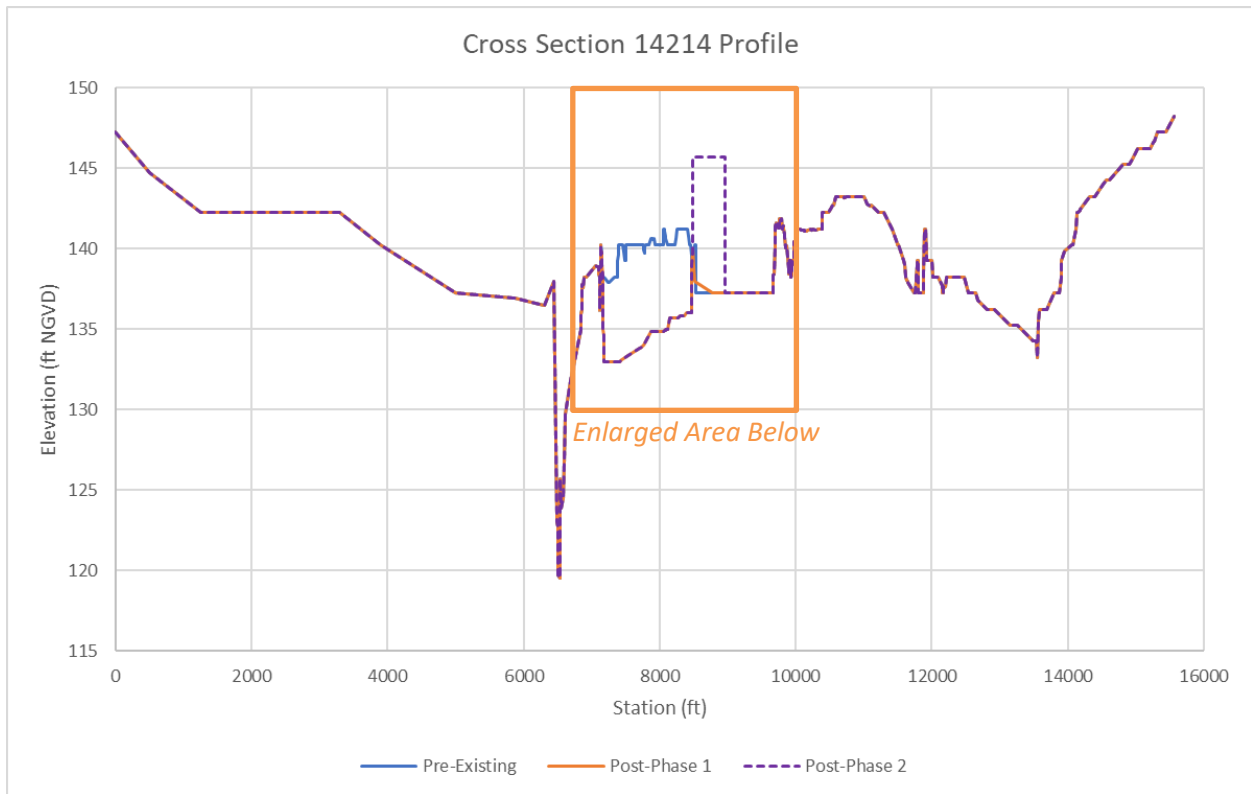


Figure 7. Cross Section Changes to Model Project Improvements

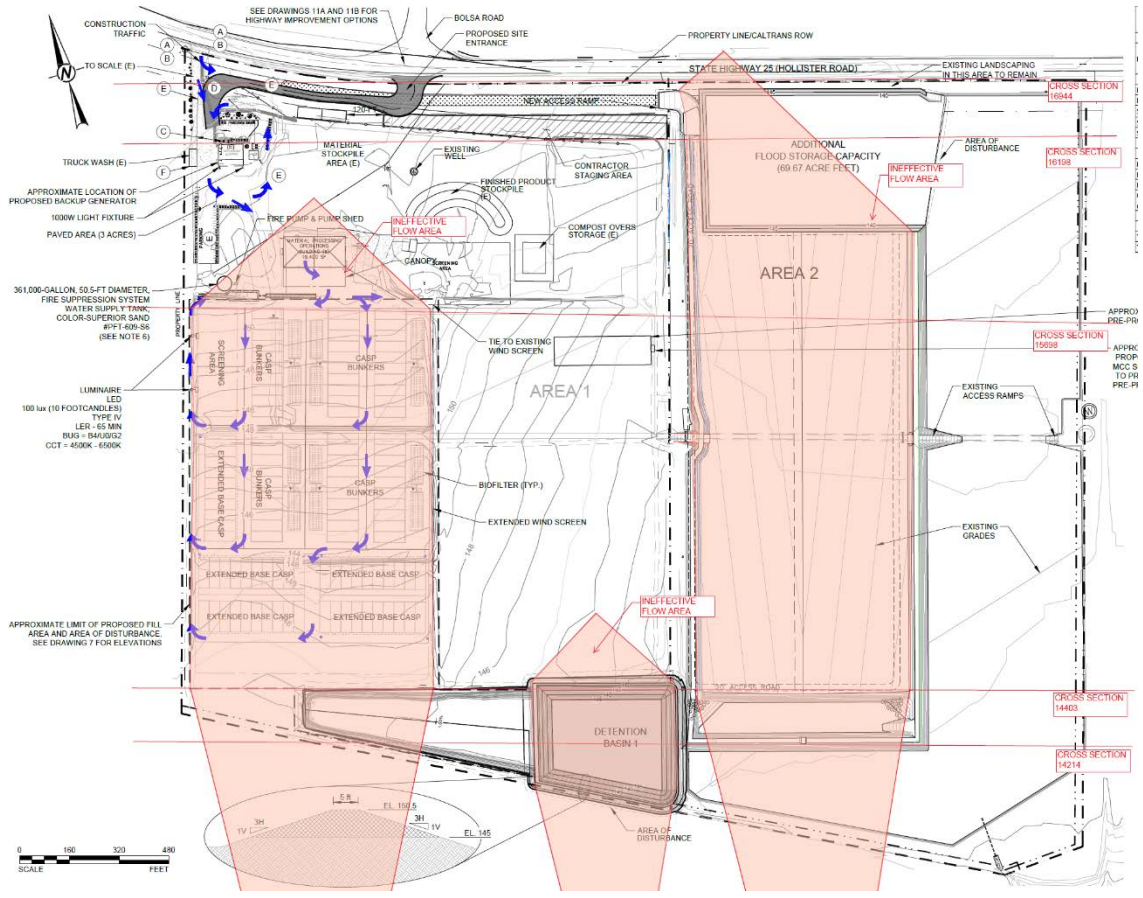


Figure 8. Project Ineffective Flow Area Schematic

Hydraulic Model Results

There is no significant Project impact to the existing water surface elevation. The maximum increase in water surface elevation between the existing and project scenarios is approximately 0.01 foot at a single cross section, which is considered negligible. The local Floodplain Administrator is the County of Santa Clara. The governing floodplain ordinance is Section C12-821:

“Until a regulatory floodway is adopted, no new construction, substantial development, or other development (including fill) shall be permitted within Zones A1–30 and AE, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other development, will not increase the water surface elevation of the base flood more than one foot at any point within Santa Clara County.”

Figure 9 shows the 100-year water surface profile, noting that a 0.01-foot difference cannot be discerned at a reasonable scale. Table 2 summarizes the HEC-RAS model results which compare the pre-project (pre-existing) water surface elevations to post-fill water surface elevations on the NGVD datum.

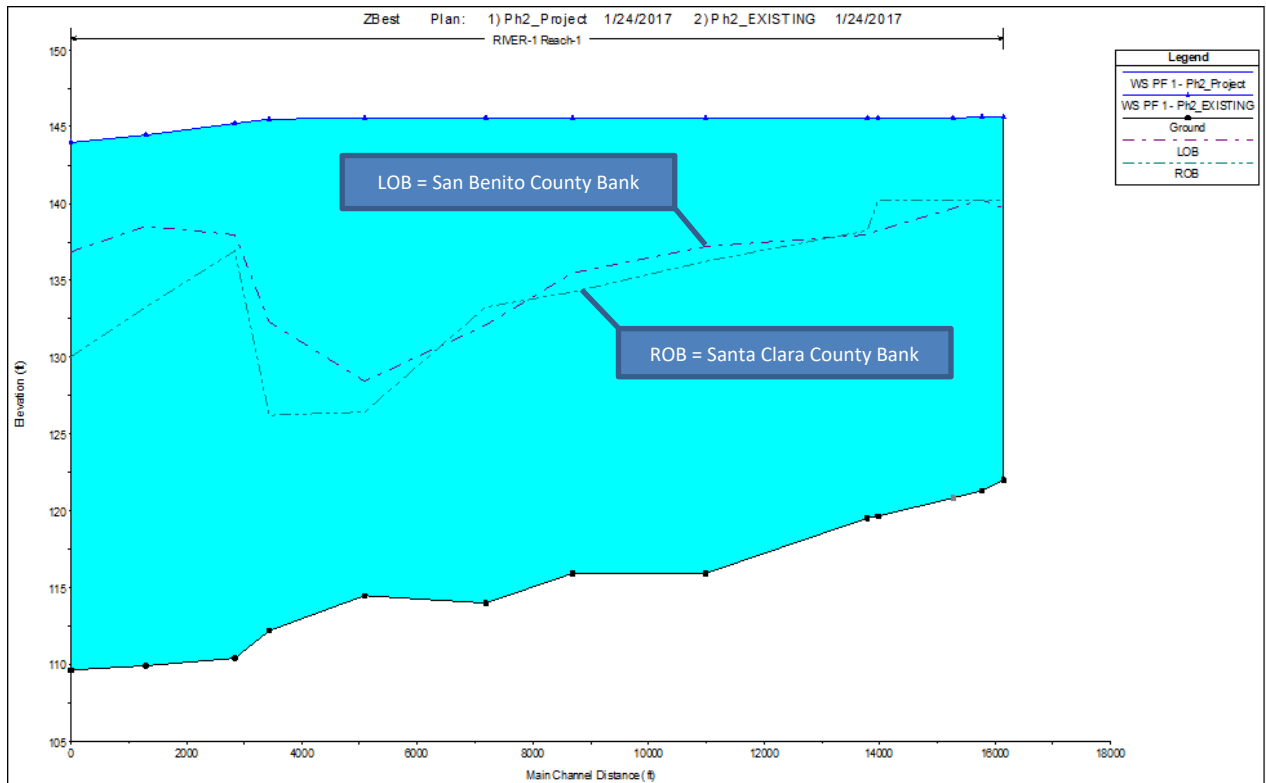


Figure 9. 100-yr WSELs through Soap Lake for the Pre-Existing and Project Scenarios

Table 2. Existing and Post-Project Scenario 100-YR Event WSELs

Model River Station XS	Pre-Existing WSEL (ft NGVD)	Post-Project WSEL (ft NGVD)	Difference
16944*	145.63	145.63	0.00
16198*	145.61	145.62	0.01
15998*	145.61	145.61	0.00
15698*	145.59	145.60	0.00
14403*	145.56	145.56	0.00
14214*	145.56	145.56	0.00
11414	145.55	145.55	0.00
9114	145.55	145.55	0.00
7614	145.55	145.55	0.00
5514	145.54	145.54	0.00
3864	145.50	145.50	0.00
3264	145.24	145.24	0.00
1734	144.45	144.45	0.00
434	144.00	144.00	0.00

*Cross Section thru Project Area

The floodplain model ends at Highway 25. Comparing proposed contours at the high point of the highway alignment to pre-existing contours (Figure 10), there is no significant difference in roadway elevations and overall, the regraded roadway appears to provide more flow conveyance than under pre-existing conditions. In other words, the slight decrease in grade is greater in volume than the slight increase in grade. This suggests that the impact analysis need not be carried further upstream. Flooding will not be deeper with increased flow conveyance over the highway.

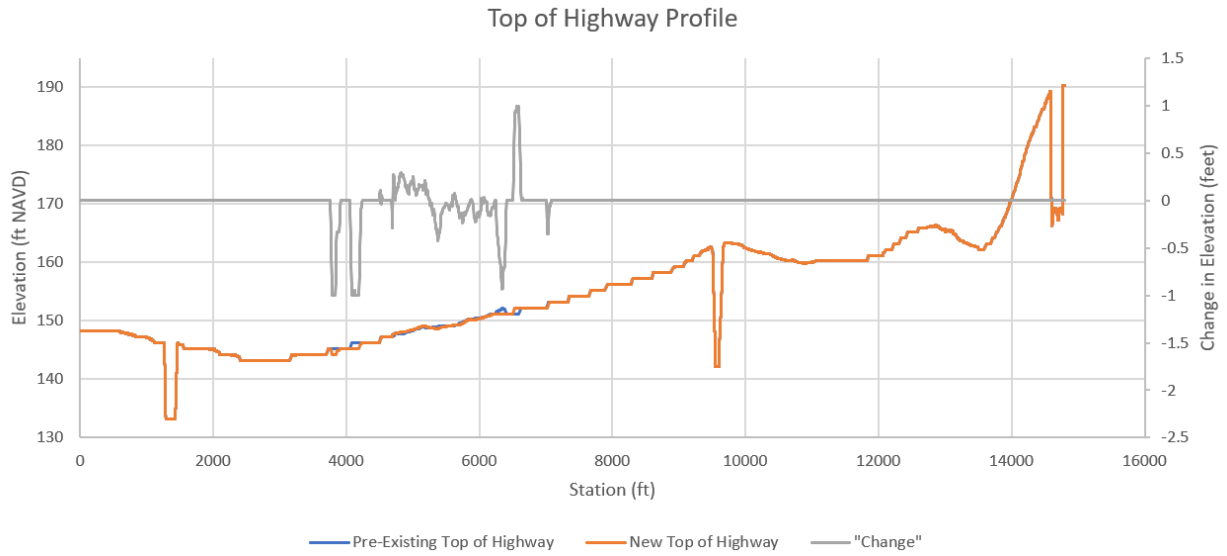


Figure 10. Nominal Grading Changes at Highway 25

Conclusion

Based on the hydraulic analysis documented herein, the Z-Best Expansion Project has no adverse impact on flood storage volumes or 100-yr water surface elevations.

TECHNICAL MEMORANDUM

DATE July 5, 2022

Project No. GL13397640

TO John Doyle
Z-Best Products

CC

FROM Richard Haughey

RE: CLARIFICATION OF PREVIOUS HYDROLOGY AND WATER SUPPLY ANALYSES, Z-BEST COMPOST FACILITY

This memorandum responds to comments/questions contained in the memorandum from AECOM to the County of Santa Clara, dated June 8, 2022, regarding existing hydrology and water supply analyses contained in the Draft Environmental Impact Report for the Z-Best Composting Project.

AECOM's comments and questions are primarily focused on the use of Golder's three memoranda (October 28, 2016, March 26, 2019, June 7, 2019) to satisfy CEQA requirements and on future groundwater use. As such, we are providing an overall response and not responding to each individual comment or question. The response below is being provided to estimate the anticipated change in groundwater usage at the site related to the proposed project.

We acknowledge that there are actual and perceived inconsistencies between the three memoranda, and the three memoranda contain information determined to be incorrect. The information contained in this memorandum supersedes the three memoranda.

The purpose of Golder's water balances was to comply with the requirements of the State Water Resources Control Board Order WQ 2015-0121-DWQ, General Waste Discharge Requirements for Composting Operations. The water balances review the current project and proposed project currently under design in terms of verifying adequate onsite storage for compost run-off based on average water usage at the site and a specified design storm event. As domestic water use does not affect the water balance, domestic water was not included in any of the water balances. Additionally, the water balances were not intended to comply with CEQA Guidelines or to evaluate the potential impact on nearby water supply wells.

As the project design has evolved, it was determined to not fill the western portion of Detention Basin 1 (DB-1). A drainage ditch will be constructed along the north side of the western portion of DB-1 to intercept storm runoff from the area between the ECS compost pad and DB-1 to prevent the storm runoff from flowing into the western portion of DB-1. The runoff will be conveyed to the redesigned DB-1 and used for the compost operation or for dust control. The unfilled western portion of DB-1 can be dredged, although, after the proposed project is constructed, the water collected in the unfilled western portion of DB-1 will be direct precipitation, which will be pumped out and used for the compost operation or for dust control.

Any sediments within the footprint of the redesigned DB-1 will be removed during grading and can be re-composted.

Although the relocated site entrance is not specifically discussed in Schaaf and Wheeler's January 19, 2022, memorandum, the relocated site entrance is clearly shown on Figure 1. Schaaf & Wheeler has reviewed its work and confirmed that the estimated floodplain loss stated in their January 19, 2022, memorandum includes the earthfill associated with the relocated site entrance. Additionally, Schaaf and Wheeler's January 19, 2022 memorandum considered the impacts of proposed work within the State Route 25 right-of-way.

After reviewing AECOM's comments, we revisited our water balances. To simplify comparison of the water balances, we worked backwards from the quantity of groundwater currently used to supplement surface water.

The existing compost operation is comprised of three activities:

- CTI MSW composting
- Yard waste (green waste) composting
- Storage and blending of cured compost

The CTI MSW composting is an in-vessel composting method and does not require moisture conditioning or make-up water. The yard waste composting requires moisture conditioning and make-up water for both the primary and secondary composting phases. The storage and blending operation does not require moisture condition or make-up water. In addition to moisture conditioning and make-up water for the yard waste composting operation, water is used for dust control. Water for moisture conditioning, make-up water, and dust control is obtained from two sources, the two on-site detention basins and groundwater.

The detention basins typically run dry by summer. As the water requirements for the composting operation and dust control exceed the water available from the detention basins, groundwater is used to make up the difference. Based on flow data reported to the Valley Water from 2015 to 2020, annual groundwater usage at the site varied from approximately 15.4 million gallons to approximately 38.7 million gallons. The lower groundwater usage was associated with periods of maintenance or repairs to the well pump. Because of this, approximately 31.6 million to 38.8 million gallons is more representative of typical annual groundwater usage.

Surface runoff flows to the two detention basins. Water is pumped from the detention basins for use in the composting operation and dust control. Water is also lost from the basins due to evaporation.

Based on the average rainfall, the annual inflow to the two detention basins is approximately 43.8 million gallons. The annual evaporation loss is approximately 11.1 million gallons. The resulting net available surface water is approximately 32.7 million gallons.

The annual water usage for the existing composting operation is the total of the net available surface water and the groundwater, approximately 64.3 million to 71.4 million gallons.

The proposed project will replace the CTI MSW composting with an Engineered Compost Systems (ECS) composting system, which includes a concrete compost pad. The Area 1 detention basin, DB-1, is being

reconfigured with less surface area resulting in a reduction in water loss due to evaporation. There is also an additional small area south of the compost pad that will drain to DB-1.

The ECS composting will require moisture conditioning and make-up water. The yard waste composting operation and cured compost storage and blending operation will be unchanged as will dust control. As a result, the annual water usage will increase by the water required for the ECS composting.

The increased water required by the ECS composting will be partially offset by a minor increase in the runoff from the ECS compost pad and the reduction in evaporation loss. The annual inflow to the two detention basins will be approximately 45.2 million gallons. The annual evaporation loss is approximately 8.4 million gallons. The resulting net available surface water is approximately 36.8 million gallons.

Based on information from ECS, the primary composting will require 20,000 gallons of water per day and the secondary composting will require 40,000 gallons of water per day, or an additional 21.9 million gallons per year.

The total annual water usage for the proposed project is 86.2 million to 93.3 million gallons. Subtracting the net available surface water, the annual quantity of groundwater required to supplement the surface water is 49.4 million to 56.5 million gallons, an increase of approximately 17.8 million gallons compared to the existing project.

Golder Associates USA Inc.



Richard D. Haughey, PE
Director, Civil Engineer

TECHNICAL MEMORANDUM

DATE October 25, 2022

Project No. GL13397640

TO John Doyle
Z-Best Products

CC Lindsey Angell

FROM Richard Haughey

EMAIL rhaughey@golder.com

RE: RESPONSE TO “MEMORANDUM: FURTHER CLARIFICATION OF HYDROLOGY AND SUPPLY ANALYSES AND THE GROUNDWATER DRAWDOWN EVALUATION”

This memorandum was prepared by WSP Golder to respond to the comment noted in AECOM’s October 21, 2022 email to you.

Comment: The table of monthly domestic water use from 2018 through 2021 within bullet 1 of Golder’s memo dated August 22, 2022 (revised Oct 11, 2022) was modified to include the previously missing April values, as requested. However, the total sum of all 12 months does not match the total annual value shown in the table (the difference for each year ranges from approximately 4,000 to 18,000). It is noted that the April values that were added to the table match exactly to the May values, therefore it is suspected that values from the wrong month were added to the table by mistake. I have attached a copy of Golder’s memo with the inconsistent values highlighted.

Response: Golder has revised its August 22, 2022 memorandum to correct the domestic water use table. When the April domestic water use quantities were omitted, the domestic water use quantities for following months were moved forward. The total domestic usage shown in the August 22, 2022 memorandum was correct.

Golder Associates USA Inc.

A handwritten signature in black ink that reads 'Richard D. Haughey'.

Richard D. Haughey, PE
Director, Civil Engineering

Distribution: Lindsey Angell

Attachment: August 22, 2022 Memorandum (Revised 10/25/2022)

[https://golderassociates.sharepoint.com/sites/129941/project files/5 technical work/permitting/memo_10252022.docx](https://golderassociates.sharepoint.com/sites/129941/project%20files/5%20technical%20work/permitting/memo_10252022.docx)

TECHNICAL MEMORANDUM

DATE August 22, 2022
(Rev. 10/25/2022)

Project No. GL13397640

TO John Doyle
Z-Best Products

CC Lindsey Angell, WSP Golder

FROM Richard Haughey

EMAIL rhaughey@golder.com

RE: FURTHER CLARIFICATION OF PREVIOUS HYDROLOGY AND WATER SUPPLY ANALYSES, Z-BEST COMPOST FACILITY

This memorandum responds to comments/questions contained in the memorandum from AECOM to the County of Santa Clara, dated July 20, 2022, regarding responses by Z-Best and Golder to AECOM's June 8, 2022, memorandum as well as other requested clarifications in AECOM's July 20, 2022, memorandum.

The comments/questions are repeated in italics below followed by the response.

1. *As stated in Golder's response memo (July 5, 2022), their water balance equations do not account for domestic water use. **Please provide site-specific data on existing domestic water usage.** If site-specific data is not provided by Z-Best, AECOM will need to research average per employee water use rates to determine an appropriate rate to apply in order to calculate the anticipated increase in domestic water use as a result of the Project.*

All water for domestic use is obtained from the shop domestic well. Based on groundwater quantities reported to Valley Water, domestic groundwater usage for the last 4 years is shown in the following table.

	2018	2019	2020	2021
January	30,720	14,290	12,450	57,090
February	15,390	25,320	12,240	17,530
March	44,710	15,280	10,520	17,570
April	20,420	10,720	37,500	24,430
May	21,040	19,220	57,200	33,230
June	48,310	14,880	40,690	32,140
July	83,480	79,140	82,520	65,510
August	76,300	79,270	57,480	37,590

September	51,180	72,590	149,300	65,510
October	35,520	84,427	55,000	37,590
November	57,300	60,311	122,900	27,510
December	24,750	18,512	56,110	12,860
Total	509,120	493,960	693,910	428,560

2. *The Golder response memo also does not evaluate the potential impact on nearby water supply wells. If such an evaluation is not provided by Z-Best or their consultants, AECOM hydrologists will need to model the anticipated radius of influence for the Z-Best on-site wells and amount of drawdown anticipated at the neighboring agricultural wells using Theis’s method for unsteady flow for a well (Kruseman and de Ridder 1991). The model can be run using conservative assumptions; however, the following information is requested (if available) to refine the model inputs:*

- a. *Details of the 3 existing Z-Best on-site wells and typical operation (e.g., depth to water, screening intervals, well logs, existing pump rates, typical distribution of pumping between the wells under existing and anticipated proposed use, if known—i.e., are the 3 wells pumped equally or is one used more than the others).*

Golder initiated work on evaluating the potential impact on nearby water supply wells based on comments from the July 15, 2022, meeting with the County and AECOM. It is anticipated that the evaluation will be completed within 1 week.

3. *The Golder response memo states that Schaaf and Wheeler has confirmed that the estimated floodplain loss stated in their January 19, 2022 memorandum accounted for the earthfill associated with the relocated site entrance and associated work within the State Route (SR) 25 right-of-way (ROW). However, Table 1 in Schaaf and Wheeler’s memo, which summarizes the various components of the project and the associated volume of floodplain storage, only lists the following components:*

- a. *Fill above [sic1] BFE for compost pad*
- b. *Area removed from 100-yr floodplain due to Detention Basin 1 berms*
- c. *Excavation below BFE in Area 2*

The latest design plans (April 2022) for the project state that 2,960 cubic yards of fill is proposed within the SR-25 ROW (Drawing 7) and indicate that at least a portion of that fill would be placed below the Base Flood Elevation (BFE) of 148.5 feet (Drawing 12D). However, the Schaaf & Wheeler reports do not include any mention of how many acre-feet of floodplain storage would be removed due to this fill.

Please ask Schaaf & Wheeler to revise their memo to correct the typographical error in Table 1 (see footnote 1) and to clarify how many acre-feet of floodplain storage would be lost due to fill in the SR-25 ROW and whether the proposed floodplain storage in Area 2 would be sufficient to account for this additional fill. A site map showing the various areas of flood storage gain and flood storage loss (and associated volumes) would also be helpful.

Please also ask Schaaf & Wheeler to provide backup data and calculations that are consistent with and support the updated floodplain storage analysis provided in their January 19, 2022 memorandum and that reflect the latest April 2022 project plans.

Schaaf & Wheeler have been requested to revise their memorandum and it will be submitted separately.

- 4. The Golder memo states that the information contained in their July 5 memorandum supersedes the three previous memoranda which contained inconsistencies and errors. Please ask Golder to provide backup data and calculations that are consistent with and support the summary water balance information provided in the July 5, 2022 memorandum.*

A memorandum providing the requested information is attached.

- 5. The Golder memo mentions a drainage ditch to be constructed along the north side of the western portion of Detention Basin #1, which does not appear to be shown on the project plans. Please provide an updated Drawing 13 showing the location and contours of the proposed drainage ditch and provide north-south sections through the western and eastern portions of the detention basin showing both existing and proposed ground surfaces. Please also update Proposed Basin Section A on Drawing 13 to show the proposed ground surface on the outer slopes of the Detention Basin #1 berms, which are currently missing from the section.*

A revised drawing 13 is attached.

- 6. The 2016 Golder memo (Section 4.2) mentions a 300,000-gallon leachate storage tank. Please confirm that this leachate storage tank is no longer part of current or proposed operations.*

A 300,000-gallon leachate storage tank has never been part of the current or proposed project.

- 7. The original Draft EIR (page 3-22) states that stormwater from the CTI processing area is considered leachate and is directed to unlined ditches that deliver the stormwater/leachate to Detention Basin #1. It also states that "leachate is also produced as a by-product of the composting process." Please provide clarification of how this "by-product leachate" is currently managed.*

In its General Compost Order, the State Water Resources Control Board defines runoff from a compost area as wastewater. Leachate is often used to describe runoff from a compost area. The MSW material received is high moisture content feedstock and thus produces leachate during composting. The excess moisture mixes with other surface runoff and flows to drainage ditches that convey the runoff to Detention Basin #1 where it is detained for on-site use. This leachate will continue to be produced with the proposed ECS system and will be managed in the same way.

- 8. Valley Water requested additional information in their comment letter on the original Draft EIR that does not appear to have been addressed/provided within the revised Golder or Schaaf & Wheeler memorandums. Please provide a copy of Schaaf & Wheeler's "Grading and Flood Study Summary Report" dated April 26, 2011 (Item 6 from Valley Water comment letter) or a more updated version detailing development of the hydraulic model used as the basis for Schaaf & Wheeler's January 2022 memo (see bullet point 3, above).*

Schaaf & Wheeler have been asked to respond to Valley Water's comment. Their response will be submitted separately.

If you have any questions or need additional information, contact the undersigned.

Golder Associates USA Inc.



Richard D. Haughey
Director, Civil Engineering

Attachments: Water Supply Evaluation Memorandum
Revised Drawing 13

[https://golderassociates.sharepoint.com/sites/129941/project files/5 technical work/permitting/aecom responses_08182022.docx](https://golderassociates.sharepoint.com/sites/129941/project%20files/5%20technical%20work/permitting/aecom%20responses_08182022.docx)

ATTACHMENT 1

**Water Supply Evaluation
Memorandum**

ATTACHMENT 2

Revised Drawing 13

ATTACHMENT 1

**Water Supply Evaluation
Memorandum**

Date:	August 15, 2022	Made by:	AB
Project No.:	GL13397640	Checked by:	HSG
Subject:	Water Supply Evaluation	Reviewed by:	LMA
Project Short Title:	Z-Best Compost Facility		

1.0 OBJECTIVE:

Evaluate water supply sources for existing and proposed compost facility operations.

2.0 METHODOLOGY:

Estimate monthly inflows and outflows for Detention Basin 1 and Detention Basin 2 (DB-1 and DB-2). Inflows consist of direct precipitation into DB-1 and DB-2 and facility runoff. Outflows include DB-1 and DB-2 evaporation and use of water for compost moisture conditioning and dust control. If compost operations water requirements exceed available water from DB-1 and DB-2, estimate the volume of groundwater required to make-up the difference.

Separate reports have been previously prepared presenting detailed water balances for the existing and proposed compost facility operations. This memorandum presents a conservative overview of water requirements and water supply sources.

3.0 ASSUMPTIONS/GIVENS:

The existing compost operation is comprised of three activities:

- CTI MSW composting
- Yard waste (green waste) composting
- Storage and blending of cured compost

The CTI MSW composting is an in-vessel composting method and does not require moisture conditioning or make-up water. The yard waste composting requires moisture conditioning and make-up water for both the primary and secondary composting phases. The storage and blending operation do not require moisture conditioning or make-up water. In addition to moisture conditioning and make-up water for the yard waste composting operation, water is used for dust control. Water for moisture conditioning, make-up water, and dust control is obtained from two sources, the two on-site detention basins and groundwater.

As part of proposed modifications to the compost operation, the CTI MSW composting will be replaced with an Engineered Compost Systems (ECS) composting system, which includes a concrete compost pad. The ECS composting will require moisture conditioning and make-up water. The existing yard waste composting operation and cured compost storage and blending operation will be unchanged as will dust control. As a result, the annual water usage will increase by the water required for the ECS composting.

For purposes of this evaluation, the composting system is assumed to operate in a steady-state condition, i.e., the quantity of feedstock entering the system is equivalent to the quantity of finished compost removed from the system. A detailed breakdown of each water use has not been prepared. The amount of water required for the compost facility operation is based on the available surface water and groundwater production records.

3.1 Stage-Storage Relationship

The stage-storage relationships for Detention Basins 1 and 2 at the Z-Best Compost Facility provide information relating the water elevation, surface area, and volume of the basins. These relationships were determined using the design grades for the existing detention basins. Tables 1 and 2 show Detention Basins 1 and 2 stage-storage relationship data.

Table 1: Existing Detention Basin 1 Stage-Storage Data

Elevation (ft)	Water Surface Area (sq ft)	Incremental Water Volume (gal)	Cumulative Water Volume (Acre-ft)
139	274,324	1,989,192	9,138,789
138	262,958	1,905,503	7,149,598
137	251,722	1,822,772	5,244,095
136	240,615	1,740,997	3,421,322
135	229,637	1,680,326	1,680,326
134	224,197	0	0

Table 2: Existing Detention Basin 2 Stage-Storage Data

Elevation (ft)	Water Surface Area (sq ft)	Incremental Water Volume (gal)	Cumulative Water Volume (Acre-ft)
145	85,340	614,939	3,240,686
144	80,764	583,891	2,625,747
143	76,949	555,552	2,041,855
142	73,111	526,297	1,486,304
141	69,051	495,813	960,006
140	64,880	464,194	464,194
139	60,515	0	0

4.0 EXISTING OPERATION WATER USAGE

The average annual conditions over a period of several years were used to estimate inflows and outflows for the existing operation. Each of the inflows and outflows are described in detail in the following sections.

4.1 Inflows

Inflows include direct precipitation to the detention basins and stormwater runoff from the operational areas as described below. It is assumed that the quantity of water used for the composting operations and dust control is the minimum required and, as a result, there is no runoff from the compost pad to the detention basins from the application of water for compost operations or dust control.

4.1.1 Direct Precipitation in Detention Basins

The Isohyetal Map of Santa Clara County Mean Annual Precipitation, included in the Santa Clara County Hydrology Manual (October 2007), shows a mean annual precipitation for the site of approximately 21 inches. Monthly precipitation data was obtained from the Western Regional Climate Center (WRCC) website. Precipitation data was also obtained from records for Weather Station 043417 in Gilroy, CA. This station is located at 37° 0' 24 N and 121° 33' 48 W at elevation 190 feet approximately 8 miles northwest from the site. The data range is March 1, 1906, to June 10, 2016. The mean annual precipitation for this range of data is 20.83 inches. Therefore, with over 100 years of precipitation data, the monthly precipitation data based on Gilroy Station 043417 with an annual mean precipitation of 20.83 inches was used.

Table 3: Average Monthly Precipitation

	Jan	Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Annual Total ¹
Average Precipitation (in)	4.70	3.74	3.24	1.40	0.39	0.10	0.05	0.05	0.32	0.90	2.21	3.72	20.83

¹ Precipitation values may not add to 20.83 inches due to rounding.

To apply the monthly precipitation as an inflow to the water balance model, the area of DB-1 footprint (274,324 sq ft) and DB-2 footprint (85,340 sq ft) is multiplied by the amount of rainfall in the particular month and converted to gallons, according to the equation below. The basin is always subject to precipitation inflow, regardless of whether the other operational inflows are occurring.

$$P = \frac{R \times A}{12} \times 7.481 \text{ gal/cf}$$

Where:

- P = monthly precipitation volume (gallons)
- R = monthly rainfall from historical data (inches)
- A = area of the Detention Basin footprint (ft²)

Table 4: Average Monthly Direct Precipitation

Month	Existing Detention Basin 1 (gal)	Existing Detention Basin 2 (gal)
January	803,785	250,051
February	639,608	198,977
March	554,099	172,367
April	239,425	74,483
May	66,697	20,749
June	17,102	5,320
July	8,551	2,660
August	8,551	2,660
September	54,726	17,025
October	153,916	47,882
November	377,950	117,577
December	636,188	197,913
Totals	3,560,598	1,107,674

4.1.2 Existing Compost Facility Stormwater Runoff

The compost facility pad stormwater runoff was calculated by multiplying the average monthly precipitation, the drainage area for each basin (sq ft), and the runoff coefficient. Area 1 will drain to DB-1 and Area 2 will drain to DB-2. The average runoff coefficient of 0.72 for DB-1 and DB-2 was estimated based on calculated coefficients at similar composting facilities. Tables 5 and 6 show the average monthly compost facility stormwater runoff.

Table 5: Existing Compost Facility Stormwater Runoff Calculation – DB-1

Month	Drainage Area (sq ft)	Runoff Coefficient C	Precipitation (inches)	Monthly Facility Direct Precipitation (gallons)	Stormwater Runoff (gallons)
January	3,057,780	0.72	4.70	7,253,744	6,449,959
February	3,057,780	0.72	3.74	5,772,128	5,132,520
March	3,057,780	0.72	3.24	5,000,453	4,446,355
April	3,057,780	0.72	1.40	2,160,690	1,921,264
May	3,057,780	0.72	0.39	601,906	535,209
June	3,057,780	0.72	0.10	154,335	137,233
July	3,057,780	0.72	0.05	77,167	68,617
August	3,057,780	0.72	0.05	77,167	68,617
September	3,057,780	0.72	0.32	493,872	439,146
October	3,057,780	0.72	0.90	1,389,015	1,235,098
November	3,057,780	0.72	2.21	3,410,803	3,032,853
December	3,057,780	0.72	3.72	5,741,261	5,105,074
Totals			20.83	32,132,543	28,571,945

Notes:

¹ The compost pad runoff volume was calculated by multiplying the monthly precipitation volume by the runoff coefficient.

² The monthly precipitation may not add to 20.83 inches due to rounding.

Table 6: Existing Compost Facility Runoff Calculation – DB-2

Month	Drainage Area (sq ft)	Runoff Coefficient C	Precipitation (inches)	Monthly Facility Direct Precipitation (gallons)	Stormwater Runoff (gallons)
January	1,132,560	0.72	4.70	3,318,023	2,388,977
February	1,132,560	0.72	3.74	2,640,299	1,901,016
March	1,132,560	0.72	3.24	2,287,318	1,646,869
April	1,132,560	0.72	1.40	988,347	711,610
May	1,132,560	0.72	0.39	275,325	198,234
June	1,132,560	0.72	0.10	70,596	50,829
July	1,132,560	0.72	0.05	35,298	25,415
August	1,132,560	0.72	0.05	35,298	25,415
September	1,132,560	0.72	0.32	225,908	162,654
October	1,132,560	0.72	0.90	635,366	457,464
November	1,132,560	0.72	2.21	1,560,177	1,123,327
December	1,132,560	0.72	3.72	2,626,180	1,890,850
Totals	26 acres	-	20.83 ³	14,698,137	10,582,659

Notes:

¹ The compost pad runoff volume was calculated by multiplying the monthly precipitation volume by the runoff coefficient.² Monthly precipitation may not add to 20.83 inches due to rounding.

4.2 Outflows

Outflows include basin evaporation and water usage for compost operations and dust control, as described below.

4.2.1 Monthly Evaporation

Evapotranspiration (ET_o) data was obtained from the CIMIS website from records for Station 211 in Gilroy, California. ET_o values are considered equal to evaporation from a large body of water, such as a basin or lake. The data range retrieved is September 1, 2009, to June 10, 2016. The mean annual evaporation for this range of data is 49.56 inches.

Table 7: Average Monthly Evaporation

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Evaporation (in)	1.55	2.00	3.55	4.71	6.08	6.65	6.99	6.32	4.93	3.50	1.89	1.39	49.56

The monthly evaporation for the basins is calculated using the following equation:

$$E = \frac{R \times SA}{12} \times 7.481 \text{ gal / cf}$$

where:

- E = monthly evaporation (gallons)
- R = evaporation rate from historical data (inches)
- SA = surface area of basin at the beginning of month (ft²)

As conservative assumptions, for the purposes of estimating evaporation from DB-1 and DB-2, it is assumed both DB-1 and DB-2 are full, which will maximize the evaporation quantity. Monthly evaporation quantities are shown in Table 8.

Table 8: Average Monthly Evaporation Quantity

Month	Existing DB-1 (gal)	Existing DB-2 (gal)
January	265,078	82,464
February	342,036	106,405
March	607,114	188,868
April	805,496	250,583
May	1,039,790	323,470
June	1,137,271	353,796
July	1,195,417	371,885
August	1,080,835	336,239
September	843,119	262,288
October	598,564	186,208
November	323,224	100,552
December	237,715	73,951
Total	8,475,680	2,636,710

Notes:

¹ Evaporation was estimated by multiplying the average monthly evaporation from Table 8 by the maximum surface area.

² DB-1 and DB-2 were assumed to be full with a surface area of 274,324 sq ft and 85,340 sq ft, respectively.

4.2.2 Current Water Usage for Compost Operations

Current water usage for compost operations, including dust control, can be estimated based on the available water from DB-1 and DB-2 and groundwater production. Currently, DB-1 and DB-2 run dry during the summer months will all water either evaporating or being used for compost operations. The water requirements for the compost operations exceed the available water from DB-1 and DB-2. Groundwater is used to offset the shortfall. All groundwater for compost operations is provided by a well located at the eastern boundary of the site.

Groundwater production is metered as required by Valley Water for purposes of paying a pump tax. Based on metered data reported to Valley Water from 2015 to 2020, annual groundwater production for compost operations varied from approximately 15.4 million gallons to 38.7 million gallons. The lower groundwater production years were associated with periods of maintenance or repairs to the well pump. Because of this, approximately 31.6 million to 38.7 million gallons is likely more representative of typical annual groundwater production for compost operations.

Table 9: Historic Groundwater Production

Year	Groundwater Production (gal)
2015	31,611,000
2016	22,603,050
2017	15,433,255
2018	38,658,124
2019	17,762,000
2020	24,437,245

Notes:

¹ During times when the well pump was being maintained or repaired, the shared well was used. During those times, there is not available records of how much of the groundwater production was used for compost operations.

² A new well was installed in 2021 and there is not yet a full year groundwater production data available.

The total water requirement can be estimated by adding the available water from DB-1 and DB-2 and the groundwater production as summarized in Table 10.

Table 10: Existing Compost Operations Water Requirement (gallons)

Inflow	DB-1	32,132,543	
	DB-2	11,690,332	
	Subtotal	43,822,875	
Evaporation	DB-1	8,475,660	
	DB-2	2,636,710	
	Subtotal	11,112,370	
	Net Available Surface Water	32,710,505	
Groundwater Production		31,600,000	38,700,000
	Total Water Requirement	64,310,505	71,410,505

Note: Inflow includes direct precipitation and compost facility stormwater runoff.

5.0 PROPOSED COMPOST OPERATION WATER USAGE

5.1 Estimated Inflows and Outflows for Proposed Compost Operation

The proposed project will replace the CTI MSW composting with an ECS composting system, which includes a concrete compost pad. The stormwater runoff from the compost pad will increase slightly due to the higher runoff coefficient (0.76) of the concrete compost pad compared to the existing composting area (0.72). Stormwater runoff from an approximately 2.6-acre area south of the compost pad, which currently does not flow to Area 1 detention basin, DB-1, will be intercepted and conveyed to DB-1. DB-1 is being reconfigured with less surface area (185,388 sq ft) resulting in a reduction in direct precipitation and in water loss due to evaporation. Direct precipitation, runoff, and evaporation for the reconfigured DB-1 are shown in the following tables.

Table 11: Reconfigured DB-1 Direct Precipitation and Evaporation

Month	Direct Precipitation (gal)	Evaporation (gal)
January	543,198	768,567
February	432,247	807,862
March	374,460	730,427
April	161,804	569,780
May	45,074	404,509
June	11,557	218,435
July	5,779	160,648
August	5,779	179,140
September	36,984	231,148
October	104,017	410,288
November	255,418	544,353
December	429,935	702,690
Total	2,406,250	5,727,846

Table 12: Proposed Compost Operation Stormwater Runoff

Month	Drainage Area (sq ft)	Runoff Coefficient C	Precipitation (inches)	Monthly Facility Direct Precipitation (gallons)	Stormwater Runoff (gallons)
January	3,170,560	0.76	4.70	9,289,925	7,022,213
February	3,170,560	0.76	3.74	7,392,408	5,587,889
March	3,170,560	0.76	3.24	6,404,118	4,840,845
April	3,170,560	0.76	1.40	2,767,212	2,091,723
May	3,170,560	0.76	0.39	770,866	582,694
June	3,170,560	0.76	0.10	197,658	149,409
July	3,170,560	0.76	0.05	98,829	74,704
August	3,170,560	0.76	0.05	98,829	74,704
September	3,170,560	0.76	0.32	632,506	478,108
October	3,170,560	0.76	0.90	1,778,922	1,344,679
November	3,170,560	0.76	2.21	4,368,241	3,301,934
December	3,170,560	0.76	3.72	7,352,877	5,558,007
Total			20.83 ³	41,152,390	31,106,911

Notes:

¹ The drainage area includes an approximately 2.2.6-acre area south of the compost pad.

² The compost pad stormwater runoff volume was calculated by multiplying the monthly precipitation volume by the runoff coefficient.

³ Monthly precipitation may not add to 20.83 inches due to rounding.

The ECS composting will require moisture conditioning and make-up water. The existing yard waste composting operation and cured compost storage and blending operation will be unchanged as will dust control. As a result, the annual water usage will increase by the water required for the ECS composting.

Based on information from ECS, the primary composting phase will require an average 20,000 gallons of water per day and the secondary composting phase will require an average 40,000 gallons of water per day, or an additional 21.9 million gallons per year.

The total water requirement for the proposed compost operation can be estimated by adding the existing water requirement and additional water required by the ECS compost system as summarized in Table 13.

Table 13: Proposed Compost Operations Water Requirement (gallons)

Inflow	DB-1	33,513,161	
	DB-2	11,690,332	
	Subtotal	45,203,493	
Evaporation	DB-1	5,727,846	
	DB-2	2,636,710	
	Subtotal	8,364,556	
	Existing Water Usage	64,310,506	71,410,506
	ECS Compost System	21,900,000	21,900,000
	Total Water Usage	86,210,506	93,310,506
	Available Surface Water	36,838,938	36,838,938
	Required Groundwater	49,371,568	56,471,568
	Additional Groundwater	17,771,568	17,771,568

Note: Inflow includes direct precipitation and compost facility stormwater runoff.

The total annual water requirement for the proposed project is 86.2 million to 93.3 million gallons. Subtracting the net available surface water, the annual quantity of groundwater required to supplement the surface water is 49.4 million to 56.5 million gallons, an increase of approximately 17.8 million gallons compared to the existing project.

6.0 SUMMARY

Based on the average rainfall, the annual inflow to the two detention basins is approximately 43.8 million gallons for the current compost operation and approximately 45.2 million gallons for the proposed compost operation. The annual evaporation loss is approximately 11.1 million gallons for the current compost operation and approximately 8.4 million gallons for the proposed compost operation. The resulting net available surface water is

approximately 32.7 million gallons for the current compost operation and approximately 36.8 million gallons for the proposed compost operation.

Groundwater well meter records from the site indicate that annual groundwater usage is between 31.6 and 38.7 million gallons. Therefore, the total annual water usage for the current composting operation is approximately 64.3 million to 71.4 million gallons.

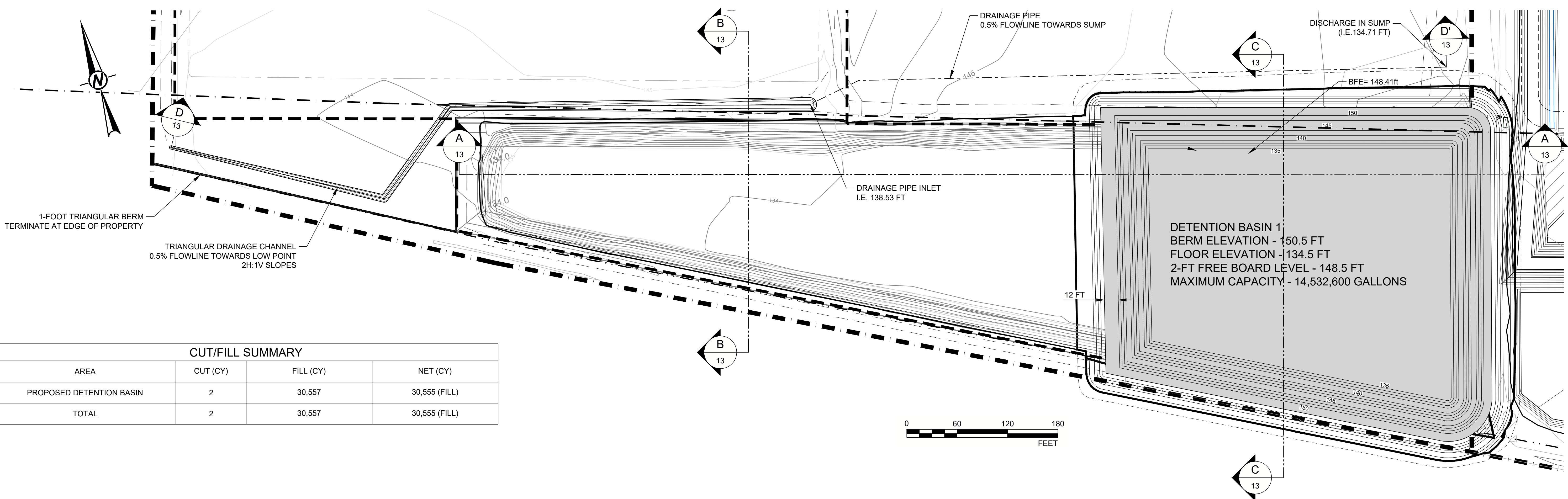
The proposed compost operation will increase the total annual water requirement by 21.9 million gallons to between approximately 86.2 and 93.3 million gallons. Additional groundwater production will be required to meet the increased annual water requirement. The annual groundwater usage will increase to between approximately 49.4 million gallons and 56.5 million gallons.

[https://golderassociates.sharepoint.com/sites/129941/project files/5 technical work/permitting/ceqa water balance calc 2022-08-15 existing operations.docx](https://golderassociates.sharepoint.com/sites/129941/project%20files/5%20technical%20work/permitting/ceqa%20water%20balance%20calc%202022-08-15%20existing%20operations.docx)

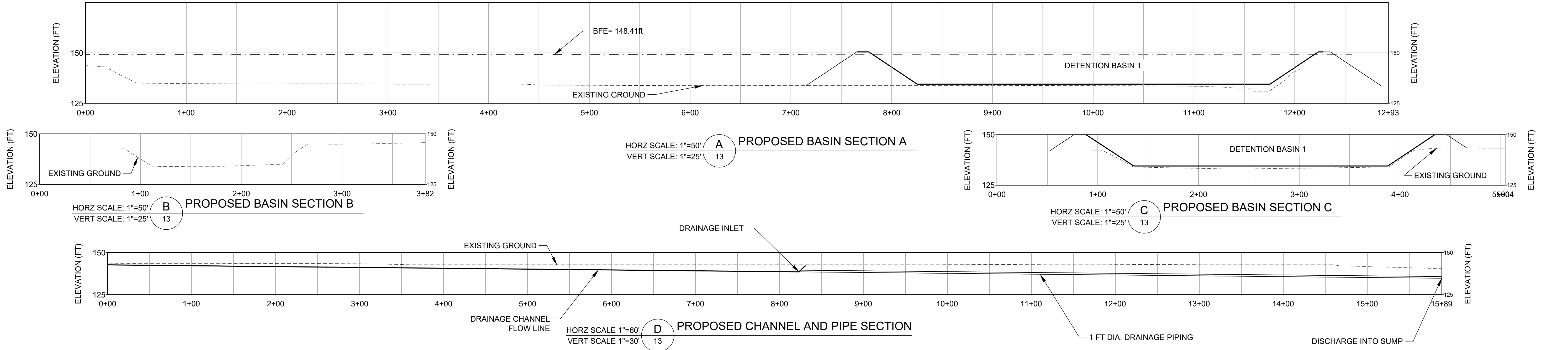
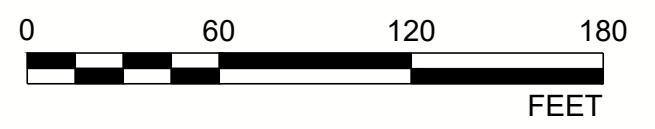
ATTACHMENT 2

Revised Drawing 13

Path: \\golder.com\projects\08\082019\Aerated Static Pile Composting Facility\Civil\3D\082019 Aerated Static Pile Composting Facility\Civil\Sheet\2-Best Compost Facility\Civil\3D\082019 Aerated Static Pile Composting Facility\Plan (Rev1) | File Name: 13397640_Proposed Basin 1 (Sheet 13).dwg | Last Edited By: hggill | Date: 2022-08-22 Time: 12:14:37 PM | Printed By: HSGH | Date: 2022-08-22 Time: 12:15:03 PM



CUT/FILL SUMMARY			
AREA	CUT (CY)	FILL (CY)	NET (CY)
PROPOSED DETENTION BASIN	2	30,557	30,555 (FILL)
TOTAL	2	30,557	30,555 (FILL)



REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
6	2022-08-22	REVISED PER CEQA REVIEW COMMENTS	RDH	HSG	LMA	
5	2022-02-07	REVISED PER COUNTY COMMENTS	RDH	HSG	RDH	
4	2018-04-01	ISSUED FOR PERMIT	RDH	MAG	RDH	
3	2018-08-28	ISSUED FOR PERMIT	RDH	JMH	RDH	
2	2018-07-17	ISSUED FOR PERMIT	RDH	JDR	RDH	
1	2018-06-29	ISSUED FOR PERMIT	RDH	MAL	RDH	
0	2018-04-20	ISSUED FOR PERMIT	RDH	MAL	RDH	

CLIENT
Z-BEST COMPOST PRODUCTS
 COMPOSTING FACILITY
 GILROY, CALIFORNIA
 CONSULTANT
GOLDER
 MEMBER OF WSP
 SUNNYVALE
 425 LAKESIDE DRIVE
 SUNNYVALE, CALIFORNIA 94085
 USA
 [+1] (408) 220-9223
 www.golder.com

PROJECT
AERATED STATIC PILE COMPOSTING PERMIT PACKAGE
 TITLE
PROPOSED DETENTION BASIN 1 - PLAN AND SECTION
 PROJECT NO. 133-97640 COUNTY FILE NO. 6498-81-11-09G 08P 08A 08EA REV. 25 of 25 DRAWING 13

1 in IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANS/D

TECHNICAL MEMORANDUM

DATE August 26, 2022
(Rev. 10/5/2022)

Project No. GL13397640

TO John Doyle
Z-Best Composting Facility

CC Richard Haughey

FROM George Wegmann, PG, CHG; Michael Bombard,
PG, CHG

EMAIL george.wegmann@wsp.com

GROUNDWATER DRAWDOWN EVALUATION, Z-BEST COMPOSTING FACILITY, GILROY, CALIFORNIA

1.0 INTRODUCTION

Golder Associates USA Inc. (Golder), a member of WSP, prepared this technical memorandum (memo) to address comments from the County of Santa Clara Department of Planning and Development regarding the potential impacts on nearby supply wells from the proposed project at the Z-Best Composting Facility in Gilroy, California.¹ Information requested by the County is stated below:

The Golder response memo also does not evaluate the potential impact on nearby water supply wells. If such an evaluation is not provided by Z-Best or their consultants, AECOM hydrologists will need to model the anticipated radius of influence for the Z-Best on-site wells and amount of drawdown anticipated at the neighboring agricultural wells using Theis's method for unsteady flow for a well (Kruseman and de Ridder 1991). The model can be run using conservative assumptions; however, the following information is requested (if available) to refine the model inputs:

o Details of the 3 existing Z-Best on-site wells and typical operation (e.g., depth to water, screening intervals, well logs, existing pump rates, typical distribution of pumping between the wells under existing and anticipated proposed use, if known—i.e., are the 3 wells pumped equally or is one used more than the others).

