County of Ventura Planning Division

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Initial Study for Agromin-Limoneira Commercial Organics Processing Operation Conditional Use Permit and Non-Coastal Zoning Ordinance Text Amendment

Section A – Project Description

1. **Project Case Number(s):** PL17-0154

2. **Property Owner:** Limoneira Company

3. **Applicant:** Bill Camarillo, CalWood, Inc. (dba Agromin), 201 Kinetic Drive, Oxnard, CA 93030

3. **Project Location and Assessor's Parcel Number(s):** The project site is located at the terminus of Edwards Ranch Road, south of State Highway 126, approximately five miles west of the City of Santa Paula, in the unincorporated area of Ventura County. The Tax Assessor's Parcel Number (APN) for the parcel that constitutes the project site area is 090-0-180-085.

4. **Existing General Plan Land Use Designation and Zoning Designation of the Project Site:**

   a. **General Plan Land Use Designation:** Agricultural

   b. **Zoning Designation:** AE 40 ac (Agricultural Exclusive, 40-acre minimum lot size)

5. **Description of the Environmental Setting:** The proposed project is located on Tax Assessor's Parcel Number (APN) 090-0-180-085. The APN is part of a larger 994-acre lot subdivided in compliance with the Subdivision Map Act pursuant to a Certificate of Compliance recorded in instrument No. 20140507-00057264-0. The project will be located on 70-acres. Currently 15-acres is used for an agricultural composting facility. The remainder of the subject parcel includes lemon orchards, the historic Edwards Adobe, agricultural-accessory dwellings, and oil and gas wells. The subject property is located within the Saticoy and Santa Paula 7.5 Minute Series Topographic Quadrangle Maps (USGS, 2015).

   <u>Existing Operations:</u>

   The site is currently occupied by a 15-acre agricultural material composting operation licensed through CalRecycle under a 2005 Enforcement Agency

Notification (SWIS #56-AA-0147) with an annual loading of 60,000 tons per year. The operation is accessory to agricultural activities performed on-site. The operation receives, and processes green materials and wood wastes collected from surrounding agricultural operations on Limoneira properties as well as green material collected by curbside recycling programs from cities within Ventura County. Material feedstock is received at the site via truck deliveries; truck loads that exceed 1% of contaminates are diverted away from the facility. Finished compost and mulch produced at the site is used only in support of Limoneira's surrounding operations, none of the finished compost is used for any use other than agriculture, sold or delivered off-site. Activities conducted at the site include open air processing and composting of green materials, shredding and screening of materials, placement into large windrows, and turning the materials by heavy equipment. Equipment presently operated on the site includes grinders, screeners, loaders, tractors and an excavator. Volume of waste and material handled on-site is less than 12,500 cubic yards with a peak loading of 300 tons per day. The operation was modified in 2015 under Zoning Clearance No. ZC15-0842 which authorized the installation of a weigh scale, an office trailer, two (2) portable toilets and three (3) sea-cargo containers in support of the facility.

The site is also occupied with orchards and row crops; activities performed on site include pruning and maintenance of trees, pesticide herbicide application, irrigation system maintenance and harvesting. Miscellaneous structures on site include farmer worker dwelling units, and agricultural accessory and support structures and improvements.

<u>Oil and Gas Facilities On-Site:</u>

The site has a history of oil and gas production beginning in the 1960's. Historic topographic maps and records from the Division of Oil, Gas and Geothermal Resources (DOGGR) show approximately ten (10) oil wells and four (4) oil sumps within the Project area. Eight of the wells are abandoned, one is an active producing well and one an idle waterflood injection well. An existing oil production well (Vintage Projection California, LLC Saticoy Field Edwards 28) and an idle oilfield injection well (Vintage Production California, LLC   Edwards 27) are within the current boundary of the existing agricultural material composting operation. The proposed project will support access to these wells by the oil company as required by DOGGR.

<u>Easements:</u>

Existing easements through the proposed project site are shown on the attached plans (Attachment 2). Easements within the project area include:

- A 100-foot wide Southern Pacific Railroad right-of-way currently owned by the Ventura County Transportation Commission per Instrument No. 95-131252.

Crossing has been granted by a private license agreement between the Limoneira Company and the Ventura County Transportation Committee;

- Southern California Edison (SCE) easements for public utilities and incidental purposes; and
- An 8-foot-wide easement for petroleum pipelines owned by the Shell Oil Company.

Table A1 – Surrounding Zoning and Land Uses:

Adjacent Parcel	Zoning Designation	Zoning Description	Existing Use
North	AE-40ac	Agricultural Exclusive, 40-acre minimum lots size	Agriculture
East	OS-80ac OS-80ac/MRP	Open Space, 80-acre minimum lot size Open Space, 80-acre minimum lot size, Mineral Resource Protection Overlay	Agriculture Todd Road Jail
South	OS-80ac/MRP	Open Space, 80-acre minimum lot size, Mineral Resource Protection Overlay	Santa Clara River
West	AE-40ac	Agricultural Exclusive, 40-acre minimum lot size	Agriculture with intermittent residences

6. **Project Description:** The proposed project includes a Conditional Use Permit (CUP) and Non-Coastal Zoning Ordinance (NCZO) Text Amendment to permit the expansion of an existing 15-acre agricultural organics processing facility to a new 70-acre commercial organics processing operation that would process food and green material delivered to the site and package-for-sale mulch, compost, and wood chip materials. The proposed project would utilize a combination of open windrows, Covered Aerated Static Piles (CASPs), and Anaerobic Digestion (AD) systems to process organic materials into saleable compost and mulch products. The NCZO Text Amendment proposes to amend Section 8107-36.4.1(a) Standards Relating To Organics Processing Operations (Includes Biosolids, Composting, Vermicomposting, And Chipping And Grinding). The project site will be accessed from the intersection of Telegraph Road and Olive Road (both public rights-of-ways) south to Edwards Ranch Road (a private road) and crossing at the Southern Pacific Railroad right-of-way. Options for off-site secondary access for public safety purposes include utilization of existing private roads to Todd Road (includes a railroad crossing over Todd Barranca) or to Darling Road (includes a railroad crossings over Ellsworth Barranca).

Water will be provided by the City of Santa Paula via a new service connection to existing infrastructure at Todd Road and wastewater disposal will be handled by a new Onsite Wastewater Treatment System (OWTS).

<u>Buildings:</u>

The proposed project includes the construction of six new structures.

Table A2 – Building Coverage

Structure	**Building Coverage[1] (Square Feet [sq. ft.])**
Facility Administration Building	7,022
Scale House	13,800
Maintenance Building	25,000
Production/Packaging Building	23,107
Wet Organics Building	80,925
Dry Organics Building	80,925
Total Building Coverage	230,779
Net Building Coverage Percentage	7.6

The Facility Administration Building will be approximately 13,516 sq. ft., and 35 ft. in height. The building will include two classrooms, 14 office spaces, a conference room, and four restrooms. There would be 21 parking spaces and two handicap accessible spaces adjacent to the building.

A scale house (unenclosed area of 12,500 sq. ft.) with two scales will be located just south of the Facility Administration Building along the alignment of Edwards Ranch Road.

The Maintenance Building will be approximately 25,000 sq. ft., and 33 ft. in height. The building would have an open interior for repair and maintenance activities associated with the onsite processing equipment, onsite mobile equipment and company-owned delivery vehicles.

The Production/Packaging Building will be approximately 23,107 sq. ft. and 33 ft. in height. The building would include the main packaging floor, five offices, a break room, a conference room, and two restrooms. There would be 15 parking spaces and two handicap accessible spaces for employees adjacent to this building. In addition to employee parking, the production/packaging facility would include four loading docks.

[1] Building Coverage: The ratio of the area of land covered by buildings to total lot area, expressed as percent coverage. For purposes of this definition, "building" is any structure having a roof supported by columns or walls, and "building area" is the area included within the surrounding exterior walls or columns of a building, exclusive of courts.

The Wet Organics Building (food waste) would be approximately 80,925 sq. ft. and 33 ft. in height. The building would include an internal break room and two full restrooms with the remainder of the structure open to house processing equipment and piles. The wet organics building would be fully enclosed with air ventilated through four (4) biofilters to control volatile organics (VOCs) and odor emissions.

The Dry Organics Building (green waste) will be approximately 80,925 sq. ft. and 33 ft. in height. The building would be a partially open structure with no internal rooms that would house various pieces of processing equipment. The dry organics building would have a roof canopy and open sides.

The expansion of the existing 15-acre agricultural organics processing operation to the proposed commercial organics processing facility would result in the removal of 50 acres of existing citrus orchard. Additionally, three propane-powered windmills will be removed as part of the orchard removal.

Non-Coastal Zoning Ordinance Text Amendment:

Pursuant to NCZO Section 8107-36.4.1(a) no organics processing operations, other than those accessory to agricultural activities and on-site composting operations, shall be located in the AE (Agricultural Exclusive) zone on land designated as Prime Farmland. The subject property is zoned AE and located on designated Prime Farmland soils. A text amendment to the NCZO is proposed as part of the project in order to permit the proposed Commercial Organics Processing use on the subject property.

The proposed Text Amendment to NCZO Section 8107-36.4.1.a is shown below in legislative format (deleted text in ~~strikethrough~~, and added text underlined):

Sec. 8107-36.4.1 - General Standards

The following standards shall apply to all organics processing operations, and vermiculture operations with over 5,000 square feet of open beds:

a) *No organics processing operation, other than those accessory to agricultural activities and on-site composting operations, shall be located in the AE (Agricultural Exclusive) zone on land designated as "Prime", "Statewide Importance", "Unique" or "Local Importance", on the California Department of Conservation's Farmland Mapping and Monitoring program, Important Farmlands Maps ~~, or on land subject to a Land Conservation Act (LCA) contract, unless the Planning Director, in consultation with the Agricultural Commissioner, determines that the land is developed or otherwise unsuitable for agricultural activities.~~ unless it meets one of the following criteria:*

   1. *The Planning Director, in consultation with the Agricultural Commissioner, determines that the land upon which the organics processing operation would be located is developed or otherwise unsuitable for agricultural use;*

2. *The organics processing operation is a commercial organics processing operation that meets all of the following criteria:*
   1. *Development of the commercial organics processing operation will not result, when combined with all other commercial organics processing operations, in the cumulative loss in the unincorporated area of more than 200 acres of AE zoned land designated as "Prime", "Statewide Importance", "Unique" or "Local Importance" on the California Department of Conservation's Farmland Mapping and Monitoring Program, Important Farmland Maps.*
   2. *At least 60 percent of the finished products generated by the commercial organics processing operation are used for an agricultural use or an agricultural accessory use in Ventura County, the City of Carpinteria or outside the State of California.*
   3. *All feedstock used to generate the finished products are generated and collected from Ventura County and the City of Carpinteria;*
   4. *The maximum size of a commercial organics processing operation is not larger than 100 acres; and*
   5. *The applicant demonstrates that all terms and conditions of an applicable Land Conservation Act (LCA) contract will be maintained if a commercial organics processing operation is located on land subject to an LCA contract. The applicant must also demonstrate compliance with the California Land Conservation Act of 1965, Sections 51200 et seq. of the California Government Code and the Williamson Act.*
   6. *Upon completion of the commercial organics processing operation, the site is returned to its condition as existing prior to development of the operation.*

Operational Components:

Incoming green and food water materials would be unloaded, processed, screened, and sorted inside the wet and dry process buildings. The dry organics building would process green/woody materials while the wet organics building would process food and other potentially odorous materials. Both buildings will accommodate tipping areas, trommel screens (pre-screens), picking conveyors with magnets to remove ferrous metals, and grinders. The wet organics building would have a bio-separator that would produce a food slurry which is used as either a compost feedstock or sent to an off-site organics processor. The wet organics building would also include a blending pad, where bulking agents (i.e., green material) would be added to processed food material/food slurry as needed prior to composting in anaerobic digesters or covered aerated static piles.

A 40,000 ton per year anaerobic digestion (AD) system would produce high-quality compost and methane rich biogas. The biomethane generated would be used to fuel an internal combustion combined heat and power (CHP) engine which would generate electrical power that would be used to serve facility operations. The AD system is a “dry” system comprised of four individual 4-bay AD units. Each 4-bay AD unit includes approximately a 3600 sq. ft. concrete pad, four (4) prefabricated steel insulated tunnels (each 12 ft. by 40 ft, and 12 ft in height), an above ground percolate tank (12 feet in width, 10 feet in height, and 48 feet in length) with 2 subsurface sumps used to collect percolate and pump percolate to and from the percolate tank, a mechanical electrical container, a packaged roof mounted bio-filter and a rubber external biogas storage bladder.

A 75,000 ton per year positive pressure covered aerated static pile (CASP) system will aerobically decompose green and food organic materials into useable compost. The CASP system will be comprised of two groups of eight individual CASPs units totaling 16 CASPs.

Open windrow composting of organics (green material) would continue and be expanded by this project. Similar to existing practice, active, aerobic composting of green materials would be placed in long, narrow uncovered piles.

The Production/Packaging Building will include a bagging operation. Producing mulch, woodchips and compost products would be bagged or in bulk (weighed) for sale to the public. Soil amendments, such as gypsum, peat moss, and perlite, would be added to finished compost material and placed on a conveyor that feeds an electric-powered bagging system. Finished compost products would be blended with amendments to customer specifications on a mixing pad adjacent to the Production/Packaging Building and stockpiled before being transported off-site to the end user by company-owned vehicles.

On-site water storage would be located on the southern border site and would include a 50,000-gallon domestic water tank, 120,000-gallon operations water tank, and three 120,000-gallon fire water storage tanks.

Proposed drainage improvements include two water drainage retention ponds (approximately 43.5 acre-ft. total storage capacity) located on the south, down gradient, edge of the Project site that covers approximately 7.3 acres.

The project will require road improvements at the intersection of Telegraph Road and Edwards Ranch Road, including construction of a right turn lane on the eastbound side Telegraph Road, installation of 150-foot storage length for both the westbound left turn lane and the eastbound right turn lane on Telegraph Road, and pavement widening and utility relocation for the southwest and southeast corners of Telegraph Road/Edwards Ranch Road to accommodate large truck movements into the project site.

The total expected project life is 50 years. No employees will reside on the project site. Currently, the existing composting operation has 11 full-time employees. The proposed project would increase the total number of full-team equivalent employees to 37.

Table A3 - Facility Employees and Hours of Operation

Operation	Employees	Employee Shift	Shifts per Day	Days per Week
Waste Receiving	4	7:00 AM to 5:00 PM	1	Mon.-Sat.
Material Processing Buildings	10	6:00 AM to 4:00 PM	1	Mon.-Sat.
Packaging Building	5	6:00 AM to 4:00 PM	1	Mon.-Sat.
Maintenance	4	7:00 AM to 5:00 PM	1	Mon.-Sat.
Outdoor Processing	4	sunrise to sunset	1	Mon.-Sat. (with remote monitoring for Sunday)
Office	10	7:00 AM to 5:00 PM	1	5
Total:	**37**			
Current Site Employees:	**-11**			
New Employees:	**26**			

In accordance with Titles 14 and 27 of the California Code of Regulations, the Project would be considered a Compostable Materials Handling Facility requiring a Full Solid Waste Facility Permit.

7. **Regulatory Framework:** The State of California has implemented several legislative changes which have accelerated the need for organic composting facilities across the State. Solid waste diversion and reductions in greenhouse gas emissions are now mandated by the California Air Resources Board (CARB) in conjunction with the California Department of Resources Recycling and Recovery (CalRecycle). The key developments are summarized below:

- Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006 (AB 32, Chapter 488, Statutes of 2006) charges CARB with “monitoring and regulating sources of emissions of greenhouse gases that cause global warming in order to reduce emissions of greenhouse gases (GHGs)." CARB is responsible for administering the multi-year program to limit California's GHG emissions to 1990 levels by 2020. Since then, Senate Bill (SB) 32 (Pavley, Chapter 249, Statutes of 2016) was enacted, which set a statewide GHG emission target of 40 percent below the 1990 level by 2030. AB 32 also creates the State's Climate Change Scoping Plan to achieve the maximum technologically feasible and cost-effective GHG emission reductions by 2020. As part of this Scoping Plan, the State is moving towards the elimination of organic materials in landfills specifically targeting methane, which has a high global warming potential.

- SB 1383 (Lara, Chapter 395, Statutes of 2016). As required by SB 1383, Cal Recycle in consultation with CARB, is charged with developing regulations to reduce disposal of organic waste by 50 percent of 2014 levels by 2020 and 75 percent by 2025.

- AB 1826 (Chesbro, Chapter 727, Statutes of 2014) requires businesses and multi-family developments (exceeding five units) to recycle organic waste (green material, food material, wood waste) as of April 1, 2016. These materials may be processed by composting and grinding (mulch production).

8. **List of Responsible and Trustee Agencies:** Los Angeles Regional Water Quality Control Board, California Department of Fish and Wildlife, California Department of Recycling (CalRecycle), Resources Management Agency - Environmental Health Division, Ventura Local Agency Formation Commission.

9. **Methodology for Evaluating Cumulative Impacts:** Cumulative impacts" refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time [California Environmental Quality Act (CEQA) Guidelines, 2014c, § 15355].

   In order to analyze the proposed project's contribution to cumulative environmental impacts, this Initial Study relies on both the list method in part (e.g., for the analysis of impacts on biological resources) and the projection (or plans) method in part (e.g., for the analysis of cumulative traffic impacts).

   With regard to the list method, this Initial Study evaluated the proposed project's contribution to cumulative impacts associated with related past, present, and reasonably foreseeable probable future projects [CEQA Guidelines, 2015c, § 15064(h)(1)] – mainly those located within proximity to the project sites and have the potential to contribute to the impact that is evaluated in this Initial Study. Section A includes a list of pending and approved projects within the County of Ventura and cities of Santa Paula and Ventura. A map of pending and approved projects are attached (Attachment 3).

With regard to the projection method, this Initial Study includes an analysis of whether the project will comply with the requirements of a plan, regulation, or program specified by law or adopted by a public agency with jurisdiction over the affected resource, which in itself has been subject to environmental review pursuant to the CEQA Guidelines [§ 15064(h)(3)]. For instance, in order to address the potential cumulative adverse impacts of traffic on the Regional Road Network (RRN), County staff evaluated the proposed project in light of the Ventura County Traffic Impact Mitigation Fee (TIMF) Ordinance 4246 and policies of the Ventura County General Plan Goals, Policies and Programs (2013c; Policy Section 4.2.2), which require that the Transportation Department of the Public Works Agency collect a TIMF for development projects that make a cumulatively considerable contribution to the RRN.

Table A4 – Ventura County Unincorporated Area Pending and Recently Approved Projects within 5 Mile Radius

Permit No.	Permit Type	Description	Status
County of Ventura Projects			
PL15-0034	Minor Modification	A minor modification to CUP 4741 (Case No. LU06-0019) for the continued use of an existing water supply, storage, and distribution system for a period of 40 years; (2) the installation of water transmission and storage facilities on Tax Assessor's Parcel 149-0-041-185 and Tax Assessor's Parcel 149-0-041-205; and (3) approval of a Conditional Certificate of Compliance to create a legal lot for Tax Assessor's Parcel 149-0-041-185 that complies with the Subdivision Map Act and Ventura County Subdivision Ordinance	Pending
PL15-0195	Conditional Use Permit (CUP)	Conditional Use Permit for an existing Assembly Use located in the Rural Exclusive-20,000 sq. ft zone designation in the Urban Residential 1-2 Dwelling Unit El Rio/Nyeland Acres Area Plan Land Use Designation located at 250 East Collins Avenue (APN145-0-153-030). The Assembly Use includes 1,910 sq. ft. Assembly Hall/Chapel, a 1,218 sq. ft. Community Center, and a 1,502 sq. ft. parsonage (Single-family dwelling unit). The site is also developed with 42 accessory parking space. Water is provided by the Vineyard Avenue Water Company and sewer service is provided by the County Community Service District.	Pending
PL16-0017	CUP	Conditional Use Permit for Strickland Mutual Water Company (SMWC). The proposed project consists of the addition of water supply improvements (new well and booster pump), transmission and storage facilities (Two 27,000 gallon storage tanks) on APN 147-0-060-055 for use in conjunction with the existing water supply, storage, and distribution system for a period of 40 years or to 2056. The proposed additional infrastructure is necessary to (A) replace a water	Approved

Permit No.	Permit Type	Description	Status
		supply well currently idled by drought, and (B) bring the existing system into compliance with Ventura County Water Works Manual (VCWWM).	
PL16-0121	Planned Development Permit (PD)	In August 2006, the project was originally approved under case no. LU05-0073. The current proposal includes a 'phased' Planned Development Permit for a contractor's service and storage yard on an industrial M2 zoned property addressed as 2971 East Ventura Blvd., Oxnard. A conditional use permit authorizing a caretaker dwelling for the contractor's service and storage yard. During the initial phase of the project the applicant will install landscaping and screening in order to abate violations and continue to operate the contractor service and storage yard. Once adequate water service is made available by the Garden Acres Water Mutual Company, the proposal includes constructing a 3,000 sq. ft. warehouse with an internal restroom, and removal of the various storage sheds.	Pending
PL17-0049	CUP	Conditional Use Permit for an existing 80-foot tall communications facility and associated equipment. The original Conditional Use Permit (CUP) 4912expired. The stealth facility is designed as a faux pine tree. No physical improvements are proposed.	Pending
PL17-0077	Permit Adjustment (PAJ)	Permit Adjustment to PD permits PD1491 and PL09-0022 for occupancy of a medical office and retail sales of clothing, and updating existing pole sign with new text for building located at 2945 E Ventura Blvd in El Rio	Pending
PL17-0108	Minor Mod.	Modification of Conditional Use Permit (CUP) 5275, for the continued operation of an existing model airplane field for a 20-year period. CUP 5275 approved on December 5, 2002 authorized the operation of a model airplane field until December 12, 2012. LU07-0146 extended the expiration date to March 18, 2018.The site is located on the southeast bank of the Santa Clara River at the western intersection of Vineyard Avenue and Highway 118 in Saticoy.	Pending
PL18-0006	General Plan Amendment	General Plan and Zoning Ordinance Amendments related to adoption of polices and development standards for the protection of habitat connectivity and wildlife corridors.	Approved
PL18-0011	Lot Line Adjustment (LLA)	PMW/LLA adjustment between 2 legal lots to allow the main dwelling in Parcel A be conforming to setback requirements. Parcel A (APN 107-0-190-045) is a legal lot pursuant to C of C # 15-05-975, Lot 2 (APNs 107-0-050-445, 107-0-050-465 and 107-0-050-535) is legal lot pursuant to C of C # 16-01-1033. Lot 1 (Parcel A) will increase in size from 1.21 acres to 1.44 acres, this lot is zoned OS-160 ac. Parcel B will decrease in size from 76.35 acres to 76.12 acres, this parcel is zoned AE-40 AC.	Pending

Permit No.	Permit Type	Description	Status
PL18-0029	CUP	Conditional Use Permit 4869 to authorize a wireless communication facility (WCF) that includes a tower (120 feet tall) and the associated telecommunication equipment located within an equipment shelter and fenced lease area. The project site has a General Plan land use designation of Agriculture and an Agricultural Exclusive (AE) zone designation, addressed as 10001 Blackburn Road. The	Pending
PL18-0041	Minor Mod.	Minor Modification to Conditional Use Permit (CUP) No. 5020-1 to authorize a ten year time extension of an existing wireless communications facility (WCF) which includes six 6-foot panel antennas at 48 feet, three antennas mounted at 50 feet, and three antennas mounted at 57 feet, on the existing 60-foot monopole. The telecommunication equipment and equipment shelter are located within a lease area at the base of the tower enclosed in 22' X 22' fenced enclosure and open equipment cabinets within another fenced enclosure accommodating 2 separate carriers. The enclosures include batteries and a generator.	Pending
PL18-0057	Minor Mod.	Minor Modification of CUP 5013 for the continued use of an existing WCF which includes a 49-foot-tall non-stealth, monopole and associated equipment for a 10-year period. The facility includes 3 sector arrays each with 2 panel antennas (6 antennas total) with the associated telecommunication equipment located in a fenced equipment lease area at the base of the tower. The equipment and the base of the tower are screened from public view along Highway 101 by a building, though the antennas are visible.	Pending
PL18-0068	CUP	The applicant requests a Conditional Use Permit (Case No. PL18-0068) to authorize a minor expansion to an existing two-story drive through mini-storage facility by adding an 32,715 sq. ft. interior third-story to the shell of the existing warehouse building (Building “A”), construction of a new two-story multi-use building (Building “B”) 4,640-sq. ft., and removal of existing turf to allow for installation of drought tolerant landscaping. Water is provided by the City of Ventura and sewer service is provided by the Saticoy Sanitation District.	Approved
PL18-0138	Minor Mod.	Minor Modification to authorize the continued use of a contractor service and storage yard at 11032 Nardo Street in Saticoy. This permit re-instates the conditions of approval of Case No. LU09-0020 with replacement of Conditions 1 and 2 for. All other conditions of approval remain the same as originally imposed in 2009. Water to the site will continue to be provided by the United Water Conservation District.	Approved
PL18-0139	Minor Mod.	Modification to remove the expiration date of November 6th, 2018 for Case No. PD1943, an RV storage facility with an office, addressed as 1028 Mission Rock Road, Santa Paula.	Pending
PL19-0002	CUP	Conditional Use Permit for an existing plant research and development facility that consists of :	Pending

Permit No.	Permit Type	Description	Status
		• 1,685 sq. ft. of unenclosed covered canopy; • 125,881 sq. ft. of greenhouses; • 24,450 sq. ft. of warehouse/storage buildings; • the removal of 8,034 sq. ft. of greenhouse structures; • the removal of 15,291 sq. ft. of office space; • the construction of 7,729 sq. ft. new office/administration space; • the removal of 11,413 sq. ft. of miscellaneous accessory structures; • the construction of 10,695 facilities/operations building; • the construction of a 144 sq. ft. entry; • the construction of a 1,920 sq. ft. shop building; • the construction of a 3,720 sq. ft. seed storage building; • the construction of an 1,800 sq. ft. pump house; and • the construction of a new employee lunch area. • Water to the site is provided by the City of Santa Paula and wastewater is provided by an onsite septic system	
PL19-0006	Merger	The applicant requests a modification of a Conditional Use Permit be granted to authorize the continued use of a 1,190-sq.-ft. caretaker dwelling and 610-sq.-ft. office associated with an existing, permitted self-storage facility. The storage facility is authorized under PD 1163.	Approved
PL19-0014	Merger	Parcel map waiver lot line merger between two legal lots referenced in Tax Assessor's parcel numbers 145-0-012-100 and 145-0-012-110. Parcel #1 (145-0-012-100) is a legal lot granted by deed measuring at .30 acres (13,300 sq. ft.), with a General Plan land use designation existing community (El Rio/Del Norte) and zoned RE-10,000 sf . Parcel #2 (APN 145-0-012-110) is a legal lot granted by deed (Ventura County Official Record in recorded map 21 MR 43 lots 301, 302, 303, and 304), measuring at 1.10 acres (47,824 sq. ft.) with a General Plan land use designation existing community (El Rio/Del Norte) and zoned RE-10,000 sf.. These lots will merge to form one contiguous 1.4 acre lot, addressed as 269 Walnut Ave, Oxnard.	Pending
PL19-0027	LLA	PMW lot line adjustment for the reconfiguration of 3 legal lots. Parcel 1 (APN 038-0-130-465) is legal in as recorded PMW LLA Pl13-0165 (Recordation number 20141023-00134260) Parcel 2 (APNs 038-0-130-365 and 097-0-060-265) was found to be in compliance with the subdivision map act Certificate of Compliance CC#17-02-1154. Parcel 3 (APN 038-0-130-125) was found to be in compliance with the Subdivision Map Act CC#17-12-1240)	Pending
PL19-0033	PAJ	Permit Adjustment to CUP No. 4735-2 to authorize the re-configuration of approved Phase 1B of the	Pending

Permit No.	Permit Type	Description	Status
		Todd Road Jail facility. The proposal involves the relocation of approximately one-half of the approved 149,762 square-foot inmate housing building from the eastern side of the existing jail facility to the western side of the facility.	
PL19-0034	PAJ	Permit Adjustment to CUP Case No. PL14-0084 to reduce the CUP boundary of an Agricultural Contractor's Service and Storage Yard from 2.5 acres to 1.5 acres. The general plan land use designation for the subject property is Agricultural and the zoning is AE.	Approved
PL19-0036	PAJ	Permit Adjustment to CUP Case No. LU2932 for modifications to Wishtoyo Clubhouse, commonly known as the Mountain View Golf Course, addressed as 16799 South Mountain View Road. Facility improvements include enclosing an existing 520 sq. ft. patio area located at the north east portion of the clubhouse, the removal of an existing interior bar area adjacent to the kitchen, the removal of a bar counter outside of the existing office, and the remodel of the existing bathrooms to conform to ADA regulations. Water for the clubhouse is provided by the City of Santa Paula. The applicant is proposing to update/repair the septic system that services the clubhouse as part of the proposed commercial kitchen improvements. The property has a General Plan land use designation Open Space and is zoned Open Space 80 acres.	Pending
PL19-0039	PAJ	Request for modification of existing CUP Case No. 4858 (and Minor Modification No. PL14-0040) to decommission and abandon Water Well site no. 5, well and filtration system (the reservoir to remain) located on a different site, and to install Well no. 7 and pump house. Crestview Mutual water Company office site is located at 328 Valley Vista Drive in Camarillo, APN 152-0-341-065.	Pending
PL19-0060	LLA	LCA Contract application and Lot Line Adjustment between APNs 109-0-042-080 and 109-0-042-090.	Pending
PL19-0062	Minor Modification	Minor Modification to CUP Case No. 4535 for the ongoing operation of an 80 ft tall wireless communication tower owned by American Tower known as Site No. 301077.	Pending
Projects within the City of Ventura			
PROJ-8150	Residential	17 Single Family Homes, 1 Duplex	Pending
PROJ-6811	Mixed Use	306 Apartment Units, 5,000 sq. ft. Commercial, 5,000 sq. ft. Clubhouse	Approved
PROJ-6270	Residential	117 Single Family Homes, 31 Affordable for sale Triple/Quadplex, 50 Apartment Units	Approved
PROJ-8446	Residential	131 Single Family Homes, 34 Town Home Units, 2 Parks, 3 Miniparks.	Approved
PROJ-4154	Residential	50 Apartment Units (Low Income)	Approved
PROJ-7166	Mixed Use	Mixed Use: 43 Apartment Units, 2 Live/Work Units,	Approved

Permit No.	Permit Type	Description	Status
		2100 sq. ft. Commercial/Retail	
PROJ-03829	Residential	216 Single Family Homes; 110 Town Home Units	Approved
PROJ-8427	Residential	78 Apartment Units	Approved
PROJ-13226	Commercial	1,162 sq. ft. Car Wash and Existing Food Mart Building Remodel	Pending
PROJ-8428	Mixed Use	Mixed Use: 43 Apartment Units, 1200 sq. ft. Retail	Approved
PROJ-4222	Residential	173 Apartment Units	Approved
Projects within the City of Santa Paula			
18-CDP-03	Mixed Use	Convert 2nd floor offices to 6 new apartments in downtown retail building, and, remodel ground floor commercial unit.	Pending
13-CDP-09	Airpark Specific Plan	Twelve new buildings comprising 37 units for airport residential and/or aviation-related businesses.	Approved
13-CDP-04	SP Business Park West	Santa Paula West Specific Plan. The specific plan would guide future land use development on approximately 53.81 acres of the city's 125-acre West Area 2 designation. The land uses envisioned within the specific plan would be a mix of low-intensity industrial (such as light manufacturing or research and development), professional offices, and supporting commercial businesses.	Approved
12-CDP-05	Industrial	Unfinished and incomplete Industrial Park.	Pending
16-CUP-06	Commercial	New 5-Mega Watt (MW) battery storage facility, solar charged, ties into Southern California Edison (SCE) grid. Phase 2 will expand the facility to 20 MW.	Approved
18-CUP-04	Industrial	Remodel of site for construction equipment yard.	Approved
17-CDP-04	Industrial	New heavy equipment storage yard.	Approved
15-CDP-06	Industrial	New 52,000 sq. ft. factory for specialty pipe manufacturing.	Approved
16-CDP-07	Commercial	Banquet hall and event center conversion from existing retail (furniture) store in Central Business District.	Approved
18-CUP-02	Commercial	New hard cider taproom, outdoor patio, & production facility in Central Business District.	Approved
18-DR-09	Commercial	New restaurant.	Pending
18-CDP-04	Commercial	New 30,000 sq. ft. commercial development: 20,000-sq. ft. medical office building, 10,000 sq. ft. educational building, 148-parking spaces.	Approved
18-CDP-01	Commercial	New self-storage facility w/rental office. Increase Floor to Area Ratio from 0.25 to 0.345.	Approved
19-DR-09	Institutional	New classroom building to replace ~60-year old modular ("temporary") classroom facilities.	Pending
19-CI-07 / PC C-5367	Institutional	New 50-foot tall wireless telecommunications facility to support municipal water oversight, operations and management.	Pending

Section B – Initial Study Checklist and Discussion of Responses[2]

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
RESOURCES:								
1. Air Quality (VCAPCD)								
Will the proposed project:								
a) Exceed any of the thresholds set forth in the air quality assessment guidelines as adopted and periodically updated by the Ventura County Air Pollution Control District (VCAPCD), or be inconsistent with the Air Quality Management Plan?			X				X	
b) Be consistent with the applicable General Plan Goals and Policies for Item 1 of the Initial Study Assessment Guidelines?			X				X	

1. Air Quality (VCAPCD) Impact Discussion:

1a. The project site is currently occupied by a 15-acre, roughly 60,000 ton per year agricultural material composting operation, operated by Agromin. The operation receives and processes green materials/wood wastes collected from surrounding agricultural programs on Limoneira properties, and green material collected by curbside recycling programs in cities within Ventura County. This operation involves open-air processing and composting of green materials. The process involves the initial shredding and screening of material, placement into large open windrows, turning of the windrows with heavy equipment, screening to separate the fine composted materials from the larger material, and curing of the fine composting materials in windrows.

The project applicant, Agromin, currently operates a 9-acre green and agricultural materials compost facility ("Agromin Shoreline") in the City of Oxnard (APN 231-0-040-165) and unincorporated area of Ventura County (APNs 231-0-080-070,231-0-080-085, and 231-0-040-315), pursuant to Conditional Use Permit (CUP) 5001-1. The CUP allows Agromin to accept and process approximately 55,000 tons of green material per year. Operations at the Agromin Shoreline facility are proposed to be modified under Major Modification Permit Case No. PL13-0101 which will expand the CUP boundary to

[2] The threshold criteria in this Initial Study are derived from the *Ventura County Initial Study Assessment Guidelines* (April 26, 2011). For additional information on the threshold criteria (e.g., definitions of issues and technical terms, and the methodology for analyzing each impact), please see the *Ventura County Initial Study Assessment Guidelines*.

12 acres and extend operations at the site tentatively until operations can commence at the Limoneira site. Current operations at the facility and Current operations at Agromin Shoreline include material receiving and sorting, pre-processing using a grinder and trammel screens, and composting of organics in open windrows. The applicant-provided project description references transferring the Agromin Shoreline to the proposed 70-acre commercial composting facility in Santa Paula. As the existing compost operations at both the project site and Agromin Shoreline will be completely integrated into the proposed project, these operations are considered part of the baseline/existing conditions used to evaluate the proposed project for incremental air quality impacts. Also included in the baseline assumptions are existing landfill emissions using the volume of divertible compositable material in the absence of the project. This baseline assumption, or emission offset, is reasonable to assume because the location of the organic material destination is known, there is only one waste hauling company taking the organic waste in west county to landfill locations. This diverted offset-method is acceptable and used in certified EIRs across the state[3], as the nature of the proposed expanded compost project is directly related to mandated requirements to divert organic waste away from landfills (SB 1383, 2016), and because quantifying ozone precursors are a regional air quality issue for the purposes of attaining federal and state ambient ozone air quality standards.

According to the Air Quality, Climate Change Impact and Health Risk Assessment (AQCCIA, Attachment 4) and Dust Control Plan (Attachment 5) prepared by the Applicant's consultant, ozone precursor pollutants and localized emissions resulting from the operation of the proposed project are estimated to remain below the thresholds of significance identified in the VCAPCD's Air Quality Assessment Guidelines (AQAG). The report identifies incremental project-related changes for Reactive Organic Compound (ROC) emissions, estimated to be 22 pounds (lbs.)/day and -291 lbs./day Nitrous Oxides (NOx)(Attachment 4). Note, the incremental NOx emissions are less than existing as the proposed off-road equipment used on site will be the cleanest diesel engine available (Tier 4), the amount of equipment is smaller from the consolidation of the existing Santa Paula and Oxnard compost facilities, and less vehicle miles travelled from waste sources to new destination. An emissions summary table is provided below.

Table 1a.-1		
	Regional Ozone Precursors[i]	
Emission Sources	ROC (lbs./day)	NOx (lbs./day)
Baseline Operations		
Composting Sources[ii]	1,176	
Landfill Fugitives[iii]	296	

[3] Badlands Landfill Integrated Project, EIR 2017, EA No. 2017-03
West Contra Costa Sanitary Landfill Bulk Materials Processing Center, EIR 2003, SCH No. 2002102057
Nursery Product Hawes Composting Facility, EIR 2006, SCH No. 2006051021
Coachella Valley Compost SW Facility Revision, EIR 2015, SCH No. 2013081021
Sonoma County Waste Management Compost Facility, EIR 2012, SCH No. 2008122007

Landfill LFGCS[iii]	26	157
Mobile Sources[iv]	12	229
Proposed Operations		
Composting Sources[v]	1,525	
Mobile Sources	7	95
Incremental Operational Emissions		
(Proposed – Baseline)	22	-291
VCAPCD Thresholds	25	25
Exceedance?	No	No

[i] All emissions are taken from applicant consultant air quality calculations excel sheet titled "AG01-Emission Calcs_v10- Landfill VOC Using Flared Gas"
[ii] includes existing stockpile, windrow, and CASP emissions for Santa Paula and Oxnard compost facilities
[iii] based on landfill gas collection system performance standards and existing organic waste taken to both county landfills
[iv] includes on-road vehicles and off-road mobile equipment; reduction in mobile emissions due to proposed use of Tier 4 off-road equipment and less vehicle miles travelled from waste sources to Gold Coast Recycling & Transfer Station for sorting and transfer to landfill
[v] includes proposed stockpile, windrow, CASP fugitives, and wet building biofilter emissions

Ventura County is currently designated as non-attainment for federal and state ozone standards. In accordance with the Ventura County AQAG (October 2003), Section 5.3 "Calculating Operational Emissions", for purposes of determining whether the project will have a significant adverse impact on air quality, project-related ROC and nitrogen oxides (NOx) emissions from compost processing equipment that is required to have a Ventura County APCD Permit to Operate are not considered because these emissions are mitigated and enforced through the APCD permitting system (ministerial) and its rules and regulations. The AQCCIA prepared by the Applicant's consultant included stationary emissions requiring APCD permits for informational purposes but not in the regional significance determination for ozone precursors.

Odors are substances in the air that pose a potential nuisance to nearby land uses. A public nuisance is defined by APCD Rule 51 as "such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or to the public, or which cause, or have a natural tendency to cause, injury or damage to business or property." As identified in the AQAG guidelines (Table 6-3), composting facilities are prescribed a screening distance of one mile for nearby sensitive land uses. The proposed commercial organic processing facility will handle compositable material feedstock (food and green waste) and active windrow composting which has the potential to impact nearby sensitive receptors (Todd Road Jail is 0.59 miles to the northeast, and onsite sensitive receptors will abut the proposed CUP boundary). Pursuant to the AQAG, "any project that has the potential to create a public nuisance by subjecting members of the public to objectionable odors should be deemed to have a significant odor impact." Therefore, the proposed expanded compost facility may have a significant odor impact. However, the Applicant is proposing to process all incoming food waste in an enclosed building (i.e. "wet organics building") that will be equipped with a negative-pressure blower system to prevent all odors and emissions from escaping the building. The negative-pressure ventilation system will force air pollutants and odors through a biofilter located outside which is proposed to have a 90% control efficiency. The Applicant is also proposing to have a Covered Aerated Static Pile (GORE system) to compost the processed food waste and green waste mix, which would have a 97% emission control. In addition, the Applicant's consultant prepared an Odor Impact Minimization Plan (OIMP, Attachment 6) in compliance with California Code of Regulations (CCR) Title 14, Section 17863.4 (Compost Material Handling Facilities) and VCAPCD requirements for assessments of odor related project impacts. The plan will be employed during the operational phase of the project and includes the following objectives: monitoring odor of emissions, implementation of processes to eliminate odors, and implementation corrective action procedures to address odor impacts from facility operations. The plan indicates multiple sensitive receptors are located within the one-mile screening distance of the VCAPCD guidelines; the Todd Road Ventura County Jail is approximately 0.59 miles northeast of the CUP boundary and onsite dwelling units adjoin the CUP boundary to the south and east. Impacts related to odor are found to be less than significant with mitigation incorporated into the project design by way of 1) fully enclosing the food waste processing operation, which has the highest odor potential, 2) processing the food and green bulk compost in a CASP with 97% odor control technology, and 3) implementation of the OIMP. The compost facility would also be obtaining an APCD Permit to Operate for the proposed biofilter, AD and CASP emission control equipment to comply with applicable emission reduction rules in addition to compliance with APCD Rules 50 (Opacity), 51 (Nuisance), and 55 (Fugitive Dust). The APCD is proposing to adopt a compost rule, which was included as a proposed emission control measure in the most recent 2016 Air Quality Management Plan (AQMP). Adoption of a compost rule will further reduce criteria pollutant emissions and odors generated at the project site.

Based on information in the project application, fugitive dust may be generated from the proposed compost processing operations and by delivery trucks entering and exiting the facility. However, it is not expected to be significant since the project roadways, scale house, and admin building lot will be paved with asphalt. The tipping/staging areas are proposed to be paved with cement, and the windrow and feedstock areas with be laid with cement-treated native soil. In addition, full implementation and adherence to the Dust Control Plan (Attachment 5) and APCD Rules 51, Nuisance, and 55, Fugitive Dust (also included in facility's existing CUP and APCD permit conditions) will help minimize fugitive dust prior to creating a nuisance potential.

The Applicant consultant assessed localized exposure of toxic air contaminants (TAC) to nearby sensitive receptors in accordance with the California Air Resources Board (CARB) Hotspots Analysis and Reporting Program (HARP 2). Cumulative cancer risks to residents were calculated with a 30-year exposure period; worker cancer risks were calculated with a 25-year exposure period based on Office of Environmental Health Hazard Assessment (OEHHA) guidelines. Acute and chronic risks were also calculated using the same OEHHA derived method. Based on the information submitted (AQCCIA), there will be less toxic exposure from the proposed project conditions as compared with the existing operations at the Santa Paula site. This is primarily due to the replacement of older dirtier diesel engine equipment with cleaner Tier 4 diesel equipment, usage of cleaner waste delivery transfer trucks (CNG) and electrification of some of the equipment.

According to the applicant's project description, the proposed project operations for the Agromin Limoneira Facility would increase the total number of full-time employees from 11 to 37; none of the employees will live on site but may potentially live in the Santa Paula Non-Growth Area. The 2016 AQMP population forecasts are interpolated from the Southern California Association of Governments' (SCAG) 2016 Regional Transportation Plan (RTP) for forecast years 2020, 2025, 2030, and 2035. If the 20 employees from the Agromin Shoreline facility transfer to the Limoneira facility, a potential increase of 46 new residents (the net gain of employees from the project plus the transfer from Shoreline) would not negatively contribute to the 2025 population growth forecast for the unincorporated county (104,182 vs. current population of 99,673) and does not conflict or obstruct with implementation of the most recent adopted AQMP (Initial Study Item Checklist C. Air Quality, Item 1).

1b. The proposed project has been evaluated for consistency with the General Plan Air Quality Goals 1.2.1-1 and -2 and Policies 1.2.2.1 through 3 and 5. The proposed project is consistent with General Plan Policy 1.2.2.1 and the requirement to comply with the AQMP. The estimated emissions do not exceed 25 lbs./day or greater for ROC or NOx, as described in the Air Quality Assessment Guidelines, 2003, Section 5 "Estimating Ozone Precursor Emissions".

Mitigation/Residual Impact(s)

Mitigation Measure AQ MM-1 – Dust Prevention
Purpose: To ensure that fugitive dust and particulate matter that may result from site operations are minimized to the greatest extent feasible.

Requirement: The Permittee shall comply with the provisions of applicable VCAPCD Rules and Regulations, which include but are not limited to, Rule 50 Opacity, Rule 51 Nuisance, and Rule 55 Fugitive Dust. The Permittee shall ensure compliance with the following provisions:

a. Permittee shall cease all organics processing and compost pile spreading activities during periods of high winds (minimum 25 MPH) to prevent excessive amounts of fugitive dust generated from windrow stockpiles and unpaved roads.

b. No person shall cause or allow the emissions of fugitive dust from any applicable source such that the dust remains visible beyond the midpoint (width) of a public street or road adjacent to the property line of the emission source or beyond 50 feet from the property line if there is not an adjacent public street or road.

c. Permittee shall periodically water or treat all unpaved on-site roads with environmentally safe dust suppressants to prevent excessive amounts of dust.

d. The Permittee shall either operate or ensure that all on-site vehicles travel at speeds not to exceed 15 miles per hour.

e. Permittee shall control dust from composting stockpiles, windrows and other related materials with the potential to release fugitive dust to minimize dust release.

f. The Permittee shall minimize the amount of material tracked onto the highway to help control potential associated dust concerns by either a wheel wash and/or a grating system at the entrance of the facility. As vehicles leave the facility, mud and soil shall be either washed and/or vibrated from the wheels prior to leaving the property.

g. Notwithstanding the 3 available track-out control measures outlined in APCD Rule 55, Section B.3, all track-out shall be removed at the conclusion of each workday or evening shift subject to the same condition regarding PM-10 efficient street sweepers as outlined in Subsection B.3.a.iii. The use of blowers for removal of track-out is expressly prohibited under any circumstances.

h. Permittee shall maintain in good condition and in proper tuning all composting and spreading equipment engines in accordance with the engine manufacturer's specifications.

Documentation: The Permittee shall submit the Final Dust Control Plan to the Planning Division and the Environmental Health Division Local Enforcement Agency (LEA) for review and approval. The plan shall comply with identified VCAPCD Rules and Regulations.

Timing: Prior to the issuance of the Zoning Clearance for construction, the Permittee shall submit the Final Dust Control Plan for review and approval. All protocols in the approved Final Dust Control Plan shall be implemented by the Permittee for the life of the Project.

Reporting and Monitoring: The Planning Division and the LEA will maintain copies of all documentation and reporting related to the approval of the Final Dust Control Plan. The APCD shall also have access to and review the document for compliance with Rules 50, 51 and 55 prior to approval. Monitoring and Enforcement of dust-related provisions for project shall be conducted by APCD staff during compliance inspections and on a complaint-basis.

Mitigation Measure AQ MM-2 – Nuisance

Purpose: To ensure that the facility operates in accordance with the Rules and Regulations of the Ventura County Air Pollution Control District, with emphasis on Rule 51, Nuisance.

Requirement: Facility shall be operated in accordance with the Rules and Regulations of the Ventura County Air Pollution Control District, with emphasis on Rule 51, *Nuisance*. The Permittee shall ensure compliance with the following provision:

a. A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endangers the comfort, repose, health or safety of any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property.

Documentation: The Permittee shall prepare and submit a Final Odor Impact Minimization Plan (OIMP) to the Planning Division and the Environmental Health Division Local Enforcement Agency (LEA) for review and approval. The plan shall be in compliance with applicable state and local requirements to minimize operational odors from migrating offsite and creating a public nuisance.

Timing: Prior to the issuance of a Zoning Clearance for Construction, the Permittee shall submit the Final OIMP for review and approval. The Final OIMP shall be reviewed annually and updated as necessary to reflect any changes in the design or operation of this site, including but not limited to any change in the methods of storing feedstock, type(s) of equipment, site layout, and odor control measures. Modifications to the OIMP shall be submitted to the Planning Division and LEA before any changes are implemented at the site. All protocols in the approved Final OIMP shall be implemented by the Permittee for the life of the Project.

Reporting and Monitoring: The Planning Division and LEA will maintain copies of all documentation and reporting related to the implementation of the OIMP. The Planning Division and LEA has the authority to inspect the site to confirm the OIMP has been implemented consistent with the requirements of Ventura County Ordinance Code §4719. Monitoring and Enforcement of composting-generated odors is done by the LEA, as APCD does not have regulatory authority over composting odors (H&SC §41700) although other air contaminants may be called in as complaints to APCD and inspectors will be dispatched accordingly.

Mitigation Measure AQ MM-3 – Permits Required

Purpose: To ensure that project operations shall be conducted in compliance with all applicable VCAPCD Rules and Regulations, in particular Rule 10, (Permits Required) certain types of new and modified equipment and operations require APCD permits prior to installation.

Requirement: The Permittee shall obtain an Authority to Construct prior to installation and a Permit to Operate prior to operation. All APCD Permitting requirements shall be satisfied prior to any operations commencing onsite. To contact APCD Permitting, please call at the Engineering Division at 805-645-1401 or by email at engineering@vcapcd.org.

Documentation: An approved Authority to Construct and an approved Permit to Operate from APCD.

Timing: The Permittee shall submit the appropriate applications and supporting documentation to APCD for review and approval prior to a Zoning Clearance for construction. The Permittee shall provide the Planning Division these APCD permits, or written confirmation from APCD that the permits are not needed, prior to the issuance of a Zoning Clearance for use inauguration and/or installation.

Monitoring and Reporting: A copy of the approved Authority to Construct and Permit to Operate shall be maintained as part of the project file. Ongoing compliance with the requirements of the Permit to Operate shall be accomplished through field inspection by APCD Inspectors.

Residual Impacts:

Following the implementation of Mitigation Measures AQ MM-1, AQ MM-2, and AQ MM-3, impacts to air quality will be less than significant.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
2A. Water Resources – Groundwater Quantity (WPD)								
Will the proposed project:								
1) Directly or indirectly decrease, either individually or cumulatively, the net quantity of groundwater in a groundwater basin that is overdrafted or create an overdrafted groundwater basin?		X				X		
2) In groundwater basins that are not overdrafted, or are not in hydrologic continuity with an overdrafted basin, result in net groundwater extraction that will individually or cumulatively cause overdrafted basin(s)?		X				X		
3) In areas where the groundwater basin and/or hydrologic unit condition is not well known or documented and there is evidence of overdraft based upon declining water levels in a well or wells, propose any net increase in groundwater extraction from that groundwater basin and/or hydrologic unit?	X				X			
4) Regardless of items 1-3 above, result in 1.0 acre-feet, or less, of net annual increase in groundwater extraction?		X				X		
5) Be consistent with the applicable General Plan Goals and Policies for Item 2A of the Initial Study Assessment Guidelines?		X				X		

2A. Water Resources – Groundwater Quantity (WPD) Impact Discussion:

2A-1. The proposed project will convert an existing 15-acre composting facility and a 55-acre lemon orchard to a 70-acre commercial organics processing operation. Water use by the existing composting operation is not known. The 55-acre lemon orchard is estimated to use 2.75 AFY for a total of 151 AFY. Domestic water demand is estimated at 48 AFY.

Water for the proposed project will be supplied by the City of Santa Paula (Attachment 7) from wells pumping in the Santa Paula Basin. The Santa Paula Basin is in hydrologic connection with the Oxnard Subbasin, designated Critically Overdrafted by the California Department of Water Resources.

The proposed operation will remove the orchard and render the site area impermeable. Irrigation return flows from agriculture are an important source of recharge. According to the Facility Water Balance Study (Attachment 8), “an efficient orchard irrigation system should not create excessive runoff either as surface flow or groundwater percolation.” However, the study does not provide information regarding the loss of recharge and precipitation due to reduction of permeability of the 55 acre orchard area. According to a 2010 study conducted by the Irrigation Training and Research Center for the Fox Canyon Groundwater Management Agency (FCGMA), citrus in the area has an adjusted leaching requirement of 16%. Therefore, the net irrigation impact by the existing basin is approximately 127 AFY. Similarly, a 2017 study by Daniel B. Stephens & Associates for FCGMA found that 10% of precipitation infiltrated for deep percolation/infiltration of precipitation nearest the project site.

The proposed operation will capture and store rainwater to supplement composting operational water needs. With rainwater capture and storage, the proposed project would result in a net reduction in groundwater use, estimated at 60 AF less than the current orchard use in normal precipitation years, 76 AF less in wet years, with a net increase of 2 AF in dry years. The proposed project would not directly or indirectly decrease, either individually or cumulatively, the net quantity of groundwater in a groundwater basin that is overdrafted or create an overdrafted groundwater basin and is considered less than significant for groundwater quantity.

2A-2. The proposed project overlies the Santa Paula Basin, which is in hydrologic connection with the Oxnard Subbasin, designated Critically Overdrafted by the California Department of Water Resources. However, the proposed project will result in a net decrease in groundwater use from the present use with the conversion of land use from agricultural to commercial. The proposed project would not result in net groundwater extraction that would individually or cumulatively cause an overdrafted basin and is therefore considered less than significant for groundwater quantity

2A-3. This item does not apply to the project. The project site overlies the Santa Paula groundwater basin which is a well-known and documented groundwater basin.

2A-4. The proposed project will not result in an increase of 1.0-acre feet or more of net groundwater extraction.

2A-5. The proposed project will be consistent with the applicable General Plan Goals and Policies for Item 2A of the Initial Study Assessment Guidelines.

Mitigation/Residual Impact(s): Potential impacts on groundwater extraction will be less-than-significant. No mitigation is required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
2B. Water Resources - Groundwater Quality (WPD)								
Will the proposed project:								
1) Individually or cumulatively degrade the quality of groundwater and cause groundwater to exceed groundwater quality objectives set by the Basin Plan?		X				X		
2) Cause the quality of groundwater to fail to meet the groundwater quality objectives set by the Basin Plan?		X				X		
3) Propose the use of groundwater in any capacity and be located within two miles of the boundary of a former or current test site for rocket engines?	X				X			
4) Be consistent with the applicable General Plan Goals and Policies for Item 2B of the Initial Study Assessment Guidelines?		X				X		

2B. Water Resources - Groundwater Quality (WPD) Impact Discussion:

2B-1. and 2B-2. The historically most shallow depth of groundwater as 15 feet below the ground surface applicant provided Geotechnical Report (Attachment 9, Earth Systems, December 2017) identifies the. Potential project groundwater quality impacts would be associated with discharges from the proposed septic systems and discharges from composting operations. The Applicant's consultant submitted a Containment Area for Compost Processing Operations Plan (Attachment 10) which outlines the best practices and controls for stormwater management. The proposed project consists of both aerobic and anaerobic composting operations. Leachate from composting operations can contaminate groundwater if allowed to percolate into soil. The project will be designed with all process and working surfaces paved or underlain with engineered low permeability soils with hydraulic conductivity <10 5 cm/s in accordance with State Water Resources Control Board Order WQ 2015 0121 DWQ General Waste Discharge Requirements for Composting Operations. Stormwater retention ponds will be designed with liners with a hydraulic conductivity of <10 6 cm/s. Anaerobic digester sumps will be constructed of precast concrete inside a polyethylene geomembrane liner. Proposed anaerobic digesters will include subsurface sumps to collect percolate. Construction in accordance with these requirements and Standard Condition No. 172 Containment Area for Compost Processing Operations, will mitigate potential leaching to groundwater to less than significant.

The proposed project includes installation of multiple on-site wastewater treatment systems (OWTS) septic systems. The OWTS will be permitted by the County of Ventura Environmental Health Division and regulated by the State Water Resources Control Board. Septic systems have the potential to contaminate groundwater if not properly installed or maintained. Properly installed and maintained OWTS will reduce the groundwater contamination potential to less than significant and not cause groundwater to exceed groundwater quality objectives set by the Basin Plan.

The proposed project will not cause the quality of groundwater to fail to meet the groundwater quality objectives set by the Basin Plan because the project liquid effluent is disposed of through a County Environmental Health Department approved onsite septic system. Such systems have adequate separation from adjacent properties and nearby systems and are constructed with adequate clearances from historical high groundwater levels so as not to create any cumulative effects upon local groundwater supplies.

The proposed project includes the storage of hazardous materials, vehicle maintenance, and installation of an emergency generator. Standard Conditions of approval:

- Vehicle and Equipment Maintenance Area
- Containment Area for Hazardous Materials; and
- Diesel Fuel Tank Area are required.

2B-3. The project does not propose the use of groundwater within two miles of the boundary of a former or current test site for rocket engines and is considered to have no impact.

2B-4. The proposed project will be consistent with the applicable General Plan Goals and Policies for Item 2B of the Initial Study Assessment Guidelines.

Mitigation/Residual Impact(s): Potentially significant impacts on groundwater quality are mitigated with implementation of a containment plan (required as a standard condition of approval) and compliance with the Waste Discharge Requirements enforced by the RWQCB. No mitigation is required. Residual impacts on groundwater quality will be less than significant.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
2C. Water Resources - Surface Water Quantity (WPD)								
Will the proposed project:								
1) Increase surface water consumptive use (demand), either individually or cumulatively, in a fully appropriated stream reach as designated by SWRCB or where unappropriated surface water is unavailable?	X				X			
2) Increase surface water consumptive use (demand) including but not limited to diversion or dewatering downstream reaches, either individually or cumulatively, resulting in an adverse impact to one or more of the beneficial uses listed in the Basin Plan?	X				X			
3) Be consistent with the applicable General Plan Goals and Policies for Item 2C of the Initial Study Assessment Guidelines?		X				X		

2C. Water Resources - Surface Water Quantity (WPD) Impact Discussion:

2C-1 and 2C 2. Surface water is not proposed to be used for the project. Water for the project will be supplied by the City Santa Paula. According to the City of Santa Paula 2018 General Urban Water Management Plan, the City currently utilizes groundwater exclusively from five municipal wells within the Santa Paula Groundwater Basin. The project is considered to have no impact on surface water quantity.

2C-3. The proposed project will be consistent with the applicable General Plan Goals and Policies for Item 2C of the Initial Study Assessment Guidelines.

Mitigation/Residual Impact(s): The proposed project will not require surface water supplies to be diverted or dewatered. Potential impacts on surface water consumption will be less-than-significant. No mitigation is required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
2D. Water Resources - Surface Water Quality (WPD)								
Will the proposed project:								
1) Individually or cumulatively degrade the quality of surface water causing it to exceed water quality objectives as contained in Chapter 3 of the three Basin Plans?			X				X	
2) Directly or indirectly cause storm water quality to exceed water quality objectives or standards in the applicable MS4 Permit or any other NPDES Permits?		X				X		
3) Be consistent with the applicable General Plan Goals and Policies for Item 2D of the Initial Study Assessment Guidelines?		X				X		

2D. Water Resources - Surface Water Quality (WPD) Impact Discussion:

2D-1. The proposed project is addressed as 13290 W Telegraph Road (APN 090-0-180-085) and is located outside the County unincorporated urban area. The Todd Barranca and Ellsworth Barranca, tributaries to the Santa Clara River (SCR), flow along the east and west property boundaries accordingly. The southern boundary of the property is less than 200 feet away from the SCR Reach 3. The SCR has documented water quality impairments and effective Total Maximum Daily Loads (TMDLs) to address these impairments including bacteria and chloride TMDLs. Water quality at Reach 3 is documented on Clean Water Act 303(d) list for chloride, bacteria, total dissolved solids and toxicity.

The proposed development will disturb over 70 acres, replacing existing lemon orchards with approximately 50 acres of impervious surface dedicated to building footprints, driveways, water tanks, concrete pads, and impervious area for compost storage and processing.

Runoff pollution from the proposed impervious surfaces has the potential to contribute to the exceedances of water quality objectives in downstream waterbodies. Increased new development and urbanization is typically addressed through the Part 4.E., “Planning and Land Development Program” of the Ventura Countywide NPDES Municipal Stormwater Permit No. CAS004002, but the proposed project located outside urban Existing Community area, is not subject to these requirements. Overall, the proposed development and increased impervious surface area has an individual and cumulative potential to exceed the threshold for significance related to the water quality objectives of the Los Angeles Region Basin Plan and is expected to have a Potentially Significant Impact (PSM) on surface water quality objectives. Incorporation of the mitigation measure CSWP MM-1 – Post-Construction Best Management Practices (below), will ensure individual and cumulative impacts to existing impaired downstream waterbodies and water quality objectives will be avoided.

2D-2. The proposed project is addressed as 13290 W Telegraph Road (APN 090 0 180 085) in the Santa Clara River watershed and located outside the County unincorporated urban area. The Conditional Use Permit is for construction of a large-scale Commercial Organics Processing Operation (Composting) facility. The proposed development will replace existing lemon orchards, will disturb over 70 acres, replacing existing lemon orchards with approximately 50 acres of impervious surface dedicated to building footprints, driveways, water tanks, concrete pads, and impervious area for compost storage and processing. In accordance with the Ventura Countywide Municipal Stormwater NPDES Permit CAS004002, "Development Construction Program" Subpart 4.F, the Permittee will be required to include Best Management Practices (BMPs) designed to ensure compliance and implementation of an effective combination of erosion and sediment control measures for a disturbed site greater than 5 acres to protect surface water quality during construction (Table 8 in Subpart 4.F). The proposed construction activities are also subject to coverage under the NPDES General Construction Permit (No. CAS000002). Additionally, once constructed, the proposed project will be subject to compliance with the State Water Resources Control Board Order WQ 2015 0121 DWQ, General Waste Discharge Requirements for Composting Operations.

As such, neither the individual project nor the cumulative threshold for significance would be exceeded and the project is expected to have a Less than Significant (LS) impact related to water quality objectives or standards in the applicable MS4 Permit or any other NPDES Permits.

2D-3. Mitigation measure Mitigation Measure CSWP MM-1 – Post-Construction Best Management Practices, and standard conditions assigned to the proposed project will ensure that the proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 2D of the *Ventura County Initial Study Assessment Guidelines*.

Mitigation/Residual Impact(s)

<u>Mitigation Measure CSWP MM-1 – Post-Construction Best Management Practices</u>

Purpose: To ensure runoff from new impervious surfaces does not contribute pollutants or degrade water quality of downstream surface waters resulting in further exceedances of water quality objectives contained in the Los Angeles Region Basin Plan.

Requirement: The Permittee shall include post construction stormwater best management practices (BMPs) to retain/treat the new impervious surface runoff, a Maintenance Plan and annual verification of ongoing maintenance.

Documentation: The Permittee shall submit the following items to the Watershed Protection District – County Stormwater Program Section (CSWP) for review and approval:

a. A complete site plan prepared and stamped by a California licensed civil engineer or land surveyor that accurately delineates the location of the proposed development, existing and proposed impervious surfaces, storm drain system elements, general drainage patterns, and proposed site specific Post Construction Stormwater Management Plan (PCSMP). A drawing detail prepared and stamped by a California licensed civil engineer or architect verifying that the installation of the PCSMP will meet performance criteria defined in Section III of the Part 4.E of the Permit and the 2011 Technical Guidance Manual (TGM), to the maximum extent practicable.

b. Maintenance Plan (Exhibit “C” of the County’s “Covenant for Maintenance of Post Construction Stormwater Management Control System” form available at http://onestoppermit.ventura.org) for the detention basins shall be prepared in accordance with Section 7 and Appendix I of the TGM. The plan shall include but not limited to the following:

    1) the location of each device;
    2) the maintenance processes and procedures necessary to provide for continued operation and optimum performance;
    3) a timeline for all maintenance activities; and
    4) any technical information that may be applicable to ensure the proper functionality of this device.

c. Maintenance Agreement (County’s “Covenant for Maintenance of Post Construction Stormwater Management Control System” form is available at http://onestoppermit.ventura.org) signed by the Property Owner including a signed statement accepting responsibility for maintenance of the detention basins. The statement must include written verification that the detention basins will be properly maintained. At a minimum, this statement shall include the following:

    1) written conditions in the sales or lease agreement, which require the Property Owner or tenant to assume responsibility for PCSMP maintenance and annual maintenance inspection;
    2) written text in project covenants, or
    3) any other legally enforceable agreement or mechanism that assigns PCSMP maintenance responsibility.

d. Completed and signed Annual Maintenance Verification Report (Exhibit "D" of the County's "Covenant for Maintenance of Post Construction Stormwater Management Control System" form available under the County Stormwater Program Section tab at http://onestoppermit.ventura.org).

Timing: The above listed items (a, b and c) shall be submitted to the CSWP for review and approval prior to Zoning Clearance for Construction. In addition, the Annual Maintenance Verification Report (d) shall be submitted to CSWP annually prior to September 15th after signing off for occupancy and issuing the Certificate of Occupancy.

Monitoring and Reporting: CSWP staff will review the submitted materials to ensure the project does not contribute to exceedances of water quality objectives in downstream receiving waters. Maintenance Plan shall be kept on site for periodic review by CSWP staff.

<u>Residual Impacts:</u>

Following the implementation of Mitigation Measure CSWP MM-1, impacts to surface water quality objectives will be less than significant.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
3A. Mineral Resources – Aggregate (Plng.)								
Will the proposed project:								
1) Be located on or immediately adjacent to land zoned Mineral Resource Protection (MRP) overlay zone, or adjacent to a principal access road for a site that is the subject of an existing aggregate Conditional Use Permit (CUP), and have the potential to hamper or preclude extraction of or access to the aggregate resources?	X				X			
2) Have a cumulative impact on aggregate resources if, when considered with other pending and recently approved projects in the area, the project hampers or precludes extraction or access to identified resources?					X			
3) Be consistent with the applicable General Plan Goals and Policies for Item 3A of the Initial Study Assessment Guidelines?	X				X			

3A. Mineral Resources – Aggregate (Plng.) Impact Discussion:

3A-1. through 3A-3. The CUP boundary is not within the MRZ-2 Overlay; however, the subject property is located adjacent to MRZ-2 zoned lands, and adjacent to lands that may possess land use approvals for mining activities (CUP-1524 EUA#7). A review of available records indicates that no active surface mining is presently occurring within the vicinity of the project. The project site is also not located adjacent to a principal access road for a site that is subject to an existing aggregate CUP. The proposed project will not create a project-specific impact or create a cumulatively considerable contribution to a cumulative impact and will not hamper or preclude extraction or access to identified aggregate resources. The proposed project was evaluated for cumulative impacts for pending and recently approved projects in the area and was determined was not determined to create a cumulatively considerable impact related to the extraction or access to aggregate resources. The proposed project was determined to comply with the applicable *Ventura County General Plan* Goals 1.4.1 1 through 3 and Policies 1.4.2 6 through 8.

The project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 3A of the *Ventura County Initial Study Assessment Guidelines*.

Mitigation/Residual Impact(s)

Because no significant impacts on mineral resources have been identified, no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
3B. Mineral Resources – Petroleum (Plng.)								
Will the proposed project:								
1) Be located on or immediately adjacent to any known petroleum resource area, or adjacent to a principal access road for a site that is the subject of an existing petroleum CUP, and have the potential to hamper or preclude access to petroleum resources?		X				X		
2) Be consistent with the applicable General Plan Goals and Policies for Item 3B of the Initial Study Assessment Guidelines?		X				X		

3B. Mineral Resources – Petroleum (Plng.) Impact Discussion:

3B-1. The subject property and proposed CUP boundary are located within the boundary of the Saticoy Oil Field and adjacent to multiple land use permits allowing petroleum extraction (CUP 308; CUP 462; CUP 2810). An existing oil production well (Vintage Projection California, LLC Saticoy Field Edwards 28) and an idle oilfield injection well (Vintage Production California, LLC Edwards 27) are located near the center of the current permit boundary of the existing Agricultural Material Composting Operation (432 feet southeast of the existing facility entrance). The proposed project will support access to the wells by the oil company as required by DOGGR. Additionally, the proposed project will not preclude physical access to the Saticoy Oil Field. Impacts related to the construction and operation of proposed project will remain less than significant with respect to Mineral Resources.

3B-2. The project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 3B of the *Ventura County Initial Study Assessment Guidelines*.

Mitigation/Residual Impact(s)

Based on the discussion above, no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
4. Biological Resources								
4A. Species								
Will the proposed project, directly or indirectly:								
1) Impact one or more plant species by reducing the species' population, reducing the species' habitat, fragmenting its habitat, or restricting its reproductive capacity?		X				X		
2) Impact one or more animal species by reducing the species' population, reducing the species' habitat, fragmenting its habitat, or restricting its reproductive capacity?			X			X		

4A. Species Impact Discussion:

4A-1. The Ventura County General Plan (December 13, 2016), Biological Resources Policy 1.5.2.1, requires an evaluation by a qualified biologist to assess the potential adverse impacts and, if necessary, the development of mitigation measures for discretionary development that has the potential to adversely affect biological resources. In addition, Biological Resources Policy 1.5.2.2 requires discretionary development to be sited and designed to incorporate all feasible measures to mitigate significant impacts to biological resources. Discretionary actions undertaken by public agencies are required to demonstrate compliance with the California Environmental Quality Act (CEQA).

Biological assessment surveys were conducted at the project site by Biologists Stephen Jones and Matt Schaap, BioResource Consultants, Inc (BRC), a Ventura County Qualified Biology Consulting firm; on July 15, 2014, July 23, 2014, July 30, 2014, December 3, 2015. The biological surveys characterized and mapped the vegetation, assessed the habitat suitability for potential special-status species and wildlife movement, mapped special-status biological resources, conducted a "waters or wetlands delineation and determination"; and recorded observations of plant and wildlife species on the project site (Survey Area).

Information gathered from the surveys supported the preparation of an Initial Study Biological Assessment (ISBA), prepared in accordance with the Ventura County Planning Division's *Standards for Initial Study Biological Assessments* and pursuant to CEQA Section 15064 (Determining Significant Impacts). The biological resources that occurred at the project site at the time of the surveys and survey results are documented in the Initial Study Biological Assessment (ISBA) report, prepared by BRC (BRC, 2016) (Attachment 11).

The Survey Area predominantly consists of an existing agricultural compost operations facility and its associated structures, with the remaining area of the parcel characterized as active agricultural (Site and Survey Map, ISBA, Attachment 11). The vegetation with the Survey Area is dominated by non-native agricultural crops and non-native weedy plant species. An unnamed ephemeral drainage (agricultural ditch) transverse the central portion of the parcel (located approximately 120 feet east of the existing driveway) and drains south from the tracks of the Southern Pacific Railroad towards Roger Road, an unnamed dirt road, located outside (south) of the Survey Area (denoted as “W-1” on Wetlands and Waters Map, Attachment 11). The drainage ditch continues southwest to the Santa Clara River, which is located approximately ½ mile from the proposed CUP boundary. Along the proposed eastern boundary of the proposed CUP, there is a concrete lined trapezoidal drainage channel. A windrow of eucalyptus or “Redgum” trees *(Eucalyptus camaldulensis),* lines the western bank of the VCWPD channel (Plant Communities Map, Attachment 11).

Table 4A-1, below provides the percent of various cover types occurring within the Survey Area

Table 4A-1 – Vegetation Cover	
Cover Type	Amount of Cover (percentage)
Native vegetation	5
Non-native vegetation	65
Bare Ground/Graded/Developed/Roads	25

No locally important or rare plant communities were found within the Survey Area. The following are the major plant community types occurring on the parcel:

Agricultural Compost is dominated by bare ground and large compost piles. The area lacks the presence of native plant assemblages. Weedy species occur sporadically through the habitat and include storksbill *(Erodium cicutarium*), pineapple weed (*Chamomilla suaveolens*) and ragweed (*Ambrosia psilostachya*).

Agricultural is dominated by lemon and orange crop trees and strawberries. The habitat lacks a presence of native plant assemblages. Weedy species occur sporadically and include storksbill, ragweed, and horehound (*Marrubium vulgare*).

Cleared Areas are roads, pads and other improved areas or areas void of any vegetation. The cleared areas lack non-native plant assemblages and are dominated by bare ground with occurrences of weedy species including storksbill, pineapple weed, horehound and ragweed.

Agricultural Ditch is an ephemeral drainage ditch that drains Survey Area 1; it transverses the site form north to south and is located 120 feet east of the existing facility driveway. The ditch is dominated by weedy species including ragweed and horehound, with occurrences of mulefat (*Baccharis salicifolia*) and white sweet clover (*Melilotus albus*).

The Plant Communities Table in Attachment 11 provides an estimate of potential impacts to these communities from proposed project development, no locally important or rare plant communities were found within the Survey Areas.

The dominant land use on the parcel is agriculture. The land has been historically cultivated and as such, dominant plant community within the parcel is agricultural crops or ruderal (non-native plants adapted to disturbed conditions), including row crops with occurrences of non-native weedy species. Because of the developed nature of the project site, there are no natural areas occurring that provides a suitable habitat for special-status plant species to occur. Therefore, project development is not likely to impact one or more plant species by reducing the species' population, reducing the species' habitat, fragmenting its habitat, or restricting its reproductive capacity.

4A-2. BRC conducted a query of California Natural Diversity Database RareFind Version 8.1.0 (CNDDB) for the USGS *Saticoy*, *Santa Paula*, *Ventura* and *Oxnard* 7.5-minute topographic quadrangles with a target search within a 5-mile radius of the parcel. Potential special-status wildlife species that could potentially occur in the search radius are provided in the "Observed and Potentially Occurring Special-status Species" table in Attachment 11. Site surveys did not detect any special-status wildlife species. However, suitable habitat is present within the parcel for monarch butterfly (*Danaus plexippus*), coast horned lizard (*Phrynosoma blainvillii*), and silvery legless lizard (*Anniella pulchra pulchra*). In addition, suitable habitat for nesting birds also occur on the parcel. These species are discussed further below:

<u>Monarch butterfly:</u> The monarch butterfly occurs globally, and as a species, the global population is considered somewhat stable however the population of subspecies that inhabits North America, *Danaus plexippus plexippus*, is imperiled (NatureServe & Xerces Society, 2015)[4]. The decline includes the two main populations in North America, the larger eastern population and the smaller western population. The California Department of Fish and Wildlife (CDFW) also recognizes this species as "S3" meaning, that it is vulnerable to extirpation or extinction sub nationally (meaning, within the State). The stand of Eucalyptus trees lining the western bank of the concrete lined trapezoidal drainage channel provide marginal roosting habitat for the butterflies. Monarch butterflies have not been documented as roosting on the site. Breeding sites are associated with Eucalyptus stands along the coast. Current project plans do not entail the removal or trimming of the eucalyptus. However, if these trees are to be removed or trimmed in the future and if monarch butterflies are roosting on these trees, the loss of these trees could be considered potentially a significant impact. Therefore, Mitigation Measure (MM) BIO-1 is proposed, which requires pre-construction surveys be

[4] Conservation Status and Ecology of the Monarch Butterfly in the United States. Prepared for the U.S. Forest Service, prepared by: The Xerces Society for Invertebrate Conservation. March 2015

conducted and monitoring of the construction activities during the roosting season, for these butterflies.

Coast horned lizard: This species is recognized as "ST" (State Threatened) by the State of California and as "SSC" (Species of Special Concern), by the CDFW. On the project site, potentially suitable coast horned lizard habitat is present within the existing citrus orchards located on the eastern and southern portion of the Survey Area within PC-2 Agriculture (See Plant Communities Map, Attachment 11). These areas have loose-textured soils that are typical of horned lizard habitat. The composting area and the new citrus orchard located on the western portion of the parcel have highly compacted soils. It is highly unlikely that coast horned lizards would be found in these areas. However, there still is a low potential for their occurrence. Expansion of composting operations into areas of suitable habitat of this species on the parcel and other activities associated with the composting operations, such as grading, human and vehicular activity could all result in mortality of these species. This impact is significant. Therefore, MM BIO-2 is proposed, which requires pre-construction surveys and relocation of these lizards, if found within the proposed CUP area.

Silvery Legless Lizard: This reptile species is recognized as a Species of Special Concern (SSC) by the CDFW. Within the Survey Area, suitable habitat for legless lizard may be present within the existing citrus orchards located on the eastern and southern portion of the parcel, within PC-2 Agriculture (Plant Communities Map, Attachment 11). These areas have a well-defined leaf layer and loose-textured soils that allow for legless lizard movement and foraging. The soils in the existing agriculture composting operation area and the newly planted citrus orchard located on the western portion of the parcel are highly compacted and lacks a leaf layer, making it an unsuitable habitat for legless lizards. It is highly unlikely that legless lizards would be found in either area. However, there still is a low potential for their occurrence. Expansion of composting operations into areas of suitable habitat of this species within the Survey Area and other activities associated with the composting operations, such as grading, human and vehicular activity could all result in mortality of these species. This impact is considered potentially significant. Therefore, MM BIO-2 is proposed, which entails pre-construction surveys and relocation of these lizards, if found within CUP boundary.

Nesting Birds: The Federal Migratory Bird Treaty Act (MBTA) and the CDFW Code (3503, 3503.5, 3511, 3513 and 3800) protect most native birds. In addition, the federal and state endangered species acts protect some bird species listed as threatened or endangered. No special-status bird species were detected during the site surveys. However, the agricultural crops and the row of eucalyptus trees on eastern edge of the proposed CUP boundary provide suitable roosting and nesting habitat for a variety of birds.

Project-related impacts to birds protected by these regulations would occur during the breeding season, because unlike adult birds, eggs and chicks are unable to escape impacts. Construction activities such as clearing and grubbing activities, as well as noise and dust could directly and indirectly impact nesting birds. These impacts could potentially adversely impact nesting birds under the protection of the MBTA and are therefore considered significant.

Therefore, the Permittee will be subject to a standard condition of approval that will require the Permittee to conduct land clearing activities that would avoid the nesting season (January 1 – September 1) or conduct pre-construction surveys within the nesting season to determine presence or absence and if present, to avoid impacts to nesting birds.

Mitigation/Residual Impact(s)

Mitigation Measure BIO MM-1 – Pre-construction Surveys & Construction Monitoring for Monarch Butterfly
Purpose: To avoid impacts to monarch roosts during construction activities.

Requirement: The Permittee shall retain the services of a County-approved qualified biologist to conduct pre-construction roosting monarch surveys within 72 hours prior to construction activities (tree trimming or removal); that may impact the stand of eucalyptus trees occurring on the banks of the trapezoidal located along the eastern boundary of the Condition Use Permit (approximately 2,000 lineal feet).

Documentation: The Permittee shall provide to the Planning Division a copy of the executed contract with a County-qualified biologist, to conduct the Monarch Roosting Habitat Monitoring. A Survey Report documenting the results of the roosting monarch survey shall be provided to the Planning Division, 72 hours prior to any plans to trim or remove the *Eucalyptus* trees located along the eastern boundary of the Condition Use Permit (approximately 2,000 lineal feet). If roosting monarchs are detected, the Permittee will consult with the Planning Division prior to undertaking tree removal or trimming activities. Should activities occur that may potentially disturb roosting monarchs, a biological monitor will be required to monitor such activities to ensure that the potential roost is not disturbed.

Timing: Winter roosting monarch surveys shall be required, only between winter roosting season of the Monarchs (October to March). An initial pre-construction survey shall be conducted within 72 hours prior to construction activities (tree trimming or tree removal). Monitoring activities shall include periodic roosting monarch surveys prior to commencement of any construction activities that may disturb potential roost areas. The Permittee shall provide a copy of the preliminary monitoring report and a final report monitoring report to the Planning Division, within 14 days of the completion of activities that may impact the roosting habitat (*Eucalyptus* trees).

Monitoring and Reporting: The Permittee shall submit a copy of the executed contract (with financial information redacted) with the County-qualified biologist for the monitoring to the Planning Division for review. The Permittee shall provide a copy of the preliminary monitoring report and a final report. The Permittee shall submit the preliminary monitoring report, 72 hours prior to impacting the roosting habitat (*Eucalyptus* trees). The final monitoring report shall be submitted to the Planning Division, within 14 days of the completion of monitoring activities. The Planning Division maintains copies of the executed contract and the monitoring reports in the Project file. The Planning Division has the authority to inspect the property during the monitoring phase of the Project to ensure that the County-approved biologist is on-site as required. If the Planning Division confirms that the County-approved qualified biologist is not monitoring the Project in compliance with this condition, enforcement actions may be enacted in accordance with § 8114-3 of the Ventura County Non-Coastal Zoning Ordinance.

<u>Mitigation Measure BIO MM-2 – Pre-Construction Surveys and Relocation of Special-Status Reptile Species</u>
Purpose: To avoid significant impacts to special-status wildlife that could occur during vegetation removal and grading activities.

Requirement: Not less than two weeks prior to the commencement of ground disturbing activities (e.g., vegetation removal and grading), the Permittee shall install a silt-screen fence around the area of disturbance. This practice shall be implemented for each recurrence of vegetation removal and grading until the full extent of ground disturbing activities has been implemented under the approved project. The Permittee shall hire a County-approved qualified biologist to monitor all ground disturbing activities for the presence of special status wildlife. The County-approved qualified biologist shall possess a valid California Department of Fish and Wildlife (CDFW) Scientific Collecting Permit.

Following the installation of the silt-screen fence, the qualified biologist shall conduct preconstruction surveys within the fenced area for Coast horned lizard and Silvery Legless lizard. The qualified biologist shall ensure that these species are not harmed within these fenced areas. Individuals of these species that are found within the fenced area shall be relocated to suitable undisturbed habitat, outside of the areas directly and indirectly (e.g., noise) affected by the construction and operational phases of the project. The preconstruction surveys and relocation activities shall be conducted according to methods approved by the CDFW. The silt fencing must remain in place until the completion of ground disturbance activities.

Documentation: The Permittee shall submit the following documentation to the Planning Division for review and approval:

- Signed contract (financial information redacted) with a County-approved qualified biologist responsible for conducting preconstruction surveys and relocation of special status wildlife, with proof of a valid CDFW Scientific Collection Permit;
- Grading plan(s) which depict the location and specifications of the required exclusionary silt fencing, in compliance with the CDFW recommendations for excluding special status species from active construction areas;

- A memorandum prepared by the qualified biologist with confirms the completion of the preconstruction surveys, reports the results of the surveys and avoidance and relocation activities.

Timing: Prior to the issuance of a Zoning Clearance for construction, the Permittee shall submit the following documents:

- One copy of the signed contract (financial information redacted) with a County-approved biologist responsible for conducting preconstruction surveys and relocation of special status wildlife, with proof of a valid CDFW Scientific Collection Permit; and
- Three copies of the grading plans with the location and specifications of the required exclusionary silt fencing.

Within 30 days of the wildlife surveys and relocation activities, the Permittee shall provide a memorandum reporting the results.

Monitoring and Reporting: The Permittee shall confirm with the Planning Division that a County-approved qualified biologist has been contracted to implement the requirements of this condition prior to issuance of a Zoning Clearance for construction. The Planning Division maintains copies of the signed contract and the survey reports in the Project file. The Planning Division has the authority to inspect the property during the development phase of the Project to ensure that the survey and wildlife relocation work is conducted as required and the silt fencing is maintained as required. If the Planning Division confirms that the required surveys are not conducted as agreed upon or the fencing is not maintained as required, enforcement actions may be enacted in accordance with § 8114-3 of the Ventura County Non-Coastal Zoning Ordinance.

<u>Residual Impacts:</u>

With the implementation Mitigation Measures BIO MM-1 and BIO MM-2, project-specific impacts, as well as the proposed project's contribution to significant cumulatively impacts to special status species and its habitats, would be reduced to a less than significant level.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
4B. Ecological Communities - Sensitive Plant Communities								
Will the proposed project:								
1) Temporarily or permanently remove sensitive plant communities through construction, grading, clearing, or other activities?	X				X			
2) Result in indirect impacts from project operation at levels that will degrade the health of a sensitive plant community?	X				X			

4B. Ecological Communities - Sensitive Plant Communities Impact Discussion:

4B-1and 4B-2. The subject parcel is in active agriculture (55 acres of orchards) that has been heavily modified to support agricultural production. Additionally, approximately 15 acres is dedicated to an agricultural organics processing facility. No sensitive plant communities occur on the parcel. The proposed project will not temporarily or permanently remove sensitive plant communities through any of the proposed construction activities. Additionally, operation of the proposed Commercial Organics Processing Operation will not result in any indirect impact that will degrade the health of a sensitive plant community.

Mitigation/Residual Impact(s)

The project will result in no impacts sensitive plant communities and no residual impacts. No mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
4C. Ecological Communities - Waters and Wetlands								
Will the proposed project:								
1) Cause any of the following activities within waters or wetlands: removal of vegetation; grading; obstruction or diversion of water flow; change in velocity, siltation, volume of flow, or runoff rate; placement of fill; placement of structures; construction of a road crossing; placement of culverts or other underground piping; or any disturbance of the substratum?			X			X		
2) Result in disruptions to wetland or riparian plant communities that will isolate or substantially interrupt contiguous habitats, block seed dispersal routes, or increase vulnerability of wetland species to exotic weed invasion or local extirpation?			X			X		
3) Interfere with ongoing maintenance of hydrological conditions in a water or wetland?			X			X		
4) Provide an adequate buffer for protecting the functions and values of existing waters or wetlands?			X			X		

4C. Ecological Communities - Waters and Wetlands Impact Discussion:

4C-1 through 4C-4. There are no areas meeting the three mandatory criteria (hydrology, hydric soils and hydrophytic vegetation) that define “wetlands waters of the U.S.” that occur within the parcel. As indicated in the Analysis for Biological Resources (Attachment 11), an improved/concrete lined channel occurs along the eastern boundary of parcel (denoted as “W-2” in the Waters and Wetlands Map,). The channel is identified as “state waters” and a “waters of the U.S.” and is therefore regulated under Section 1602 of the California Department of Fish and Wildlife Code administered by the California Department of Fish and Wildlife (CDFW) and under Section 404 of the Clean Water Act administered by the Army Corps of Engineers (USACE); respectively. Although this channel occurs along the eastern CUP boundary there are no proposed activities that would encroach into this channel or result in direct or indirect impacts to this channel. Facility structures are proposed to be sited away from the channel; the Wet Organics building is setback 50 feet from the edge of the channel. An existing agricultural drainage (approximately an 0.90-acre area of State Waters) will be modified via a double barrel pipe pass-through which will direct flows through the facility to the south side of the facility to an existing drainage structure at Roger Road. Therefore, no impacts to the channel is anticipated from proposed construction or operation of the facility.

Ventura County Biological Resources Policy 1.5.2-4 states: “Discretionary development shall be sited a minimum of 100 feet from significant wetland habitats to mitigate the potential impacts on said habitats. Buffer areas may be increased or decreased upon evaluation and recommendation by a qualified biologist and approval by the decision-making body. Factors to be used in determining adjustment of the 100-foot buffer include soil type, slope stability, drainage patterns, presence or absence of endangered, threatened or rare plants or animals, and compatibility of the proposed development with the wildlife use of the wetland habitat area.”

The trapezoidal concrete lined channel is recognized as a “significant wetland” under the County definition. The Applicant is requesting a reduced buffer of 25 feet. Based on the biological assessment of the drainage conducted by the biologist and described in the ISBA (Attachment 11), reduction of the buffer width from the typical 100 feet between the development envelope and the wetlands is not considered to be a significant impact. This is because the segment of the flood control channel adjacent to the CUP’s eastern boundary is heavily disturbed and lacks native vegetation or any associated riparian habitat. Additionally, facility drainage will not be directed to this channel. Therefore, a buffer of 25 feet is adequate to prevent impacts to the drainage.

In the central portion of the parcel is an unnamed ephemeral drainage that traverses the parcel in a northeast to southwest orientation (denoted as “W-2” in the Waters and Wetlands Map, Attachment 11). This drainage supports approximately 0.90 acres of “State Waters”, under the jurisdictional oversight of the California Department of Fish and Wildlife (CDFW), pursuant to Section 1600 of the Fish and Game Code. The US Army Corps of Engineers (USACE) has determined that the unnamed drainage to be an upland-excavated drainage ditch which only drains uplands and is therefore not considered a Waters of the U.S. Therefore, the unnamed drainage is not jurisdictional and is not regulated under Section 404 of the Clean Water Act by the USACE (ISBA, 2016, Attachment 11).

Activities proposed will not impact USACE jurisdictional waters as the unnamed drainage is not considered Waters of the U.S. In addition, as stated earlier, no wetland areas meeting the three mandatory criteria (hydrology, hydric soils and hydrology) will be impacted by the project. However, project approval will result in impacts to 0.90 acres of State Waters, due to the filling of the unnamed drainage in support of the installation of a double barrel arch pipe pass-through. The pipe pass-through will direct flows through the facility to the south side of the facility to an existing drainage structure at Roger Road.

Due to the lack of native plant assemblages and wildlife habitat within the unnamed drainage, the filling of the unnamed ephemeral drainage/ agricultural ditch will not result in wildlife habitat loss and therefore, no mitigation for habitat loss is required. However, the permanent loss of approximately 0.90 acres of State Waters is a potentially significant impact as the filling of the drainage will result in morphological changes to the drainage and result in diversion or obstruction of the natural drainage flow. The Applicant proposes this modification to expand the existing footprint of the existing Organics Processing Operation from 15-arcres to 70-acres and to increase annual loading from 60,000 tons per year to 295,000 tons per year. Therefore, MM-BIO 3 is proposed, entailing the procurement a Lake and Streambed Alteration Agreement (LSAA), and compliance with California Fish and Game Code § 1602. With the implementation of this mitigation, impacts to state waters will be reduced to a level below significance.