A Golder California Certified Hydrogeologist modeled the potential effects on neighboring wells from increasing the groundwater extraction rate from the existing onsite production well based on established hydrogeological principles as noted herein. Golder revised this memo based on AECOM's *Memorandum: Further clarification of Hydrology and Supply Analyses and the groundwater drawdown evaluation, dated September 28, 2022*. Golder's response to comments is attached to this memo.

1.1 Background

The site is in the Llagas Subbasin (DWR Basin Number 3-3.01), which is part of the Gilroy-Hollister Valley Groundwater Basin (DWR Basin Number Basin 3-3), and encompasses approximately 87 square miles (CGB, 2004). The Llagas Subbasin is comprised of unconsolidated alluvial sediments with discontinuous layers of gravel and sand (aquifer materials) and clay and silt (confining units) at various depths beneath the ground surface (Valley Water, 2021). Groundwater generally flows from north to south following the topography. The

¹ AECOM, July 20, 2022 Memorandum: Further Clarification of Previous Hydrology and Water Supply Analyses, Z-Best Composting Facility – CEQA Services, addressed to Mr. Bharat Singh, County of Santa Clara Department of Planning and Development, 70 West Hedding Street, 7th Floor East Wing San Jose, CA 95110

subbasin ranges in thickness from about 500 feet at the northern boundary to over 1,000 feet thick beneath the Pajaro River while principal aquifer zones generally occur at depths below 150 feet.

Groundwater in the groundwater basin is primarily used for public and domestic water supply and for irrigation purposes. Long-term groundwater levels are stable and demonstrate sustainable groundwater conditions where the subbasin has not been identified as being critically overdrafted (Valley Water, 2021). Operational storage capacity of the Llagas Subbasin is estimated to be 150,000 acre-feet with natural recharge is estimated to be 44,300 acre-feet per year or 14,400 million gallons per year (MGPY) (CGB, 2004).

1.2 Water Usage

There are three wells located onsite that are currently used to provide water for site operations as shown on Attachment A, Figure 1 and listed on Table 1. Golder calculated usage rates based on information provided by Z-Best, including Valley Water well meter records since 2018, as summarized below. Also included in the table is the anticipated change in production rate of 21.9 MGPY from the primary extraction well (Main Agriculture Well) as part of the proposed project. The production rates from the other onsite wells remain the same. Two other production wells, referred to as Old Well A and Well 1, are located on site; however, these wells are not currently in use.

Table 1: Groundwater Usage

Well ID	Existing Baseline Production Rate	Change in Production Rate	Anticipated Future Production Rate
Well Y (Domestic Well)	0.5 MGPY	0	0.5 MGPY
Well Z (Shared Well)	14.3 MGPY	0	14.1 MGPY
Main Agriculture Well (Primary Extraction Well)	39 MGPY	21.9 MGPY	60.7 MGPY

Main Agriculture Well is operated at an average flow rate of 381 gallons per minute (gpm), and the desired average flow rate will be 590 gpm. Well Z is operated at an average flow rate of 277 gpm and Well Y is operated at an average flow rate of 5 gpm. According to Z-Best, the wells are operated for about 33 hours per week.

1.3 Offsite Wells

Golder completed a review of California's State Water Resources Control Board Division of Water Quality Groundwater Ambient Monitoring & Assessment Program (GAMA) database to identify offsite wells within the vicinity of the site. Production and domestic wells identified within a one-mile radius of the agriculture extraction well are shown in Figure 1 and listed in Section 2. It has not been confirmed if any of the identified wells are still in use or their production rates.

2.0 EVALUATION METHOD

Golder evaluated the potential impact of the increased pumping on water levels within one mile from the primary extraction well (referred to as Main Agriculture Well on Attachment A, Figure 1). A review of publicly available documents was completed to obtain basin-specific groundwater parameter data to calculate aquifer drawdown using the Theis solution for evaluating drawdown in a confined aquifer (Freeze and Cherry, 1979); however, specific information for the site vicinity was not identified. Z-Best provided pump test reports prepared by Integrated Water Management that provided well flow, pumping, and standing water level data. Golder was also able to obtain well logs for Well Y (domestic well), Well Z (shared well) and the Main Agriculture Well from the California Department of Water Resources Well Completion Reports Database. Copies of the well completion reports are included as Attachment B.

The well flow, and water level data was used to estimate the transmissivity (T) using Driscoll's approximation (Groundwater and Wells, Driscoll, 1986):

$$T = 2,000 \times Q / s_w$$

Where: T = transmissivity in gallons per day per foot (gpd/ft)
Q = flow in gallons per minute (gpm)
S_w = drawdown (feet)

Note: Driscoll's calculation assumes t = 1 day, r = 0.5 ft, T = 30,000 gpd/ft; S = 0.001 for a confined aquifer to calculate the factor of 2000. Using the assumed T and S to calculate the factor, errors of less than 7% were reported by Driscoll (Driscoll, 1986).

Golder used the 0.001 storativity value for our calculations. Additionally, Golder derived the average flow rate used in the calculations based on water use and operational data supplied by Z-Best. The annual usage rate of the domestic well (0.5 MGPY) is insignificant; therefore, this well was excluded from the analysis. Because the wells are operated approximately 33 hours per week or about 19.6 percent of the available hours and the model assumes continuous operation for the selected time period, use of the average flow rates listed in Section 1.2 as model values would greatly overstate the drawdown experienced at nearby wells. Therefore, proportional flow rates for Well Z's and Main Agriculture Well's current average flow rates and Main Agricultural Well's proposed average flow rate were calculated as follows:

$$\text{Average Well Flow Rate (gpm)} \times 0.196 = \text{Model Continuous Flow Rate}$$

For Well Z, the calculation is:

$$277 \text{ gpm} \times 0.196 = 54 \text{ gpm}$$

Performing the same calculations for the current and proposed average flow rates for Main Agriculture Well, results in model continuous flow rates of 75 gpm and 116 gpm, respectively. Table 2 below lists the parameters used in the calculation of potential drawdown associated with the current production rates from Well Z and Main Agriculture Well and the proposed increased production rate from Main Agriculture Well.

Table 2: Parameters Used in Drawdown Calculations

Aquifer Parameters		Well Parameters		
Main Agriculture Well (Primary Extraction Well)				
K	26 ft/dy	Q (current)	75 gpm	14,439 ft ³ /dy
S ¹	0.001	Q (proposed)	116 gpm	20,984 ft ³ /dy
b ²	497 ft	t	1, 6, 12, 60, and 120 months	
T ¹	12,707 ft ² /dy			
Well Z (Shared Well)				
K	140 ft/dy	Q (current)	54 gpm	10,396 ft ³ /dy
S ¹	2.03E-02	t	1, 6, 12, 60, and 120 months	
b ³	328 ft			
T ¹	45,875 ft ² /dy			
Well Operating Parameters				
Hours/Week	33	Weeks/Year	52	

Source: 1: Calculated using Driscoll's method from Groundwater and Wells, Driscoll 1986
2: Integrated Water Management Pump Test 7/20/2022
3: Integrated Water Management Pump Test 8/5/2022

K = hydraulic conductivity (calculated using the equation $K=T/b$)

S = Storativity

b = saturated thickness

T = Transmissivity

Q = average flow rate (adjusted in the model to be 19.6 percent of average flow rate based on well operating parameters)

t = time

The calculation of the drawdown in terms of radius and time is performed by first calculating u (a dimensionless variable necessary to performing the analytical drawdown solution), using the following equation:

$$u = \frac{r^2 S}{4Tt}$$

where:

r = radius (feet (ft)), S = storativity (dimensionless), T = Transmissivity (ft²/dy), and t = time (days)

The resultant value of u is used to derive the well function ($W(u)$) term using a table such as Table 3 below:

Table 3: Values of $W(u)$ for Various Values of u

u	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0
$\times 1$	0.219	0.049	0.013	0.0038	0.0011	0.00036	0.00012	0.000038	0.000012
$\times 10^{-1}$	1.82	1.22	0.91	0.70	0.56	0.45	0.37	0.31	0.26
$\times 10^{-2}$	4.04	3.35	2.96	2.68	2.47	2.30	2.15	2.03	1.92
$\times 10^{-3}$	6.33	5.64	5.23	4.95	4.73	4.54	4.39	4.26	4.14
$\times 10^{-4}$	8.63	7.94	7.53	7.25	7.02	6.84	6.69	6.55	6.44
$\times 10^{-5}$	10.94	10.24	9.84	9.55	9.33	9.14	8.99	8.86	8.74
$\times 10^{-6}$	13.24	12.55	12.14	11.85	11.63	11.45	11.29	11.16	11.04
$\times 10^{-7}$	15.54	14.85	14.44	14.15	13.93	13.75	13.60	13.46	13.34
$\times 10^{-8}$	17.84	17.15	16.74	16.46	16.23	16.05	15.90	15.76	15.65
$\times 10^{-9}$	20.15	19.45	19.05	18.76	18.54	18.35	18.20	18.07	17.95
$\times 10^{-10}$	22.45	21.76	21.35	21.06	20.84	20.66	20.50	20.37	20.25
$\times 10^{-11}$	24.75	24.06	23.65	23.36	23.14	22.96	22.81	22.67	22.55
$\times 10^{-12}$	27.05	26.36	25.96	25.67	25.44	25.26	25.11	24.97	24.86
$\times 10^{-13}$	29.36	28.66	28.26	27.97	27.75	27.56	27.41	27.28	27.16
$\times 10^{-14}$	31.66	30.97	30.56	30.27	30.05	29.87	29.71	29.58	29.46
$\times 10^{-15}$	33.96	33.27	32.86	32.58	32.35	32.17	32.02	31.88	31.76

Source: Wenzel (1942).

The $W(u)$ term is inserted into the following equation:

$$h_0 - h = \frac{Q}{4\pi T} W(u)$$

where:

$h_0 - h$ = initial head – pumping head or drawdown (ft) at specified radius or time, Q = pumping rate (ft³/dy), T = Transmissivity (ft²/dy), $W(u)$ = dimensionless parameter derived from Table 3. Note, any system of units can be use to calculate the drawdown as long as consistent units are are used between the terms. The analysis assumes the following simplifying assumptions for the aquifer:

- horizontal
- infinite in horizontal extent
- constant thickness
- homogeneous and isotropic with respect to its hydrogeological parameters

Additional simplifying assumptions for using the analytical method are:

- there is only a single pumping well in the aquifer
- the pumping rate is constant over time
- the well diameter is infinitesimally small
- the well penetrates the entire aquifer
- the hydraulic head in the aquifer prior to pumping is uniform throughout the aquifer

Because the method assumes only one pumping well and two primary pumping wells (Main Agriculture Well and Well Z) are in use simultaneously at the site, Golder separately modelled the drawdown from the Main Agriculture Well and Well Z using the same eleven wells located within one mile of Main Agriculture Well. As noted previously, Well Y (domestic well) is excluded from the evaluation based on its minimal extraction rate and estimated drawdown. The parameters in Table 2 were then inserted into an analytical model to determine the drawdown at each off-site well based on transmissivity, pumping duration, and pumping flow rate. To model current conditions (both wells pumping simultaneously), the results of the modelled drawdown at each off-site well were summed to simulate the contribution of drawdown at the well from the simultaneous pumping at Main Agriculture Well and Well Z. The models were used to simulate drawdown for the following scenarios:

- Current drawdown based on existing baseline conditions
- Future drawdown based on proposed site operations

The model results for the above scenarios are included in Attachment C. Baseline conditions were calculated by adding the drawdown for the Main Agriculture Well and the Well Z under various timelines. The potential changes in drawdown from the project were determined by calculating an increased pumping rate of 21.9 MGPY for the Main Agriculture Well.

Table 4 below lists the offsite wells well within one mile of the Main Agriculture Well (Attachment A, Figure 1).

Table 4: Location Data for Wells Located within One-Mile Radius of Main Agricultural Well

Well ID	Distance from Main Agriculture Well (feet)	Distance from Well Z (feet)
Offsite Well No. 1	1,729	2,795
Offsite Well No. 6	2,184	2,259
Offsite Well No. 7	2,799	1,473
Offsite Well No. 5	3,012	5,743
Offsite Well No. 2	3,374	1,422
Offsite Well No. 4	3,443	4,465
Offsite Well No. 10	3,865	3,952

Well ID	Distance from Main Agriculture Well (feet)	Distance from Well Z (feet)
Offsite Well No. 8	4,025	6,910
Offsite Well No. 9	4,195	1,557
Offsite Well No. 9A	4,261	1,612
Offsite Well No. 3	5,109	4,669

For the purposes of this analysis, it is assumed that the offsite wells are screened at the same intervals and within the same units as the primary extraction well that is being modeled.

3.0 EVALUATION RESULTS

The results of the drawdown evaluation are presented in Table 5 below:

Table 5: Results of Drawdown Evaluation

Well ID	Distance from Main Agriculture Well (feet)	Calculated Change in Drawdown Over Time (feet)				
		1 month	6 months	1 year	5 years	10 years
Offsite Well No. 1	1,729	-0.23	-0.31	-0.34	-0.40	-0.43
Offsite Well No. 6	2,184	-0.21	-0.29	-0.32	-0.38	-0.41
Offsite Well No. 7	2,799	-0.19	-0.27	-0.30	-0.36	-0.39
Offsite Well No. 5	3,012	-0.19	-0.26	-0.29	-0.35	-0.38
Offsite Well No. 2	3,374	-0.18	-0.25	-0.28	-0.35	-0.37
Offsite Well No. 4	3,443	-0.18	-0.25	-0.28	-0.35	-0.37
Offsite Well No. 10	3,865	-0.17	-0.24	-0.27	-0.34	-0.36
Offsite Well No. 8	4,025	-0.16	-0.24	-0.27	-0.33	-0.36
Offsite Well No. 9	4,195	-0.16	-0.23	-0.26	-0.33	-0.36
Offsite Well No. 9A	4,261	-0.16	-0.23	-0.26	-0.33	-0.35
Offsite Well No. 3	5,109	-0.15	-0.22	-0.25	-0.31	-0.34

Notes:
Negative value indicates decreasing water level.

The additional drawdown was modeled from the increased production rate from each simulated well over five intervals: one month, 6 months, 12 months, 60 months, and 120 months. The closest offsite well (Offsite Well No. 1) is estimated to have an additional 0.23 feet of drawdown after 1 month and 0.43 feet of drawdown after 10 years. The drawdown rate decreases with time as steady state is approached.

Recharge to the groundwater system from precipitation is not considered with this evaluation. Additionally, the drawdown values calculated are based on literature-derived aquifer parameters and limited site-specific data. The use of published values, rather than site-specific data, coupled with the simplifying assumptions for the method, suggest that the calculated values represent an idealized drawdown and are likely conservative, worst-case estimates.

4.0 SUMMARY

The calculated drawdown values indicate minimal excess drawdown risk to existing offsite wells based on the increased pumping rate of 21.9 MGPY from the Main Agriculture Well.

Attachments:

- A: Figure 1
- B: Well Completion Reports
- C: Drawdown Results
- D: Response to Comments Memorandum

References:

- CGB, 2004. California's Groundwater Bulletin 118, Gilroy-Hollister Groundwater Basin, Llagas Subbasin, updated February 27, 2004.
- Driscoll, F.G., 1986. Ground Water and Wells. 2nd Edition, Johnson Division, St. Paul.
- Freeze and Cherry, 1979. Groundwater. Englewood Cliffs, N.J., Prentice-Hall.
- Valley Water, 2021. Santa Clara Valley Water District 2021 Groundwater Management Plan for the Santa Clara and Llagas Subbasins. November 2021.

mb/gw

[https://golderassociates.sharepoint.com/sites/112344/project files/5 technical work/drawdown evaluation/revised memo/zbest_drawdown_tm_09292022.docx](https://golderassociates.sharepoint.com/sites/112344/project%20files/5%20technical%20work/drawdown%20evaluation/revised%20memo/zbest_drawdown_tm_09292022.docx)

ATTACHMENT A

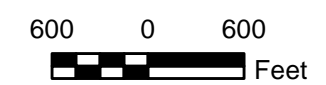
Figure 1



LEGEND

- Well Location
- Well Location - Not in Use
- Parcel Line

Note: Wells within one mile of Main Agriculture Well are shown.



REFERENCE
 COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA III
 FIPS 0403 FEET

CLIENT
 Z-BEST COMPOSTING FACILITY
 GILROY, CALIFORNIA

PROJECT
 Z-BEST

TITLE
ON-SITE AND OFF-SITE WELL LOCATIONS

CONSULTANT	YYYY-MM-DD	2022-08-25
	PREPARED	SHL
	DESIGN	SHL
	REVIEW	GW
	APPROVED	

PROJECT No.	CONTROL	Rev.	FIGURE
GL13397640	---	---	1

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

ATTACHMENT B

Well Completion Reports

State of California
Well Completion Report
 Form DWR 188 Auto-Completed 9/13/2021
 WCR2021-008568

Owner's Well Number _____ Date Work Began 04/21/2021 Date Work Ended 05/30/2021
 Local Permit Agency Santa Clara Valley Water District
 Secondary Permit Agency County of Santa Clara DEH Permit Number C20210317001 Permit Date 03/17/2021

Well Owner (must remain confidential pursuant to Water Code 13752)			
Name	<u>XXXXXXXXXXXXXXXXXXXX</u>		
Mailing Address	<u>XXXXXXXXXXXXXXXXXXXX</u> <u>XXXXXXXXXXXXXXXXXXXX</u>		
City	State	Zip	<u>XXXXX</u>

Planned Use and Activity	
Activity	<u>New Well</u>
Planned Use	<u>Water Supply Irrigation - Agriculture</u>

Well Location					
Address <u>980 State 25 HWY</u>			APN <u>841-37-029</u>		
City <u>Gilroy</u>	Zip <u>95020</u>	County <u>Santa Clara</u>	Township <u>11 S</u>		
Latitude <u>36 56 47 N</u>	Longitude <u>-121 31 1 W</u>		Range <u>04 E</u>		
Deg. Min. Sec.	Deg. Min. Sec.		Section <u>27</u>		
Dec. Lat. <u>36.9463889</u>		Dec. Long. <u>-121.5169444</u>		Baseline Meridian <u>Mount Diablo</u>	
Vertical Datum _____		Horizontal Datum <u>WGS84</u>		Ground Surface Elevation <u>140</u>	
Location Accuracy <u>5 Ft</u>		Location Determination Method <u>GPS</u>		Elevation Accuracy <u>1 Ft</u>	
				Elevation Determination Method <u>GPS</u>	

Borehole Information	
Orientation <u>Vertical</u>	Specify _____
Drilling Method <u>Direct Rotary</u>	Drilling Fluid <u>Bentonite</u>
Total Depth of Boring <u>560</u>	Feet
Total Depth of Completed Well <u>551</u>	Feet

Water Level and Yield of Completed Well			
Depth to first water	<u>48</u>	(Feet below surface)	
Depth to Static _____			
Water Level	<u>17</u>	(Feet)	Date Measured <u>05/24/2021</u>
Estimated Yield*	<u>1000</u>	(GPM)	Test Type <u>Air Lift</u>
Test Length	<u>50</u>	(Hours)	Total Drawdown <u>523</u> (feet)
*May not be representative of a well's long term yield.			

Geologic Log - Free Form		
Depth from Surface Feet to Feet		Description
0	3	Mended topsoil
3	13	Black adobe clay
13	48	Gray clay
48	67	Large gravel with cobbles
67	75	Gray sticky clay
75	90	Large gravel
90	110	Gray clay
110	135	Medium gravel
135	148	Gray clay
148	184	Small gravel
184	195	Gray swelling clay
195	210	Medium gravel
210	217	Gray clay
217	235	Rounded gravel
235	275	Gray sticky clay

275	310	Small gravel
310	327	Gray clay
327	375	Medium gravel
375	385	Gray clay
385	405	Small gravel with coarse sand
405	412	Gray clay
412	435	Medium gravel
435	443	Gray sandy clay
443	485	Tight gravel
485	505	Gray clay
505	525	Small gravel
525	530	Gray clay
530	550	Tight gravel
550	560	Cemented gray clay

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	19	Conductor or Fill Pipe	Low Carbon Steel	Grade: ASTM A53	0.25	30			
2	0	160	Blank	Low Carbon Steel	Grade: ASTM A53	0.25	16			
2	160	200	Screen	Low Carbon Steel	Grade: ASTM A53	0.25	16	Milled Slots	0.06	
2	200	351	Blank	Low Carbon Steel	Grade: ASTM A53	0.25	16			
2	351	551	Screen	Low Carbon Steel	Grade: ASTM A53	0.25	16	Milled Slots	0.06	

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	19	Cement	10.3 Sack Mix		sand slurry
0	110	Cement	10.3 Sack Mix		
110	560	Filter Pack	8 x 16		washed sand

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	19	38
19	560	26

Attachments

0448ELOG-5.pdf - Geophysical Log
Water well construction diagram.xlsx - Well Construction Diagram

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name GUARDINO WELL DRILLING INC
Person, Firm or Corporation

4825 CROY ROAD MORGAN HILL CA 95037
Address City State Zip

Signed electronic signature received 07/13/2021 664960
C-57 Licensed Water Well Contractor Date Signed C-57 License Number

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number
	10S04E34H004		

									N
--	--	--	--	--	--	--	--	--	---

Latitude Deg/Min/Sec

TRS: 10S04E34H004M

APN:

										W
--	--	--	--	--	--	--	--	--	--	---

Longitude Deg/Min/Sec

1062

The free Adobe Reader may be used to view and complete this form. However, software must be purchased to complete, save, and reuse a saved form.

File Original with DWR

State of California
Well Completion Report

Refer to Instruction Pamphlet
No. e0087944

Page _____ of _____
Owner's Well Number _____
Date Work Began 3/16/09 Date Work Ended 5/13/09
Local Permit Agency S.C.V.W.D.
Permit Number D9400157 Permit Date 3-10-09

DWR Use Only - Do Not Fill In

11504E27E006
State Well Number/Site Number

Latitude _____ N _____ W
Longitude _____

APN/TRS/Other _____

Geologic Log		
Orientation		Specify
<input checked="" type="radio"/> Vertical	<input type="radio"/> Horizontal	<input type="radio"/> Angle
Drilling Method <u>ROTARY</u>		Drilling Fluid <u>MUD</u>
Depth from Surface	Description	
Feet . . . to Feet.	Describe material, grain size, color, etc.	
0	2	BASE ROCK
2	10	SANDY CLAY
10	15	SAND
15	28	BLUE CLAY
28	35	SANDY SILT
35	40	BLUE CLAY
40	44	SAND
44	68	GRAVEL
68	82	BLUE CLAY
82	84	SAND
84	93	BLUE CLAY w/ SAND STRCS
93	98	SAND
98	110	BLUE CLAY
110	122	SAND
122	130	SAND w/CLAY STRCS
130	140	SAND w/GRAVEL & CLAY STRCS
140	157	SAND & GRAVEL
157	162	YELLOW CLAY
162	190	SANDY CLAY
190	195	COURSE SAND
195	245	BLUE CLAY
245	263	SAND & BLUE CLAY
263	277	SAND & GRAVEL
277	318	BLUE CLAY
318	370	GRAVEL
370	377	GRAVELY SAND
377	403	GRAVEL
403	410	GRAY CLAY
Total Depth of Boring <u>410</u> Feet		
Total Depth of Completed Well <u>408</u> Feet		

Well Location

Address 980 STATE HWY 25
City GILROY County SANTA CLARA
Latitude _____ N Longitude _____ W
Datum _____ Decimal Lat. _____ Decimal Long. _____
APN Book 841 Page 37 Parcel 028
Township _____ Range _____ Section _____

Location Sketch
(Sketch must be drawn by hand after form is printed.)

Activity

New Well
 Modification/Repair
 Deepen
 Other _____
 Destroy
Describe procedures and materials under "GEOLOGIC LOG"

Planned Uses

Water Supply
 Domestic Public
 Irrigation Industrial
 Cathodic Protection
 Dewatering
 Heat Exchange
 Injection
 Monitoring
 Remediation
 Sparging
 Test Well
 Vapor Extraction
 Other _____

If it is the order, give distance of well from roads, bidding fences, rivers, etc. and attach a map. Use additional paper if necessary. Please be accurate and complete.

Water Level and Yield of Completed Well

Depth to first water _____ (Feet below surface)
Depth to Static _____
Water Level 8 (Feet) Date Measured 5/13/09
Estimated Yield 2,500 (GPM) Test Type AIR
Test Length 6 HRS (Hours) Total Drawdown _____ (Feet)
*May not be representative of a well's long term yield.

Casings								Annular Material		
Depth from Surface	Borehole Diameter	Type	Material	Wall Thickness	Outside Diameter	Screen Type	Slot Size if Any	Depth from Surface	Fill	Description
Feet to Feet	(Inches)			(Inches)	(Inches)		(Inches)	Feet to Feet		
0	138	24	BLANK SCH 40 PIPE	.5	15			0	118	CONCRETE 10 SACK
138	158	"	PERF	"	"	.032	.032	118	408	SAND COX8
158	258	"	BLANK	"	"					
258	278	"	PERF	"	"		.032			
278	318	"	BLANK	"	"					
318	398	"	PERF	"	"		.032			

Attachments

Geologic Log
 Well Construction Diagram
 Geophysical Log(s)
 Soil/Water Chemical Analyses
 Other 2 in. 1/2" GENIE

Attach additional information, if it exists.

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name ANDREW DAUGHERTY
Person, Firm, or Corporation DAUGHERTY PERMITS
Address 10150X 1519 City SAN MARTIN State CA Zip 95046
Signed [Signature] Date Signed 6/4/09 C-57 License Number 733914

Authorized Water Well Contractor

DWR 188 REV. 1/2006

RECEIVED
JUL 07 2009
S.C.V.W.D.

ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

147

TRIPPLICATE
Owner's Copy

STATE OF CALIFORNIA

WELL COMPLETION REPORT

Refer to Instruction Pamphlet

2012

DWR USE ONLY DO NOT FILL IN

11504E27E006

STATE WELL NO./STATION NO.

LATITUDE	LONGITUDE
APN/TRS/OTHER	

Page _____ of _____

Owner's Well No. _____

ate Work Began _____, Ended _____

Local Permit Agency _____

Permit No. _____ Permit Date _____

No. ~~768881~~
EC087944

GEOLOGIC LOG				WELL OWNER			
ORIENTATION (\sphericalangle)	_____ VERTICAL _____ HORIZONTAL _____ ANGLE _____ (SPECIFY)	DRILLING METHOD _____	FLUID _____	Name _____	Mailing Address _____		
DEPTH FROM SURFACE		DESCRIPTION		CITY _____ STATE _____ ZIP _____			
Ft. to Ft.	Describe material, grain size, color, etc.			WELL LOCATION			
				Address _____			
				City _____			
				County _____			
				APN Book _____ Page _____		Parcel _____	
				Township _____ Range _____		Section _____	
				Latitude _____		Longitude _____	
				NORTH		WEST	
				DEG. MIN. SEC.		DEG. MIN. SEC.	
				LOCATION SKETCH		ACTIVITY (\sphericalangle)	
				NORTH		NEW WELL _____	
				WEST		MODIFICATION/REPAIR	
				EAST		_____ Deepen _____ Other (Specify) _____	
				SOUTH		DESTROY (Describe Procedures and Materials Under "GEOLOGIC LOG") _____	
				Illustrate or Describe Distance of Well from Roads, Buildings, Fences, Rivers, etc. and attach a map. Use additional paper if necessary. PLEASE BE ACCURATE & COMPLETE.			
				WATER LEVEL & YIELD OF COMPLETED WELL			
				DEPTH TO FIRST WATER _____ (Ft.) BELOW SURFACE			
				DEPTH OF STATIC WATER LEVEL _____ (Ft.) & DATE MEASURED _____			
				ESTIMATED YIELD _____ (GPM) & TEST TYPE _____			
				TEST LENGTH _____ (Hrs.) TOTAL DRAWDOWN _____ (Ft.)			
				* May not be representative of a well's long-term yield.			
TOTAL DEPTH OF BORING _____ (Feet)		TOTAL DEPTH OF COMPLETED WELL _____ (Feet)					

DEPTH FROM SURFACE	BORE-HOLE DIA. (Inches)	CASING (S)							
		TYPE (\sphericalangle)				MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
		BLANK	SCREEN	CON-DUCTOR	FILL PIPE				
Ft. to Ft.									
398	408	X			SOL 40 PVC	14"	1/2"		

DEPTH FROM SURFACE	ANNULAR MATERIAL			
	TYPE			
	CE-MENT (\sphericalangle)	BEN-TONITE (\sphericalangle)	FILL (\sphericalangle)	FILTER PACK (TYPE/SIZE)
Ft. to Ft.				

- ATTACHMENTS (\sphericalangle)**
- _____ Geologic Log
- _____ Well Construction Diagram
- _____ Geophysical Log(s)
- _____ Soil/Water Chemical Analyses
- _____ Other _____
- ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.**

CERTIFICATION STATEMENT

undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.

NAME _____ (PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)

ADDRESS _____ CITY _____ STATE _____ ZIP _____

Signed _____ WELL DRILLER/AUTHORIZED REPRESENTATIVE

DATE SIGNED _____ C-57 LICENSE NUMBER _____

*This Form-Active Reader may be used to view and complete this form. However, software must be purchased to complete, save, and reuse a saved form.
 File Original with DWR

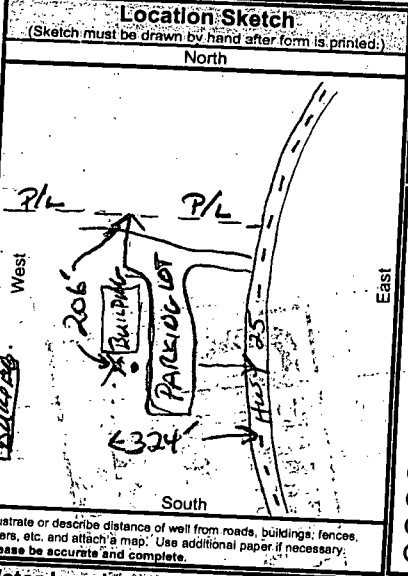
Page 1 of 1
 Owner's Well Number _____
 Date Work Began 12/15
 Local Permit Agency SCWD
 Permit Number 08W00960 Permit Date 11-19-08

State of California
Well Completion Report
 Refer to Instruction Pamphlet
 No. e0082938

DWR Use Only - Do Not Fill In
11504E27E005
 State Well Number/Site Number
 Latitude _____ N _____ W
 Longitude _____
 APN/TRS/Other _____

Geologic Log		
Orientation		Specify
<input type="radio"/> Vertical	<input type="radio"/> Horizontal	<input type="radio"/> Angle
Drilling Method		Drilling Fluid
Depth from Surface		Description
Feet	to Feet	Describe material, grain size, color, etc.
0	5	GRAY GRAVELLY CLAY
5	12	GRAY SANDY CLAY
12	17	GRAY SILTY SAND
17	23	BLUE CLAY
23	30	BLUE CLAY WITH GRAVEL STRKS
30	40	COURSE GRAY SAND
40	45	SANDY CLAY
45	63	GRAVEL
63	75	SAND & GRAVEL
75	90	BLUE CLAY
90	100	BLUE SANDY CLAY
100	105	SAND
105	112	GRAVELLY CLAY
112	125	SAND & GRAVEL
125	163	SAND & GRAVEL
163	185	YELLOW CLAY
185	200	GRAY SAND WITH GRAVEL
200	217	GRAVELLY CLAY
217	220	SANDY CLAY
220	250	GRAY CLAY
250	264	GRAY CLAY WITH SAND STRKS
264	274	BLUE CLAY WITH SAND STRKS
274	277	GRAY GRAVELLY CLAY
277	285	GRAVEL
285	294	YELLOW GRAVELLY CLAY
294	320	BLUE CLAY
320	330	YELLOW CLAY WITH SAND STRKS
330	359	GRAVEL
359	370	BLUE CLAY W STRKS OF GRAVEL

Well Location
 Address 480 STATE Highway 25
 City 1616207 County SANTA CLARA
 Latitude _____ Dec. _____ Min. _____ Sec. _____ N Longitude _____ Dec. _____ Min. _____ Sec. _____ W
 Datum _____ Decimal Lat. _____ Decimal Long. _____
 APN Book 841 Page 37 Parcel 02P
 Township _____ Range _____ Section _____



Activity
 New Well
 Modification/Repair
 Deepen
 Other
 Destroy
 Describe procedures and materials under "GEOLOGIC LOG"

Planned Uses
 Water Supply
 Domestic Public
 Irrigation Industrial
 Cathodic Protection
 Dewatering
 Heat Exchange
 Injection
 Monitoring
 Remediation
 Sparging
 Test Well
 Vapor Extraction
 Other

Total Depth of Boring 370 Feet
 Total Depth of Completed Well 367 Feet

Water Level and Yield of Completed Well
 Depth to first water _____ (Feet below surface)
 Depth to Static _____ (Feet below surface)
 Water Level 10 (Feet) Date Measured 12/20/08
 Estimated Yield * 100 (GPM) Test Type AIR LIFT
 Test Length 1 (Hours) Total Drawdown _____ (Feet)
 *May not be representative of a well's long term yield.

Casings						
Depth from Surface	Borehole Diameter	Type	Material	Wall Thickness	Outside Diameter	Screen Type
Feet to Feet	(Inches)			(Inches)	(Inches)	
0	327	10	BLANK PVC			
327	367	10	SPECIAL PVC	200		
				200		FACTORY .032

Annular Material		
Depth from Surface	Fill	Description
Feet to Feet		
0	250	CONCRETE
250	367	6 X 8 SAND

Attachments
 Geologic Log
 Well Construction Diagram
 Geophysical Log(s)
 Soil/Water Chemical Analyses
 Other _____
 Attach additional information, if it exists.

Certification Statement
 I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief
 Name Douglas Pump Service
 Person, Firm or Corporation
 Address P.O. Box 1519
 City SAN MARTIN State CA Zip 95046
 Signed [Signature] Date Signed 11/8/08 C-57 License Number 733914
 C-57 Licensed Water Well Contractor

ATTACHMENT C

Drawdown Results

**Drawdown Evaluation Calculations
1 Month of Operation**

$$u = \frac{r^2 S}{4Tt}$$

$$h_0 - h = \frac{Q}{4\pi T} W(u)$$

Aquifer Parameters			Well Parameters		
K (ft/dy)		26	Flow Rate	gpm	r^2/d
S	1.00E-03		Duration (months)	1	
b (ft)	497				
T (ft ² /dy)		12707			

Sources: Groundwater and Wells, Driscoll 1986
Integrated Water Management Pump Test 7/20/2022

$$u = \frac{r^2 S}{4Tt}$$

$$h_0 - h = \frac{Q}{4\pi T} W(u)$$

Aquifer Parameters			Well Parameters		
K (ft/dy)		140	Flow Rate	gpm	r^2/d
S	1.00E-03		Duration (months)	1	
b (ft)	328				
T (ft ² /dy)		45875			

Sources: Groundwater and Wells, Driscoll 1986
Integrated Water Management Pump Test 8/5/2022

Ag Well Existing Pumping Rate

Point ID	radius (ft)	time (dy)	T (ft ² /dy)	u	W(u)	h ₀ -h (ft)	W(u) Upper	W(u) Lower	u remainder	W(u) minus	W(u) final
	1	30	12707	6.468E-10	20.58512	1.86129484	20.66	20.50	0.47	0.07488	20.59
	50	30	12707	1.617E-06	12.81427	1.158659003	13.24	12.55	0.617	0.42573	12.81
	100	30	12707	6.468E-06	11.37512	1.028531879	11.45	11.29	0.47	0.07488	11.38
	500	30	12707	0.000162	8.2022	0.741638258	8.63	7.94	0.62	0.4278	8.20
	1000	30	12707	0.000647	6.76950	0.612094339	6.84	6.69	0.47	0.0705	6.77
	1500	30	12707	0.001455	6.01605	0.543967819	6.33	5.64	0.455	0.31395	6.02
Offsite Well No. 1	1729	30	12707	0.001933	5.69	0.514145682	6.33	5.64	0.933	0.64377	5.69
	2000	30	12707	0.002587	5.39933	0.488204347	5.64	5.23	0.587	0.24067	5.40
Offsite Well No. 6	2184	30	12707	0.003085	5.2062	0.470741642	5.23	4.95	0.085	0.0238	5.21
	2500	30	12707	0.004043	4.94054	0.446720816	4.95	4.73	0.043	0.00946	4.94
Offsite Well No. 7	2799	30	12707	0.005069	4.71689	0.42649851	4.73	4.54	0.069	0.01311	4.72
	3000	30	12707	0.005821	4.5740	0.413579382	4.73	4.54	0.821	0.15599	4.57
Offsite Well No. 5	3012	30	12707	0.005869	4.56489	0.412754757	4.73	4.54	0.869	0.16511	4.56
Offsite Well No. 2	3374	30	12707	0.007363	4.34281	0.392674441	4.39	4.26	0.363	0.04719	4.34
Offsite Well No. 4	3443	30	12707	0.007667	4.30329	0.389101034	4.39	4.26	0.667	0.08671	4.30
	3500	30	12707	0.007923	4.27001	0.386091875	4.39	4.26	0.923	0.11999	4.27
Offsite Well No. 10	3865	30	12707	0.009664	4.0736	0.368332595	4.14	4.04	0.664	0.0664	4.07
	4000	30	12707	0.010349	4.015919	0.363117111	4.04	3.35	0.0349	0.024081	4.02
Offsite Well No. 8	4025	30	12707	0.010479	4.006949	0.362306049	4.04	3.35	0.0479	0.033051	4.01
Offsite Well No. 9	4195	30	12707	0.011384	3.944504	0.356659808	4.04	3.35	0.1384	0.095496	3.94
Offsite Well No. 9A	4261	30	12707	0.011745	3.919595	0.35440755	4.04	3.35	0.1745	0.120405	3.92
	4500	30	12707	0.013098	3.826238	0.345966263	4.04	3.35	0.3098	0.213762	3.83
	5000	30	12707	0.016170	3.61427	0.326800237	4.04	3.35	0.617	0.42573	3.61
Offsite Well No. 3	5109	30	12707	0.016883	3.565073	0.322351873	4.04	3.35	0.6883	0.474927	3.57
	5280	30	12707	0.018032	3.485792	0.31518333	4.04	3.35	0.8032	0.554208	3.49

Well Z

Point ID	radius (ft)	time (dy)	T (ft ² /dy)	u	W(u)	h ₀ -h (ft)	W(u) Upper	W(u) Lower	u remainder	W(u) minus	W(u) final
	1	30	45875	1.792E-10	21.90352	0.394989	22.45	21.76	0.79	0.54648	21.90
	50	30	45875	4.479E-07	14.04462	0.253269	14.15	13.93	0.479	0.10538	14.04
	100	30	45875	1.792E-06	12.69352	0.228904	13.24	12.55	0.79	0.54648	12.69
	500	30	45875	0.00004479	9.44462	0.170316	9.55	9.33	0.479	0.10538	9.44
	1000	30	45875	0.0001792	8.08352	0.145771	8.63	7.94	0.79	0.54648	8.08
Offsite Well No. 2	1422	30	45875	0.000362	7.3564	0.132659	7.53	7.25	0.62	0.1736	7.36
Offsite Well No. 7	1473	30	45875	0.000389	7.2808	0.131296	7.53	7.25	0.89	0.2492	7.28
	1500	30	45875	0.000403	7.2431	0.130616	7.25	7.02	0.030	0.0069	7.24
Offsite Well No. 9	1557	30	45875	0.000434	7.1718	0.12933	7.25	7.02	0.34	0.0782	7.17
Offsite Well No. 9A	1612	30	45875	0.000466	7.0982	0.128003	7.25	7.02	0.66	0.1518	7.10
	2000	30	45875	0.000717	6.6662	0.120213	6.69	6.55	0.170	0.0238	6.67
Offsite Well No. 6	2259	30	45875	0.000914	6.4246	0.115856	6.44	6.33	0.140	0.0154	6.42
	2500	30	45875	0.001120	6.2472	0.112657	6.33	5.64	0.12	0.0828	6.25
Offsite Well No. 1	2795	30	45875	0.001400	6.05	0.109173	6.33	5.64	0.400	0.276	6.05
	3000	30	45875	0.001612	5.9077	0.106535	6.33	5.64	0.612	0.42228	5.91
	3500	30	45875	0.002195	5.56005	0.100265	5.64	5.23	0.195	0.07995	5.56
Offsite Well No. 10	3952	30	45875	0.002799	5.31241	0.095799	5.64	5.23	0.799	0.32759	5.31
	4000	30	45875	0.002867	5.28453	0.095297	5.64	5.23	0.867	0.35547	5.28
Offsite Well No. 4	4465	30	45875	0.003573	5.06956	0.09142	5.23	4.95	0.573	0.16044	5.07
	4500	30	45875	0.003628	5.05416	0.091142	5.23	4.95	0.628	0.17584	5.05
Offsite Well No. 3	4669	30	45875	0.003905	4.9766	0.089744	5.23	4.95	0.905	0.2534	4.98
	5000	30	45875	0.004479	4.84462	0.087364	4.95	4.73	0.479	0.10538	4.84
	5280	30	45875	0.004995	4.7311	0.085317	4.95	4.73	0.995	0.2189	4.73
Offsite Well No. 5	5743	30	45875	0.005909	3.515186	0.06339	4.04	3.35	0.7606	0.524814	3.52
Offsite Well No. 8	6910	30	45875	0.008554	2.919764	0.052653	2.96	2.68	0.1437	0.040236	2.92

$$u = \frac{r^2 S}{4Tt}$$

$$h_0 - h = \frac{Q}{4\pi T} W(u)$$

Aquifer Parameters			Well Parameters		
K (ft/dy)		26	Flow Rate	gpm	r^2/d
S	1.00E-03		Duration (months)	1	
b (ft)	497				
T (ft ² /dy)		12707			

Sources: Groundwater and Wells, Driscoll 1986
Integrated Water Management Pump Test 7/20/2022

Ag Well Proposed Pumping Rate

Point ID	radius (ft)	time (dy)	T (ft ² /dy)	u	W(u)	h ₀ -h (ft)	Upper	Lower	der	minus	final
	1	30	12707	6.468E-10	20.58512	2.878802685	20.66	20.50	0.47	0.07488	20.59
	50	30	12707	1.617E-06	12.81427	1.792059259	13.24	12.55	0.617	0.42573	12.81
	100	30	12707	6.468E-06	11.37512	1.590795973	11.45	11.29	0.47	0.07488	11.38
	500	30	12707	0.000162	8.2022	1.147067172	8.63	7.94	0.62	0.4278	8.20
	1000	30	12707	0.000647	6.76950	0.946705911	6.84	6.69	0.47	0.0705	6.77
	1500	30	12707	0.001455	6.01605	0.841336893	6.33	5.64	0.455	0.31395	6.02
Offsite Well No. 1	1729	30	12707	0.001933	5.69	0.795211988	6.33	5.64	0.933	0.64377	5.69
	2000	30	12707	0.002587	5.39933	0.75508939	5.64	5.23	0.587	0.24067	5.40
Offsite Well No. 6	2184	30	12707	0.003085	5.2062	0.728080407	5.23	4.95	0.085	0.0238	5.21
	2500	30	12707	0.004043	4.94054	0.690928196	4.95	4.73	0.043	0.00946	4.94
Offsite Well No. 7	2799	30	12707	0.005069	4.71689	0.659651029	4.73	4.54	0.069	0.01311	4.72
	3000	30	12707	0.005821	4.5740	0.639669444	4.73	4.54	0.821	0.15599	4.57
Offsite Well No. 5	3012	30	12707	0.005869	4.56489	0.638394024	4.73	4.54	0.869	0.16511	4.56
Offsite Well No. 2	3374	30	12707	0.007363	4.34281	0.60733642	4.39	4.26	0.363	0.04719	4.34
Offsite Well No. 4	3443	30	12707	0.007667	4.30329	0.601809599	4.39	4.26	0.667	0.08671	4.30
	3500	30	12707	0.007923	4.27001	0.597155433	4.39	4.26	0.923	0.11999	4.27
Offsite Well No. 10	3865	30	12707	0.009664	4.0736	0.569687746	4.14	4.04	0.664	0.0664	4.07
	4000	30	12707	0.010349	4.015919	0.561621132	4.04	3.35	0.0349	0.024081	4.02
Offsite Well No. 8	4025	30	12707	0.010479	4.006949	0.560366689	4.04	3.35	0.0479	0.033051	4.01
Offsite Well No. 9	4195	30	12707	0.011384	3.944504	0.551633836	4.04	3.35	0.1384	0.095496	3.94
Offsite Well No. 9A	4261	30	12707	0.011745	3.919595	0.548150344	4.04	3.35	0.1745	0.120405	3.92
	4500	30	12707	0.013098	3.826238	0.535094487	4.04	3.35	0.3098	0.213762	3.83
	5000	30	12707	0.016170	3.61427	0.505451034	4.04	3.35	0.617	0.42573	3.61
Offsite Well No. 3	5109	30	12707	0.016883	3.565073	0.498570896	4.04	3.35	0.6883	0.474927	3.57
	5280	30	12707	0.018032	3.485792	0.48748355	4.04	3.35	0.8032	0.554208	3.49

Current Operation

Point ID	radius (ft)	h ₀ -h (ft)
	1	1.41
	50	1.26
	100	0.91
	500	0.76
	1000	0.68
	1500	0.67
Offsite Well No. 1	1729	0.62
	2000	0.61
Offsite Well No. 6	2184	0.59
	2500	0.56
Offsite Well No. 7	2799	0.56
	3000	0.52
Offsite Well No. 5	3012	0.48
Offsite Well No. 2	3374	0.53
Offsite Well No. 4	3443	0.48
	3500	0.49
Offsite Well No. 10	3865	0.46
	4000	

Drawdown Evaluation Calculations 6 Months of Operation

$$u = \frac{r^2 S}{4Tt}$$

$$h_o - h = \frac{Q}{4\pi T} W(u)$$

Aquifer Parameters			Well Parameters		
K (ft/dy)		26	Flow Rate	gpm	f ³ /d
S	1.00E-03		Duration (months)	6	
b (ft)	497				
T (ft ² /dy)		12707			

Sources: Groundwater and Wells, Driscoll 1986
Integrated Water Management Pump Test 7/20/2022

$$u = \frac{r^2 S}{4Tt}$$

$$h_o - h = \frac{Q}{4\pi T} W(u)$$

Aquifer Parameters			Well Parameters		
K (ft/dy)		140	Flow Rate	gpm	f ³ /d
S	1.00E-03		Duration (months)	6	
b (ft)	328				
T (ft ² /dy)		45875			

Sources: Groundwater and Wells, Driscoll 1986
Integrated Water Management Pump Test 8/5/2022

Ag Well Existing Pumping Rate

Well ID	radius (ft)	time (dy)	T (ft ² /dy)	u	W(u)	h _o -h (ft)	W(u) Upper	W(u) Lower	u remainder	W(u) minus	W(u) final
	1	183	12707	1.078E-10	22.39618	2.025049855	22.45	21.76	0.08	0.05382	22.40
	50	183	12707	2.695E-07	14.56505	1.316963535	14.85	14.44	0.695	0.28495	14.57
	100	183	12707	1.078E-06	13.18618	1.192286894	13.24	12.55	0.08	0.05382	13.19
	500	183	12707	0.000027	9.962	0.900758373	10.24	9.84	0.695	0.278	9.96
	1000	183	12707	0.000108	8.57480	0.775328538	8.63	7.94	0.08	0.0552	8.57
	1500	183	12707	0.000243	7.7637	0.701989337	7.94	7.53	0.430	0.1763	7.76
Offsite Well No. 1	1729	183	12707	0.000322	7.47	0.675288479	7.53	7.25	0.220	0.0616	7.47
	2000	183	12707	0.000431	7.1787	0.64909397	7.25	7.02	0.310	0.0713	7.18
Offsite Well No. 6	2184	183	12707	0.000514	6.9948	0.632465837	7.02	6.84	0.140	0.0252	6.99
	2500	183	12707	0.000674	6.729	0.608432352	6.84	6.69	0.74	0.111	6.73
Offsite Well No. 7	2799	183	12707	0.000845	6.50105	0.587821243	6.55	6.44	0.445	0.04895	6.50
	3000	183	12707	0.000970	6.3630	0.57533884	6.44	6.33	0.7	0.077	6.36
Offsite Well No. 5	3012	183	12707	0.000978	6.3542	0.574543149	6.44	6.33	0.78	0.0858	6.35
Offsite Well No. 2	3374	183	12707	0.001227	6.17337	0.558192603	6.33	5.64	0.227	0.15663	6.17
Offsite Well No. 4	3443	183	12707	0.001278	6.13818	0.555010744	6.33	5.64	0.278	0.19182	6.14
	3500	183	12707	0.001321	6.10851	0.552327999	6.33	5.64	0.321	0.22149	6.11
Offsite Well No. 10	3865	183	12707	0.001611	5.90841	0.534235071	6.33	5.64	0.611	0.42159	5.91
	4000	183	12707	0.001725	5.82975	0.527122679	6.33	5.64	0.725	0.50025	5.83
OffSite Well No. 8	4025	183	12707	0.001746	5.81526	0.525812501	6.33	5.64	0.746	0.51474	5.82
Offsite Well No. 9	4195	183	12707	0.001897	5.71107	0.5163917	6.33	5.64	0.897	0.61893	5.71
Offsite Well No. 9A	4261	183	12707	0.001957	5.66967	0.512648336	6.33	5.64	0.957	0.66033	5.67
	4500	183	12707	0.002183	5.56497	0.503181422	5.64	5.23	0.183	0.07503	5.56
	5000	183	12707	0.002695	5.35505	0.484200575	5.64	5.23	0.695	0.28495	5.36
Offsite Well No. 3	5109	183	12707	0.002814	5.30626	0.479789011	5.64	5.23	0.814	0.33374	5.31
	5280	183	12707	0.003005	5.2286	0.472767037	5.23	4.95	0.005	0.0014	5.23

Well Z

Well ID	radius (ft)	time (dy)	T (ft ² /dy)	u	W(u)	h _o -h (ft)	W(u) Upper	W(u) Lower	u remainder	W(u) minus	W(u) final
	1	183	45875	2.986E-11	21.90352	0.394989	22.45	21.76	0.79	0.54648	21.90
	50	183	45875	7.465E-08	14.04462	0.253269	14.15	13.93	0.479	0.10538	14.04
	100	183	45875	2.986E-07	12.69352	0.228904	13.24	12.55	0.79	0.54648	12.69
	500	183	45875	0.00000747	9.44462	0.170316	9.55	9.33	0.479	0.10538	9.44
	1000	183	45875	0.0000299	8.08352	0.145771	8.63	7.94	0.79	0.54648	8.08
Offsite Well No. 2	1422	183	45875	0.000060	7.3564	0.132659	7.53	7.25	0.62	0.1736	7.36
Offsite Well No. 7	1473	183	45875	0.000065	7.2808	0.131296	7.53	7.25	0.89	0.2492	7.28
	1500	183	45875	0.000067	7.2431	0.130616	7.25	7.02	0.030	0.0069	7.24
Offsite Well No. 9	1557	183	45875	0.000072	7.1718	0.12933	7.25	7.02	0.34	0.0782	7.17
Offsite Well No. 9A	1612	183	45875	0.000078	7.0982	0.128003	7.25	7.02	0.66	0.1518	7.10
	2000	183	45875	0.000119	6.6662	0.120213	6.69	6.55	0.170	0.0238	6.67
Offsite Well No. 6	2259	183	45875	0.000152	6.4246	0.115856	6.44	6.33	0.140	0.0154	6.42
	2500	183	45875	0.000187	6.2472	0.112657	6.33	5.64	0.12	0.0828	6.25
Offsite Well No. 1	2795	183	45875	0.000233	6.05	0.109173	6.33	5.64	0.400	0.276	6.05
	3000	183	45875	0.000269	5.9077	0.106535	6.33	5.64	0.612	0.42228	5.91
	3500	183	45875	0.000366	5.56005	0.100265	5.64	5.23	0.195	0.07995	5.56
Offsite Well No. 10	3952	183	45875	0.000466	5.31241	0.095799	5.64	5.23	0.799	0.32759	5.31
	4000	183	45875	0.000478	5.28453	0.095297	5.64	5.23	0.867	0.35547	5.28
Offsite Well No. 4	4465	183	45875	0.000595	5.06956	0.09142	5.23	4.95	0.573	0.16044	5.07
	4500	183	45875	0.000605	5.05416	0.091142	5.23	4.95	0.628	0.17584	5.05
Offsite Well No. 3	4669	183	45875	0.000651	4.9766	0.089744	5.23	4.95	0.905	0.2534	4.98
	5000	183	45875	0.000747	4.84462	0.087364	4.95	4.73	0.479	0.10538	4.84
	5280	183	45875	0.000832	4.7311	0.085317	4.95	4.73	0.995	0.2189	4.73
Offsite Well No. 5	5743	183	45875	0.000985	3.515186	0.06339	4.04	3.35	0.7606	0.524814	3.52
OffSite Well No. 8	6910	183	45875	0.001426	2.919764	0.052653	2.96	2.68	0.1437	0.040236	2.92

$$u = \frac{r^2 S}{4Tt}$$

$$h_o - h = \frac{Q}{4\pi T} W(u)$$

Aquifer Parameters			Well Parameters		
K (ft/dy)		26	Flow Rate	gpm	f ³ /d
S	1.00E-03		Duration (months)	6	
b (ft)	497				
T (ft ² /dy)		12707			

Sources: Groundwater and Wells, Driscoll 1986
Integrated Water Management Pump Test 7/20/2022