Mitigation/Residual Impact(s)

<u>Mitigation Measure BIO MM-3 – California Department of Fish and Wildlife (CDFW) Lake & Streambed Alteration Agreement (LSAA)</u>
Purpose: To ensure compliance with California Fish and Game Code § 1602.

Requirement: The Permittee shall obtain a LSAA from the CDFW for any excavation, fill, or other land disturbance activity within the ephemeral drainage depicted in the site drawings, identified as W-1 of the Waters and Wetlands map of the Initial Study Biological Assessment (January 2016, Exhibit TBD).

Documentation: The Permittee shall provide written proof or documentation to the County that the Permittee has obtained either: (1) the LSAA from the CDFW; or, (2) written verification from CDFW stating that a LSAA is not required.

Timing: The Permittee shall provide the LSAA or written verification from the CDFW to the Planning Division prior to issuance of a Zoning Clearance for construction.

Monitoring and Reporting: The Planning Division maintains a copy of the LSAA provided by the Permittee in the Project file. Monitoring of any mitigation measures required as part of the LSAA is the responsibility of CDFW.

<u>Residual Impact(s):</u>
With the implementation Mitigation Measures BIO MM-3, project-specific impacts, as well as the proposed project's contribution to significant cumulatively impacts to the unnamed ephemeral drainage; would be reduced to a less than significant level.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
4D. Ecological Communities - ESHA (Applies to Coastal Zone Only)								
Will the proposed project:								
1) Temporarily or permanently remove ESHA or disturb ESHA buffers through construction, grading, clearing, or other activities and uses (ESHA buffers are within 100 feet of the boundary of ESHA as defined in Section 8172-1 of the Coastal Zoning Ordinance)?	X				X			
2) Result in indirect impacts from project operation at levels that will degrade the health of an ESHA?	X				X			

4D. Ecological Communities - ESHA (Applies to Coastal Zone Only) Impact Discussion:

4D-1 and 4D-2. The project site is not located in the Coastal Zone; therefore, ESHA policies and analysis do not apply.

Mitigation/Residual Impact(s)

No impacts identified. No mitigation required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
4E. Habitat Connectivity								
Will the proposed project:								
1) Remove habitat within a wildlife movement corridor?		x				X		
2) Isolate habitat?		x				X		
3) Construct or create barriers that impede fish and/or wildlife movement, migration or long-term connectivity or interfere with wildlife access to foraging habitat, breeding habitat, water sources, or other areas necessary for their reproduction?			X				X	
4) Intimidate fish or wildlife via the introduction of noise, light, development or increased human presence?		X				X		

4E. Habitat Connectivity Impact Discussion:

4E-1. through 4E. The Santa Clara River is located along the southern edge of the project, approximately ¼ mile south of the proposed CUP boundary. The river supports the Santa Monica-Sierra Madre Wildlife Corridor, a mapped wildlife corridor of high significance for wildlife movement. The riparian corridor of the Santa Clara River serves as a suitable habitat (cover, food and shelter) for wildlife movement in the river corridor. The southern boundary of the proposed CUP area is located approximately 800 feet from the edge of the riparian corridor. The Planning Division Staff Biologist determined that this was an sufficient buffer distance between the operational limits of the project and the riverine habitat that supports wildlife movement. The Applicant is not proposing the removal of habitat within the river corridor or modifications to the river ecosystem. Therefore, proposed project development is not anticipated to result in direct impacts to Santa Monica-Sierra Madre wildlife corridor and wildlife movement. However, lighting of the facility operations, especially during night times, may impair wildlife movement of animals that may incidentally use the river corridor next to the project site.

Interruption of darkness by artificial lighting may result in disruptive side effects for wildlife, especially to nocturnal animals that depend upon darkness for movement. Reproductive cycles are most often disrupted when artificial light at night interferes with species' natural detection systems. Change in light signals the start of activities as foraging (feeding and substance), sheltering, mating and reproducing (fireflies and frogs), and communicating (e.g.: coyotes). Artificial lights alter an animal's circadian rhythm (an animal's natural 24-hour cycle of biological processes) and create miss-cues. These potential negative impacts from lighting are therefore considered significant impacts. MM BIO-4 is therefore proposed, which requires the Permittee to prepare and implement a Lighting Plan, to protect wildlife movement. With the implementation of mitigation measure MM BIO-4, indirect impacts to wildlife corridor and wildlife movement from lighting, would be reduced to a level below significance.

Mitigation/Residual Impact(s)

<u>Mitigation Measure BIO MM-4 – Lighting Plan</u>
Purpose: In order to mitigate impacts associated with night lighting to wildlife movement, and ensure lighting on the subject property is provided in compliance with § 8106-8.6 of the Ventura County Non-Coastal Zoning Ordinance and to ensure the following objectives are met:

a. avoids interference with reasonable use of adjoining properties;
b. avoids conflict with landscape features;
c. minimizes on-site and eliminates off-site glare;
d. provides adequate on-site lighting for security;
e. minimizes impacts to wildlife movement;
f. minimizes energy consumption; and
g. includes devices that are compatible with the design of the permitted facility.

Requirement: The Permittee shall submit two copies of a lighting plan to the Planning Division for review and approval prior to implementing such plan. The lighting plan must comply with the following:

a. the lighting plan shall be prepared by an electrical engineer registered by the State of California;

b. the lighting plan shall include a photometric plan and manufacturer's specifications for each exterior light fixture type (e.g., light standards, bollards, and wall mounted packs).

c. the lighting plan shall provide illumination information for all exterior lighting such as parking areas, walkways/driveways, streetscapes, and open spaces proposed throughout the development;

d. all outdoor lighting must be located within 100 feet of a structure or adjacent to a driveway and shall be hooded to direct light downward onto buildings, structures, driveways, or yards, to prevent the illumination of surrounding habitat. Floodlights are prohibited.

e. in order to minimize light and glare on the project property, all parking lot lighting, exterior structure light fixtures, and freestanding light standards must be a cut-off type, fully shielded, and downward directed, such that the lighting is projected downward onto the property and does not cast light on any adjacent property or roadway; and,

f. light emanation shall be controlled so as not to produce excessive levels of glare or abnormal light levels directed at any neighboring uses. Lighting shall be kept to a minimum to maintain the normal night-time light levels in the area, but not inhibit adequate and safe working light levels.

The Permittee shall bear the total cost of the review and approval of the lighting plan. The Permittee shall install all exterior lighting in accordance with the approved lighting plan.

Documentation: The Permittee shall submit two copies of a lighting plan to the Planning Division for review and approval.

Timing: The Permittee shall obtain the Planning Division's approval of the lighting plan prior to the issuance of a Zoning Clearance for construction. The Permittee shall maintain the lighting as approved in the lighting plan for the life of the Project.

Monitoring and Reporting: The Planning Division maintains a stamped copy of the approved lighting plan in the Project file. The Permittee shall ensure that the lighting is installed according to the approved lighting plan prior to occupancy. The Building and Safety Inspector and Planning Division staff have the authority to ensure that the lighting plan is installed according to the approved lighting plan. Planning Division staff has the authority to conduct periodic site inspections to ensure ongoing compliance with this condition consistent with the requirements of § 8114-3 of the *Non-Coastal Zoning Ordinance*.

Mitigation/Residual Impact(s):
With implementation of Mitigation Measure BIO MM-4, the proposed project will have a less-than-significant project-specific impact on wildlife corridor and wildlife movement and will not make a cumulatively considerable contribution to a significant cumulative impact related to a wildlife movement corridor.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
4F. Will the proposed project be consistent with the applicable General Plan Goals and Policies for Item 4 of the Initial Study Assessment Guidelines?			X				X	

4F. Impact Discussion:

4F. The project was reviewed and found to be consistent with the *Ventura County General Plan* Goals, Programs and Policies for Item 4 of the Initial Study Assessment Guidelines.The Ventura County General Plan Biological Resources Policy 1.5.2.1, requires an evaluation by a qualified biologist to assess the potential adverse impacts and, if necessary, the development of mitigation measures for discretionary development that has the potential to adversely affect biological resources. Biological assessment surveys were conducted at the project site by BioResource Consultants, Inc. (BRC; Attachment 11). The proposed project will result in a potentially significant impact to an unnamed ephemeral drainage along the unnamed agricultural road; the drainage transverse the site from north to south and is located 120 feet to the east of the existing facility driveway. The unnamed ephemeral drainage occurs in the central portion of the Study Area and drains south from the Santa Paula Railroad to outside the Survey Area to Roger Road and continues to the Santa Clara River. Proposed project site improvements require this unnamed ephemeral drainage to be filled and surface drainage redirected to the detention basins via subgrade drainage pipes. The drainage, which occurs in the middle of the CUP boundary, is ‘state waters’ and a County-recognized ‘significant’ wetland. Recommended mitigation measure BIO MM-3 requires the Permittee to submit a California Department of Fish and Wildlife (CDFW) Lake & Streambed Alteration Agreement (LSAA) or written verification that a permit is not required, to mitigate this impact. Implementation of BIO MM-3 is expected to offset impacts to this unnamed ephemeral drainage.

Ventura County General Plan Policy 1.5.2-4 requires development to be setback a minimum 100 feet from significant wetland habitats. The proposed project is adjacent to and west of a drainage channel, a state waters, a water of the US, and a significant wetland habitat. The Applicant is seeking a reduced buffer from 100 feet to a width of 25 feet between facility operations and channel. The area is heavily disturbed and lacks native vegetation and any associated riparian habitat, the type of site features which typically warrant the incorporation of a larger buffer. The proposed 25-foot buffer has been evaluated by the Planning Division Biologist for potential impacts to wetland habitats and the Survey Area conditions noted within the ISBA (Attachment 11) were verified. The project is therefore consistent with Biological Resource Policy 1.5.2-3. Biological Resource.

The project site is 1/4 mile north of the Santa Clara River. The segment of the river ecosystem adjacent to the project site is recognized as the Santa Monica-Sierra Madre Wildlife Corridor. Proposed project actions do not entail removal of habitat within the corridor or actions that would directly impair wildlife movement within the river. Recommended mitigation measure BIO MM-4 – Lighting Plan requires the Permittee to submit for review and approval a Lighting Plan. When implementation of this BIO MM-4, potential lighting impacts on wildlife movement would be reduced to a less than significant level.

With regard to the applicable General Plan Goal and Policies, the proposed project does not involve the removal of special status plant or animal species as indicated above. Additionally, an Initial Study Biological Assessment (BRC; Attachment 11) was prepared for the project in conformance with the County's Initial Study Assessment Guidelines (ISAG). The ISBA identifies impacts to suitable habitat (monarch butterfly (Danaus plexippus), silvery legless lizard (Anniella pulchra pulchra) and coast horned lizard (Phrynosoma blainvillii)) and permanent impacts to State Waters, however mitigation has been added to the project which will reduce impacts below the threshold of significance. The proposed project is therefore consistent with applicable General Plan Policies and Goals.

Mitigation/Residual Impact(s):

With the implementation of the biological mitigation measures BIO MM-1 through BIO MM-4, the proposed project will be consistent with all applicable *Ventura County General Plan* policies governing biological resources.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
5A. Agricultural Resources – Soils (Plng.)								
Will the proposed project:								
1) Result in the direct and/or indirect loss of soils designated Prime, Statewide Importance, Unique or Local Importance, beyond the threshold amounts set forth in Section 5a.C of the Initial Study Assessment Guidelines?				X				X
2) Involve a General Plan amendment that will result in the loss of agricultural soils?					X			
3) Be consistent with the applicable General Plan Goals and Policies for Item 5A of the Initial Study Assessment Guidelines?				X				X

5A. Agricultural Resources – Soils (Plng.) Impact Discussion:

5A-1. The project site, with the exception of the existing 15-acre agricultural organics processing facility, includes soils designated as “Prime” in the Ventura County Important Farmland Inventory (IFI). The proposed project includes the creation of a 70-acre commercial organics processing facility where the existing agricultural organics processing facility is located and on and approximately 55 acres of orchards. Pursuant to Section 5a.C of the *Ventura County Initial Study Assessment Guidelines*, converting more than five acres of designated prime soils on Agricultural designated lands is considered a significant impact. The proposed project would convert approximately 55 acres of existing orchards which is considered a potentially significant impact.

5A 2. The project site has a General Plan Land Use Designation of Agricultural and a zoning designation of AE 40 ac (Agricultural Exclusive, 40-acre minimum lot size). An amendment to the General Plan is not required, however as noted in Section 5A 1 (above), the proposed project would result in the loss of agricultural soils. The Applicant is requesting a text amendment to NCZO Section 8107-36.4.1 - General Standards, to allow a commercial organics processing operation. Presently, no organics processing operations, other than those accessory to agricultural activities and on-site composting operations, can be located in the AE zone on land designated as "Prime", "Statewide Importance", "Unique" or "Local Importance", on the California Department of Conservation's Farmland Mapping and Monitoring program, Important Farmlands Maps. The proposed project does not include a General Plan amendment and will not make a cumulatively considerable contribution to a significant cumulative impact to agricultural soils as defined for Item 5A 2.

5A 3. The proposed project has the potential to conflict with the following General Plan policies and goals:

Goal 1.6.1-1: Preserve and protect agricultural lands as a nonrenewable resource to assure the continued availability of such lands for the production of food, fiber and ornamentals.

Policy 1.6.2-1: Discretionary development located on land designated as Agricultural (see Land Use Chapter) and identified as Prime Farmland or Farmland of Statewide Importance on the State's Important Farmland Inventory, shall be planned and designed to remove as little land as possible from potential agricultural production and to minimize impacts on topsoil.

Due to project related impacts associated with the conversion of 55-acres of classified agricultural soils, further evaluation of the consistency between the proposed project and the identified General Plan goal and policy is warranted.

Mitigation/Residual Impact(s):

Impacts to agricultural resources are considered significant and will be evaluated in an EIR.

Issue (Responsible Department)*	**Project Impact Degree Of Effect****				**Cumulative Impact Degree Of Effect****			
	N	LS	PS-M	PS	N	LS	PS-M	PS
5B. Agricultural Resources - Land Use Incompatibility (AG.)								
Will the proposed project:								
1) If not defined as Agriculture or Agricultural Operations in the zoning ordinances, be closer than the threshold distances set forth in Section 5b.C of the Initial Study Assessment Guidelines?		X				X		
2) Be consistent with the applicable General Plan Goals and Policies for Item 5b of the Initial Study Assessment Guidelines?		X				X		

5B. Agricultural Resources - Land Use Incompatibility (AG.) Impact Discussion:

5B-1. The proposed project includes the development of a Large-Scale Commercial Organics Processing Operation. The proposed land use is not listed under the

Agriculture or Agricultural Operations categories of the Ventura County NCZO Section 8105-4 Permitted Uses Open Space, Agricultural, Residential and Special Purpose Zones, however the proposed commercial composting facility is permitted in the AE zone with an approved CUP. The proposed project was evaluated for conformance with the Agricultural Commissioners Agricultural/Urban Buffer Policy, which requires a 300-foot setback between non-agricultural uses and agriculture land uses. Non-agricultural land uses (compost piles and the proposed facility buildings) will be approximately 48 feet from adjoining agricultural uses.

On October 7, 2019, the proposed project was heard before the Agricultural Policy Advisory Committee (APAC) and the Agricultural Commissioner. The Applicant requests a reduced buffer from the 300-foot setback requirement. APAC recommended the following requirements:

1. Installation of a vegetative screen which conforms to the minimum standards in the buffer policy;
    - Two staggered rows of trees and shrubs characterized by evergreen foliage that extends from the base of the plant to the crown
    - Trees and shrubs should be vigorous, drought tolerant and at least 6 feet in height at the time of installation
    - Plants should have 50% to 75% porosity (i.e., approximately 50% to 75% of the plant is air space)
    - Plant height should vary in order to capture drift within 4 feet of ground applications
    - A mature height of 15 feet or more is required for trees
    - To ensure adequate coverage, 2 staggered rows should be located 5 feet apart and consist of minimum 5 gallon plants at least 6 feet tall planted 10 feet on center
    - Recommended plants include: Toyon (Heteromeles arbutifolia), Sugarbush (Rhus ovata), Laurel sumac (Malosma laurina) and Italian cypress (Cupressus sempervirens)
    - A long-term plan shall be in place for maintaining the vegetative shelter belt
2. Installation of a reinforced eight-foot high chain link fence with top bar;
3. Coordination between Limoneira Company and the Permittee regarding the schedule of agricultural spraying and notification thereof;
4. Posting of Right-to-Farm Ordinance at the project site; and,
5. Execution of an agreement to modify practices (between the Permittee and the Office of the Ventura County Agricultural Commissioner), if needed.

A reduced buffer will address the visual compatibility/aesthetic issues associated with the proposed project, screening the development from the adjacent agricultural lands and any potential public viewing locations. With the implementation and review of prescribed reduced buffer requirements, the proposed project would have less than significant impact on surrounding agricultural uses.

5B-2. With implementation of prescribed reduced buffer requirements incorporated into the project as conditions of approval, the project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 5b of the Ventura County Initial Study Assessment Guidelines.

Based on the above discussion, project-specific and cumulative impacts on agricultural land use incompatibility will be less than significant.

Mitigation/Residual Impact(s)

Potential impacts on agricultural resources will be less-than-significant and no mitigation is required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
6. Scenic Resources (Plng.)								
Will the proposed project:								
a) Be located within an area that has a scenic resource that is visible from a public viewing location, and physically alter the scenic resource either individually or cumulatively when combined with recently approved, current, and reasonably foreseeable future projects?		X				X		
b) Be located within an area that has a scenic resource that is visible from a public viewing location, and substantially obstruct, degrade, or obscure the scenic vista, either individually or cumulatively when combined with recently approved, current, and reasonably foreseeable future projects?		X				X		
c) Be consistent with the applicable General Plan Goals and Policies for Item 6 of the Initial Study Assessment Guidelines?		X				X		

6. Scenic Resources (Plng.) Impact Discussion:

6a. and 6b. The project site does not include any land within the Scenic Resource Protection (SRP) Overlay Zone. However, the site is located approximate ¼ mile north of the Santa Clara River and ¼ mile south of and State Route 126, an Eligible County Scenic Highway. The site is currently occupied by a 15-acre agricultural material composting operation that will be expanded to cover approximately 70 acres and include a commercial organics processing facility that would process food and green material delivered to the site. Existing agriculture provides a buffer between the existing composting operation and public viewing locations from Highway 126 and the Santa Clara River. Edwards Ranch Road is a private road and views of the project site would be seen from this location. A review of the project plans (Attachment 2) and photo simulations (Attachment 12, dated January 18, 2016), indicates the Facility Administration Building will be the tallest structure (35 ft in height) and the Wet and Dry Organics Building will be the largest (80,925 sf each). The project is setback from Highway 126 such that motorists traveling along this highway would only see the upper portion of the Facility Administration Building for a brief moment. Unless there is a reason to enter the Santa Clara River, public views from this vantage point would also be limited to the upper portion of the Facility Administration Building. The project would not obstruct, degrade, or obscure public views of these scenic vistas, either individually or cumulatively when combined with recently approved, current, and reasonably foreseeable future projects. Therefore, the proposed project would have less than significant impacts on scenic resources in the viewshed surrounding the project site.

Lighting is proposed as part of the of the project that could be visible from public views, if it is excessive or shines into adjacent areas. Therefore, Mitigation Measure BIO MM-4 is proposed, which requires the Applicant to submit a lighting plan to the Planning Division for review and approval.

The proposed project will include development that is characteristic of an industrial facility. Proposed buildings will support composting operations and provide office and classroom space for employees. Windrows will be located throughout the project site, with heavy equipment moving composting materials throughout the site. In order to minimize views of the facility and the intensity of uses that the proposed development will introduce, the project will be conditioned to require the Applicant to submit a materials sample/color board at the time of construction of the new buildings utilizing natural building materials and colors (earth tones and non-reflective paints). The Applicant will also be required to submit a landscape plan to provide visual screening of the facility as part of the screening and landscaping provided under Mitigation Measure CULTURAL MM-2.

The proposed project would result in less-than-significant, project-specific impacts and would not result in a cumulatively considerable contribution to a significant cumulative impact, related to scenic resources.

6c. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 6 of the *Ventura County Initial Study Assessment Guidelines*.

Conditions of Approval/Residual Impact(s)
<u>Building Materials and Colors</u>
Purpose: In order to ensure that buildings and structures comply with the development standards of the Ventura County Non-Coastal Zoning Ordinance and Ventura County General Plan Policy 1.7.2.2(3)(e) and blend in with the Project site's surroundings.

Requirement: The Permittee shall utilize building materials and colors compatible with surrounding terrain (earth tones and non-reflective paints) on exterior surfaces of all structures, including but not limited to the proposed buildings, water tanks, walls, and fences. All glass and other materials used on building exteriors and structures must be selected to minimize reflective glare.

Documentation: A copy of the approved plans denoting the building materials and colors.

Timing: Prior to the issuance of a Zoning Clearance for construction, the Permittee shall submit the building plans with the colors and materials noted on all structures for review and approval by the Planning Division. Prior to occupancy, the Permittee shall paint the structures according to the approved plans.

Monitoring and Reporting: The Planning Division maintains the approved plans in the Project file. Prior to occupancy, the Planning Division has the authority to inspect the site to ensure that the exterior of the structures were treated as approved. The Permittee shall maintain these materials and colors throughout the life of the Project. The Planning Division has the authority to inspect the site to confirm on-going compliance with the approved plans consistent with the requirements of § 8114-3 of the Ventura County Non-Coastal Zoning Ordinance.

Based on the discussion above, no mitigation measures are required.

Issue (Responsible Department)*	**Project Impact Degree Of Effect****				**Cumulative Impact Degree Of Effect****			
	N	LS	PS-M	PS	N	LS	PS-M	PS
7. Paleontological Resources								
Will the proposed project:								
a) For the area of the property that is disturbed by or during the construction of the proposed project, result in a direct or indirect impact to areas of paleontological significance?		X				X		
b) Contribute to the progressive loss of exposed rock in Ventura County that can be studied and prospected for fossil remains?		X				X		
c) Be consistent with the applicable General Plan Goals and Policies for Item 7 of the Initial Study Assessment Guidelines?		X				X		

7. Paleontological Resources Impact Discussion:

7a. In accordance with the Ventura County Initial Study Assessment Guidelines, Planning Division staff reviewed the Paleontological Map Series of the RMA GIS (2015c), which indicated the subject property has an undetermined paleontological importance. In addition, staff review the California Department Conservation GIS map located at https://maps.conservation.ca.gov/cgs/QSD, which identifies the geologic formation of the subject property as Alluvial fan deposits (Holocene to Pleistocene Quaternary Deposits) and Stream terrace deposits (early Holocene to Pleistocene) within the project site. Pursuant to the Ventura County Initial Study Assessment Guidelines, the paleontological importance of the project site is considered low (Ventura County, 2015a).

Although the proposed project will not likely result in impacts to paleontological resources, future ground disturbance activities will be subject to the following condition of approval, to ensure the protection of any subsurface resources that are inadvertently encountered during ground disturbance activities.

<u>Paleontological Resources Discovered During Grading</u>
Purpose: In order to mitigate potential impacts to paleontological resources that may be encountered during ground disturbance or construction activities.

Requirement: If any paleontological remains are uncovered during ground disturbance or construction activities, the Permittee shall:

a. Cease operations and assure the preservation of the area in which the discovery was made;

b. Notify the Planning Director in writing, within three days of the discovery;

c. Obtain the services of a paleontological consultant or professional geologist who shall assess the find and provide a report that assesses the resources and sets forth recommendations on the proper disposition of the site;

d. Obtain the Planning Director's written concurrence with the recommended disposition of the site before resuming development; and

e. Implement the agreed upon recommendations.

Documentation: The Permittee shall submit the paleontologist's or geologist's reports. Additional documentation may be required to demonstrate that the Permittee has implemented the recommendations set forth in the paleontological report.

Timing: If any paleontological remains are uncovered during ground disturbance or construction activities, the Permittee shall provide the written notification to the Planning Director within three days of the discovery. The Permittee shall submit the paleontological report to the Planning Division immediately upon completion of the report.

Monitoring and Reporting: The Permittee shall provide the paleontological report to the Planning Division to be made part of the Project file. The Permittee shall implement any recommendations made in the paleontological report to the satisfaction of the Planning Director. The paleontologist shall monitor all ground disturbance activities within the area in which the discovery was made, in order to ensure the successful implementation of the recommendations made in the paleontological report. The

Planning Division has the authority to conduct site inspections to ensure that the Permittee implements the recommendations set forth in the paleontological report, consistent with the requirements of § 8114-3 of the *Ventura County Non-Coastal Zoning Ordinance*.

7b. The proposed project will not contribute to the progressive loss of exposed rock in Ventura County that can be studied and prospected for fossil remains. Therefore, the proposed project will not create a project-specific impact and will not make a cumulatively considerable contribution to a significant cumulative impact to paleontological resources.

7c. The proposed project is consistent with the applicable *Ventura County General Plan Goals and Policies* for Item 7 of the *Ventura County Initial Study Assessment Guidelines.*

Mitigation/Residual Impact(s)

Based on the discussion above, no mitigation measures are required.

Issue (Responsible Department)*	**Project Impact Degree Of Effect****				**Cumulative Impact Degree Of Effect****			
	N	LS	PS-M	PS	N	LS	PS-M	PS
8A. Cultural Resources - Archaeological								
Will the proposed project:								
1) Demolish or materially alter in an adverse manner those physical characteristics that account for the inclusion of the resource in a local register of historical resources pursuant to Section 5020.1(k) requirements of Section 5024.1(g) of the Public Resources Code?		X				X		
2) Demolish or materially alter in an adverse manner those physical characteristics of an archaeological resource that convey its archaeological significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for the purposes of CEQA?		X				X		
3) Be consistent with the applicable General Plan Goals and Policies for Item 8A of the Initial Study Assessment Guidelines?		X				X		

8A. Cultural Resources - Archaeological Impact Discussion:

8a-1 and 8a-2. The proposed project will be located on a 70-acre portion of a 994-acre lot, within the Saticoy and Santa Paula 7.5 Minute Series Topographic Quadrangle Maps (USGS, 2015). The project site has been historically used for agricultural purposes and is presently cultivated with row crops and orchard plantings. The site is also occupied by the existing agricultural composting operation which currently occupies 15 acres of the subject property.

County Planning staff reviewed the Resources Appendix of the Ventura County General Plan (Figure 1.8.1) the County GIS database, and permits on adjoining properties. The project site is not located within either the Very Sensitive or Sensitive areas of the Archeological Sensitivity Map, and no past archaeological survey had been performed for the subject property.

On April 3,2019, County Planning staff contacted the South Central Coastal Information Center (SCCIC) to determine if an archaeological assessment would need to be performed. SCCIC is an affiliate of the State Office of Historic Preservation and the official repository for archaeological records for most of Southern California. SCCIC determined that a Phase I Archeological Resources Report should be prepared by a professional archaeologist prior to approval of project plans due the unknown archeological sensitivity of the project area. The Phase I Archeological Resources Report consists of a summary of the findings of the archeological record search, a surface survey of the project impact area and recommendations from the archeologist on appropriate actions for project implementation.

Padre Associates, Inc. was contracted by the Applicant to prepare the Phase I Archeological Resources Report. The formal record search performed by Padre indicated that no archaeological resources have been previously recorded within ½ miles of the project site. Though no archeological sites have been previously recorded within the ½ miles of the project site, the site is located within close proximity to the Western Santa Clara Valley Historic District and the Orchard Farm Historic District. Impacts related to these resources are evaluated further in 8b.

Padre Associates, Inc. also conducted a pedestrian survey of the project site on May 8, 2019. The survey did not identify any archeological resources within the project survey area.

In accordance with Public Resources Code Section 21080.3.1 et seq., on April 11, 2019, a formal request was sent to Native American representatives for consultation regarding the proposed project’s potential impact to tribal coastal resources. On April 12, 2019, Ms. Julie Tumamait-Stenslie, Chair of the Barbareno-Ventureno Band of Mission Indians and designated Native American Heritage Commission tribe listed with traditional lands or cultural places within the boundary of Ventura County, requested to review the Phase I Cultural Resources Report. The report was provided to Ms. Tumamait-Stenslie on May 16, 2019. As of the date of this report, no response has been received from Ms. Tumamait-Stenslie.

Based on the results of the Cultural Phase I Report, no significant archaeological resources exist on the project site and in the areas proposed for development, and no additional cultural resource surveys would be required for the proposed development. Although the proposed project is unlikely to result in impacts to archaeological resources, future ground disturbance activities will be subject to the condition of approval (below), to ensure the protection of any subsurface resources if they are inadvertently encountered during ground disturbance activities.

With the inclusion of archaeological resources condition (below), the proposed project would not demolish or materially alter in an adverse manner the physical characteristics of an archaeological resource in a local register, pursuant to Section 5020.1(k) requirements of Section 5024.1(g) of the Public Resources Code. Therefore, the proposed project will have a less-than-significant impact on archaeological resources. Furthermore, the proposed project will not make a cumulatively considerable contribution to a significant cumulative impact related to archaeological resources.

8a-3. With implementation of the recommended condition of approval, the proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 8a of the *Ventura County Initial Study Assessment Guidelines*.

Condition of Approval/Residual Impact(s)
<u>Archaeological Resources Discovered During Grading</u>
Purpose: In order to mitigate potential impacts to archaeological resources discovered during ground disturbance.

Requirement: The Permittee shall implement the following procedures:

a. If any archaeological or historical artifacts are uncovered during ground disturbance or construction activities, the Permittee shall:

   (1) Cease operations and assure the preservation of the area in which the discovery was made;

   (2) Notify the Planning Director in writing, within three days of the discovery;

   (3) Obtain the services of a County-approved archaeologist who shall assess the find and provide recommendations on the proper disposition of the site in a written report format;

   (4) Obtain the Planning Director's written concurrence of the recommended disposition of the site before resuming development; and

   (5) Implement the agreed upon recommendations.

b. If any human burial remains are encountered during ground disturbance or construction activities, the Permittee shall:

   (1) Cease operations and assure the preservation of the area in which the discovery was made;

   (2) Immediately notify the County Coroner and the Planning Director;

   (3) Obtain the services of a County-approved archaeologist and, if necessary, Native American Monitor(s), who shall assess the find and provide recommendations on the proper disposition of the site in a written report format;

   (4) Obtain the Planning Director's written concurrence of the recommended disposition of the site before resuming development on-site; and

   (5) Implement the agreed upon recommendations.

Documentation: If archaeological remains are encountered, the Permittee shall submit a report prepared by a County-approved archaeologist including recommendations for the proper disposition of the site. Additional documentation may be required to demonstrate that the Permittee has implemented any recommendations made by the archaeologist's report.

Timing: If any archaeological remains are uncovered during ground disturbance or construction activities, the Permittee shall provide the written notification to the Planning Director within three days of the discovery. The Permittee shall submit the archaeological report to the Planning Division immediately upon completion of the report.

Monitoring and Reporting: The Permittee shall provide the archaeological report to the Planning Division to be made part of the Project file. The Permittee shall implement any recommendations made in the archaeological report to the satisfaction of the Planning Director. The archaeologist shall monitor all ground disturbance activities within the area in which the discovery was made, in order to ensure the successful implementation of the recommendations made in the archaeological report. The Planning Division has the authority to conduct site inspections to ensure that the Permittee implements the recommendations set forth in the archaeological report, consistent with the requirements of § 8114-3 of the Ventura County Non-Coastal Zoning Ordinance.

Based on the discussion above, no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
8B. Cultural Resources – Historic (Plng.)								
Will the proposed project:								
1) Demolish or materially alter in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources?			X				X	
2) Demolish or materially alter in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the Public Resources Code or its identification in a historical resources survey meeting the requirements of Section 5024.1(g) of the Public Resources Code?			X				X	
3) Demolish or materially alter in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA?			X				X	
4) Demolish, relocate, or alter an historical resource such that the significance of the historical resource will be impaired [Public Resources Code, Sec. 5020(q)]?			X				X	

8B. Cultural Resources – Historic (Plng.) Impact Discussion:

8B-1. through 8B-4. The proposed project is located on a 70-acre portion of a 994-acre parcel, within the Saticoy and Santa Paula 7.5 Minute Series Topographic Quadrangle Maps (USGS, 2015). The subject property is located within the western Santa Clara Valley, a geographic area between Saticoy to the west and the City of Santa Paula to the east. The subject property has been historically used for agricultural purposes and is presently cultivated with row crops and orchard plantings. The parcel also contains residential buildings and agricultural support structures.

The subject property was determined to be a contributor to two, National Register of Historic Preservation (NRHP) eligible historic districts based on a comprehensive survey of the unincorporated western Santa Clara Valley performed in 1996. The subject property also contains Ventura County Landmark No. 2 - The More-Edwards Adobe. A Phase II Historic Resources Report (HRR) was prepared by San Buenaventura Research Associates (SBRA) to assess whether the proposed project will have significant adverse impacts on these districts and the designated Ventura County Landmark No. 2. (Attachment 13).

The western Santa Clara Valley was determined to be eligible for listing as a rural historic landscape district under NRHP evaluation Criterion A as a result of the area's characteristic expression of growth and development related to the area's period of significance (1860-1946). The survey states,

> *"The district illustrates the historical development of agricultural products and farming techniques, and documents the progression of this land use from the dry farming of grains and row crops, to irrigated tree crops and citrus ranching. The district also illustrates the historic use of the land within the adjacent canyons for stock raising and tree crops."*

Under the NRHP evaluation Criterion C, the survey found that the district was one of the best-preserved examples of a mature Southern California citriculture landscape. The district possesses a significant concentration of buildings, structures, objects and sites related to the citriculture land use. The project site is also within a subarea evaluated in the survey and separately determined to be eligible under NRHP evaluation Criterion A and C. The Edwards Ranch-Orchard Farm was part of the larger Rancho Santa Paula y Saticoy granted to Manuel Jimeno Casarin in 1843, and subsequently sold to Thomas Wallace More in the late 1850's. The 1,043-acre Edwards Ranch-Orchard Farm was apportioned from the Rancho Santa Paula y Saticoy in 1867. The survey identifies the property as the oldest continuous operating ranch in the western Santa Clara Valley. From the period of the late 1850's to Samuel Edwards' purchase of the property in 1883, various buildings and structures were constructed on the subject property. This period is also noteworthy for the introduction of the first 160-acre orchard on the ranch in 1862.

Buildings and structures contributing to the eligibility determination include:

- The More-Edwards Adobe: A cluster of buildings located approximately 250 feet west of the project site comprised of the More-Edwards Adobe and five secondary residences. The More-Edwards Adobe was constructed in 1860 by W.D. Hobson for Thomas Wallace More. Other buildings within this grouping include an office building, two barns, equipment sheds and a row of other buildings that include a schoolhouse moved onto the property after 1902. The Historical Resources Report (Attachment 13) notes that severe structural damage to the More-Edwards Adobe has occurred since the survey occurred in 1996. The report notes that:

> *"a substantial portion of the building's eastern wall and a portion of the southern wall have collapsed. The two-story porch on the southern elevation is now almost entirely missing. Wood lap siding covering the adobe wall on the western elevation is bowed in places, suggesting the presence of structural trauma in the wall underneath."*

- Ranch Residence: A circa 1920 single story residence and barn located approximately 25 feet from the project site. The residence is presently occupied.
- Edwards House: A circa 1910 two-story residence, a tennis court and landscaping improvements.

The historic resources report identifies potential project-related impacts and cumulative impacts associated with pending and approved projects within the vicinity of the project area. The project related impacts include the conversion of 55 acres of land from agricultural use. The existing agricultural use of the property contributes to the significance and eligibility of the western Santa Clara Valley and the Edwards Ranch-Orchard Farm rural historic landscape districts. Implementation of the project will result in a reduction of design and setting integrity to the districts and should be regarded as having a significant adverse impact on these districts. Similarly, the operation of the proposed Large-Scale Commercial Organic Processing Operation will introduce activities and buildings in close proximity to buildings that contribute to the significance and eligibility of the historic districts and the More-Edwards Adobe, Ventura County Landmark No. 2. This activity will result in a substantial loss of integrity of setting for these features. The proposed project may also result in the further degradation of these buildings which presently exhibit existing signs of deterioration.

On September 23, 2019, the Cultural Heritage Board (CHB) conducted a public meeting to review the project. The CHB found that construction and operational activities associated with the proposed project may result in adverse impacts to the undesignated potentially eligible historic districts. However, the CHB found that the project-related impacts could be mitigated to a less than significant level with the incorporation of recommended mitigation measures CULTURAL MM-1, and CULTURAL MM-2. Mitigation measure CULTURAL MM-1 will address data recovery and CULTURAL MM-2 requires the Applicant to submit a landscape plan that will introduce a buffer and screen between these structures. No direct impacts to Ventura County Landmark No. 2 (the More-Edwards Adobe) will result from the proposed project; the project will not result in demolition or modification of the building and does not involve operational activities that can impact the structure. Project traffic will utilize the Edwards Ranch Road for site access which is approximately 1,200 feet north of Ventura County Landmark No. 2. Additionally, the proposed CUP boundary is approximately 250 feet away from the landmark site.

Mitigation/Residual Impact(s)

Mitigation Measure CULTURAL MM-1 – Historic American Buildings Level-III Photo Survey

Purpose: In order to document and formally catalogue the condition of the existing More-Edwards farm cluster.

Requirement: A qualified Historic American Buildings (HABS) photographer in concert with a qualified architectural historian shall collect HABS -Level lll documentation of the site. This shall include documentation of the More-Edwards farm cluster spatial relationships, historic context, and the structures, objects and buildings within the farm cluster.

Documentation: The documentation will consist of overview photographs of the farm cluster, photo caption index, photo key maps, and a short-form historic report incorporating a basic plan of the site to create a historic record with 16 to 20 photographic views taken on large format (4-inch x 5-inch or 5-inch x 7-inch) film.

Timing: Prior to the issuance of a Zoning Clearance for construction, the Permittee shall submit one (1) copy of the signed contract (financial information redacted) with a HABS photographer and architectural historian responsible for conducting the HABS survey and one (1) copy of a statement of qualifications for both contractors. The HABS survey shall be conducted prior to commencement of any ground disturbing activities. Within 30 days of the completion of the HABS surveys, the Permittee shall provide documentation of the survey results.

Monitoring and Reporting: The Planning Division and Cultural Heritage Board Program Staff maintains copies of the signed contract and the HABS III survey in the Project file. The Planning Division has the authority to inspect the property during the construction phase of the Project to ensure that the survey work is conducted as required. If the Planning Division confirms that the HABS III survey is not conducted as required, enforcement actions may be enacted in accordance with § 8114-3 of the Ventura County Non-Coastal Zoning Ordinance.

Monitoring and Reporting: The Planning Division and Cultural Heritage Board Program Staff maintains copies of the HABS III survey in the Project file. The Planning Division has the authority to inspect the property to ensure that the stabilization work is completed as required. If the Planning Division confirms that the documentation requirements have not been implemented as approved, enforcement actions may be enacted in accordance with § 8114-3 of the Ventura County Non-Coastal Zoning Ordinance.

Mitigation Measure CULTURAL MM–2 – Screening and Landscaping Plan

Purpose: To ensure that operational impacts associated with the project do not have an adverse effect on the western Santa Clara Valley and the Edwards Ranch-Orchard Farm, unlisted rural historic landscape districts, identified as eligible for listing within the National Register of Historic Places under Criterion A and Criterion C and to comply with the County's landscaping and screening requirements.

Requirement: In addition to standard requirements for landscaping and screening, the Permittee shall prepare a landscape plan that details. Installation of the approved landscaping.

The Permittee shall retain a landscape architect to prepare a landscape plan that complies with the requirements of this condition and the "Ventura County Landscape Design Criteria" (1992).

Landscaping Objectives: The Permittee must install and maintain landscaping and screening that serves the following functions:

a. Screens undesirable views, incompatible land uses or uses in natural settings. The Permittee must install landscaping and screening to screen the Administrative Building, Material Processing Buildings, Maintenance and Packing Buildings, parking area, open windrow composting areas, heavy equipment, materials loading areas, mechanical heating and cooling equipment, water tanks and other site equipment from State Route 126.

b. Provides visual relief and visual integration with the surrounding agricultural use and the historic use of the site for citriculture. The Permittee must install landscaping that integrates the structures with their surrounding agricultural land uses.

c. Ensures compatibility with community character. The Permittee must install landscaping that visually integrates the development with the character of the surrounding community.

d. Compliance with the California Department of Water Resources Model Water Efficient Landscape Ordinance. The Permittee must install landscaping that complies with the requirements of the California Department of Water Resources' Model Water Efficient Landscape Ordinance, which is available on-line at: http://www.water.ca.gov/wateruseefficiency/landscapeordinance/.

e. Provide appropriate screening measures from the historic district and landmark in such a manner as to minimize its visual impact upon the district and historic landmark, subject to review and approval of Cultural Heritage Board Program Staff's review and approval. The landscape plan shall incorporate and identify an appropriate mix of box specimen trees (representative of the historic citriculture use of the site), shrubs and perimeter fencing around the CUP Boundary to meet the objective of this screening requirement.

Landscaping Design: The Permittee shall design all landscaping such that the landscaping requires minimal amounts of water and uses required water efficiently, in accordance with the water efficiency requirements of the Landscape Design Criteria and the California Department of Water Resources Model Water Efficient Landscape Ordinance, and must achieve the following design objectives:

a. Use Available Non-potable Sources of Water. The landscaping must involve the harvesting and/or use of alternative, non-potable sources of water, including stormwater, reclaimed water, and gray water, if available to the Project site.

b. Protection of Solar Access. The Permittee must design the landscaping to avoid the introduction of vegetation that would now or in the future cast substantial shadow on existing solar collectors or photovoltaic cells, or impair the function of a nearby building using passive solar heat collection.

d. Create Viable Growing Environment. The landscape design must address the needs of the plants to ensure their health, long-term viability, and protection.

e. Species Diversity. The landscape plan must integrate a variety of plant species, heights, colors, and textures, as appropriate given the size of the landscape.

h. Use Non-Invasive Plant Species.

Financial Security: The Permittee shall:

a. Post a financial assurance to cover the costs of planting and maintaining the required landscaping for 1-year period. The financial assurance may consist of cash, a time certificate of deposit, letter of credit, or bond in a form satisfactory to the Planning Director. The amount of the financial assurance must be based upon cost estimates in the approved landscape plan. The financial assurance shall designate the Ventura County Planning Division as the beneficiary of the instrument.

Upon satisfactory completion of the provisions of the landscape and screening plan for which the financial assurance is made, the County of Ventura can reassign the financial assurance to the Permittee upon request. If the Permittee fails to carry out the provisions of the landscape plan, the County may use the financial assurance to pay the costs associated with correcting the failure. If the amount of the financial assurance exceeds the cost and expense incurred by the County, the County may refund the Permittee the remaining balance. If the amount of the financial assurance is less than the cost and expense incurred by the County for the offsets, the Permittee shall be liable to the County for the difference.

b. Reimburse the County for staff and/or consultant costs to monitor compliance with the approved landscape plan. Planning Division staff time and consultant costs to monitor compliance will be billed to the Condition Compliance account for the Project. (See Condition No. [insert the condition number for the condition that discusses the Condition Compliance account].)

Documentation: The Permittee shall submit three sets of a draft landscape plan to the Planning Division for review and approval. The draft landscape plan is subject to review and approval of Cultural Heritage Board Program. A California registered landscape architect (or other qualified individual as approved by the Planning Director) shall prepare the landscape plan, demonstrating compliance with the requirements set forth in this mitigation measure (above), § 8109-0.6 (Landscaping) of the Non-Coastal Zoning Ordinance, and the Ventura County Landscape Design Criteria. The landscape architect responsible for the work shall stamp the plan. After landscape installation, the Permittee shall submit to Planning Division staff a statement from the project landscape architect that the Permittee installed all landscaping as shown on the approved landscape plan. Prior to installation of the landscaping, the Permittee must obtain the Planning Director's approval of any changes to the landscape plans that affect the character or quantity of the plant material or irrigation system design.

The landscape plan shall include an estimate of the costs to install and maintain the required landscaping for 1-year. The Permittee shall submit the required financial assurance to the Planning Division.

Timing: The Permittee shall submit the landscape plan to the Planning Division for review and approval prior to issuance of a Zoning Clearance for construction. Landscaping installation and maintenance activities shall occur according to the timing requirements set forth in the "Ventura County Landscape Design Criteria" (§ F).