Ag Well Proposed Pumping Rate

Well ID	radius (ft)	time (dy)	T (ft ² /dy)	u	W(u)	h _o -h (ft)	W(u) Upper	W(u) Lower	u remainder	W(u) minus	W(u) final
	1	183	12707	1.078E-10	22.39618	3.132077108	22.45	21.76	0.08	0.05382	22.40
	50	183	12707	2.695E-07	14.56505	2.036903601	14.85	14.44	0.695	0.28495	14.57
	100	183	12707	1.078E-06	13.18618	1.844070396	13.24	12.55	0.08	0.05382	13.19
	500	183	12707	0.000027	9.962	1.39317295	10.24	9.84	0.695	0.278	9.96
	1000	183	12707	0.000108	8.57480	1.199174805	8.63	7.94	0.08	0.0552	8.57
	1500	183	12707	0.000243	7.7637	1.085743508	7.94	7.53	0.430	0.1763	7.76
Offsite Well No. 1	1729	183	12707	0.000322	7.47	1.044446181	7.53	7.25	0.220	0.0616	7.47
	2000	183	12707	0.000431	7.1787	1.003932007	7.25	7.02	0.310	0.0713	7.18
Offsite Well No. 6	2184	183	12707	0.000514	6.9948	0.978213827	7.02	6.84	0.140	0.0252	6.99
	2500	183	12707	0.000674	6.729	0.941042038	6.84	6.69	0.74	0.111	6.73
Offsite Well No. 7	2799	183	12707	0.000845	6.50105	0.909163522	6.55	6.44	0.445	0.04895	6.50
	3000	183	12707	0.000970	6.3630	0.889857406	6.44	6.33	0.7	0.077	6.36
Offsite Well No. 5	3012	183	12707	0.000978	6.3542	0.888626737	6.44	6.33	0.78	0.0858	6.35
Offsite Well No. 2	3374	183	12707	0.001227	6.17337	0.863337893	6.33	5.64	0.227	0.15663	6.17
Offsite Well No. 4	3443	183	12707	0.001278	6.13818	0.858416617	6.33	5.64	0.278	0.19182	6.14
	3500	183	12707	0.001321	6.10851	0.854267305	6.33	5.64	0.321	0.22149	6.11
Offsite Well No. 10	3865	183	12707	0.001611	5.90841	0.826283576	6.33	5.64	0.611	0.42159	5.91
	4000	183	12707	0.001725	5.82975	0.815283076	6.33	5.64	0.725	0.50025	5.83
OffSite Well No. 8	4025	183	12707	0.001746	5.81526	0.813256668	6.33	5.64	0.746	0.51474	5.82
Offsite Well No. 9	4195	183	12707	0.001897	5.71107	0.79868583	6.33	5.64	0.897	0.61893	5.71
Offsite Well No. 9A	4261	183	12707	0.001957	5.66967	0.792896093	6.33	5.64	0.957	0.66033	5.67
	4500	183	12707	0.002183	5.56497	0.778253932	5.64	5.23	0.183	0.07503	5.56
	5000	183	12707	0.002695	5.35505	0.748896889	5.64	5.23	0.695	0.28495	5.36
Offsite Well No. 3	5109	183	12707	0.002814	5.30626	0.74207367	5.64	5.23	0.814	0.33374	5.31
	5280	183	12707	0.003005	5.2286	0.731213018	5.23	4.95	0.005	0.0014	5.23

Current Operation

Well ID	Distance (ft)	Combined h _o -h (ft)
	1	2.42
	50	1.57
	100	1.42
	500	1.07
	1000	0.92
	1500	0.83
Offsite Well No. 1	1729	0.78
	2000	0.77
Offsite Well No. 6	2184	0.75
	2500	0.72
Offsite Well No. 7	2799	0.72
	3000	0.67
Offsite Well No. 5	3012	0.64

Drawdown Evaluation Calculations 12 Months of Operation

$u = \frac{r^2 S}{4Tt}$

$h_o - h = \frac{Q}{4\pi T} W(u)$

Aquifer Parameters			Well Parameters		
K (ft/dy)		26	Flow Rate	gpm	ft ³ /d
S	1.00E-03		Duration (months)	12	
b (ft)	497				
T (ft ² /dy)		12707			

Sources: Groundwater and Wells, Driscoll 1986
Integrated Water Management Pump Test 7/20/2022

$u = \frac{r^2 S}{4Tt}$

$h_o - h = \frac{Q}{4\pi T} W(u)$

Aquifer Parameters			Well Parameters		
K (ft/dy)		140	Flow Rate	gpm	ft ³ /d
S	1.00E-03		Duration (months)	12	
b (ft)	328				
T (ft ² /dy)		45875			

Sources: Groundwater and Wells, Driscoll 1986
Integrated Water Management Pump Test 8/5/2022

Ag Well Existing Pumping Rate

Well ID	radius (ft)	time (dy)	T (ft ² /dy)	u	W(u)	h _o -h (ft)	W(u) Upper	W(u) Lower	u remain-der	W(u) minus	W(u) final
	1	365	12707	5.390E-11	23.0698	2.085958192	23.14	22.96	0.39	0.0702	23.07
	50	365	12707	1.348E-07	15.29988	1.383406446	15.54	14.85	0.348	0.24012	15.30
	100	365	12707	5.390E-07	13.8598	1.253195231	13.93	13.75	0.39	0.0702	13.86
	500	365	12707	0.000013	10.73	0.970200496	10.94	10.24	0.3	0.21	10.73
	1000	365	12707	0.000054	9.25400	0.836744145	9.33	9.14	0.4	0.076	9.25
	1500	365	12707	0.000121	8.4851	0.767217915	8.63	7.94	0.210	0.1449	8.49
Offsite Well No. 1	1729	30	12707	0.001933	8.21	0.742262152	8.63	7.94	0.610	0.4209	8.21
	2000	30	12707	0.002587	7.8744	0.711998768	7.94	7.53	0.160	0.0656	7.87
Offsite Well No. 6	2184	30	12707	0.003085	7.7063	0.696799262	7.94	7.53	0.570	0.2337	7.71
	2500	30	12707	0.004043	7.4264	0.671490863	7.53	7.25	0.37	0.1036	7.43
Offsite Well No. 7	2799	30	12707	0.005069	7.1994	0.650965652	7.25	7.02	0.22	0.0506	7.20
	3000	365	12707	0.000485	7.0545	0.637863877	7.25	7.02	0.85	0.1955	7.05
Offsite Well No. 5	3012	30	12707	0.005869	7.0453	0.637032018	7.25	7.02	0.89	0.2047	7.05
Offsite Well No. 2	3374	30	12707	0.007363	6.819	0.616570101	6.84	6.69	0.14	0.021	6.82
Offsite Well No. 4	3443	30	12707	0.007667	6.7815	0.613179372	6.84	6.69	0.39	0.0585	6.78
	3500	30	12707	0.007923	6.75	0.61033116	6.84	6.69	0.6	0.09	6.75
Offsite Well No. 10	3865	30	12707	0.009664	6.5445	0.591749967	6.55	6.44	0.05	0.0055	6.54
	4000	30	12707	0.010349	6.4818	0.586080669	6.55	6.44	0.62	0.0682	6.48
OffSite Well No. 8	4025	30	12707	0.010479	6.4697	0.584986593	6.55	6.44	0.73	0.0803	6.47
Offsite Well No. 9	4195	30	12707	0.011384	6.3861	0.577427529	6.44	6.33	0.49	0.0539	6.39
Offsite Well No. 9A	4261	30	12707	0.011745	6.3531	0.574443688	6.44	6.33	0.79	0.0869	6.35
	4500	30	12707	0.013098	6.26721	0.566677563	6.33	5.64	0.091	0.06279	6.27
	5000	30	12707	0.016170	6.08988	0.550643485	6.33	5.64	0.348	0.24012	6.09
Offsite Well No. 3	5109	30	12707	0.016883	6.04917	0.54696251	6.33	5.64	0.407	0.28083	6.05
	5280	30	12707	0.018032	5.98293	0.540973127	6.33	5.64	0.503	0.34707	5.98

Well Z

Well ID	radius (ft)	time (dy)	T (ft ² /dy)	u	W(u)	h _o -h (ft)	W(u) Upper	W(u) Lower	u remain-der	W(u) minus	W(u) final
	1	365	45875	1.493E-11	24.40983	0.440186	24.75	24.06	0.49	0.34017	24.41
	50	365	45875	3.733E-08	16.53476	0.298174	16.74	16.46	0.733	0.20524	16.53
	100	365	45875	1.493E-07	15.19983	0.274101	15.54	14.85	0.49	0.34017	15.20
	500	365	45875	0.0000373	11.92743	0.215089	12.14	11.85	0.733	0.21257	11.93
	1000	365	45875	0.000149	10.59490	0.191059	10.94	10.24	0.49	0.3451	10.59
Offsite Well No. 2	1422	365	45875	0.000030	9.84	0.177446	9.84	9.55	0	0	9.84
Offsite Well No. 7	1473	365	45875	0.000032	9.782	0.1764	9.84	9.55	0.2	0.058	9.78
	1500	365	45875	0.000034	9.724	0.175354	9.84	9.55	0.400	0.116	9.72
Offsite Well No. 9	1557	365	45875	0.000036	9.666	0.174308	9.84	9.55	0.6	0.174	9.67
Offsite Well No. 9A	1612	365	45875	0.000039	9.579	0.172739	9.84	9.55	0.9	0.261	9.58
	2000	365	45875	0.000060	9.14	0.164823	9.14	8.99	0.000	0	9.14
Offsite Well No. 6	2259	365	45875	0.000076	8.912	0.160711	8.99	8.86	0.6	0.078	8.91
	2500	365	45875	0.000093	8.707	0.157015	8.74	8.63	0.3	0.033	8.71
Offsite Well No. 1	2795	365	45875	0.000117	8.51	0.153511	8.63	7.94	0.170	0.1173	8.51
	3000	365	45875	0.000134	8.3954	0.151395	8.63	7.94	0.34	0.2346	8.40
	3500	365	45875	0.000183	8.0573	0.145298	8.63	7.94	0.83	0.5727	8.06
Offsite Well No. 10	3952	365	45875	0.000233	7.8047	0.140743	7.94	7.53	0.33	0.1353	7.80
	4000	365	45875	0.000239	7.7801	0.1403	7.94	7.53	0.39	0.1599	7.78
Offsite Well No. 4	4465	365	45875	0.000298	7.5382	0.135937	7.94	7.53	0.98	0.4018	7.54
	4500	365	45875	0.000302	7.5244	0.135689	7.53	7.25	0.02	0.0056	7.52
Offsite Well No. 3	4669	365	45875	0.000325	7.46	0.134527	7.53	7.25	0.25	0.07	7.46
	5000	365	45875	0.000373	7.3256	0.132104	7.53	7.25	0.73	0.2044	7.33
	5280	365	45875	0.000416	7.2132	0.130077	7.25	7.02	0.16	0.0368	7.21
Offsite Well No. 5	5743	365	45875	0.000492	7.0384	0.126924	7.25	7.02	0.92	0.2116	7.04
OffSite Well No. 8	6910	365	45875	0.000713	6.6718	0.120314	6.69	6.55	0.13	0.0182	6.67

$u = \frac{r^2 S}{4Tt}$

$h_o - h = \frac{Q}{4\pi T} W(u)$

Aquifer Parameters			Well Parameters		
K (ft/dy)		26	Flow Rate	gpm	ft ³ /d
S	1.00E-03		Duration (months)	12	
b (ft)	497				
T (ft ² /dy)		12707			

Sources: Groundwater and Wells, Driscoll 1986
Integrated Water Management Pump Test 7/20/2022

Ag Well Proposed Pumping Rate

Well ID	radius (ft)	time (dy)	T (ft ² /dy)	u	W(u)	h _o -h (ft)	W(u) Upper	W(u) Lower	u remain-der	W(u) minus	W(u) final
	1	365	12707	5.390E-11	23.0698	3.226282003	23.14	22.96	0.39	0.0702	23.07
	50	365	12707	1.348E-07	15.29988	2.139668636	15.54	14.85	0.348	0.24012	15.30
	100	365	12707	5.390E-07	13.8598	1.938275291	13.93	13.75	0.39	0.0702	13.86
	500	365	12707	0.000013	10.73	1.500576767	10.94	10.24	0.3	0.21	10.73
	1000	365	12707	0.000054	9.25400	1.294160056	9.33	9.14	0.4	0.076	9.25
	1500	365	12707	0.000121	8.4851	1.186630375	8.63	7.94	0.210	0.1449	8.49
Offsite Well No. 1	1729	365	12707	0.000161	8.21	1.148032128	8.63	7.94	0.610	0.4209	8.21
	2000	365	12707	0.000216	7.8744	1.101224762	7.94	7.53	0.160	0.0656	7.87
Offsite Well No. 6	2184	365	12707	0.000257	7.7063	1.077716192	7.94	7.53	0.570	0.2337	7.71
	2500	365	12707	0.000337	7.4264	1.038572535	7.53	7.25	0.37	0.1036	7.43
Offsite Well No. 7	2799	365	12707	0.000422	7.1994	1.006826876	7.25	7.02	0.22	0.0506	7.20
	3000	365	12707	0.000485	7.0545	0.986562796	7.25	7.02	0.85	0.1955	7.05
Offsite Well No. 5	3012	365	12707	0.000489	7.0453	0.985276188	7.25	7.02	0.89	0.2047	7.05
Offsite Well No. 2	3374	365	12707	0.000614	6.819	0.953628422	6.84	6.69	0.14	0.021	6.82
Offsite Well No. 4	3443	365	12707	0.000639	6.7815	0.948384095	6.84	6.69	0.39	0.0585	6.78
	3500	365	12707	0.000660	6.75	0.943978861	6.84	6.69	0.6	0.09	6.75
Offsite Well No. 10	3865	365	12707	0.000805	6.5445	0.915239949	6.55	6.44	0.05	0.0055	6.54
	4000	365	12707	0.000862	6.4818	0.906471434	6.55	6.44	0.62	0.0682	6.48
OffSite Well No. 8	4025	365	12707	0.000873	6.4697	0.904779265	6.55	6.44	0.73	0.0803	6.47
Offsite Well No. 9	4195	365	12707	0.000949	6.3861	0.893087912	6.44	6.33	0.49	0.0539	6.39
Offsite Well No. 9A	4261	365	12707	0.000979	6.3531	0.888472904	6.44	6.33	0.79	0.0869	6.35
	4500	365	12707	0.001091	6.26721	0.876461297	6.33	5.64	0.091	0.06279	6.27
	5000	365	12707	0.001348	6.08988	0.851661924	6.33	5.64	0.348	0.24012	6.09
Offsite Well No. 3	5109	365	12707	0.001407	6.04917	0.845968682	6.33	5.64	0.407	0.28083	6.05
	5280	365	12707	0.001503	5.98293	0.836705103	6.33	5.64	0.503	0.34707	5.98

Current Operation

Well ID	Distance (ft)	Combined h _o -h (ft)
	1	2.53
	50	1.68
	100	1.53
	500	1.19
	1000	1.03
	1500	0.94
Offsite Well No. 1	1729	0.90
	2000	0.88
Offsite Well No. 6	2184	0.86
	2500	0.83
Offsite Well No. 7	2799	0.83
	3000	0.79
Offsite Well No. 5	3012	0.76
Offsite Well No. 2	3374	0.79
Offsite Well No. 4	3443	0.75
	3500	0.76
Offsite Well No. 10	3865	0.73
	4000	0.73
OffSite Well No. 8	4025	0.71
Offsite Well No. 9	4195	0.75
Offsite Well No. 9A	4261	0.75
	4500	0.70
	5000	0.68
Offsite Well No. 3	5109	0.68
	5280	0.67

Additional Main Ag Well

Drawdown Evaluation Calculations 60 Months of Operation

$$u = \frac{r^2 S}{4Tt}$$

$$h_o - h = \frac{Q}{4\pi T} W(u)$$

Aquifer Parameters		Well Parameters		
K (ft/dy)	26	Flow Rate	75	f³/d
S	1.00E-03	Duration (months)	60	
b (ft)	497			
T (ft²/dy)	12707			

Sources: Groundwater and Wells, Driscoll 1986
Integrated Water Management Pump Test 7/20/2022

$$u = \frac{r^2 S}{4Tt}$$

$$h_o - h = \frac{Q}{4\pi T} W(u)$$

Aquifer Parameters		Well Parameters		
K (ft/dy)	140	Flow Rate	54	f³/d
S	1.00E-03	Duration (months)	60	
b (ft)	328			
T (ft²/dy)	45875			

Sources: Groundwater and Wells, Driscoll 1986
Integrated Water Management Pump Test 8/5/2022

Ag Well Existing Pumping Rate

Well ID	radius (ft)	time (dy)	T (ft²/dy)	u	W(u)	h _o -h (ft)	W(u) Upper	W(u) Lower	u remain-der	W(u) minus	W(u) final
	1	1825	12707	1.078E-11	24.69618	2.233014546	24.75	24.06	0.08	0.05382	24.70
	50	1825	12707	2.695E-08	16.86505	1.524928227	17.15	16.74	0.695	0.28495	16.87
	100	1825	12707	1.078E-07	15.48618	1.400251586	15.54	14.85	0.08	0.05382	15.49
	500	1825	12707	0.000003	12.263	1.108813484	12.55	12.14	0.7	0.287	12.26
	1000	1825	12707	0.000011	10.87000	0.982859216	10.94	10.24	0.1	0.07	10.87
	1500	1825	12707	0.000024	10.08	0.911427866	10.24	9.84	0.400	0.16	10.08
Offsite Well No. 1	1729	1825	12707	0.000032	9.78	0.884482875	9.84	9.55	0.200	0.058	9.78
	2000	1825	12707	0.000043	9.484	0.857537885	9.55	9.33	0.300	0.066	9.48
Offsite Well No. 6	2184	1825	12707	0.000051	9.311	0.841895323	9.33	9.14	0.100	0.019	9.31
	2500	1825	12707	0.000067	9.035	0.81693956	9.14	8.99	0.7	0.105	9.04
Offsite Well No. 7	2799	1825	12707	0.000084	8.812	0.796776027	8.86	8.74	0.4	0.048	8.81
	3000	1825	12707	0.000097	8.6630	0.783303532	8.74	8.63	0.7	0.077	8.66
Offsite Well No. 5	3012	1825	12707	0.000098	8.652	0.782308918	8.74	8.63	0.8	0.088	8.65
Offsite Well No. 2	3374	1825	12707	0.000123	8.4713	0.765970127	8.63	7.94	0.23	0.1587	8.47
Offsite Well No. 4	3443	1825	12707	0.000128	8.4368	0.762850656	8.63	7.94	0.28	0.1932	8.44
	3500	1825	12707	0.000132	8.4092	0.76035508	8.63	7.94	0.32	0.2208	8.41
Offsite Well No. 10	3865	1825	12707	0.000161	8.2091	0.742262152	8.63	7.94	0.61	0.4209	8.21
	4000	1825	12707	0.000172	8.1332	0.735399317	8.63	7.94	0.72	0.4968	8.13
OffSite Well No. 8	4025	1825	12707	0.000175	8.1125	0.733527635	8.63	7.94	0.75	0.5175	8.11
Offsite Well No. 9	4195	1825	12707	0.000190	8.009	0.724169224	8.63	7.94	0.9	0.621	8.01
Offsite Well No. 9A	4261	1825	12707	0.000196	7.9676	0.720425859	8.63	7.94	0.96	0.6624	7.97
	4500	1825	12707	0.000218	7.6202	0.689014149	7.94	7.53	0.78	0.3198	7.62
	5000	1825	12707	0.000270	5.847	0.528682414	6.33	5.64	0.7	0.483	5.85
Offsite Well No. 3	5109	1825	12707	0.000281	7.6079	0.68790199	7.94	7.53	0.81	0.3321	7.61
	5280	1825	12707	0.000301	7.5272	0.680605142	7.53	7.25	0.01	0.0028	7.53

Well Z

Well ID	radius (ft)	time (dy)	T (ft²/dy)	u	W(u)	h _o -h (ft)	W(u) Upper	W(u) Lower	u remain-der	W(u) minus	W(u) final
	1	1825	45875	2.986E-12	25.9656	0.468241	26.36	25.96	0.99	0.3944	25.97
	50	1825	45875	7.465E-09	18.13955	0.327113	18.20	18.07	0.465	0.06045	18.14
	100	1825	45875	2.986E-08	16.74574	0.301978	17.15	16.74	0.99	0.40426	16.75
	500	1825	45875	0.00000075	13.53	0.243988	13.60	13.46	0.5	0.07	13.53
	1000	1825	45875	0.0000030	12.14000	0.218922	12.14	11.85	0.00	0	12.14
Offsite Well No. 2	1422	1825	45875	0.00000604	11.4436	0.206364	11.45	11.29	0.04	0.0064	11.44
Offsite Well No. 7	1473	1825	45875	0.0000065	11.37	0.205037	11.45	11.29	0.5	0.08	11.37
	1500	1825	45875	0.0000067	11.338	0.20446	11.45	11.29	0.700	0.112	11.34
Offsite Well No. 9	1557	1825	45875	0.0000072	11.264	0.203125	11.29	11.16	0.2	0.026	11.26
Offsite Well No. 9A	1612	1825	45875	0.0000078	11.064	0.199519	11.16	11.04	0.8	0.096	11.06
	2000	1825	45875	0.000012	10.8	0.194758	10.94	10.24	0.200	0.14	10.80
Offsite Well No. 6	2259	1825	45875	0.000015	10.59	0.190971	10.94	10.24	0.500	0.35	10.59
	2500	1825	45875	0.000019	10.31	0.185922	10.94	10.24	0.9	0.63	10.31
Offsite Well No. 1	2795	1825	45875	0.000023	10.13	0.182622	10.25	9.84	0.300	0.123	10.13
	3000	1825	45875	0.000027	9.9630	0.179664	10.25	9.84	0.7	0.287	9.96
	3500	1825	45875	0.000037	9.637	0.173785	9.84	9.55	0.7	0.203	9.64
Offsite Well No. 10	3952	1825	45875	0.000047	9.374	0.169043	9.55	9.33	0.8	0.176	9.37
	4000	1825	45875	0.000048	9.374	0.169043	9.55	9.33	0.8	0.176	9.37
Offsite Well No. 4	4465	1825	45875	0.0000595	8.9975	0.162253	9.14	8.99	0.95	0.1425	9.00
	4500	1825	45875	0.0000605	9.1325	0.164688	9.14	8.99	0.05	0.0075	9.13
Offsite Well No. 3	4669	1825	45875	0.000065	9.065	0.16347	9.14	8.99	0.5	0.075	9.07
	5000	1825	45875	0.000075	8.925	0.160946	8.99	8.86	0.5	0.065	8.93
	5280	1825	45875	0.000083	8.824	0.159124	8.86	8.74	0.3	0.036	8.82
Offsite Well No. 5	5743	1825	45875	0.000098	8.652	0.156023	8.74	8.63	0.8	0.088	8.65
Offsite Well No. 8	6910	1825	45875	0.000143	8.5334	0.153884	8.63	7.94	0.14	0.0966	8.53

$$u = \frac{r^2 S}{4Tt}$$

$$h_o - h = \frac{Q}{4\pi T} W(u)$$

Aquifer Parameters		Well Parameters		
K (ft/dy)	26	Flow Rate	116	f³/d
S	1.00E-03	Duration (months)	60	
b (ft)	497			
T (ft²/dy)	12707			

Sources: Groundwater and Wells, Driscoll 1986
Integrated Water Management Pump Test 7/20/2022

Ag Well Proposed Pumping Rate

Well ID	radius (ft)	time (dy)	T (ft²/dy)	u	W(u)	h _o -h (ft)	W(u) Upper	W(u) Lower	u remain-der	W(u) minus	W(u) final
	1	1825	12707	1.078E-11	24.69618	3.453729165	24.75	24.06	0.08	0.05382	24.70
	50	1825	12707	2.695E-08	16.86505	2.358555657	17.15	16.74	0.695	0.28495	16.87
	100	1825	12707	1.078E-07	15.48618	2.165722452	15.54	14.85	0.08	0.05382	15.49
	500	1825	12707	0.0000027	12.263	1.714964855	12.55	12.14	0.7	0.287	12.26
	1000	1825	12707	0.000011	10.87000	1.520155588	10.94	10.24	0.1	0.07	10.87
	1500	1825	12707	0.000024	10.08	1.409675099	10.24	9.84	0.400	0.16	10.08
Offsite Well No. 1	1729	1825	12707	0.000032	9.78	1.36800018	9.84	9.55	0.200	0.058	9.78
	2000	1825	12707	0.000043	9.484	1.326325262	9.55	9.33	0.300	0.066	9.48
Offsite Well No. 6	2184	1825	12707	0.000051	9.311	1.302131433	9.33	9.14	0.100	0.019	9.31
	2500	1825	12707	0.000067	9.035	1.263533186	9.14	8.99	0.7	0.105	9.04
Offsite Well No. 7	2799	1825	12707	0.000084	8.812	1.232346922	8.86	8.74	0.4	0.048	8.81
	3000	1825	12707	0.000097	8.6630	1.211509462	8.74	8.63	0.7	0.077	8.66
Offsite Well No. 5	3012	1825	12707	0.000098	8.652	1.209971126	8.74	8.63	0.8	0.088	8.65
Offsite Well No. 2	3374	1825	12707	0.000123	8.4713	1.184700463	8.63	7.94	0.23	0.1587	8.47
Offsite Well No. 4	3443	1825	12707	0.000128	8.4368	1.179875682	8.63	7.94	0.28	0.1932	8.44
	3500	1825	12707	0.000132	8.4092	1.176015857	8.63	7.94	0.32	0.2208	8.41
Offsite Well No. 10	3865	1825	12707	0.000161	8.2091	1.148032128	8.63	7.94	0.61	0.4209	8.21
	4000	1825	12707	0.000172	8.1332	1.13741761	8.63	7.94	0.72	0.4968	8.13
OffSite Well No. 8	4025	1825	12707	0.000175	8.1125	1.134522742	8.63	7.94	0.75	0.5175	8.11
Offsite Well No. 9	4195	1825	12707	0.000190	8.009	1.120048399	8.63	7.94	0.9	0.621	8.01
Offsite Well No. 9A	4261	1825	12707	0.000196	7.9676	1.114258662	8.63	7.94	0.96	0.6624	7.97
	4500	1825	12707	0.000218	7.6202	1.065675217	7.94	7.53	0.78	0.3198	7.62
	5000	1825	12707	0.000270	5.847	0.817695467	6.33	5.64	0.7	0.483	5.85
Offsite Well No. 3	5109	1825	12707	0.000281	7.6079	1.063955078	7.94	7.53	0.81	0.3321	7.61
	5280	1825	12707	0.000301	7.5272	1.052669286	7.53	7.25	0.01	0.0028	7.53

Current Operation

Well ID	Distance (ft)	Combined h _o -h (ft)
	1	2.70
	50	1.85
	100	1.70
	500	1.35
	1000	1.20
	1500	1.12
Offsite Well No. 1	1729	1.07
	2000	1.05
Offsite Well No. 6	2184	1.03
	2500	1.00
Offsite Well No. 7	2799	1.00
	3000	0.96
Offsite Well No. 5	3012	0.94
Offsite Well No. 2	3374	0.97
Offsite Well No. 4	3443	0.93
	3500	0.93
Offsite Well No. 10	3865	0.91
	4000	0.90
OffSite Well No. 8	4025	0.89
Offsite Well No. 9	4195	0.93
Offsite Well No. 9A	4261	0.92
	4500	0.85
	5000	0.69
Offsite Well No. 3	5109	0.85
	5280	0.84

Drawdown Evaluation Calculations 120 Months of Operation

$$u = \frac{r^2 S}{4Tt}$$

$$h_o - h = \frac{Q}{4\pi T} W(u)$$

Aquifer Parameters			Well Parameters		
K (ft/dy)		26	Flow Rate	75	ft ³ /d
S	1.00E-03		Duration (months)	120	
b (ft)	497				
T (ft ² /dy)		12707			

Sources: Groundwater and Wells, Driscoll 1986
Integrated Water Management Pump Test 7/20/2022

$$u = \frac{r^2 S}{4Tt}$$

$$h_o - h = \frac{Q}{4\pi T} W(u)$$

Aquifer Parameters			Well Parameters		
K (ft/dy)		140	Flow Rate	54	ft ³ /d
S	1.00E-03		Duration (months)	120	
b (ft)	328				
T (ft ² /dy)		45875			

Sources: Groundwater and Wells, Driscoll 1986
Integrated Water Management Pump Test 8/5/2022

Ag Well Existing Pumping Rate

Well ID	radius (ft)	time (dy)	T (ft ² /dy)	u	W(u)	h _o -h (ft)	W(u) Upper	W(u) Lower	u remainder	W(u) minus	W(u) final
	1	3650	12707	5.390E-12	25.3698	2.293922883	25.44	25.26	0.39	0.0702	25.37
	50	3650	12707	1.348E-08	17.59988	1.591371137	17.84	17.15	0.348	0.24012	17.60
	100	3650	12707	5.390E-08	16.1598	1.461159923	16.23	16.05	0.39	0.0702	16.16
	500	3650	12707	0.0000013	13.033	1.178436446	13.24	12.55	0.3	0.207	13.03
	1000	3650	12707	0.000005	11.55800	1.045067785	11.63	11.45	0.4	0.072	11.56
	1500	3650	12707	0.000012	10.8	0.976529856	10.94	10.24	0.200	0.14	10.80
Offsite Well No. 1	1729	3650	12707	0.000016	10.52	0.951212415	10.94	10.24	0.600	0.42	10.52
	2000	3650	12707	0.000022	10.16	0.91866142	10.24	9.84	0.200	0.08	10.16
Offsite Well No. 6	2184	3650	12707	0.000026	10	0.904194311	10.24	9.84	0.600	0.24	10.00
	2500	3650	12707	0.000034	9.724	0.879238548	9.84	9.55	0.4	0.116	9.72
Offsite Well No. 7	2799	3650	12707	0.000042	9.506	0.859527112	9.55	9.33	0.2	0.044	9.51
	3000	3650	12707	0.000049	9.3630	0.846597133	9.55	9.33	0.85	0.187	9.36
Offsite Well No. 5	3012	3650	12707	0.000049	9.3542	0.845801442	9.55	9.33	0.89	0.1958	9.35
Offsite Well No. 2	3374	3650	12707	0.000061	9.125	0.825077309	9.14	8.99	0.1	0.015	9.13
Offsite Well No. 4	3443	3650	12707	0.000064	9.08	0.821008434	9.14	8.99	0.4	0.06	9.08
	3500	3650	12707	0.000066	9.05	0.818295852	9.14	8.99	0.6	0.09	9.05
Offsite Well No. 10	3865	3650	12707	0.000081	8.848	0.800031126	8.86	8.74	0.1	0.012	8.85
	4000	3650	12707	0.000086	8.788	0.794605961	8.86	8.74	0.6	0.072	8.79
OffSite Well No. 8	4025	3650	12707	0.000087	8.776	0.793520927	8.86	8.74	0.7	0.084	8.78
Offsite Well No. 9	4195	3650	12707	0.000095	8.685	0.785292759	8.74	8.63	0.5	0.055	8.69
Offsite Well No. 9A	4261	3650	12707	0.000098	8.652	0.782308918	8.74	8.63	0.8	0.088	8.65
	4500	3650	12707	0.000109	8.5679	0.774704644	8.63	7.94	0.09	0.0621	8.57
	5000	3650	12707	0.000135	8.3885	0.758483398	8.63	7.94	0.35	0.2415	8.39
Offsite Well No. 3	5109	3650	12707	0.000141	8.3471	0.754740033	8.63	7.94	0.41	0.2829	8.35
	5280	3650	12707	0.000150	8.6231	0.779695796	8.63	7.94	0.01	0.0069	8.62

Well Z

Well ID	radius (ft)	time (dy)	T (ft ² /dy)	u	W(u)	h _o -h (ft)	W(u) Upper	W(u) Lower	u remainder	W(u) minus	W(u) final
	1	3650	45875	1.493E-12	26.70983	0.481662	27.05	26.36	0.49	0.34017	26.71
	50	3650	45875	3.733E-09	18.83743	0.339698	19.05	18.76	0.733	0.21257	18.84
	100	3650	45875	1.493E-08	17.49983	0.315577	17.84	17.15	0.49	0.34017	17.50
	500	3650	45875	0.00000037	14.237	0.256738	14.44	14.15	0.7	0.203	14.24
	1000	3650	45875	0.000015	12.89500	0.232537	13.24	12.55	0.5	0.345	12.90
Offsite Well No. 2	1422	3650	45875	0.000030	12.14	0.218922	12.14	11.85	0	0	12.14
Offsite Well No. 7	1473	3650	45875	0.000032	12.082	0.217876	12.14	11.85	0.2	0.058	12.08
	1500	3650	45875	0.000034	12.024	0.216831	12.14	11.85	0.4	0.116	12.02
Offsite Well No. 9	1557	3650	45875	0.000036	11.966	0.215785	12.14	11.85	0.6	0.174	11.97
Offsite Well No. 9A	1612	3650	45875	0.000039	11.879	0.214216	12.14	11.85	0.9	0.261	11.88
	2000	3650	45875	0.000060	11.45	0.206479	11.45	11.29	0	0	11.45
Offsite Well No. 6	2259	3650	45875	0.000076	11.19	0.201813	11.29	11.16	0.76	0.0988	11.19
	2500	3650	45875	0.000093	11.01	0.198545	11.04	10.94	0.3	0.03	11.01
Offsite Well No. 1	2795	3650	45875	0.000117	10.82	0.195137	10.94	10.24	0.170	0.119	10.82
	3000	3650	45875	0.00013	10.7300	0.193496	10.94	10.24	0.3	0.21	10.73
	3500	3650	45875	0.00018	10.38	0.187184	10.94	10.24	0.8	0.56	10.38
Offsite Well No. 10	3952	3650	45875	0.00023	10.12	0.182495	10.24	9.84	0.3	0.12	10.12
	4000	3650	45875	0.00024	10.08	0.181774	10.24	9.84	0.4	0.16	10.08
Offsite Well No. 4	4465	3650	45875	0.000298	9.848	0.17759	10.24	9.84	0.98	0.392	9.85
	4500	3650	45875	0.000302	9.8342	0.177342	9.84	9.55	0.02	0.0058	9.83
Offsite Well No. 3	4669	3650	45875	0.00033	9.753	0.175877	9.84	9.55	0.3	0.087	9.75
	5000	3650	45875	0.00037	9.637	0.173785	9.84	9.55	0.7	0.203	9.64
	5280	3650	45875	0.00042	9.506	0.171423	9.55	9.33	0.2	0.044	9.51
Offsite Well No. 5	5743	3650	45875	0.00049	9.352	0.168646	9.55	9.33	0.9	0.198	9.35
OffSite Well No. 8	6910	3650	45875	0.00071	8.977	0.161884	8.99	8.86	0.1	0.013	8.98

$$u = \frac{r^2 S}{4Tt}$$

$$h_o - h = \frac{Q}{4\pi T} W(u)$$

Aquifer Parameters			Well Parameters		
K (ft/dy)		26	Flow Rate	116	ft ³ /d
S	1.00E-03		Duration (months)	120	
b (ft)	497				
T (ft ² /dy)		12707			

Sources: Groundwater and Wells, Driscoll 1986
Integrated Water Management Pump Test 7/20/2022

Ag Well Proposed Pumping Rate

Well ID	radius (ft)	time (dy)	T (ft ² /dy)	u	W(u)	h _o -h (ft)	W(u) Upper	W(u) Lower	u remainder	W(u) minus	W(u) final
	1	3650	12707	5.390E-12	25.3698	3.54793406	25.44	25.26	0.39	0.0702	25.37
	50	3650	12707	1.348E-08	17.59988	2.461320692	17.84	17.15	0.348	0.24012	17.60
	100	3650	12707	5.390E-08	16.1598	2.259927347	16.23	16.05	0.39	0.0702	16.16
	500	3650	12707	0.0000013	13.033	1.822648369	13.24	12.55	0.3	0.207	13.03
	1000	3650	12707	0.0000054	11.55800	1.616371507	11.63	11.45	0.4	0.072	11.56
	1500	3650	12707	0.000012	10.8	1.510366177	10.94	10.24	0.200	0.14	10.80
Offsite Well No. 1	1729	3650	12707	0.000016	10.52	1.471208536	10.94	10.24	0.600	0.42	10.52
	2000	3650	12707	0.000022	10.16	1.420862996	10.24	9.84	0.200	0.08	10.16
Offsite Well No. 6	2184	3650	12707	0.000026	10	1.398487201	10.24	9.84	0.600	0.24	10.00
	2500	3650	12707	0.000034	9.724	1.359889954	9.84	9.55	0.4	0.116	9.72
Offsite Well No. 7	2799	3650	12707	0.000042	9.506	1.329401933	9.55	9.33	0.2	0.044	9.51
	3000	3650	12707	0.0000485	9.3630	1.309403566	9.55	9.33	0.85	0.187	9.36
Offsite Well No. 5	3012	3650	12707	0.0000489	9.3542	1.308172898	9.55	9.33	0.89	0.1958	9.35
Offsite Well No. 2	3374	3650	12707	0.000061	9.125	1.276119571	9.14	8.99	0.1	0.015	9.13
Offsite Well No. 4	3443	3650	12707	0.000064	9.08	1.269826379	9.14	8.99	0.4	0.06	9.08
	3500	3650	12707	0.000066	9.05	1.265630917	9.14	8.99	0.6	0.09	9.05
Offsite Well No. 10	3865	3650	12707	0.000081	8.848	1.237381476	8.86	8.74	0.1	0.012	8.85
	4000	3650	12707	0.000086	8.788	1.228990552	8.86	8.74	0.6	0.072	8.79
OffSite Well No. 8	4025	3650	12707	0.000087	8.776	1.227312368	8.86	8.74	0.7	0.084	8.78
Offsite Well No. 9	4195	3650	12707	0.000095	8.685	1.214586134	8.74	8.63	0.5	0.055	8.69
Offsite Well No. 9A	4261	3650	12707	0.000098	8.652	1.209971126	8.74	8.63	0.8	0.088	8.65
	4500	3650	12707	0.000109	8.5679	1.198209849	8.63	7.94	0.09	0.0621	8.57
	5000	3650	12707	0.000135	8.3885	1.173120989	8.63	7.94	0.35	0.2415	8.39
Offsite Well No. 3	5109	3650	12707	0.000141	8.3471	1.167331252	8.63	7.94	0.41	0.2829	8.35
	5280	3650	12707	0.000150	8.6231	1.205929498	8.63	7.94	0.01	0.0069	8.62

Current Operation

Well ID	radius (ft)	combined h _o -h (ft)
	1	2.78
	50	1.93
	100	1.78
	500	1.44
	1000	1.28
	1500	1.20
Offsite Well No. 1	1729	1.15
	2000	1.13
Offsite Well No. 6	2184	1.11
	2500	1.08
Offsite Well No. 7	2799	1.08
	3000	1.04
Offsite Well No. 5	3012	1.01
Offsite Well No. 2	3374	1.04
Offsite Well No. 4	3443	1.00
	3500	1.01
Offsite Well No. 10	3865	0.98
	4000	0.98
OffSite Well No. 8	4025	0.96
Offsite Well No. 9	4195	1.00
Offsite Well No. 9A	4261	

ATTACHMENT D

Response to Comments Memorandum

MEMORANDUM**DATE** October 5, 2022**Project No.** GL13397640**TO** John Doyle
Z-Best Composting Facility**CC** Richard Haughey**FROM** George Wegmann, PG, CHG; Michael Bombard
PG, CHG**EMAIL** george.wegmann@wsp.com**RESPONSES TO: *Memorandum: Further Clarification of Hydrology and Supply Analyses and the Groundwater Drawdown Evaluation***

This memorandum (memo) was prepared by Golder Associates USA (Golder), a member of WSP, to provide responses to the comments noted in the subject memorandum, which was prepared by AECOM and dated September 28, 2022 (AECOM Memorandum). This memorandum addresses only those comments in the AECOM memorandum related to Golder's August 26, 2022 Groundwater Drawdown Evaluation memorandum. Each related comment is presented below with its corresponding response.

Comment 2, 4th Bullet: Due to uncertainty in annual inflow to the drainage basins due to water year type, it would be more conservative to estimate the change in groundwater drawdown based on the proposed usage for primary and secondary composting of 21.9 MGPY, instead of the adjusted value of 18 MGPY which is based on a change in excess surface water. **It is recommended that Golder revise their August 26, 2022 memo to include calculation of the groundwater drawdown based on the more conservative value of 21.9 MGPY for the proposed change in composting use.**

Response: Golder has revised the memo to include calculation of the groundwater drawdown based on 21.9 MGPY.

Comment 3: Clarifications needed in Table 1 and Table 2. The Golder groundwater drawdown evaluation memo (August 26, 2022) includes a groundwater usage summary (Table 1). The values provided in Table 1 include annual volume (in MGPY) and estimated pumping rate (in gallons per minute; gpm). The main body of the text indicates that the operational period is approximately 30 hours per week. Table 2 of the memo provides the "parameters used in the drawdown calculation" and includes flow rates in gpm and daily usage in cubic feet per day. Attachment C directly shows the calculations used in the drawdown estimates and includes the input flow rate in gpm and cubic feet per day. **It is recommended that Golder revise their August 26, 2022 memo to resolve inconsistencies in the values shown at these three locations.**

Response: Golder has revised the memorandum to provide additional clarity.

Comment 3, Bullet 1: In Table 1, the annual volume/annual rate used in the estimates, but not the instantaneous rate in gpm, should be reported. (Golder does not use the gpm reported in Table 1 in the calculations in Attachment C.) In Table 2, actual flow rates used in Attachment C should be reported. (This will require moving up the explanation that 39 MGPY = 381 gpm @ 33 hours per week = 75 gpm @ 168 hours per week, etc., but this will reduce confusion later.)

Response: Golder has revised Table 1 and Table 2 as requested. The explanation of the proportional calculation of the model continuous flow rates was moved to above Table 2.

Comment 3, Bullet 2: In Table 1, Golder should only show the existing baseline value for the primary extraction well that was used in the calculations shown in Attachment C. It appears that only the 39 MGPY value was used in the estimates.

Response: Golder has revised Table 1 as requested.

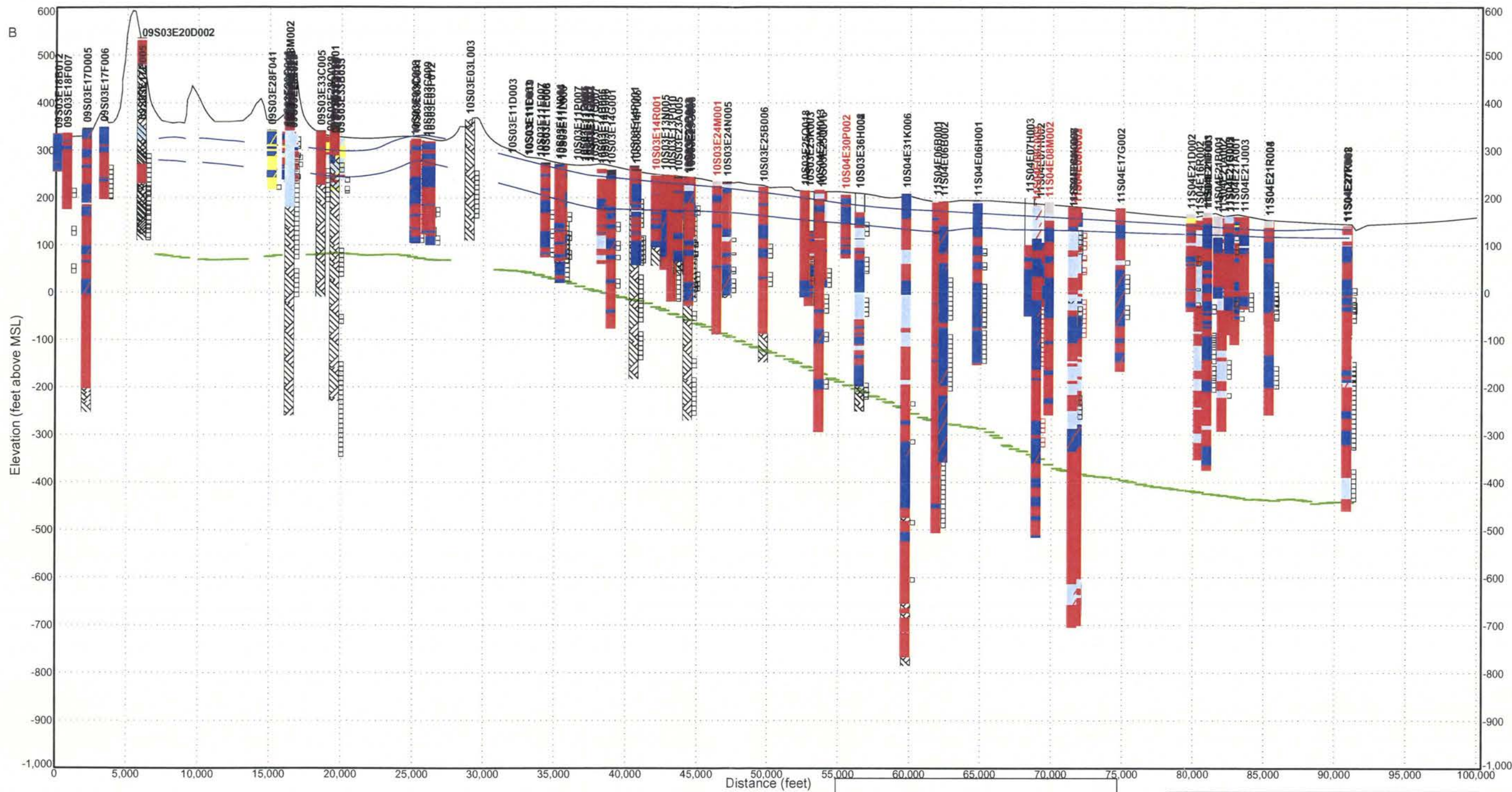
Comment 4: **Provide drawdown estimates for the river distance.** The Golder groundwater drawdown evaluation memo (August 26, 2022) provides estimated drawdown at offsite wells. Because the Pajaro River is also a sensitive receptor, the estimated drawdown at the closes riverine location should also be provided. **It is recommended that Golder revise their August 26, 2022 memo to include the estimated drawdown for the closest riverine location to the well.**

Response: Golder disagrees with this recommendation. As shown in the well log for Main Aquifer Well, the top of screened interval is at 160 feet below ground surface (bgs). The well log also shows thick clay layers above the screened interval at 135 to 148 bgs, 90 to 110 feet bgs and 13 to 48 feet bgs. Attached with this memo, are two cross sections from the report titled *Llagas Basin Numerical Groundwater Model*, prepared for Santa Clara Valley Water District by CH2M Hill and dated May 2005. The cross sections, oriented roughly north to south and west to east, show two thick continuous clay layers located at depths above the reported screened interval for Main Aquifer Well that extend to the bank of the river (i.e., the model boundary). Further, as observed in well logs reviewed by Golder, the uppermost clay layer extends from the base of a thin (typically less than 3 feet thick) surficial topsoil layer to a depth below the bottom of the river. These data suggest a separation from the upper unconfined zone that includes the river and the deeper confined zones in which the Main Agriculture Well is screened. Therefore, it is highly unlikely that Main Agricultural Well is in hydraulic communication with the river.

An additional consideration is that the Theis method and Driscoll's approximation used to calculate the drawdown are based on confined aquifer conditions. The use of the Theis method for calculating drawdown in an unconfined receptor would be inappropriate. Based on these factors, no changes are proposed for the revised memorandum with respect to Comment 4.

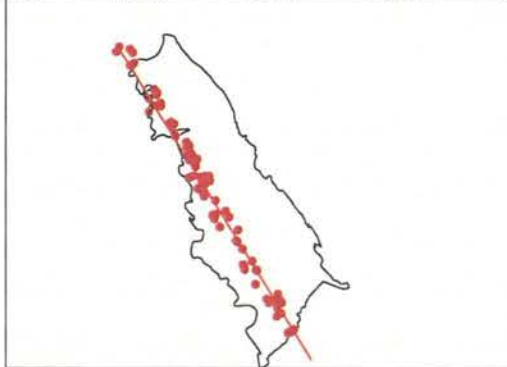
End of Technical Memorandum

[https://golderassociates.sharepoint.com/sites/112344/project files/5 technical work/drawdown evaluation/revised memo/z-best response to comments.docx](https://golderassociates.sharepoint.com/sites/112344/project%20files/5%20technical%20work/drawdown%20evaluation/revised%20memo/z-best%20response%20to%20comments.docx)



Legend

Well Screen	GP	SP	ML	BR
GW	SW	MH	CL	CH
GM	SM	FL	OH	OL
GC	SC	PT	OL	



XSection B-B'

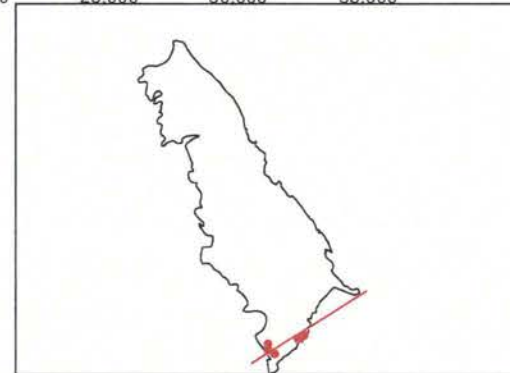
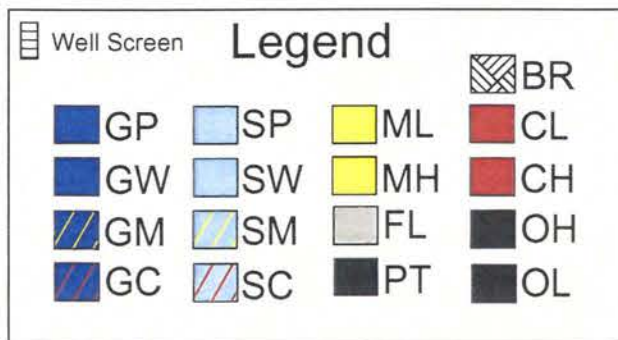
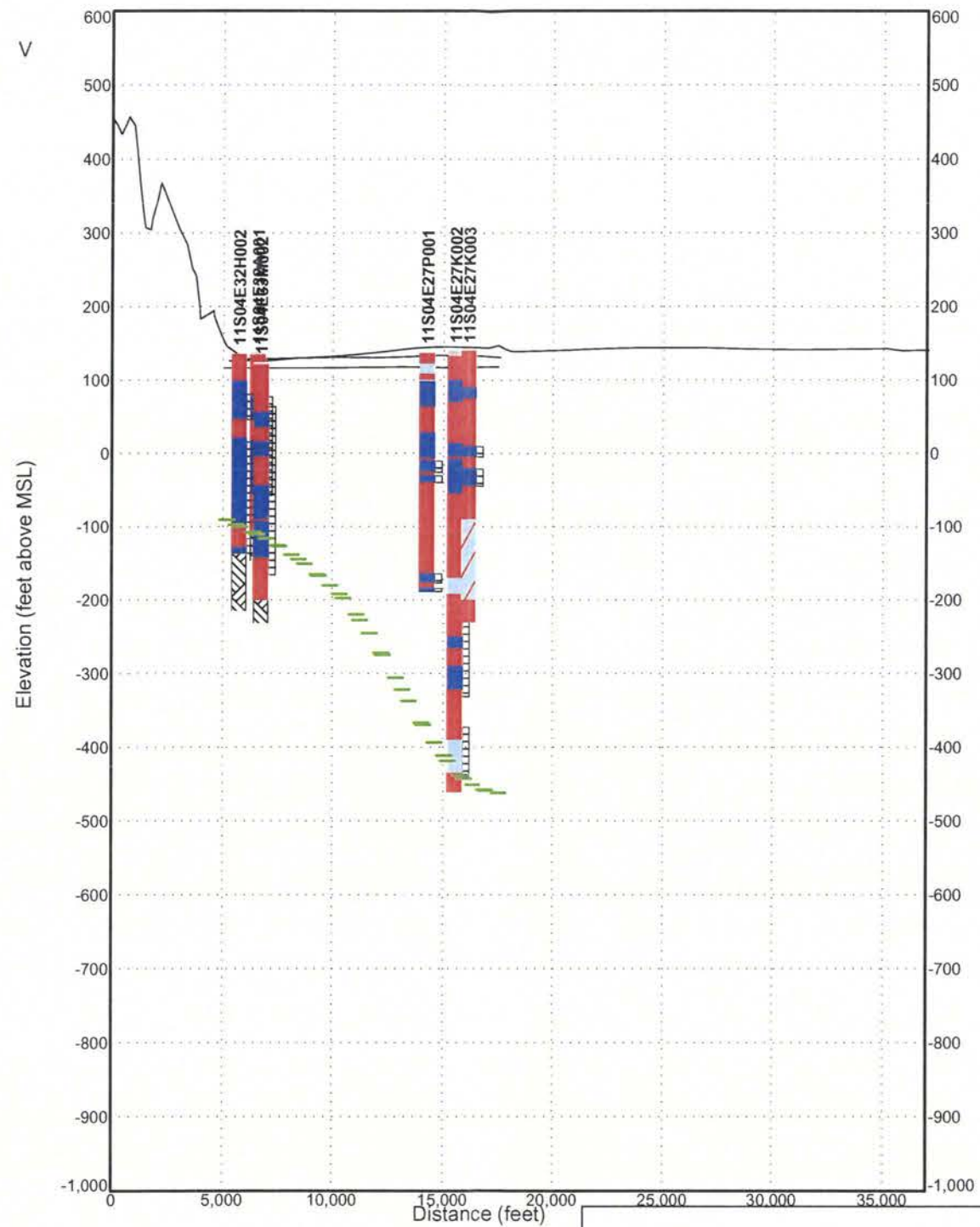
Santa Clara Valley

Date: 02 Mar 04

Figure

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 GS_ELEV_LONG
 3/2/2004

FIGURE 1-11
CROSS SECTION B-B'
 LLAGAS BASIN GROUNDWATER MODEL
 SANTA CLARA VALLEY DISTRICT



XSection V-V'	
Santa Clara Valley	
Date: 01 Mar 04	Figure

FIGURE 1-31
CROSS SECTION V-V'
 LLAGAS BASIN GROUNDWATER MODEL
 SANTA CLARA VALLEY WATER DISTRICT

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 3/19/2004



AECOM
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Project name:
Z-Best Composting Facility

Project ref:
60666256

From: Elizabeth Nielsen, Water Resources Engineer, AECOM

Date:
April 7, 2023

To: Valerie Negrete
County of Santa Clara Department of Planning
and Development
70 West Hedding Street,
7th Floor East Wing
San Jose, CA 95110

CC: Emmanuel Ursu, Consultant Planner
Sam Gutierrez, Principal Planner
Elizabeth Vissers, Deputy County Counsel
Lizanne Reynolds, Deputy County Counsel

Memo

Subject: Detention Basin Analysis

This Technical Memorandum evaluates whether the storage capacity of the detention basins at the Z-Best Composting Facility, as proposed under the Z-Best Composting Facility Expansion and Upgrade Project (project), would be sufficient for the recent sequence of atmospheric rivers experienced during December 2022 to March 2023.