The Permittee shall submit the required financial assurance prior to the issuance of a Zoning Clearance for construction. The financial assurance may be released 1-year after landscape installation if the Planning Division determines that the landscaping is in substantial conformance with the approved landscape plan.

Monitoring and Reporting: Landscaping approval/installation verification, monitoring activities, and enforcement activities shall occur according to the procedures set forth in the "Ventura County Landscape Design Criteria" (§§ F and G) and § 8114-3 of the Non-Coastal Zoning Ordinance. The Planning Division maintains the landscape plans and statement by the landscape architect in the Project file and has the authority to conduct site inspections to ensure that the Permittee installs and maintains the landscaping in accordance with the approved plan consistent with the requirements of § 8114-3 of the Non-Coastal Zoning Ordinance. Operations maintains copies of the financial documentation submitted by the Permittee.

Residual Impacts:

With the implementation of Mitigation Measures CULTURAL MM-1, and CULTURAL MM-2, project-specific impacts, as well as the proposed project's contribution to significant cumulatively considerable impacts to historic cultural resources will be reduced to a less than significant level.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
9. Coastal Beaches and Sand Dunes								
Will the proposed project:								
a) Cause a direct or indirect adverse physical change to a coastal beach or sand dune, which is inconsistent with any of the coastal beaches and coastal sand dunes policies of the California Coastal Act, corresponding Coastal Act regulations, Ventura County Coastal Area Plan, or the Ventura County General Plan Goals, Policies and Programs?	X				X			
b) When considered together with one or more recently approved, current, and reasonably foreseeable probable future projects, result in a direct or indirect, adverse physical change to a coastal beach or sand dune?					X			
c) Be consistent with the applicable General Plan Goals and Policies for Item 9 of the Initial Study Assessment Guidelines?	X							

9. Coastal Beaches and Sand Dunes Impact Discussion:

9a and 9b. The project site is located approximately 8.5 miles east of the Pacific Ocean and, at that distance, the proposed project does not have the potential to adversely impact a coastal beach or sand dune. Therefore, the proposed project will not create a project specific impact and will not make a cumulatively considerable contribution to a significant cumulative impact, to coastal beaches or sand dunes.

9c. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for item 9 of the *Ventura County Initial Study Assessment Guidelines*.

Mitigation/Residual Impact(s)
No significant Impacts on coastal beaches and sand dunes have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
10. Fault Rupture Hazard (PWA)								
Will the proposed project:								
a) Be at risk with respect to fault rupture in its location within a State of California designated Alquist-Priolo Special Fault Study Zone?	X							
b) Be at risk with respect to fault rupture in its location within a County of Ventura designated Fault Hazard Area?	X							
c) Be consistent with the applicable General Plan Goals and Policies for Item 10 of the Initial Study Assessment Guidelines?	X				X			

10. Fault Rupture Hazard (PWA) Impact Discussion:

Fault rupture hazard will impact each project individually. No cumulative fault rupture hazard would occur as a result of other projects. Any discussion of potential impacts of seismic and geologic hazards to the proposed project is provided for informational purposes only and is neither required by CEQA nor subject to its requirements.

10a. and 10b. There are no known active or potentially active faults extending through the proposed project based on State of California Earthquake Fault Zones in accordance with the Alquist Priolo Earthquake Fault Zoning Act, and Ventura County General Plan Hazards Appendix - Figure 2.2.3b. Furthermore, no habitable structures are proposed at this time within 50 feet of a mapped trace of an active fault. There is no impact (N) from potential fault rupture hazard. Therefore, the proposed project will not result in a project-specific impact from potential fault rupture hazard. There is no known cumulative fault rupture hazard impact that will occur as a result of other approved, proposed, or probable projects.

10c. The project is consistent with the applicable *Ventura County General Plan Goals and Policies* for Item 10 of the *Ventura County Initial Study Assessment Guidelines.*

Mitigation/Residual Impact(s)

No significant Impacts on fault rupture hazards have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
11. Ground Shaking Hazard (PWA)								
Will the proposed project:								
a) Be built in accordance with all applicable requirements of the Ventura County Building Code?		X			X			
b) Be consistent with the applicable General Plan Goals and Policies for Item 11 of the Initial Study Assessment Guidelines?						X		

11. Ground Shaking Hazard (PWA) Impact Discussion:

The hazards from ground shaking will affect each project individually. No cumulative ground shaking hazard would occur as a result of other projects. Any discussion of potential impacts from ground shaking is provided for informational purposes only and is neither required by CEQA nor subject to its requirements.

11a. The property will be subject to moderate to strong ground shaking from seismic events on local and regional fault systems. The County of Ventura Building Code adopted from the California Building Code, requires structures be designed to withstand this ground shaking. The seismic design parameters are provided by the Update of Geotechnical Engineering Report, prepared by Earth Systems, Inc., dated May 17, 2017, page 4 and 5. These parameters may need to be updated to the building code in effect at the time the application for a building permit is submitted. The requirements of the building code will reduce the effects of ground shaking to less than significant (LS). The hazards from ground shaking will affect each project individually, and no cumulative ground shaking hazard will occur as a result of other approved, proposed, or probable projects.

11b. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 11 of the *Ventura County Initial Study Assessment Guidelines.*

Therefore, the project is consistent with the applicable General Plan Goals and Policies for Item 11 of the Initial Study Assessment Guidelines.

Mitigation/Residual Impact(s)

No significant Impacts on ground shaking hazards have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
12. Liquefaction Hazards (PWA)								
Will the proposed project:								
a) Expose people or structures to potential adverse effects, including the risk of loss, injury, or death involving liquefaction because it is located within a Seismic Hazards Zone?		X						
b) Be consistent with the applicable General Plan Goals and Policies for Item 12 of the Initial Study Assessment Guidelines?		X				X		

12. Liquefaction Hazards (PWA) Impact Discussion:

The hazards from liquefaction will affect each project individually. No cumulative liquefaction hazard would occur as a result of other projects. Any discussion of potential impacts of seismic and geologic hazards to the proposed project is provided for informational purposes only and is neither required by CEQA nor subject to its requirements.

12a. The property is located within a potential liquefaction zone based on the Ventura County General Plan Hazards Appendix – Figure 2.4b. This map is a compilation of the State of California Seismic Hazards Maps for the County of Ventura and was used as the basis for delineating the potential liquefaction hazards within the county. The Update Geotechnical Engineering Report, prepared by Earth Systems, dated May 17, 2017 concludes that the soil profile will experience liquefaction and or seismically-induced settlements during a strong seismic event. The report documents as much as 11 inches of settlement in the vicinity of Boring Number 6 (CPT or cone penetrometer test) and between 0.1 and 4.0 inches for the 9 other boring locations (Page 6). These settlements may be mitigated by some remedial grading or ground improvement technology (i.e., deep dynamic compaction, cemented deep soil mixed columns, stone columns, etc.). In this regard, the potential hazards resulting from liquefaction are considered to be less than significant because the impacts can be address through the . The hazards from liquefaction will affect each project individually, and no cumulative liquefaction hazard will occur as a result of other approved, proposed, or probable projects.

12b. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 12 of the *Ventura County Initial Study Assessment Guidelines.*

Mitigation/Residual Impact(s)

No significant Impacts on liquefaction hazards have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
13. Seiche and Tsunami Hazards (PWA)								
Will the proposed project:								
a) Be located within about 10 to 20 feet of vertical elevation from an enclosed body of water such as a lake or reservoir?	X							
b) Be located in a mapped area of tsunami hazard as shown on the County General Plan maps?	X							
c) Be consistent with the applicable General Plan Goals and Policies for Item 13 of the Initial Study Assessment Guidelines?	X				X			

13. Seiche and Tsunami Hazards (PWA) Impact Discussion:

The hazards from seiche and tsunami will affect each project individually. No cumulative seiche and tsunami hazard would occur as a result of other projects. Any discussion of potential impacts of seismic and geologic hazards to the proposed project is provided for informational purposes only and is neither required by CEQA nor subject to its requirements.

13a. The site is not located adjacent to a closed or restricted body of water based on aerial imagery review (photos dated October 21, 2017, aerial imagery is under the copyrights of Pictometry, Source: Pictometry©, 2017) and is not subject to seiche hazard. There is no hazard from potential seiche and no impact to the proposed project. Therefore, the proposed project will not have a project-specific impact related to potential seiche hazard. The hazards from seiche will affect each project individually, and no cumulative seiche hazard will occur as a result of other approved, proposed, or probable projects.

13b. The project is not mapped within a tsunami inundation zone based on the Ventura County General Plan, Hazards Appendix, Figure 2.6, dated October 22, 2013. There is no impact (N) from potential hazards from tsunami. Therefore, the proposed project will not have a project-specific impact related to tsunami hazards. The hazards from tsunami will affect each project individually, and no cumulative tsunami hazard will occur as a result of other approved, proposed, or probable projects.

13c. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 13 of the *Ventura County Initial Study Assessment Guidelines.*

Mitigation/Residual Impact(s)

No significant seiche or tsunami Hazards have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	**Project Impact Degree Of Effect****				**Cumulative Impact Degree Of Effect****			
	N	LS	PS-M	PS	N	LS	PS-M	PS
14. Landslide/Mudflow Hazard (PWA)								
Will the proposed project:								
a) Result in a landslide/mudflow hazard, as determined by the Public Works Agency Certified Engineering Geologist, based on the location of the site or project within, or outside of mapped landslides, potential earthquake induced landslide zones, and geomorphology of hillside terrain?	X							
b) Be consistent with the applicable General Plan Goals and Policies for Item 14 of the Initial Study Assessment Guidelines?	X				X			

14. Landslide/Mudflow Hazard (PWA) Impact Discussion:

The hazards from landslides/mudslides will affect each project individually. No cumulative landslide/mudslide hazard would occur as a result of other projects. Any discussion of potential impacts of seismic and geologic hazards to the proposed project is provided for informational purposes only and is neither required by CEQA nor subject to its requirements.

14a. The site is not located in a mapped landslide, not located within a hillside area, and is not located in a potential seismically induced landslide zone, based on analysis conducted by the California Geological Survey as part of California Seismic Hazards Mapping Act, 1991, Public Resources Code Sections 2690 2699.6. The project does not include any excavations into a hillside. There are no impacts (N) to the project resulting from landslide hazard. The hazards from landslides/mudslides will affect each project individually. No cumulative landslide/mudslide hazard would occur as a result of other projects.

14b. The proposed project is consistent with the applicable *Ventura County General Plan Goals and Policies* for Item 14 of the *Ventura County Initial Study Assessment Guidelines.*

Mitigation/Residual Impact(s): No significant Impacts on landslide and mudflow hazards have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
15. Expansive Soils Hazards (PWA)								
Will the proposed project:								
a) Expose people or structures to potential adverse effects, including the risk of loss, injury, or death involving soil expansion because it is located within a soils expansive hazard zone or where soils with an expansion index greater than 20 are present?		X						
b) Be consistent with the applicable General Plan Goals and Policies for Item 15 of the Initial Study Assessment Guidelines?		X			X			

15. Expansive Soils Hazards (PWA)Impact Discussion:

The hazards from expansive soils will affect each project individually. No cumulative expansive soils hazard would occur as a result of other projects. Any discussion of potential impacts of seismic and geologic hazards to the proposed project is provided for informational purposes only and is neither required by CEQA nor subject to its requirements.

15a. The expansion range of the soils in the project area will be mitigated to less than significant by implementation of the Ventura County Building Code. The Update Geotechnical Engineering Report, prepared by Earth Systems, dated May 17, 2017, recommends foundations into future compacted fill be designed for medium expansive soils conditions (Attachment 9, page 17). Future development of the site will be subject to the requirements of the County of Ventura Building Code adopted from the California Building Code, dated 2016, Section 1803.5.3 that require mitigation of potential adverse effects of expansive soils. These parameters may need to be updated to the building code in effect at the time the application for a building permit is submitted. The hazard associated with adverse effects of expansive soils is considered to be less than significant (LS). The hazards from expansive soils will affect each project individually. No cumulative expansive soils hazard would occur as a result of other projects.

15b. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 15 of the *Ventura County Initial Study Assessment Guidelines.*

Mitigation/Residual Impact(s)

No significant Impacts on expansive soil hazards have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	**Project Impact Degree Of Effect****				**Cumulative Impact Degree Of Effect****			
	N	LS	PS-M	PS	N	LS	PS-M	PS
16. Subsidence Hazard (PWA)								
Will the proposed project:								
a) Expose people or structures to potential adverse effects, including the risk of loss, injury, or death involving subsidence because it is located within a subsidence hazard zone?		X						
b) Be consistent with the applicable General Plan Goals and Policies for Item 16 of the Initial Study Assessment Guidelines?		X			X			

16. Subsidence Hazard (PWA) Impact Discussion:

The subsidence hazards will affect each project individually. No cumulative subsidence hazard would occur as a result of other projects. Any discussion of potential impacts of seismic and geologic hazards to the proposed project is provided for informational purposes only and is neither required by CEQA nor subject to its requirements.

16a. The project site is located within the probable subsidence hazard zone as delineated on the Ventura County General Plan Hazards Appendix Figure 2.8 (October

22, 2013). A subsidence hazard to an area may be caused by the removal of oil, gas and/or water such that the overburden load that the liquid used to support is placed on the rock or sediment structure and this material becomes compressed producing a net loss in volume and a depression in the land surface. The proposed project is not for oil, gas or groundwater extraction and the effects of the project on subsidence are less than significant. Therefore, the subsidence hazard is considered to be less than significant (LS). The hazards from subsidence will affect each project individually. No cumulative subsidence hazard would occur as a result of other projects.

16b. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 16 of the *Ventura County Initial Study Assessment Guidelines.*

Mitigation/Residual Impact(s)
No significant Impacts on subsidence hazards have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
17a. Hydraulic Hazards – Non-FEMA (PWA)								
Will the proposed project:								
1) Result in a potential erosion/siltation hazard and flooding hazard pursuant to any of the following documents (individually, collectively, or in combination with one another): • 2007 Ventura County Building Code Ordinance No.4369 • Ventura County Land Development Manual • Ventura County Subdivision Ordinance • Ventura County Coastal Zoning Ordinance • Ventura County Non-Coastal Zoning Ordinance • Ventura County Standard Land Development Specifications • Ventura County Road Standards • Ventura County Watershed Protection District Hydrology Manual • County of Ventura Stormwater Quality Ordinance, Ordinance No. 4142 • Ventura County Hillside Erosion Control Ordinance, Ordinance No. 3539 and Ordinance No. 3683 • Ventura County Municipal Storm Water NPDES Permit • State General Construction Permit • State General Industrial Permit • National Pollutant Discharge Elimination System (NPDES)?		X				X		
2) Be consistent with the applicable General Plan Goals and Policies for Item 17A of the Initial Study Assessment Guidelines?		X				X		

17a. Hydraulic Hazards – Non-FEMA (PWA) Impact Discussion:

17a 1. There is an increase in impervious area proposed by the project. No increase in flooding hazard or potential for erosion or siltation will occur as a result of the proposed project as the increase in runoff will be collected and detained in proposed stormwater impoundments (Regional and Local Hydrology Study, Attachment 14, April 2017, page

12). Any future development will be completed according to current codes and standards that will require no increase in flooding hazard or increase in the potential for erosion or siltation.

17a 2. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 17a of the *Ventura County Initial Study Assessment Guidelines.*

Mitigation/Residual Impact(s)

No significant Impacts on non-FEMA hydraulic hazards have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
17b. Hydraulic Hazards – FEMA (WPD)								
Will the proposed project:								
1) Be located outside of the boundaries of a Special Flood Hazard Area and entirely within a FEMA-determined 'X-Unshaded' flood zone (beyond the 0.2% annual chance floodplain: beyond the 500-year floodplain)?		X				X		
2) Be located outside of the boundaries of a Special Flood Hazard Area and entirely within a FEMA-determined 'X-Shaded' flood zone (within the 0.2% annual chance floodplain: within the 500-year floodplain)?		X				X		
3) Be located, in part or in whole, within the boundaries of a Special Flood Hazard Area (1% annual chance floodplain: 100-year), but located entirely outside of the boundaries of the Regulatory Floodway?		X				X		
4) Be located, in part or in whole, within the boundaries of the Regulatory Floodway, as determined using the 'Effective' and latest available DFIRMs provided by FEMA?		X				X		
5) Be consistent with the applicable General Plan Goals and Policies for Item 17B of the Initial Study Assessment Guidelines?		X				X		

17b. Hydraulic Hazards – FEMA (WPD) Impact Discussion:

17b-1. through 17b-4. The proposed project is not located in a Federal Emergency Management Agency (FEMA) 1% annual chance (100-year) floodplain as evidenced on FEMA digital Flood Insurance Rate Map 06111C0770E, and 06111C0790E effective January 20, 2010. The project site is in "Zone X Unshaded" areas (i.e., outside of the 100-year floodplain). However, offsite flows from Todd Barranca as determined in the Hydrologic and Hydraulic (H&H) analysis (Attachment 14, Harrison Industries, November 2018) would be higher than one foot above the landside finished grade of the proposed retaining wall along the east side of the development (see Plan Sheets 19 and 20). This creates a leveed condition and therefore the retaining wall must be designed as a flood wall and meet the guidelines for levee design as delineated by the Army Corp of Engineers.

The project proponent will be required to submit final versions of the “Regional & Local Hydrology Study” (Attachment 14) prepared by Harrison and the “Hydrologic and Hydraulic (H&H) Report Todd Barranca” prepared by NextGen and all source model files used to support the study’s findings. The Regional & Local Hydrology Study will be required to be updated to remove any statement of the District as the owner of the adjacent trapezoidal channel. Based on the District’s database of facilities, this channel is not owned by the District.

It has been determined that the proposed project design with the conditions mentioned above mitigates the direct and indirect project-specific and cumulative impacts. Therefore, it is staff’s position that the project impact on the flood hazard is “Less than Significant”.

17b 5. As stated above, the project site is located outside of the 1% annual chance (100-year) floodplain as evidenced on the latest effective DFIRM and, therefore, will be consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 17b of the *Ventura County Initial Study Assessment Guidelines*.

Mitigation/Residual Impact(s)

No significant Impacts on FEMA hydraulic hazards have been identified; therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
18. Fire Hazards (VCFPD)								
Will the proposed project:								
a) Be located within High Fire Hazard Areas/Fire Hazard Severity Zones or Hazardous Watershed Fire Areas?		X				X		
b) Be consistent with the applicable General Plan Goals and Policies for Item 18 of the Initial Study Assessment Guidelines?		X				X		

18. Fire Hazards (VCFPD) Impact Discussion:

18a. The subject property is not located within a High Fire Severity Zone. Fire Station 26, located at 536 West Main Street, Santa Paula, is 5.5 miles northeast of the project site. The proposed project will comply with all applicable Federal and State regulations and the requirements of the Ventura County Building Code and Ventura County Fire Code. The proposed project will be subject to conditions of approval to ensure the project is in conformance with current California State Law and the Ventura County Fire Code. Therefore, the proposed project will not create a project-specific impact and will not make a cumulatively considerable contribution to a significant cumulative fire hazards impact.

18b. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 18 of the *Ventura County Initial Study Assessment Guidelines.*

Mitigation/Residual Impact(s)

No significant Impacts on fire hazards have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
19. Aviation Hazards (Airports)								
Will the proposed project:								
a) Comply with the County's Airport Comprehensive Land Use Plan and pre-established federal criteria set forth in Federal Aviation Regulation Part 77 (Obstruction Standards)?	X				X			
b) Will the proposed project result in residential development, a church, a school, or high commercial business located within a sphere of influence of a County airport?	X				X			
c) Be consistent with the applicable General Plan Goals and Policies for Item 19 of the Initial Study Assessment Guidelines?	X				X			

19. Aviation Hazards (Airports) Impact Discussion:

19a. and 19b. The proposed project will not involve any obstruction to navigable airspace, as all reasonably foreseeable future development on-site will be limited to a maximum of 35 feet. Additionally, the proposed project is not located within the sphere of influence of any County airport. The nearest County airport, Santa Paula, is 4.5 miles to the northeast of the project site. The proposed project will comply with the County's Airport Comprehensive Land Use Plan and pre-established deferral criteria set forth in the Federal Aviation Regulation Part 77 (Obstruction Standards); the proposed project does not involve any of the construction activities which require notification under FAR Sec. 77.9 Additionally, the proposed project will not result in residential development, a church, a school, or a high commercial business within the sphere of influence of the Santa Paula Airport. Therefore, the proposed project will not create a project-specific impact and will not make a cumulatively considerable contribution to a significant cumulative impact related to aviation hazards.

19c. The proposed project is consistent with the applicable *Ventura County General Plan Goals and Policies* for Item 19 of the *Ventura County Initial Study Assessment Guidelines.*

Mitigation/Residual Impact(s):
No significant Impacts on aviation hazards have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
20a. Hazardous Materials/Waste – Materials (EHD/Fire)								
Will the proposed project:								
1) Utilize hazardous materials in compliance with applicable state and local requirements as set forth in Section 20a of the Initial Study Assessment Guidelines?		X				X		
2) Be consistent with the applicable General Plan Goals and Policies for Item 20a of the Initial Study Assessment Guidelines?		X				X		

20a. Hazardous Materials/Waste – Materials (EHD/Fire) Impact Discussion:

20a 1. The site is currently occupied by a 15-acre agricultural material composting operation. The use of hazardous materials at the facility is incidental to the proposed primary land use of the site as a Large-Scale Commercial Organics Processing Operation. Incoming feedstock will contain minimal household hazardous waste and other contaminants, as screened by the commercial generators (source separated) and inspected by the facility operator in compliance with NCZO Section 8107-36.4.1(h). The existing operation maintains an active permit to operate (permit number FA0010148) issued by Ventura County Environmental Health Division (EHD)/Certified Unified Program Agency (CUPA). Incidental handling of hazardous materials is expected to include:

Table 20a.-1

Name of Material	Physical State	DOT Hazard Class	IBC/IFC Hazard Class	Largest Container	Maximum Quantity
Diesel Fuel	Liquid	Class III Combustible Liquid	Class II Combustible Liquid	500 gallons	500 gallons
Unleaded Gasoline	Liquid	Class III Flammable Liquid	Class1B Flammable Liquid	55 gallons	110 gallons
Motor Oil	Liquid	Class III Combustible Liquid	Class IIIB Combustible Liquid	55 gallons	250 gallons
Hydraulic Oil	Liquid	Not Regulated	Class IIIB Combustible Liquid	55 gallons	110 gallons
Transmission Oil	Liquid	Not Regulated	Class IIIB Combustible Liquid	55 gallons	110 gallons
Glycol Based Coolant	Liquid	Not Regulated	Class IIIB Combustible Liquid	55 gallons	110 gallons

Acetylene	Compressed Gas	Class 2.1 Flammable Gas	Flammable Gas	107 ft^3	214 ft^3
Oxygen	Compressed Gas	Class 2.2 Non-Flammable Gas	Oxidizer	280 ft^3	560 ft^3
Propane	Liquid	Class 2.1 Flammable Gas	Flammable Gas	10 gallons	50 gallons

A Hazardous Materials Business Plan (HMBP) for reportable hazardous materials was electronically submitted to the California Environmental Reporting System (CERS) on February 20, 2019, (CERS ID 10337200). The proposed project would involve an increase of, addition to, and relocation of hazardous materials. The Permittee will be required to update the HMBP in CERS to remain in compliance with state law. Improper storage, handling, and disposal of potentially hazardous materials may result in the creation of adverse impacts to the environment. Hazardous materials will be stored inside the proposed maintenance building incompliance with the applicable State and local regulations. Compliance with applicable state and local regulations will reduce potential project specific impacts to less than significant levels.

20a 2. The proposed project is consistent with the *Ventura County General Plan* Goals and Policies for Item 20a of the *Ventura County Initial Study Assessment Guidelines,* provided the business maintains compliance with all applicable laws and regulations related to hazardous materials handling, storage, and disposal.

Mitigation/Residual Impact(s)

No significant impacts on hazardous materials/waste have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
20b. Hazardous Materials/Waste – Waste (EHD)								
Will the proposed project:								
1) Comply with applicable state and local requirements as set forth in Section 20b of the Initial Study Assessment Guidelines?		X				X		
2) Be consistent with the applicable General Plan Goals and Policies for Item 20b of the Initial Study Assessment Guidelines?		X				X		

20b. Hazardous Materials/Waste – Waste (EHD) Impact Discussion:

20b 1. The site is currently occupied by a 15-acre agricultural material composting operation. The existing operation maintains an active hazardous waste generator permit from Ventura County Environmental Health Division/Certified Unified Program Agency (FA0010148), and an active hazardous waste generator EPA ID number issued by Department of Toxic Substances Control (CAL000297304). The proposed project will generate hazardous waste in the form of waste oil from equipment and vehicle maintenance activities as well as other incidental waste materials. The materials are listed below. Improper storage, handling, and disposal of hazardous wastes may result in the creation of adverse impacts to the environment. Compliance with applicable Federal, state and local regulations will reduce potential project specific and cumulative impacts to a level considered less than significant.

Table 20b.-1

Waste	Physical State	Largest Container	Maximum Quantity
Waste Motor Oil	Liquid	55 gallons	110 gallons
Waste Antifreeze	Liquid	55 gallons	110 gallons
Waste Absorbent	Solid (soils or absorbent)	One 55 gallon drum (250 pounds)	2 drums (500 pounds)

20b 2. The proposed project is consistent with the *Ventura County General Plan* Goals and Policies for Item 20b of the *Ventura County Initial Study Assessment Guidelines* provided the business maintains compliance with state and local laws as it relates to hazardous waste storage, handling, and disposal.

Mitigation/Residual Impact(s)

No significant impacts on hazardous materials/waste have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
21. Noise and Vibration								
Will the proposed project:								
a) Either individually or when combined with other recently approved, pending, and probable future projects, produce noise in excess of the standards for noise in the Ventura County General Plan Goals, Policies and Programs (Section 2.16) or the applicable Area Plan?			X				X	
b) Either individually or when combined with other recently approved, pending, and probable future projects, include construction activities involving blasting, pile-driving, vibratory compaction, demolition, and drilling or excavation which exceed the threshold criteria provided in the Transit Noise and Vibration Impact Assessment (Section 12.2)?			X				X	
c) Result in a transit use located within any of the critical distances of the vibration-sensitive uses listed in Table 1 (Initial Study Assessment Guidelines, Section 21)?	X				X			
d) Generate new heavy vehicle (e.g., semi-truck or bus) trips on uneven roadways located within proximity to sensitive uses that have the potential to either individually or when combined with other recently approved, pending, and probable future projects, exceed the threshold criteria of the Transit Use Thresholds for rubber-tire heavy vehicle uses (Initial Study Assessment Guidelines, Section 21-D, Table 1, Item No. 2)?			X				X	
e) Involve blasting, pile-driving, vibratory compaction, demolition, drilling, excavation, or other similar types of vibration-generating activities which have the potential to either individually or when combined with other recently approved, pending, and probable future projects, exceed the threshold criteria provided in the Transit Noise and Vibration Impact Assessment [Hanson, Carl E., David A. Towers, and Lance D. Meister. (May 2006) Section 12.2]?			X				X	
f) Be consistent with the applicable General Plan Goals and Policies for Item 21 of the Initial Study Assessment Guidelines?			X				X	

21. Noise and Vibration Impact Discussion:

21a., 21b., 21d., and 21e. The proposed project is a request to expand an existing compost facility to a large-scale commercial organics processing operation. The facility will expand from 15 acres to 70 acres. The proposed project will involve the construction of buildings and site improvements and the operation of land uses that will generate noise and vibration. Once constructed, the facility will process approximately 295,000 tons per year of green and food materials, using a combination of open windrows, Covered Aerated Static Piles (CASP), and Anaerobic Digesters (AD). The following summary was obtained from the Noise Impact Assessment (Attachment 15, Sespe Consulting, March 2017) provided by the Applicant and lists the estimated noise and vibration generating activities associated with the operation of the proposed facility.

Outdoor Processing (i.e. open windrows)

- Chippers/Grinders
- Trommel Screens
- Loaders/Excavators/Backhoes
- Water/Dump Trucks
- Pile Turners
- Forklifts

Covered Aerated Static Piles (CASP)

- Blower/Fan Group

Anaerobic Digesters (AD)

- Internal Combustion Engine Exhaust

Windrow composting: Noise generating equipment utilized for open windrow composting will operate during daylight hours (sunrise-sunset) only.

CASPs: The primary noise source associated with the CASP system is the blower/fan group that powers the in-floor aeration system. The CASP system will operate 24-hours per day.

AD units: The primary noise source associated with the AD system is the internal combustion engine and exhaust, which are part of the biogas collection system. All four proposed AD units will connect to a single combined heat and power (CHP) engine located on the utility pad on the southern portion of the facility (Figure 3, Appendix A). The AD units will operate 24-hours per day.

Table 21-1

Operation/Activity	Existing Operations Operation)		Proposed Operations Processing	
	Days of the Week	Hours of Operation	Days of the Week	Hours of Operation
Waste Receiving	Mon. – Fri.	6:00 AM – 6:00 PM	Mon. – Sat.	7:00 AM – 5:00 PM
Outdoor Processing	Mon. – Fri.	6:00 AM – 6:00 PM	Mon. – Sun.	Sunrise to Sunset
Material Processing Buildings [5]	---	---	Mon. – Sun.	6:00 AM – 10:00 PM
Packaging	---	---	Mon. – Sat.	6:00 AM – 10:00 PM
Maintenance	---	---	Mon. – Sat.	7:00 AM – 5:00 PM
Office	---	---	Mon. – Fri.	7:00 AM – 5:00 PM

Construction-related activities are estimated to last 8 weeks. Noise generating construction equipment includes graders excavators, dozer, back hoes, front-end/skid steer loaders, and dump trucks. The summary of construction activities provided in the Noise Impact Assessment are as follows:

- Demolition (14 Days): Approximately 55 acres of the Project site is currently active orchards and row crops, which will need to be removed to accommodate the expanded Project. Portions of the existing 15-acre compost facility will also need to be demolished/cleared.

- Site Preparation (21 Days): Existing compost equipment and areas not demolished will be temporarily relocated to allow for the construction of the new facility structures and compost working surfaces.

- Grading (28 Days): The Project area is nearly flat, however minor grading will be required across the entire 70-acre site to establish final grade. Additionally,

[5] Material Processing & Packaging operations will occur indoors within enclosed structures (Attachment 2)

two (2) retention basins will be excavated along the southern boundary of the project site. A system of underground storm drains connecting to the basins will also be constructed.

- Building Construction (90 Days): The following building will be constructed: Dry Organics and Wet Organics Buildings, Facilities Administration Building, Production Building (i.e. Packaging Building), and Maintenance Building. Ancillary equipment such as the CASP, AD systems, scale house, staging pads, tipping areas, and utility structures (e.g. utility pad and transformers) will also be installed during the building phase. Working surfaces will be treated with cement in the open windrow composting areas .

- Architectural Coatings (60 Days): Following construction of the buildings, painting and finishing of surfaces will occur.

- Paving (21 Days): A large portion of the site will be paved with either cement or asphalt concrete to accommodate vehicle and equipment operations. Parking spaces for employees and visitors will be installed adjacent to the scale house near the facilities administration and maintenance buildings.

Construction activities that generate noise will be restricted to daytime hours only, as defined by Ventura County's *Construction Noise Threshold Criteria and Control Plan* (7:00 AM - 7:00 PM Monday through Friday, 9:00 AM - 7:00 PM Weekends/Holidays).

In order to determine whether a project will result in a significant noise impact, the Ventura County *Initial Study Assessment Guidelines* set forth standards to determine whether the proposed use is a "noise sensitive use" or a "noise generator." Noise sensitive uses include, but are not limited to, dwellings, schools, hospitals, nursing homes, churches and libraries. The proposed project, consisting of a commercial composting operation, is considered a noise generator.

The proposed project is located approximately ¼ mile south from Highway 126 and is outside the CNEL 60dB(A) noise contour (RMA GIS Viewer, Noise Contour Maps, 2019). However, the proposed project site is located 4.5 miles west of the Santa Paula Airport. Therefore, the proposed project will not be subject to noise from these noise generators.

Existing facility operations and existing road, railroad and airplane traffic are considered baseline for the proposed project.

Nine noise sensitive receptors (i.e. dwellings, schools, hospitals, nursing homes, churches, etc.) were identified in the Noise Impact Assessment. The receptors considered in the Noise Impact Assessment are described below:

- **Receptor 1 (R1)** is the residential dwelling located 650 feet to the southwest of the Project site. This residence and the surrounding property are owned by

Limoneria and leased out to farm workers employed in their nearby agricultural fields.

- **Receptor 2 (R2)** is the residential dwelling located immediately (40 feet) south of the Project site. This small residence and the surrounding property are owned by Limoneria and leased out to farm workers employed in their nearby agricultural fields.

- **Receptor 3 (R3)** is the residential dwelling located 150 feet to the southeast of the Project site. This residence and the surrounding property is owned by Limoneria and leased out to farm workers employed in their nearby agricultural fields.

Receptor 1 (R1) through Receptor 3 (R3) are the closest noise sensitive receptors, conservatively accounting for potential noise impacts for locations farther from the identified construction and operational noise sources. Receptor 4 (R4) through Receptor 9 (R9) were analyzed for noise impacts related to the increase in vehicle traffic along the proposed project haul routes:

- **Receptor 4 (R4)** is the Briggs School (1.94 miles northeast of the project site) located at the southeast corner of Briggs Road and Telegraph Road intersection, along the proposed Project haul route. This school serves elementary and middle school children (K-8).

- **Receptor 5 (R5)** is the privately-owned residential dwelling located adjacent to the southwest corner of the Todd Road and Telegraph Road intersection, along the proposed Project haul route (1 mile to the northeast of the project site). Noise impacts at this receptor are meant to represent worst-case impacts for other residences along this portion of the Project haul route.

- **Receptor 6 (R6)** is the privately-owned residential dwelling located to the southeast of the Telegraph Road and Edwards Ranch Road intersection, along the proposed Project haul route (0.64 miles to the north of the project site). Noise impacts at this receptor are meant to represent worst-case impacts for other residences along this portion of the Project haul route.

- **Receptor 7 (R7)** is the privately-owned residential dwelling located to the northeast of the Telegraph Road and Edwards Ranch Road intersection, along the proposed Project haul route (0.77 miles to the north of the project site). Noise impacts at this receptor are meant to represent worst-case impacts for other residences along this portion of the Project haul route.

- **Receptor 8 (R8)** collectively represents the group of residences southeast of the Telegraph Road and Wells Road intersection, along the proposed Project haul route (1.91 mile west of the project site). The residence within this housing tract nearest to this intersection, specifically located at the north end of Camelia Way, was assessed. Noise impacts at this receptor are meant to represent worst-case impacts for other residences along this portion of the Project haul route. Please note that an approximately 4-foot wall exists between this group of receptors and Telegraph Road (Figures 6 & 7, Appendix A).

- **Receptor 9 (R9)** is the Palms at Bonaventure Assisted Living & Memory Care facility northwest of the Telegraph Road and Wells Road intersection, along the proposed Project haul route (2.15 miles west of the project site). Noise impacts at this receptor are meant to represent worst-case impacts for other residences along this portion of the Project haul route.

The Noise Impact Assessment finds noise associated with operation of the proposed project will remain less than significant as indicated in Table 21-2 Industrial Noise Source Impacts (below):

Table 21-2
Industrial Noise Source Impacts (L_{eq}-Hr dBA)

Parameter	Receptor 1 (R1)			Receptor 2 (R2)			Receptor 3 (R3)		
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night
Baseline Noise Level	51.8	43.0	45.1	46.4	37.6	39.7	44.0	35.2	37.3
Project Noise Level	24.9	0.0	0.0	30.7	17.0	17.0	23.0	7.1	7.1
Total Noise Level	**51.9**	**43.0**	**45.1**	**46.6**	**37.6**	**39.7**	**44.1**	**35.2**	**37.3**
Threshold	**55.0**	**50.0**	**48.1**	**55.0**	**50.0**	**45.0**	**55.0**	**50.0**	**45.0**
Significant?	No	No	No	No	No	No	No	No	No

The Noise Impact Assessment also finds that traffic noise associated with the haul route for the proposed project will does not exceed the outdoor noise level threshold of L_{eq}(1hr): 65 dB(A) (defined in *Ventura County General Plan* Policy 2.16.2-1(1)(b)), indicated in Table 21-3, Total Traffic Noise Level and Significance Determination (below):

Table 21-3
Total Traffic Noise Level and Significance Determination

Parameter	Daytime $_{Leq1H}$ (dBA)					
	R4	R5	R6	R7	R8	R9
Baseline Noise Level	49.1	55.8	57.0	49.7	58.9	56.8
Project Noise Level	53.5	57.7	61.3	54.8	63.4	62.3
Total Noise Level	**54.8**	**59.9**	**62.7**	**56.0**	**64.7**	**63.4**
Significance	**65.0**	**65.0**	**65.0**	**65.0**	**65.0**	**65.0**
Significant?	No	No	No	No	No	No

No mitigation is required for operational impacts (traffic or industrial) as these were below the applicable significance thresholds.

For temporary construction impacts, facility-adjacent receptors (R1, R2, and R3) were found to be temporarily impacted by construction noise. The findings of the Noise Impact Assessment are summarized in the table below:

Table 21-4
Project Construction Noise Impacts (dBA)

Parameter	Receptor 1 (R1)		Receptor 2 (R2)		Receptor 3 (R3)	
	L_{eq}	L_{max}	L_{eq}	L_{max}	L_{eq}	L_{max}
Construction Noise Impact	**54.1**	**63.0**	**66.1**	**75.0**	**58.7**	**67.6**
Significance Threshold	**55.0**	**75.0**	**55.0**	**75.0**	**55.0**	**75.0**
Significant?	No	No	**Yes**	**Yes**	**Yes**	No

Note: Noises impacts shown above were calculated for the grading construction phase, which represents the construction phase with the highest expected noise impacts.

The Ventura County Construction Noise Threshold Criteria and Control Plan (NTC, 2010) specifies the specific construction noise limits for noise sensitive locations. The applicant will be subject to compliance with the NTC and no evening or nighttime construction activities will occur. The daytime construction noise threshold criteria prescribed in the NTC vary by the duration of construction affecting noise sensitive receptors. Depending on project duration, the daytime noise threshold criteria shall be the greater of the fixed Leq(h) limit (which includes non-construction evening and nighttime noise) or the measured ambient Leq(h) plus 3 dB. In addition, the construction related, slow response, instantaneous maximum noise (Lmax) shall not exceed the noise threshold criteria by 20 dBA more than eight times per daytime hour, more than six times per evening hour and more than four times per nighttime hour. The project construction phase is anticipated to last 16 to 32 weeks. The closest relevant receptors in each direction from the Facility (i.e., R1, R2, and R3) are all residential dwellings. Referring again to the County's guidance document, "single-family and multi-family dwellings (residential)" are only considered "noise-sensitive locations" during the "evening/nighttime" periods (i.e., between 7:00 p.m. – 10:00 p.m. and 10:00 p.m. – 7:00 a.m. respectively). Therefore, so long as Project construction activities occur during daytime hours only, the Project's noise impacts at nearby Facility receptors would be considered less than significant. As described in the Mitigation measures NOISE MM-1 is defined below and address the temporary project impacts associated with the construction phase, addressing vehicle idling and the limitation on construction hours. With the formal implementation on the limitation of construction hours, project-related construction impacts will be less than significant.

21c. The proposed project does not include the development of a transit use which is located within the critical distances of vibration sensitive uses listed in Section 21 D, Table 1 of the Initial Study Assessment Guidelines. Therefore, no impact is estimated for this hazard category item and no further evaluation of this topic is required.

21f. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 21 of the *Ventura County Initial Study Assessment Guidelines*. Pursuant to the requirements for the *Ventura County General Plan* Goals, Policies and Programs Policy 2.13.2-1(5), *Construction Noise Threshold Criteria and Control Plan* (2010a), this Initial Study evaluated the noise impacts of the proposed project and future development on the project site.

Mitigation/Residual Impact(s)

<u>Mitigation Measure NOISE MM-1 – Construction Noise with Idling Restriction</u>
Purpose: To ensure that construction activities are conducted in conformance with *Ventura County General Plan Noise Element* (Noise Element), the *Ventura County Initial Study Assessment Guidelines* (ISAGs), and *Ventura County's Construction Noise Threshold Criteria and Control Plan* (Construction Guidelines)

Requirement: The Permittee shall limit construction activity for site preparation and development to the hours between 7:00 a.m. and 7:00 p.m., Monday through Friday, and from 9:00 a.m. to 7:00 p.m. Saturday, Sunday, and State holidays. Construction equipment maintenance shall be limited to the same hours. Construction equipment shall not idle for more than 30 minutes at any one time. Non-noise generating construction activities such as interior painting are not subject to these restrictions.

Documentation: The Permittee shall post a sign stating these restrictions in a conspicuous location on the Project site, in order so that the sign is visible to the general public. The Permittee shall provide photo documentation showing posting of the required signage to the Planning Division, prior to the commencement of grading and construction activities. The sign must provide a telephone number of the site foreman, or other person who controls activities on the jobsite, for use for complaints from the public. The Permittee shall maintain a "Complaint Log," noting the date, time, complainant's name, complaint, and any corrective action taken, in the event that the Permittee receives noise complaints. The Permittee must submit the "Complaint Log" to the Planning Division upon the Planning Director's request.

Timing: The Permittee shall install the sign prior to the issuance of a building permit and throughout all grading and construction activities. The Permittee shall maintain the signage on-site until all grading and construction activities are complete. If the Planning Director requests the Permittee to submit the "Complaint Log" to the Planning Division, the Permittee shall submit the "Complaint Log" within one day of receiving the Planning Director's request.

Reporting and Monitoring: The Planning Division reviews, and maintains in the Project file, the photo documentation of the sign and the "Complaint Log." The Planning Division has the authority to conduct site inspections and take enforcement actions to ensure that the Permittee conducts grading and construction activities in compliance with this condition, consistent with the requirements of § 8114-3 of the Non-Coastal Zoning Ordinance.

<u>**Residual Impacts:**</u>

With implementation Mitigation Measures NOISE MM-1 project-specific impacts, as well as the proposed project's contribution to significant cumulatively considerable impacts to noise will be reduced to a less than significant level.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
22. Daytime Glare								
Will the proposed project:								
a) Create a new source of disability glare or discomfort glare for motorists travelling along any road of the County Regional Road Network?		X				X		
b) Be consistent with the applicable General Plan Goals and Policies for Item 22 of the Initial Study Assessment Guidelines?		X				X		

22. Daytime Glare Impact Discussion:

22a. The project site is situated in a rural area surrounded by lands in agricultural production and, to a lesser degree, very low density, rural residential development. The Santa Clara River is approximately ¼ mile south of the project site. The project site is not noticeably visible from Highway 126 but is visible from Edwards Ranch Road. The potential to create a new source of disability glare or discomfort glare for motorists is considered low, however, the proposed project will likely incorporate lighting that could have a significant impact on wildlife movement in and around the Santa Clara River, if it is excessive or shines into adjacent areas with native vegetation. Therefore, Mitigation Measure MM Bio MM-4 Outdoor Lighting/Glare, is proposed, which requires the Applicant to submit a lighting plan to the Planning Division for review and approval. Additionally, as discussed in Item 6 (above), the Applicant shall submit a materials sample/color board at the time of construction of the proposed commercial composting facility and shall utilize natural building materials and colors (earth tones and non-reflective paints) on exterior surfaces of all structures. Therefore, the project-specific glare impact will be less-than-significant, and the proposed project will not make a cumulatively considerable contribution to significant glare impacts.

22b. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 22 of the *Ventura County Initial Study Assessment Guidelines*.

Mitigation/Residual Impact(s)

No significant Impacts on daytime glare have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
23. Public Health (EHD)								
Will the proposed project:								
a) Result in impacts to public health from environmental factors as set forth in Section 23 of the Initial Study Assessment Guidelines?			X				X	
b) Be consistent with the applicable General Plan Goals and Policies for Item 23 of the Initial Study Assessment Guidelines?			X				X	

23. Public Health (EHD) Impact Discussion:

23a. The project site has been historically used for agricultural purposes and is presently cultivated with row crops and orchard plantings. The site is also occupied by the existing composting operation which currently occupies 15 acres of a 994-acre parcel. The proposed project is for the continued operation and expansion of the composting facility from 15 acres to 70 acres. The proposed project will also include the handling and composting of food waste. Public health impacts commonly associated with commercial organics composting activities include, but are not limited to, odors, dust and bioaerosols, and vectors. Vector control issues include breeding and/or harborage of insects (flies, mosquitoes, etc.) and rodents. The applicant submitted a Vector Control Plan (VCP) (Attachment 16, Agromin, February 2017) and Odor Impact Minimization Plan (OIMP) (Attachment 6, Agromin, February 2017) to analyze impacts related to these areas of concern. These documents are subject to final review under the regulations for Solid Waste Facilities (California Code of Regulations Title 27 and Title 14) under the permitting authority of the Local Enforcement Agency (LEA) (Environmental Health Division). As described in these plans, the permittee will employ a program of best available control measures and best management practices related to vector and odor control to address and eliminate potential public health impacts. The identified vector control measures include prompt screening/inspection of feedstock and processing. The identified odor control measures include processing of food material in a fully enclosed building and subject to negative pressure with air ventilated through bio-filters to control odor emissions. If the proposed project creates unforeseen vector, odor, etc. issues not addressed in any current plans, the approved programs may be modified to eliminate or add control measures, subject to approval by the LEA.

The proposed project has the potential to impact public health due to the use of an onsite wastewater treatment systems (OWTS). An OWTS that is undersized, improperly installed, failing, or poorly maintained has the potential to create a public nuisance and/or contaminate groundwater. Potential impacts can be reduced to less than significant with adherence to State and local OWTS regulations and proper maintenance of tanks and disposal fields. Septic tank must be pumped by a Ventura County EHD permitted pumper truck and septage wastes must be disposed of in an approved manner.

The proposed project may have impacts to public health due to onsite storage and/or handling of hazardous materials and the generation of hazardous waste. Compliance with applicable hazardous materials and hazardous waste regulations will reduce potential project specific and cumulative impacts to a level considered less than significant. As discussed in Sections 29d of this Initial Study (below), to ensure the facility complies with California Code of Regulations Title 14, Section 17866 “General Design Requirements” and Section 17867 “General Operating Standards” for composting, recommended Mitigation Measure WASTE MM-1, requires the Permittee to provide written maintenance and operations plans identifying best management practices and specific control technologies for the operation and maintenance of the facility.

23b. The proposed project will be consistent with the *Ventura County General Plan* policies for Item 23 of the *Ventura County Initial Study Assessment Guidelines* provided the operator adheres to all applicable laws, regulations, and health and safety measures related to the operation of a composting facility, the installation and maintenance of an OWTS, and the storage and handling of hazardous materials and waste.

Mitigation/Residual Impact(s):

With the implementation of Mitigation Measure WASTE MM-1, project-specific impacts related to public health will be reduced to a less than significant level.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
24. Greenhouse Gases (VCAPCD)								
Will the proposed project:								
a) Result in environmental impacts from greenhouse gas emissions, either project specifically or cumulatively, as set forth in CEQA Guidelines §§ 15064(h)(3), 15064.4, 15130(b)(1)(B) and -(d), and 15183.5?		X				X		

24. Greenhouse Gases (VCAPCD) Impact Discussion:

24a. Neither APCD nor the County has adopted a threshold of significance applicable to Greenhouse Gas (GHG) emissions from projects subject to the County's discretionary land use permitting authority. The County has, however, routinely applied a 10,000 metric tons carbon dioxide equivalent per year (MTCO2e/Yr) threshold of significance to industrial projects, in accordance with CEQA Guidelines Section 15064.4(a)(2). APCD has concurred with the County's approach. APCD supports the application of this numeric threshold as stated in the GHG Threshold Report APCD published in 2011 at the request of the APCD Board, which concludes "Unless directed otherwise, District staff will continue to evaluate and develop suitable interim GHG threshold options for Ventura County with preference for GHG threshold consistency with the South Coast AQMD and the SCAG region". The South Coast AQMD at the same time proposed an interim screening threshold of 3,000 MTCO2e/Yr for commercial/residential projects. Industrial projects or facilities are defined as stationary emission sources that have or are required to have an APCD Permit to Operate.

The total incremental GHG emissions for the proposed project are -59,640 MTCO2e/Yr, which is well below the 10,000 MTCO2e/year recommended threshold of significance and results in a net GHG benefit. The Applicant submitted a report titled Air Quality, Climate Change Impact and Health Risk Assessment (Sespe Consulting, Inc., May 2017). According to the report, the project's GHG emissions result in a net benefit to regional and local areas, as all food and waste material in West Ventura County (Camarillo, Ojai, Oxnard, Pt Hueneme, Ventura, Santa Paula, ½ of unincorporated) that would be going to landfills for disposal would be diverted to the project site for composting. This diverted offset-method is acceptable and used in certified EIRs across the state as the nature of the proposed increase in organic waste to project site is directly related to CalRecycle mandated requirements to divert organic waste away from landfills (SB 1383, 2016). In addition, 2019 CEQA Guidelines Section 15064.4(b) recommends focusing on a project's reasonably foreseeable incremental contribution to the global effects of climate change. Diverting organic waste material to composting operations (aerobic process) prevents methane (CH_4, a potent GHG) emissions from being generated in landfills (anaerobic process). Composting (rather than landfilling) one ton of yard trimmings can prevent the production of 0.2 metric tons of CO_2e and composting one ton of food waste can prevent the production of approximately 0.3 $MTCO_2e$ (CARB, 2017). According to the Air Quality, Climate Change Impact and Health Risk Assessment report, there will also be a reduction in incremental GHG mobile emissions because newer cleaner emission off-road equipment is proposed for on-site use and there will be less vehicle miles travelled (VMT) from the waste sorting facility in Oxnard to the site (removing disposal route to landfill farther away from site).

Mitigation/Residual Impact(s)

No significant impacts on greenhouse gases have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
25. Community Character (Plng.)								
Will the proposed project:								
a) Either individually or cumulatively when combined with recently approved, current, and reasonably foreseeable probable future projects, introduce physical development that is incompatible with existing land uses, architectural form or style, site design/layout, or density/parcel sizes within the community in which the project site is located?		X				X		
b) Be consistent with the applicable General Plan Goals and Policies for Item 25 of the Initial Study Assessment Guidelines?	X				X			

25. Community Character (Plng.) Impact Discussion:

25a. The project site has a General Plan land use designation of Agricultural and a zoning designation of AE 40 ac (Agricultural Exclusive, 40-acre minimum lot size). The area surrounding the project site consists primarily of lands in agricultural production and, to a lesser degree, very low density, rural residential development. The Santa Clara River is the located ¼ mile to the south of the project site.

The project site is presently developed with an existing composting facility, which uses modular buildings and a weigh scale to conduct operations. Heavy equipment operated on the site include rubber tire front loaders, trommel screens and grinders.

Large-scale commercial organics processing operations are currently permissible within the AE zone subject to a CUP. Presently, NCZO Section 8107-36.4.1 states that no organics processing operations, other than those accessory to agricultural activities and on-site composting operations, can be located in the AE zone on land designated as "Prime", "Statewide Importance", "Unique" or "Local Importance", on the California Department of Conservation's Farmland Mapping and Monitoring program, Important Farmlands Maps. The proposed project does not comply with the NCZO Section 8107-36.4.1. The Applicant has requested a text amendment to NCZO Section 8107-36.4.1, to allow a commercial organics processing operation on 70 acres. The Ventura County Board of Supervisors screened the privately-initiated zoning text amendment on September 15, 2015 and approved the proposed changes for further processing.

The proposed project has been evaluated for conformance with the applicable requirements of the Ventura County NCZO for the construction of commercial organics processing operations, including building setbacks, height limits, and other development standards. Additionally, as discussed in Sections B - 6, B - 8, and B - 22 (above) the proposed project will be conditioned to require the Applicant to submit plans and a material sample/color board, a landscape plan (under Mitigation Measure CULTURAL MM-2), and a lighting plan (under Mitigation Measure BIO MM-4), for proposed development to the Planning Division for review and approval prior to issuance of a Zoning Clearance for the construction of the proposed project. These requirements ensure the proposed facility is compatible with adjoining and uses. Therefore, the project-specific impacts to community character will be less-than-significant, and the proposed project will not make a cumulatively considerable contribution to significant community character impacts.

Furthermore, significant impacts on community character would not occur for the following reasons:

1) The site is currently developed with an existing composting facility and while the proposed project will introduce a new land uses that could result in the displacement of existing agricultural development, the Ventura County Board of Supervisors, the decision making body for an ordinance text amendment, will consider changes to allow changes to the NCZO to accommodate commercial organics processing operations in Agricultural Zones that contain classified soils. On September 15, 2015, the Board of Supervisors heard the NCZO Text Amendments proposed by Agromin as part of the text amendment screening process (ZN12001). Under the proposed changes, the conversion of agricultural land will be limited by proposed language in the NCZO ordinance amendment to 200 acres county-wide. The proposed physical development will be in conformance with the applicable development requirements for lands within the AE zone, if these changes are adopted by the Board of Supervisors. The proposed CUP and Ordinance Text Amendment will be considered simultaneously by the Board of Supervisors during the decision-making process.
2) The access roads exist and would not be expanded or cause the further displacement of offsite agricultural development.

25b. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 25 of the *Ventura County Initial Study Assessment Guidelines*.

Mitigation/Residual Impact(s)

No significant impacts on community character have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
26. Housing (Plng.)								
Will the proposed project:								
a) Eliminate three or more dwelling units that are affordable to: • moderate-income households that are located within the Coastal Zone; and/or, • lower-income households?	X				X			
b) Involve construction which has an impact on the demand for additional housing due to potential housing demand created by construction workers?		X				X		
c) Result in 30 or more new full-time-equivalent lower-income employees?		X				X		
d) Be consistent with the applicable General Plan Goals and Policies for Item 26 of the Initial Study Assessment Guidelines?		X				X		

26. Housing (Plng.) Impact Discussion:

26a. The proposed project includes the construction of a commercial organics composting facility on 70 acres will not eliminate existing dwelling units. Therefore, the proposed project will not have a significant project-specific impact to housing. The proposed project will not make a cumulatively considerable contribution to a significant cumulative housing impact.

26b. As stated in the *Ventura County Initial Study Assessment Guidelines*, any project that involves construction has an impact on the demand for additional housing due to potential housing demand created by construction workers. However, construction worker demand would result in a less than significant, project-specific and cumulative because construction work is short-term and there is a sufficient pool of construction workers within Ventura County and the Los Angeles metropolitan regions. Therefore, the proposed project will have a less-than-significant, project-specific impact and will not make a cumulatively considerable contribution to a significant cumulative impact, related to the demand for construction worker housing.

26c. The Ventura County Initial Study Guidelines (Section 26.b. – Housing) states that if a project would employ 30 or more new full-time equivalent (FTE) employees (excluding construction workers) it would be regarded as potentially significant if there is not enough available affordable housing within proximity to the project. This threshold is based upon General Plan Employment and Commerce/Industry Policy 3.4.2-9 which applies to all discretionary project until the development of a Housing Impact Mitigation Fee ordinance.

According to the project description no employees will reside on the project site. Currently, the existing composting operation has 11 full-time employees. The proposed project would increase the total number of full-team equivalent employees to 37. With 20 employees at the Agromin-Shoreline facility, it was previously estimated that Shoreline employees would be transferred to the expanded Agromin-Limoneira facility. However, the anticipated closure of the Agromin Shoreline facility is not final due to number of factors; operations at the Shoreline and Limoneira facilities may overlap for an undetermined interim period. Anticipating the possibility of extended operations at the Agromin Shoreline facility (for an indeterminate length of time), Agromin has determined that only one daily shift will be required for the Material Processing Buildings and the Packaging Building. Agromin states that employees would work a 10-hour shift, 6 days a week. The net increase of employees at the expanded Agromin-Limoneira facility is expected to be 26 employees.

Operation	Employees	Employee Shift	Shifts per Day	Days per Week
Waste Receiving	4	7:00 AM to 5:00 PM	1	Mon.-Sat.
Material Processing Buildings	10	6:00 AM to 4:00 PM	1	Mon.-Sat.
Packaging Building	5	6:00 AM to 4:00 PM	1	Mon.-Sat.
Maintenance	4	7:00 AM to 5:00 PM	1	Mon.-Sat.
Outdoor Processing	4	sunrise to sunset	1	Mon.-Sat. (with remote monitoring for Sunday)
Office	10	7:00 AM to 5:00 PM	1	5
Total:	**37**			
Current Site Employees:	**-11**			
New Employees:	**26**			

The project would employ less than 30 or more new full-time equivalent (FTE) employees, below the threshold of significance for this category. Therefore, the impacts related to need for low and moderate income housing associated the generation of new employees will remain less than significant.

26d. The proposed project will be analyzed for conformance with the applicable *Ventura County General Plan Goals and Policies* for Item 26 of the *Ventura County Initial Study Assessment Guidelines.* The proposed project has the potential to conflict with the following *Ventura County General Plan* policy:

Policy 3.4.2-9 Employment generating discretionary development resulting in 30 or more new full-time and full-time-equivalent employees shall be evaluated to assess the project's impact on lower-income housing demand within the community in which the project is located or within a 15-minute commute distance of the project, whichever is more appropriate. At such time as program 3.4.3-3 is completed, this policy shall no longer apply.

<u>Mitigation/Residual Impact(s)</u>

Impacts to housing are considered significant and will be evaluated in an EIR.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
27a(1). Transportation & Circulation - Roads and Highways - Level of Service (LOS) (PWA)								
Will the proposed project:								
a) Cause existing roads within the Regional Road Network or Local Road Network that are currently functioning at an acceptable LOS to function below an acceptable LOS?								

27a(1). Transportation & Circulation - Roads and Highways - Level of Service (LOS) (PWA) Impact Discussion:

27a(1) a. The Applicant is requesting a Conditional Use Permit for a commercial organics processing facility. As proposed, the project has the potential to generate additional traffic on local public roads and the Regional Road Network; however, the traffic generated by the project does not have the potential to alter the Level of Service (LOS) on nearby, County maintained roads. The project site will be accessed from the north via Edwards Ranch Road (private). Traffic will access Edwards Ranch Road primarily from Telegraph Road. The site will not be accessed from Todd Road or Gaythorne Road (private) east of the property. Public safety secondary access may be sited at either of these roads as analyzed under Section B – 27a(4) for Tactical Access.

Associated Transportation Engineers (ATE) completed a traffic study for the project (Attachment 17). The traffic study concluded:

- The addition of project traffic to the State Route 126 and the adjacent roadways would not significantly impact the study-area roadway segments based on Ventura County impact criteria.

- The addition of project traffic would not significantly impact the study-area intersections during the A.M. and P.M. peak hour periods.

- The project would be consistent with the Ventura County General Plan by paying the "Traffic Impact Mitigation Fee".

- The project would add less than 50 peak hour trips to State Route 126, thus no impacts based on the County's Congestion Management Program (CMP) criteria.

- The intersections are all expected to operate at LOS "C" or better with the addition of cumulative + project peak hour volumes, and thus would not exceed the CMP LOS "E" standard.

Trip generation data within the traffic study is summarized below[6]:

Table 27a1-1

Project Daily Trips by Vehicle Type:	**Loads**	**ADT**	**Time Period**
incoming waste SL/FL (side loader/front loader)	74	148	7AM - 5PM, Mon.-Fri.
incoming waste TT (transfer trailer)	25	49	7AM - 5PM, Mon.-Fri.
incoming waste BH (business & self haul)	124	248	7AM - 5PM, Mon.-Fri.
incoming waste RO (roll off)	6	11	7AM - 5PM, Mon.-Fri.
Incoming supplies deliveries (transfer trailer)	9	18	7AM - 5PM, Mon.-Fri.
Outgoing sales (roll off)	5	10	7AM - 5PM, Mon.-Fri.
Outgoing sales (transfer trailer)	25	50	7AM - 5PM, Mon.-Fri.
Outgoing sales (dump truck)	31	63	7AM - 5PM, Mon.-Fri.
Outgoing sales (customer self pickup/trailer)	24	49	7AM - 5PM, Mon.-Fri.
Employees (office)	10	20	7AM - 5PM, Mon.-Fri.
Employees (waste receiving & maintenance)	8	16	7AM - 5PM, Mon.-Sat.
Employees (material processing bldg.)	10	20	6AM - 3PM, Mon.-Sun.
Employees (material processing bldg.)	10	20	3PM - 10PM, Mon.-Sun.
Employees (packaging)	5	10	6AM - 3PM, Mon.-Sat.
Employees (packaging)	5	10	3PM - 10PM, Mon.-Sat.
Employees (outdoor processing)	4	8	sunrise - sunset
Visitors	10	20	7AM - 5PM, Mon.-Sat.
Total	**385**	**770**	

Incoming Waste Total:	229	458
Outgoing Sales Total:	85	170
Incoming Deliveries Total:	9	18
Employee/Visitor Total:	62	124
Total:	**385**	**770**

To address the cumulative adverse impacts of traffic on the Regional Road Network, *Ventura County General Plan* Goals, Policies, and Programs Section 4.2.2 6 and Ventura County Ordinance Code, Division 8, Chapter 6 require that the Transportation Department of the Public Works Agency collect a Traffic Impact Mitigation Fee (TIMF)

[6] Note that the applicant amended their project description in March 2020, determining that the project will only require one daily 10-hour shift (six days a week) for the Material Processing Buildings and the Packaging Building. This is attributable to an interim period (for an indeterminate length of time) in the overlap of operations with the Shoreline Facility. Evaluation of LOS related impacts will not be affected by the applicant-initiated revisions to the project description.

from developments. This project is subject to this Ordinance. With payment of the TIMF(s), LOS and safety of the existing roads would remain consistent with the County's General Plan.

Therefore, adverse traffic impacts relating to LOS of County roads will be less than significant.

Mitigation/Residual Impact(s)

No significant Impacts on transportation/circulation have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
27a(2). Transportation & Circulation - Roads and Highways - Safety and Design of Public Roads (PWA)								
Will the proposed project:								
a) Have an Adverse, Significant Project-Specific or Cumulative Impact to the Safety and Design of Roads or Intersections within the Regional Road Network (RRN) or Local Road Network (LRN)?			X			X		

27a(2). Transportation & Circulation - Roads and Highways - Safety and Design of Public Roads (PWA) Impact Discussion:

27a(2) a. The traffic generated by the project has the potential to alter the safety of nearby, County maintained roads used to access the project site. The existing turning radius at the southwest and southeast corners of intersection at Telegraph Road and Edwards Ranch Road are inadequate for large truck turning movements. As a result, pavement widening and utility pole relocation are required for the project. In addition, the Public Works Agency Transportation Department required the following improvements at the intersection of Telegraph Road and Edwards Ranch Road:

- Lengthen existing westbound left-turn pocket on Telegraph Road from 40 feet to 150 feet.
- Construct a 150-foot eastbound right-turn pocket on Telegraph Road.
- Remove large palm tree at southeast corner of the intersection.
- Replace stop sign and pole with new stop sign and pole at Edwards Ranch Road.
- Install white stop bar and legend at Edwards Ranch Road.

The proposed street improvements are shown in the attached plans (Attachment 2). These improvements will accommodate trucks and large vehicles for both westbound and eastbound traffic entering the project from Telegraph Road, mitigating the potential safety impacts from project-generated traffic. Therefore, impacts related to safety/design of County roads will be less than significant.

Mitigation/Residual Impact(s)

Mitigation Measure TRANSPORTATION MM-1 - Road Improvements:

Purpose: To ensure that intersection improvements at Telegraph Road and Edwards Ranch Road are constructed to accommodate vehicles accessing the project site.

Requirement: Road improvements listed below are required to mitigate the impact at the intersection of Telegraph Road and Edwards Ranch Road in accordance with the County Road Standards. Telegraph Road has an existing road width of 40 feet. The minimum required road width is 32 feet per Road Standard Plate B 7 [A].

a. At the intersection of Telegraph Road and Edwards Ranch Road, construct a 12-foot-wide eastbound right turn lane on Telegraph Road.

b. At the intersection of Telegraph Road and Edwards Ranch Road, provide 150 foot storage length for the westbound left turn lane and 150 foot storage length for the eastbound right turn lane on Telegraph Road.

c. Existing southwest and southeast corners of the Telegraph Road/Edwards Ranch Road intersection are inadequate for large truck movements. Pavement widening, utility relocation and removal of the existing large palm tree at the southeast corner of the intersection will be required to accommodate appropriate turn radii.

d. Install white stop bar striping on northbound Edwards Ranch Road at Telegraph Road. Remove and replace existing stop sign and pole at Edwards Ranch Road to meet current standards.

e. Submit road improvement, striping and signage plans prepared by a Registered Civil Engineer to the Ventura County Public Works Agency (PWA) – Transportation Department for review and approval. Enter into an agreement with the County to complete the road improvements. Submit the agreement to the PWA – Transportation Department for review and approval. Post sufficient surety guaranteeing the construction of the road improvements. Submit proof to the PWA – Transportation Department that the surety has been posted.

Documentation: The Permittee shall submit road improvement, striping and signage plans, agreement, and proof of posting the surety to the Ventura County PWA – Transportation Department for review and approval.

Timing: The Permittee shall submit the required documentation (road improvement, striping and signage plans, agreement) prior to the issuance of the Zoning Clearance for construction. Surety shall be posted prior to issuance of a Building Permit.

Monitoring and Reporting: The Ventura County PWA – Transportation Department will review the improvement plans, agreement, and surety for conformance with the project conditions. The Ventura County PWA – Transportation Department maintains copies of the road improvement documentation and surety submitted by the Permittee.

Residual Impacts:
With the implementation of Mitigation Measure TRANSPORTATION MM-1, project-specific impacts related to safety and design of public roads will be reduced to a less than significant level.

Issue (Responsible Department)*	**Project Impact Degree Of Effect****				**Cumulative Impact Degree Of Effect****			
	N	LS	PS-M	PS	N	LS	PS-M	PS
27a(3). Transportation & Circulation - Roads & Highways – Safety & Design of Private Access (VCFPD)								
a) If a private road or private access is proposed, will the design of the private road meet the adopted Private Road Guidelines and access standards of the VCFPD as listed in the Initial Study Assessment Guidelines?	X				X			
b) Will the project be consistent with the applicable General Plan Goals and Policies for Item 27a(3) of the Initial Study Assessment Guidelines?	X				X			

27a(3). Transportation & Circulation - Roads & Highways – Safety & Design of Private Access (VCFPD) Impact Discussion:

27a(3) a. Primary site access will occur via Edwards Ranch Road, a private road, which will connect the site to Telegraph Road. Secondary all-weather access, as required by Ventura County Fire Protection District (VCFPD), is proposed along an unnamed access road which connects to Todd Road to the east and Darling Road to the west. Secondary access will be constructed to meet the adopted Private Road Guidelines and access standards of the VCFPD.

27a(3) b. The proposed project is consistent with the applicable Ventura County General Plan Goals and Policies for Item 27a(3) of the Ventura County Initial Study Assessment Guidelines.

Mitigation/Residual Impact(s)

No significant impacts on safety & design of private access have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
27a(4). Transportation & Circulation - Roads & Highways - Tactical Access (VCFPD)								
Will the proposed project:								
a) Involve a road or access, public or private, that complies with VCFPD adopted Private Road Guidelines?	X							
b) Be consistent with the applicable General Plan Goals and Policies for Item 27a(4) of the Initial Study Assessment Guidelines?		X				X		

27a(4). Transportation & Circulation - Roads & Highways - Tactical Access (VCFPD) Impact Discussion:

27a(4) a. Primary site access will occur via Edwards Ranch Road, a private road which connects the site to Telegraph Road, 3,600 feet north of the project entrance. This distance is in excess of the 800-foot standard required by the Ventura County Fire Protection District (VCFPD). Secondary all-weather access, as required by VCFPD, is proposed along an unnamed access road which connects to Todd Road to the east and Darling Road to the west. Secondary access will be required to meet private road standards. Therefore, adverse impacts relating to access for firefighting purposes will be less-than-significant and would not make a cumulatively considerable contribution to a significant cumulative impact on tactical access.

27a(4) b. The proposed project is consistent with the applicable *Ventura County General* Plan Goals and Policies for Item 27a(4) of the *Ventura County Initial Study Assessment Guidelines*.

Condition of Approval Residual Impact(s)
Maximum Single Access Road Length
Purpose: To ensure that adequate fire department access is provided in conformance with current California State Law and Ventura County Fire Protection District Ordinance.

Requirement: The Permittee shall design the project such that when only one (1) access point is provided, the maximum length of the access road shall not exceed 800 feet from the point of two (2) separate means of ingress / egress. The two (2) separate means of ingress/egress shall not re converge to a single intersection or access road from the area. Note: The maximum length may be increased when in compliance with the VCFC and State Law.

Documentation: A stamped copy of the approved access plan.

Timing: The Permittee shall submit an access plan to the Fire Prevention Bureau for approval before the issuance of building permits. All required access shall be installed before the start of combustible construction.

Monitoring and Reporting: A copy of the approved access plan shall be kept on file with the Fire Prevention Bureau. The Fire Prevention Bureau shall conduct a final inspection to ensure that the access is installed according to the approved plans. Unless a modification is approved by the Fire Prevention Bureau, the Permittee, and their successors in interest, shall maintain the access for the life of the development.

No significant impacts on tactical access have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	**Project Impact Degree Of Effect****				**Cumulative Impact Degree Of Effect****			
	N	LS	PS-M	PS	N	LS	PS-M	PS
27b. Transportation & Circulation - Pedestrian/Bicycle Facilities (PWA/Plng.)								
Will the proposed project:								
1) Will the Project have an Adverse, Significant Project-Specific or Cumulative Impact to Pedestrian and Bicycle Facilities within the Regional Road Network (RRN) or Local Road Network (LRN)?		X				X		
2) Generate or attract pedestrian/bicycle traffic volumes meeting requirements for protected highway crossings or pedestrian and bicycle facilities?		X				X		
3) Be consistent with the applicable General Plan Goals and Policies for Item 27b of the Initial Study Assessment Guidelines?		X				X		

27b. Transportation & Circulation - Pedestrian/Bicycle Facilities (PWA/Plng.)
Impact Discussion:

27b 1. There are no pedestrian and/or bicycle crossings on Edwards Ranch Road. Furthermore, the most appropriate County road standard for roadways in rural areas does not require pedestrian facilities (sidewalks) and/or bicycle facilities (bike lanes). Therefore, the proposed project will not have a project-specific adverse impact and will not make a cumulatively considerable contribution to a significant cumulative impact to pedestrian and bicycle facilities/traffic.

27b 2. The proposed project will not generate or attract pedestrian/bicycle traffic volumes meeting requirements for protected highway crossings or pedestrian and bicycle facilities. The project site is located approximately 2 miles from the Community of Saticoy and the City of Ventura, the nearest populated communities. The proposed project is located within a rural area removed from a concentration of pedestrian and bike routes as well as from schools (nearby school sites are two miles from the project site) and commercial centers and transit facilities. The provision long-term and short-term bicycle parking onsite is not practice due to the type of vehicle traffic that will utilize the site and the private road to the site entrance. No further mitigation is required.

Based on the above discussion, the project specific pedestrian/bicycle facility impacts will be less than significant, and the proposed project will not make a cumulatively considerable contribution to pedestrian/bicycle facilities impacts.

27b 3. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 27b of the *Ventura County Initial Study Assessment Guidelines*.

Mitigation/Residual Impact(s)

No significant Impacts on pedestrian/bicycle facilities have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
27c. Transportation & Circulation - Bus Transit								
Will the proposed project:								
1) Substantially interfere with existing bus transit facilities or routes, or create a substantial increase in demand for additional or new bus transit facilities/services?		X				X		
2) Be consistent with the applicable General Plan Goals and Policies for Item 27c of the Initial Study Assessment Guidelines?		X				X		

27c. Transportation & Circulation - Bus Transit Impact Discussion:

27c-1. According to the *Ventura County Initial Study Assessment Guidelines* (p. 173), "A project will normally have a significant impact on bus transit if it would substantially interfere with existing bus transit facilities or routes, or if it would create a substantial increased demand for additional or new bus transit facilities/services." However, only "projects that can be expected to generate more than 100 daily vehicle trips (10 single family housing units or equivalent traffic generation) will require an evaluation of the specific project impacts through either consultation with the appropriate transit service provider or separate analysis performed by the Applicant."

The project site is not located within proximity to any bus transit facilities or routes with which it could interfere. The nearest transit stop is two miles east of the project site at a Ventura Intercity Transit Authority transit stop located near the Briggs School. The proposed project consists of the construction of a commercial organics composting operation. As discussed in Section 27a(1) (above), the proposed project will generate 770 average daily vehicle trips The greater part of the increased traffic is associated incoming waste, outgoing sales and incoming deliveries. 124 average daily trips are attributable to employee and visitor trips, a net increase of 98 daily vehicle trips from the existing baseline of 26 average daily trips. Therefore the proposed project will not have a project-specific impact on bus transit facilities/services and will not make a cumulatively considerable contribution to a significant cumulative impact related to bus transit facilities/services.

27c 2. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 27c of the *Ventura County Initial Study Assessment Guidelines*.

Mitigation/Residual Impact(s)

No significant impacts on bus transit facilities have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
27d. Transportation & Circulation - Railroads								
Will the proposed project:								
1) Individually or cumulatively, substantially interfere with an existing railroad's facilities or operations?		X				X		
2) Be consistent with the applicable General Plan Goals and Policies for Item 27d of the Initial Study Assessment Guidelines?		X				X		

27d. Transportation & Circulation - Railroads Impact Discussion:

27d 1. A 100-foot wide Southern Pacific Railroad right-of-way currently owned by the Ventura County Transportation Commission per Instrument No. 95-131252 abuts the assessor parcel boundary to the north. At grade railroad tracks are located along the northern boundary of the project, approximately 50 feet from the entrance of the facility. The existing operation traffic utilizes an uncontrolled crossing to gain entrance to the facility. Crossing has been granted by a private license agreement between the Limoneira Company and the Ventura County Transportation Commission (VCTC).

The proposed driveway crosses the railroad tracks creating a potential conflict between construction and operational vehicle traffic and future railroad operations. Additionally, the project improvements will be constructed within proximity to these existing tracks; the administrative building will be setback approximately 75 feet from the tracks. The description for proposed project indicates that the tracks are presently inactive railroad. However, the proposed project will not create additional demand for railroad facilities or operations. The property owner and permittee will be responsible for interfacing with VCTC to update or amend the existing license agreement, if required. Therefore, the proposed project will not have a project-specific impact and will not make a cumulatively considerable contribution to a significant cumulative impact, related to railroad facilities/operations.

27d 2. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 27D of the *Ventura County Initial Study Assessment Guidelines.*

Mitigation/Residual Impact(s)
No significant Impacts on railroad facilities have been identified, therefore no mitigation measures are necessary.

Issue (Responsible Department)*	**Project Impact Degree Of Effect****				**Cumulative Impact Degree Of Effect****			
	N	LS	PS-M	PS	N	LS	PS-M	PS
27e. Transportation & Circulation – Airports (Airports)								
Will the proposed project:								
1) Have the potential to generate complaints and concerns regarding interference with airports?	X				X			
2) Be located within the sphere of influence of either County operated airport?	X				X			
3) Be consistent with the applicable General Plan Goals and Policies for Item 27e of the Initial Study Assessment Guidelines?	X				X			

27e. Transportation & Circulation – Airports (Airports) Impact Discussion:

27e 1 and 27e 2. The proposed project is located 5.5 miles southwest from the Santa Paula Airport. The project site is not located within the sphere of influence of any County operated airport. Furthermore, proposed structures will not exceed the maximum height of 35 feet allowed by the Ventura County NCZO and will not involve the introduction of substantial lighting or other features that could interfere with air traffic safety. Therefore, the proposed project will not have a project-specific adverse impact and will not make a cumulatively considerable contribution to a significant cumulative impact related to existing airport facilities or operations.

27e 3. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 27e of the *Ventura County Initial Study Assessment Guidelines*.

Mitigation/Residual Impact(s)

No significant impacts on airports have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
27f. Transportation & Circulation - Harbor Facilities (Harbors)								
Will the proposed project:								
1) Involve construction or an operation that will increase the demand for commercial boat traffic and/or adjacent commercial boat facilities?	X				X			
2) Be consistent with the applicable General Plan Goals and Policies for Item 27f of the Initial Study Assessment Guidelines?	X				X			

27f. Transportation & Circulation - Harbor Facilities (Harbors) Impact Discussion:

27f 1. The proposed project is located 8.7 miles from the nearest harbor, Ventura Harbor. The proposed project will not result in an increase in demand for commercial boat traffic. Therefore, the proposed project will not have project-specific adverse impacts and will not make cumulatively considerable contribution to a significant cumulative impact related to existing harbor facilities or operations.

27f 2. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 27f of the *Ventura County Initial Study Assessment Guidelines*.

Mitigation/Residual Impact(s)

No significant impacts on harbor facilities have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
27g. Transportation & Circulation - Pipelines								
Will the proposed project:								

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
1) Substantially interfere with, or compromise the integrity or affect the operation of, an existing pipeline?		X				X		
2) Be consistent with the applicable General Plan Goals and Policies for Item 27g of the Initial Study Assessment Guidelines?		X				X		

27g. Transportation & Circulation - Pipelines Impact Discussion:

27g 1. The County GIS Maps (2019) indicate that the proposed CUP boundary is proximity of a major pipeline. The proposed project does not propose to relocate or remove these existing improvements. Therefore, the proposed project will not result in project-specific impacts and will not make a cumulatively considerable contribution to a significant cumulative impact related to pipeline facilities.

27g 2. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 27g of the *Ventura County Initial Study Assessment Guidelines.*

Mitigation/Residual Impact(s)

No significant impacts on pipelines have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
28a. Water Supply – Quality (EHD)								
Will the proposed project:								
1) Comply with applicable state and local requirements as set forth in Section 28a of the Initial Study Assessment Guidelines?	X				X			
2) Be consistent with the applicable General Plan Goals and Policies for Item 28a of the Initial Study Assessment Guidelines?	X				X			

28a. Water Supply – Quality (EHD) Impact Discussion:

28a 1. Domestic water supply for the proposed project will be provided by the City of Santa Paula. A water will serve letter dated March 22, 2018, from the City of Santa Paula (Attachment 7) confirms the intent to connect the proposed project to the City's potable water service upon the satisfaction of specific requirements, including, infrastructure upgrades and connection fees. The proposed project will not have any project specific or cumulative impacts to the domestic water supply.

28a 2. The proposed project is consistent with the *Ventura County General Plan* Goals and Policies for Item 28a of the *Ventura County Initial Study Assessment Guidelines*.

Mitigation/Residual Impact(s)

No significant Impacts on water supply - quality have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
28b. Water Supply – Quantity (WPD)								
Will the proposed project:								
1) Have a permanent supply of water?		X				X		
2) Either individually or cumulatively when combined with recently approved, current, and reasonably foreseeable probable future projects, introduce physical development that will adversely affect the water supply - quantity of the hydrologic unit in which the project site is located?		X				X		
3) Be consistent with the applicable General Plan Goals and Policies for Item 28b of the Initial Study Assessment Guidelines?		X				X		

28b. Water Supply – Quantity (WPD) Impact Discussion:

28b 1. Domestic and operational water for the proposed project will be provided by the City of Santa Paula. A water will serve letter dated March 22, 2018, from the City of Santa Paula (Attachment 7) confirms the intent to connect the proposed project to the City's potable water service upon the satisfy action of specific requirements, including, infrastructure upgrades and connection fees. The issuance of an intent to serve establishes a permanent water supply.

28b 2. As discussed in this initial study, Section 2a (above), The proposed operation will remove 55 acres of orchards and render the site area impermeable. The proposed operation will capture and store rainwater to supplement composting operational water needs. According to the Facility Water Balance Study (Attachment 8), “an efficient orchard irrigation system should not create excessive runoff either as surface flow or groundwater percolation.” However, the study does not provide information regarding the loss of recharge and precipitation due to reduction of permeability of the 55-acre orchard area. According to a 2010 study conducted by the Irrigation Training and Research Center for the Fox Canyon Groundwater Management Agency (FCGMA), citrus in the area has an adjusted leaching requirement of 16%. Therefore, the net irrigation impact by the existing basin is approximately 127 AFY. With rainwater capture and storage, the proposed project would result in a net reduction in groundwater use, estimated at 60 AF less than the current orchard use in normal precipitation years, 76 AF less in wet years, with a net increase of 2 AF in dry years. The proposed project would not directly or indirectly decrease, either individually or cumulatively, the net quantity of groundwater in a groundwater basin that is overdrafted or create an overdrafted groundwater basin and is considered less than significant for groundwater quantity.

The proposed project overlies the Santa Paula Basin, which is in hydrologic connection with the Oxnard Subbasin, designated Critically Overdrafted by the California Department of Water Resources. However, the proposed project will result in a net decrease in groundwater use from the present use with the conversion of land use from agricultural to commercial. The proposed project would not result in net groundwater extraction that would individually or cumulatively cause an overdrafted basin and is therefore considered less than significant for groundwater quantity

28b 3. The proposed project will be consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 28b of the *Ventura County Initial Study Assessment Guidelines*.

Mitigation/Residual Impact(s)

No significant impacts on water supply - quantity have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	**Project Impact Degree Of Effect****				**Cumulative Impact Degree Of Effect****			
	N	LS	PS-M	PS	N	LS	PS-M	PS
28c. Water Supply - Fire Flow Requirements (VCFPD)								
Will the proposed project:								
1) Meet the required fire flow?		X				X		
2) Be consistent with the applicable General Plan Goals and Policies for Item 28c of the Initial Study Assessment Guidelines?		X				X		

28c. Water Supply - Fire Flow Requirements (VCFPD) Impact Discussion:

28c 1. Water to the proposed project will be supplied by the City of Santa Paula. The Applicant will be required to provide an on-site water supply that meets the required fire flow in accordance with the Ventura County Fire Code. New fire hydrants and fire sprinklers in the building within the proposed structures will be installed as part of the proposed project. The fire hydrants and fire sprinklers in the building will be required to meet VCFPD fire flow requirements. Therefore, the proposed project will not have any project-specific impacts and will not make a cumulatively considerable contribution to a significant cumulative impact, related to fire flow requirements.

28c 2. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 28c of the *Ventura County Initial Study Assessment Guidelines*.

Mitigation/Residual Impact(s)

No significant impacts on fire flow requirements have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	**Project Impact Degree Of Effect****				**Cumulative Impact Degree Of Effect****			
	N	LS	PS-M	PS	N	LS	PS-M	PS
29a. Waste Treatment & Disposal Facilities - Individual Sewage Disposal Systems (EHD)								
Will the proposed project:								
1) Comply with applicable state and local requirements as set forth in Section 29a of the Initial Study Assessment Guidelines?		X				X		
2) Be consistent with the applicable General Plan Goals and Policies for Item 29a of the Initial Study Assessment Guidelines?		X				X		

29a. Waste Treatment & Disposal Facilities - Individual Sewage Disposal Systems (EHD) Impact Discussion:

29a 1. The proposed project will utilize onsite wastewater treatment systems (OWTS). A Soils Report dated April 3, 2017, shows the site is suitable for a conventional OWTS which utilizes leach line dispersal fields. The proposed OWTS for the site includes: one 4,000-gallon septic tank for the Administration building; one 2,500-gallon tank for the Production building, one 2,500-gallon tank for the Maintenance building, one 2,000-gallon tank for the Green Materials Processing building, and one 2,000 gallon tank for the Wet Organics Processing building. Wastewater will be pumped via well pumps and dosing tanks to the leach lines at the north western section of the site. A waste discharge permit from the Los Angeles Regional Water Quality Control Board will be required in order for this project to comply with state law. Conformance with the County Building Code Ordinance, state OWTS policy, and EHD guidelines, as well as proper routine maintenance of septic systems, will reduce any project specific and cumulative impacts to a level considered less than significant.

29a 2. The proposed project will be consistent with the *Ventura County General Plan* Goals and Policies for Item 29a of the *Ventura County Initial Study Assessment Guidelines* provided the septic systems are properly installed and maintained so as not to contaminate groundwater or create a public nuisance, and adequate setbacks from septic tanks and disposal fields are maintained.

Mitigation/Residual Impact(s)

No significant impacts on individual sewage disposal systems have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
29b. Waste Treatment & Disposal Facilities - Sewage Collection/Treatment Facilities (EHD)								
Will the proposed project:								
1) Comply with applicable state and local requirements as set forth in Section 29b of the Initial Study Assessment Guidelines?	X				X			
2) Be consistent with the applicable General Plan Goals and Policies for Item 29b of the Initial Study Assessment Guidelines?	X				X			

29b. Waste Treatment & Disposal Facilities - Sewage Collection/Treatment Facilities (EHD) Impact Discussion:

29b 1. The proposed project will utilize an onsite wastewater treatment system and will not require connection to a sewage collection facility at this time. Therefore, the proposed project will not have any project specific and will not make a cumulative considerably contribution to a significant cumulative impact, related to the use of a sewage collection/treatment facility.

29b 2. The proposed project is consistent with the *Ventura County General Plan* Goals and Policies for Item 29b of the *Ventura County Initial Study Assessment Guidelines*.

Mitigation/Residual Impact(s)

No significant impacts on sewage collection/treatment facilities have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
29c. Waste Treatment & Disposal Facilities - Solid Waste Management (PWA)								
Will the proposed project:								
1) Have a direct or indirect adverse effect on a landfill such that the project impairs the landfill's disposal capacity in terms of reducing its useful life to less than 15 years?		X				X		
2) Be consistent with the applicable General Plan Goals and Policies for Item 29c of the Initial Study Assessment Guidelines?		X				X		

29c. Waste Treatment & Disposal Facilities - Solid Waste Management (PWA) Impact Discussion:

29c 1. As required by California Public Resources Code (PRC) 41701, Ventura County's Countywide Siting Element (CSE), adopted in June 2001 and updated annually, indicated Ventura County has at least 15 years of disposal capacity available for waste generated by in-County projects. Because the County currently exceeds the minimum disposal capacity required by state PRC, the proposed project will result in less-than-significant project-specific and cumulative impacts upon Ventura County's solid waste disposal capacity.

29c 2. Ventura County Ordinance 4421 requires all discretionary permit project proponents whose proposed project includes construction and/or demolition activities to reuse, salvage, recycle, or compost a minimum of 65% of the solid waste generated by their project. The IWMD's waste diversion program (Form B Recycling Plan/Form C Report) ensures this 65% diversion goal is met prior to issuance of a final zoning clearance for use inauguration or occupancy, consistent with the Ventura County General Plan's Waste Treatment and Disposal Facility Goals 4.4.1 1 and 2 and Policies 4.4.2 1, 2, and 6. Therefore, the proposed project will have less than significant project specific impacts and will not make a cumulatively considerable contribution to significant cumulative impacts related to the Ventura County General Plan's goals and policies for solid waste disposal capacity.

The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 29c of the *Ventura County Initial Study Assessment Guidelines.*

Mitigation/Residual Impact(s)

No significant Impacts on solid waste management have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
29d. Waste Treatment & Disposal Facilities - Solid Waste Facilities (EHD)								
Will the proposed project:								
1) Comply with applicable state and local requirements as set forth in Section 29d of the Initial Study Assessment Guidelines?			X				X	
2) Be consistent with the applicable General Plan Goals and Policies for Item 29d of the Initial Study Assessment Guidelines?			X				X	

29d. Waste Treatment & Disposal Facilities - Solid Waste Facilities (EHD) Impact Discussion:

29d 1. This existing 15-acre composting facility has an active permit to operate with the Ventura County Environmental Health Division, Local Enforcement Agency (LEA) for a composting operation and chip and grind operation (FA0009836; SWIS 56 AA 0147; Geotracker ID T10000010023). The proposed project involves expanding the activities from 15 acres to 70 acres and would include commercial food waste and green waste. Estimated annual tons per year of feedstock is 295,000 cubic yards and up to 153,000 cubic yards of materials stored onsite. These activities constitute a full solid waste facility permit to be issued by EHD LEA and requires concurrence from the State CalRecycle.

A composting facility must meet general design and operating standards as described in California Code of Regulations Title 14, section 17866 and 17867. The buildings must be designed and operated to prevent leachate leaving the site, minimize odors, and ensure employees are working in a safe and healthful workplace. The Applicant provided a Vector Control Plan (Attachment 16), Odor Impact Minimization Plan (Attachment 6), Dust Control Plan (Attachment 5) and Containment Area for Compost Processing Operations Plan (Attachment 10). If nuisance and health/safety issues are not being addressed as prescribed by these plans, operation and maintenance measures will be reevaluated and the plans amended. Operations and maintenance of the wet organics processing building is of a particular concern due to the wet organic residue deposited on processing equipment, any intermediate containers/machinery used for storage or conveyance, and the immediate area around the processing equipment. This wet organics processing building requires regular cleaning to prevent odors, grime, and the attraction of vector. Depending on the incoming food material, there may be grease, fats, oils, etc. that require degreasing cleansers to effectively clean the building.