The analysis found that the proposed design capacity of the basins would be insufficient to detain the recent sequence of storm events and that, with consideration of antecedent rainfall conditions, the proposed design is unlikely to meet the required design conditions from the State Water Resources Control Board General Waste Discharge Requirements for Composting Operations (Composting Order), which requires detention basins to be designed to contain all runoff from working surfaces in addition to direct precipitation from the 25-year, 24-hour storm event.

1. Background

Z-Best Products has applied to the County of Santa Clara for a major modification to its existing Use Permit at the Z-Best Composting Facility located at 980 State Route 25 (SR-25) in an unincorporated area approximately 5 miles southeast of Gilroy, California. Proposed facility modifications will also require Architecture and Site Approval and Grading Approval. Z-Best is proposing to replace the existing composting process it uses for processing municipal solid waste feedstock with an Engineered Composting System (ECS) process that uses aerated static piles (ASP); existing green waste composting operations would remain unchanged. Additional components of the proposed project include expanding the existing flood storage facility, modifying Detention Basin #1, relocating the existing facility entrance, and widening SR-25 along the project site frontage to enable installation of acceleration lanes and deceleration lanes into and out of the proposed relocated entrance.

As part of the proposed project, the ECS improvements area within Area 1 would be raised by approximately 1 to 2 feet; the existing flood storage basin would increase by approximately 7.2 acres; and the footprint and elevation of the perimeter berms for Detention Basin #1 would be modified. Perimeter berms at the drainage basin would be raised to protect the basin from a 100-year flood and the footprint of the drainage basin would decrease from 6.3 acres to approximately 3.6 acres. As a result of these modifications, Detention Basin #1 would increase its maximum capacity from approximately 9.1 million gallons to approximately 14.5 million gallons. No modifications to Detention Basin #2 are proposed as part of the project. See Figure 1 through 3 for project plans showing existing and proposed conditions.

2. Methodology

The proposed storage capacity for Detention Basin #1 was evaluated based on the methodology provided in Golder (2020) with project data updated based on Golder (2022a, b, and c). A water balance model was used to estimate basin storage needs that accounts for direct precipitation to the basin, runoff from the facility, evaporation from the basin, and operational outflows. Operational outflows include water use for green waste composting operations and dust control; water used for ASP composting operations were assumed to come from Detention Basin #1, Detention Basin #2, or groundwater. Operations for Detention Basin #1 and Detention Basin #2 are interconnected and therefore inflows and outflows at both basins were modeled concurrently.

The major differences between the water balance presented herein and the one presented in Golder (2020) is the timestep of the model and input hydrology. This model uses a daily timestep and the daily precipitation data measured in Gilroy during water year 2023. These data were used to evaluate whether the storage capacity in Detention Basin #1 would be sufficient in light of the recent sequence of storm events experienced in the Gilroy area.

2.1 Input Data and Assumptions

The following input data and assumptions were used in the water balance.

- Detention basin characteristics. Detention basin capacity, surface area, and berm elevations and the contributing runoff area are described in Table 1.
- Stage-storage-area relationships. Information related to elevation, surface area, and volume for water stored within the drainage basins is provided in Tables 2 and 3. These data are the same as those reported in Golder (2020). Where drainage basin capacity was found to be limited (i.e., the basin would have overtopped), the volume and surface area were estimated based on trendlines fitted to these data. For the purpose of the modeling, where proposed capacity was limited, the berm elevations were assumed to increase (as opposed to changing the footprint of the drainage basins or allowing overtopping) so as to contain all runoff from the facility without discharge from the drainage basins.
- Direct precipitation. Direct precipitation to the basins was estimated based on rainfall and the footprints of the drainage basins.
- Runoff. Runoff to the drainage basins was estimated based on rainfall, the size of the contributing drainage area, and a runoff coefficient for the contributing drainage area. The runoff coefficient for Area 1 was assumed to be 0.76 and the runoff coefficient for Area 2 was assumed to be 0.72, which were considered reasonable estimates provided in Golder (2022a). Note that proposed conditions include runoff from an approximate 2.6-acre area south of Area 1's compost pad which

does not currently flow to Detention Basin #1 (Golder 2022a); in addition, the contributing drainage area from Area 2 was reduced to 24 acres to account for the increased size of the flood storage basin included in the proposed project, which captures about 2 acres of drainage that is currently part of Area 2.

- Evaporation. Evaporation from the detention basins was estimated based on the reference evapotranspiration rate (ET_o) for Gilroy and the estimated surface area of the water stored in the drainage basins.¹ The ET_o values used in Golder (2020 and 2022a) were verified as reasonable and used to facilitate consistency in the modeling. See Table 4.
- Operations. Operational decisions affect either or both of the detention basins. Operational outflows include water used for green waste composting and for dust control. Water demands for ASP composting are assumed to be met by groundwater.

Water demands for primary and secondary green waste composting are each estimated at 176,000 gallons per day, Monday through Friday (260 days per year) with no reduction for concurrent rainfall or seasonal fluctuations in evaporation from the compost. The water demand for primary green waste composting was assumed to be met first from water stored in Detention Basin #1 until empty, then from Detention Basin #2. If both basins were insufficient or empty, demand would then be met by groundwater. The water demand for secondary green waste composting was assumed to be met from Detention Basin #2 or, if insufficient or empty, from groundwater.

Water demands for dust control are estimated at 147,000 gallons per day, Monday through Friday. Water demand for dust control was assumed to be met after demands for green composting operations were resolved. Water for dust control was obtained first from the remaining water in Detention Basin #1, then Detention Basin #2, and, if both were empty or insufficient, from groundwater.

Water demands for primary ASP composting are estimated at 20,000 gallons per day, 365 days per year and water demands for secondary ASP composting are estimated at 40,000 gallons per day, 365 days per year. Golder (2020) indicates that ASP primary and secondary composting demands would be met preferentially from groundwater but could also be met from water captured in Detention Basin #2. This assumption was updated based on personal communication from Z-Best Operations Manager, John Doyle in 2023; water for ECS ASP composting would be obtained from Detention Basin #1, Detention Basin #2, or groundwater.

- Transfers between detention basins. For the purpose of the modeling, it was assumed that transfers would not occur between drainage basins. However, as it is possible to pump water between the drainage basins, the potential for overtopping has also been evaluated based on the combined capacity of the two drainage basins.

2.2 Hydrology

Precipitation data for Gilroy, California were downloaded from the National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information and NOAA's National Weather Service (NOAA 2023a, 2023b). Three weather stations recorded precipitation data in the Gilroy area during water year 2023; see Table 5 for a summary of these data. The National Weather Service reports daily precipitation for Gilroy, California based on data recorded at the weather station Gilroy, CA US, USC00043417, which has a long-term data record. Minor corrections to data are made during review (NOAA 2023b). Data from weather station Gilroy, CA US, USC00043417, was selected for the model to allow for comparison to the long-term record. One datapoint was removed from the

¹ ET_o is approximately equal to evaporation from a large body of water.

October 2022 to March 2023 record (data for March 9, 2023); this datapoint was also excluded by the National Weather Service.

There have been several flood events in the vicinity of the project area in 2023. On January 9, 2023, and on March 10, 2023, storms caused flooding on Highway 101, Bloomfield Avenue, and Bolsa Road. Winter 2023 was particularly wet, with atmospheric rivers providing multiple inches of rain over several weeks-long periods. The March 10, 2023, storm was the largest 24-hour precipitation event during this period, with 4.05 inches of rain. December and early January also experienced substantial rainfall. The maximum 45-day averaging period during December and early January was 18.65 inches inclusive of the January 9, 2023, storm.

Table 6 compares point precipitation frequency estimates for the Gilroy, CA US, USC00043417 gauge location, obtained from NOAA's National Weather Service Hydrometeorological Design Studies Center (NOAA 2023c), to the precipitation data from this weather station for different averaging periods. The maximum 1-day precipitation was between a 5-year and a 10-year event and the maximum 45-day precipitation was between a 10-year and a 25-year event.

3. Results

The water balance predicts flooding under proposed conditions at the Z-Best Composting Facility and overtopping of the detention basins after the January 9, 2023, and March 10, 2023, storms. Although the capacity at the crest of Detention Basin #1 would increase from 9.1 million gallons to 14.5 million gallons as a result of the project, there would not be adequate storage within Detention Basin #1 and #2 to hold runoff from the facility as well as the direct precipitation to the basins during the January 9th and March 10th storms. The atmospheric river conditions experienced in December 2022 through March 2023 are predicted to fill the detention basins to 80 to 90 percent capacity prior to when these large events would occur, and water use demands are not expected to be sufficient to prevent overtopping of the basin berms. Water use demands were assumed conservatively and did not account for reductions to demand based on concurrent rainfall or seasonal fluctuations in evaporation from the compost.

Because the proposed capacity was not predicted to be adequate to retain the runoff and precipitation from these storms, for the purpose of the modeling, increased capacity was assumed for the drainage basins. As discussed in Section 2.1, where the proposed capacity was limiting, the berm elevations were assumed to increase (as opposed to increasing the footprint of the drainage basins or allowing overtopping) until all runoff from the facility would be contained without discharge from the drainage basins. This is a simplifying assumption and it does not represent optimization for site conditions.

Figures 4, 5, and 6 show the results of the water balance with the above-mentioned assumptions. Assuming that all runoff and precipitation could be held within the basins, the water balance indicates that approximately 3.8 million gallons of additional capacity would be needed at Detention Basin #1 and an additional 0.5 million gallons of capacity would be needed at Detention Basin #2 to accommodate the post-January 9, 2023, storms without overtopping. This value would increase to 6.1 and 1.8 million gallons of additional capacity below the freeboard, respectively, if 2 feet of freeboard would be maintained at each of the detention basins. Detailed results of the water balance model are shown in Attachment A. These results are specific to the rainfall that occurred in water year 2023, and a different amount of additional storage may be required for historical rainfall periods in other wet years. Including additional operational complexity such as fluctuating the demand based on rainfall and evaporation conditions, which would increase the estimated amount of additional storage needed

because wet winter conditions would likely have lower demand than the annual average, as is assumed here.

4. Conclusions and Recommendations

The State Water Resources Control Board Composting Order requires detention basins to be designed to contain all runoff from working surfaces in addition to direct precipitation from the 25-year, 24-hour storm event. Specifically, it indicates that:

Detention ponds, if used, must be designed, constructed, and maintained to prevent conditions contributing to, causing, or threatening to cause contamination, pollution, or nuisance, and must be capable of containing, without overflow or overtopping (taking into consideration the crest of winddriven waves and water reused in the composting operation), all runoff from the working surfaces in addition to precipitation that falls into the detention pond from a 25-year, 24-hour peak storm event at a minimum, or equivalent alternative approved by the Regional Water Board.

According to NOAA point precipitation frequency estimates, the 25-year, 24-hour storm event is 5.8 inches of rain (NOAA 2023c), and such an event could be accommodated if the detention basins were empty. A storm with 5.8 inches of rain is expected to fill the detention basins to approximately 65 percent of their combined capacity. However, as demonstrated in Golder (2020) and in this water balance model, operations of the detention basins will not draw down water levels to empty during extended periods of time in wet years. In addition, extreme events such as the 25-year, 24-hour storm event are more likely to occur during wet years than dry years. As such, there remains a substantial risk of overtopping if an extreme event occurs during a wet year assuming the currently proposed capacity increase in Detention Basin #1.

It is recommended that design capacity of Detention Basin #1 consider the operational context of the detention basin. A wet year is expected to provide antecedent rainfall conditions which would likely occupy a portion of the drainage basins prior to an extreme event. Wet conditions would also reduce water use demands. Although 2023 has been a very wet year with storm events providing multiple inches of rain, single day and multiple day events were less than the 25-year event.

5. References

Doyle, John, pers. comm. 2023. Personal communication from Z-Best Operations Manager, John Doyle.

Golder Associates Inc. (Golder), 2020. Area 1 and Area 2 Water Balance. Appendix C of Z-Best Composting Facility Technical Report. Submitted by Golder Associates Inc. to Zanker Road Resource Management Ltd. December 2020.

Golder, 2022a. Water Supply Evaluation, Z-Best Compost Facility. August 15, 2022.

Golder, 2022b. Aerated Static Pile Composting Permit Package. Project No. 133-97640. County File No. 6498-81-11-09G 08P 08A 08EA. April 2022.

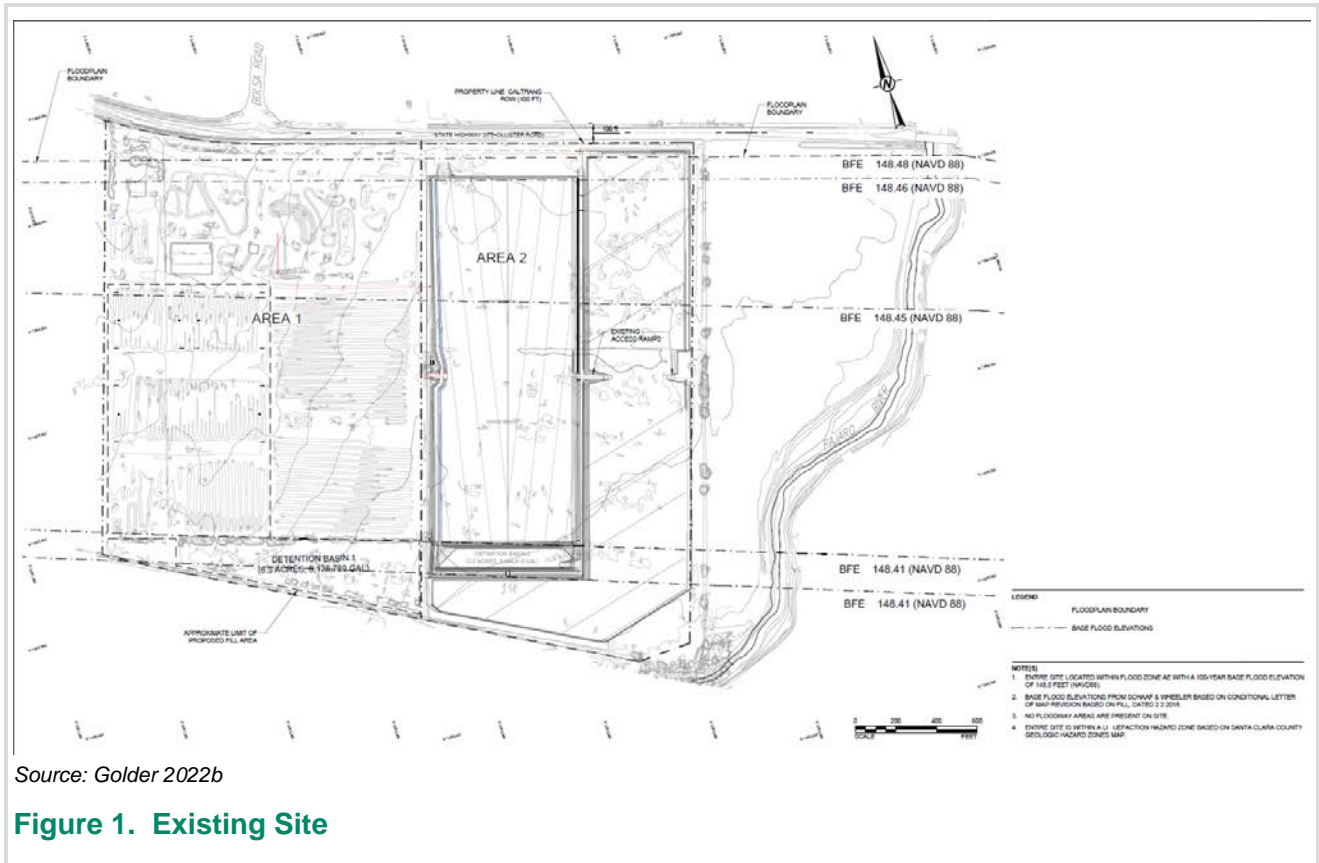
Golder, 2022c. Drawing 13, Proposed Detention Basin 1 - Plan and Section. Aerated Static Pile Composting Permit Package. Project No. 133-97640. County File No. 6498-81-11-09G 08P 08A 08EA. August 22, 2022.

National Oceanic and Atmospheric Administration (NOAA), 2023a. Climate Data Online. National Centers for Environmental Information. <https://www.ncei.noaa.gov/cdo-web/>

National Oceanic and Atmospheric Administration (NOAA), 2023b. NOWData – NOAA Online Weather Data. National Weather Service. <https://www.weather.gov/wrh/Climate?wfo=mtr>

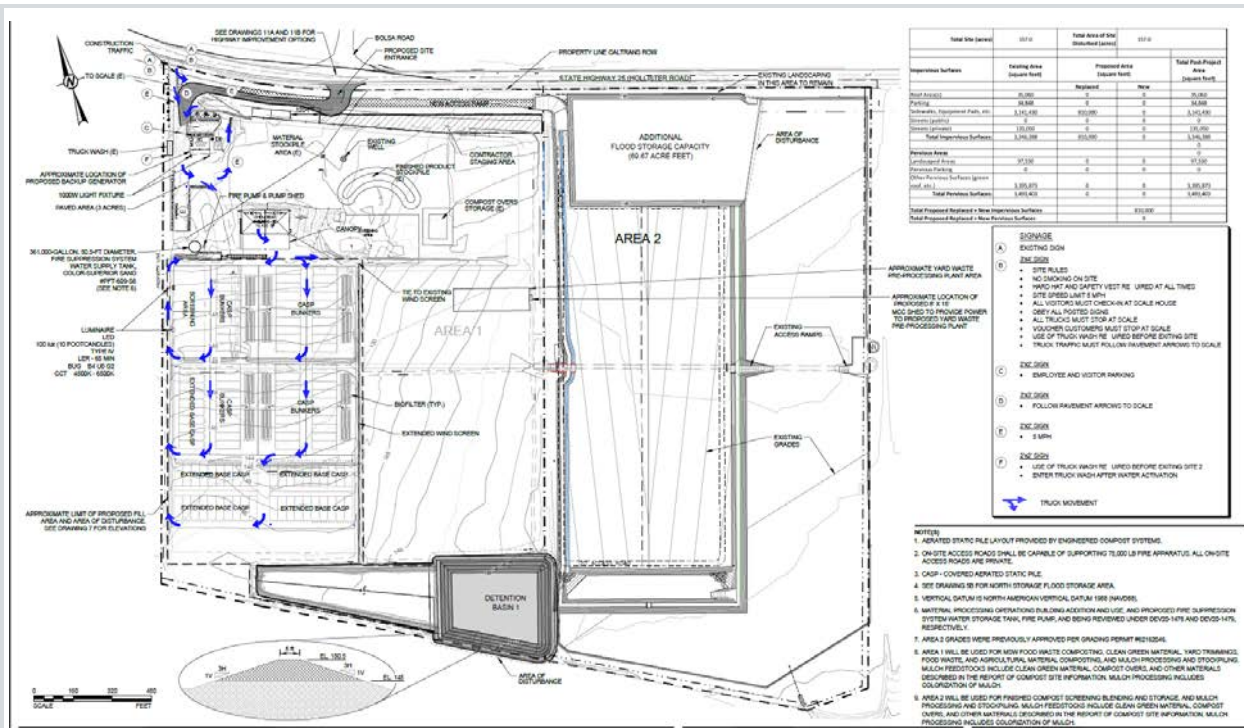
National Oceanic and Atmospheric Administration (NOAA), 2023c. NOAA Atlas 14 Point Precipitation Frequency Estimates. National Weather Service, Hydrometeorological Design Studies Center. https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html

Figures



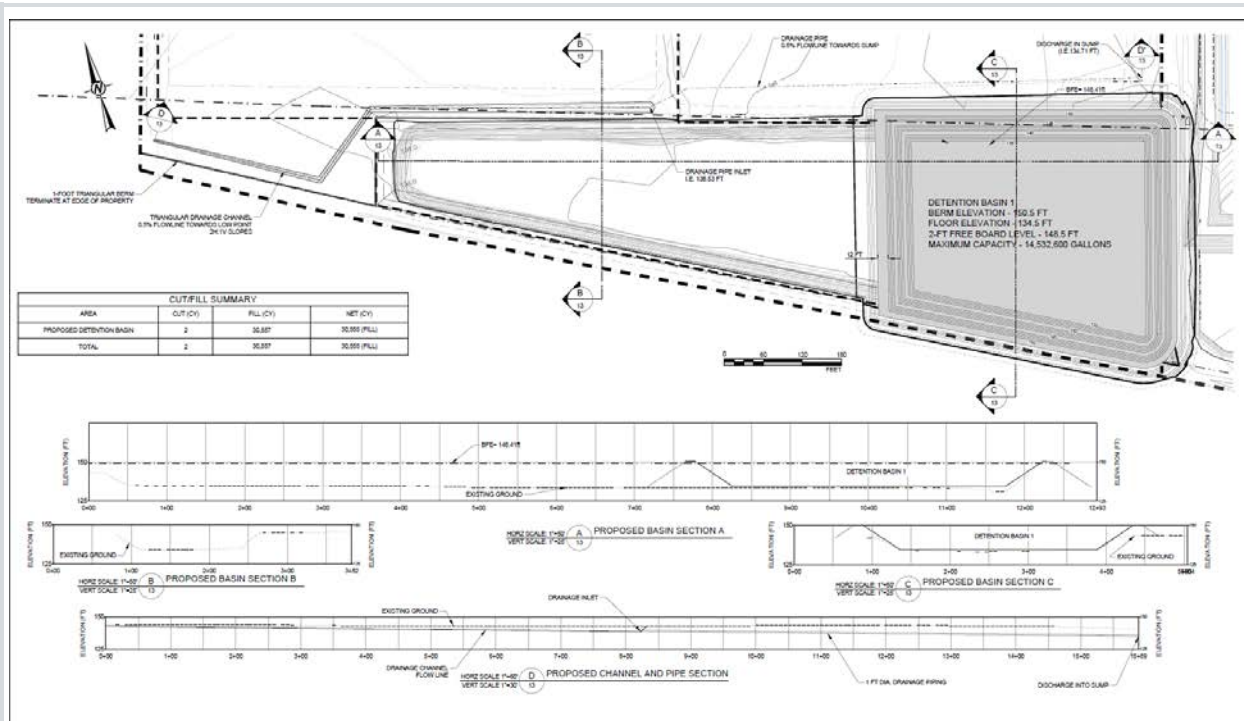
Source: Golder 2022b

Figure 1. Existing Site



Source: Golder 2022b

Figure 2. Proposed Site Plan



Source: Golder 2022c

Figure 3. Detail of Detention Basin #1, Proposed Site Plan

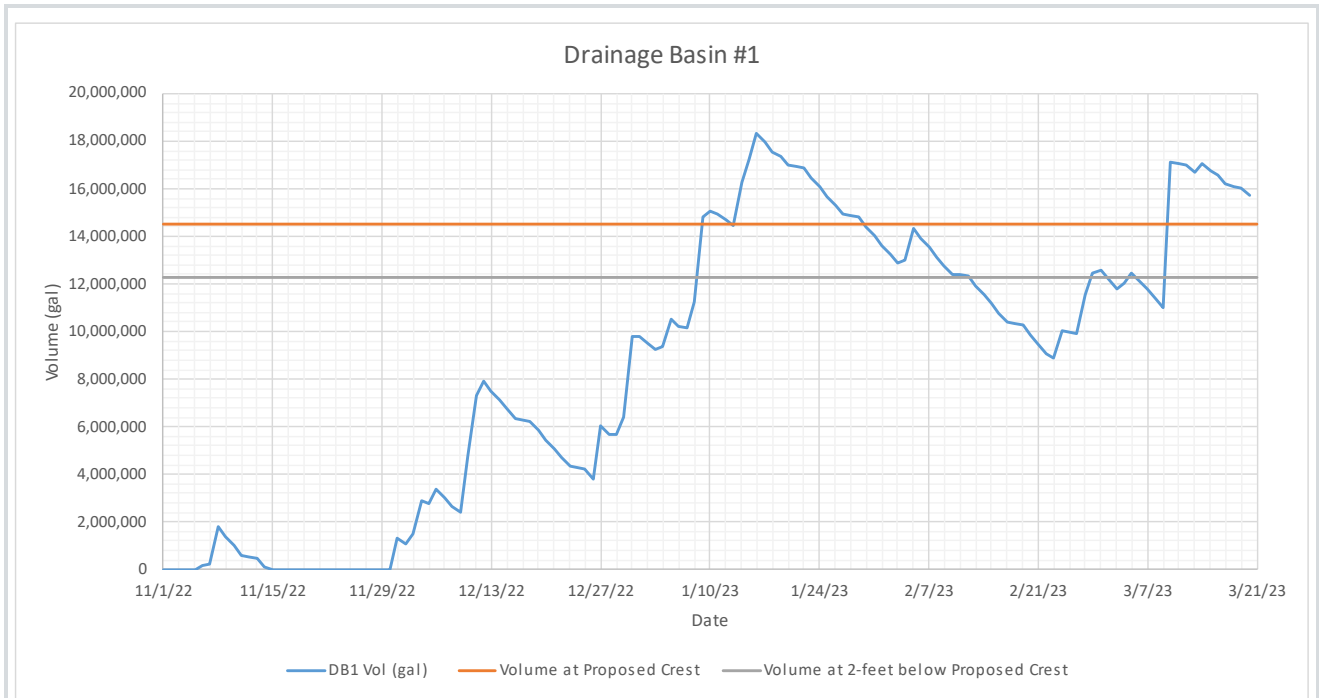


Figure 4. Model Results for Detention Basin #1

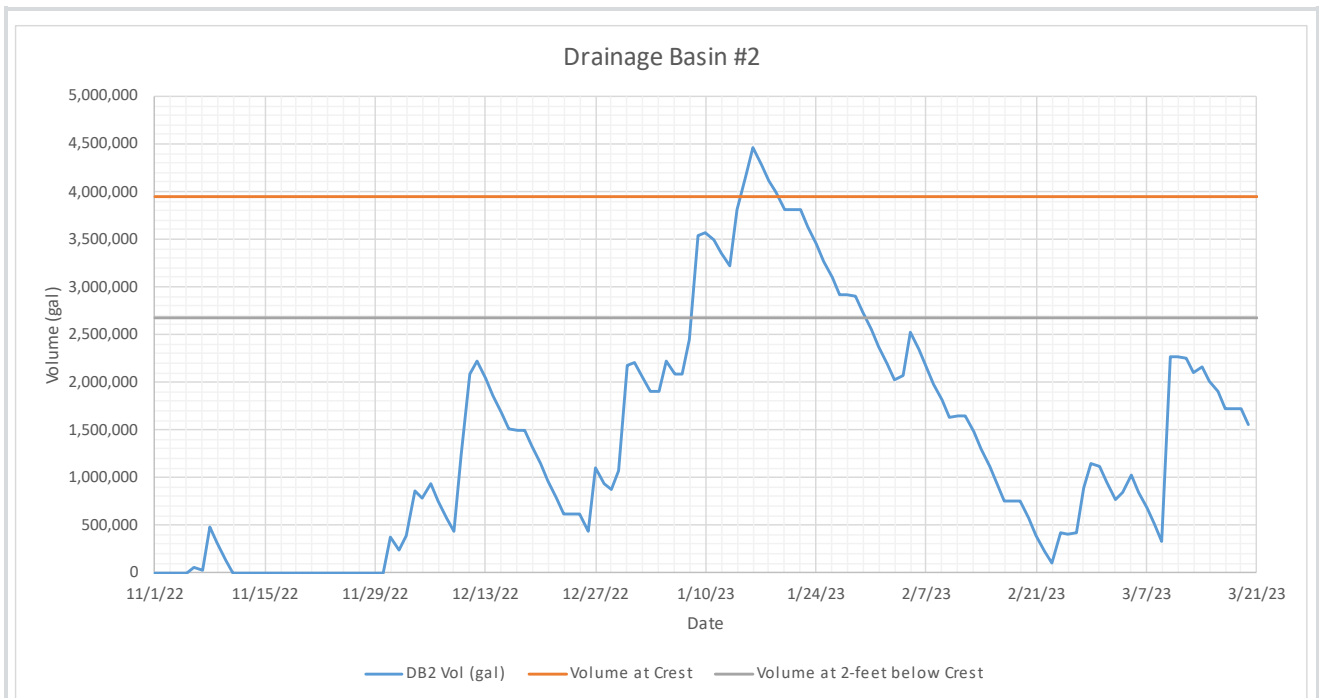


Figure 5. Model Results for Detention Basin #2

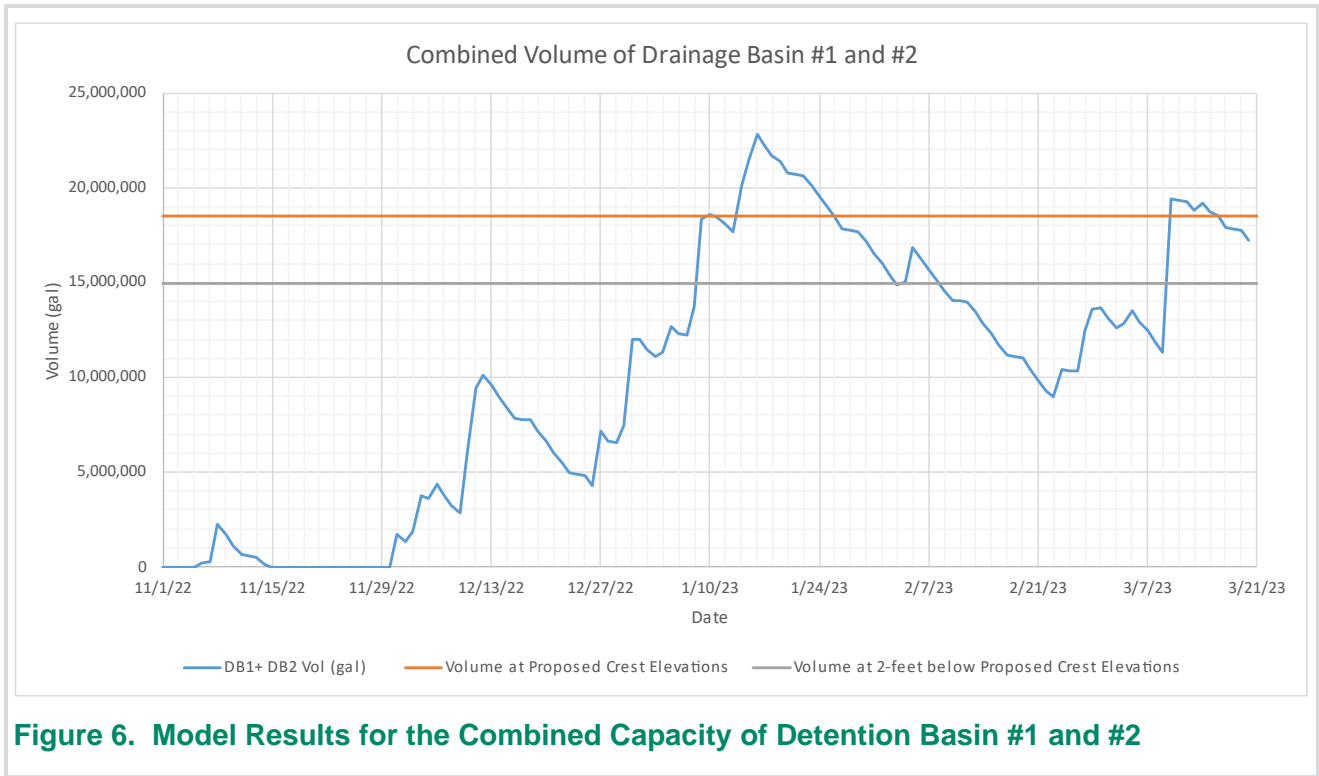


Figure 6. Model Results for the Combined Capacity of Detention Basin #1 and #2

Tables

Table 1. Detention Basin Characteristics

Description	Value	Data Source
Area 1 drainage area, existing	3,057,780 sq ft (70.2 ac)	Golder 2022, table 5
Area 1 drainage area, proposed	3,170,560 sq ft (72.8 ac)	Golder 2022, table 12
DB1 capacity, existing	9,138,789 gal	Golder 2022, table 1
DB1 capacity, proposed	14,532,600 gal	Update to Drawing 13
DB1 surface area, proposed	sq ft	Golder 2022, page 10
DB1 floor elevation	134.5 ft	Update to Drawing 13
Base flood elevation of the 100-year floodplain	148.41 ft	Project plans, Drawing 3
DB1 berm elevation, proposed	150.5 ft	Update to Drawing 13
Area 2 drainage area, existing	1,132,560 sq ft (26 acres)	Golder 2022
Area 2 drainage area, proposed	1,045,440 sq ft (24 acres)	Estimated from project plans
DB2 capacity	3,944,915 gal	Golder 2020
DB2 surface area	88,226 sq ft	Golder 2020
DB2 floor elevation	141.8 ft	Golder 2020
DB2 berm elevation	149 ft	Golder 2020

Source: Golder 2020 and 2022a; Project plans (Golder 2022b); Update to Drawing 13 (Golder 2022b)

Table 2. Detention Basin #1 Stage-Storage-Area Relationship, Proposed Condition

Elevation (ft)	Surface Area (sq ft)	Volume (Acre-ft)	Volume (gal)
150.5	156,295	44.5	14,532,595
150	153,947	42.8	13,952,443
149	149,301	39.3	12,818,295
148.5	147,008	37.6	12,264,196
148	144,722	35.9	11,718,661
147	140,209	32.7	10,653,019
146	135,762	29.5	9,620,887
145	131,381	26.4	8,621,771
144	127,066	23.5	7,655,177
143	122,818	20.6	6,720,611
142	118,635	17.8	5,817,576
141	114,519	15.2	4,945,579
140	110,469	12.6	4,104,126
139	106,485	10.1	3,292,721

Elevation (ft)	Surface Area (sq ft)	Volume (Acre-ft)	Volume (gal)
138	102,567	7.7	2,510,869
137	98,715	5.4	1,758,077
136	94,929	3.2	1,033,850
135	91,209	1.0	337,692
134.5	89,374	0.0	Approx. 0

Source: Golder 2020; elevations verified by Drawing 13 (Golder 2020c).

Table 3. Detention Basin #2 Stage-Storage-Area Relationship

Elevation (ft)	Surface Area (sq ft)	Volume (Acre-ft)	Volume (gal)
149	88,226	12.1	3,944,915
148	84,677	10.1	3,298,256
147	80,203	8.2	2,681,604
146	76,032	6.4	2,097,284
145	71,822	4.7	1,544,309
144	67,345	3.1	1,023,825
143	62,723	1.6	537,370
142	57,968	0.3	85,984
141.8	56,983	0.0	Approx. 0

Source: Golder 2020; elevations verified by project plans (Drawing 5B) (Golder 2022b)

Table 4. Reference Evapotranspiration for Gilroy, CA

Month	ETo (inches/month)	ETo (inches/day)
January	1.55	0.050
February	2.00	0.071
March	3.55	0.115
April	4.71	0.157
May	6.08	0.196
June	6.65	0.222
July	6.99	0.225
August	6.32	0.204
September	4.93	0.164
October	3.50	0.113
November	1.89	0.063
December	1.39	0.045

Source: Golder 2020 and 2022a

Table 5. Precipitation in Gilroy, California

Month	Gilroy, CA US (USC00043417), precipitation in inches	Gilroy 2.0 S, CA US (US1CASC0063), precipitation in inches	Gilroy 0.1 SE, CA US (US1CASC0054), precipitation in inches
October 2022	0	0	0
November 2022	1.61	3.24	3.04
December 2022	11.65	11.58	11.12
January 2023	8.25	11.52	11.74
February 2023	4.19	2.94	4.38
March 2023*	5.49	7.85	7.7
Total (through March 15 th)	31.19	37.13	37.98

Source: NOAA 2023a

Note: * March 1 through March 15. Outlier occurring on March 9, 2023 was removed from Gilroy, CA US (USC00043417).

Table 6. Comparison of Precipitation Frequency Estimates, in inches, to Water Year 2023 Data, in inches

Duration	Maximum precipitation, inches^{1,2}	Average Return Interval, in years									
		1	2	5	10	25	50	100	200	500	1,000
24-hour	4.05	1.83	2.71	3.81	4.67	5.80	6.64	7.46	8.29	9.37	10.2
7-day	5.03	3.71	5.09	6.87	8.31	10.3	11.7	13.2	14.8	16.8	18.4
10-day	6.77	4.19	5.66	7.57	9.11	11.2	12.8	14.4	16.0	18.2	20.0
20-day	11.9	5.47	7.29	9.60	11.4	13.9	15.7	17.5	19.3	21.7	23.5
30-day	12.95	6.72	8.92	11.7	13.8	16.6	18.6	20.6	22.5	25.0	26.9
45-day	18.65	8.28	10.9	14.1	16.6	19.7	21.9	24.0	26.1	28.6	30.5
60-day	19.9	9.73	12.8	16.4	19.1	22.5	24.8	27.0	29.1	31.7	33.5

Source: NOAA Atlas 14, Volume 6, Version 2 Point Precipitation Frequency Estimates (NOAA 2023c)

Notes:

¹ Gauge location name: Gilroy, California, USA, Latitude: 37.003°, Longitude: -121.5608°

² Maximum precipitation from November 1, 2022 to March 15, 2023. October 2022 had no rainfall in Gilroy, California.

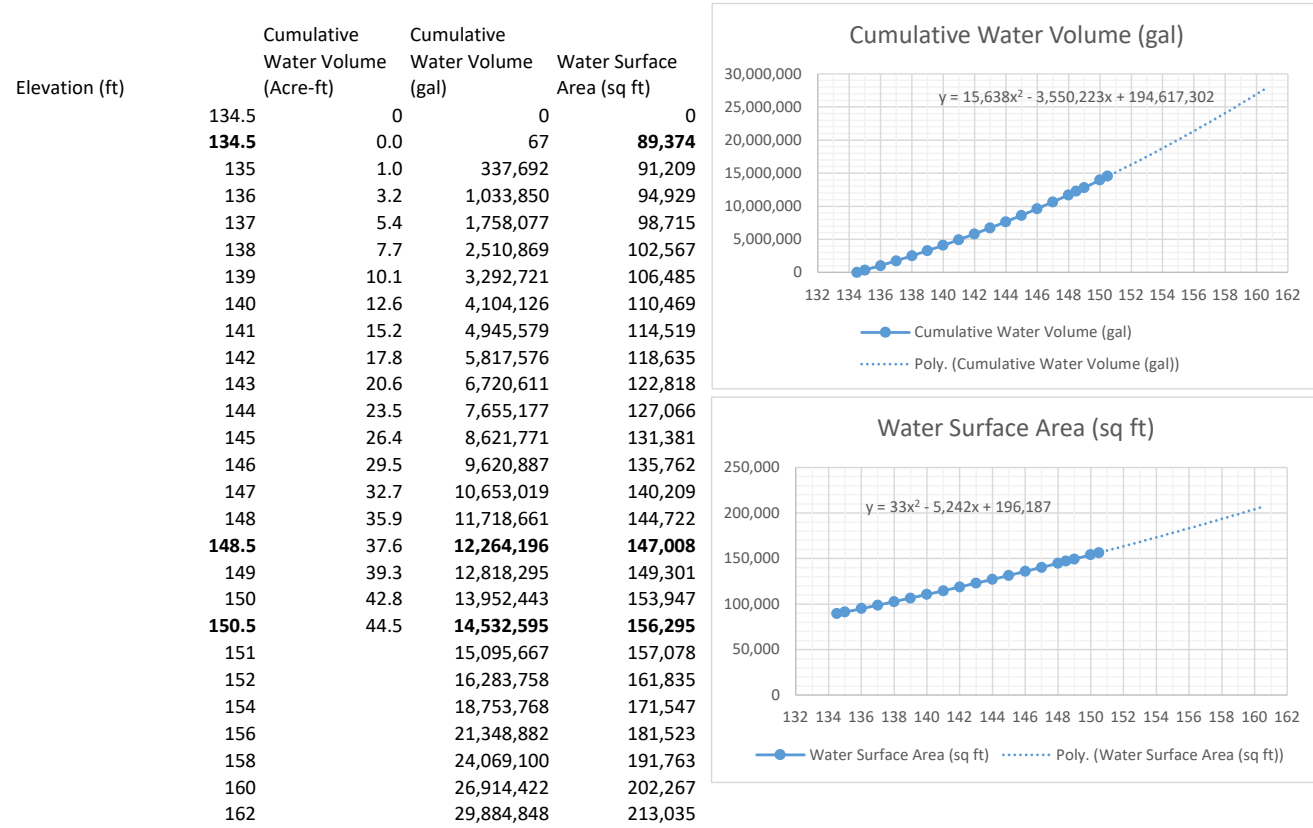
Attachment A - Calculations

Detention Basin Analysis

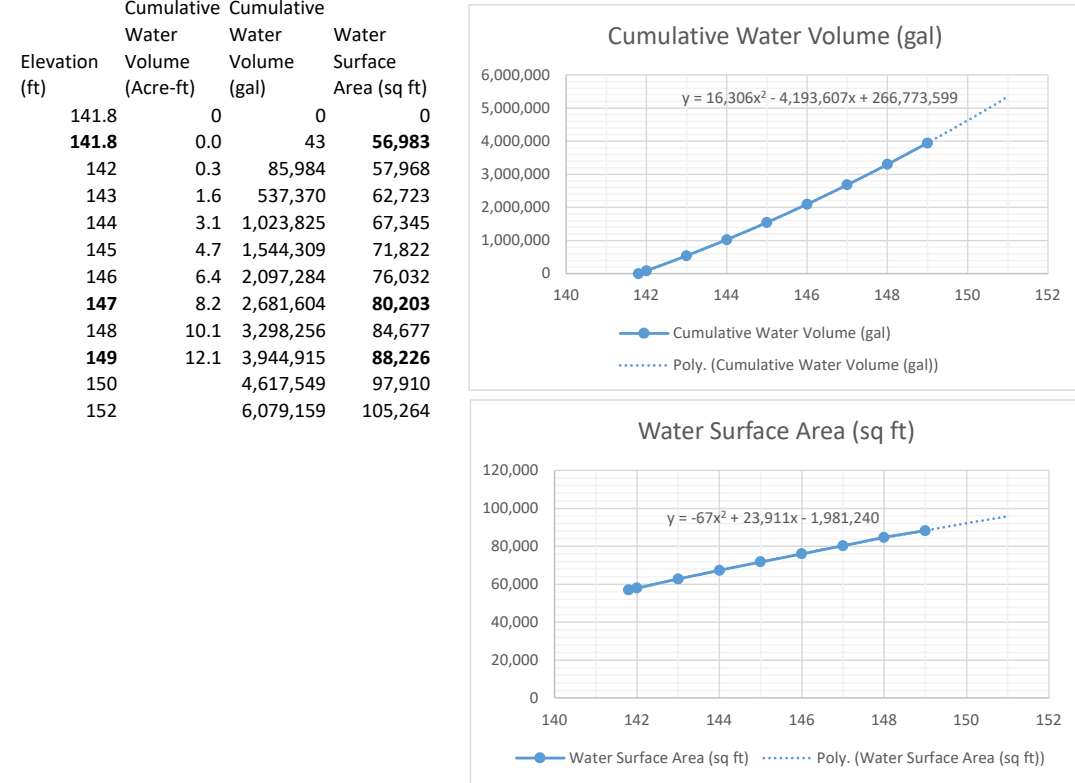
<u>Detention Basin 1</u>	<u>Value</u>	<u>Unit</u>	<u>Source</u>	<u>Detention Basin 2</u>	<u>Value</u>	<u>Unit</u>	<u>Source</u>
Area 1 runoff area, existing	3,057,780	sq ft (70.2 ac)	Golder 2022, table 5	Area 2 runoff area, exist	1,132,560	sq ft (26 ac)	Golder 2022
Area 1 runoff area, proposed	3,170,560	sq ft (72.8 ac)	Golder 2022, table 12	Area 2 runoff area, prop	1,045,440	sq ft (24 ac)	
DB1 capacity, existing	9,138,789	gal	Golder 2022, table 1	DB2 capacity	3,944,915	gal	Golder 2020
DB1 capacity, proposed	14,532,600	gal	Drawing 13	DB2 surface area	88,226	sq ft	Golder 2020
DB1 surface area, proposed	185,388	sq ft	Golder 2022, page 10	DB2 floor El.	141.8	ft	Golder 2020
DB1 floor El.	134.5	ft	Drawing 13	DB2 berm elevation	149	ft	Golder 2020
BFE	148.41	ft	Project plans, Drawing 3				
Base of freeboard	148.5	ft	Drawing 13				
Berm El.	150.5	ft	Drawing 13				

Composing General Order: Detention ponds, if used, must be designed, constructed, and maintained to prevent conditions contributing to, causing, or threatening to cause contamination, pollution, or nuisance, and must be capable of containing, without overflow or overtopping (taking into consideration the crest of winddriven waves and water reused in the composting operation), all runoff from the working surfaces in addition to precipitation that falls into the detention pond from a 25-year, 24-hour peak storm event at a minimum, or equivalent alternative approved by the Regional Water Board.

DB1 (proposed) Stage Storage Area (source: Golder 2020; elevations verified on Drawing 13)



DB2 Stage Storage Area (source Golder 2020; elevations verified by Drawing 5B)



Inflows

Direct precipitation at basin = rainfall * basin surface area
 Runoff = rainfall * drainage area* runoff coefficient Q=CIA

<u>Runoff coefficient</u>	<u>Value</u>	<u>Source</u>
Area 1 coefficient	0.76	Golder 2022, table 12
Area 2 coefficient	0.72	Golder 2022, table 6

Outflows

Evaporation = ETo * basin surface area
 Evaporation rate = ETo for Gilroy (inches)

Operations (Source: Golder 2020)

Green compost, primary	176,000 gal/day for 260 days/yr (M-F) from DB1, then DB2, then GW
Green compost, secondary	176,000 gal/day for 260 days/yr (M-F) from DB2, then GW
Dust control*	147,000 gal/day for 245 days/yr (36M gal/yr)

* after green compost primary and secondary; from DB1, then DB2, then GW

Operations (Source: Golder 2022, pers comm. 2023)

ASP primary	20,000 gal/day for 365 day/yr
ASP secondary	40,000 gal/day for 365 day/yr

ETo for Gilroy (source: Golder 2020, 2022)

Month	in/mo	days/mo	in/day	
Jan	1	1.55	31	0.050
Feb	2	2.00	28	0.071
Mar	3	3.55	31	0.115
Apr	4	4.71	30	0.157
May	5	6.08	31	0.196
Jun	6	6.65	30	0.222
Jul	7	6.99	31	0.225
Aug	8	6.32	31	0.204
Sep	9	4.93	30	0.164
Oct	10	3.50	31	0.113
Nov	11	1.89	30	0.063
Dec	12	1.39	31	0.045
Total		49.56		



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To: Valerie Negrete
County of Santa Clara Department of Planning
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Project name:
Z-Best Composting Facility

Project ref:
60666256

From: Elizabeth Nielsen, Water Resources
Engineer, AECOM

Date:
April 7, 2023

CC: Emmanuel Ursu, Consultant Planner
Sam Gutierrez, Principal Planner
Elizabeth Vissers, Deputy County Counsel
Lizanne Reynolds, Deputy County Counsel

Memo

Subject: Flow Frequency Analysis

This Technical Memorandum provides a flow frequency analysis for four U.S. Geological Survey (USGS) river gauges located in the vicinity of the Z-Best Composting Facility near Gilroy, California. This analysis found that the January and March 2023 storms, which caused flooding throughout the region, can be characterized as having peak flows with a return interval between the 5-year event and those in excess of the 20-year event.

1. Background

Z-Best Products has applied to the County of Santa Clara for a major modification to its existing Use Permit at the Z-Best Composting Facility located at 980 State Route 25 (SR-25) in an unincorporated area approximately 5 miles southeast of Gilroy, California. Proposed facility modifications associated with the Z-Best Composting Facility Expansion and Upgrade Project (project) will also require Architecture and Site Approval and Grading Approval. Z-Best is proposing to replace the existing composting process it uses for processing municipal solid waste feedstock with an Engineered Composting System (ECS) process that uses aerated static piles (ASP); existing green waste composting operations would remain unchanged. Additional components of the proposed project include expanding the existing flood storage facility, modifying Detention Basin #1, relocating the existing facility entrance, and widening SR-25 along the project site frontage to enable installation of acceleration lanes and deceleration lanes into and out of the proposed relocated entrance. See Figures 1 and 2 for project plans showing existing and proposed conditions.

The project site is located within the Federal Emergency Management Agency (FEMA) designated 100-year floodplain for the Pajaro River. The northern Pajaro River basin receives water from the Uvas Creek, Llagas Creek, Pacheco Creek, and Tequisquita Slough/Santa Ana Creek subbasins. San Felipe Lake, also known as Upper Soap Lake, is a permanent body of water on the mainstem of the Pajaro River. Lower Soap Lake (or just Soap Lake) is an intermittent floodplain area located between San Felipe Lake and US-101 (see Figure 3); the project site is located within the floodplain for Soap

Lake. This area floods when water backs up on the Pajaro River upstream of the San Benito River confluence.

There have been several flood events on the Pajaro River in the vicinity of the project area including the recent floods in 2023. On January 9, 2023, and on March 10, 2023, storms caused flooding on US-101, Bloomfield Avenue, and Bolsa Road. Peak flows at the USGS gauge located on the Pajaro River near Chittenden (downstream of the project area) reached 11,100 cubic feet per second (cfs) on January 10, 2023, and 11,900 cfs on March 10, 2023. Although this level of flooding has not been seen in the project vicinity since 1998, flood events have also occurred in the 1950's, 1960's, 1980's, and 1990's with peak flows in the Pajaro River exceeding those experienced in January and March 2023 (USGS 2023). In addition to local flooding near the project area, levee failure occurred on the Pajaro River downstream of the project area on March 11, 2023, causing massive flooding in Monterey County.

The flow frequency analysis provided herein provides context that can be used to characterize the severity of the 2023 floods.

2. Methodology and Results

2.1 Flow Data

Historical stream flow data and annual peak discharges were obtained for USGS gauging stations located near Gilroy, California (USGS 2023). These USGS gauge stations included:

- USGS 11159000, Pajaro River at Chittenden, California;
- USGS 11158600, San Benito River at State Highway 156, near Hollister, California;
- USGS 11153000, Pacheco Creek near Dunneville, California; and
- USGS 11153650, Llagas Creek near Gilroy, California.

Table 1 shows the peak flows measured at the gauging stations during the January and March 2023 storms. Pacheco Creek and Llagas Creek contribute flow directly to the Pajaro River floodplain upstream of the project area. This is in contrast to the San Benito River, which joins the Pajaro River downstream from the project area, but can provide indirect effects by reducing outflow from the floodplain by backing up the Pajaro River.

2.2 Flow Frequency

A flow frequency analysis was performed using the U.S. Army Corps of Engineers, Hydrologic Engineering Center's (HEC) Statistical Software Package (HEC-SSP) with methods based on Bulletin 17C. Annual peak discharges at the USGS gauge stations were supplemented with the peak discharge found in the instantaneous flow data from October 1, 2022 to March 14, 2023.

A weighted skew methodology was used in the analysis. A regional skew of -0.548 and regional skew mean square error of 0.13 was used for the Pajaro River, Pacheco Creek, and Llagas Creek gauges. A regional skew of -0.479 and regional skew mean square error of 0.13 was used for the San Benito River gauge. The regional skew was based on Parrett et al. (2011), which evaluated regional skew and flood frequency for various gauges in California.

Calculated flood flows for the gauging stations are summarized in Table 2 and the flow frequency plots are shown on Figures 4 through 7. The estimated return period for peak winter 2023 flows are as follows:

- The peak flow occurring in March 2023 on the Pajaro River at Chittenden (11,900 cfs) is estimated between a 5-year and a 10-year event;
- The peak flow occurring in March 2023 on the San Benito River at SR-156 (7,910 cfs) is estimated between a 10-year and a 20-year event;
- The peak flow occurring in January 2023 on Pacheco Creek near Dunneville (15,700 cfs) is estimated between a 20-year and a 50-year event; and
- The peak flow occurring in January 2023 on Llagas Creek near Gilroy (4,840 cfs) is estimated between a 20-year and a 50-year event.

3. Conclusions

This analysis found that the January 2023 storm was a large event (an approximate 30-year storm) in the smaller watersheds directly contributing to the flood basin in the vicinity of the project area. In contrast, the March 2023 storm was the larger event for the San Benito River watershed, which contributes to the Pajaro River downstream of the project area. In general, the January and March 2023 storms, which caused flooding throughout the region, can be characterized as having peak flows with a return interval between the 5-year event and those in excess of the 20-year event.

4. References

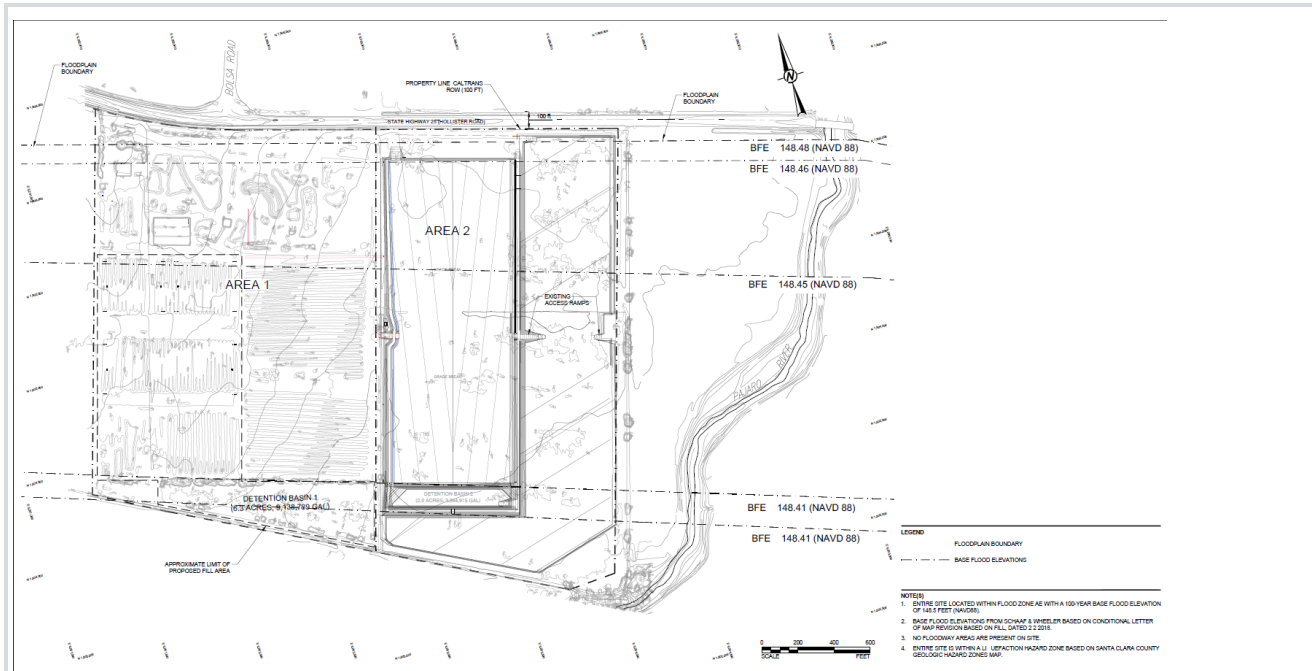
Golder Associates Inc. (Golder), 2022. Aerated Static Pile Composting Permit Package. Project No. 133-97640. County File No. 6498-81-11-09G 08P 08A 08EA. April 2022.

Pajaro River Watershed Flood Prevention Authority, 2005. Soap Lake Floodplain Preservation Project Final Initial Study and Negative Declaration. Prepared by RMC. March. Online at: https://www.pajaroriverwatershed.org/sites/default/files/2021-04/Soap_Lake_Floodplain_Preservation_Project_Fina.pdf

Parrett, C., Veilleux, A., Stedinger, J.R., Barth, N.A., Knifong, D.L., and Ferris, J.C., 2011, Regional skew for California, and flood frequency for selected sites in the Sacramento–San Joaquin River Basin, based on data through water year 2006: U.S. Geological Survey Scientific Investigations Report 2010–5260, 94 p. Online at: <https://pubs.usgs.gov/sir/2010/5260/>

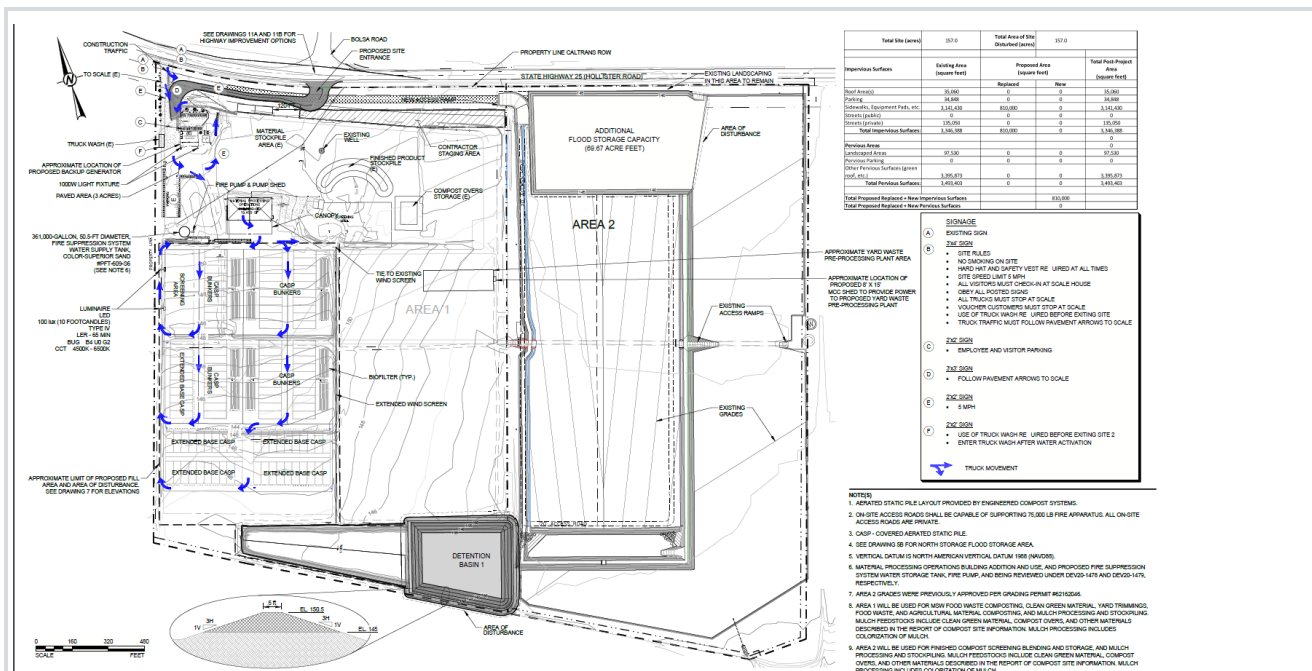
U.S. Geological Survey (USGS), 2023. USGS 11159000, Pajaro River at Chittenden, CA; USGS 11158600, San Benito River at State Highway 156, near Hollister, CA; USGS 11153000, Pacheco Creek near Dunneville, CA; and USGS 11153650, Llagas Creek near Gilroy, CA. National Water Information System. Online at: <https://maps.waterdata.usgs.gov/mapper/index.html>

Figures



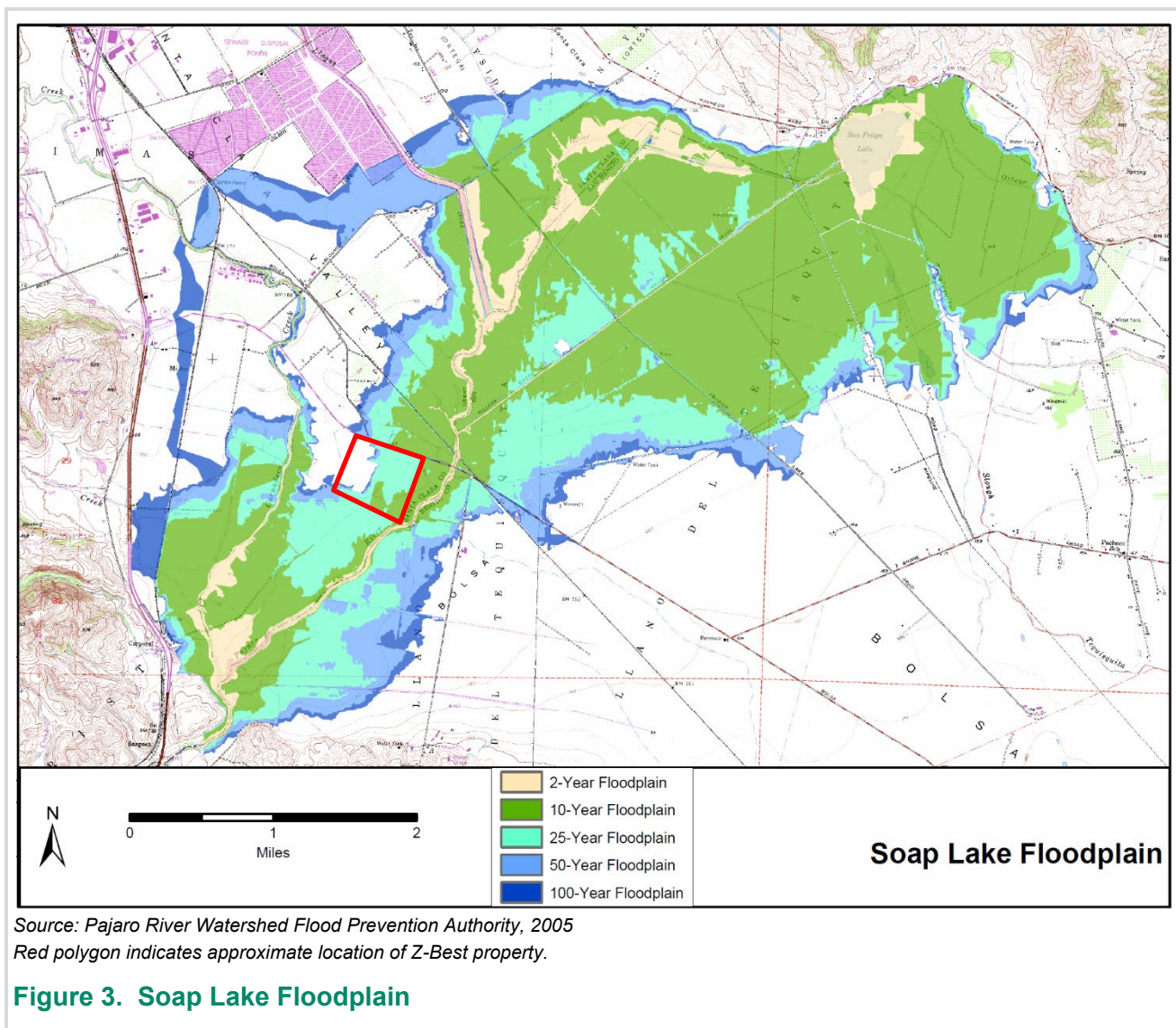
Source: Golder 2022

Figure 1. Existing Site



Source: Golder 2022

Figure 2. Proposed Site Plan



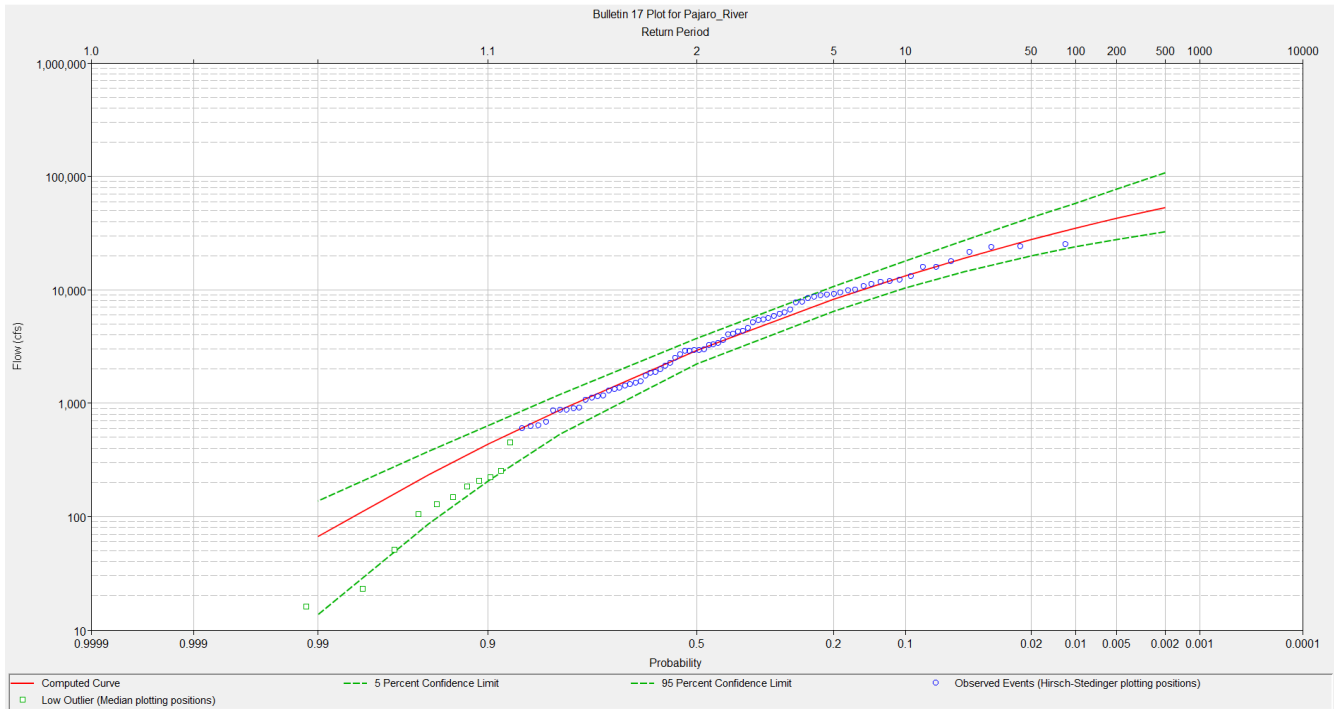


Figure 4. Flow Frequency for USGS Gauge No. 11159000, Pajaro River at Chittenden, CA

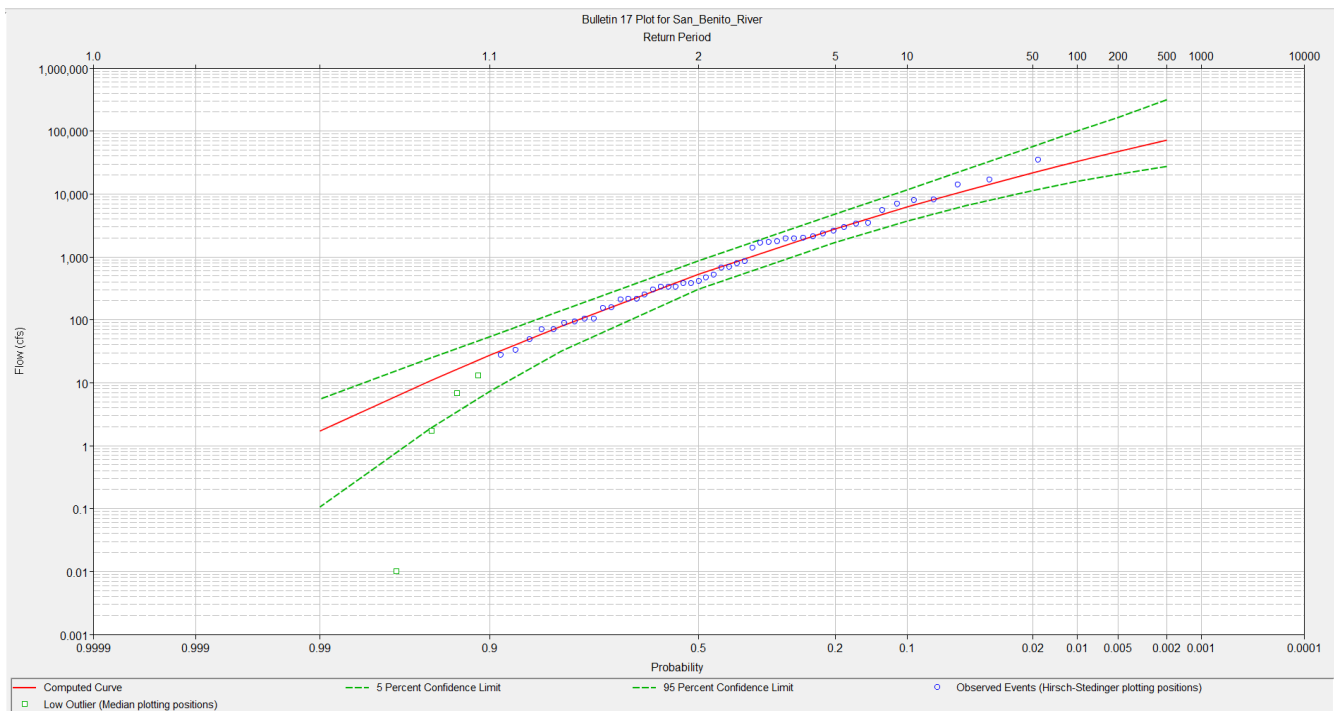


Figure 5. Flow Frequency for USGS Gauge No. 11158600, San Benito River at State Highway 156, near Hollister, CA

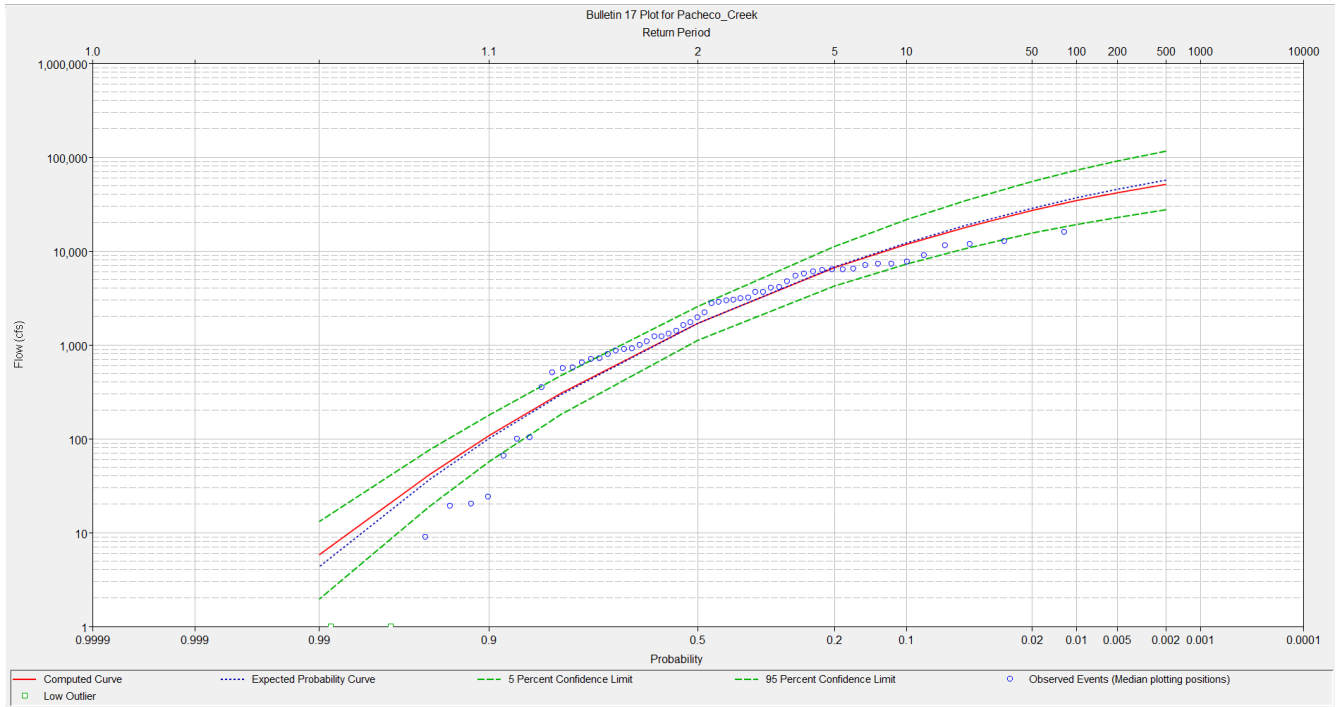


Figure 6. Flow Frequency for USGS Gauge No. 11153000, Pacheco Creek near Dunneville, CA

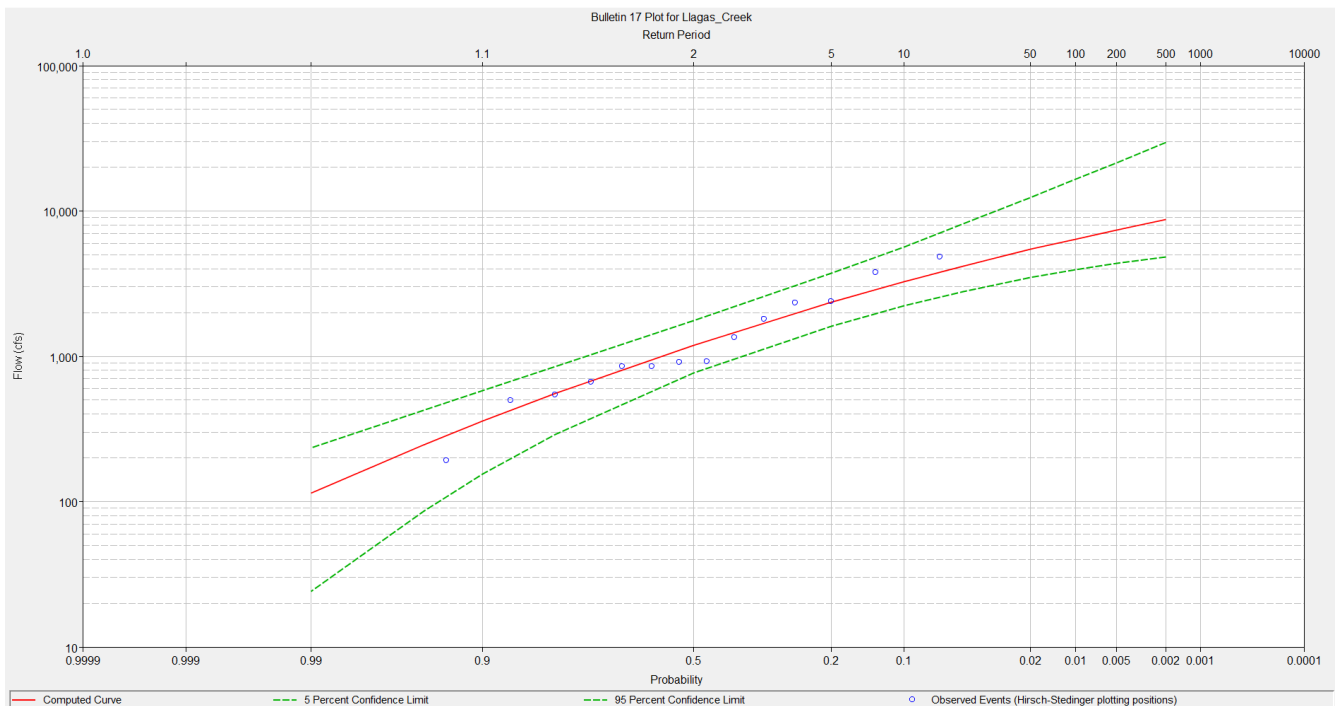


Figure 7. Flow Frequency for USGS Gauge No. 11153650, Llagas Creek near Gilroy, CA

Tables

Table 1. Flood Events in January and March 2023

Location	USGS Gauge No.	Drainage Area (square miles)	January 2023 peak flow (cfs)	March 2023 peak flow (cfs)
Pajaro River at Chittenden, CA	11159000	1,186	11,100	11,900
San Benito River at State Highway 156, near Hollister, CA	11158600	607	2,520	7,910
Pacheco Creek near Dunneville, CA	11153000	146	15,700	8,910
Llagas Creek near Gilroy, CA	11153650	84.2	4,840	4,310

Source: USGS 2023

Acronyms: CA = California; cfs = cubic feet per second; USGS = United States Geological Survey

Table 2. Annual Peak Flows for USGS Gauge Locations using Bulletin 17C Procedures

USGS Gauge	Gauge No.	Drainage (square miles)	Period of record	Annual peak flow, in cfs, for recurrence interval, in years							
				2-yr	5-yr	10-yr	20-yr	50-yr	100-yr	200-yr	500-yr
Pajaro River at Chittenden, CA	11159000	1,186	1940-2023	2,930	8,262	13,313	19,121	27,796	35,001	42,670	53,393
San Benito River at State Highway 156, near Hollister, CA	11158600	607	1971-2023	526	2,798	6,184	11,438	21,907	32,978	47,161	71,256
Pacheco Creek near Dunneville, CA	11153000	146	1940-1982, 2007-2023	2,054	5,679	9,018	12,773	18,244	22,684	27,318	33,659
Llagas Creek near Gilroy, CA	11153650	84.2	2010-2023	1,196	2,362	3,258	4,180	5,434	6,408	7,400	8,733

Source: HEC-SSP, Bulletin 17C

Acronyms: CA = California; cfs = cubic feet per second; USGS = United States Geological Survey; yr = year
Note: Bulletin 17C analysis method weighted with a regional skew.

Appendix F – Noise Supporting Information

Contains:

- 2023 Noise Memorandum (AECOM)



Technical Memorandum
Noise
FINAL

**Z-Best Composting Facility
Expansion and Upgrade**

Prepared for:

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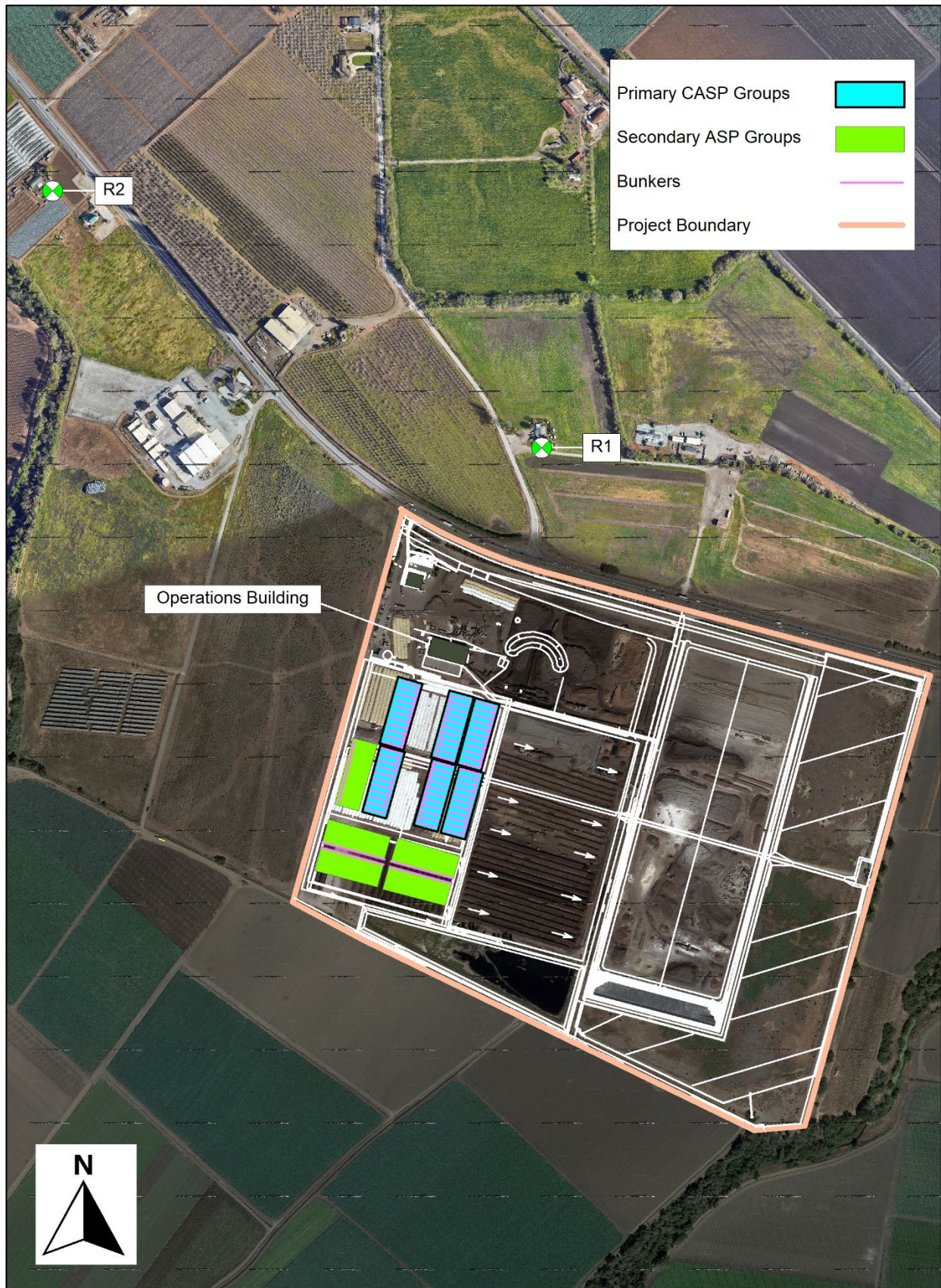
January 2023

Project Introduction

This Technical Memorandum assesses the noise effects from the proposed Z-Best Composting Facility Expansion and Upgrade Project (project). The project proponent, Zanker Road Resource Management Ltd., has applied to the County of Santa Clara for a modification of its Use Permit, and an Architectural Site Approval, for the Z-Best Composting facility at 980 State Route 25 (SR 25) in an unincorporated area approximately 5 miles southeast of Gilroy, California. The proposed modification would allow an upgrade to the Z-Best facility's existing municipal solid waste (MSW) composting process from the current windrow method to an aerated static pile (ASP) process and associated modifications to existing operations and site conditions to accommodate the new processing technology. The purpose of the proposed project is to enable faster and more efficient composting.

The proposed technology and operations modifications would enable Z-Best to increase its current permitted MSW composting capacity from 1,500 tons per day (tpd) with up to 15 days per year at 2,500 tpd, to 2,750 tons per day with up to 20 days per year at 3,500 tpd. The additional capacity is consistent with State of California CalRecycle goals to increase waste diversion from landfills and a partial remedy for addressing regulations imposing restrictions on placing organic materials in landfills. Z-Best is not proposing to modify its existing green waste composting operations or green waste intake volume as part of the proposed project.

Although the facility generates noise and vibration from current operations, the project would increase the scale of activities performed at the site by introducing additional on-site and off-site truck trips, operation of additional on-site material manipulation and transport equipment (e.g., loaders and excavators), and additional on-site stationary noise sources (e.g., shredder, conveyors, and aeration fans). Figure 1 shows the proposed project layout superimposed on aerial imagery of the study area and nearest residential receptors (worst-case noise-sensitive land uses).



Map data: Google 2022©, Engineered Compost Systems 2022

Figure 1 Proposed Project Area and Worst-Case Noise-Sensitive Receptors

Acoustics and Vibration Terminology

A summary of relevant fundamental concepts and a glossary of terms related to noise and vibration are provided in Attachment A.

Existing Land Uses and Noise Environment

Land uses surrounding the project property are agricultural. The noise-sensitive receptor most vulnerable to both on-site construction and operational noise is a single-family residence (R1) approximately 650 feet north of the northern project property line. This property is considered most vulnerable to project noise and vibration due to its proximity to project construction work areas, site driveways, and proposed stationary noise sources. Receptor R2 represents another single-family residence that is most vulnerable to traffic noise effects due to its proximity to project-related truck trips on Highway 25. Therefore, R1 was identified as the worst-case noise-sensitive receiver for the on-site facility construction and operation noise impact assessment, and R2 was identified as the worst-case noise-sensitive receptor for the traffic noise impact assessment.

Due to greater relative distance and reduced sensitivity to noise and vibration, other properties surrounding the project will receive less contribution from, and be less affected by, project-generated noise and vibration. Therefore, other properties surrounding the project do not need to be considered for impact assessment if the single-family land uses identified as R1 and R2 are determined to be not impacted. If either of the studied receptors are determined to be impacted by either noise or vibration, the scope of studied receptors would expand to include other receptors in the vicinity to identify the extent of impacts and requirements for mitigation.

Baseline Noise Measurements

A baseline sound level measurement was conducted by Edward L. Pack Associates, Inc. for 24 hours on December 19, 2016¹. The baseline measurement was performed with a Larson Davis 812 sound level meter and was conducted approximately 150 feet from the residential receptor location along the edge of Bolsa Road (R1). The measured sound data at this location is summarized in Table 1. The primary observed noise source at the residential measurement location was traffic on Highway 25, with the maximum sound levels due to traffic on Bolsa Road. As shown in Table 1, the lowest 1-hr Leq values during the daytime (7:00 AM to 10:00 PM) and the nighttime (10:00 PM to 7:00 AM) were 59 and 54 dBA, respectively. WJV Acoustics, Inc. conducted verification noise measurements at the same two locations as part of their 2018 peer review of the Edward L. Pack Associates report².

¹ Noise Assessment Study for the Proposed Z-Best Products Food Waste Static Aeration Composting Facility Modification, Jeffrey K. Pack, July 24, 2019, Project No. 48-073-R2

² Noise Study Peer Review, Z-Best Products Facility Modification. Santa Clara County, California. August 6, 2018.

Table 1. Summary of Measured Sound Levels near Receptor R1

Time	Existing Ambient Sound levels, dBA					
	L _{eq}	L _{max}	L ₂	L ₈	L ₂₅	L ₅₀
7:00 AM	64	84	73	65	63	62
8:00 AM	64	86	71	65	62	61
9:00 AM	61	82	68	63	60	58
10:00 AM	61	87	68	62	59	57
11:00 AM	62	86	70	63	59	56
12:00 PM	59	81	65	61	57	55
1:00 PM	61	83	68	63	60	58
2:00 PM	62	84	70	62	60	58
3:00 PM	64	89	73	64	60	59
4:00 PM	65	84	74	68	62	60
5:00 PM	65	84	74	70	63	60
6:00 PM	63	81	72	65	62	60
7:00 PM	62	81	66	64	62	61
8:00 PM	60	79	65	62	61	59
9:00 PM	60	85	64	62	60	58
10:00 PM	61	93	64	61	59	57
11:00 PM	56	79	61	59	56	53
12:00 AM	54	71	60	59	56	52
1:00 AM	54	73	61	58	55	51
2:00 AM	56	79	63	60	57	53
3:00 AM	58	74	63	64	59	57
4:00 AM	61	77	65	64	62	60
5:00 AM	63	84	67	65	63	61
6:00 AM	63	83	70	65	63	61
Quietest Daytime Hour (12:00 PM)	59	81	65	61	57	55
Quietest Nighttime Hour (1:00 AM)	54	73	61	58	55	51

Source: Noise Assessment Study for the Proposed Z-Best Products Food Waste Static Aeration Composting Facility Modification, Jeffrey K. Pack, July 24, 2019, Project No. 48-073-R2

Regulatory Setting

Construction Noise Regulations

Santa Clara County Noise Ordinance

Santa Clara County Code of Ordinances Title B – Regulations, Division B11 – Environmental Health, Chapter VIII, Control of Noise and Vibration (Santa Clara County 2022) regulates noise within unincorporated areas of the County and on County-owned or operated land. Section B11-154(b)(6) prohibits the following in relation to construction/demolition noise:

- a. *Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between weekdays and Saturday hours of 7:00 p.m. and 7:00 a.m., or at any time on Sundays or holidays, that the sound therefrom creates a noise disturbance across a residential or commercial real property line, except for emergency work of public service utilities or by variance. This section will not apply to the use of domestic power tools as specified in Subsection 11.*
- b. *Where technically and economically feasible, construction activities will be conducted in a manner that the maximum noise levels at affected properties will not exceed those listed in the following schedule:*
 - i. *Mobile equipment. Maximum noise levels for nonscheduled, intermittent, short-term operation (less than ten days) of mobile equipment:*
 - *Single- and Two-Family Dwelling Residential Areas:*
 - 75 dBA: 7am to 7pm daily except Sundays and legal holidays.
 - 50 dBA: 7pm to 7am daily and all day Sundays and legal holidays.
 - *Multifamily Dwelling Residential Areas:*
 - 80 dBA: 7am to 7pm daily except Sundays and legal holidays.
 - 55 dBA: 7pm to 7am daily and all day Sundays and legal holidays.
 - *Commercial Areas:*
 - 85 dBA: 7am to 7pm daily except Sundays and legal holidays.
 - 60 dBA: 7pm to 7am daily and all day Sundays and legal holidays.
 - ii. *Stationary equipment. Maximum noise levels for repetitively scheduled and relatively long-term operation (periods of ten days or more) of stationary equipment are as follows:*
 - *Single- and Two-Family Dwelling Residential Areas:*
 - 60 dBA: 7am to 7pm daily except Sundays and legal holidays.
 - 50 dBA: 7pm to 7am daily and all day Sundays and legal holidays.
 - *Multifamily Dwelling Residential Areas:*
 - 65 dBA: 7am to 7pm daily except Sundays and legal holidays.
 - 55 dBA: 7pm to 7am daily and all day Sundays and legal holidays.
 - *Commercial Areas:*
 - 70 dBA: 7am to 7pm daily except Sundays and legal holidays.
 - 60 dBA: 7pm to 7am daily and all day Sundays and legal holidays.

Construction Vibration Regulations and Guidance

Santa Clara County Noise Ordinance – Vibration Annoyance

Section B11-154(b)(7) of the County Noise Ordinance also prohibits operating or permitting the operation of any device that creates a vibrating or quivering effect that:

- a) Endangers or injures the safety or health of human beings or animals;
- b) Annoys or disturbs a person of normal sensitivities; or
- c) Endangers or injures personal or real properties.

The ordinance defines the vibration perception threshold as “the minimum ground or structure borne vibrational motion necessary to cause a normal person to be aware of the vibration by direct means as, but not limited to, sensation by touch or visual observation of moving objects. The perception threshold will be presumed to be a motion velocity of 1/100 inches per second over the range of one to 100 Hz.”

California Department of Transportation – Vibration

The California Department of Transportation (Caltrans) Transportation and Construction Vibration Guidance Manual (Caltrans Manual) (Caltrans 2020) provides guidance for the analysis of vibratory impacts generated by transportation and construction projects by providing thresholds for structural damage and human perception/annoyance. Table 2 below shows a curated list of damage thresholds from the Caltrans Manual, as applicable to various receptors and vibratory source types.

Table 2. Maximum Vibration Levels for Construction Equipment for Potential Damage and Annoyance (PPV in/sec)

Structure Type	Potential Damage Thresholds	
	Transient Sources	Continuous/Frequent Intermittent Sources
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial and commercial buildings	2.0	0.5

Source: Transportation and Construction Vibration Guidance Manual (Caltrans 2020), Tables 19 and 20.

As shown in Table 2, vibratory activities have the potential to result in structural damage when vibration levels exceed 0.25 to 2 PPV in/sec as applicable to the source type and receptor characterization.

Construction & Operational Vibration

Construction activities can generate ground-borne noise and vibration of varying degrees based on the construction activity and equipment, soil conditions, and distance to vibration-sensitive structures or land uses. Vibration associated with project construction activities would occur most notably during major ground-disturbing activities, such as site grading. The piece of construction equipment generating the strongest vibration would be the dozer which, per the FTA Manual, can generate a vibration level of up to 0.089 PPV in/sec at 25 feet. With the closest residential structure as close as 1,200 feet from the potential operation of dozers used during grading, vibration was assessed at this distance using Equation 7-2 from the FTA Manual. At approximately 1,200 feet, a dozer will result in a vibration level of 0.0003 PPV in/sec at the closest residential unit which is well below the perception threshold of 0.01 PPV in/sec vibration perception threshold.

Vibration generated on-site during project operation would be negligible and thus, dismissed from this study due to the relative distances to vibration-sensitive receptors. Vibration associated with facility operations would occur most notably during the use of excavators when transporting materials around the facility. An excavator can generate a vibration level of up to 0.076 PPV in/sec (comparable to the

reference vibration level of a loaded truck in the FTA Manual). With the closest residential structure as close as 780 feet from the potential operation of excavators, will result in a vibration level of 0.0004 PPV in/sec at the closest residential unit which is well below the perception threshold of 0.01 PPV in/sec vibration perception threshold.

Operational Noise Regulations

Santa Clara County Noise Ordinance

Santa Clara County Code of Ordinances Title B – Regulations, Division B11 – Environmental Health, Chapter VIII, Control of Noise and Vibration (Santa Clara County 2022) regulates noise within unincorporated areas of the County and on County-owned or operated land.

Section B11-152 Exterior Noise Limits regulates noise sources by establishing sound level thresholds at property lines in Santa Clara County. These limits, which vary by land use type and time of day, are shown in Table 3.

Table 3. Santa Clara County Noise Ordinance, Exterior Noise Limits

Receiving Land Use Category	Time Period	Noise Level (dBA)
One- and Two-family residential districts	10 p.m. to 7 a.m.	45
	7 a.m. to 10 p.m.	55
Multiple-family Dwelling	10 p.m. to 7 a.m.	50
	7 a.m. to 10 p.m.	55
Commercial	10 p.m. to 7 a.m.	60
	7 a.m. to 10 p.m.	65
Light Industrial	Any time	70
Heavy Industrial	Any time	75

Source: Santa Clara County Noise Ordinance

This section of the code includes the following text to accompany this table:

No person may operate or cause to be operated any source of sound at any location within the unincorporate territory of the County or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by the person, which causes the noise level when measured on any other property either incorporated or unincorporated, to exceed:

1. *The noise standard for that land use specified in table B11-152 of this section (Table 3 above) for a cumulative period of more than thirty (30) minutes in any hour; or*
2. *The noise standard plus five (5) dB for a cumulative period of more than fifteen (15) minutes in any hour; or*
3. *The noise standard plus ten (10) dB for a cumulative period of more than five (5) minutes in any hour; or*
4. *The noise standard plus fifteen (15) dB for a cumulative period of more than one minute in any hour; or*
5. *The noise standard plus twenty (20) dB or the maximum measured ambient level, for any period of time.*

If the measured ambient level exceeds the allowable noise exposure standard within any of the first four (4) noise limit categories above, the allowable noise exposure standard shall be adjusted

in five (5) dB increments in each category as appropriate to encompass or reflect said ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under this category shall be increased to reflect the maximum ambient noise level.

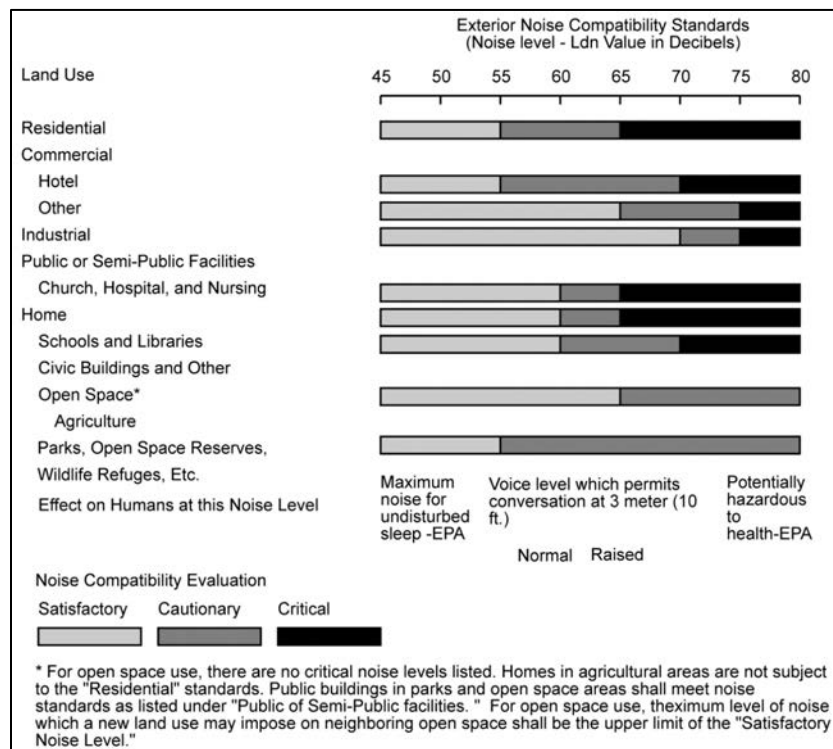
Since the lowest measured 1-hr L_{eq} ambient daytime (59 dBA) and nighttime (54 dBA) sound levels at measurement R1 exceed the allowable noise exposure standard in Table 3 (55 and 45 dBA, respectively), the exterior noise limits were adjusted per ordinance guidance in five (5) dB increments to encompass the ambient noise levels. Table 4 summarizes the adjusted single-family residential exterior noise limits applicable to noise-sensitive receptors for this project.

Table 4. Santa Clara County Noise Ordinance, Adjusted Exterior Noise Limits (L_{50})

Receiving Land Use Category	Time Period	Noise Level (dBA)
One- and Two-family residential districts	10 p.m. to 7 a.m.	55
	7 a.m. to 10 p.m.	60

Santa Clara County General Plan

The Safety and Noise section of the County’s general plan summarizes goals and policies related to the safe siting of land uses within areas of elevated or harmful noise levels. Figure 2 shows the noise compatibility standards for each land use type by defining the criteria for satisfactory, cautionary, or critical exposure to existing noise levels.



Source: County of Santa Clara 1994 General Plan

Figure 2 Noise Compatibility Standards for Land Use in Santa Clara County

Although the project will not be introducing any new land use to the study area that would be held to general plan policies, these noise levels are important in characterizing the existing noise environment at studied noise-sensitive receptors.

Construction Noise and Vibration Assessment

Construction Noise Prediction and Results

Project construction phasing would include the following:

- Site Grading (duration of approximately 78 days)
- Site Trenching (duration of approximately 53 days)
- Above ground mechanical, concrete, and utility work (duration of approximately 69 days)

Construction would occur Monday through Saturday from 7 a.m. to 4 p.m. . General construction efforts would occur, on average, approximately 1,200 feet from the façade of the existing residential structure at R1 (measured from the approximate center of the construction area).

The construction noise assessment was conducted using construction prediction methodologies based on FTA manual. Utilization factors for construction equipment (or the percentage of time in a given hour that a piece of equipment is operating at maximum power) as recommended for FTA detailed assessments, were also included in the calculations to help accurately predict construction noise levels during the various construction phases. The compliance assessment for this analysis focused on predicted 1-hour L_{eq} levels. Project construction noise was estimated for construction phases by considering the quantities of contributing sound sources and calculating their aggregate sound propagation to the studied nearest receptor location.

The key assumptions for this analysis included in this method are as follows:

- Free-field conditions and no attenuation factors
- For a given construction phase, the two loudest pieces of construction equipment are assumed to operate—on average—from the same source point location at the general geographic centroid of the Project site or stationed range.
- Each piece of equipment or vehicle is assigned a reference L_{max} value at a reference distance (e.g., 50 feet), and an “acoustical usage factor” (AUF) that the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM) User’s Guide (FHWA 2006) describes as an estimated portion of a construction operation time period when the L_{max} value can be expected.

Table 5 provides a list of equipment types anticipated to operate during the various project construction phases along with their reference maximum sound level, usage factor, and calculated 1-hour L_{eq} . Since reference sound levels for the listed construction equipment are presented as maximum sound levels (i.e., the maximum sound level the equipment would produce at any moment in time, or L_{max}), the usage factor is applied to account for the fact that equipment is not continuously operated in a full-throttle condition throughout its use. Thus, typical usage factors for each type of construction equipment were applied to reference maximum sound levels to arrive at average hourly sound levels. L_{max} values and usage factors provided herein are generally based on a combination of the RCNM User’s Guide and the FTA Manual.

Table 5. Proposed Project Construction Equipment Reference Sound Pressure Levels

Anticipated Project Construction Equipment	L_{max} , dBA at 50 Feet ¹	Usage Factor	Resulting 1-Hour L_{eq} , dBA at 50 Feet ²
Compactor	83	0.2	76
Concrete Finisher ³	73	0.5	70
Concrete Pump Truck	81	0.2	74
Dozer	82	0.4	78
Front-End Loaders	79	0.4	75
Grader	85	0.4	81
Paver	77	0.5	74
Scraper	84	0.4	80
Tractors (Excavator)	81	0.4	77
Water Truck	74	0.4	70

Source: FHWA RCNM 2006, FTA 2018

- L_{max} values are based on representative equipment in RCNM ("Actual Measured" levels) and the FTA Manual.
- 1-Hour L_{eq} values are calculated by applying the usage factor (reductive adjustment) to the momentary L_{max} reference noise level.
Reference L_{max} value based on RCNM <25kVA generator set.

Individual hourly noise levels generated by Proposed Project construction equipment would range from 70 to 81 dBA, L_{eq} at 50 feet from the equipment. Following a combination of procedures suggested in the FTA Manual for the general and detailed assessment of construction noise, Table 6 calculates the combined construction noise level generated by the two loudest pieces of equipment operating during each construction phase.

Table 6. Combined Construction Noise Levels per Construction Phase

Construction Phase/Activity	Two Loudest Pieces of Equipment in Phase	Combined 1-hour L_{eq} , dBA at 50'	Combined 1-hour L_{eq} , dBA at Nearest Receptor R1 (1,200')	Applicable Daytime County Threshold ² (dBA)
Grading	Grader	84	56 ¹	60
	Scraper			
Trenching	Front End Loader	79	52 ¹	60
	Tractor (Excavator)			
Paving	Concrete Pump Truck	77	49 ¹	60
	Paver			

Notes:

- Calculated using distance measured from the geometric center of the overall project area to receptor (approximately 1,200') and an acoustical attenuation rate of 6 decibels per doubling of distance from the source.
- Single-family residential daytime threshold for stationary equipment is conservatively applied to all phases due to mobile equipment being operated for more than 10 days, per the definition of "stationary equipment" in County Ordinance. Construction activities would only occur during daytime periods; therefore, nighttime thresholds are not applicable.

Table 6 shows that project construction activities will not exceed Santa Clara County's construction noise criteria of 60 dBA, L_{eq} at the nearest noise-sensitive receptor. Since construction activities are not expected during nighttime hours as restricted by the Santa Clara County's noise ordinance, construction activities are not predicted to generate adverse effects at any adjacent noise-sensitive properties.

Operational Noise Assessment

The main operations at the facility under proposed project conditions would include the following^{1,2}:

- Trucking (9:00 AM to 3:00 PM and 8:00 PM to 7:00 AM): Large semi-tractor trailer and dump trucks enter and exit the facility from Highway 25, get weighed at the scale, and washed.
- Transporting of composted materials to the screening area (6:00 AM to 6:00 PM).
- Screening (12:00 AM to 11:00PM).
- Grinding of non-compostable wood waste and compost overs (7:00 AM to 4:00 PM Monday through Friday, 7:00 AM to 11:00 AM Saturday).
- Finish Loading (6:00 AM to 5:00 PM): Final products are removed from the facility using a loader to load trucks.
- Non-compostable Transport (6:00 AM to 5:00 PM)
- Bunker loading and unloading (24-hours operation)
- Primary and Secondary Aeration Fans (24-hour operation). Aeration fans supporting the primary covered aerated static pile (CASP) will operate in one of two modes (positive and negative pressure modes) depending on material air flow needs. Fans supporting the secondary ASP will operate only in positive pressure mode.

Sources:

1. *Noise Assessment Study for the Proposed Z-Best Products Food Waste Static Aeration Composting Facility Modification*, Jeffrey K. Pack, July 24, 2019, Project No. 48-073-R2
2. *Email communications with Z-Best on October 12 and 25, 2022 and response to request for information.*

Traffic Noise Prediction

Existing daily traffic volumes from facility operation amounts to approximately 182 car trips per day and 208 truck trips per day traveling on Highway 25, primarily in the early morning or daytime hours (i.e., generally between the hours of 3 a.m. and 6 p.m.). During peak season operations³, the proposed project would increase these quantities to 246 car trips and 314 truck trips per day, with the bulk of additional truck trips occurring at night, between 8 p.m. and 4 a.m. Under the proposed project operations, truck trips would be re-distributed to avoid any truck trips during peak traffic hours (7 a.m. to 9 a.m. and 3 p.m. to 8 p.m.).

The closest noise-sensitive receptor (R2) to Highway 25 is a single-family residential building on the south side of Highway 25 and west of the project site, approximately 220 feet from the highway centerline. The existing and future with-project 24-hour day-night noise level (L_{dn}) was calculated at this receptor using the Federal Highway Administration Traffic Noise Prediction Model Version 2.5. Data used in this calculation included existing (2019) annual average daily traffic volumes and truck mixes for this segment of Highway 25 from the Caltrans database and hourly existing and peak-season traffic volumes from the Hexagon Transportation Consultants, Inc. Z-Best Traffic Operations and Site Access Analysis memorandum. Traffic volumes used in this analysis are provided in Attachment B.

Table 7 compares the predicted existing and future with-project traffic noise levels at receptor R2.

³ Peak season operations are anticipated to occur up to 20 days per year but are used for modeling purposes to be conservative.

Table 7. Comparison of Predicted Traffic Noise Levels (L_{dn} , dBA)

Receptor ID	Existing Traffic Noise Level	Future With-Project Traffic Noise Level	Change due to Project
R2	66	67	+1

Both existing and future with-project traffic noise levels at the receptor are within the “Critical” noise range for residential land use compatibility, meaning the existing noise environment at the receptor is already above preferred County guidelines. Due to the critical nature of the existing noise environment, many municipalities will place a higher value on potential increases in noise level (i.e., worsening an unwanted condition).

Although the project would result in an approximately 5-times increase in heavy truck traffic accessing the site during the nighttime hours, the resulting overall noise level increase at the worst-case receptor will be only 1 dB (imperceptible) on account of contributions from the substantial existing non-project traffic on Highway 25.

Operational Noise Prediction

The noise generating operations at the facility and corresponding operation schedules are described at the beginning of the Operational Noise Assessment section.

Table 8 provides the noise sources included in the acoustic model, corresponding quantity, and reference A-weighted sound power levels.

The primary and secondary aeration fan systems are designed to provide either negative or positive pressure. When the fans operate in the positive pressure mode, the noise generated is greater due to the non-ducted inlet of each primary zone fan that is otherwise not used during the negative pressure scenario.

Based on information provided by Engineered Compost Systems, each zone fan, on average, will use negative aeration, with a ducted inlet and outlet, for 17 days. The zone fans will then use positive aeration, with a ducted outlet only, for 1 day. Therefore, the positive aeration scenario was considered in the acoustic model to represent the worst-case noise generating mode of operation for the aeration fans.