Compliance with federal, state, and local solid waste regulations, and recommended mitigation measure WAST MM-1, will reduce potentially significant public health impacts to a level considered less than significant.

29d 2. The proposed project will be consistent with the *Ventura County General Plan* Goals and Policies for Item 29d of the *Ventura County Initial Study Assessment Guidelines*, provided the facility remains in compliance with all applicable laws, regulations, and health and safety measures related to the operation of a composting facility.

Mitigation/Residual Impact(s)

<u>Mitigation Measure WASTE MM-1 – Composting Facility – Wet and Dry Organics Processing Design, Operation, and Maintenance</u>
Purpose: To ensure the facility site complies with California Code of Regulations Title 14, Section 17866 "General Design Requirements" and Section 17867 "General Operating Standards" for composting facilities.

Requirement: The buildings shall be designed and operated to prevent leachate leaving the site, minimize odors, and ensure employees are working in a safe and healthy workplace. The interior of the Wet Organics Processing Building and equipment inside, shall be cleaned with degreasing cleansers to effectively remove grease, fats, oils, etc. The cleaning of the Wet Organics Building shall be performed periodic basis in conformance with a written maintenance and operations plan. Water used to clean the Wet Organics Processing Building shall be discharged to in an appropriate manner to avoid chemicals damaging the composting process.

Documentation: The Permittee shall provide written maintenance and operations plans identifying best management practices and specific control technologies proposed for the operation and maintenance of the dry and wet organics buildings, including controls for nuisance and health concerns within the building (odors, pooling of liquids, vector control, etc.).

Timing: Operations and maintenance plans shall be submitted to the Ventura County Environmental Health Division, Local Enforcement Agency (LEA) for review and approval prior to LEA's approval of the Solid Waste Facility Permit. The Permittee shall follow the approved operations and maintenance plans developed to prevent and/or mitigate nuisances, vectors, and odors, at all times.

Monitoring and Reporting: Ventura County Environmental Health Division, LEA will evaluate the adequateness and effectiveness of the facility's operations and maintenance plans during routine site visits and complaint investigations.

Residual Impacts:

With the implementation Mitigation Measure WASTE MM-1, project-specific impacts related to waste-treatment and disposal will be reduced to a less than significant level.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
30. Utilities								
Will the proposed project:								
a) Individually or cumulatively cause a disruption or re-routing of an existing utility facility?		X				X		
b) Individually or cumulatively increase demand on a utility that results in expansion of an existing utility facility which has the potential for secondary environmental impacts?		X				X		
c) Be consistent with the applicable General Plan Goals and Policies for Item 30 of the Initial Study Assessment Guidelines?		X				X		

30. Utilities Impact Discussion:

The project site is currently served by existing electrical facilities provided by Southern California Edison. The proposed project will utilize a propane tank; and, therefore, a natural gas service line connection will not be required. Therefore, the proposed project will not result in project-specific impacts and will not make a cumulatively considerable contribution to a significant cumulative impact related to existing utility facilities.

30a and 30b. The area in which the project site is located is currently served with electrical, gas, and communication facilities. Therefore, the proposed project will not make a cumulatively considerable contribution to a significant cumulative impact related to an expansion of an existing facility.

30c. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 30 of the *Ventura County Initial Study Assessment Guidelines*.

Mitigation/Residual Impact(s)

No significant impacts on utility facilities have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
31a. Flood Control Facilities/Watercourses - Watershed Protection District (WPD)								
Will the proposed project:								
1) Either directly or indirectly, impact flood control facilities and watercourses by obstructing, impairing, diverting, impeding, or altering the characteristics of the flow of water, resulting in exposing adjacent property and the community to increased risk for flood hazards?		X				X		
2) Be consistent with the applicable General Plan Goals and Policies for Item 31a of the Initial Study Assessment Guidelines?		X				X		

31a. Flood Control Facilities/Watercourses - Watershed Protection District (WPD) Impact Discussion:

31a 1. The proposed project is situated about ¼ mile feet north of the Santa Clara River, which is a Ventura County Watershed Protection District (WPD) jurisdictional redline channel. No direct connections to the Santa Clara River are proposed. As discussed in Section 17b., the project site is in “Zone X Unshaded” areas (i.e., outside of the 100-year floodplain). However, offsite flows from Todd Barranca as determined in the Hydrologic and Hydraulic (H&H) analysis (Harrison Industries, November 2018) would be higher than one foot above the landside finished grade of the proposed retaining wall along the east side of the development (see Plan Sheets 19 and 20). This creates a leveed condition and therefore the retaining wall must be designed as a flood wall and meet the guidelines for levee design as delineated by the Army Corp of Engineers.

In accordance with Appendix J of the Ventura County Building Code, runoff from the proposed project site will be released at no greater than the undeveloped flow rate and in such manner as to not cause an adverse impact downstream in peak, velocity or duration. WPD staff determined that the proposed project design, with incorporation of the WPD conditions mentioned above, mitigates the direct and indirect project-specific and cumulative impacts to flood control facilities and watercourses. Therefore, the proposed project will result in less-than-significant project-specific and cumulative impacts, related to redline channels under the jurisdiction of WPD.

31a 2. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 31a of the *Ventura County Initial Study Assessment Guidelines*.

Mitigation/Residual Impact(s)

No significant impacts on flood hazards have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	**Project Impact Degree Of Effect****				**Cumulative Impact Degree Of Effect****			
	N	LS	PS-M	PS	N	LS	PS-M	PS
31b. Flood Control Facilities/Watercourses - Other Facilities (PWA)								
Will the proposed project:								
1) Result in the possibility of deposition of sediment and debris materials within existing channels and allied obstruction of flow?		X				X		
2) Impact the capacity of the channel and the potential for overflow during design storm conditions?		X				X		
3) Result in the potential for increased runoff and the effects on Areas of Special Flood Hazard and regulatory channels both on and off site?	X				X			
4) Involve an increase in flow to and from natural and man-made drainage channels and facilities?	X				X			
5) Be consistent with the applicable General Plan Goals and Policies for Item 31b of the Initial Study Assessment Guidelines?		X				X		

31b. Flood Control Facilities/Watercourses - Other Facilities (PWA) Impact Discussion:

31b 1, 31b 2, 31b 3, and 31b 4. The proposed project preserves the existing trend of runoff and local drainage patterns, as indicated in the Regional and Local hydrology Study (Attachment 14, Harrison Industries, November 2018). The project is designed to capture and prevent any surface water runoff from the site that could impact neighboring properties. Through a combination of site grading and a subsurface drain system, stormwater runoff from working surfaces will be directed to water retention ponds proposed to be installed at the south boundary of the project site. As required by the General WDR for Composting Operations (Order WQ 2016-0121-DWQ), the site has been designed to contain runoff from a 25-year, 24 hour storm within water retention basins.

The project will not create an obstruction of flow in the existing drainage as runoff from the project site will maintain the drainage conditions that presently exist. The runoff that normally would enter the project area will be collected and carried south past the project via a proposed protected bypass culvert that extends through the project and does not collect any onsite water. This project will not impact the capacity of the downstream channel (Santa Clara River) or increase the potential for channel overflow during design storm conditions. There will be no adverse effects to Areas of Special Flood Hazard, regulatory channels, and natural and man-made channels. The proposed project will be completed according to current codes and standards. Therefore, the impacts of the project on drainage facilities not under the jurisdiction of WPD are less than significant.

31b 5. The proposed project will be consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 31b-5 of the *Ventura County Initial Study Assessment Guidelines*.

Mitigation/Residual Impact(s)

No significant impacts on flood control facilities/watercourses have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	**Project Impact Degree Of Effect****				**Cumulative Impact Degree Of Effect****			
	N	LS	PS-M	PS	N	LS	PS-M	PS
32. Law Enforcement/Emergency Services (Sheriff)								
Will the proposed project:								
a) Have the potential to increase demand for law enforcement or emergency services?	X				X			
b) Be consistent with the applicable General Plan Goals and Policies for Item 32 of the Initial Study Assessment Guidelines?	X				X			

32. Law Enforcement/Emergency Services (Sheriff) Impact Discussion:

32a. The proposed project includes a commercial organics processing facility which is not included in the list of project categories identified in the Ventura County Assessment Guidelines that have the potential to increase demand for law enforcement or emergency services. 24-hour security for the facility will be provided by perimeter fencing, locked gates and nighttime lighting around the onsite buildings. The nearest Ventura County Sheriff's Station is the West County Police Services/ Headquarters Station, located at 800 S. Victoria Avenue, Ventura, which is approximately 5.5 miles west of the project site. The proposed project will not substantially increase demand for law enforcement or emergency services. Therefore, the proposed project would not have a project-specific impact on or make a cumulatively considerable contribution to a cumulative impact to emergency services.

32b. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 32 of the *Ventura County Initial Study Assessment Guidelines*.

Mitigation/Residual Impact(s)

No significant impacts on law enforcement/emergency services have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
33a. Fire Protection Services - Distance and Response (VCFPD)								
Will the proposed project:								
1) Be located in excess of five miles, measured from the apron of the fire station to the structure or pad of the proposed structure, from a full-time paid fire department?	X				X			
2) Require additional fire stations and personnel, given the estimated response time from the nearest full-time paid fire department to the project site?	X				X			
3) Be consistent with the applicable General Plan Goals and Policies for Item 33a of the Initial Study Assessment Guidelines?	X				X			

33a. Fire Protection Services - Distance and Response (VCFPD) Impact Discussion:

33a 1 and 33a 2. The nearest fire station, Ventura County Fire Station 26, is located at 536 W Main Street in Santa Paula. Fire Station 26 is 5.5 miles northeast of the project site. The distance from Fire Station 26 to the project site is adequate, and the proposed project will not require a new fire station or additional personnel. Therefore, the proposed project will have a less-than-significant project-specific impact related to fire protection services. The proposed project will not make a cumulatively considerable contribution to a significant cumulative impact related to fire protection services.

33a 3. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 33a of the *Ventura County Initial Study Assessment Guidelines*.

Mitigation/Residual Impact(s)

No significant impacts on fire protection services (distance and response), have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
33b. Fire Protection Services – Personnel, Equipment, and Facilities (VCFPD)								
Will the proposed project:								
1) Result in the need for additional personnel?	X				X			
2) Magnitude or the distance from existing facilities indicate that a new facility or additional equipment will be required?	X				X			
3) Be consistent with the applicable General Plan Goals and Policies for Item 33b of the Initial Study Assessment Guidelines?	X				X			

33b. Fire Protection Services – Personnel, Equipment, and Facilities (VCFPD) Impact Discussion:

33b 1. The proposed project will not result in the need for additional fire protection services personnel. Therefore, the proposed project will not have a project-specific impact and will not make a cumulatively considerable contribution to a significant cumulative impact, with regard to personnel for fire protection services.

33b 2. As stated in this Initial Study (above), the nearest fire station to the project site is Ventura County Fire Station 26, which is located approximately 5.5 miles northeast of the project site. The distance from Fire Station 26 to the project site is adequate. Additionally, the Ventura County Fire Protection District will condition the proposed project, to require the Applicant to provide an on-site water supply and fire hydrants that will meet the required fire flow in accordance with the Ventura County Waterworks Manual and the Ventura County Fire Code. A new fire station or equipment will not be required to serve the proposed project. Therefore, the proposed project will not have a project-specific impact and will not make a cumulatively considerable contribution to a significant cumulative impact, with regard to facilities and equipment for fire protection services.

33b 3. The proposed project will be consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 33b of the *Ventura County Initial Study Assessment Guidelines*.

Mitigation/Residual Impact(s)

No significant impacts on fire protection services (personnel, equipment and facilities), have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	**Project Impact Degree Of Effect****				**Cumulative Impact Degree Of Effect****			
	N	LS	PS-M	PS	N	LS	PS-M	PS
34a. Education - Schools								
Will the proposed project:								
1) Substantially interfere with the operations of an existing school facility?		X				X		
2) Be consistent with the applicable General Plan Goals and Policies for Item 34a of the Initial Study Assessment Guidelines?		X				X		

34a. Education - Schools Impact Discussion:

34a 1. The proposed project will not interfere with the operations of an existing school facility or cause a significant demand on schools. The proposed project is located approximately 1.94 miles southwest miles of the Briggs School, approximately 2 miles south of Olivelands School and 2.2 miles east of Saticoy Elementary School. These distances will buffer impacts as analyzed in the Odor Impact Minimization Plan (Attachment 6) and Noise Impact Assessment (Attachment 15).

The State of California authorizes the collection of Developer Fees pursuant to § 65996 of the California Government Code (2014b) for commercial and industrial projects. These fees can be collected without special city or county approval, to fund the construction of new school facilities necessitated by the impact of residential and commercial development activity. Payment of such fees are based on the rationale that as commercial and industrial development occurs so will the need for new or expanded school facilities due to new employment and the potential to result in an increase in the population of within the geographic area of the project. Education Code Section 17621(e)(1)(B) authorizes school districts to establish Commercial/Industrial Fees based upon the January 1990 edition of the "San Diego Traffic Generators," a report of the San Diego Association of Governments. The project is located within the Briggs Elementary School District and the Santa Paula Union Highschool District and will be subject to the collection of such developer fees. Therefore, the proposed project will have less-than-significant, project-specific impacts related to schools and will not make a cumulatively considerable contribution to a significant cumulative impact related to schools.

34a 2. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 34a of the *Ventura County Initial Study Assessment Guidelines*.

Mitigation/Residual Impact(s)

No significant impacts on schools have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
34b. Education - Public Libraries (Lib. Agency)								
Will the proposed project:								
1) Substantially interfere with the operations of an existing public library facility?	X							
2) Put additional demands on a public library facility which is currently deemed overcrowded?		X						
3) Limit the ability of individuals to access public library facilities by private vehicle or alternative transportation modes?	X							
4) In combination with other approved projects in its vicinity, cause a public library facility to become overcrowded?						X		
5) Be consistent with the applicable General Plan Goals and Policies for Item 34b of the Initial Study Assessment Guidelines?		X				X		

34b. Education - Public Libraries (Lib. Agency) Impact Discussion:

34b 1 through 34b 4. The proposed project will not be located adjacent to a public library facility and will not interfere with the operations of an existing public library facility. The Planning Division staff analyzed Figure 4.9.1 (County Library Facilities map, *Ventura County General Plan* Public Facilities and Services Appendix, May 8, 2007 Edition) and determined that the project site is not located adjacent to or near any County library facilities. The nearest public library to the project site, Saticoy Library, is located approximately 1.87 miles south of the project site. The proposed use and development of the subject property does not have the potential to create project-specific impacts which would interfere with the use of a library. Therefore, the proposed project will not have a significant project-specific impact and will not make a cumulatively considerable contribution to a significant cumulative impact related to library services.

34b 5. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 34b of the *Ventura County Initial Study Assessment Guidelines*.

Mitigation/Residual Impact(s)

No significant impacts on public libraries have been identified, therefore no mitigation measures are required.

Issue (Responsible Department)*	Project Impact Degree Of Effect**				Cumulative Impact Degree Of Effect**			
	N	LS	PS-M	PS	N	LS	PS-M	PS
35. Recreation Facilities (GSA)								
Will the proposed project:								
a) Cause an increase in the demand for recreation, parks, and/or trails and corridors?		X				X		
b) Cause a decrease in recreation, parks, and/or trails or corridors when measured against the following standards: • Local Parks/Facilities - 5 acres of developable land (less than 15% slope) per 1,000 population; • Regional Parks/Facilities - 5 acres of developable land per 1,000 population; or, • Regional Trails/Corridors - 2.5 miles per 1,000 population?		X				X		
c) Impede future development of Recreation Parks/Facilities and/or Regional Trails/Corridors?		X				X		
d) Be consistent with the applicable General Plan Goals and Policies for Item 35 of the Initial Study Assessment Guidelines?		X				X		

35. Recreation Facilities (GSA) Impact Discussion:

35a and 35 b. The proposed project does not include a residential component that would increase demand for recreation, parks, and/or trails and corridors in the local area and will not impede the future development of local parks facilities. Therefore, the proposed project will result in less-than-significant project-specific impacts and will not make a cumulatively considerable contribution to a significant cumulative impact, related to recreational facilities.

35c. The proposed project site is not located within or adjacent to a planned or proposed future park, recreational facility, or trail corridor. The proposed project will be built within the boundaries of an existing developed site and therefore no impacts on recreational facilities will occur.

35d. The proposed project is consistent with the applicable *Ventura County General Plan* Goals and Policies for Item 35 of the *Ventura County Initial Study Assessment Guidelines*.

Mitigation/Residual Impact(s)

No significant Impacts on recreation facilities have been identified, therefore no mitigation measures are required.

***Key to the agencies/departments that are responsible for the analysis of the items above:**

Airports - Department Of Airports	AG. - Agricultural Department	VCAPCD - Air Pollution Control District
EHD - Environmental Health Division	VCFPD - Fire Protection District	GSA - General Services Agency
Harbors - Harbor Department	Lib. Agency - Library Services Agency	Plng. - Planning Division
PWA - Public Works Agency	Sheriff - Sheriff's Department	WPD – Watershed Protection District

****Key to Impact Degree of Effect:**

N – No Impact
LS – Less than Significant Impact
PS-M – Potentially Significant but Mitigable Impact
PS – Potentially Significant Impact

Section C – Mandatory Findings of Significance

Based on the information contained within Section B:		
	Yes	**No**
1. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?		X
2. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? (A short-term impact on the environment is one that occurs in a relatively brief, definitive period of time while long-term impacts will endure well into the future).		X
3. Does the project have impacts that are individually limited, but cumulatively considerable? "Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effect of other current projects, and the effect of probable future projects. (Several projects may have relatively small individual impacts on two or more resources, but the total of those impacts on the environment is significant.)		X
4. Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?		X

Findings Discussion:

1. As discussed in Section B Items 4 (Biological Resources) and 8 (Cultural Resources) the proposed project would potentially have significant impacts on biological and cultural resources. However, with the imposition of the mitigation measures as defined in those sections, potential impacts would be mitigated to less-than-significant on project-specific and cumulative levels. The proposed project does not have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory.

2. The proposed project will not result in the implementation of short-term goals to the disadvantage of long-term environmental goals. The proposed project facilitates meeting the State-wide target of 50 percent diversion (based on 2014 levels) of

organic waste from landfills mandated by California Senate Bill 1383 by 2020 through recycling, itself a long-term state-wide environmental goal. Potentially significant impacts associated with the project relate to the conservation of agricultural resources within Ventura County and not the implementation of environmental goals within the County. While Air Quality Impacts have been identified, anticipating the proposed rule change identified in the discussion in Section B, the proposed project will comply with the identified thresholds of significance for Criteria Air Pollutants.

3. As stated in Section B, and with the imposition of the recommended mitigation measures and conditions of approval, the proposed project does not have the potential to create a cumulatively considerable contribution to a significant cumulative impact.

4. The proposed project consists of the construction and operation of a Large-Scale Commercial Organics Processing Operation and Development Code Text Amendment to modify the requirements for these facilities within the AE Zone. As stated in Section B, the proposed project does not involve the use of hazardous materials in a manner that pose any unusual risks since they must be handled in compliance with all applicable regulations. Additionally, the proposed project does not involve operational noise that will interfere with surrounding uses, traffic hazards, adverse impacts on water resources located on or around the project site.

Section D – Determination of Environmental Document

Based on this initial evaluation:

[ ]	I find the proposed project **could not** have a significant effect on the environment, and a **Negative Declaration** should be prepared.
[ ]	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measure(s) described in Section B of the Initial Study will be applied to the project. A **Mitigated Negative Declaration** should be prepared.
[X]	I find the proposed project, individually and/or cumulatively, MAY have a significant effect on the environment and an **Environmental Impact Report** (EIR) is required.*
[ ]	I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **Environmental Impact Report** is required, but it must analyze only the effects that remain to be addressed.*
[ ]	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or Negative Declaration pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or Negative Declaration, including revisions or mitigation measures that are imposed upon the proposed project, **nothing further is required.**

<u>EIR Issues of Focus</u>: The EIR must evaluate the proposed project's environmental impacts related to: Agricultural Resources – Soils (Planning Division), and Housing (Planning Division).

This Initial Study identifies mitigation measures which avoid or reduce potentially significant impacts to a less than significant level for the following issues: Air Quality (Ventura County Air Pollution Control District, Planning Division), Water Resources – Surface Water Quality (Watershed Protection District), Biological Resources (Planning Division), Cultural Resources – Historic (Planning Division), Noise and Vibration (Planning Division), Public Health (Environmental Health Division), Transportation & Circulation – Roads and Highways – Safety and Design of Public Roads (Public Works

Agency), Waste Treatment & Disposal Facilities – Solid Waste Facilities (Environmental Health Division).

Furthermore, it has been determined that one or more of these potential significant impacts cannot be reduced to a less-than-significant level through the imposition of feasible mitigation measures; therefore, an Environmental Impact Report (EIR) must be prepared for this project.

John Oquendo, Case Planner

3/10/2020
Date

Attachments:

Attachment 1 – Maps
Attachment 2 – Project Plans
Attachment 3 – Map and Lists of Pending and Approved Projects
Attachment 4 – Air Quality Analysis, Climate Change Impact and Health Risk Assessment (May 2017) and Update Memo (February 2020)
Attachment 5 – Dust Control Plan (February 2017)
Attachment 6 – Odor Impact Minimization Plan (February 2017)
Attachment 7 – City of Santa Paula Will Serve Letter (March 2018)
Attachment 8 – Facility Water Balance Study (February 2017)
Attachment 9 – Update of Geotechnical Engineering Report (December 2017)
Attachment 10 – Containment Area for Compost Processing Operations Plan (February 2017)
Attachment 11 – Initial Study Biological Assessment (April 2017)
Attachment 12 – Photo Simulations (January 2016)
Attachment 13 – Phase II Historic Resources Report (May 2017)
Attachment 14 – Regional and Local Hydrology Study (November 2018)
Attachment 15 – Noise Impact Assessment (February 2020)
Attachment 16 – Vector Control Plan (February 2017)
Attachment 17 – Traffic Study (February 2017)
Attachment 18 – Works Cited

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[i] All emissions presented except "Landfill Fugitives Active Face" are taken from applicant consultant air quality calculations; also does not include permitted sources (flares, AD engine) since they are already mitigated by APCD rules and per determination methodology in VCAQAG
[ii] includes existing stockpile, windrow, and CASP emissions for Santa Paula and Oxnard locations
[iii] based on back-calculating emissions from permitted flare, or LFGCS
[iv] includes on-road vehicles and off-road mobile equipment; reduction in mobile emissions due to proposed use of Tier 4 off-road equipment and less vehicle miles travelled from waste sources to Gold Coast Recycling & Transfer Station for sorting and transfer to landfill
[v] includes proposed stockpile, windrow, CASP, AD CHP engine exhaust and AD waste flare emissions

Ventura County, California
Resource Management Agency
GIS Development & Mapping Services
Map created on 03-11-2019

RMAgis

County of Ventura
Notice of Preparation of an EIR
PL17-0154
Attachment 1 - Maps

0 8,000 16,000 Feet

Disclaimer: This Map was created by the Ventura County Resource Management Agency, Mapping Services - GIS which is designed and operated solely for the convenience of the County and related public agencies. The County does no twarrant the accuracy of this mapand no decision involving a risk of economic loss or physical injury should be made in reliance thereon.

RH

Ventura County
Resource Management Agency
Information Systems GIS Services
Map created on 03-11-2019
Source: Pictometry: 2018

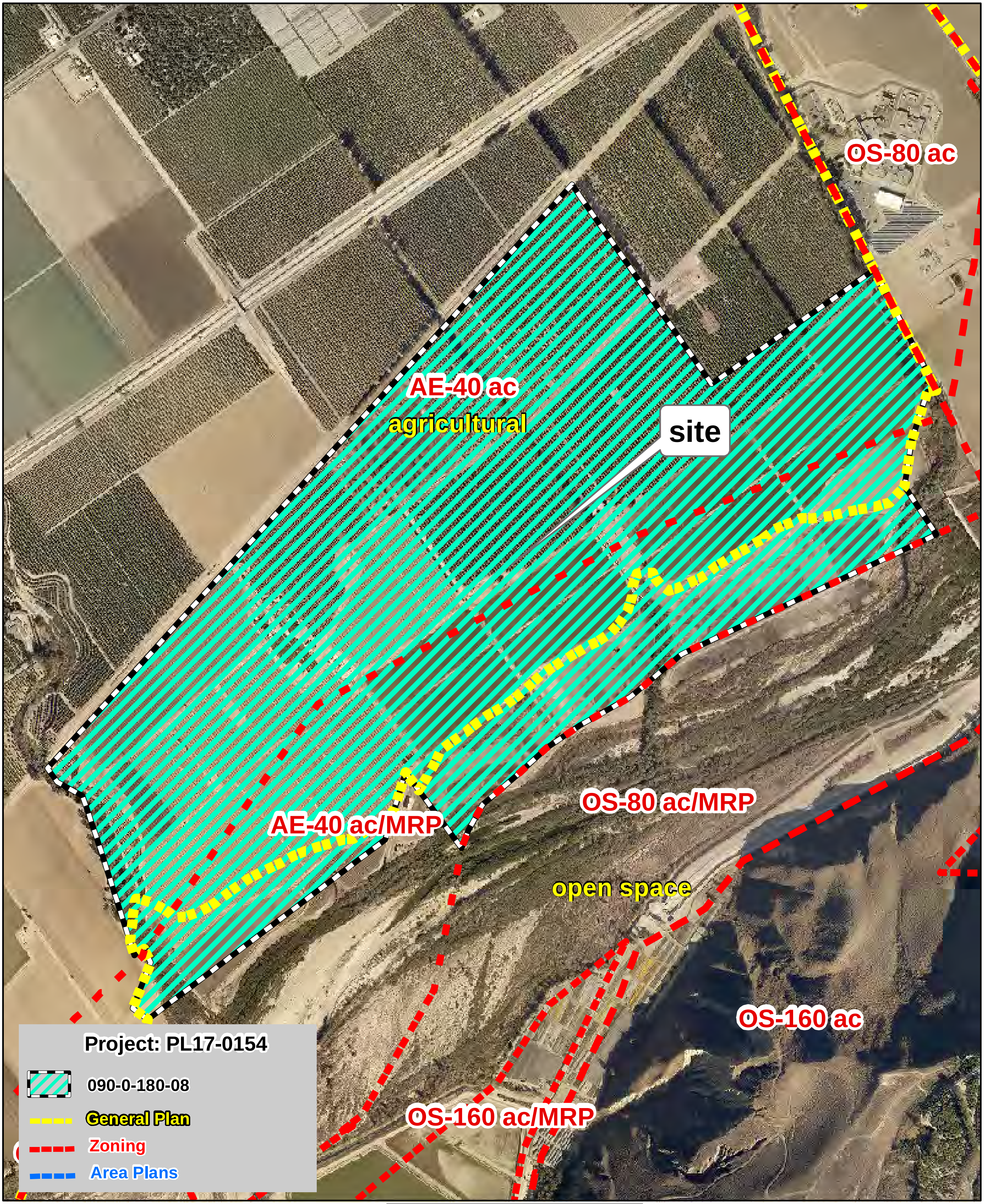
RMAgis

County of Ventura
Notice of Preparation of an EIR
PL17-0154
Maps

0 250 500 1,000 Feet

Disclaimer: this map was created by the Ventura County Resource Management Agency Information Systems GIS, which is designed and operated solely for the convenience of the County and related public agencies. The County does not warrant the accuracy of this map and no decision involving a risk of economic loss or physical injury should be made in reliance therein

RH



Ventura County
Resource Management Agency
Information Systems GIS Services
Map created on 03-11-2019
Source: Pictometry: 2018

RMAgis

County of Ventura
Notice of Preparation of an EIR
PL17-0154
Maps

0 100 200 400 Feet

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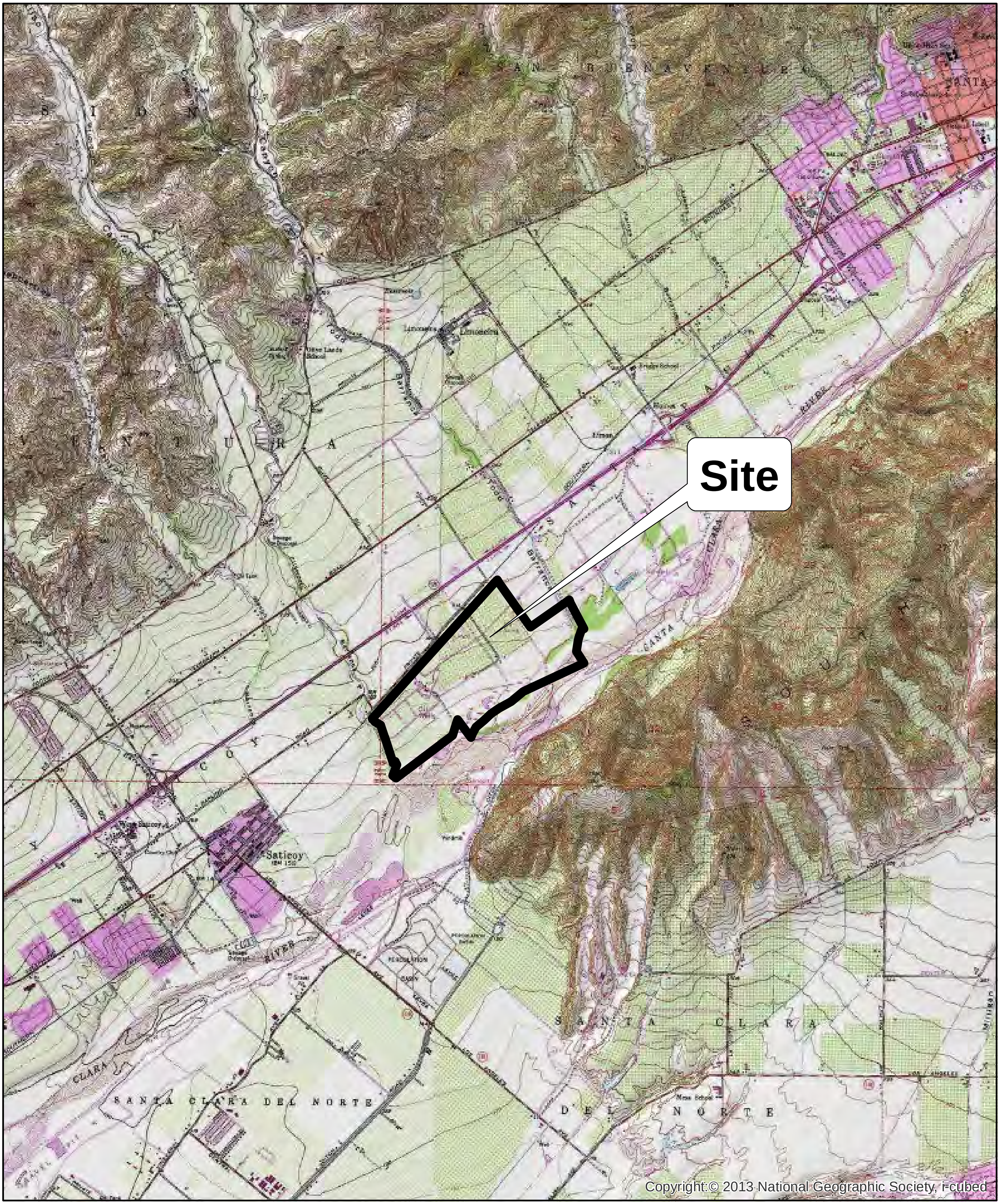
RH



County of Ventura
Resource Management Agency
GIS Development & Mapping Services
Map created on 09-11-2018
Source: Santa Paula, Saticoy U.S.G.S.
7.5 Minutes Quadrangle
Contour Interval = 20 ft

RMAgis

County of Ventura
Notice of Preparation of an EIR
PL17-0154
Attachment 1 - Maps

0 1,000 2,000 Feet

Disclaimer: This Map was created by the Ventura County Resource Management Agency, Mapping Services - GIS which is designed and operated solely for the convenience of the County and related public agencies. The County does no twarrant the accuracy of this mapand no decision involving a risk of economic loss or physical injury should be made in reliance thereon.

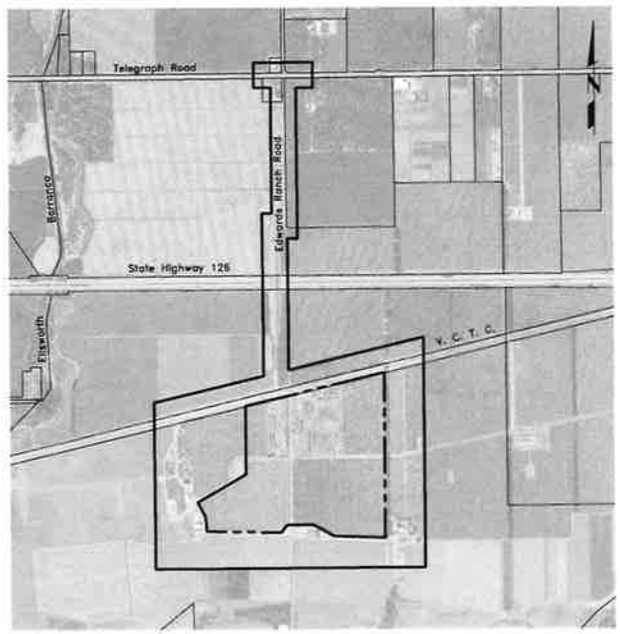
RH

County of Ventura
Resource Management Agency
Planning Division

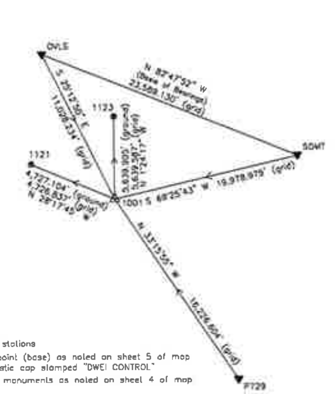
Commercial Organics Processing Facility

Entitlement Plans

Regional Vicinity Map
not to scale



Project Vicinity Map
not to scale



SYMBOL LEGEND
- CSRC reference stations
- GPS reference point (base) as noted on sheet 5 of map set rebar w/plastic cap stamped "DWEI CONTROL"
- Found boundary monuments as noted on sheet 4 of map

GPS Vector Diagram
not to scale
provided for reference only from Diamond West Record Boundary Map, dated 4/1/14

County of Ventura
Notice of Preparation of an EIR
PL17-0154
Attachment 2- Project Plans

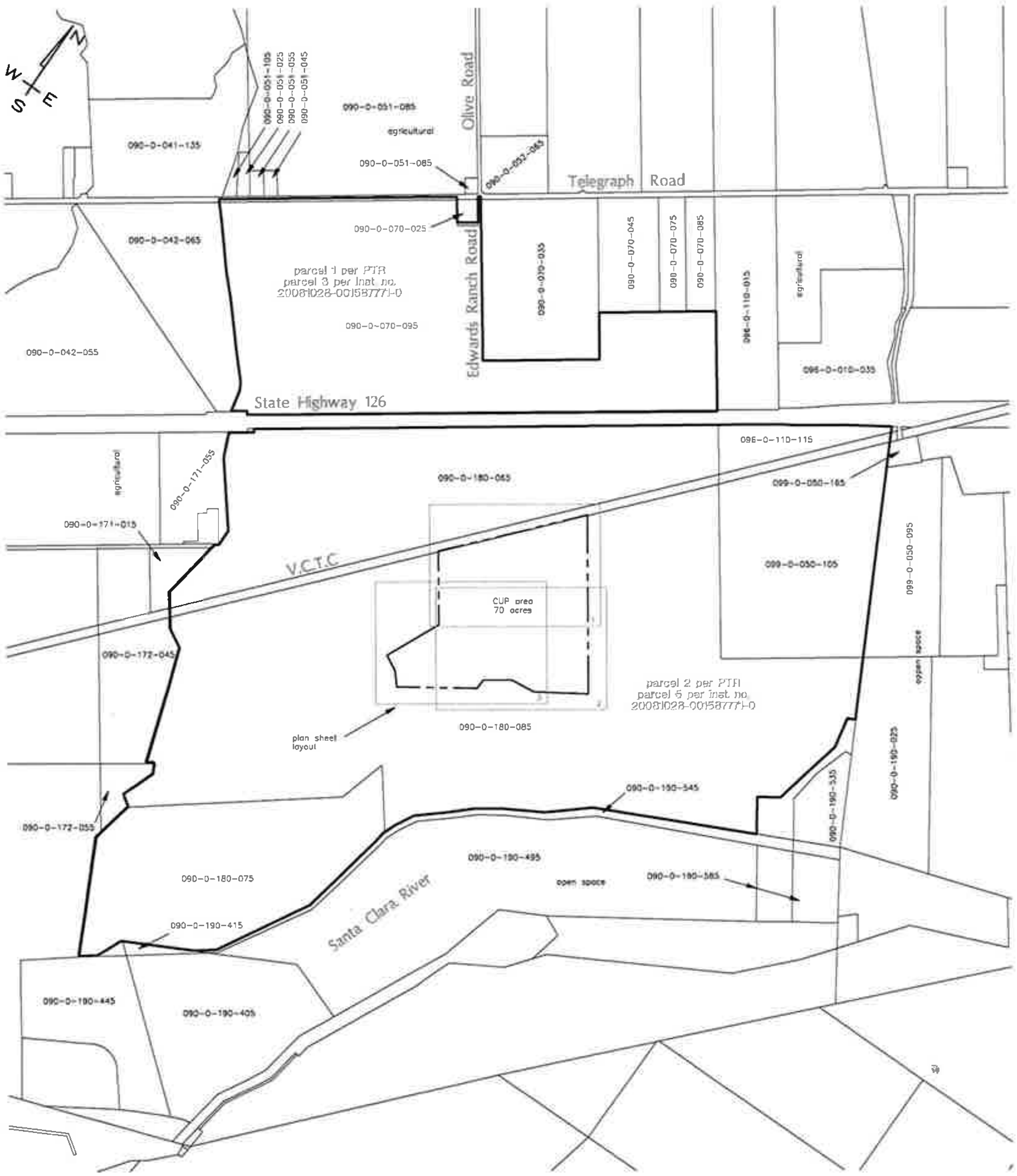
Prepared By:

Harrison

Commercial Organics Processing Facility
Entitlement Planning
Title Sheet
County of Ventura

AGROMIN
Soil for a Greener World

scale: as shown
date: November 30, 2018
sheet 1 of 33



Project Statistics

property address: 12390 W. Telegraph Road, Santa Paula, California 93060

parcels below determined to have been a single, discrete lot in compliance with the provisions of the Subdivision Map Act and local ordinances pursuant thereto per Certificate of Compliance recorded in Instrument no. 20140507-00057264-0

parcel 1
gross area: 8,644,589.6 sf or 198.5 ac
net area: 8,565,278.7 sf or 196.7 ac

parcel 2
gross area: 35,478,018.4 sf or 814.5 ac
net area: 34,662,195.3 sf or 795.8 ac

both parcels zoned Agricultural Exclusive AE-40 (agricultural)

proposed structures	
facility admin building	7,022 sf (first) 6,494 (second)
scale house	13,800 sf
maintenance building	25,000 sf
production building	23,107 sf
wet organics building	80,925 sf
dry organics building	80,925 sf
total building coverage	230,779 sf
total net building coverage	7.6%
construction type	V-B
automatic fire sprinklers	yes
parking required (proj. descr. – trip generation)	62
parking provided	70 (includes 4 accessible spaces)
required accessible spaces	3
loading dock	4
landscaping area	223,350 sf (7.3%)
orchard removal	50 ac

Agriculture/Urban buffer exemption to be requested to the Agricultural Commissioner

Prepared By:

Harrison

P.O. Box 4009
Ventura, California 93007
Voice: (805) 647-1414
Facsimile: (805) 659-9856
www.ejharrison.com

Prepared under the direction of:
Mike Harrison RCE 57,320

Commercial Organics Processing Facility

Entitlement Planning
Regional Area Map & Notes

County of Ventura

AGROMIN
Soil for a Greener World

scale: 1" = 600'
date: November 30, 2018
sheet 2 of 33

13-1008.230 1st entitlement submittal - preliminary

C:\Work Local\13-1008 - Biogenic Facility\230-Entitlement Planning\Civil-Survey\dwg\13-1008-230-PSPC02.dwg
11/22/18 11:28am-HARRISON

Floodplain

According to the following current FEMA Flood Insurance Rate Map, the project is situated in an area of minimal risk of flooding. The project is located in Zone X (unshaded). This zone is described as areas of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level. Zone X is the area determined to be outside the 500-year flood and protected by levee from 100-year flood

Ventura County, California and Incorporated Areas
Panel 770 of 1275
Map Number: 06111C0770E
Effective Date: January 20, 2010

Ventura County, California and Incorporated Areas
Panel 790 of 1275
Map Number: 06111C0790E
Effective Date: January 20, 2010

Owner & Consultant Contact Information

<u>Operator</u>
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Bill Camarillo
201 Kinetic Drive
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Jay Lomagno, AIA
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(805) 648-1234

<u>Landscape Architect</u>
Jordan, Gilbert, and Bain
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Ventura, CA 93001
(805) 642-3641

General Notes

1. The topographic mapping shown herein was prepared by a photogrammetric survey by Aerial Photomapping Services (2929 Larkin Avenue, Clovis, California 93612 (559) 291-0147). The dates of the aerial flights were 09/23/2013, 01/07/2014, and 11/13/2015. The map scale for the control network is 1"=40' and the contour interval is 1 foot.
2. Mapping beyond the control perimeter of the aerial target network may not satisfy the National Map Accuracy Standards. Contours shown with tree and brush lines are considered approximate only.
3. The location of the utilities shown herein are for information only. The location, type, quantity, size, and/or depth were obtained from sources of varying reliability. The engineer-of-record is not responsible for the accuracy or completeness of said records.

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1-6	Record Boundary Map

Utility Contact Information (grids 0473004, -005, -006, -E05, -E06, -C04, -C05)

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Vintage
Doug Felkens
(805) 732-1601

Basis of Bearings

Referenced from Record Boundary Map prepared by Diamond West, Inc., dated November 13, 2013

The basis of bearings for these plans are based on the California Coordinate System, Zone 5, North American Datum 1983 CSRC Epoch 2011.00, as determined locally by a line between Continuous Operating Reference Stations (CGPS) SOMT and OVLS being North 82° 47' 52" West as derived from geodetic values published by the California Spatial Reference Center (CSRC).

The bearing of North 54° 55' 53" East of the northwesterly line of Lot 38 of Rancho Santa Paula Y Saticoy is shown as North 54° 00' East on Record of Survey Map 9 RS 23, records of the County of Ventura, State of California.

All distances shown on these plans are ground values unless otherwise noted. The ground values were calculated based on grid coordinates of all measured points utilizing Rapid Static and RTK GPS techniques and adjusted to CSRC Continuous Operating Reference Stations SOMT, P729, and OVLS. The latitude, longitude, and ellipsoidal height of said reference stations are published in the horizontal control network adjusted by CSRC, EPOCH 2011.00 NAD83 (NSRS2007) coordinates computed by SOPAC/CSRC on 05/13/2011 from modeled position time series up to EPOCH 2011.2918.

The average combined scale factor of 0.9999441818 was used to obtain ground distances. The grid distance equals the ground distance times the combined scale factor.