Table 8. Modeled Noise Sources

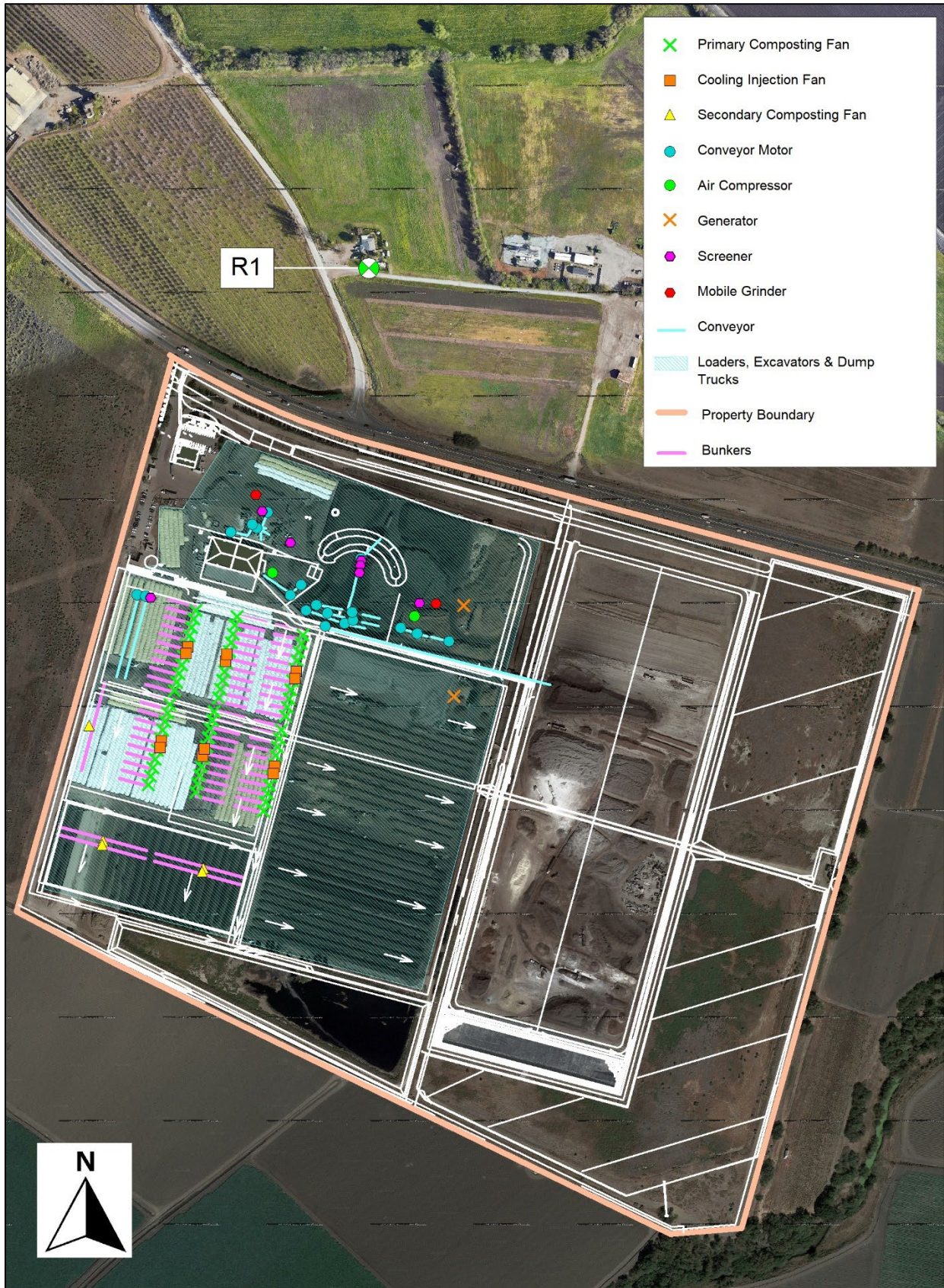
Equipment Name	Quantity Modeled	Reference A-Weighted Sound Power Level (dBA)
Air Compressors	2	93
Conveyers	21	92
Conveyer Motors	19	105
Cooling Inject Fans	12	93
Dump Trucks	3	109
Excavators	4	115
Generators	2	110
Loaders	11	117
Mobile Grinders	2	115
Primary Composting Fans (Positive Aeration)	60	102
Screeners	7	105
Secondary Zone Fans	5	102

Operational Noise Modeling Results

The CadnaA® Noise Prediction Model (Version 2022) was used to estimate the propagation of sound from project operations, and thereby to predict SPL at various distances from the project area, including representative noise-sensitive receptors selected for the ambient sound survey. CadnaA is a Windows-based software program that predicts and assesses sound levels near industrial sound sources and is based on ISO 9613-2 algorithms for the calculation of sound propagation (ISO 1996). The software can accept sound power levels in octave-band center frequency resolution to describe the multiple sound propagation sources of the site processes or activity to be modeled. The calculations account for classical sound wave divergence plus attenuation factors resulting from air absorption, basic ground effects, and barrier/shielding. The advantage of using CadnaA is that it can handle the three-dimensional sound propagation complexity of considering realistic intervening natural and human-made topographical barrier effects, including those resulting from terrain features and structures, such as multi-story buildings.

Additional CadnaA model configuration settings and operations noise analysis assumptions were as follows: 10 degrees Celsius outdoor temperature, 70 percent relative humidity, calm wind conditions (less than 0.5 meters per second), one order of acoustic reflections, and a ground absorption co-efficient of 0.5 representing a conservative mixture of hard and soft ground surfaces. These assumptions were selected as they represent conservative meteorological conditions for sound propagation that are expected to occur at the project site.

Figure 3 shows the primary facility noise sources included in the acoustic model. Table 9 shows predicted project operational sound levels for both daytime and nighttime facility operations at receptor R1.



Map data: Google 2022©, Engineered Compost Systems 2022

Figure 3 Distribution of Modeled Noise Sources Assumed for Project Operations

Table 9. Predicted Proposed Facility Operational Sound Levels (dBA)

Noise-Sensitive Receptor ID	Predicted Daytime (7:00 AM – 10:00 PM) Sound Level	Applicable Daytime Noise Limit	Predicted Nighttime (10:00 PM – 7:00 AM) Sound Level	Applicable Nighttime Noise Limit	Compliant With Noise Limits?
R1	58	60	54	55	Yes

As shown in Table 9, the predicted daytime and nighttime operational noise levels are below the applicable noise limits.

Conclusion and Recommendations

Project construction and operations were assessed for noise and vibration impacts to sensitive receptors in the project vicinity. No applicable noise or vibration impact thresholds were exceeded when assessing project construction noise, construction vibration, and operational noise, and no noise mitigation beyond standard construction noise reduction practices is recommended. The predicted operational sound levels at the closest noise-sensitive receptor are considered conservative since the predictive noise model assumed flat topography at the project site. However, the project site will typically have compost piles in the northern section of the facility that would shield the noise generated by most sources south of these piles which would result in lower sound levels at the studied receptor.

References

- Santa Clara County, California, 2022, Code of Ordinances, Title B – Regulations, Division B11 – Environmental Health, Chapter VIII – Control of Noise and Vibration
- Santa Clara County General Plan, 1994, Book B, Safety and Noise, Rural Unincorporated Area Issues and Policies
- Edward L. Pack Associates. Inc. 2019. Noise Assessment Study for the Proposed Z-Best Products Food Waste Static Aeration Composting Facility Modification. Project No. 48-073-R2
- California Department of Transportation (Caltrans), 2020. Transportation and Construction Vibration Guidance Manual.
- Federal Highway Administration (FHWA). 2006. FHWA Roadway Construction Noise Model User’s Guide. FHWA-HEP-05-054.
- Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. FTA Report No. 0123.
- WJV Acoustics, Inc. 2018. Noise Study Peer Review, Z-Best Products Facility Modification, Santa Clara County, California. August 6. 2018.

Attachment A

Glossary of Acoustical Terminology

- **Sound** – For this analysis, sound is a physical phenomenon generated by vibrations that result in waves that travel through a medium, such as air, and result in auditory perception by the human brain.
- **Noise** – Noise typically is regarded as unwanted or disruptive sound. Whether something is perceived as a noise event is influenced by the type of sound, the perceived importance of the sound, and its appropriateness in the setting, the time of day, and the type of activity during which the noise occurs and the sensitivity of the listener. Local jurisdictions may have legal definitions of what constitutes “noise” and such environmental parameters to consider.
- **Frequency** – Sound frequency is measured in hertz (Hz), which is a measure of how many times each second the crest of a sound pressure wave passes a fixed point. For example, when a drummer beats a drum, the skin of the drum vibrates a number of times per second. When the drum skin vibrates 100 times per second, it generates a sound pressure wave that is oscillating at 100 Hz, and this pressure oscillation is perceived by the ear/brain as a tonal pitch of 100 Hz. Sound frequencies between 20 and 20,000 Hz are within the range of sensitivity of the best human ear.
- **Amplitude or Level** – Amplitude is measured in decibels (dB), using a logarithmic scale. A sound level of zero dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal conversational speech has a sound level of approximately 60 dB. Sound levels above approximately 110 dB begin to be felt inside the human ear as discomfort and eventually pain at 120 dB and higher levels. The minimum change in the sound level of individual events that an average human ear can detect is about 1 to 2 dB. A 3 to 5 dB change is readily perceived. A change in sound level of about 10 dB is usually perceived by the average person as a doubling (or if decreasing by 10 dB, halving) of the sound’s loudness.
- **Sound pressure** – Sound level is usually expressed by reference to a known standard. This document refers to sound pressure level (SPL), which is expressed on a logarithmic scale with respect to a reference value of 20 micropascals. SPL depends not only on the power of the source, but also on the distance from the source and the acoustical characteristics of the space surrounding the source.
- **Sound power** – Unlike sound pressure, which varies with distance from a source, sound power (and its counterpart sound power level) is the acoustic power of a source, typically expressed in watts.
- **A-weighting** – Sound from a tuning fork contains a single frequency (a pure tone), but most sounds heard in the environment do not consist of a single frequency and instead are composed of a broad band of frequencies, differing in sound levels. The method commonly used to quantify environmental sounds consists of evaluating all frequencies of a sound according to a weighting system that reflects the typical frequency-dependent sensitivity of average healthy human hearing. This is called “A-weighting,” and the measured decibel level is referred to as dBA.
- **Equivalent sound level (L_{eq})** – Environmental noise levels vary continuously and include a mixture of noise from near and distant sources. A single descriptor, L_{eq} may be used to describe such sound that is changing in level from one moment to another. L_{eq} is the energy-average sound level during a measured time interval. It is the “equivalent” constant sound level that would have to be produced by a single, steady source to equal the acoustic energy contained in the fluctuating sound level measured.
- **Community noise equivalent level (CNEL):** The CNEL is the energy average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added to the A-weighted sound levels occurring between 7 p.m. and 10 p.m. and 10 dB added to the A-weighted sound levels occurring between 10 p.m. and 7 a.m.

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock band
Jet flyover at 1,000 feet		
	100	
Gas lawnmower at 3 feet		
	90	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower, 100 feet	70	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60	
		Large business office
Quiet urban daytime	50	Dishwasher in next room
Quiet urban nighttime	40	Theater, large conference room (background)
Quiet suburban nighttime		
	30	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20	
		Broadcast/recording studio
	10	
	0	

Source: Caltrans 2013

Figure A-1. Typical Indoor and Outdoor Sounds and Their Corresponding dB Levels

Attachment B

Traffic Tables

Hexagon Traffic Table 4 (Existing and Future Facility Traffic - Hourly)

	Existing Project-Only				Future Peak Season Project-Only				Change in Volume with Project			
	Daytime		Nighttime		Daytime		Nighttime		Daytime		Nighttime	
	Auto	Trucks	Auto	Trucks	Auto	Trucks	Auto	Trucks	Auto	Trucks	Auto	Trucks
ADT	137	169	45	39	185	276	61	246	48	107	16	207
Avg Hourly	9	11	5	4	12	18	7	27	3	7	2	23
	% Traveling west based on Hexagon Figure 2				% Traveling west based on Hexagon Figure 3							
Avg Hourly	4	9	2	4	6	15	3	23	2	6	1	19
	% Traveling east based on Hexagon Figure 2				% Traveling east based on Hexagon Figure 3							
Avg Hourly	5	2	3	1	6	3	3	5	2	1	1	4

Caltrans AADT on Highway 25 (2019)				
Vehicle AADT Total	AADT for MT	AADT for HT	% MT	% HT
27900	961	855	3.4%	3.1%

Existing Average Hourly Traffic - Assuming Standard Day/Night Distribution (85/15) - Theoretically includes existing car/truck traffic

Day Vehicle	Volume
Auto	1478
MT	54
HT	48
Night Vehicle	Volume
Auto	435
MT	16
HT	14

Existing Hourly Traffic - Adjusted to remove project traffic traveling east of site (Hexagon Fig 2 Split), Final volumes for existing scenario

Day Vehicle	Volume
Auto	1473
MT	54
HT	46
Night Vehicle	Volume
Auto	432
MT	16
HT	13

*no Medium Trucks associated with project

*no Medium Trucks associated with project

Future Hourly Traffic - Adjusted to remove project traffic traveling east of site (Hexagon Fig 3 Split), Final volumes for future scenario

Day Vehicle	Volume
Auto	1475
MT	54
HT	52
Night Vehicle	Volume
Auto	433
MT	16
HT	33

*no Medium Trucks associated with project

*no Medium Trucks associated with project

Receiver ID	Existing Day	Existing Night	Existing Ldn	Future Day	Future Night	Future Ldn	Change in Level
R2	+64.10	+58.80	+66.48	+64.20	+59.90	+67.25	+0.77

Appendix G – Transportation Supporting Information

Contains:

- 2020 Z-Best Traffic Operations and Site Access Analysis (Hexagon Transportation Consultants), Peer Review (Keith Higgins, Traffic Engineer), and Response to Peer Review (Hexagon Transportation Consultants)
- 2020 Supplemental Vehicle Miles Traveled Clarification and Analysis (Hexagon Transportation Consultants)
- 2023 Traffic Safety Memorandum (AECOM)



HEXAGON TRANSPORTATION CONSULTANTS, INC.

Memorandum

Date: March 30, 2020
To: John Doyle, Z-best
From: Robert Del Rio, T.E.
Subject: Response to Peer Review Letter for the Z-Best Compost Facility Application (File No. 6498-17P)

This memo is being provided in response to the second peer review letter prepared for the proposed Z-Best Compost Facility Expansion. The peer review letter dated March 17, 2020 and prepared by Keith Higgins, consisted of a review of the January 30, 2020 traffic operations study. The peer review listed a total of 16 comments. The following is a summary of responses to the peer review comments.

- Comment 1 discusses existing and projected peak hour traffic and congestion along SR 25. The referenced traffic conditions currently exist and are projected to occur without the proposed project. The comment is noted, however there are no additional issues identified in the comment that warrant addressing in a revised operations study.
- Comment 2 references the future widening of SR 25 and associated improvements. The comment is noted, however there are no additional issues identified in the comment that warrant addressing in a revised operations study.
- The project's trip generation estimates and alignment with peak traffic conditions along SR 25 are discussed in Comment 3. The comment is noted, however there are no additional issues identified in the comment that warrant addressing in a revised operations study.
- The proposed relocation of the project site's access point from its existing location along SR 25 to the Bolsa Road intersection with SR 25 are discussed in Comment 4. The comment discusses the planned access point configuration and anticipated safety and operations of the relocated site access point. The future operations and safety at the site access point are accurately described in the comment. There are no additional issues identified in the comment that warrant addressing in a revised operations study.
- The use of Bolsa Road by existing site traffic as well as traffic associated with the proposed project expansion are discussed in Comments 5 and 6. The comments note that the proposed relocation of the project access point to Bolsa Road may result in a minimal increase in the use of Bolsa Road by project traffic. However, the project proposes to continue to prohibit the use of Bolsa Road by trucks originating from and bound for the project site. Thus, as stated in the comment, the project will result in little to no increased usage of Bolsa Road by employees and trucks associated with the project.
- Comments 7 and 11-16 reference the planned design of the relocated project access point to Bolsa Road. The comments will be considered in the ultimate access point design along with Caltrans review. However, there are no additional issues identified in the comment that warrant addressing in a revised operations study.
- The remaining comments, 8-10, address minor textual and formatting considerations. However, the comments do not identify significant issues that warrant addressing in a revised operations study.

Keith Higgins

Traffic Engineer

March 20, 2020

Ron Sissem
EMC Planning Group
301 Lighthouse Avenue, Suite C
Monterey, CA 93940

Re: Z-Best Traffic Operations and Site Access Analysis Peer Review, Santa Clara County, CA

Dear Ron,

As you requested, this is a peer review of the “Z-Best Traffic Operations and Site Access Analysis,” State Route 25, Santa Clara County, California, prepared by Hexagon Transportation Consultants, Inc., January 30, 2020 (herein referred to as the “Operations Analysis”). Supplemental information was also reviewed, including the “Response to Peer Review Comments on the Z-Best Compost Facility Application (File No. 6498-17P), Hexagon Transportation Consultants, Inc., January 25, 2019 (herein referred to as the “Response to Comments”).

General comments are also provided for the latest version of “Figure 4 - Conceptual Bolsa Road/Relocated Project Driveway Improvements,” Ruggeri-Jensen-Azar (herein referred to as the “Conceptual Plan”), which is dated January 14, 2020. This supersedes the November 16, 2019 version included in the Operation Analysis.

The following are my comments on the above-referenced Operations Analysis.

1. Pg. 1, Scope of Study – Changes in shift hours will occur that move the arrival and departure times further from the traditional 7-9 am and 4-6 pm street peak hours of traffic. However, peak traffic conditions occur much earlier and for a longer time along SR 25. This is due to its regional function and because commuters leave Hollister as early as 5 am to avoid northbound US 101 traffic congestion and/or to arrive at employment centers in Silicon Valley before traditional work starting times. The study intersections should be analyzed during Project peak hour conditions.
2. Pg. 4, Potential SR 25 Widening and Realignment - The study includes analyzing the existing highway network and the existing SR 25 after its conversion to a frontage road with the proposed SR 152 Trade Corridor. That project includes the US 101 / SR 25 interchange reconstruction, widening US 101 to 6 lanes and the realignment and widening of SR 25 to 4 lanes in Santa Clara County near Z-Best. It only has funding through the environmental phase. With the recent passage of San Benito County Measure G, the SR 25 Widening and Realignment portion in San Benito County has funding and is expected to be constructed by 2030. In order to expedite the major widening project, it will require issuing bonds and obtaining matching State funds. However, the San Benito County Council of Governments

(SBCOG), the project sponsor, has limited bonding capacity. It therefore must implement the project in phases. At this time, SBCOG is considering constructing an interchange at the State Route 25/State Route 156 intersection. This will be discussed at the SBCOG Board meeting on March 19, 2020. SBCOG has an ad-hoc committee with Caltrans District 4 (Santa Clara County, in which Z-Best is located), Caltrans District 5 (San Benito County), Santa Clara Valley Transportation Authority (VTA) to finalize the strategic plan for delivery of Measure G projects in cooperation with VTA improvements at the US 101 / State Route 25 interchange. A final strategic plan that addresses funding limitations is expected to be delivered to the SBCOG Board for adoption in early summer, 2020.

3. Pg. 3, Existing Trip Generation Estimates – Truck scale data is now 4 to 5 years old. The applicant has stated that project activity levels have not changed over the past four years. It would be helpful for the applicant to provide documentation.
4. Pg. 3, Existing Trip Generation – Study intersection traffic counts were collected in August 2015, which is over 4 years old. It would be helpful for the validity of intersection volumes to be documented as well. For informational purposes, the daily traffic volumes on Highway 25 along the project frontage for the most recent five years reported on the Caltrans Traffic Volumes website are tabulated below. This indicates that Highway 25 traffic volumes increased by 20.8% over the most recent four-year period for which data is available. It is likely that the trend has continued since 2017 to the present time. Increased traffic demand on Highway 25 would likely result in more peak spreading. In other words, peak traffic conditions may now extend for longer periods during the day, including earlier in the morning and the afternoon when the project is proposing to have its work shifts occur.

Traffic volume increases on Highway 25 would likely not appreciably change the findings and conclusions. However, provision of current traffic volume data would be helpful for informational purposes.

The proposed driveway improvements including channelization on Highway 25 will require a Caltrans Encroachment Permit. Caltrans may require updated traffic forecasts during its plan check process.

Year	AADT	Percent Change from Previous Year	Percent Change Since 2013
2017	27,300	5.0%	20.8%
2016	26,000	9.2%	15.0%
2015	23,800	3.0%	5.3%
2014	23,100	2.2%	2.2%
2013	22,600		

Highway 25 Average Annual Daily Traffic (AADT) at Project

5. Pg. 8, Proposed SR 25 Site Access Improvements – The project driveway is proposed to be realigned to become a fourth (south) leg at the existing Bolsa Road intersection. The proposed improvement includes a westbound Highway 25 left turn lane for traffic entering the project as well as a westbound left turn acceleration lane for traffic exiting the project and heading westbound on Highway 25. An eastbound Highway 25 right turn lane is also proposed. An eastbound Highway 25 left turn lane is not included due to the very low volume that makes this movement.

The proposed westbound left turn lane will provide a refuge for westbound Highway 25 vehicles waiting for gaps in eastbound traffic to turn into the Project. This will be a safety improvement compared to existing conditions.

The proposed westbound median acceleration lane will allow vehicles making a left turn as they exit the Project to cross one direction of Highway 25 traffic at a time, which is considered a two-step left turn movement. This will be a safety improvement compared to existing conditions.

No eastbound Highway 25 left turn lane at Bolsa Road is proposed. This is a very low existing movement that may be reduced because exiting Project traffic destined to Bolsa Road that currently turns right followed by an eastbound left onto Bolsa Road would become a through movement directly onto Bolsa Road. The lack of a left turn would essentially be equivalent to existing conditions.

No eastbound median acceleration lane is proposed to be provided for vehicles exiting Bolsa Road to proceed eastbound on Highway 25. This is similar to existing conditions. However, these vehicles will be required to yield to westbound left turns waiting to enter the Project. These vehicles currently enter the Project downstream (west) of Bolsa Road, so have already cleared the Bolsa Road intersection. This will result in a slight increase in delay for Bolsa Road traffic attempting to proceed eastbound on Highway 25. Very few westbound left turns will be entering the Project during the PM peak hours when peak demand on Bolsa Road occurs, so this should only result in a slight increase in delay and corresponding reduced safety for this movement from the Project driveway relocation. When considering the beneficial safety effects of the channelization improvements, the proposed driveway relocation plus shift changes will result in an overall improvement in safety.

The Highway 25 / Bolsa Road intersection already meets peak hour signal warrants. The relocation of the Project driveway will result in some increase in delay for the Bolsa Road movement. This would further indicate more consideration being given to signalization. However, given that there are 8-hour warrants as well as other warrants and operational considerations, Caltrans has typically had a policy of not installing traffic signals based only on the peak hour warrant. Caltrans' decision to not install a traffic signal at this intersection is consistent with their decision to not signalize other intersections along Highway 25, including Wright Road, Flynn Road and Shore Road in the "Route 25 Safety and Operations Project Study Report" prepared by Caltrans in 2005. In that study Caltrans recommended

acceleration and deceleration lanes on Highway 25 at Bolsa Road and median left turn lane at the Z-Best and Uesugi Farms driveways.

In this case, the intersection will need to be monitored to determine if a signal is the appropriate traffic control.

6. Pg. 8, Proposed SR 25 Site Access Improvements – The relocation of the Project driveway to be directly across from Bolsa Road could result in some additional Project traffic using Bolsa Road. However, Project trucks are currently prohibited from using Bolsa Road. The Project employee volumes are low. Traffic entering the site from the north via Bolsa Road can currently turn left into the site. Any Project traffic that would use Bolsa Road would need to cross both directions of Highway 25 traffic. This is a major disincentive for inbound Project traffic to use Bolsa Road. Outbound traffic will have a median acceleration lane to assist in heading westbound on Highway 25. This will be an easier movement than attempting to cross both directions of Highway 25 traffic to enter northbound Bolsa Road. Very few, if any, additional Project trips would use Bolsa Road with the proposed realignment of the Project driveway to be the fourth leg at Bolsa Road.
7. Pg. 11, Figure 3, “Trip Distribution and Traffic Volumes Under Project Conditions” – A small amount of through traffic may occur between the north leg of Bolsa Road and the Proposed Project Entrance. This would affect the volume diagram for the Proposed Bolsa Road Project Entrance. This will not affect the levels of service but should be noted on Figure 3.
8. Pg. 13, Existing and Project Conditions Traffic Volumes - The Existing and Project traffic volumes reflect project volumes during the peak hours between 7 and 9am and 4 and 6pm. The project’s street morning peak hour volumes will total 1 inbound and 1 outbound trip. The project’s street evening peak hour volumes will total 0 inbound and 20 outbound trips. However, the project’s morning peak hour will occur between 6 and 7am and will total 40 inbound trips and 7 outbound trips. The project’s afternoon peak hour volume will occur between 3 and 4pm and total 0 inbound trips and 47 outbound trips. The study already indicates that the project driveway will operate at Level of Service F at certain times, so no additional level of service analysis is required. However, the project volumes during the project’s peak hours should be used to determine channelization storage requirements. Project peak hourly truck volumes should also be included in the storage requirement determination.
9. Pg. 14, Figure 5 “Conceptual Existing Project Driveway Improvements” – Consider removing this from the report if it is no longer a proposed alternative or provide a discussion regarding why it is no longer a consideration.
10. Pg. 16, Existing Project Entrance Alternative, first sentence – Add “during the PM peak hour” after LOS F.

Ron Sissem
March 20, 2020

11. Pg. 16, Signal Warrant Analysis – The second paragraph indicates that the SR 25 / Bolsa Road intersection currently meets peak hour signal warrants. A traffic signal is not recommended in the report or apparently supported by Caltrans with the proposed relocation of the project entrance to this intersection. However, given that a signal is warranted, traffic conditions should be monitored
12. Pg. 17, Intersection Operations (Queuing) Analysis – The analysis should include storage requirements during project peak hours as well as street peak hours to ensure that the maximum queues are considered in the design of the left turn storage.
13. Pg. 17, Intersection Operations (Queuing) Analysis – The assumed length of the queue should include one truck plus one car. Each car should be assumed to have a length of 25 feet. Measurements of on-site trucks using Google Earth indicate that trucks are over 70 feet in length. The minimum storage may need to be 100 feet. Deceleration and storage lengths will be reviewed and approved by Caltrans during the Encroachment Permit plan check process.
14. Pg. 18, Highway Design Manual Standards – The Caltrans Highway Design Manual Index 101.1 indicates that the design speed should be above the observed operating speed. This often is higher than the posted speed limit. The design speed will be reviewed and approved by Caltrans during the Encroachment Permit plan check process. This applies to sight distance, approach taper lengths and deceleration lane lengths.
15. Pg. 19, Lane Width – The minimum lane width is 10 feet. However, the turn lanes will carry a moderate amount of truck traffic. This is more important for the westbound left turn acceleration lane because trucks entering this lane from the Project could not be parallel to the travel lanes for a distance along the acceleration lane. Lane widths will be approved by Caltrans.
16. Pg. 19, Storage Length – See Comment 14 above.
17. Pg. 20, Potential SR 25 Widening and Realignment – See Comment 2 above.

At the request of the County, Keith Higgins, Traffic Engineer, has conducted an independent peer review of the “Z-Best Traffic Operations and Site Access Analysis,” State Route 25, Santa Clara County, California, prepared by Hexagon Transportation Consultants, Inc., January 30, 2020 (herein referred to as the “Operations Analysis”). Supplemental information was also reviewed, including the “Response to Peer Review Comments on the Z-Best Compost Facility Application (File No. 6498-17P), Hexagon Transportation Consultants, Inc., January 25, 2019 (herein referred to as the “Response to Comments”) submitted by Z-Best Products to verify the technical accuracy of the information, and identify any apparent deficiencies, errors and omissions affecting the completeness, methodologies, findings and adequacies of the analysis. The ultimate goal of the peer review is to help ensure that the information contained in the report met accepted professional standards for use in the EIR.

Ron Sissem
March 20, 2020

As part of the peer review, Keith Higgins, Traffic Engineer, advised County staff of any revisions or additions to the report that were necessary. Keith Higgins, Traffic Engineer, has submitted this peer review letter to the County to document its comments. In turn, Hexagon Transportation Consultants, Inc. will respond to the peer review comments and/or revise the analysis. The primary requested information is updated traffic count data for purposes of Caltrans' future encroachment permit process. The latest status of the major Highway 25 widening project is also provided in this comment letter, indicating that the proposed Z-Best driveway improvements will be handling main line Highway 25 traffic, rather than located on a frontage road, for a longer period than initially anticipated. This will not materially change the conclusions of the Hexagon reports.

This peer review letter and anticipated responses/analysis revisions from Hexagon Transportation Consultants, Inc. are part of the administrative record for the EIR. Based on the peer review conducted; Keith Higgins, Traffic Engineer, concludes that the "Z-Best Traffic Operations and Site Access Analysis," State Route 25, Santa Clara County, California, prepared by Hexagon Transportation Consultants, Inc., January 30, 2020 (herein referred to as the "Operations Analysis") with supplemental information included in the "Response to Peer Review Comments on the Z-Best Compost Facility Application (File No. 6498-17P), Hexagon Transportation Consultants, Inc., January 25, 2019 (herein referred to as the "Response to Comments") as revised is anticipated to be appropriate for use as reference in the EIR.

Please call me if you have any questions. Thank you for the opportunity to assist you.

Sincerely,

Keith Higgins

Keith Higgins, PE, TE



Memorandum

Date: January 30, 2020
To: John Doyle, Z-Best Products
From: Robert Del Rio, T.E.
Subject: Z-Best Traffic Operations and Site Access Analysis

Introduction

Hexagon Transportation Consultants, Inc. has completed a traffic operations and site access analysis for the proposed facility expansion and site operations at the existing Z-Best Compost Facility located along State Route (SR) 25, south of the City of Gilroy in southern Santa Clara County, California. The proposed project consists of material processing operation improvements on the existing site to more efficiently process a larger volume of material. Access to the project site is currently provided via one stop-controlled full access entrance along the south side of SR 25 (for ease of reference, SR 25 will be referred to as an east/west roadway within this report) located approximately 600 feet west of the Bolsa Road intersection with SR 25. As part of the proposed facility expansion, the project also is proposing to replace the existing access point along SR 25 with a new access point that will align with Bolsa Road via a new fourth leg at the existing SR 25 and Bolsa Road intersection. The project site location is presented in Figure 1.

The purpose of the traffic operations analysis is to determine the magnitude of project traffic currently on the adjacent roadway system and estimate the amount of additional traffic that would be added to the roadway system as a result of the proposed facility and operations expansion (hereafter referred to as the proposed project). Existing operational and/or safety constraints at the existing site access point and the proposed new access point at Bolsa Road and on the surrounding roadways and intersections also was evaluated. The analysis of the transportation system is based on applicable local and regional standards.

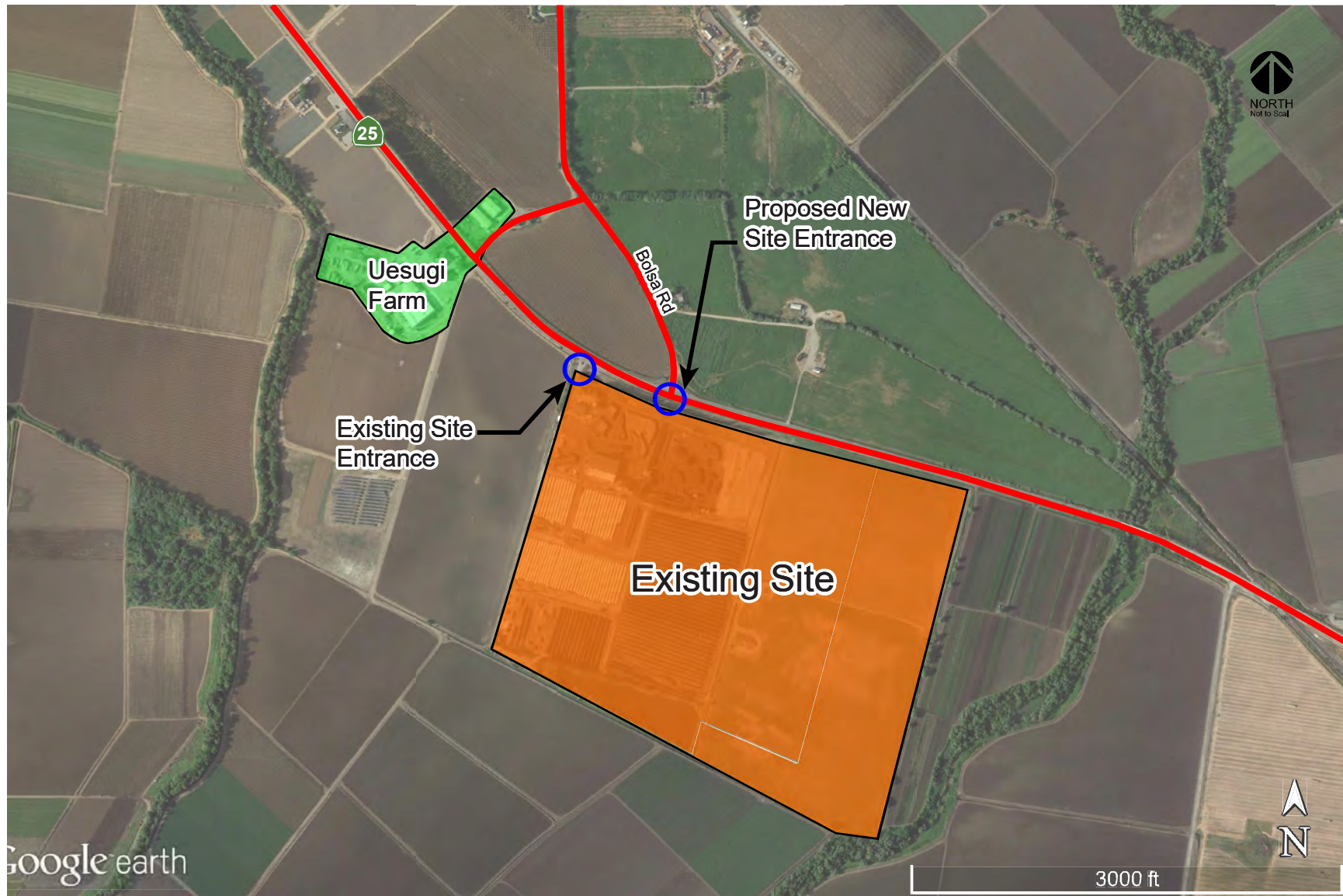
Scope of Study

The traffic operations analyses at the site access points consist of peak hour level of service analysis, signal warrant checks, and queuing analysis. The analysis includes an evaluation of traffic conditions during the AM (7:00AM to 9:00 AM) and PM (4:00 PM to 6:00 PM) peak commute periods at the following two intersections:

SR 25 and Existing Project Entrance
SR 25 and Bolsa Road/Proposed Bolsa Road Project Entrance

Additionally, highway segments along SR 25, east and west of the project site, also were evaluated to identify any existing deficiencies and to quantify the amount of additional traffic that is projected to be added by the proposed project.

Figure 1
Z-Best Site Location



Study Scenarios

The following study scenarios study were evaluated:

Existing Conditions: Existing conditions represent existing peak-hour traffic volumes obtained from intersection turn movement counts completed in 2015.

Existing Plus Project Conditions: Existing plus project conditions represent existing peak-hour traffic volumes with the addition of the traffic estimated to be generated by the proposed facility expansion. This scenario assumes no changes to the existing roadway network or the existing project access.

Existing Plus Project with a Proposed Access Point at Bolsa Road Conditions: Existing plus project conditions with the adjustment of traffic volumes to reflect a new project access point at Bolsa Road.

Trip Generation, Distribution, and Assignment

Existing Facility Operations

Currently, the Z-Best facility is permitted to receive up to 1500 tons per day of feedstock material, inert material for facility maintenance, and additives used in finished products. Feedstock includes both green waste and municipal solid waste (MSW). Up to 2,500 tons per day of material may be received a maximum of 15 days per year and subset peak tonnages are set at 1,300 tons per day for green waste, 700 tons per day of MSW, and 500 tons per day of other material. The current hours of operation for the Z-Best facility are Monday through Friday 6 AM to 5 PM and Saturday 6 AM to 12 PM. The existing use permit allows the processing building to operate from 6 AM to 10 PM, the overall facility from 6 AM to 6 PM, and the windrow materials receiving, screening and turning (on-site) to be 24 hours a day. The facility is currently operated by 58 full-time employees (allowable maximum number of employees by current use permit is 60 employees) in five shift times (5 AM to 5 PM, 7 AM to 5 PM, 5 PM to 5 AM, 5 PM to 1:30 AM, and 6 AM to 5 PM), with the majority of the employees (30 employees) working between 5 AM and 5 PM. The existing work shift times and number of employees per shift are summarized in Table 1.

Existing Trip Generation Estimates

Project trips currently utilizing the project entrance and on the surrounding roadway system were determined based upon truck scale data provided by Z-Best and count data collected at the project entrance.

The truck scale data provided by Z-Best includes the daily number of inbound and outbound trucks by hour that passed over the on-site scales during the period of October 2013 through September 2014, which, according to Z-Best staff, represent peak operations of the facility over the past two years. The existing count data was collected in August 2015 and consists of (1) peak-hour intersection turn-movement counts collected at the site's entrance during the AM peak period (7:00 AM to 9:00 AM) and the PM peak period (4:00 PM to 6:00 PM) and (2) 24-hour vehicle composition video counts also collected at the site's entrance. The new 24-hour vehicle composition data were compared with the truck data provided by Z-Best to validate the truck scale data. The number of daily and peak hour trips to the site associated with all other non-truck traffic also were obtained from the new traffic counts.

Other non-truck vehicular trips associated with the site include cars or smaller trucks driven by employees or vendors and parts and supply deliveries. Both the truck scale data provided by Z-Best and new count data are contained in the Appendix. The existing site trip generation data is summarized in Table 2.

Table 1
Existing and Proposed Employee Work Shift Times

Hours of Operation	Existing Conditions ¹				Proposed Daily Conditions ²				Peak Season Conditions ²			
12:00 AM to 1:00 AM			SHIFT 3	SHIFT 4			SHIFT 3	SHIFT 4				SHIFT 3
1:00 AM to 2:00 AM				4								
2:00 AM to 3:00 AM												
3:00 AM to 4:00 AM												
4:00 AM to 5:00 AM												
5:00 AM to 6:00 AM	30 *		5		47 *		10	13	45 *			15
6:00 AM to 7:00 AM	SHIFT 1			2 *	SHIFT 1				2 *	SHIFT 1		
7:00 AM to 8:00 AM				SHIFT								
8:00 AM to 9:00 AM		SHIFT 2		5		SHIFT 2		5			30 *	SHIFT
9:00 AM to 10:00 AM												2
10:00 AM to 11:00 AM												
11:00 AM to 12:00 PM												
12:00 PM to 1:00 PM												
1:00 PM to 2:00 PM												
2:00 PM to 3:00 PM												
3:00 PM to 4:00 PM						47						
4:00 PM to 5:00 PM										45		
5:00 PM to 6:00 PM	30	17	5 *	4 *	2		10 *					
6:00 PM to 7:00 PM			SHIFT 3	SHIFT 4			SHIFT					15 *
7:00 PM to 8:00 PM											30	SHIFT 3
8:00 PM to 9:00 PM												
9:00 PM to 10:00 PM												
10:00 PM to 11:00 PM												
11:00 PM to 12:00 AM												

Notes:
¹ Existing facility shift times and number of employees per shift (assumes employees will arrive at the site 15 minutes prior to the beginning of their work shifts and leave the site 15 minutes after completion of their work shift).
² Proposed facility shift times and assumed number of employees per shift (assumes employees will arrive at the site 15 minutes prior to the beginning of their work shifts and leave the site 15 minutes after completion of their work shift).
 * Number of employees per work shift.

Table 2
Existing Site-Generated Trips

Type	Peak Hours								
	Daily			AM			PM		
	In	Out	Total	In	Out	Total	In	Out	Total
Total Vehicle Trips									
Driveway Counts ¹	192	198	390	10	9	19	9	27	36
Heavy Truck Trips									
Truck Trips (Counts) ²	104	105	209	6	8	14	5	5	10
Truck Trips (Scale Data) ³	132	132	264	13	13	26	10	10	20
Notes:									
AM = one peak-hour between 7:00 - 9:00 am									
PM = one peak-hour between 4:00 - 6:00 pm									
Daily = 24-hour total									
¹ Based on peak hour intersection turn-movement and 24-hour daily counts completed at the project site entrance in August 2015.									
² Based on vehicle composition obtained from 24-hour daily counts completed at project site entrance in August 2015.									
³ Based on truck scale data provided by Z-Best (October 1st, 2013 to December 31st, 2013).									

The count data collected at the site entrance indicates that the facility currently generates 390 daily vehicle trips with 19 trips occurring during the AM peak hour and 36 trips occurring during the PM peak hour.

Based on the vehicle composition data collected at the site entrance, approximately 209 daily truck trips are currently generated by the facility. The truck scale data indicated a peak of 264 daily truck trips. The number of truck trips obtained from the traffic counts is approximately 20% less than that indicated by the truck scale data. However, the truck scale data is reflective of a period of peak operations for the facility over the past two years.

Hourly site-generated trips, both truck and non-truck trips, were estimated by correlating the 24-hour count information collected at the site entrance with the current number of employees and their shift-times. Based on this information, all components of traffic currently accessing and leaving the project site throughout the day were estimated (see Table 3). It is estimated that approximately 208 truck trips and 182 non-truck trips (116 employee trips and 66 “other” trips), for a total of 390 total trips, are currently generated by the Z-Best Facility on an average weekday.

Proposed Facility Expansion Operations – Typical Day

The proposed facility and operations expansion (the project), involves replacing the current method of composting MSW with a more advanced, far more efficient method of composting. The current CTI composting system is proposed to be replaced with a “State of the Art” ECS composting method. With these proposed improvements, Z-Best will be able to compost more than double the amount of MSW feedstock within the same time period and within the same footprint on the site. Subsequently, Z-Best is proposing an increase in the daily feedstock tonnage limit from 1,500 tons per day to 2,750 tons per day. The additional feedstock tonnage is proposed to be received only during non-peak traffic hours (9:00 am to 3:00 pm and 8:00 pm to 4:00 am).

The number of employees also is proposed to increase from the current 58 employees (60 allowed by the use permit) to 80-85 employees (with a maximum of 90 employees allowed by the use permit). The

**Table 3
Typical Daily Site-Generated Trips**

Hours of Operation		Existing Conditions ¹			Proposed Conditions ²																				
		Non-Truck Trips (Based on Driveway Counts)	Truck Trips (Based on Driveway Counts)	Total	Total Site Trips			Non-Truck Trips			Truck Trips				Total Site Trips			Net Additional Trips							
					In	Out	Total	Additional Employee Trips	Existing Employee Trips/New Shift Times	Other Non-Truck Trips	Total Future Non-Truck Trips	Additional Truck Trips	Existing Truck Trips/Off-Peak Hours Restriction	Total Future Truck Trips	Total	In	Out	Total	In	Out	Total				
12:00 AM to 1:00 AM	Arrivals	0	1	1	1	0	1	1	0	0	0	7	7	14	14	14	14	14	14	14	13	14	27		
1:00 AM to 2:00 AM	Departures	0	0	0	0	0	0	0	0	0	0	7	7	14	14	14	14	14	14	14	14	13	27		
2:00 AM to 3:00 AM	Arrivals	0	0	0	0	0	0	0	0	0	0	7	7	14	14	14	14	14	14	14	14	14	28		
3:00 AM to 4:00 AM	Departures	0	0	0	0	0	0	0	0	0	0	7	7	14	14	14	14	14	14	14	14	14	28		
4:00 AM to 5:00 AM	Arrivals	4	1	5	3	5	8	4	1	5	7	7	14	14	14	14	14	14	14	14	11	9	20		
5:00 AM to 6:00 AM	Departures	5	5	10	10	5	15	17	30	0	47	5	5	5	5	52	18	70	52	18	70	42	55		
6:00 AM to 7:00 AM	Arrivals	0	5	5	7	3	10	9	4	0	13	5	5	5	18	7	15	22	7	15	22	0	12	12	
7:00 AM to 8:00 AM	Departures	2	5	7	7	3	10	5	5	0	10	5	5	5	15	7	15	22	5	5	23	-17	-2	-19	
8:00 AM to 9:00 AM	Arrivals	33	7	40	40	7	47	1	17	0	18	5	5	5	23	23	5	28	5	5	5	-17	-2	-19	
9:00 AM to 10:00 AM	Departures	4	6	10	10	11	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-10	-11	-21	
10:00 AM to 11:00 AM	Arrivals	3	8	11	12	5	17	1	1	1	1	0	0	1	1	1	1	2	1	1	2	-11	-4	-15	
11:00 AM to 12:00 PM	Departures	6	6	12	12	5	17	3	2	5	6	6	6	8	5	13	19	19	20	39	0	0	0		
12:00 PM to 1:00 PM	Arrivals	7	13	20	19	20	39	7	13	20	20	8	5	13	20	19	20	39	19	20	39	0	0	0	
1:00 PM to 2:00 PM	Departures	9	7	16	16	23	39	11	12	23	11	11	7	5	12	23	21	21	44	21	23	44	5	0	5
2:00 PM to 3:00 PM	Arrivals	4	8	12	12	16	28	4	8	12	4	4	7	5	12	16	16	18	34	16	18	34	4	2	6
3:00 PM to 4:00 PM	Departures	6	10	16	14	15	29	6	10	16	6	6	7	5	12	18	18	33	16	17	33	2	2	4	
4:00 PM to 5:00 PM	Arrivals	4	10	14	14	15	29	5	10	15	5	5	7	5	12	17	17	33	16	17	33	1	4	5	
5:00 PM to 6:00 PM	Departures	3	12	15	15	13	28	3	12	15	3	3	7	6	13	16	16	29	15	14	29	4	4	8	
6:00 PM to 7:00 PM	Arrivals	4	9	13	11	10	21	4	9	13	4	4	7	6	13	17	17	29	15	14	29	4	4	8	
7:00 PM to 8:00 PM	Departures	3	8	11	8	13	21	3	8	11	2	2	7	6	13	15	15	29	15	14	29	4	4	8	
8:00 PM to 9:00 PM	Arrivals	3	7	10	8	13	21	3	7	10	1	1	7	6	13	14	14	29	15	14	29	4	4	8	
9:00 PM to 10:00 PM	Departures	3	5	8	8	13	21	3	5	8	0	0	0	0	0	0	0	0	0	0	0	-8	34	26	
10:00 PM to 11:00 PM	Arrivals	6	7	13	17	30	47	17	30	0	47	0	0	0	0	0	0	0	0	0	0	-8	34	26	
11:00 PM to 12:00 AM	Departures	5	5	10	10	27	37	5	5	0	10	0	0	0	0	10	10	0	10	0	0	0	-27	-27	
TOTAL DAILY TRIPS:		182	208	390	192	198	390	64	116	66	246	200	208	408	654	324	330	654	132	132	264				

Notes:
¹ Existing hourly project site traffic activity was estimated based on the existing 24-hour vehicle composition traffic counts conducted at the project site entrance in August 2015, in combination with information provided by Z-Best on their current number of employees, employee shift times, and hours of operation.
² Hourly site traffic projections associated with the proposed Z-Best facility operations expansion. These projections are based on the anticipated increase in the number of employees and number of trucks accessing the site daily, the proposed new employee shift times, and the restriction of all inbound truck traffic to the site during the off-peak hours only (8:00PM - 4:00AM) and outbound truck traffic to the hours of (4:00AM - 7:00AM and 9:00 AM to 3:00 PM).

proposed new work shift times would be the following: 5 AM to 3 PM, 7 AM to 5 PM, 5 PM to 5 AM, 8 PM to 4:30 AM and 6 AM to 5 PM. The work shift times are used to estimate the peak hour traffic that may be generated by the proposed facility expansion. The proposed work shift times and assumed number of employees per shift are summarized in Table 1.

Proposed Facility Expansion Trip Generation Estimates – Typical Day

The additional traffic associated with the expansion of the facility operations were estimated and assigned to the roadway network based on anticipated increase in the number of employees, employee work shift times, additional truck traffic, and assuming all new additional truck traffic would be generated outside of the commute hours between 9:00 am to 3:00 pm and 8:00 pm to 4:00 am.

It is anticipated that with the expanded operations, the facility would generate an additional 100 trucks per day including 57 trucks associated with Green Waste and 43 trucks associated with the delivery of finished product and landfill material (trash/ADC). The existing and additional truck trips would access the site throughout the entire day, with the exception of the commute periods between 7-9 AM and 3-8PM. However, there are currently truck trips that occur between the hours of 4-7 AM that would continue to occur with the proposed facility expansion. Based on this assumption, the time restrictions truck trips represent no more than an additional 16 truck trips per hour.

The proposed expansion would also increase the number of employees from the existing 58 employees to a maximum of 90 employees (although the applicant anticipates the plant to operate with no more than 85 employees). This represents an increase of 32 additional employees. The additional employees would result in the addition of 64 daily trips (32 inbound and 32 outbound trips) to the project site. Employee trips were estimated based on the proposed work shift times (5 AM to 3 PM, 7 AM to 5 PM, 5 PM to 5 AM, 8 PM to 4:30 AM and 6 AM to 5 PM) and assuming employees would arrive at the site within 15 minutes before the beginning of their shift time and leave the site within 15 minutes of the end of their shift time. The proposed new shift times were assumed to also apply to all current employees.

With the proposed expansion, the Z-Best Facility is projected to generate a total of two trips during the morning peak hour (7:00 AM to 9:00 AM) and 20 trips during the evening peak hour (4:00 PM to 6:00 PM). This represents a decrease of approximately 19 trips during the AM peak hour and 17 trips during the PM peak hour when compared to existing conditions. The projected decrease in peak hour trips is due to the change in work shift times associated with the proposed expansion. The hourly trip generation estimates with the proposed facility expansion are summarized in Table 3.

It should be noted that a maximum of 47 trips are currently generated in the morning hours between 4:00-9:00 AM and 37 trips during the early evening hours between 3:00-8:00 PM. With the proposed facility expansion and operations, the maximum number of trips during the morning hours would increase to 70 trips while the maximum number of trips during the early evening hours would increase to 47 trips. However, these increases in trips would occur outside of the standard morning and evening commute periods.

Proposed Facility Operations and Trip Generation Estimates – Peak Season Day

Work shift times could be adjusted up to 20 days per year to handle peak leaf season in the fall and heavy volume in the spring. The daily work shift times may be adjusted during the peak season to occur between 5:00 AM and 4:00 PM, 8:00 AM and 6:00 PM, and 6:00 PM and 5:00 AM. The adjusted peak season shift times along with anticipated employees for each shift are also shown in Table 1.

In addition, the project proposes to increase the daily feedstock tonnage limit from the 2,750 tons per day during typical daily operations to 3,500 tons per day for up to 20 days per year to handle peak leaf season in the fall and heavy volume in the spring. The increased tonnage during these 20 days would

result in an additional 57 truck trips. However, the increase in tonnage and associated additional truck trips during peak season would have no effect on peak hour traffic conditions since the proposed expansion includes the restriction of all existing as well as the additional truck trips due to the proposed expansion to the hours outside the morning commute period between 7:00-9:00 AM and evening commute period between 3:00-8:00 PM.

The peak season operations of the proposed expansion would result in 9 and 8 additional trips during the morning peak hour (7:00 AM – 9:00 AM) and the evening peak hour (4:00 PM – 6:00 PM), respectively, when compared to the currently generated 21 and 37 trips during the same periods. However, the addition of the additional trips that would be added to the roadway network during the peak hours would occur infrequently, up to a maximum of 20 days per year during peak season operations. The small number of additional trips due to the peak season operations would not have a significant effect on roadway operations.

The hourly trip generation estimates with the proposed facility expansion during the peak season are summarized in Table 4.

Trip Distribution and Assignment

The distribution of employee, non-truck traffic, is currently distributed equally to SR 25 north and south of the project site. The majority of trucks originating from and bound for the project site currently use SR 25 to and from US 101. A smaller number of trucks use SR 25 to SR 156. The proposed expansion is not proposing significant changes to the existing travel routes used by employees or trucks. The existing directional distribution was applied to the future volume projections, with implementation of the proposed expansion, to assign new project traffic at the project entrance and to the roadway network. The distribution of all project traffic during the peak season would be the same as the traffic distribution during the non-peak season. The existing and anticipated trip distribution patterns are presented in Figures 2 and 3, respectively.

Project Access Improvement Operations Evaluation

A traffic operations analyses at the site access points consisting of peak hour level of service analysis, signal warrant checks, and queuing analysis was completed. Each of the components of the site access operations analyses are described in the following sections.

Proposed SR 25 Site Access Improvements

As part of the proposed facility expansion, the project also is proposing to replace its existing access point along SR 25 with a new access point that will align with Bolsa Road via a new fourth leg at the existing SR 25 and Bolsa Road intersection. The new access point has been discussed with Caltrans and they have preliminarily agreed that the proposed alignment of a new the project access point with Bolsa Road would improve operations along SR 25 in the vicinity of Bolsa Road and the existing project access point by providing a controlled access point to the project site. The proposed new intersection also would include exclusive left-turn lanes along SR 25 that would not only increase intersection capacity but also would minimize the disruption of through traffic along SR 25. Providing access to the project site that aligns with Bolsa Road via a four-legged intersection would improve operations and safety for project traffic, in particular since the majority of vehicular trips generated by the project site are large trucks. The existing project site access point will be closed with the implementation of the new project access point at the Bolsa Road intersection. A conceptual plan for the proposed project access point at the SR 25 and Bolsa Road intersection is shown in Figure 4.

Z-Best also has developed plans for safety/operational improvements at the existing project site entrance on SR 25 in coordination with Caltrans should the proposed new access point at Bolsa Road

**Table 4
Peak Season Site-Generated Trips**

Hours of Operation		Existing Conditions ¹				Peak Season Conditions ²								Total Site Trips			Net Additional Trips				
		Non-Truck Trips (Based on Driveway Counts)		Truck Trips (Based on Driveway Counts)	Total	Non-Truck Trips				Truck Trips				Total	In	Out	Total	In	Out	Total	
						Additional Employee Trips	Existing Employee Trips/New Shift Times	Other Non-Truck Trips	Total Future Non-Truck Trips	Additional Truck Trips	Existing Truck Trips/Off-Peak Hours Restriction	Total Future Truck Trips									
		In	Out	Total																	
12:00 AM	Arrivals	0	1	1			0	0	11	7	18	18	18	18	18	36	17	18	35		
to 1:00 AM	Departures	0	0	0			0	0	11	7	18	18	18	18	18	36	17	18	35		
1:00 AM	Arrivals	0	0	0			0	0	11	7	18	18	18	18	18	36	17	18	35		
to 2:00 AM	Departures	0	1	1	0	1	1		11	7	18	18	18	18	18	36	17	18	35		
2:00 AM	Arrivals	0	0	0			0	0	11	7	18	18	18	18	18	36	17	18	35		
to 3:00 AM	Departures	0	0	0			0	0	11	7	18	18	18	18	18	36	17	18	35		
3:00 AM	Arrivals	0	3	3			0	0	11	7	18	18	18	18	18	36	15	13	28		
to 4:00 AM	Departures	4	1	5			0	0	11	7	18	18	18	18	18	36	15	13	28		
4:00 AM	Arrivals	5	5	10	10	5	15	17	28	0	45	5	5	50	50	55	40	0	40		
to 5:00 AM	Departures	0	5	5			0	0		5	5	5	5	5	5	25	-2	17	15		
5:00 AM	Arrivals	2	5	7			0	0		5	5	5	5	5	5	25	-2	17	15		
to 6:00 AM	Departures	0	3	3	7	3	10	5	10	0	15	5	5	20	20	25	-2	17	15		
6:00 AM	Arrivals	33	7	40	40	7	47			0	0	5	5	5	5	10	-35	-2	-37		
to 7:00 AM	Departures	0	7	7			0	0		5	5	5	5	5	5	10	-35	-2	-37		
7:00 AM	Arrivals	4	6	10	10	11	21	10	20	0	30	0	30	30	30	30	20	-11	9		
to 8:00 AM	Departures	3	8	11			0	0		0	0	0	0	0	0	0	20	-11	9		
8:00 AM	Arrivals	6	6	12	12	5	17			1	1			1	1	2	-11	-4	-15		
to 9:00 AM	Departures	3	2	5			0	0		1	1			1	1	2	-11	-4	-15		
9:00 AM	Arrivals	6	13	19	19	20	39			6	6	13	5	18	24	49	5	5	10		
to 10:00 AM	Departures	7	13	20			0	0		7	7	13	5	18	25	52	9	4	13		
10:00 AM	Arrivals	9	7	16	16	23	39			9	9	11	5	16	25	52	9	4	13		
to 11:00 AM	Departures	11	12	23			0	0		11	11	11	5	16	27	52	9	4	13		
11:00 AM	Arrivals	4	8	12	12	16	28			4	4	11	5	16	20	42	8	6	14		
to 12:00 PM	Departures	6	10	16			0	0		6	6	11	5	16	22	41	6	6	12		
12:00 PM	Arrivals	4	10	14	14	15	29			4	4	11	5	16	20	41	6	6	12		
to 1:00 PM	Departures	5	10	15			0	0		5	5	11	5	16	21	41	6	6	12		
1:00 PM	Arrivals	3	12	15	15	13	28			3	3	11	6	17	20	41	5	8	13		
to 2:00 PM	Departures	4	9	13			0	0		4	4	11	6	17	21	41	5	8	13		
2:00 PM	Arrivals	3	8	11	11	10	21			2	2	11	6	17	19	37	8	8	16		
to 3:00 PM	Departures	3	7	10			0	0		1	1	11	6	17	18	37	8	8	16		
3:00 PM	Arrivals	3	5	8	8	13	21			0	0		0	0	0	0	-8	-13	-21		
to 4:00 PM	Departures	6	7	13			0	0		0	0		0	0	0	0	-8	-13	-21		
4:00 PM	Arrivals	5	5	10	10	27	37			0	0		0	0	0	0	-10	18	8		
to 5:00 PM	Departures	22	5	27			0	0		0	0		0	0	0	0	-10	18	8		
5:00 PM	Arrivals	0	1	1			0	0		5	10	0	15	0	15	15	14	-20	-6		
to 6:00 PM	Departures	18	2	20	1	20	21			0	0		0	0	0	0	14	-20	-6		
6:00 PM	Arrivals	1	0	1	1	2	3			1	1		0	1	1	31	0	28	28		
to 7:00 PM	Departures	1	1	2			0	0		10	20	0	30	0	30	31	0	28	28		
7:00 PM	Arrivals	0	0	0	0	0	0			0	0		0	0	0	0	0	0	0		
to 8:00 PM	Departures	0	0	0			0	0		0	0		0	0	0	0	0	0	0		
8:00 PM	Arrivals	0	1	1	1	1	2			0	0	12	8	20	20	40	19	19	38		
to 9:00 PM	Departures	0	1	1			0	0		0	0	12	8	20	20	40	19	19	38		
9:00 PM	Arrivals	0	0	0	0	0	0			0	0	11	7	18	18	36	18	18	36		
to 10:00 PM	Departures	0	0	0			0	0		0	0	11	7	18	18	36	18	18	36		
10:00 PM	Arrivals	0	1	1	1	1	2			0	0	11	7	18	18	35	17	18	35		
to 11:00 PM	Departures	1	0	1			0	0		1	1	11	7	18	19	37	17	18	35		
11:00 PM	Arrivals	0	0	0	0	0	0			0	0	11	7	18	18	36	18	18	36		
to 12:00 AM	Departures	0	0	0			0	0		0	0	11	7	18	18	36	18	18	36		
TOTAL																					
DAILY TRIPS:		182	208	390	192	198	390	64	116	66	246	314	208	522	768	381	387	768	189	189	378

Notes:
¹ Existing hourly project site traffic activity was estimated based on the existing 24-hour vehicle composition traffic counts conducted at the project site entrance in August 2015, in combination with information provided by Z-Best on their current number of employees, employee shift times, and hours of operation.
² Hourly site traffic projections associated with the proposed Z-Best facility operations expansion during peak season. These projections are based on the anticipated increase in the number of employees and number of trucks accessing the site daily during peak season up to 20 days per year, the anticipated employee shift times during peak season, and the restriction of all inbound truck traffic to the site during the off-peak hours only (8:00PM - 4:00AM) and outbound truck traffic to the hours of (4:00AM - 7:00AM and 9:00 AM to 3:00 PM).

Figure 2
Trip Distribution and Traffic Volumes Under Existing Conditions

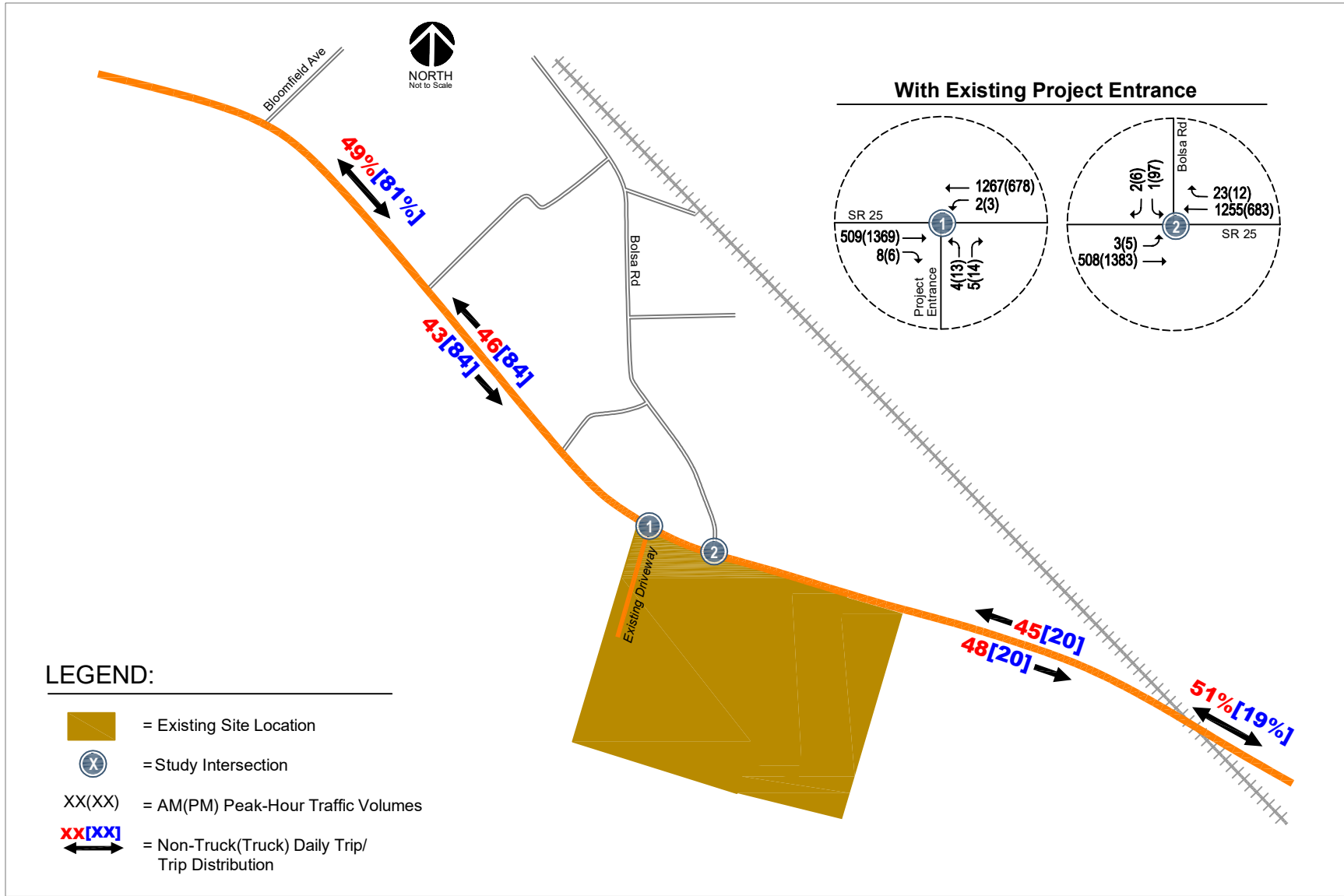


Figure 3
Trip Distribution and Traffic Volumes Under Project Conditions

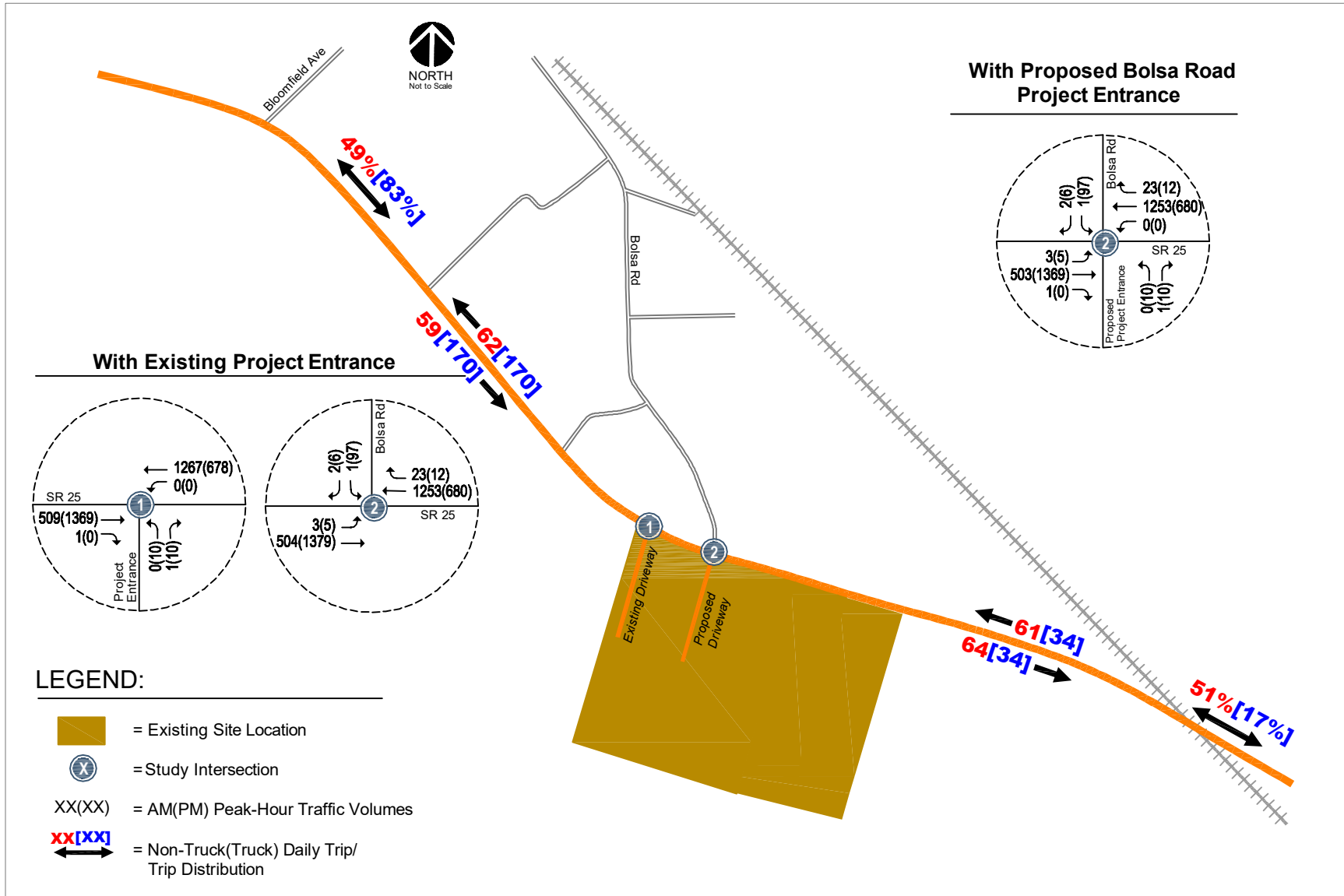
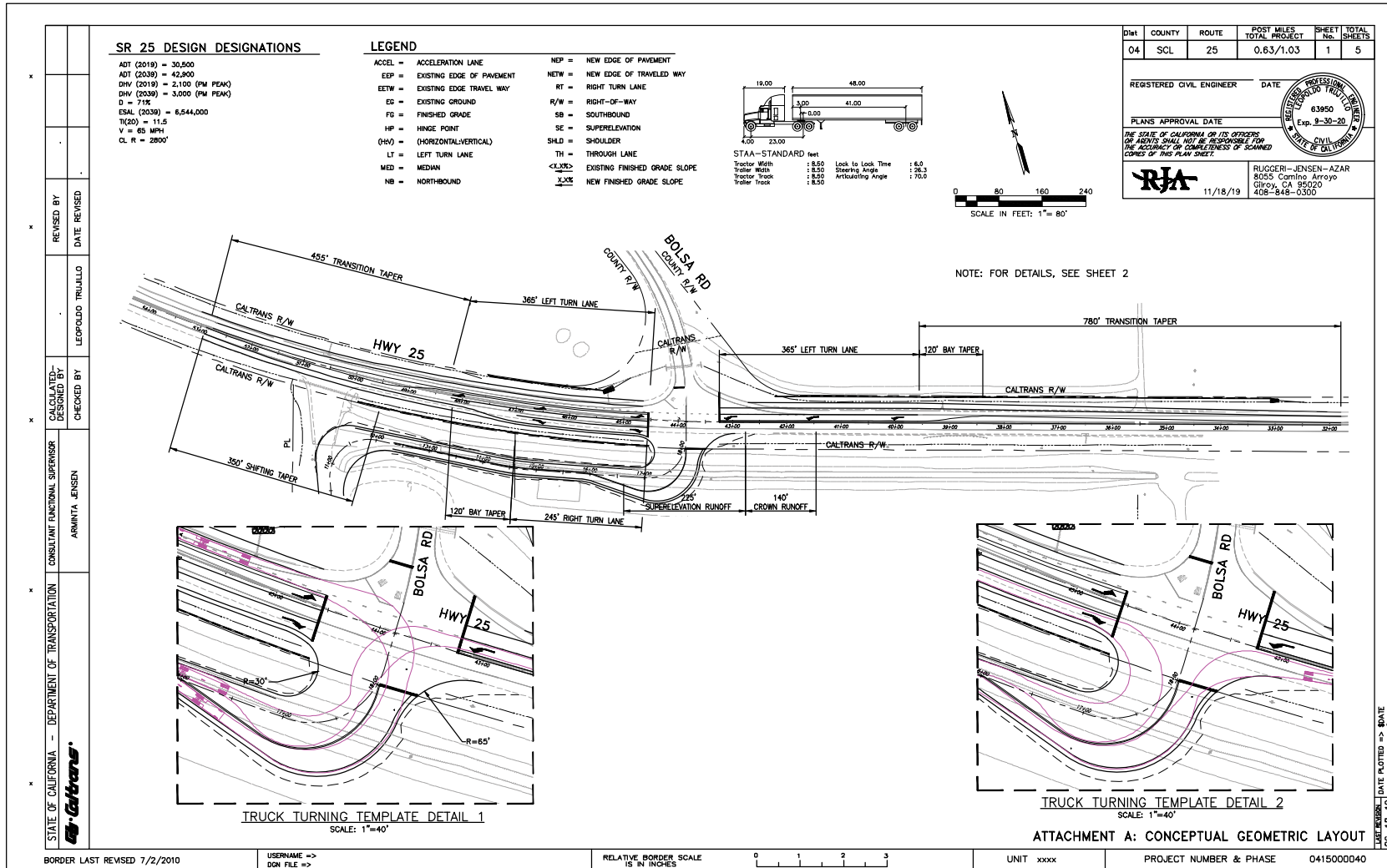


Figure 4
Conceptual Bolsa Road/Relocated Project Driveway Improvements



not be implemented. The proposed improvements include the addition of an eastbound deceleration lane into the project site, westbound left-turn lane into the project site, and acceleration lane to serve traffic exiting the project site. The proposed entrance improvements would not only improve truck access into the project site but would also result in improved highway segment operations by minimizing the disruption of through traffic along SR 25. A conceptual plan for the existing site entrance improvements is shown in Figure 5.

The site access improvements will be coordinated with Caltrans and they will determine whether the proposed site access improvements are adequate and meet Caltrans design standards.

Existing and Project Conditions Traffic Volumes

Existing plus project traffic volumes are comprised of the existing peak-hour traffic volumes and the net addition of the traffic estimated to be generated by the proposed facility expansion project.

The existing and projected peak-hour traffic volumes with the proposed facility expansion (project conditions) for each site access point alternative are shown on Figures 2 and 3, respectively.

Passenger Car Equivalent Trips

Because a significant portion of the traffic associated with the project would be truck traffic, a more conservative analysis was conducted for this study in which the truck trips were converted to passenger car equivalent (PCE) trips. This is founded on the observation that trucks impact traffic operations at intersections more significantly than passenger cars do. For this analysis, it is assumed that each truck trip is equivalent to 1.5 passenger car trips.

Intersection Level of Service Analysis

Level of Service is a qualitative description of operating conditions ranging from LOS A, or free-flow conditions with little or no delay, to LOS F, or jammed conditions with excessive delays. The study intersections were analyzed using TRAFFIX software, which is based on the *Highway Capacity Manual* (HCM) 2000 method for computing level of service at intersections. Two-way-stop controlled intersection levels of service are evaluated based on worst approach stop control delay time for all vehicles at the intersection.

Traffic conditions were analyzed for the weekday AM and PM peak hours. The weekday AM peak hour of traffic is generally between 7:00 AM and 9:00 AM, and the weekday PM peak hour is typically between 4:00 PM and 6:00 PM. It is during these periods that the most congested traffic conditions occur on a typical weekday. The level of service results are discussed below and summarized in Table 5. The level of service calculations are included in the Appendix.

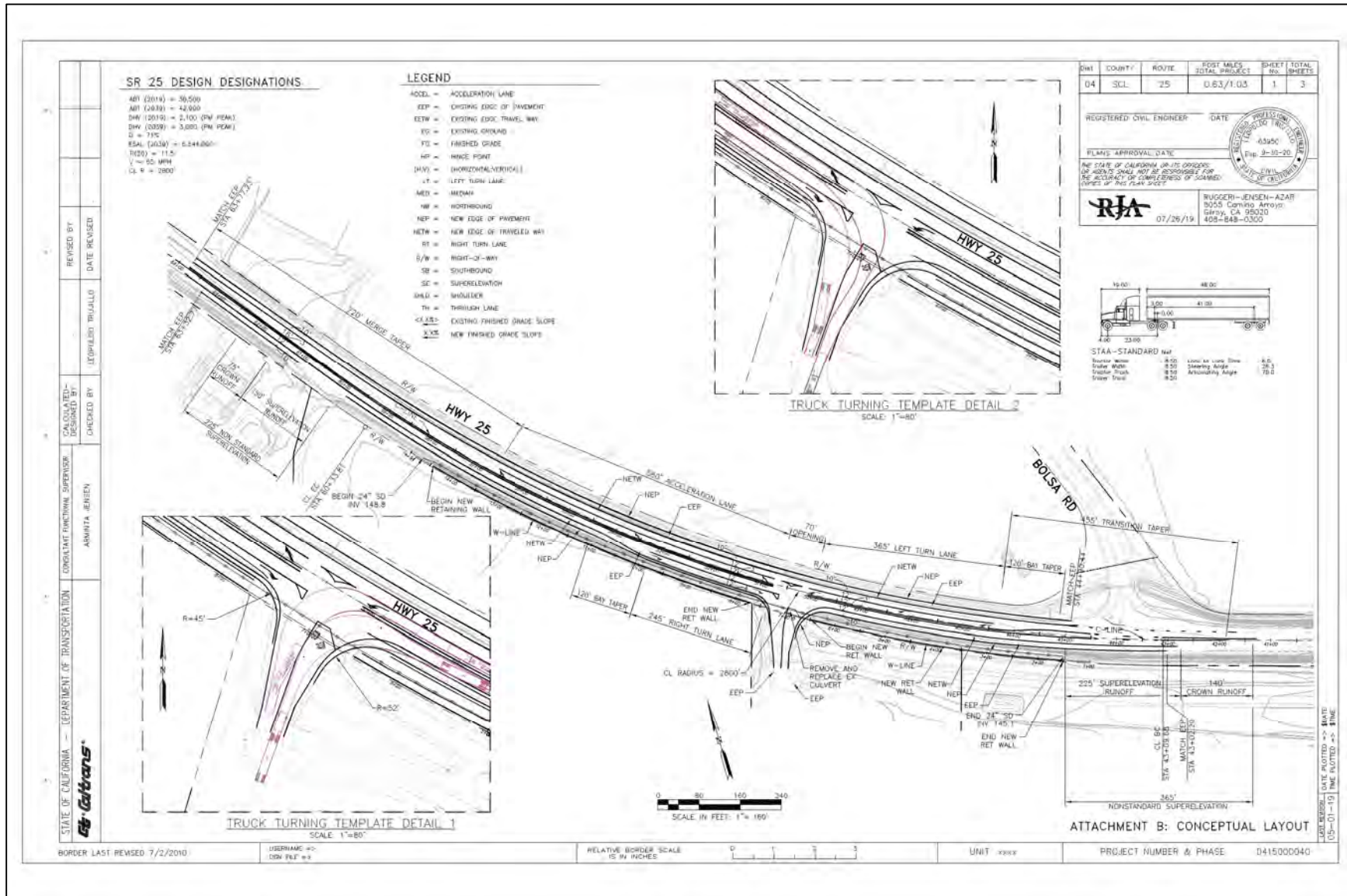
Significant Impact Criteria

Each of the study facilities are located along SR 25. The California Department of Transportation (Caltrans) has jurisdiction of all State maintained facilities, including SR 25. Therefore, the study intersections were evaluated based on Caltrans significance criteria. The criteria described below apply to the weekday AM and PM peak hours.

Caltrans Definition of Significant Impacts

All roadway facilities studied are under the jurisdiction of Caltrans, and therefore, are required to meet the Caltrans Level of Service (LOS) standard. Caltrans level of service standard is LOS C or better. The Caltrans Guide for the Preparation of Traffic Impact Studies (Caltrans 2002) defines a significant impact to occur when:

Figure 5
Conceptual Existing Project Driveway Improvements



**Table 5
Operations Analysis Result Summary**

Intersection	LOS Standard	Peak Hour	Existing				Existing + Project							
			Warrant Met?	Average Delay ¹	Worst LOS	Worst Delay ²	Warrant Met?	Average Delay ¹	Worst LOS Change	Worst Delay ²	Worst LOS Change			
Existing Project Entrance Alternative														
SR 25 and Existing Project Entrance	C	AM	No	0.2	A	28.7	D	No	0.0	A	-0.2	11.4	B	-17.3
		PM	No	0.9	A	62.9	F	No	0.5	A	-0.4	54.2	F	-8.7
SR 25 and Bolsa Road	C	AM	No	0.1	A	30.3	D	No	0.1	A	0.0	30.1	D	-0.2
		PM	Yes	22.1	C	468.6	F	Yes	21.7	C	-0.4	458.0	F	-10.6
Relocated Project Entrance to Bolsa Road Alternative														
SR 25 and Bolsa Road/Proposed Project Entrance (Stop-Controlled)	C	AM	--	--	--	--	--	No	0.1	A	--	35.2	E	--
		PM	--	--	--	--	--	Yes	43.8	E	--	914.3	F	--

Notes:
¹Whole intersection weighted average control delay.
²The worst case delay is normally the time it would take a vehicle on the minor street of an unsignalized intersection to make a left-turn onto the major street.
Bold indicates unacceptable level of service or signal warrant met.

1. The addition of project traffic causes roadway (or intersection) operations to degrade from an acceptable level (LOS C or better) to an unacceptable level (LOS D or worse) or,
2. Project traffic is added to a roadway (or intersection) operating at an unacceptable level (LOS D or worse).

Existing Conditions

The results of the level of service analysis show that, measured against the Caltrans level of service standards, both the existing project entrance and Bolsa Road intersections with SR 25 currently operate at an unacceptable LOS F during the PM peak hour based on the worst approach delay. The worst-case approach is typically the minor street approach that is stop-controlled.

Project Conditions

Existing Project Entrance Alternative

The results of the level of service analysis show that when measured against the Caltrans level of service standards, the existing project entrance intersection with SR 25 would improve to LOS B during the AM peak hour and remain at LOS F under project conditions. The SR 25 and Bolsa Road intersection is projected to continue to operate at LOS D and LOS F conditions during the AM and PM peak hours, respectively, under project conditions. Each intersection would experience a slight reduction in delay on the worst approach during the peak hours with the project. The improvement in delay at each location is a result of the net reduction in trips due to the proposed expansion during the peak hours.

The proposed project would not result in the addition of traffic to the existing site access or SR 25 and Bolsa Road intersections during the peak hours, therefore, based on Caltrans impact criteria, the proposed project would not result in a significant project impact at the study intersections.

Relocated Project Access

The results of the level of service analysis show that the SR 25 and Bolsa Road intersection with stop-control on Bolsa Road and the relocated project entrance is projected to have worst-case approach operations of LOS E and F during the AM and PM peak hours, respectively, under project conditions.

Signal Warrant Analysis

The level of service analysis at the study intersections were supplemented with an assessment of the need for signalization of the intersections. The need for signalization of unsignalized intersections is assessed based on the Peak-Hour Volume Warrant (Warrant 3) described in the *California Manual on Uniform Traffic Control Devices for Streets and Highways (CA MUTCD)*, Part 4, Highway Traffic Signals, 2014. This method makes no evaluation of intersection level of service, but simply provides an indication whether vehicular peak hour traffic volumes are, or would be, sufficient to justify installation of a traffic signal. Intersections that meet the peak hour warrant are subject to further analysis before determining that a traffic signal is necessary. Additional analysis may include unsignalized level of service analysis and/or operational analysis such as evaluating vehicle queuing and delay. Other options such as traffic control devices, signage, or geometric changes may be preferable based on existing field conditions. The results of the signal warrant analysis are summarized in Table 5. The signal warrant sheets are included within the Appendix.

The results of the peak-hour volume warrants indicate that the peak-hour volumes at the existing project entrance intersection with SR 25 currently and are projected to fall below the threshold that warrant signalization with the proposed facility expansion. The peak hour volumes at the SR 25 and

Bolsa Road intersection currently meet and are projected to continue to meet the threshold for signalization during the PM peak hour with the relocation of the site access to Bolsa Road. However, a traffic signal at the new project access point at Bolsa Road is not recommended, or supported by Caltrans, since a traffic signal would adversely affect traffic operations along SR 25.

Intersection Operations (Queuing) Analysis

The operations analysis is based on vehicle queuing for left-turn movements at intersections. Vehicle queues obtained from TRAFFIX were utilized for this analysis. The basis of the analysis is as follows: (1) TRAFFIX is used to estimate the 95th percentile maximum number of queued vehicles during the peak hour for a particular movement; (2) the estimated maximum number of vehicles in the queue is translated into a queue length, assuming 25 feet per vehicle; and (3) the estimated maximum queue length is compared to the existing or planned available storage capacity for the movement. This analysis thus provides a basis for estimating future storage requirements at the selected locations.

Under project conditions, the queuing analysis results show that, the eastbound and westbound left-turn lanes at the relocated SR 25/Bolsa Road project access intersection would experience queue lengths of no more than one vehicle during the peak hours. The southbound (Project Entrance) approach would experience queue lengths of two vehicles, or 50 feet assuming an average vehicle length of 25 feet per vehicle. The northbound (Bolsa Road) approach currently experiences lengthy queues due to the large number of left-turns from Bolsa Road to SR 25 during the PM peak hour.

During the off-peak hours, as many as 52 trips (47 non-truck and 5 truck trips) are projected to access the project site from 4:00 AM to 5:00 AM. Approximately half of the 52 trips or 26 trips would access the site from the east. Assuming an even distribution of traffic arriving throughout the hour, this would equate to approximately one trip every two to three minutes or a queue of no more than one vehicle in the westbound left-turn lane.

Collision History

The collision history along SR 25 in the vicinity of the project entrance and Bolsa Road intersections with SR 25 was reviewed. A review of collision data received from Caltrans indicates a total of 29 collisions over a 3-year span along SR 25 between Bloomfield Road and the beginning of the highway divider (located approximately 1.5 miles east of the project site entrance). The number of collisions along this highway segment exceeds the statewide average for similar facilities. However, only two collisions occurred in the vicinity of the project entrance and Bolsa Road intersections with SR 25 over that same 3-year period.

Highway Segment Operations

The highway segments located immediately east and west of the project entrance were evaluated based on the *Highway Capacity Manual* (HCM) 2010 methodology and using the Highway Capacity Software (HCS). The results of the highway segment peak hour level of service analysis show that the segments along SR 25 currently operate at an unacceptable LOS E during the AM and PM peak hours.

According to the Caltrans definition of impact on highway segments, the addition of any traffic to a facility currently operating unacceptably would be considered an impact. The proposed project would result in a reduction of traffic volumes to and from the project site during the peak hours.

Therefore, the proposed project would not result in a significant project impact on highway segments of SR 25.

Proposed SR 25 Site Access Improvements

The operations and site access analysis shows that although the proposed project would not result in traffic impacts at the site access points and Bolsa Road intersections with SR 25, both the intersections and the study highway segments currently operate at unacceptable levels. The improvements at the existing site access point would improve traffic operations along SR 25 and the project site entrance.

The proposed relocation of the project access point to the SR 25/Bolsa Road intersection would provide a controlled access point to the project site from SR 25. Providing access to the project site from SR 25 via a controlled intersection would improve operations and safety for both project traffic and through traffic along SR 25, in particular since the majority of vehicular trips generated by the project site are large trucks. Along with the proposed relocated project access point, exclusive left-turn lanes along SR 25 which would not only increase intersection capacity but also minimize the disruption of through traffic along SR 25. Overall, the proposed site access improvements on SR 25 would improve traffic conditions at the project site access and along SR 25.

Each of the design requirements that would be applicable to the relocated project access point at the SR 25/Bolsa Road intersection are discussed below.

Highway Design Manual Standards

The Caltrans Highway Design Manual (HDM) makes the following recommendations regarding intersection design standards.

Sight Distance

A clear line of sight should be provided between the driver on the minor street (crossroad) and the approaching traffic (major street). At a minimum, adequate stopping sight distance should be provided at all unsignalized intersections. Corner sight distance and decision sight distance also should be provided when possible and/or applicable. In some cases, the cost of providing the required corner sight distance may be excessive. When restrictive conditions exist, the minimum value for corner sight distance shall be equal to the stopping sight distance. Decision sight distance is required at intersections where the State route turns or crosses another State route.

Based on the design speed along SR 25 (posted speed limit of 55 mph), the required stopping sight distance must be no less than 500 ft. (Table 201.1 of the HDM) and the minimum corner sight distance should be 605 ft.

The available sight distances on SR 25 at Bolsa Road would exceed both the minimum stopping and corner sight distances because SR 25 is relatively straight and has no driver view obstruction in the vicinity of the intersection

Acceleration Lanes

According to the HDM, at rural intersections with stop control on the local cross street, acceleration lanes for left and right turn onto the State facility should be considered.

Left-Turn Channelization

The HDM recommends left-turn lanes be provided at intersections to expedite the movement of

through traffic, control the movement of turning traffic, increase intersection capacity, and improve safety. At a minimum, the left-turn lane should meet the following requirements:

Lane Width – The lane width for both single and double left-turn lanes on State highways shall be 12 ft. However, under certain circumstances, left-turn lane widths of 11 ft. or as narrow as 10 ft. may be used. Based on Caltrans design criteria, the left-turn lanes at the new intersection should be a minimum of 10 ft. wide.

Approach Taper – The approach taper provides space for a left-turn lane by moving traffic laterally to the right. In all situations where space is available (usually in rural and semi-rural areas on in urban areas with high traffic speeds and/or volumes), the standard left-turn channelization design in which all widening is to the right of approaching traffic and the deceleration lane begins at the end of the approach taper should be used. However, alternate designs with the deceleration lane beginning at the 2/3 point of the approach taper (so that part of the deceleration takes place in the through traffic lane) may be used in urban areas where constraints exist, speeds are moderate, and traffic volumes are relatively low. The required approach taper (Figure 405.2A) for the left-turn lanes on SR 25, based on a design speed of 55 mph and assuming the proposed left-turn lane would be 12 ft. wide, is 660 ft.

Deceleration Lane Length – Deceleration lane length are based on the roadway's design speed. It is desirable that deceleration take place entirely off the through traffic lanes. Based on Table 405.2B of the HDM, the required deceleration lane length for a 55-mph roadway is approximately 485 ft. (including bay taper). Bay tapers of 120 ft. are normally used on rural high-speed highways. As described above, alternate left-turn channelization designs allow the deceleration lane beginning at the 2/3 point of the approach taper, so part of the deceleration takes place in the through traffic lane. In cases where partial deceleration is permitted on the through lanes, design speeds may be reduced 10 to 20 mph for a lower entry speed.

Storage Length – As a minimum, storage space for two passenger cars should be provided at 25 ft. per car within turn-pockets. However, if 10 percent (%) or more of the peak hour traffic is composed of large trucks, space for one passenger car and one truck should be provided.

Vehicular queue estimates for left-turns at the SR 25/Bolsa Road intersection show 95th percentile queue lengths of no more than one vehicle for left-turn movements along SR 25 during the peak hours. However, traffic volumes along SR 25 are composed of a significant amount of heavy trucks since it serves as the primary route to US 101 from a primarily agricultural area. Therefore, based on the estimated queue length calculations and Caltrans standards, a minimum of 75 ft. (one vehicle and one truck length) of queue storage capacity should be provided in the left-turn pockets along SR 25 at the intersection with Bolsa Road. Ultimately, Caltrans will decide whether the proposed intersection layouts are adequate and meets Caltrans design standards.

Supplemental Evaluation of Vehicle-Miles-Traveled (VMT)

Historically, transportation analysis has utilized delay and congestion on the roadway system as the primary metric for the identification of traffic impacts and potential roadway improvements to relieve traffic congestion that may result due to proposed/planned growth. However, the State of California has recognized the limitations of measuring and mitigating only vehicle delay at intersections and in 2013 passed Senate Bill (SB) 743, which requires jurisdictions to stop using congestion and delay metrics, such as Level of Service (LOS), as the measurement for CEQA transportation analysis. With the adoption of SB 743 legislation, public agencies will soon be required to base the determination of transportation impacts on VMT rather than level of service. The intent of this change is to shift the focus of transportation analysis under CEQA from vehicle delay and roadway

auto capacity to a reduction in vehicle emissions, and the creation of robust multimodal networks that support integrated land uses.

An estimate of Vehicle-Miles-Traveled (VMT) was completed for the proposed facility expansion. VMT is typically calculated for common land uses such as residential, office, and industrial developments. However, the proposed project consists of an uncommon land use, a composting facility, that will primarily generate truck traffic for which evaluation tools such as a Transportation Demand Forecasting (TDF) model are not applicable for the estimation of VMT. Therefore, the estimates of VMT for the project were derived based on the anticipated number of employees and truck loads as well as origin/destination information provided by the applicant.

A comparison of VMT currently generated by the existing site operations versus the VMT that could be generated by the proposed expansion of site operations was completed. VMT is calculated as the number of vehicle trips multiplied by the length of the trips in miles. VMT per employee is a measure of the daily vehicle miles traveled divided by the number of employees of the project site.

As shown in Tables 6 and 7, the proposed expansion and adjustment of site operations will result in a decrease in VMT per employee and VMT per truck load, when compared to the VMT currently generated by the existing site operations.

Table 6
VMT per Employee Estimates

Origin-Destination	Distance (mi)	% Distribution ¹	Existing		Existing + Project	
			Daily Trips ²	Daily VMT	Daily Trips ²	Daily VMT
Hollister	11	51%	92	1012	127	1397
Los Banos	47	12%	22	1034	30	1410
Gilroy	5	26%	47	235	64	320
San Jose	35	6%	11	385	15	525
Morgan Hill	16	1%	2	32	2	32
Gustine	52	1%	2	104	2	104
Modesto	83	1%	2	166	2	166
Watsonville	21	1%	2	42	2	42
Santa Cruz	40	1%	2	80	2	80
Total			182	3090	246	4076
Daily VMT per Employee				51.5		45.3

¹ Source: Z-Best Products.

² Total daily trips as shown in the hourly trip generation table.

Table 7
VMT per Truck Load Estimates

Origin-Destination	Distance (mi)	Existing				Existing + Project					Existing + Project (Peak 20-Day Season) ²				
		Daily Loads ¹	Daily Trips	Daily VMT	Daily VMT per load	Daily Loads	Daily Trips	Daily VMT	Distribut ion	Daily VMT per load	Daily Loads	Daily Trips	Daily VMT	Distribut ion	Daily VMT per load
Green Waste															
GreenWaste Recovery - San Jose	38	32.73	65.46	2487.4		89.73	179.46	6819.4			122.73	245.46	9327.4		
ZeroWaste Energy - San Jose	45	9.04	18.08	813.7		9.04	18.08	813.7			9.04	18.08	813.7		
Blue Line Transfer - South San Francisco	75	1.64	3.28	245.8		1.64	3.28	245.8			1.64	3.28	245.8		
Bay Counties SMART - Sunnyvale	48	3.99	7.97	382.7		3.99	7.97	382.7			3.99	7.97	382.7		
Sub-Total		47.39	94.79	3929.5	82.9	104.39	208.79	8261.5			137.39	274.79	10769.5		78.4
Finished Product (Mulch/Compost)															
100-mile Radius	50	20.75	41.50	2074.8	100.0	28.75	57.50	2874.8			33.75	67.50	3374.8		100.0
Landfill (Trash/ADC)															
Billy Wright Landfill - Los Banos	43	5.47	10.93	470.1		15.96	31.92	1372.5	30%		21.98	43.95	1890.0	30%	
Marina Landfill - Marina	29	8.06	16.13	467.7		23.54	47.09	1365.5	44%		32.42	64.84	1880.4	44%	
Newby Island Landfill - Milpitas	45	4.44	8.87	399.2		12.95	25.90	1165.7	24%		17.83	35.67	1605.1	24%	
John Smith Landfill - Hollister	17	0.20	0.41	6.9		0.59	1.18	20.1	1%		0.82	1.63	27.7	1%	
		18.17	36.33	1343.8	74.0	53.05	106.09	3923.9			73.05	146.09	5403.2		74.0
Total		86.31	172.62	7348.1	85.1	186.19	372.38	15060.2			244.19	488.38	19547.6		80.1

¹ Source: Z-Best Products. Average daily load estimated using total number of loads recorded in 2018.
² Peak leaf season in the fall and heavy volume in the spring. The increased tonnage during these 20 days would result in an additional 58 truck trips.

Potential SR 25 Widening and Realignment

Caltrans has identified operational problems during the peak commute hours along the SR 25 corridor and at the US 101/SR 25 interchange, which are due primarily to the capacity constraints of the highway and interchange. Thus, Caltrans has initiated the study for the widening and realignment of SR 25 that will include the segment along the project's frontage and realignment of Bolsa Road. In the vicinity of the project site, SR 25 consists of an undivided two-lane State highway with a posted speed limit of 55 miles per hour (mph) in both directions of travel.

In June 2016, Caltrans approved the Hollister to Gilroy State Route 25 Route Adoption project. In the Route Adoption study, Caltrans identifies two alternatives (plus a No Build alternative) to eventually replace 11.2 miles of the existing SR 25 two-lane highway with a four-lane expressway in San Benito and Santa Clara Counties. A route adoption would require San Benito and Santa Clara Counties to adopt a specific corridor for the future expressway into their General Plans, for the purpose of acquiring most or all parcels within the defined corridor area. The route adoption study extends from San Felipe Road (in Hollister) to the end of SR 25 at US 101 in Santa Clara County.

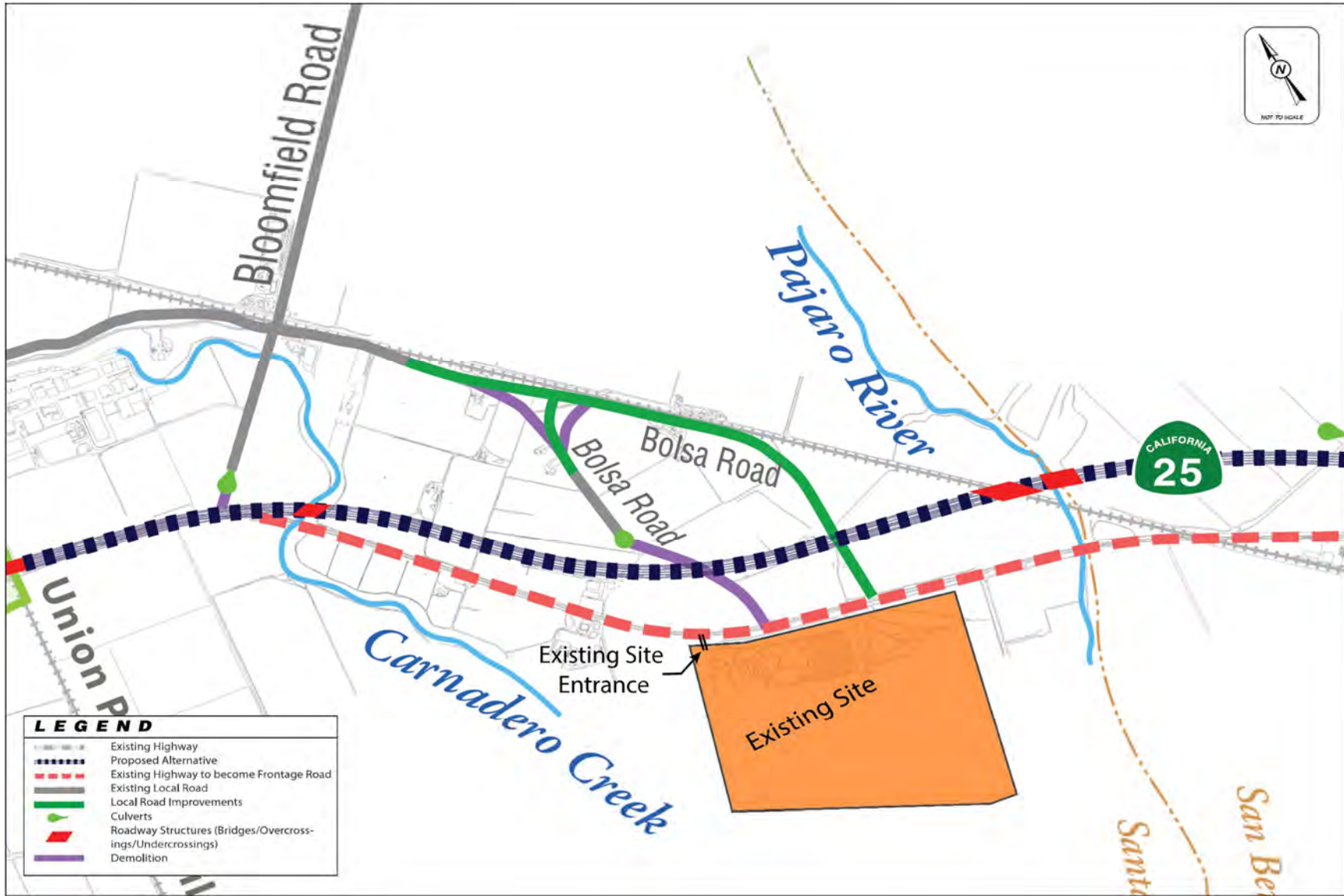
Both route adoption alternatives are 11.2 miles long and share the same alignment from US 101 to approximately ½ mile east of Shore Road. The project site entrance is located within this area. The proposed improvements would include the realignment of both SR 25 and Bolsa Road, which would result in a new intersection of Bolsa Road with the new realigned SR 25.

Although the actual SR 25 widening and realignment project has yet to be designed, approved, and funded, if constructed, it will affect project site access. The exact SR 25 realignment and location of the potential new intersection with Bolsa Road is not known at this time. However, the Route Adoption Alternatives 1 and 2 plans (prepared by Caltrans and shown on Figure 6) indicate the following:

- The realignment of SR 25 would begin east of Bloomfield Road and run north of and parallel to the existing SR 25 alignment from this point past Shore Road.
- The existing SR 25 would become a frontage road and would continue to provide direct access to the adjacent parcels/land uses, including the project site.
- The existing segment of Bolsa Road, between the existing SR 25 and north of the realigned SR 25 would be abandoned, eliminating the existing Bolsa Road/SR 25 intersection. The new Bolsa Road realignment would extend eastward adjacent to the existing Union Pacific Railroad tracks and intersect with both the realigned SR 25 and the existing SR 25 just east of the project site.

With the potential realignment of SR 25 and Bolsa Road, all project traffic bound for and originating from the Z-Best facility would utilize the new Bolsa Road intersection with the realigned SR 25.

Figure 6
Potential SR 25 Widening and Realignment



Conclusions

The proposed expansion of the existing facility operations on the site will include an increase in the number of employees from the current 58 employees (60 allowed by the use permit) to 80-85 employees (with a maximum of 90 employees allowed by the use permit). It is also anticipated that with the expanded operations, the facility would be able to serve an additional 100 trucks per day. However, based on the proposed new work shift times and all new truck trips being proposed to access the project site outside of the standard peak commute hours, the proposed expansion of the existing Z-Best facility operations would result in a decrease in the number of peak-hour trips generated by the project site when compared to existing conditions. Therefore, the proposed project would not result on impacts to any of the study facilities on SR 25.

The operations and site access analysis shows that although the proposed project would not result in traffic impacts at the study intersections and highway segments along SR 25, the existing project access point and SR 25/Bolsa Road intersection and the study highway segments currently operate at unacceptable levels. The proposed relocation of the project access point to the SR 25/Bolsa Road intersection would provide a controlled access point to the project site from SR 25. Providing access to the project site from SR 25 via a controlled intersection would improve operations and safety for both project traffic and through traffic along SR 25, in particular since the majority of vehicular trips generated by the project site are large trucks. Along with the proposed relocated project access point, exclusive left-turn lanes along SR 25 which would not only increase intersection capacity but also minimize the disruption of through traffic along SR 25. Overall, the proposed site access improvements on SR 25 would improve traffic conditions at the project site access and along SR 25.



Memorandum

Date: August 11, 2020
To: John Doyle, Z-Best Products
From: Robert Del Rio, T.E.
Subject: Z-Best Supplemental VMT Clarification and Analysis

This memo is being provided to clarify and substantiate conclusions related to the VMT analyses that were provided within the *Operations and Site Access Analysis* dated January 30, 2020 for the proposed expansion of the Z-Best Compost Facility Expansion. Revisions and additional information are provided below at the request of County staff.

VMT for Non-Truck Trips

An estimate of Vehicle-Miles-Traveled (VMT) was completed for the proposed facility expansion as part of the traffic operations and site access analysis. Existing daily VMT estimates as shown in Table 6 of the report are based on vehicle composition data collected at the site entrance. Non-truck traffic includes traffic generated by employees and non-employees. Therefore, the title of the table is revised and shown below.

Table 1
VMT for Non-Truck Trips

Origin-Destination	Distance (mi)	% Distribution ¹	Existing		Existing + Project	
			Daily Trips ²	Daily VMT	Daily Trips ²	Daily VMT
Hollister	11	51%	92	1012	127	1397
Los Banos	47	12%	22	1034	30	1410
Gilroy	5	26%	47	235	64	320
San Jose	35	6%	11	385	15	525
Morgan Hill	16	1%	2	32	2	32
Gustine	52	1%	2	104	2	104
Modesto	83	1%	2	166	2	166
Watsonville	21	1%	2	42	2	42
Santa Cruz	40	1%	2	80	2	80
Total			182	3090	246	4076

¹ Source: Z-Best Products.

² Total daily trips as shown in the hourly trip generation table.

Employee-Only VMT

A supplemental estimate of VMT generated by only the employees of the proposed facility was completed using the same methodology as utilized for VMT estimates of non-truck traffic. The assumptions of the methodology include the following:

- Employee daily trips are two trips consisting of one inbound trip before the employee's shift and one outbound trip after the employee's shift
- Distance and distribution of trips are constant
- Linear growth of employee per employee origin. The total employee growth is approximately 55% (from the existing 58 employees to a proposed 90 employees) and each location would experience a 55% increase in employee.

The results of the analysis show that daily VMT per employee would not result in an increase from existing conditions as a result of the proposed expansion.

Table 2
VMT for Employees Only

Origin-Destination	Distance (mi)	% Distribution ¹	Existing		Existing + Project	
			Daily Trips ²	Daily VMT	Daily Trips ²	Daily VMT
Hollister	11	51%	58	639.8	90	992.731
Los Banos	47	12%	13	607.2	20	942.269
Gilroy	5	26%	29	145.8	45	226.241
San Jose	35	6%	6	208.6	9	323.69
Morgan Hill	16	1%	2	34.6	3	53.6276
Gustine	52	1%	2	112.3	3	174.29
Modesto	83	1%	2	179.3	3	278.193
Watsonville	21	1%	2	45.4	3	70.3862
Santa Cruz	40	1%	2	86.4	3	134.069
Total			116	2059	180	3195
Daily VMT per Employee				35.5		35.5

¹ Source: Z-Best Products.

² The facility has 58 employees under existing conditions (116 daily trips) and is proposed to have 90 employees (180 daily trips) with the proposed expansion.

Estimate of Baseline and Project Truck Trips

Table 7 of the operations report provides an estimate of VMT per truck load under existing and proposed conditions. Truck loads under existing conditions were estimated using on-site scale report data provided by Z-Best in 2018 and shown below in Table 3. Z-best is required to provide the scale report data to its designated LEA inspector on a monthly basis to show that the site operations are in compliance with allowable material types and daily limits defined in its Solid Waste Facility Permit.

Table 3
VMT per Truck Load Estimates

Origin-Destination	Distance (mi)	Existing				Existing + Project						Existing + Project (Peak 20-Day Season) ³						
		Annual Loads (2018) ¹	Daily Loads	Daily Trips	Daily VMT	Proposed Additional Loads ²	Daily Loads	Daily Trips	Daily VMT	Distribution	Daily VMT per load	Proposed Additional Loads ²	Daily Loads	Daily Trips	Daily VMT	Daily VMT per load		
Green Waste																		
GreenWaste Recovery - San Jose	38	11,946	32.73	65.46	2487.4	57.0	89.73	179.46	6819.4		90.0	122.73	245.46	9327.4				
ZeroWaste Energy - San Jose	45	3,300	9.04	18.08	813.7		9.04	18.08	813.7			9.04	18.08	813.7				
Blue Line Transfer - South San Francisco	75	598	1.64	3.28	245.8		1.64	3.28	245.8			1.64	3.28	245.8				
Bay Counties SMART - Sunnyvale	48	1,455	3.99	7.97	382.7		3.99	7.97	382.7			3.99	7.97	382.7				
Sub-Total		17,299	47.39	94.79	3929.5	82.9												
Finished Product (Mulch/Compost)																		
100-mile Radius	50	7,573	20.75	41.50	2074.8	100.0	8.0	28.75	57.50	2874.8	100.0	13.0	33.75	67.50	3374.8	100.0		
Landfill (Trash/ADC)																		
Billy Wright Landfill - Los Banos	43	1,995	5.47	10.93	470.1		10.5	15.96	31.92	1372.5	30%	16.5	21.98	43.95	1890.0			
Marina Landfill - Marina	29	2,943	8.06	16.13	467.7		15.5	23.54	47.09	1365.5	44%	24.4	32.42	64.84	1880.4			
Newby Island Landfill - Milpitas	45	1,619	4.44	8.87	399.2		8.5	12.95	25.90	1165.7	24%	13.4	17.83	35.67	1605.1			
John Smith Landfill - Hollister	17	74	0.20	0.41	6.9		0.4	0.59	1.18	20.1	1%	0.6	0.82	1.63	27.7			
		6,631	18.17	36.33	1343.8	74.0	34.9	53.05	106.09	3923.9		54.9	73.05	146.09	5403.2	74.0		
Total			86.31	172.62	7348.1	85.1	100	186.19	372.38	15060.2		80.9	158	244.19	488.38	19547.6	80.1	
							Increase in Trucks	Increase in Trips									Increase in Trucks	Increase in Trips
							100	200									158	316

¹ Source: Z-Best Products. Total number of truck loads sent and received in 2018 as recorded by on-site scale reports.
² Additional truck loads compared to existing conditions.
³ Peak leaf season in the fall and heavy volume in the spring. The increased tonnage during these 20 days would result in an additional 58 truck trips.