Benchmark

source:	County of Ventura Public Works Agency
datum:	NAVD 1988
adjustment:	VEN CO ADJ PUB 1992
VCPID:	18
designation:	102-9
NGS PID:	EW5257
elevation:	190.282 U.S. Survey Feet
point no.:	1201 on Diamond West Record Boundary Map, dated 4/1/14
description:	found brass disk in concrete collar up 8-inches stamped 102-9 1969 - Ventura County Surveyor Benchmark
location:	1.5 miles northeasterly along Southern Pacific Railroad from Los Angeles Avenue crossing at Saticoy, 25.5 feet southeasterly from the southeast rail, 75 feet southerly from the center of a private road crossing, 48 feet westerly from a large irrigation standpipe which projects 10 feet, about 1.5 feet lower than track and in the top of a concrete core which projects 0.2 feet
note:	from the intersection of Telegraph Road and Olive Road, southerly over Highway 126 and westerly along Southern Pacific Railroad 0.3 miles to a dirt road

Legend

SD	storm drain	—185—	proposed major contour
W	water	———	proposed minor contour
WW	wastewater	× 185.8	existing spot elevation
OIL	crude oil		
O/E	overhead electric		
FS	fire service		
SS	sanitary sewer		

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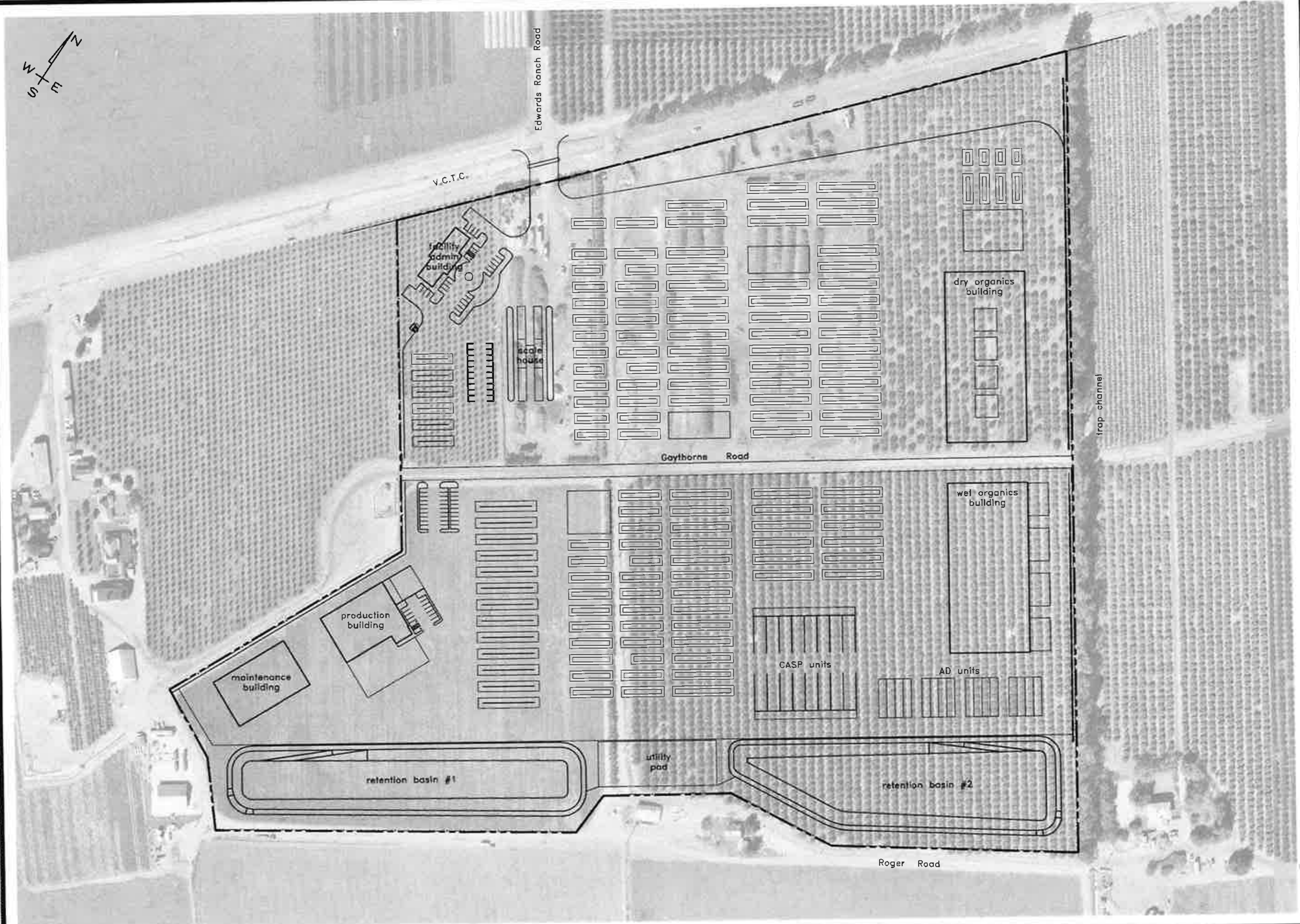
Commercial Organics Processing Facility
Entitlement Planning
General Information
County of Ventura

AGROMIN
Soil for a Greener World

scale: as shown
date: November 30, 2018
sheet 3 of 33



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Commercial Organics Processing Facility

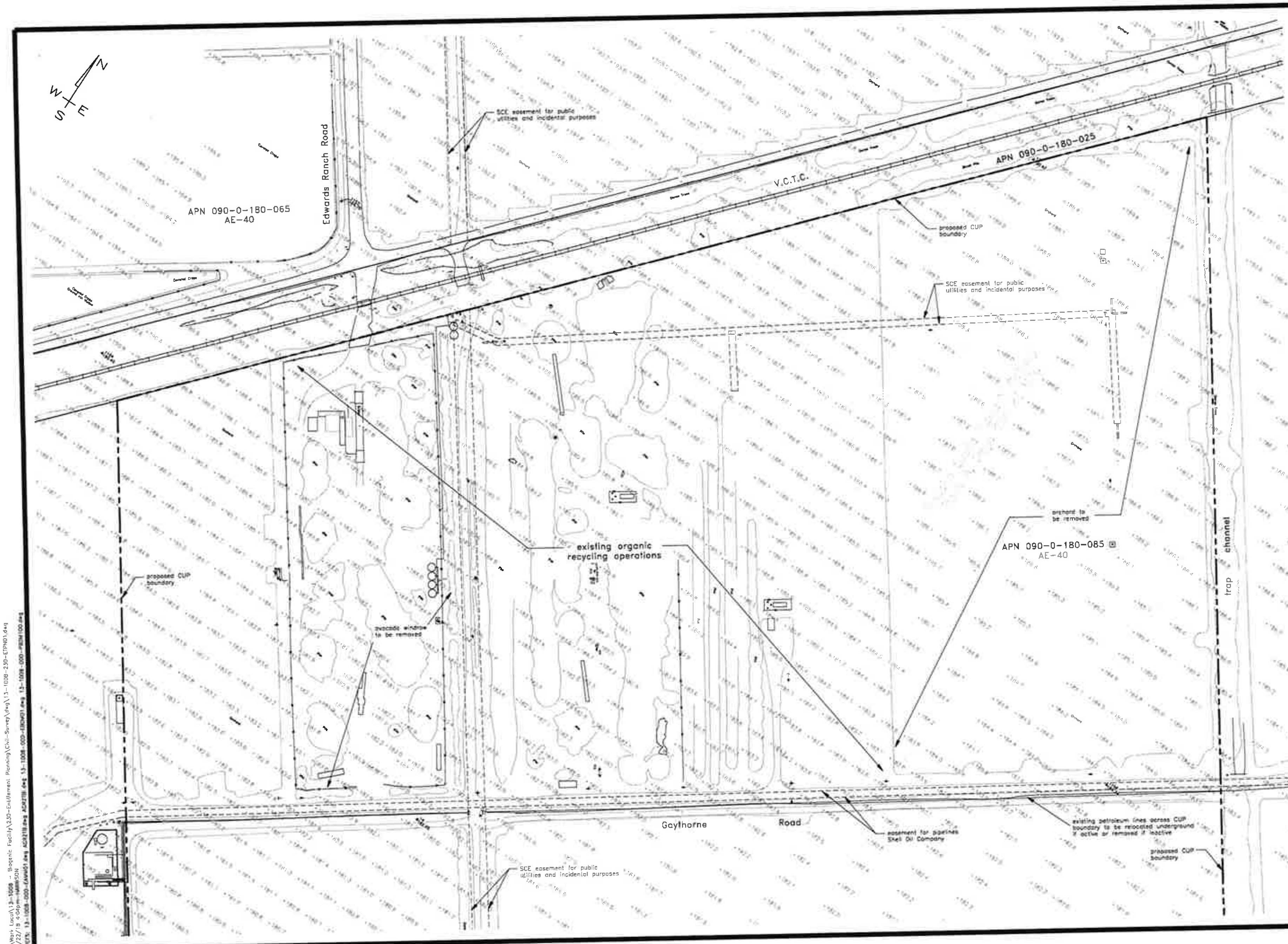
Entitlement Planning
General Site Plan

County of Ventura

AGROMIN
Soil for a Greener World

scale: 1" = 100'
date: November 30, 2018
sheet 4 of 33

13-1008.230 1st entitlement submittal - preliminary



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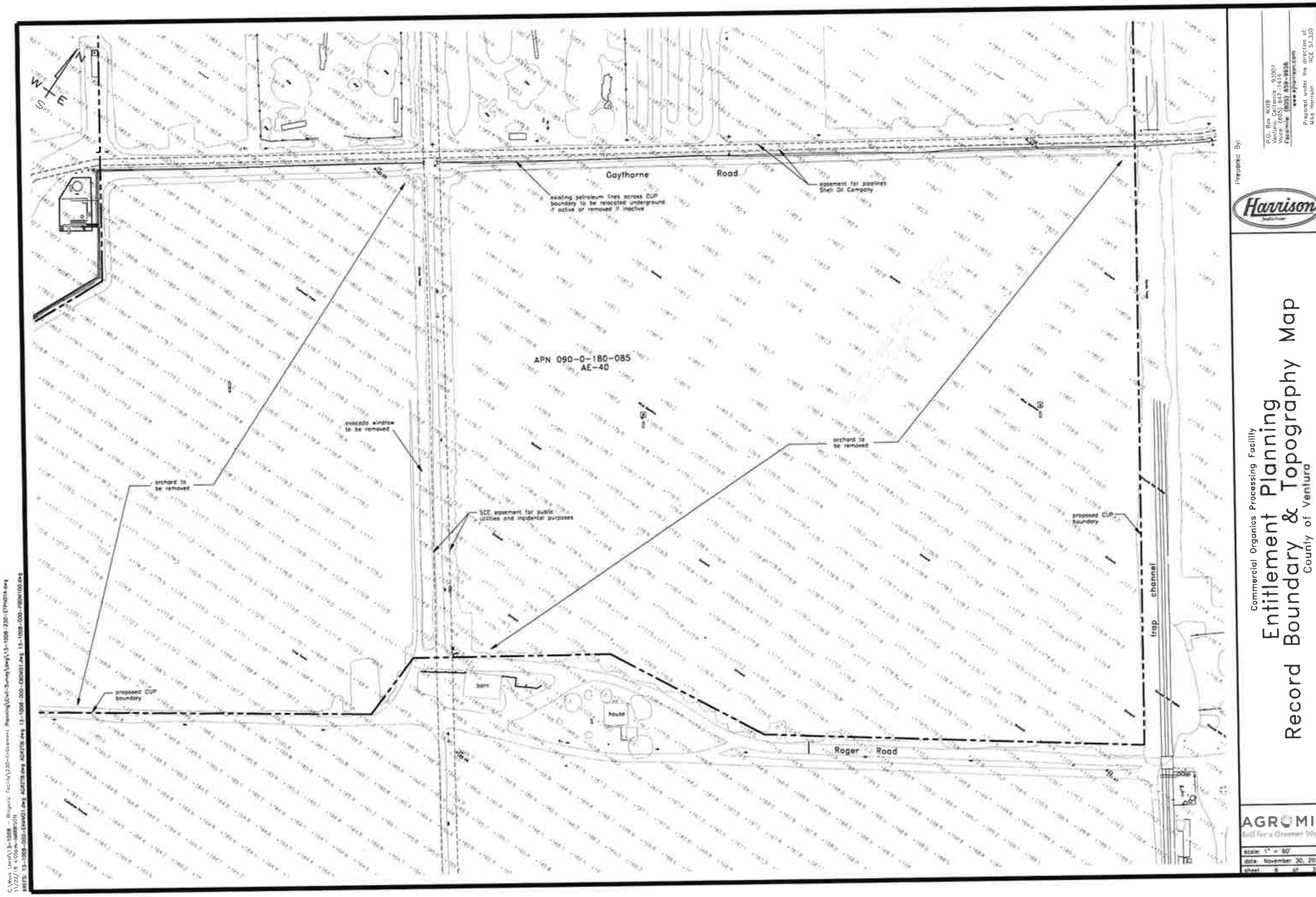
Entitlement Planning
Record Boundary & Topography Map

County of Ventura

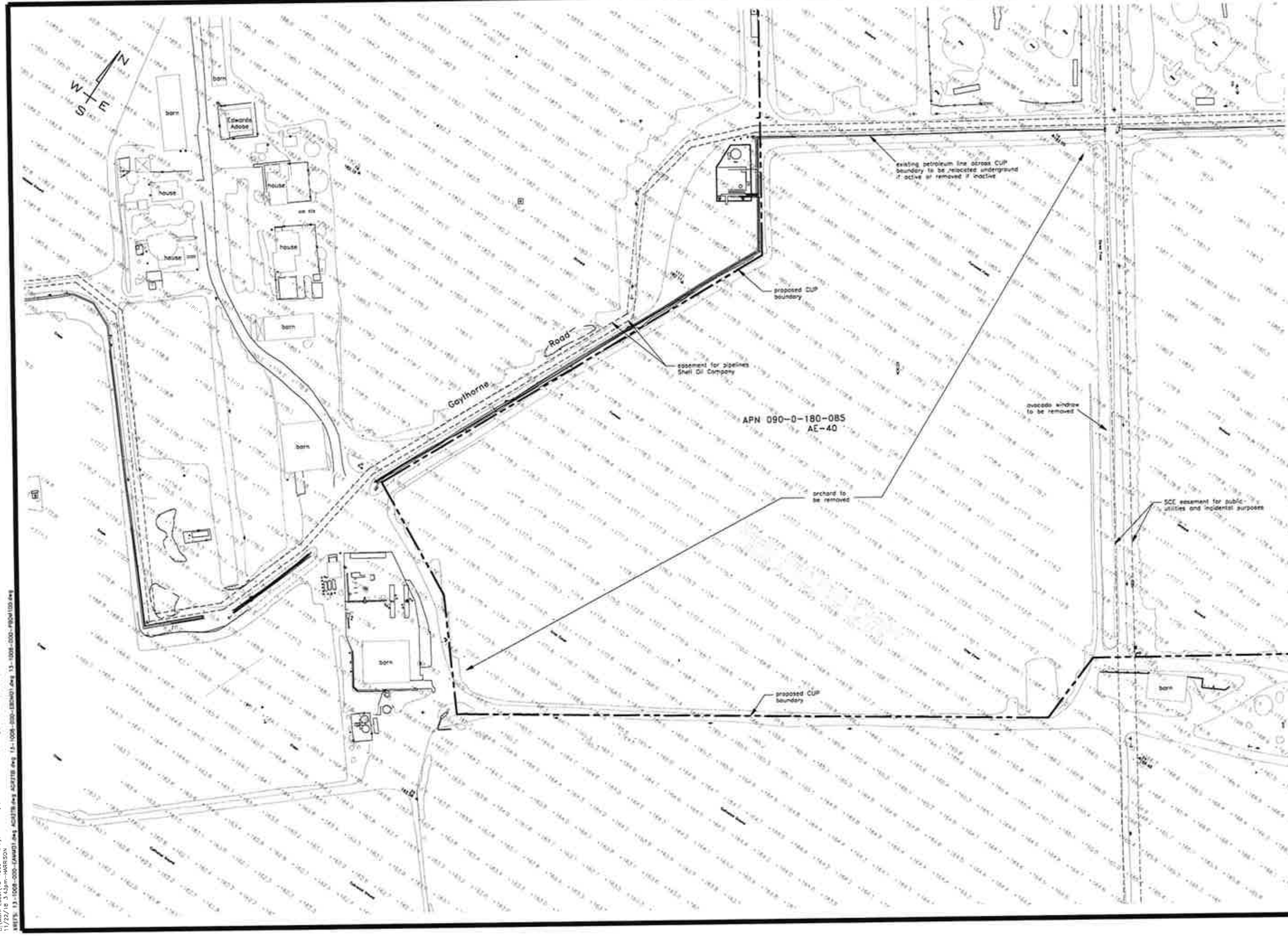
AGROMIN
Soil for a Greener World

scale: 1" = 60'
date: November 30, 2018
sheet 5 of 33

13-1008230 1st entitlement submittal - preliminary



Gaythorne Road
existing petroleum lines across CUP boundary to be relocated underground if active or removed if inactive
easement for pipelines Shell Oil Company
APN 090-0-180-085
AE-40
avocado windrow to be removed
orchard to be removed
orchard to be removed
SCE easement for public utilities and incidental purposes
proposed CUP boundary
proposed CUP boundary
barn
house
Roger Road
trap channel
Prepared By:
Harrison
Commercial Organics Processing Facility
Entitlement Planning
Record Boundary & Topography Map
County of Ventura
AGROMIN
scale: 1" = 60'
date: November 30, 2018
sheet 6 of 33



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Commercial Organics Processing Facility

Entitlement Planning
Record Boundary & Topography Map

County of Ventura

AGROMIN
Soil for a Greener World

scale: 1" = 60'
date: November 30, 2018
sheet 7 of 33

13-1008.230 1st entitlement submittal - preliminary

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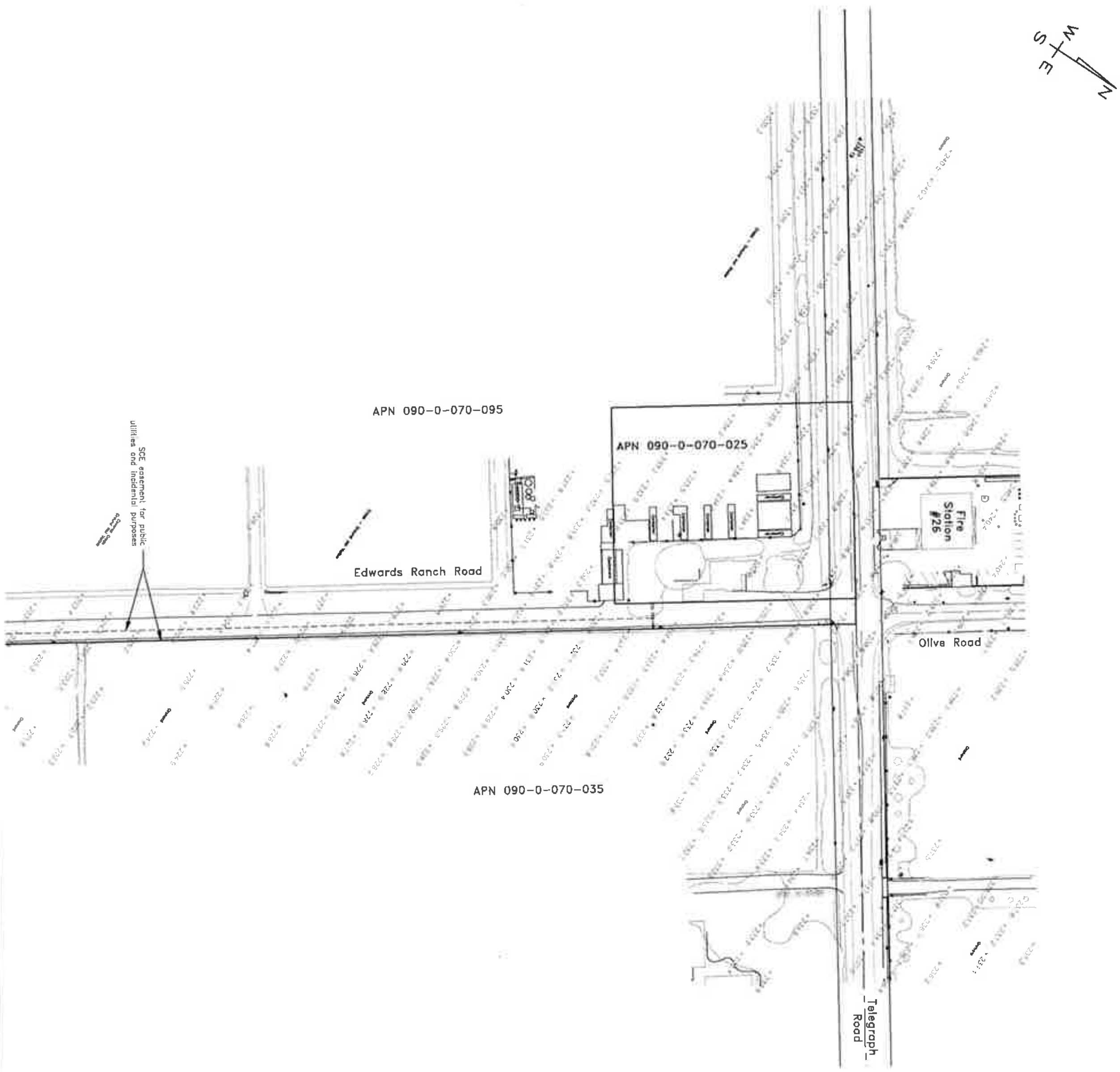

AGROMIN
Soil for a Greener World

scale: 1" = 60'
date: November 30, 2018
sheet 8 of 33

Commercial Organics Processing Facility

Entitlement Planning
Record Boundary & Topography Map

County of Ventura

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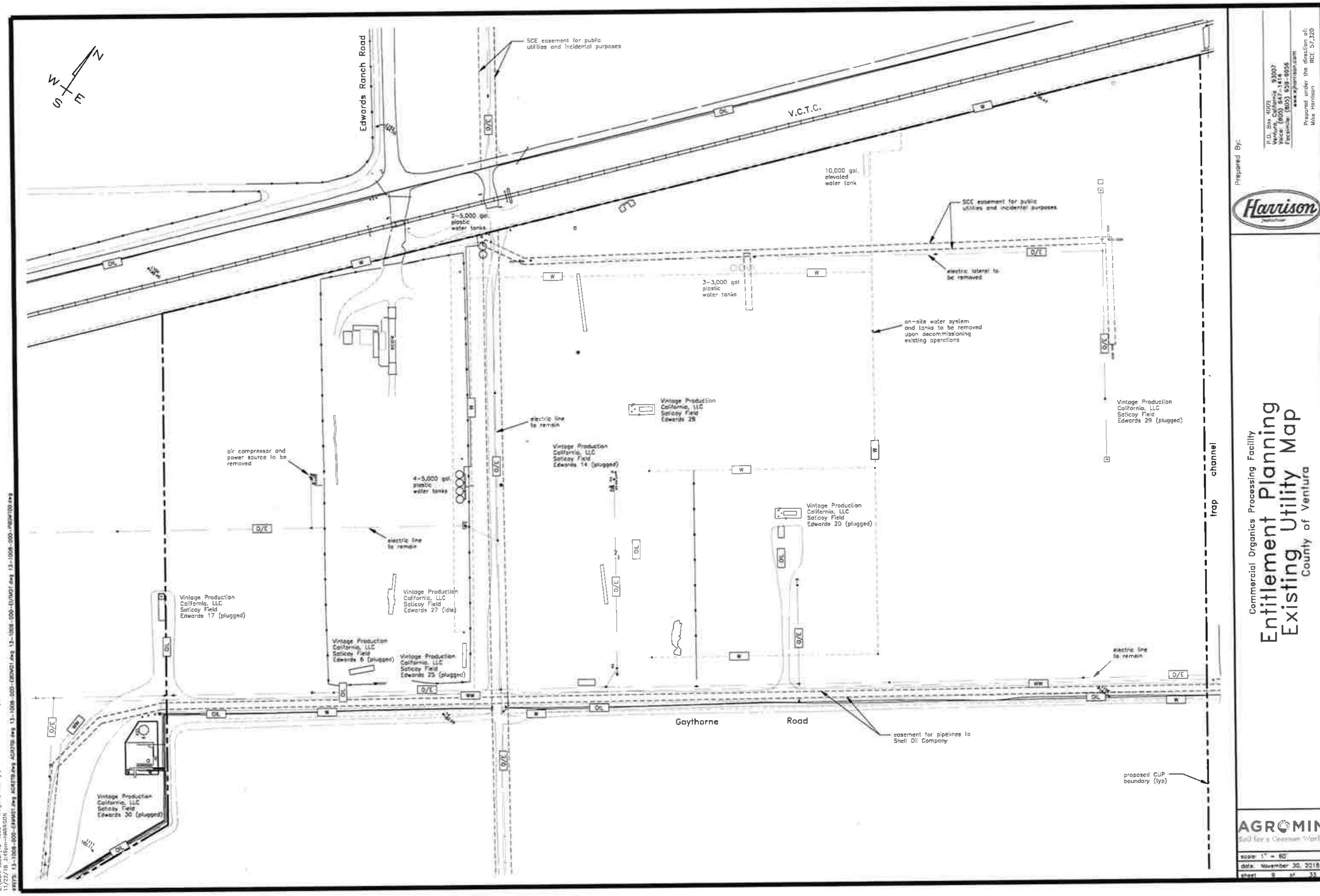
13-1008.230 1st entitlement submittal - preliminary



Edwards Ranch Road
V.C.T.C.
SCE easement for public utilities and incidental purposes
2-5,000 gal. plastic water tanks
10,000 gal. elevated water tank
3-3,000 gal plastic water tanks
on-site water system and tanks to be removed upon decommissioning existing operations
electric lateral to be removed
electric line to remain
air compressor and power source to be removed
4-5,000 gal. plastic water tanks
Vintage Production California, LLC Saticoy Field Edwards 28
Vintage Production California, LLC Saticoy Field Edwards 14 (plugged)
Vintage Production California, LLC Saticoy Field Edwards 29 (plugged)
Vintage Production California, LLC Saticoy Field Edwards 20 (plugged)
Vintage Production California, LLC Saticoy Field Edwards 17 (plugged)
Vintage Production California, LLC Saticoy Field Edwards 27 (idle)
Vintage Production California, LLC Saticoy Field Edwards 6 (plugged)
Vintage Production California, LLC Saticoy Field Edwards 25 (plugged)
Vintage Production California, LLC Saticoy Field Edwards 30 (plugged)
trap channel
Gaythorne Road
easement for pipelines to Shell Oil Company
proposed CUP boundary (typ)
O/E
OIL
W
WW
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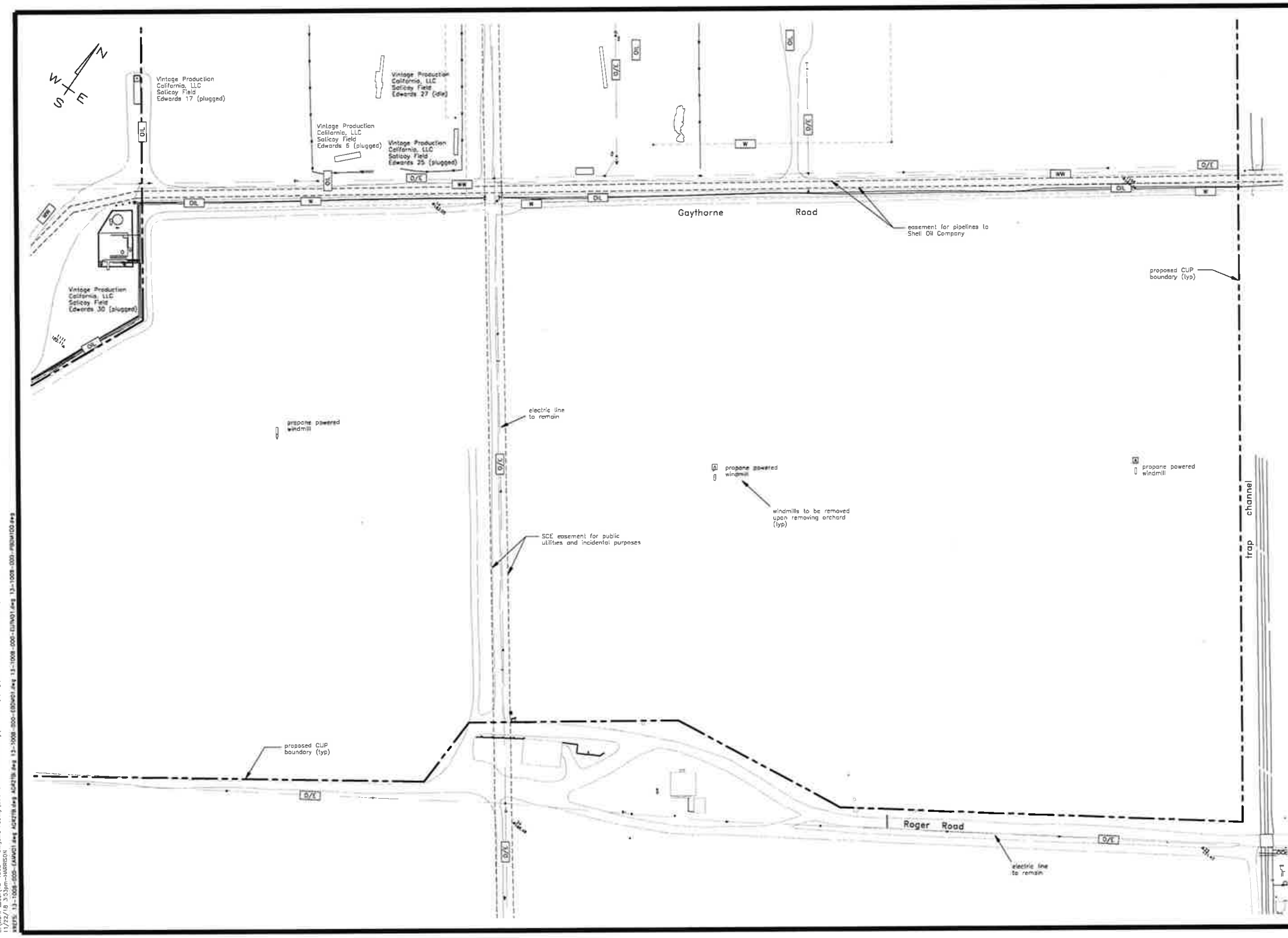
Commercial Organics Processing Facility
Entitlement Planning
Existing Utility Map
County of Ventura
AGROMIN
Soil for a Greener World
scale: 1" = 60'
date: November 30, 2018
sheet 9 of 33
13-1008.230 1st entitlement submittal - preliminary



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Commercial Organics Processing Facility

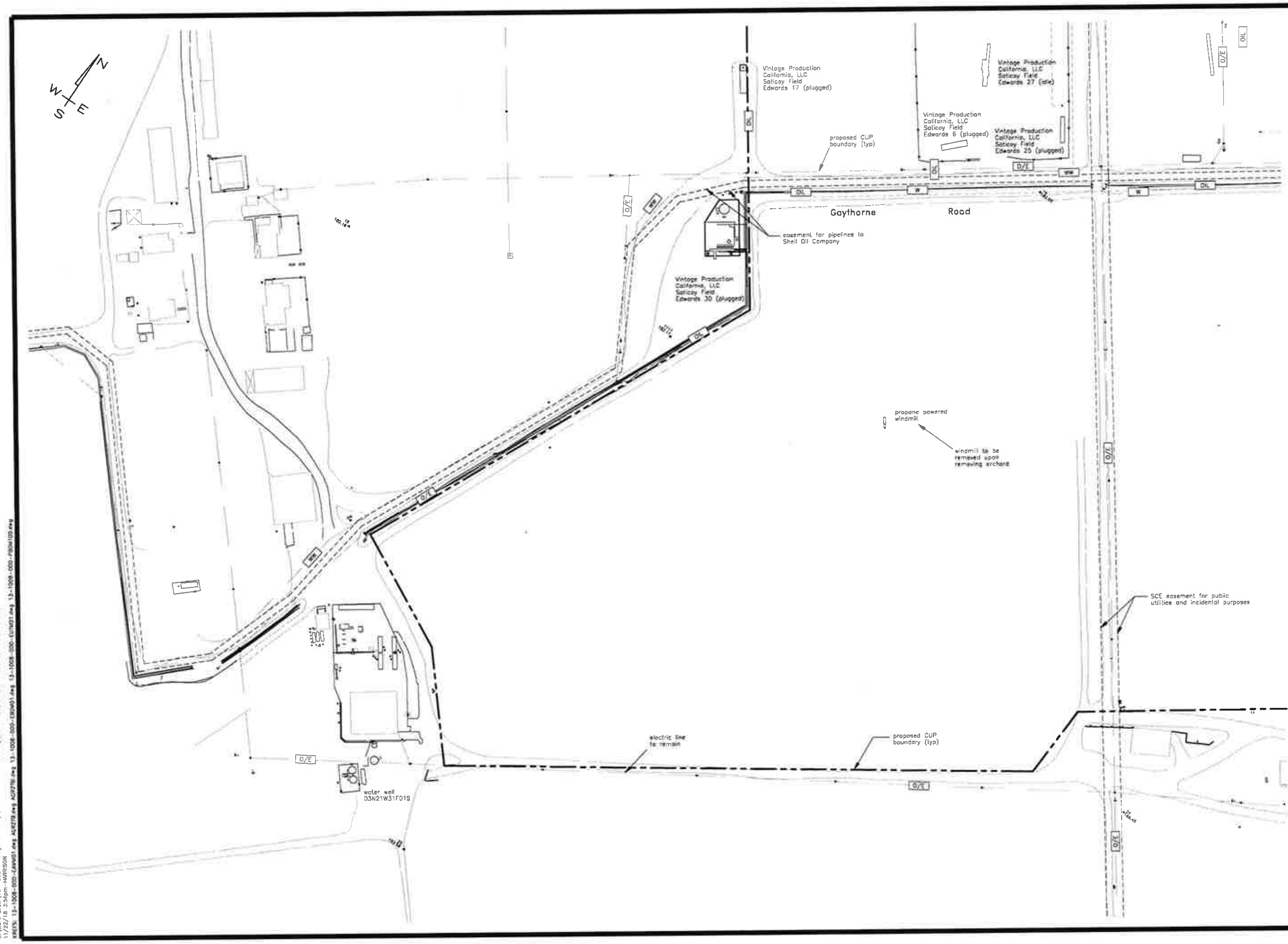
Entitlement Planning Existing Utility Map

County of Ventura

AGROMIN
Soil for a Greener World

scale 1" = 60'
date November 30, 2018
sheet 10 of 33

13-1008.230 1st entitlement submittal - preliminary



Commercial Organics Processing Facility

Entitlement Planning Existing Utility Map

County of Ventura

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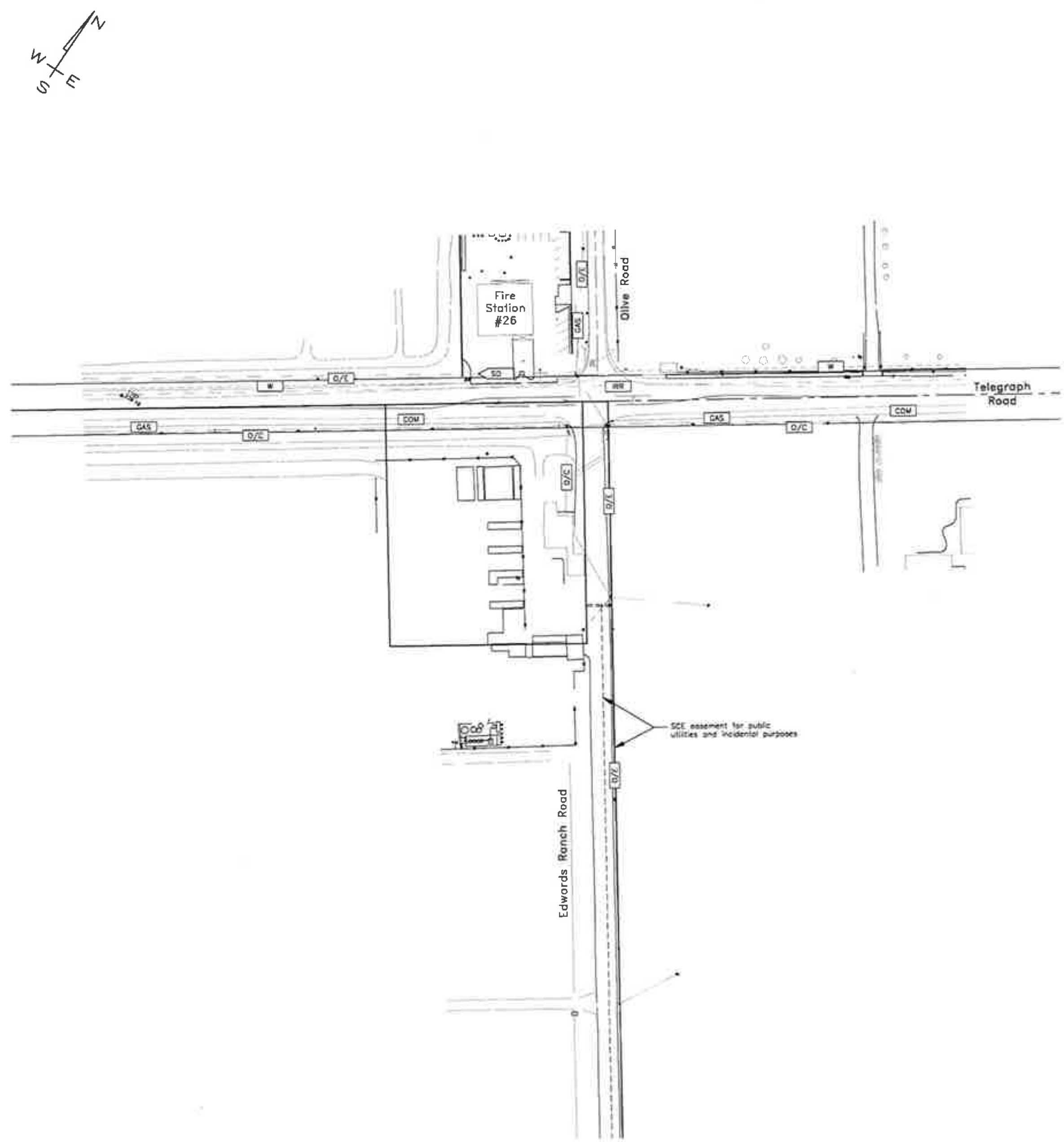
AGROMIN
Soil for a Greener World

scale: 1" = 60'
date: November 30, 2018
sheet 11 of 33

13-1008.233 1st entitlement submittal - preliminary



Commercial Organics Processing Facility

Entitlement Planning
Existing Utility Map

County of Ventura

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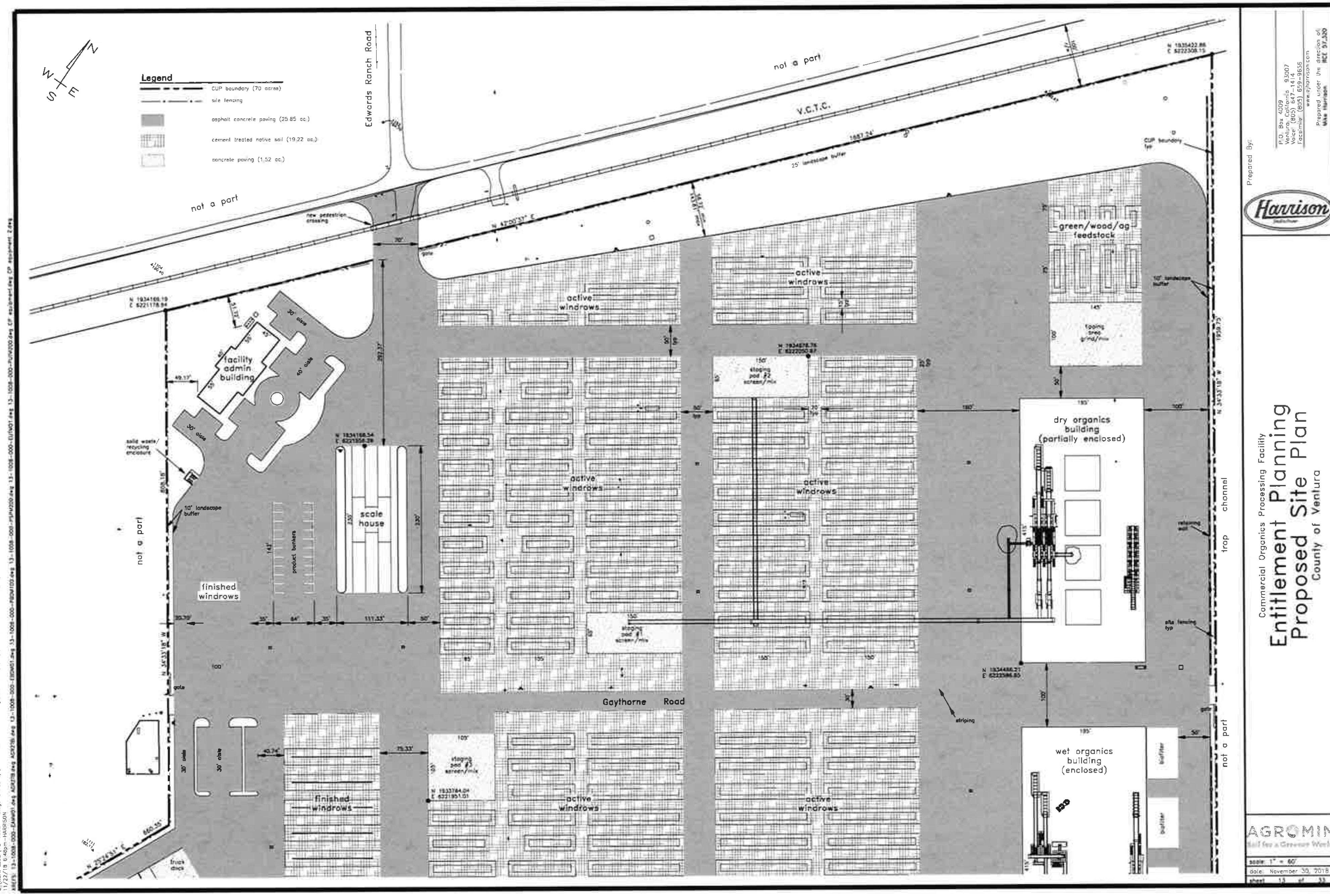
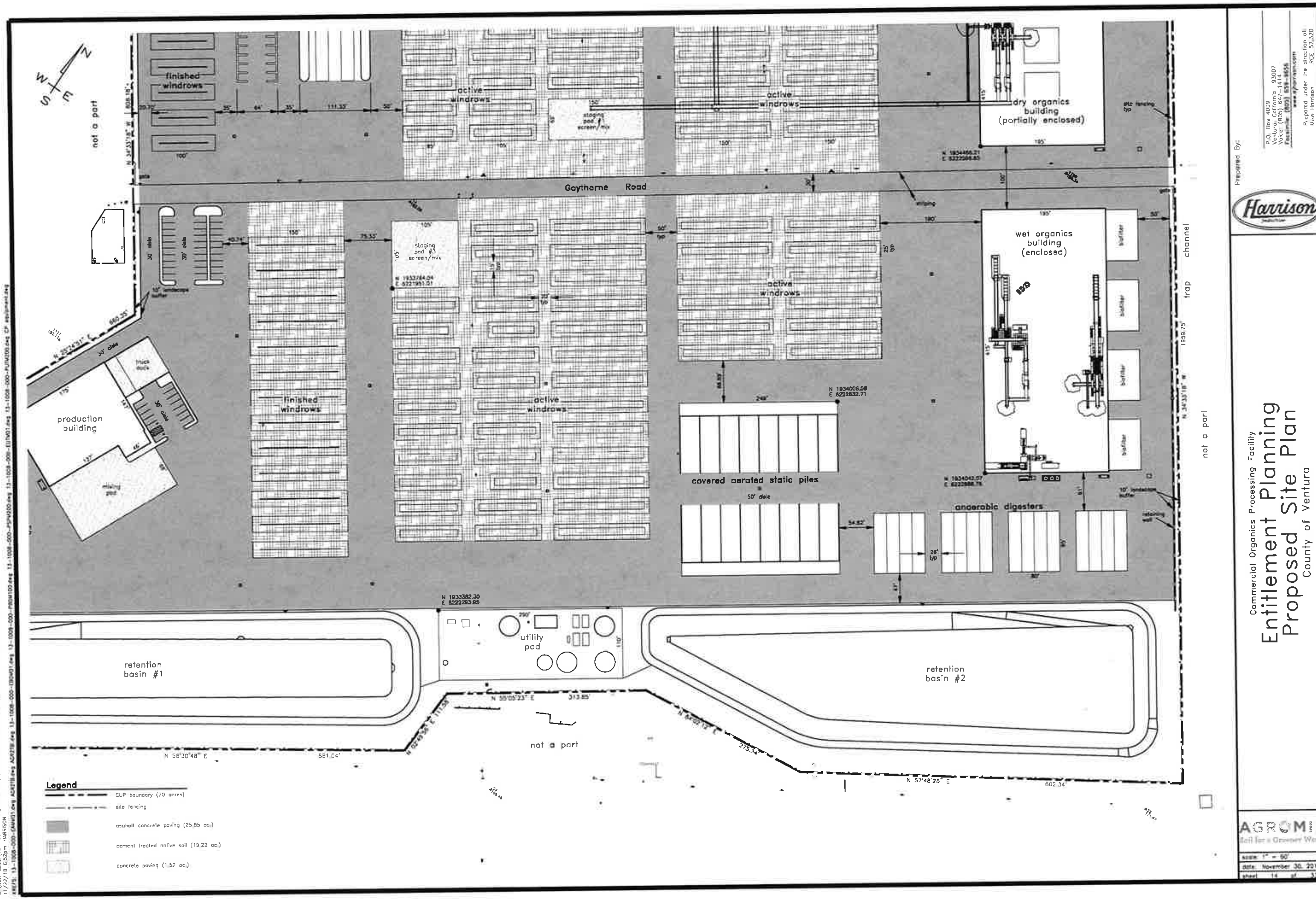
AGROMIN
Soil for a Greener World