Average Existing Daily Truck Loads

The total number of truck loads sent or received to each origin/destination facility for the entire year were divided by 365 to estimate average daily truck loads.

Average Daily Truck Loads under Project Conditions (Non-Peak Season)

Based on estimates provided by Z-Best, the proposed expansion of the facility would result in an average increase of 100 daily trucks/loads (200 daily trips) during the non-peak season. Trucks loads are estimated to increase to/from the following origin/destination facilities and are shown in Table 3:

- An average increase of 57 daily loads (114 daily trips) received from GreenWaste Recovery San Jose.
- An average increase of 8 daily loads (16 daily trips) of finished products delivered to customers within a 100-mile radius.
- An average increase of 35 daily loads (70 daily trips) split in the same proportion to the four landfill facilities currently being served. This estimate is based on approximately 12,731 loads of additional trash/ADC generated per year with the proposed project.

Average Daily Truck Loads under Project Conditions (Peak Season)

Based on estimates provided by Z-Best, the proposed expansion of the facility would result in an average increase of 158 daily trucks loads (316 daily trips) during the peak 20-day season. Trucks loads are estimated to increase to/from the following origin/destination facilities and are shown in Table 3:

- An average increase of 90 daily loads (180 daily trips) received from GreenWaste Recovery San Jose. The estimated increase is 33 loads (66 trips) more than the estimate for the non-peak season.
- An average increase of 13 daily loads (26 daily trips) of finished products delivered within a 100-mile radius. The estimated increase is 5 loads (10 trips) more than the estimate for the non-peak season.
- An average increase of 55 daily loads (110 daily trips) split in the same proportion to the four landfill facilities currently being served. The estimated increase is 20 loads (40 trips) more than the estimate for the non-peak season.

To: Ms. Valerie Negrete
County of Santa Clara
Department of Planning and Development
70 West Hedding Street, 7th Floor East Wing
San Jose, CA 95110

Project name: Z-Best Composting Facility
– CEQA Services

Project ref: 60666256

CC: Sam Gutierrez
Emmanuel Ursu
Lizanne Reynolds

From: Scott Shea, Senior Traffic Engineer
Emma Rawnsley, Project Manager

Date: April 6, 2023

Memorandum: Traffic Safety Analysis

1. Introduction and Summary of Findings

This memorandum provides an analysis of the traffic safety impacts of the proposed driveway relocation for the Z-Best Composting facility. The driveway is proposed to be relocated to form the fourth leg of the Bolsa Road and State Route 25 (SR-25) intersection in Gilroy, California, located approximately at postmile SCL 0.639 and SR-25 statewide odometer: 72.71. Additionally, center deceleration and acceleration lanes and a right turn deceleration lane are proposed as part of the driveway relocation.

Collision data from the Statewide Integrated Traffic Records System (SWITRS) was used to analyze crashes in the project study limits on SR-25 and Bolsa Road for the 5-year period between January 1, 2016, and December 31, 2020. The evaluation looked at crashes extending 250-feet from each intersection approach and along the existing Z-Best driveway approximately 600-feet northwest of the intersection. The 5-year combined crash history shows an average of 2.8 crashes a year for the area.

The study applies the Highway Safety Manual (HSM) predictive method and safety performance function (SPF) to predict average crash frequency under the following scenarios and assuming increase in traffic volumes associated with the Project:

- Proposed Project: 4-leg minor-approach stop-controlled intersection with northbound center deceleration and acceleration lanes and southbound right turn deceleration lane accessing the relocated Z-Best driveway.
- Alternative 3: Project without driveway realignment but with addition of a center northbound deceleration and acceleration lane and a southbound right turn deceleration lane for accessing Z-Best at the original driveway location. No changes to Bolsa Road intersection.

In addition, due to a proposal by Caltrans to install a center acceleration lane (refuge lane) for left turns from Bolsa Road onto southbound SR-25 and a center deceleration lane for left turns from southbound SR-25 onto Bolsa Road, the following cumulative scenarios were also analyzed:

- Proposed Project with Caltrans Project (Cumulative Condition): 4-leg minor-approach stop-controlled intersection with northbound and southbound center deceleration and acceleration lanes and a southbound right turn deceleration lane accessing the relocated Z-Best driveway.
- Alternative 3 with Caltrans Project: Project without driveway realignment but with addition of a center northbound deceleration and acceleration lane and a southbound right turn deceleration lane for accessing Z-Best at the original driveway location. Caltrans to restripe the Bolsa Road intersection to include a center acceleration lane (refuge lane) for left turns from Bolsa Road onto southbound SR-25 and a center deceleration lane for left turns from southbound SR-25 onto Bolsa Road.

In addition, a signalized intersection option was analyzed for comparison with the other scenarios:

- Project with Signal: 4-leg signalized intersection with left turn lanes and intersection lighting.

A crash frequency summary under the existing condition and for the five scenarios is summarized in Table 1, below. The study finds that the Proposed Project will reduce the predicted number of annual crashes in the study area, from an average of 2.8 crashes per year to 1.77 crashes per year for the study area.

Given the large discrepancy between actual crash distribution for the study area and typical values for intersection types based on more generalized data, it is difficult to draw quantitative conclusions about the impact the Project would have on crash type and injury severity distribution in the study area. In general, realigning two 3-leg intersections to become a single 4-leg stop-controlled intersection is expected to increase the proportion of broadside crashes, which are more likely to be severe crashes. Therefore, the proportion of higher severity crash types (broadside/angle crashes) could occur as a result of the Project as a 4-leg stop-controlled intersection. Mitigation for broadside crashes at intersections is most effective by the installation of a traffic signal.

Furthermore, a large proportion of crashes in the study area have occurred during dark conditions, and the project would substantially increase the volume of night-time trips.

Utilizing the existing driveway location but adding acceleration and deceleration lanes (i.e., Alternative 3 from the Draft EIR) is predicted to decrease the number of crashes at the existing driveway location, but slightly increase the number of crashes at the Bolsa Road intersection due to the increase in vehicles through the intersection. Adding intersection lighting to the existing driveway and Bolsa Road intersection (in addition to other Alternative 3 improvements) is predicted to decrease the crash rate at both locations to below the existing crash rates for each intersection and the total project area but is unlikely to substantially change the proportion of existing higher severity crash types.

Signalization of the 4-leg intersection (including intersection lighting and left turn-lanes) would result in a total crash frequency of 2.1 crashes per year and is predicted to decrease the number the of broadside crashes, which are typically more severe than other crash types.

Table 1: Existing and Predicted Crash Frequency Summary

Scenario	Crashes per Year ¹		
	Driveway	Intersection	Total
Existing Conditions, Historical Crashes	1	1.8	2.8
Proposed Project ² • 4-leg Minor Approach Stop-Controlled	0	1.77	1.77
Alternative 3 ³ • No driveway relocation	0.8	1.81	2.61
Proposed Project Plus Cumulative ⁴ • 4-leg Minor Approach Stop-Controlled	0	1.49	1.49
Alternative 3 Plus Cumulative ⁵ • No driveway relocation	0.8	1.3	2.1
Proposed Project with Traffic Signals ⁶	0	2.1	2.1

Notes:

1. Values for Existing Conditions based on 5-year crash history from 2016 through 2020. For other scenarios, values are predicted using HSM predictive method and SPF.
2. This scenario may increase the proportion of high severity crashes compared to existing conditions.
3. This scenario is not anticipated to substantially change the proportion of high severity crashes.
4. Geometry in this layout is not typical. The safety benefits may not be realized due to unfamiliar driver expectancy. This scenario may also increase the proportion of high severity crashes compared to existing conditions.
5. This scenario is not anticipated to substantially change the proportion of high severity crashes.
6. This scenario is anticipated to reduce the proportion of high severity crashes compared to existing conditions.

2. Geometric Conditions

Existing Conditions

The existing 3-leg intersection is shown in Figure 1, with Bolsa Road connecting to SR-25. SR-25 is a two-lane, two-way principal arterial roadway and is the main through movement for the intersection. Bolsa Road is a two-lane, two-way roadway and is currently stop-controlled as the minor approach leg for the intersection. Visible in Figure 1 is queueing on southbound Bolsa Road to turn onto SR-25. The posted speed limit on SR-25 is 55 miles per hour (mph), and 40 mph on Bolsa Road. The existing Z-Best driveway is located northwest of the 3-leg intersection by approximately 600-feet.



Figure 1: Existing 3-leg intersection of Bolsa Road and SR-25.

Proposed Project

The Proposed Project would relocate the existing Z-Best driveway to become the fourth leg of the Bolsa Road intersection. Figure 2 shows a simplified intersection layout representing this scenario. The new 4-leg intersection would have the following geometry:

- Minor Stop-Controlled 4-Leg Intersection
- Center deceleration lane for left turns into relocated Z-Best driveway from northbound SR-25
- Center acceleration lane for left turns out of relocated Z-Best driveway onto northbound SR-25
- Shoulder deceleration lane for right turns into relocated Z-Best driveway from southbound SR-25.

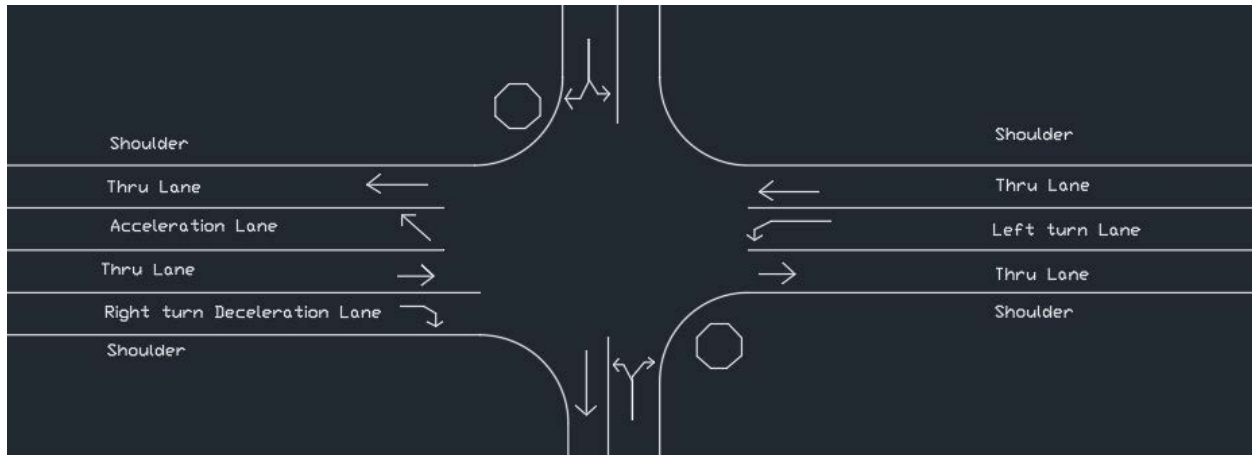


Figure 2: Conceptual Intersection Layout for Proposed Project (not to scale)

Alternative 3

The Alternative 3 scenario assumes the following intersection geometry:

- No driveway relocation
- No changes to Bolsa Road intersection
- Center deceleration lane for left turns into existing Z-Best driveway from northbound SR-25
- Center acceleration lane for left turns out of existing Z-Best driveway onto northbound SR-25
- Shoulder deceleration lane for right turns into existing Z-Best driveway from southbound SR-25

Figure 3 shows a simplified intersection layout representing this scenario.

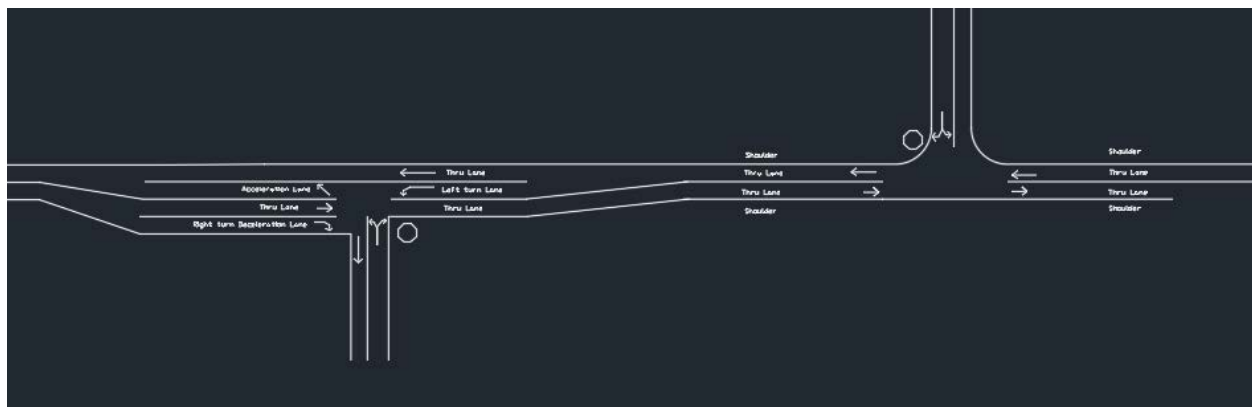


Figure 3: Conceptual Intersection Layout for Alternative 3 Scenario (not to scale)

Cumulative Conditions

To improve traffic operations and safety at the SR-25/Bolsa Road intersection, Caltrans intends to restripe the intersection to include a central receiving lane (refuge lane) for traffic turning left out of Bolsa Road onto southbound SR-25¹, and a central left turn deceleration lane for traffic turning left from southbound SR-25 onto Bolsa Road. A conceptual layout of the proposed restriping is shown in Figure 4.

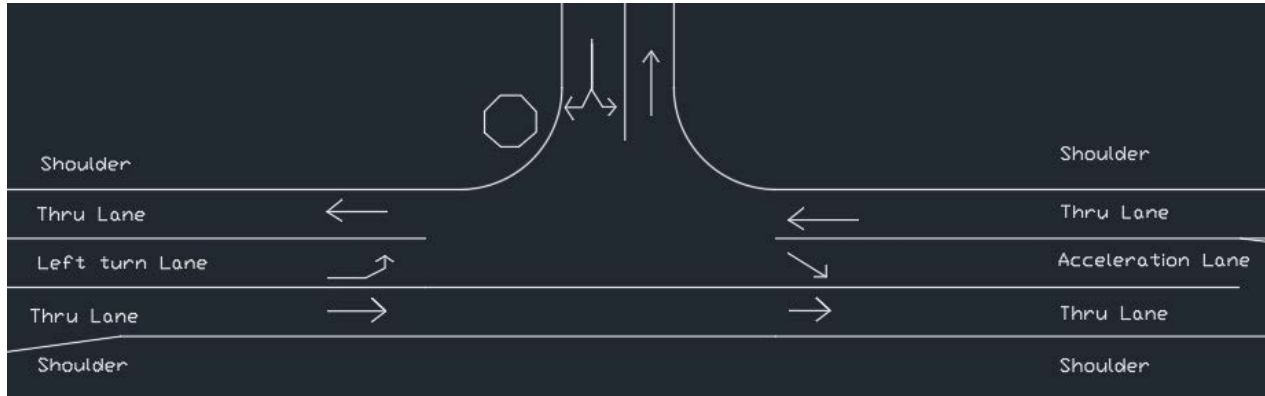


Figure 4: Conceptual Layout of Caltrans' Proposed Restriping Project (not to scale)

Although this new intersection layout is not currently part of the existing conditions, Caltrans has indicated it will be constructed during the summer of 2023, which is prior to construction of Z-Best's Proposed Project. Therefore, this memorandum considers a "Project plus Cumulative" scenario where both the improvements proposed by Z-Best and the Caltrans' proposed restriping project would be installed. In addition, an "Alternative 3 plus Cumulative" scenario is also considered.

Project + Cumulative

Figure 5 shows a simplified intersection layout representing the Project + Cumulative scenario, which assumes the following intersection geometry:

- Minor Stop-Controlled 4-Leg Intersection
- Center deceleration lane for left turns into relocated Z-Best driveway from northbound SR-25
- Center acceleration lane for left turns out of relocated Z-Best driveway onto northbound SR-25
- Shoulder deceleration lane for right turns into relocated Z-Best driveway from southbound SR-25.
- Center deceleration lane for left turns into Bolsa Road from southbound SR-25.
- Center acceleration lane for left turns out of Bolsa Road onto southbound SR-25

¹ Email from Arun Guduguntla, Caltrans Project Manager to Bharat Singh, County of Santa Clara Planning Department. Subject: Bolsa Rd./SR 25 Intersection – Proposed Project. Date: August 31, 2022. Attachment: Bolsa Rd_Rte 25_Re-stripe Option rev red.pdf.

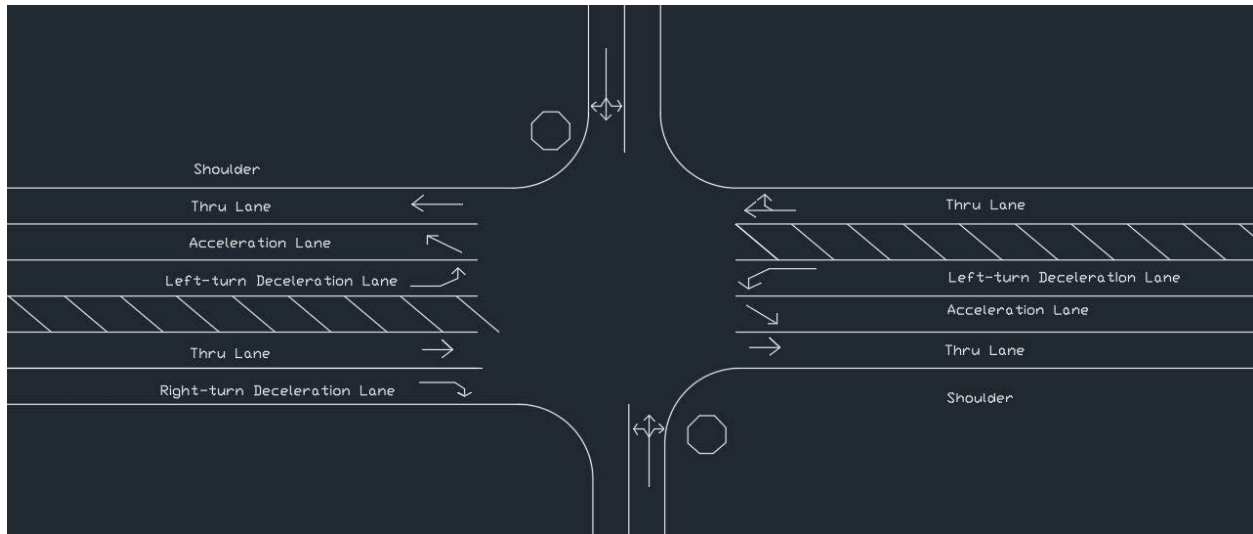


Figure 5: Conceptual Intersection Layout for Project + Cumulative Scenario (not to scale)

Alternative 3 plus Cumulative

Figure 6 shows a simplified intersection layout representing the Alternative 3 + Cumulative scenario, which assumes the following intersection geometry:

- No driveway relocation.
- Center deceleration lane for left turns into existing Z-Best driveway from northbound SR-25.
- Center acceleration lane for left turns out of existing Z-Best driveway onto northbound SR-25.
- Shoulder deceleration lane for right turns into existing Z-Best driveway from southbound SR-25.
- Shoulder acceleration lane for right turns out of existing Z-Best driveway onto southbound SR-25.
- Center acceleration lane for left turns out of Bolsa Road onto southbound SR-25.
- Center deceleration lane for left turns onto Bolsa Road from southbound SR-25.

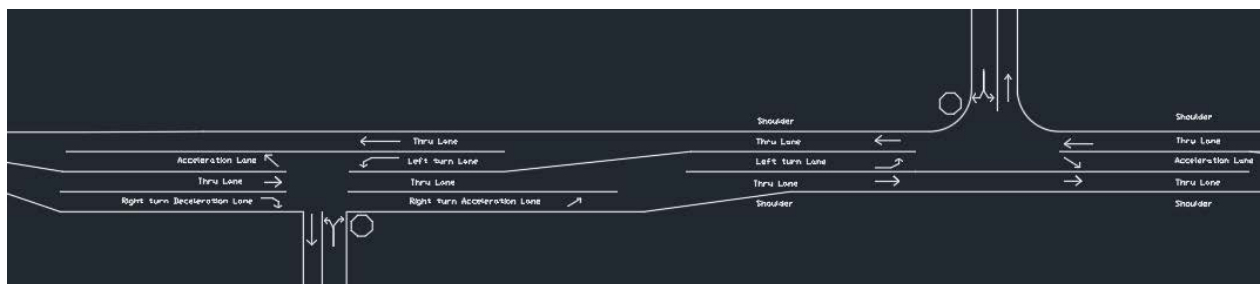


Figure 6: Conceptual Intersection Layout for Alternative 3 + Cumulative Scenario (not to scale)

3. Previous Traffic Impact Assessment and Peer Review

The Intersection Control Evaluation (ICE) report dated May 27, 2020, reviewed five options modifying the intersection. The preferred operational alternative from the ICE included relocating the driveway to intersection and to maintain stop-control for the minor streets of Bolsa Road and the driveway.

The original Draft EIR prepared for the Z-Best Composting Facility Upgrade and Expansion Project (released for public comment in January 2021) determined that relocating the Z-Best driveway to form the fourth leg of the Bolsa Road/SR-25 intersection would not have a significant safety impact due to the proposed provision of receiving lanes and deceleration lanes and because most of the additional traffic associated with the Project would not occur during peak hours.

AECOM met with the County Roads and Airports (R&A) staff to understand concerns regarding the Proposed Project access and applicable safety standards. The R&A staff indicated the original Draft EIR did not acknowledge the existing traffic safety issues at the Bolsa Road intersection and did not adequately consider the impacts of existing Z-Best traffic movements which would be relocated to the new intersection (in addition to the proposed increase in traffic movements) which may amplify existing safety issues. R&A staff also indicated concern regarding non-peak hour traffic safety impacts, as the previous analysis only considered peak-hour movements, and concern regarding dark and fog conditions.

4. Crash History

Collision data from SWITRS was utilized to analyze crashes in and around the project study limits on SR-25 and Bolsa Road for a 5-year period between January 1, 2016 and December 31, 2020. The safety evaluation looked at all crashes extending 250-feet along each approach leg of the intersection. The southbound SR-25 approach was extended to the existing Z-Best driveway to account for similar interactions that could take place if the driveway is moved to the Bolsa Road intersection.

A total of 21 crashes were identified to be within the intersection study area during the 5-year study period. A total of 9 crashes were flagged in crash reports as intersection related crashes at Bolsa Road, and 5 crashes occurred near the existing Z-Best driveway. The AM peak period had 3 crashes while the PM peak period had 11 crashes. Late night or early morning crashes have not been a concern, as no crashes were reported before 5:00AM or after 10:00PM, however, 9 crashes were flagged as having occurred in dark conditions. None of the crashes involved pedestrians and none of the crashes were reported as having alcohol involved. Table 2 shows the study intersection crash frequency count by year and indicates how many were intersection related.

Table 2: Crash History Frequency by Year

Year	Crash Count	Intersection Related
2016	5	3
2017	3	1
2018	5	2
2019	5	2
2020	3	1
Total	21	9

Table 3 provides the breakdown of crash frequency by injury severity. There were two reported fatal crashes. One fatal crash occurred in fog conditions, at approximately 7:30AM, near the existing Z-Best driveway location and involved a heavy truck. The second fatality occurred at 5:50PM in dark conditions with no street lighting. All the intersection related crashes were identified as injury crashes.

Table 3: Crash History by Injury Severity

Injury Severity	Crash Count
Fatal	2
Severe Injury	1
Apparent Injury	3
Possible Injury	15
Property Damage Only	0
Total Crashes	21
Total Fatal Injuries	2

Table 4 provides the breakdown of crash frequency and proportion of crash type. Twelve (12) of the 21 crashes were broadside (angle) crashes, where one vehicle hits the side of another vehicle commonly from turning onto the roadway from a side street or driveway. Eight (8) of the 12 broadside crashes were marked as intersection related, however of the remaining 4 broadside crashes, 2 of them are likely incorrectly marked due to their location being less than 100 feet from the intersection and the other 2 were at the Z-Best driveway. All 5 rear end crashes occurred during the PM peak hours of 4:00PM and 7:00PM. Both fatalities were broadside crashes caused by failure to yield the right-of-way.

Crash type proportions for 3-leg intersections are typically 27% broadside crashes (Highway Safety Manual, 2010). The study area is essentially two separate 3-leg intersections and has historically seen 57% of crashes as broadside crashes– more than double the proportion for typical 3-leg intersections.

Table 4: Crash History by Crash Type

Crash Type	Crash Count	Proportion
Head-On (A)	1	4.8%
Sideswipe (B)	2	9.5%
Rear End (C)	5	23.8%
Broadside (D)	12	57.1%
Overtaken (F)	1	4.8%
Total	21	100%

5. Nighttime / Off-Peak Considerations

The study area has a large proportion of crashes that are marked with lighting condition as “Dark - No Street Lights.” Nine (9) of the 21 study crashes occurred in dark conditions, and an additional crash occurred near dawn. Dark or near dawn condition crashes accounted for 43% of the total crashes in the study area. Two (2) of the crashes were between 5:05AM and 6:45AM, while the remaining 7 crashes were between 5:49PM and 9:50PM. Of the 9 crashes in dark conditions, 4 were broadside crashes. Of those crashes that were marked as intersection related, 2 of the 9 crashes (22 percent) occurred in dark conditions. Of the crashes that occurred near the Z-Best driveway, 4 of the 5 crashes occurred in the dark (80 percent). In general, however, only an estimated 25% of all driving is at night².

6. Safety Analysis Predictive Method

The Highway Safety Manual (HSM) provides a predictive method and safety performance function (SPF) for estimating the expected average crash frequency for rural two-lane, two-way roadways and intersections. The predictive method is based on the average annual daily traffic of the major and minor roadways at an intersection which is then calibrated to local conditions. The appendix provides a review of the HSM predictive method and calculations used in the safety analysis. Results are presented in Section 8 below.

7. Other Factors for Consideration

In addition to the predicted number of crashes that might result from the Project and other scenarios, the crash type and the proportion of broadside crashes may change due to different roadway configuration. Table 5 shows the proportion of crash types for various intersection configurations, based on generalized crash history data for rural roads in California from 2002 to 2006, as well as the actual proportion of crash types that occurred in the study area between 2016 and 2020.

Broadside crashes are typically more severe than other crash types at intersections such as side swipe or rear-end crashes. Crash type proportions for 3-leg intersections are typically 23.7% broadside crashes; however, the study area, which is essentially two separate 3-leg

² <https://www.nsc.org/road-safety/safety-topics/night-driving>

intersections, has historically seen more than double the proportion of broadside crashes than for typical 3-leg intersections.

Table 5: Actual and Predicted Crash Distribution

Crash Type	Study Area Crash History	Typical 3-leg	Typical 4-leg (stop control)	Typical 4-leg (signalized)
Head-On (A)	4.8%	3.2%	4.0%	5.4%
Sideswipe (B)	9.5%	9.7%	10.1%	11.8%
Rear End (C)	23.8%	27.8%	24.2%	42.6%
Broadside (D)	57.1%	23.7%	43.1%	27.4%
Overtaken (F)	4.8%	1.3%	0.5%	0.3%

Source: Study area crash history from SWITRS; other values from Highway Safety Manual, 2010.

Typical 4-leg stop controlled intersections have 43% broadside crashes, which is more than typical 3-leg stop controlled intersections but less than the actual crash history for the study area. Typical 4-leg signalized intersections have 27% broadside crashes.

In general, realigning two 3-leg intersections to become a single 4-leg stop-controlled intersection would be expected to result in an overall higher proportion of broadside crashes. Given the large discrepancy between historic crash distribution for the study area and typical values based on more generalized data, it is difficult to draw quantitative conclusions about the impact the Project would have on crash distribution.

The severity of crashes is typically associated with the type of crash. Higher proportions of broadside and head-on crashes will typically result in corresponding proportions of higher severity crashes. Table 6 shows the proportion of injury severity crashes for the existing study area crash history, as well as typical proportions for other 3-leg, 4-leg stop controlled, and 4-leg signalized intersections. The existing proportion of fatal and incapacitating injuries is almost 15% of all crashes, which is nearly 3 times the normal rate. The proposed realignment of the Z-Best driveway to become the fourth leg of the Bolsa Road intersection will likely result in an increase in the proportion of higher severity crashes as is typical for a change in intersection geometry from a 3-leg to a 4-leg stop controlled. The proportion of fatal and incapacitating injuries is greatly reduced when installing a signal at typical 4-leg intersections.

Table 6: Actual and Predicted Crash Severity

Crash Type	Study Area Crash History	Typical 3-leg	Typical 4-leg (stop control)	Typical 4-leg (signalized)
Fatal (K)	9.5%	1.7%	1.8%	0.9%
Incapacitating (A)	4.8%	4.0%	4.3%	2.1%
Non-Incapacitating (B)	14.3%	16.6%	16.2%	10.5%
Possible Injury (C)	71.4%	19.2%	20.8%	20.5%
Property Damage Only (PDO)	0.0%	58.5%	56.9%	66.0%

Source: Study area crash history from SWITRS; other values from Highway Safety Manual, 2010.

Alternative 3, which would retain both the existing driveway and Bolsa Road intersection and would add deceleration and acceleration lanes at the existing Z-Best driveway location is not anticipated to substantially change the proportion of broadside or severe injury crashes, as both would continue to operate as separate 3-leg intersections.

8. Safety Analysis Results

Safety Analysis of Proposed Project

Caltrans reports the AADT at the study location on SR-25 as 27,300 vehicles (major roadway). With the additional 264 trips generated by the Proposed Project, the major road AADT for this scenario is estimated at 27,564. Based on vehicle counts performed for the ICE report, the estimated AADT for the Bolsa Road is 1,500. Under project conditions, the traffic volume coming from the relocated Z-Best driveway would be 654 (390 existing site traffic plus 264 additional trips generated by the project), as reported in the operational traffic assessment undertaken by Hexagon in 2020. The minor road AADT with the redevelopment will be estimated at 2,154

The calibrated crash frequency prediction for the study intersection as a 4-leg minor-stop controlled intersection (with no other changes to the geometry) is 2.86 crashes per year (see Appendix A). The average 5-year crash history for the existing 3-leg intersection is 1.8 crash per year and the Z-Best driveway has an average crash frequency of 1.0 crashes per year, making a combined total of 2.8 crashes per year for the study location. The result of combining the 3-leg intersection and the Z-Best driveway to a single 4-leg intersection (with no other changes to the geometry) would be an estimated average increase of 1.06 crashes per year.

However, the Proposed Project includes adding a center northbound deceleration and acceleration lane into and out of the relocated driveway, as well as a southbound right turn deceleration lane into the relocated driveway. Installing a left turn lane on the major roadway of a 4-leg stop controlled intersection has a CMF of 0.72 for all crashes.³ Adding a left turn lane on one major roadway approach provides the space for a receiving acceleration lane for the left turns entering the major roadway, however no specific CMF is available to quantify the effect of an acceleration lane on an undivided highway. Installing a right turn lane on the major roadway of a 4-leg stop-controlled intersection has a CMF of 0.86.⁴ The resulting calculated average annual crash frequency for the Proposed Project is 1.77, shown in Table 7 (see appendix for detailed calculations). This represents a decrease of 0.03 crashes per year at the Bolsa Road intersection (from 1.8 to 1.77) and a decrease of 1.03 crashes per year in the overall study area (from 2.8 to 1.77) due to the elimination of crashes at the existing driveway location.

Table 7: Predicted Crash Frequency for Proposed Project

Scenario	Predicted Crash Frequency (crashes per year)		
	Existing Driveway	Bolsa Intersection	Total
Existing Conditions	1	1.8	2.8
Proposed Project	0	1.77	1.77
Change compared to Existing	-1	-0.27	-0.27

³ Highway Safety Manual Table 10-13

⁴ Highway Safety Manual Table 10-14

Note that the addition of intersection lighting is not part of the Proposed Project, but if added to the reconfigured intersection would further reduce the predicted crash frequency (particularly for those occurring during dark conditions) at the Bolsa Road intersection (and the study area overall) to 1.62 crashes per year.

Safety Analysis of Alternative 3

Under the Alternative 3 scenario, all existing (390 trips per day) and proposed (264 trips per day) Z-Best traffic would continue to use the existing Z-Best driveway, with approximately half traveling to/from the north and half to/from the south. The major and minor road AADT at the Z-Best intersection under Alternative 3 would therefore be 27,564 and 654, respectively. The major and minor road AADT at the Bolsa Road intersection under Alternative 3 would be 27,432 and 1500, respectively.

The Alternative 3 layout is predicted to decrease the existing annual crashes in the study area from 2.8 annual crashes to 2.61 crashes per year, shown in Table 8 (see appendix for detailed calculations). Specifically, the crashes at the Z-Best driveway are predicted to decrease from 1.0 annual crashes to 0.8 crashes per year, or a reduction of 0.2 crashes per year. The predicted crash rate at the Bolsa Road intersection would increase slightly (0.01 crashes per year) due to the slight increase in through-traffic associated with the Project. This small increase in crashes at the Bolsa Rd intersection would be offset by the larger decrease in crashes at the driveway location.

Table 8: Predicted Crash Frequency for Alternative 3

Scenario	Predicted Crash Frequency (crashes per year)		
	Existing Driveway	Bolsa Intersection	Total
Existing Conditions	1	1.8	2.8
Alternative 3	0.8	1.81	2.61
Change compared to Existing	-0.2	+0.01	-0.19

If specific mitigation is desired at the Bolsa Road intersection to address the slight increase in predicted crash frequency, adding intersection lighting would further improve safety, particularly for crashes occurring during dark conditions. During a meeting between County and Caltrans staff in March 2023, Caltrans staff requested that a right turn acceleration lane be included for traffic turning right out of the existing Z-Best driveway onto southbound SR-25 if this option were recommended, to allow traffic exiting the facility to increase speed prior to merging into the through-lane. The predicted crash frequency for Alternative 3 with the addition of intersection lighting and a right turn acceleration lane would be 0.56 crashes per year at the driveway and 1.66 crashes per year at the Bolsa Road intersection (i.e., 2.21 crashes per year for the study area).

Safety Analysis of Project + Cumulative

Consideration was made for combining the Proposed Project and Caltrans' proposed restriping project. Traffic volumes for this scenario would be the same as described for the Proposed Project. A CMF of 0.52 was applied to account for Caltrans' proposed new left turn deceleration

lane on southbound SR-25 into Bolsa and the project’s left turn lane from northbound SR-25 into the Z-Best driveway. No specific CMF is related to adding an acceleration lane for a left turn lane on an undivided highway. The resulting calculated average annual crash frequency for the cumulative Project and Caltrans’ proposed restriping project is 1.49, shown in Table 9.

Table 9: Predicted Crash Frequency for Project + Cumulative

Scenario	Predicted Crash Frequency (crashes per year)		
	Existing Driveway	Bolsa Intersection	Total
Existing Conditions	1	1.8	2.8
Project + Cumulative	0	1.49	1.49
Change compared to Existing	-1	-0.31	-1.31

If intersection lighting were also installed, the predicted crash frequency for this scenario would reduce to 1.35 crashes per year for the Bolsa Road intersection and the study area as a whole.

NOTE: The combined projects of adding a left turn lane into both Bolsa Road and the Z-Best driveway as well as acceleration lanes for left turns out of both minor approaches will create a complex and unfamiliar driving condition. The typical geometry will overlap when adding both projects and as a result will require additional widening to accommodate the necessary turn lanes and painted medians that would be required to avoid negative offset. This additional widening would be unfamiliar for drivers as the receiving acceleration lane for the left turns would be an additional lane further out. The quantitative expected safety results will likely not be realized for the predicted crash frequency.

Safety Analysis of Alternative 3 + Cumulative Caltrans

An analysis determined the predicted crash frequency if the intersection layout from Alternative 3 (the Z-Best driveway is kept in its current location while also adding traffic from the proposed re-development and associated acceleration/deceleration lanes) and adding a center deceleration lane for vehicles turning left from southbound SR-25 onto Bolsa and a center acceleration lane for vehicles turning left from Bolsa Road onto southbound SR-25, as proposed by Caltrans. This scenario also includes a right turn acceleration lane for trucks exiting the Z-Best driveway onto southbound SR-25, as requested by Caltrans. As noted earlier, a CMF of 0.75 is applicable for the left turn deceleration lane, but no specific CMF is related to adding acceleration lanes. The resulting calculated average annual crash frequency for the cumulative Alternative 3 and Caltrans’ proposed restriping project is 1.3, shown in Table 10.

Table 10: Predicted Crash Frequency for Alternative 3 + Cumulative

Scenario	Predicted Crash Frequency (crashes per year)		
	Existing Driveway	Bolsa Intersection	Total
Existing Conditions	1	1.8	2.8
Alternative 3 + Cumulative	0.80	1.3	2.1
Change compared to Existing	-0.2	-0.5	-0.7

If intersection lighting were also installed, the predicted crash frequency for this scenario would reduce to 1.75 crashes per year for the study area.

Safety Analysis of Project plus Signal

As discussed previously, the Proposed Project and Project + Cumulative scenarios are predicted to decrease the overall number of crashes at the Bolsa Road intersection but may increase the proportion of broadside crashes compared to existing conditions. The Alternative 3 and Alternative 3 + Cumulative scenarios would be expected to reduce the number of overall crashes and are unlikely to substantially change the proportion of crash types. Furthermore, the complex and unfamiliar geometry of the Project + Cumulative layout may mean that the predicted reduction in crash frequency may not be realized.

The proportion of fatal and incapacitating injuries is greatly reduced when installing a signal at typical 4-leg intersections, therefore a signalized 4-leg intersection was also analyzed.

Signalization of the Bolsa Road intersection with left turn lanes on SR-25 and at the Z-Best driveway is predicted to result in a crash rate of 2.1 crashes per year, shown in Table 11. This is 0.7 fewer annual crashes than the existing conditions for the overall study area, but an increase of 0.3 annual crashes for the Bolsa Road intersection alone. However, signalization is highly effective at reducing the specific crash types of angle and broadside crashes. The CMF for adding a signal for angle crashes at rural intersections is 0.23 or 77% reduction in angle crashes.⁵ The 5-year crash history showing 8 intersection broadside crashes (1.6 broadside crashes/year), including 2 fatalities, would be predicted to reduce to 0.37 broadside crashes per year.

Table 11: Predicted Crash Frequency for Project plus Signals

Scenario	Predicted Crash Frequency (crashes per year)		
	Existing Driveway	Bolsa Intersection	Total
Existing Conditions	1	1.8	2.8
Project + Signals	0	2.1	2.1
Change compared to Existing	-1	+0.3	-0.7

⁵ <http://www.cmfclearinghouse.org/detail.cfm?facid=326>

9. Conclusion

The Proposed Project as a 4-leg stop-controlled intersection would decrease the predicted number of annual crashes in the study area and at the Bolsa Road intersection (see Table 7 above). However, it is predicted to change the type and severity of the crashes that occur. When the minor street is stop-controlled on a 4-leg intersection, the proportion of higher severity crashes typically increases, such as increasing broadside crashes. The study intersection already includes a higher than normal proportion of high severity crashes, and it is uncertain what the proportion of higher severity crashes will be with the Proposed Project.

Utilizing the existing driveway location but adding acceleration and deceleration lanes (i.e., Alternative 3) is predicted to decrease the number of crashes at the existing driveway location, but slightly increase the number of crashes at the Bolsa Road intersection due to the increased traffic volume. Adding intersection lighting to the existing driveway and Bolsa Road intersection (in addition to other Alternative 3 improvements) is predicted to decrease the crash rate at both locations to below the existing crash rates for each intersection and the total project area. Furthermore, this scenario is unlikely to substantially change the proportion of higher severity crash types, as both the Bolsa Road intersection and the Z-Best driveway would continue to operate as separate 3-leg vehicle interactions. However, because the frequency of all crashes is being reduced the number of severe crashes will also reduce proportional to the existing crash history.

The Caltrans' proposal to add acceleration and deceleration lanes for southbound traffic turning left into or out of Bolsa Road, when combined with the Proposed Project, has a qualitative mitigation strategy based on crash and operations history. However, the cumulative project would create an uncommon and less intuitive roadway configuration; therefore, the predicted safety improvements may not be realized due to driver error.

The Caltrans' proposal in conjunction with Alternative 3 would reduce predicted crash frequency at both the existing driveway and Bolsa Road intersection (and the study area overall) and would not be expected to increase the proportion of severe crashes.

Signalizing the 4-leg intersection (Project plus Signals) would increase the number of crashes at the Bolsa Road intersection, but would decrease the overall crash rate in the study area and would also reduce the proportion of crashes that would be higher severity.

A summary of the predicted crash frequency for all scenarios is provided in Table 12.

Table 12: Existing and Predicted Crash Frequency Summary

Scenario	Crashes per Year ¹		
	Driveway	Intersection	Total
Existing Conditions, Historical Crashes	1	1.8	2.8
Proposed Project ² • 4-leg Minor Approach Stop-Controlled	0	1.77	1.77
Alternative 3 ³ • No driveway relocation	0.8	1.81	2.61
Proposed Project Plus Cumulative ⁴ • 4-leg Minor Approach Stop-Controlled	0	1.49	1.49
Alternative 3 Plus Cumulative ⁵ • No driveway relocation	0.8	1.3	2.1
Proposed Project with Traffic Signals ⁶	0	2.1	2.1

Notes:

1. Values for Existing Conditions based on 5-year crash history from 2016 through 2020. For other scenarios, values are predicted using HSM predictive method and SPF.
2. This scenario may increase the proportion of high severity crashes compared to existing conditions.
3. This scenario is not anticipated to substantially change the proportion of high severity crashes.
4. Geometry in this layout is not typical. The safety benefits may not be realized due to unfamiliar driver expectancy. This scenario may also increase the proportion of high severity crashes compared to existing conditions.
5. This scenario is not anticipated to substantially change the proportion of high severity crashes.
6. This scenario is anticipated to reduce the proportion of high severity crashes compared to existing conditions.

Appendix – HSM Predictive Method

Base Conditions

Equation 1: HSM Predictive Method for Average Crash Frequency at Intersections

$$N_{predicted\ int} = N_{spf\ int} \times C_i \times CMF_i$$

Where:

$N_{predicted\ int}$ = predicted average crash frequency for an individual intersection for the selected year

$N_{spf\ int}$ = predicted average crash frequency for an intersection with base conditions year

CMF_i = crash modification factors for base conditions at intersections, such as shoulder width, lighting, turn lanes, etc.

C_i = calibration factor for specific intersections for a particular jurisdiction or area

Base conditions will be considered the same for the existing and built conditions, so the CMF will be 1.0 for prediction calculations. CMFs are applied to improve safety if the built conditions are worse than the existing condition.

The calibration factor is determined as a ratio of the predicted number of crashes to the crash history at the intersection for base conditions. The existing Bolsa Road intersection is a 3-leg stop controlled intersection with a crash history of 9 crashes in 5 years, or an average of 1.8 crashes per year.

Equation 2: SPF for Three-Leg Stop-Controlled Intersections in the HSM

$$N_{spf\ 3ST} = \exp[-9.86 + 0.79 \times \ln(AADT_{maj}) + 0.49 \times \ln(AADT_{min})]$$

Where:

$N_{spf\ 3ST}$ = estimate of intersection-related predicted average crash frequency for base conditions for three-leg minor stop-controlled intersection

$AADT_{maj}$ = AADT (vehicles per day) on the major road (27,300 for SR-25)

$AADT_{min}$ = AADT (vehicles per day) on the minor road (1,500 for Bolsa)

$$N_{spf\ 3ST} = \exp[-9.86 + 0.79 \times \ln(27,300) + 0.49 \times \ln(1,500)] = 6.01$$

The HSM predicted number of crashes for a similar 3-leg stop-controlled intersection is 6.01. The resulting calibration factor is 1.8 historical / 6.01 predicted = 0.30

$N_{predicted\ 3ST} = 6.01 \times 0.30 \times 1 = 1.8$ intersection related crashes.

The Z-Best driveway observed 5 crashes in 5 years, indicating an average of 1.0 crashes per year. The driveway crashes are added to the 3-leg predicted crashes to get the average crash

prediction in the study area. The predicted existing annual crashes for the study area (3-leg intersection and driveway) is $1.8+1.0 = 2.8$ crashes per year.

4-Leg Intersection (Proposed Project)

Equation 3: SPF for Four-Leg Stop-Controlled Intersections in the HSM

$$N_{spf\ 4ST} = \exp[-8.56 + 0.60 \times \ln(AADT_{maj}) + 0.61 \times \ln(AADT_{min})]$$

Where:

$N_{spf\ 4ST}$ = estimate of intersection-related predicted average crash frequency for base conditions for four-leg minor stop-controlled intersection

$AADT_{maj}$ = AADT (vehicles per day) on the major road (27,564 on SR-25)

$AADT_{min}$ = AADT (vehicles per day) on the minor road (2,154 on Bolsa Road and Z-driveway)

$$N_{spf\ 4ST} = \exp[-8.56 + 0.60 \times \ln(27,564) + 0.61 \times \ln(2,154)] = 9.55$$

Apply the $N_{spf\ 4ST}$ to equation 1 and include the calibration factor with base conditions

$$N_{predicted\ 4ST} = 9.55 \times 0.30 \times 1 = 2.86$$

The predicted number of crashes for a basic 4-leg minor street stop-controlled intersection of SR-25 and Bolsa Road (i.e., no acceleration or deceleration lanes) is 2.86 crashes per year.

The CMF for adding a center left turn deceleration is 0.72. The CMF for applying a right turn deceleration lane is 0.86. No CMF is available for the proposed addition of a center left-turn acceleration lane on an undivided rural highway. Applying the CMFs for left and right turn deceleration lanes is calculated as:

$$N_{predicted\ 4ST\ with\ left\ and\ right\ turn\ lanes} = 2.86 \times 0.72 \times 0.86 = 1.77$$

The predicted number of crashes for the Proposed Project's 4-leg minor street stop-controlled intersection of SR-25 and Bolsa Road with center left turn deceleration lane, right turn deceleration lane, and center left turn acceleration lane) is 1.77 crashes per year.

Note: Adding street lighting to the proposed new intersection would further reduce the expected crash frequency where the CMF is calculated using the equation based on proportion of historic night crashes:

$$CMF_{lighting - Bolsa\ Intersection} = 1 - 0.38(\text{Proportion of night crashes}) = 1 - 0.38(0.22) = 0.916.$$

The predicted crash frequency when adding street lighting at the intersection is calculated as $1.77 \times 0.916 = 1.62$.

Existing Layout with Additional Traffic (Alternative 3):

The HSM predicted number of crashes for a 3-leg stop-controlled driveway (i.e., the existing Z-Best driveway) will be similar to the predicted crashes at a 3-leg intersection, however the calibration factor will change based on crash history.

The calibration factor for existing conditions is calculated with Equation 2 (above), but with only the 3-leg intersection crashes. The predicted annual crash count for the existing Z-Best 3-leg driveway is 3.1 crashes, calculated as:

$$N_{spf\ 3ST\ Driveway} = \exp [-9.86 + 0.79 \times \ln(27,300) + 0.49 \times \ln(390)] = 3.1$$

The resulting calibration factor for the driveway is 1.0 historical / 3.1 predicted = 0.32.

The HSM predicted number of crashes for a similar 3-leg stop-controlled driveway (i.e., no change to intersection geometry) with the additional traffic generated by the project is 4.03 and is multiplied by the calibration factor 0.32 to arrive at a predicted 1.30 annual crashes.

Calculated as:

$$N_{spf\ 3ST\ Driveway} = \exp[-9.86 + 0.79 \times \ln(27,564) + 0.49 \times \ln(1654)] = 4.03 \times 0.32 = 1.3$$

$AADT_{maj}$ = 27,564: existing AADT on SR-25 + new AADT generated by Proposed Project

$AADT_{min}$ = 654: existing + proposed AADT on the Z-Best driveway

The CMF for applying a center left turn deceleration lane is 0.72. The CMF for applying a right turn deceleration lane is 0.86. No CMF is available for addition of a center left-turn acceleration lane on an undivided rural highway. When applying both of these CMFs, it reduces the predicted annual crash count as $1.3 \times 0.72 \times 0.86 = 0.8$ at the existing Z-Best driveway with additional site traffic and proposed acceleration and deceleration lanes.

The total crash count for the study area under this scenario will include the Bolsa Road Intersection, where the predicted crash count at the 3-leg stop controlled intersection with future traffic volumes is calculated as:

$$N_{spf\ 3ST\ Int} = \exp [-9.86 + 0.79 \times \ln(27,432) + 0.49 \times \ln(1,500)] = 6.03 \times \text{calibration factor of } 0.3 = 1.81$$

$AADT_{maj}$ = 27,432: existing AADT on SR-25 + half of new AADT generated by Proposed Project

$AADT_{min}$ = 1500: existing AADT on Bolsa

The total study area predicted crashes with increased traffic and adding a right turn deceleration lane, and center left turn deceleration and acceleration lanes to the existing Z-Best driveway and maintaining existing Bolsa Road layout is 1.81 (Bolsa intersection) +0.8 (Z-Best driveway) = 2.61 crashes per year.

Note: Adding street lighting to both the Z-Best driveway and Bolsa Road intersections would further reduce the expected crash frequency where the CMF is calculated using the equation based on proportion of historic night crashes at each intersection:

$$CMF_{lighting - Z-Best} = 1 - 0.38(\text{Proportion of night crashes}) = 1 - 0.38(0.8) = 0.696.$$

$CMF_{lighting - Bolsa Intersection} = 1 - 0.38(\text{Proportion of night crashes}) = 1 - 0.38(.22) = 0.916$.

The predicted crash frequency when adding street lighting (and the proposed left and right turn lanes) at the Z-Best driveway is calculated as: $0.8 \times 0.696 = 0.56$

The predicted crash frequency when adding street lighting at the Bolsa Road intersection is calculated as $1.81 \times 0.9016 = 1.66$.

The total study area predicted crashes with increased traffic, and adding a right turn deceleration lane, and center left turn deceleration and acceleration lanes at the Z-Best driveway and adding street lighting at the Bolsa Road intersection is 1.66 (Bolsa intersection) + 0.56 (Z-Best driveway) = 2.21 crashes per year.

Proposed Project + Cumulative:

For the Proposed Project plus Cumulative scenario condition, the predicted crash frequency for a 4-leg intersection (calculated previously) is modified by a CMF of 0.52 to account for left turn center deceleration lanes on both major approaches (i.e., Caltrans' proposed left turn lane from northbound SR-25 into Bolsa Road as well as the proposed project's left turn lane from southbound SR-25 into the Z-Best Driveway. No specific CMF has been determined for addition of an acceleration lane for left turns on an undivided highway.

$$N_{spf\ 4ST\ Bolsa\ Rd} = 2.86 \times 0.52 = 1.49$$

Addition of intersection lighting would apply the 0.9 CMF based on night-time proportion of crashes:

$$N_{spf\ 4ST\ Bolsa\ Rd} = 2.86 \times 0.52 = 1.49 \times 0.9 = 1.35$$

Alternative 3 + Cumulative:

For the Alternative 3 plus Cumulative scenario condition, the predicted crash frequency for the Bolsa Road intersection under Alternative 3 (calculated previously) is further modified by a CMF of 0.72 to account for the inclusion of Caltrans' proposed center deceleration lane on southbound SR-25 for traffic turning left onto Bolsa Road.

As noted above, no specific CMF is related to adding an acceleration lane for a left turn lane on an undivided highway.

$$N_{spf\ 3ST\ Bolsa\ Rd} = 1.81 \times 0.72 = 1.3$$

The predicted crash frequency for Bolsa Road (1.3) is then added to the predicted crash frequency for the Z-Best driveway under Alternative 3 (0.8, calculated previously) with no further modifications, to obtain the overall crash frequency for the study area under this scenario of 2.1 crashes per year.

Applying the same CMFs for addition of intersection lighting at each intersection (as described for Alternative 3 above) would further reduce predicted crash frequency to 0.56 at the Z-Best driveway (i.e., 0.8×0.696) and 1.19 at the Bolsa Road intersection (1.3×0.9016), which equates to 1.75 for the total study area.

Proposed Project with Signal

Equation 4: SPF for Four-Leg Signal-Controlled Intersections in the HSM

$$N_{spf\ 4SG} = \exp[-5.13 + 0.6 \times \ln(AADT_{maj}) + 0.2 \times \ln(AADT_{min})]$$

Where:

$N_{spf\ 4SG}$ = estimate of intersection-related predicted average crash frequency for base conditions for four-leg signal-controlled intersection

$AADT_{maj}$ = AADT (vehicles per day) on the major road: 27,564

$AADT_{min}$ = AADT (vehicles per day) on the minor road: 2,154

$$N_{spf\ 4SG} = \exp[-5.13 + 0.6 \times \ln(27,564) + 0.2 \times \ln(2,154)] = 12.67$$

Using calibration of existing 3-leg intersection (0.3)

$$12.67 \times 0.3 = 3.80.$$

Adding a left turn lane on 3 approaches (SR-25 both directions and the Z-Best driveway) will have a CMF of 0.55.

$$3.80 \times 0.55 = 2.1 \text{ crashes per year.}$$