scale: 1" = 60'
date: November 30, 2018
sheet 12 of 33

13-1008.230 1st plan check submittal - preliminary



Legend
CUP boundary (70 acres)
site fencing
asphalt concrete paving (25.85 ac.)
cement treated native soil (19.22 ac.)
concrete paving (1.52 ac.)
Edwards Ranch Road
not a part
V.C.T.C.
25' landscape buffer
new pedestrian crossing
facility admin building
solid waste/recycling enclosure
10' landscape buffer
scale house
product bunkers
finished windrows
active windrows
staging pad #1 screen/mix
staging pad #2 screen/mix
staging pad #3 screen/mix
green/wood/ag feedstock
tipping area grind/mix
dry organics building (partially enclosed)
wet organics building (enclosed)
biofilter
Gaythorne Road
striping
CUP boundary typ
retaining wall
site fencing typ
trop channel
gate
truck dock
Prepared By:
Harrison
Commercial Organics Processing Facility
Entitlement Planning
Proposed Site Plan
County of Ventura
AGROMIN
scale: 1" = 60'
date: November 30, 2018
sheet 13 of 33



finished windrows
active windrows
staging pad screen/mix
dry organics building (partially enclosed)
not a part
Gaythorne Road
wet organics building (enclosed)
staging pad #3 screen/mix
trap channel
production building
truck dock
mixing pad
finished windrows
active windrows
covered aerated static piles
anaerobic digesters
biofilter
utility pad
retention basin #1
retention basin #2
not a part
Legend
CUP boundary (70 acres)
site fencing
asphalt concrete paving (25.85 ac.)
cement treated native soil (19.22 ac.)
concrete paving (1.52 ac.)
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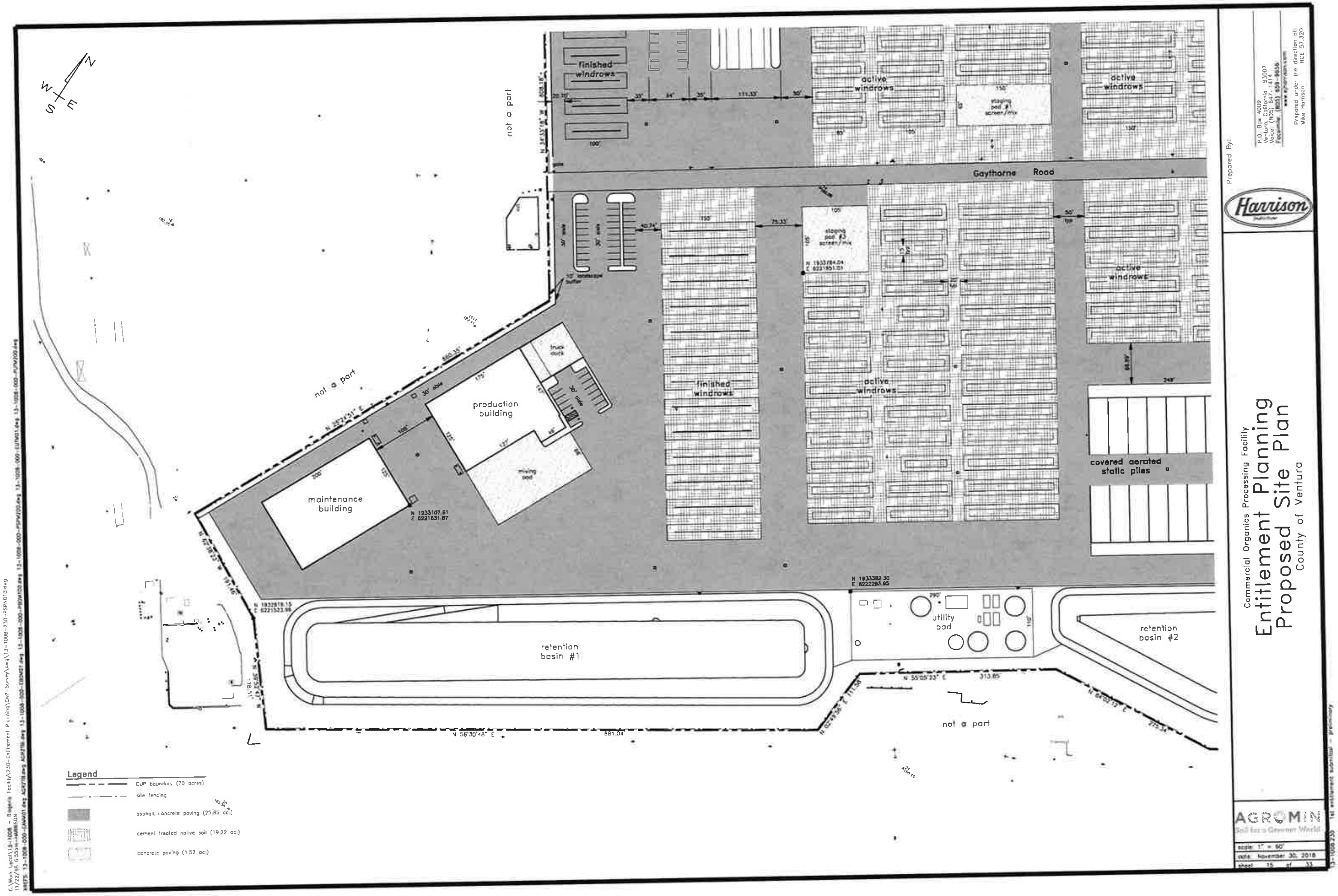
Commercial Organics Processing Facility
Entitlement Planning
Proposed Site Plan
County of Ventura
AGROMIN
Soil for a Greener World
scale: 1" = 50'
date: November 30, 2018
sheet 14 of 33


not a part
finished windrows
active windrows
staging pad #1 screen/mix
Gaythorne Road
staging pad #3 screen/mix
10' landscape buffer
30' aisle
truck dock
production building
mixing pad
maintenance building
not a part
covered aerated static piles
retention basin #1
utility pad
retention basin #2
not a part
N 1933107.61
E 6221631.87
N 1933382.30
E 6222283.95
N 1932878.15
E 6221523.98
N 56°30'48" E
881.04'
N 55°05'23" E
313.85'
Legend
CUP boundary (70 acres)
site fencing
asphalt concrete paving (25.85 ac.)
cement treated native soil (19.22 ac.)
concrete paving (1.52 ac.)
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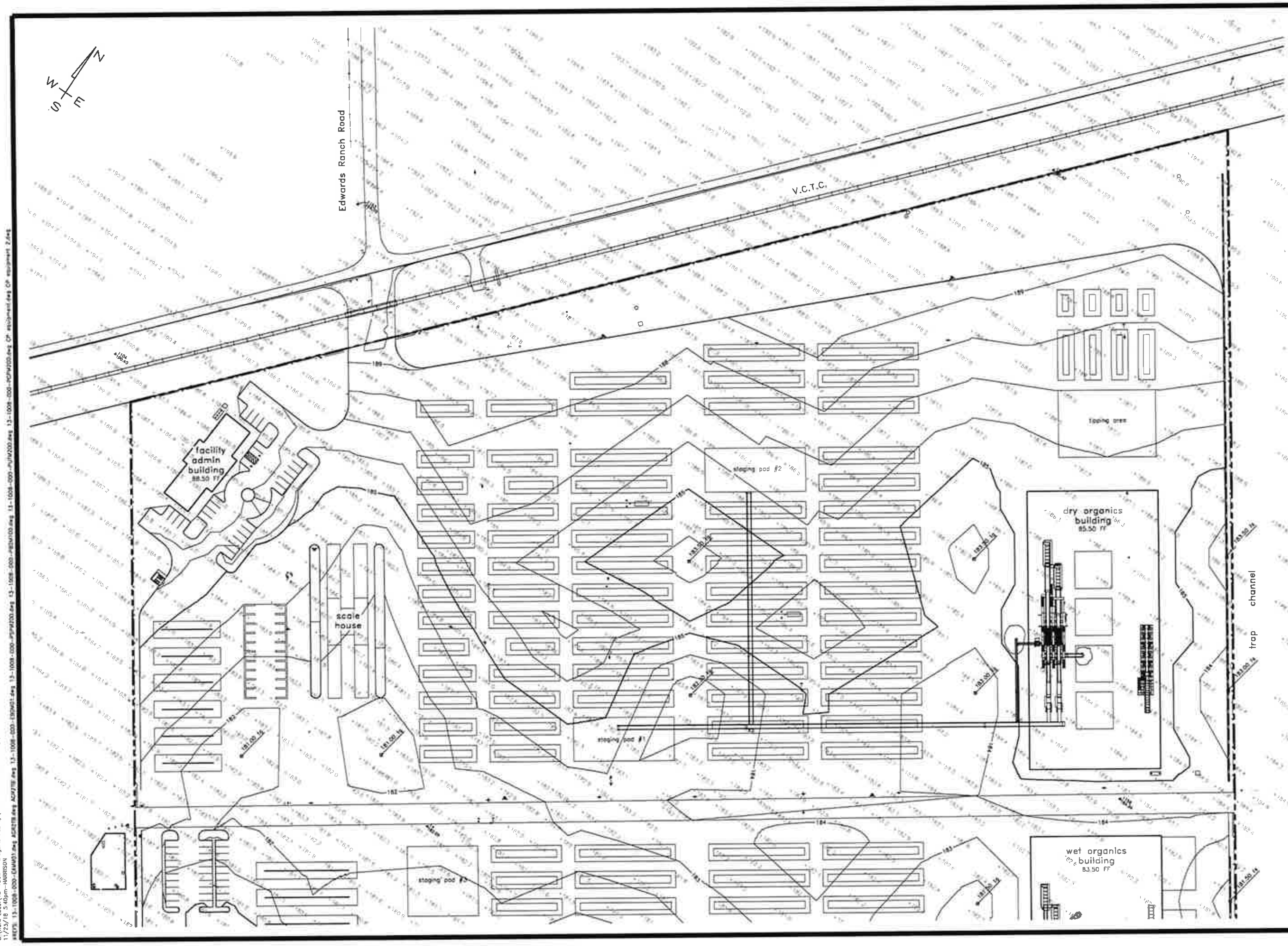
Entitlement Planning
Proposed Site Plan
County of Ventura
AGROMIN
Soil for a Greener World
scale: 1" = 60'
date: November 30, 2018
sheet 15 of 33
13-1008.230



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Commercial Organics Processing Facility

Entitlement Planning
Grading & Drainage Plan

County of Ventura

AGROMIN
Soil for a Greener World

scale: 1" = 60'
date: November 30, 2018
sheet: 16 of 33

13-1008.230 1st entitlement submittal – preliminary

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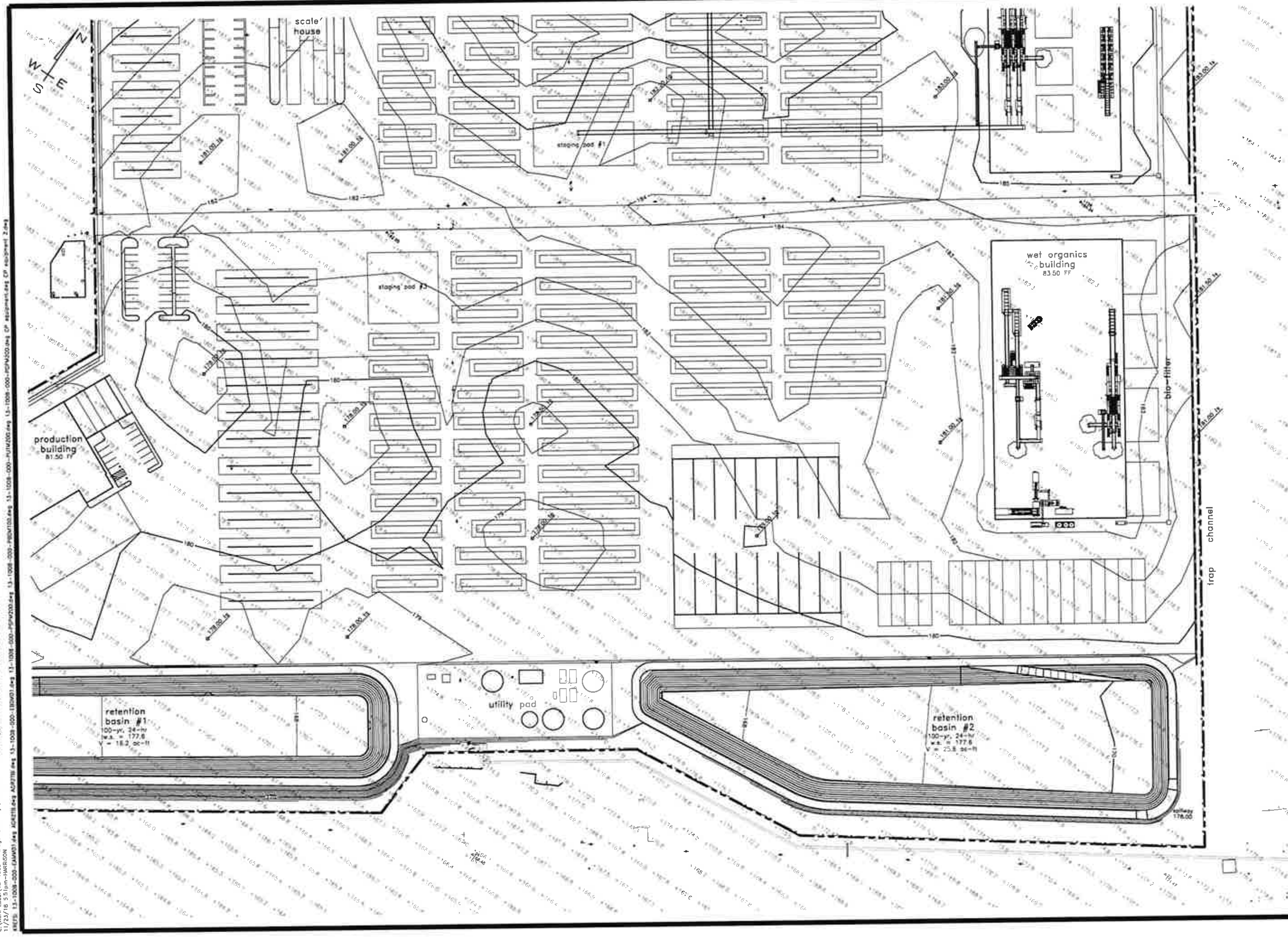

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Commercial Organics Processing Facility

Entitlement Planning Grading & Drainage Plan

County of Ventura

AGROMIN
Soil for a Greener World

scale: 1" = 60'
date: November 30, 2018
sheet 17 of 33

13-1008.230 1st entitlement submittal - preliminary

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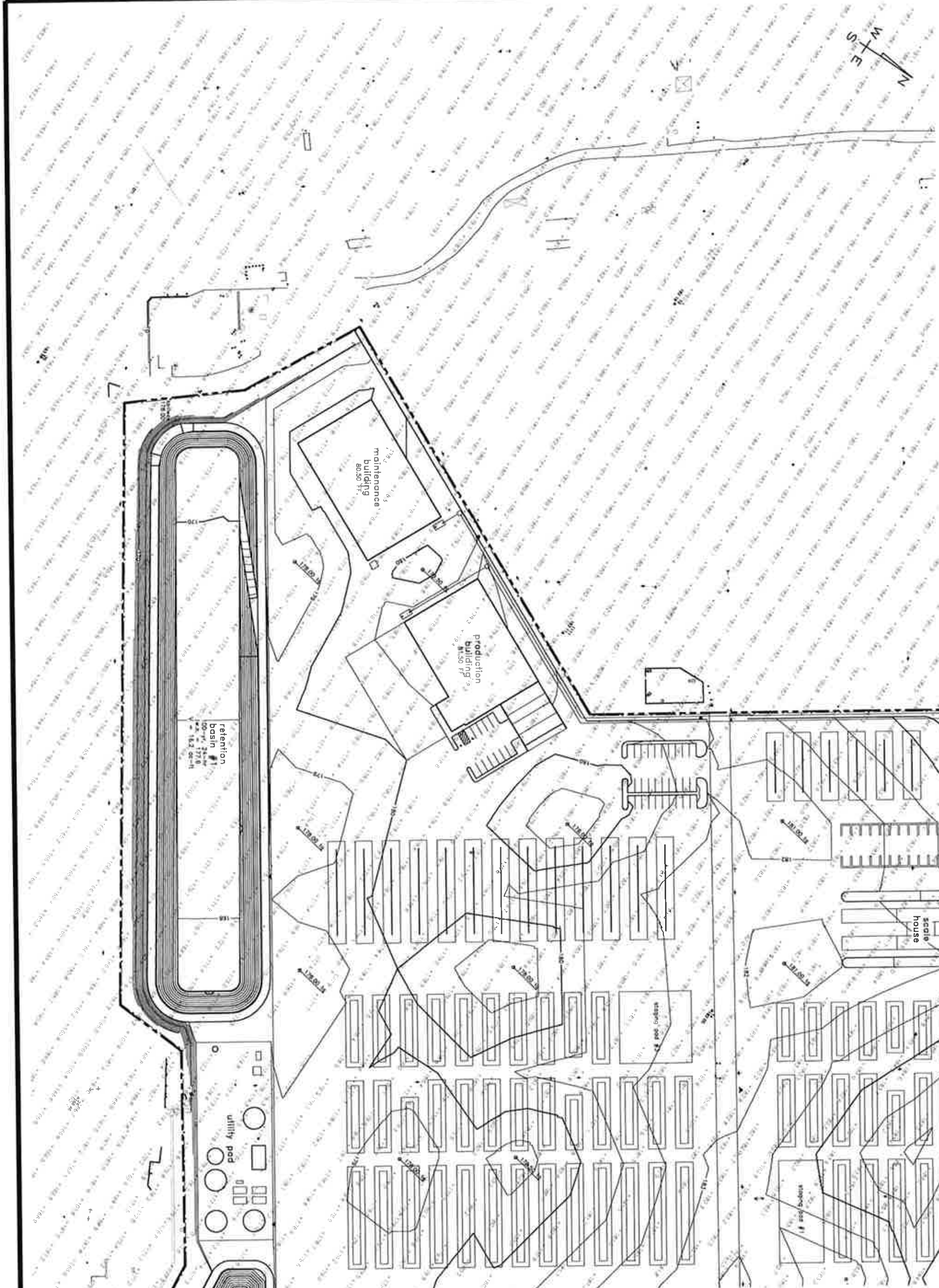

Commercial Organics Processing Facility
Entitlement Planning
Grading & Drainage Plan
County of Ventura

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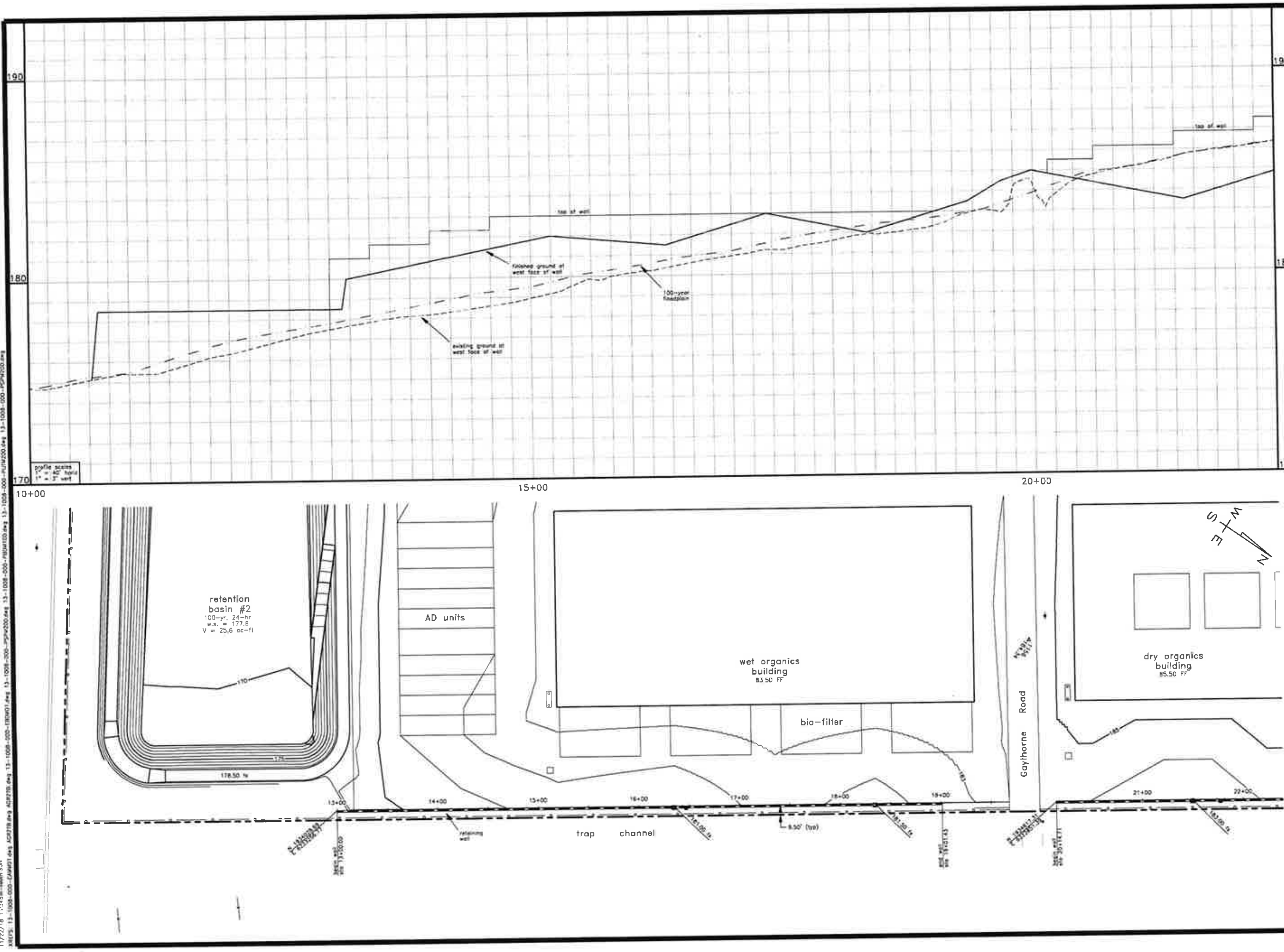
AGROMIN
Soil for a Greener World

scale: 1" = 60'
date: November 30, 2018
sheet 18 of 33

13-1008.230 1st entitlement submittal - preliminary



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Prepared under the direction of:
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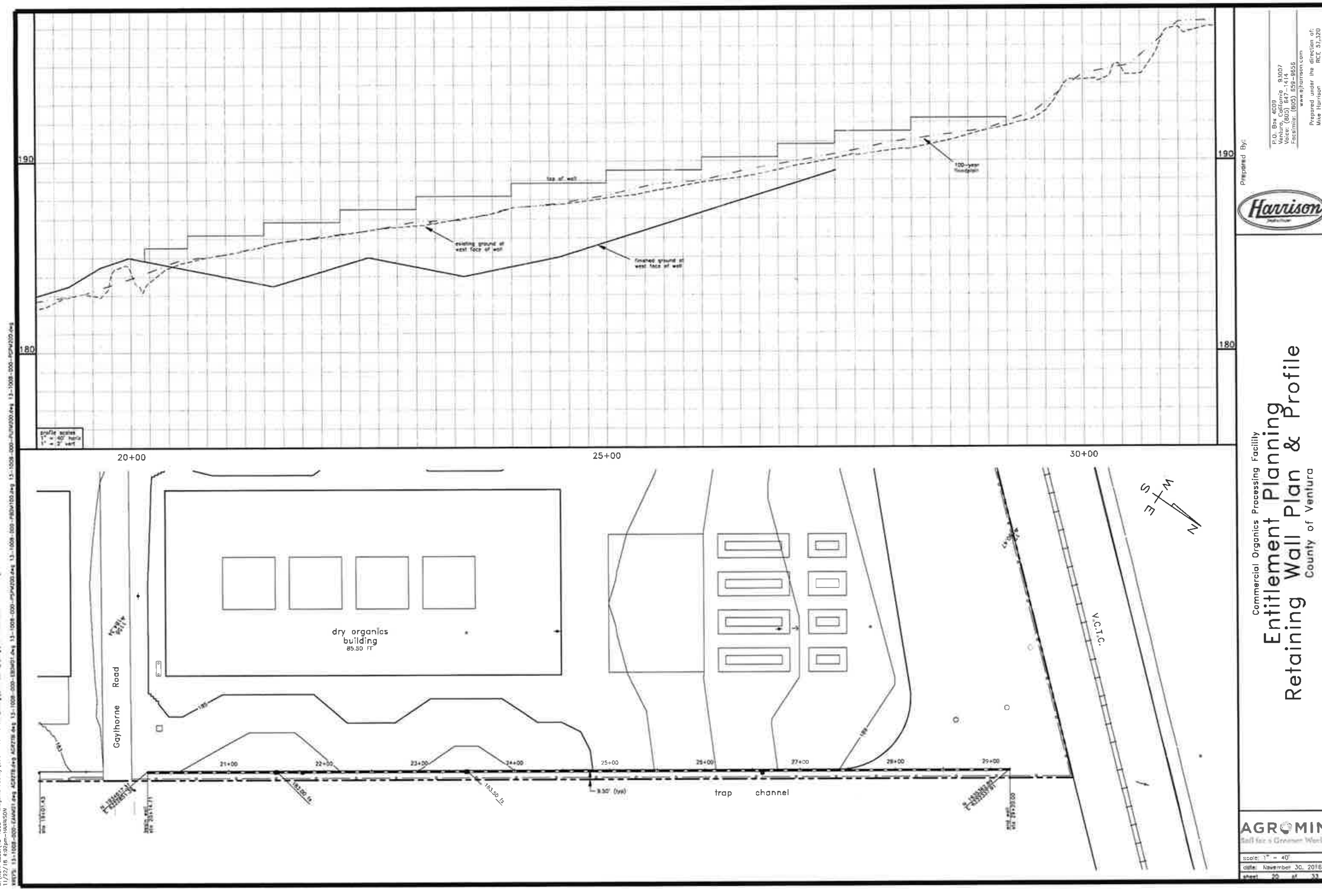
Commercial Organics Processing Facility
Entitlement Planning
Retaining Wall Plan & Profile
County of Ventura

AGROMIN
Soil for a Greener World

scale: 1" = 40'
date: November 30, 2018
sheet 19 of 33

13-1008.230 1st entitlement submittal - preliminary


190
180
top of wall
existing ground at west face of wall
finished ground at west face of wall
100-year floodplain
profile scales
1" = 40' horiz
1" = 2' vert
20+00
25+00
30+00
dry organics building
85.50 FF
Gaythorne Road
trap channel
V.C.T.C.
21+00
22+00
23+00
24+00
25+00
26+00
27+00
28+00
29+00
183.50 fs
9.30' (typ)
Prepared By:
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Ventura, California 93007
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Facsimile: (805) 659-9655
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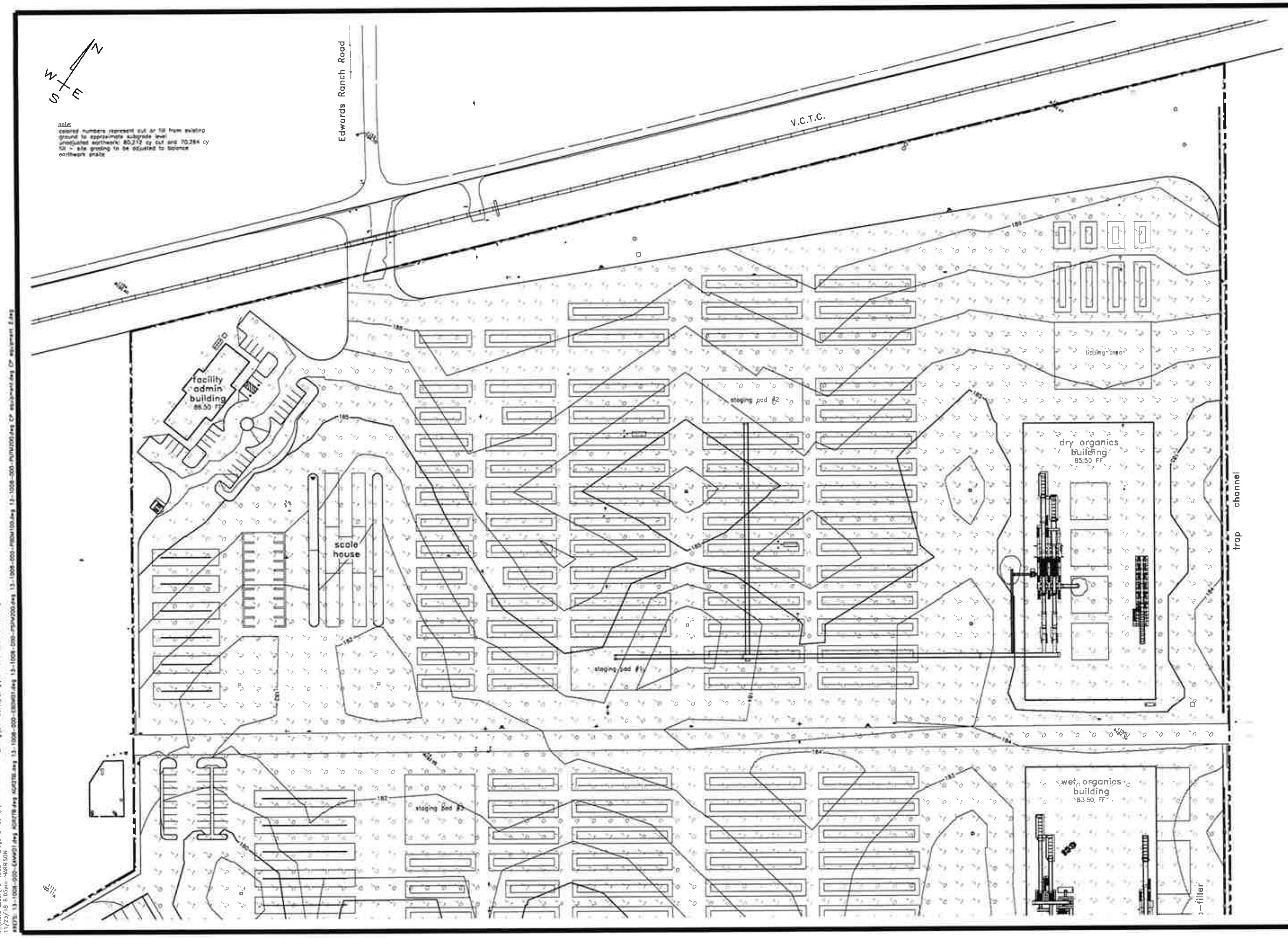
Prepared under the direction of:
Mike Harrison RCE 57,320
Commercial Organics Processing Facility
Entitlement Planning
Retaining Wall Plan & Profile
County of Ventura
AGROMIN
Soil for a Greener World
scale: 1" = 40'
date: November 30, 2016
sheet 20 of 33



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Commercial Organics Processing Facility

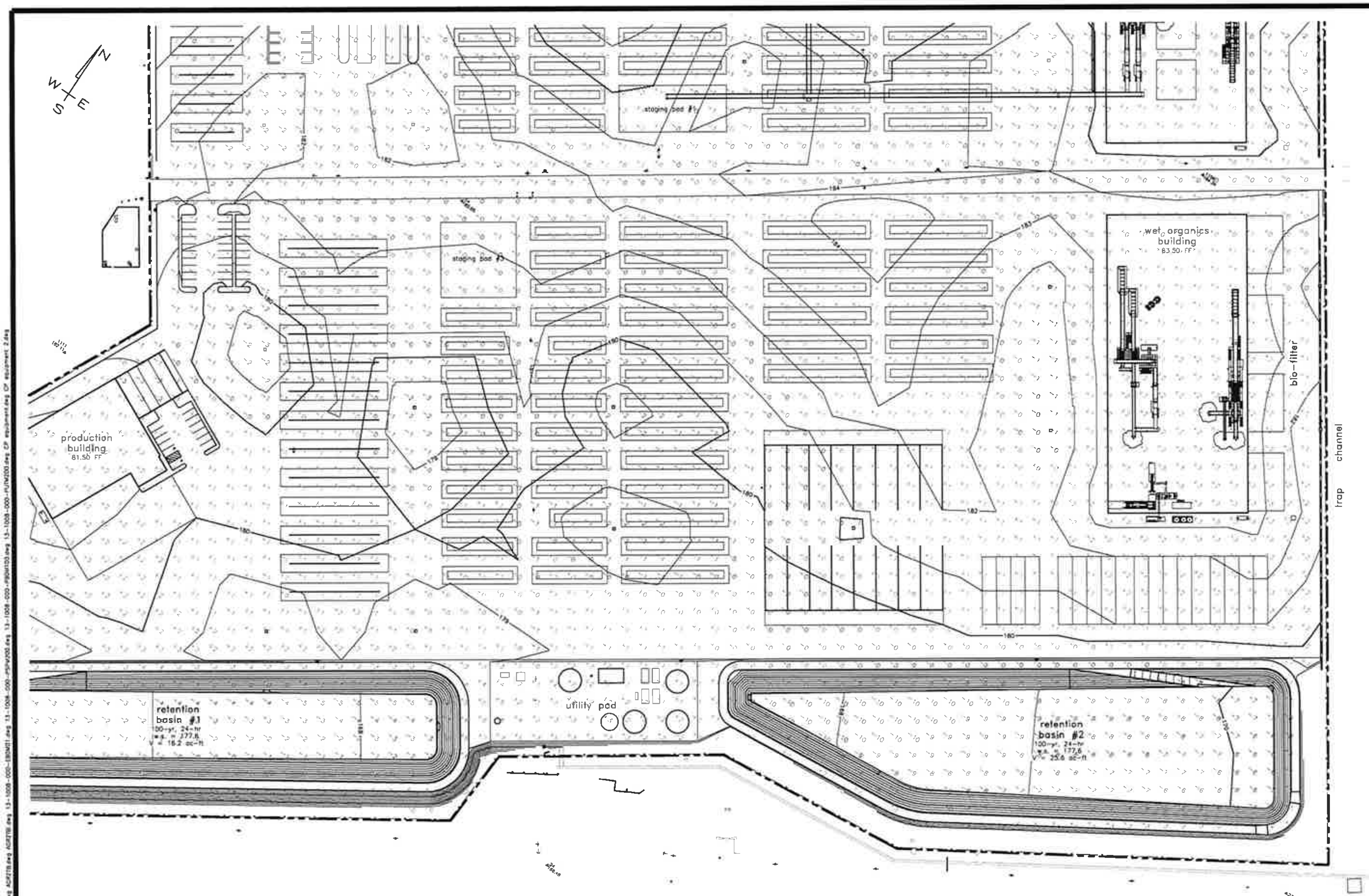
Entitlement Planning Grading Cut/Fill Map

County of Ventura

AGROMIN
Soil for a Greener World

scale: 1" = 60'
date: November 30, 2018
sheet 21 of 33

13-1008.230 1st entitlement submittal - preliminary



note:
colored numbers represent cut or fill from existing ground to approximate subgrade level
unadjusted earthwork: 80,312 cy cut and 70,264 cy fill – site grading to be adjusted to balance earthwork onsite

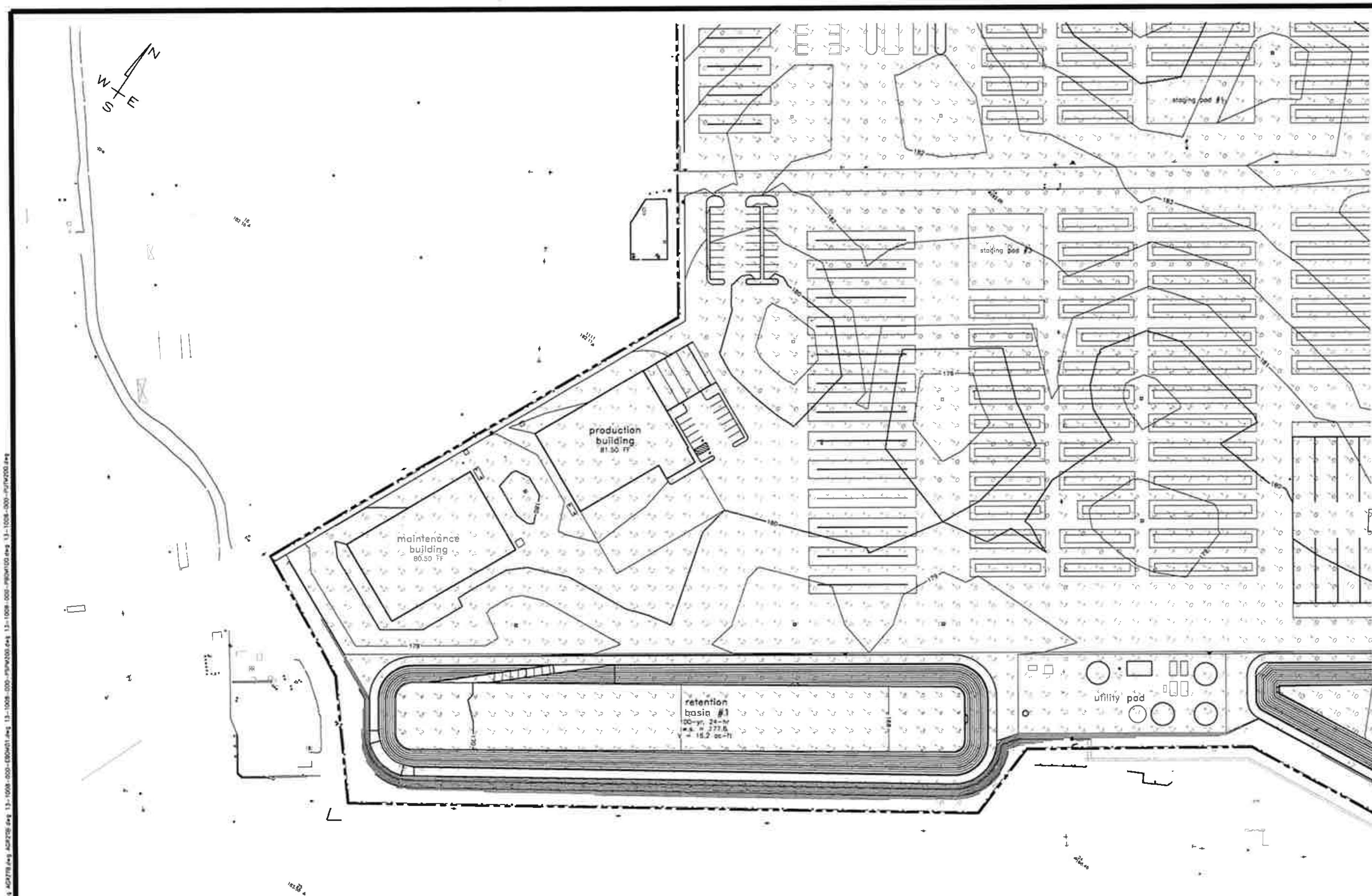
Commercial Organics Processing Facility
Entitlement Planning
Grading Cut/Fill Map
County of Ventura

Prepared By:
Harrison
P.O. Box 4009
Ventura, California 93007
Voice: (805) 647-1414
Facsimile: (805) 659-9656
www.ejharrison.com
Prepared under the direction of:
Mike Harrison RCE 57,320

AGROMIN
Soil for a Greener World

scale: 1" = 60'
date: November 30, 2018
sheet 22 of 33

13-1008.230 1st entitlement submittal – preliminary



note:
colored numbers represent cut or fill from existing ground to approximate subgrade level
unadjusted earthwork: 80,212 cy cut and 70,264 cy fill – site grading to be adjusted to balance earthwork onsite

Prepared By:

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Commercial Organics Processing Facility

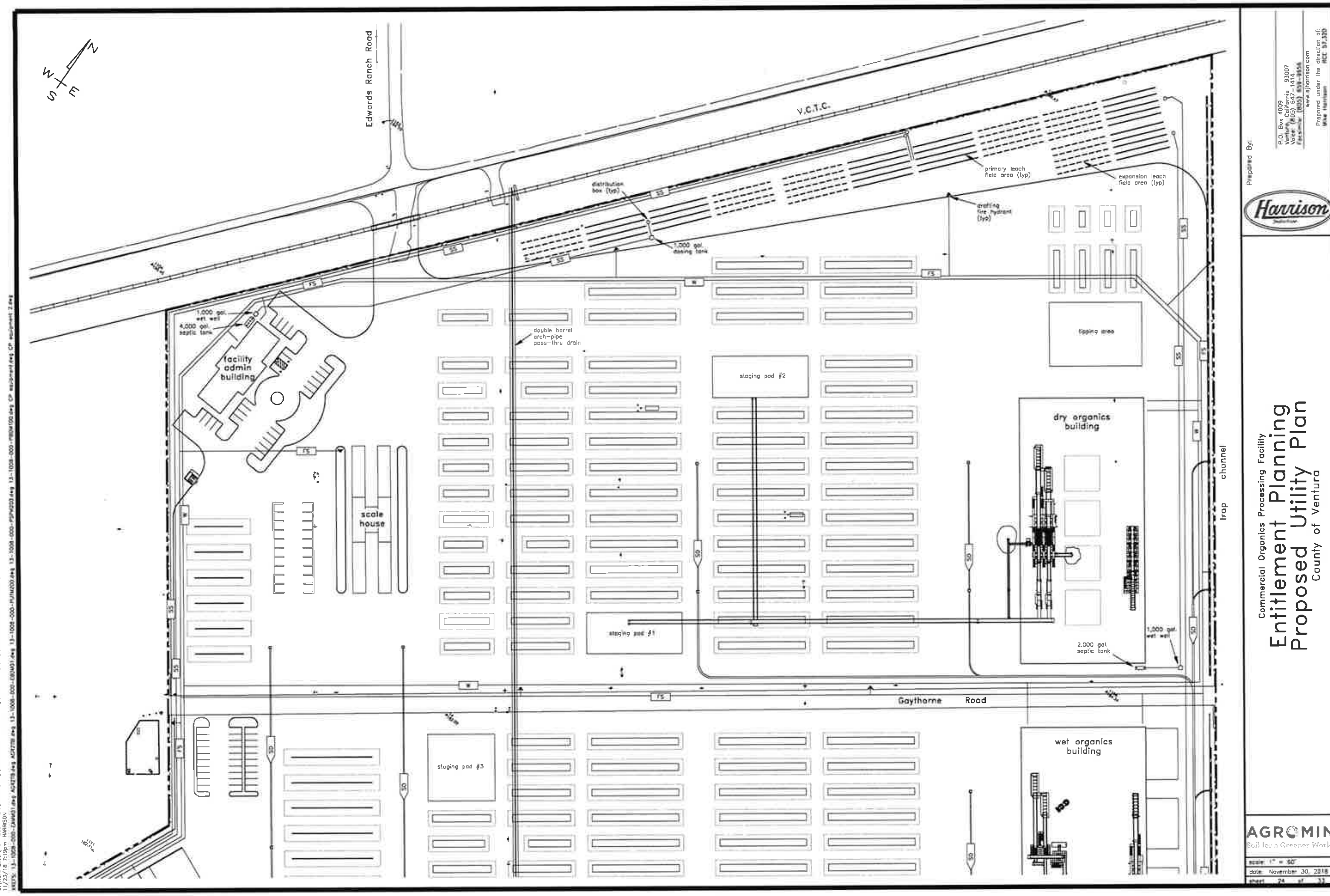
Entitlement Planning
Grading Cut/Fill Map

County of Ventura

AGROMIN
Soil for a Greener World

scale: 1" = 60'
date: November 30, 2018
sheet 23 of 33

13-1008.230 1st entitlement submittal – preliminary



Edwards Ranch Road
V.C.T.C.
distribution box (typ)
1,000 gal. dosing tank
primary leach field area (typ)
expansion leach field area (typ)
drafting fire hydrant (typ)
1,000 gal. wet well
4,000 gal. septic tank
facility admin building
double barrel arch-pipe pass-thru drain
scale house
staging pad #1
staging pad #2
staging pad #3
tipping area
dry organics building
trap channel
1,000 gal. wet well
2,000 gal. septic tank
Gaythorne Road
wet organics building
Prepared By:
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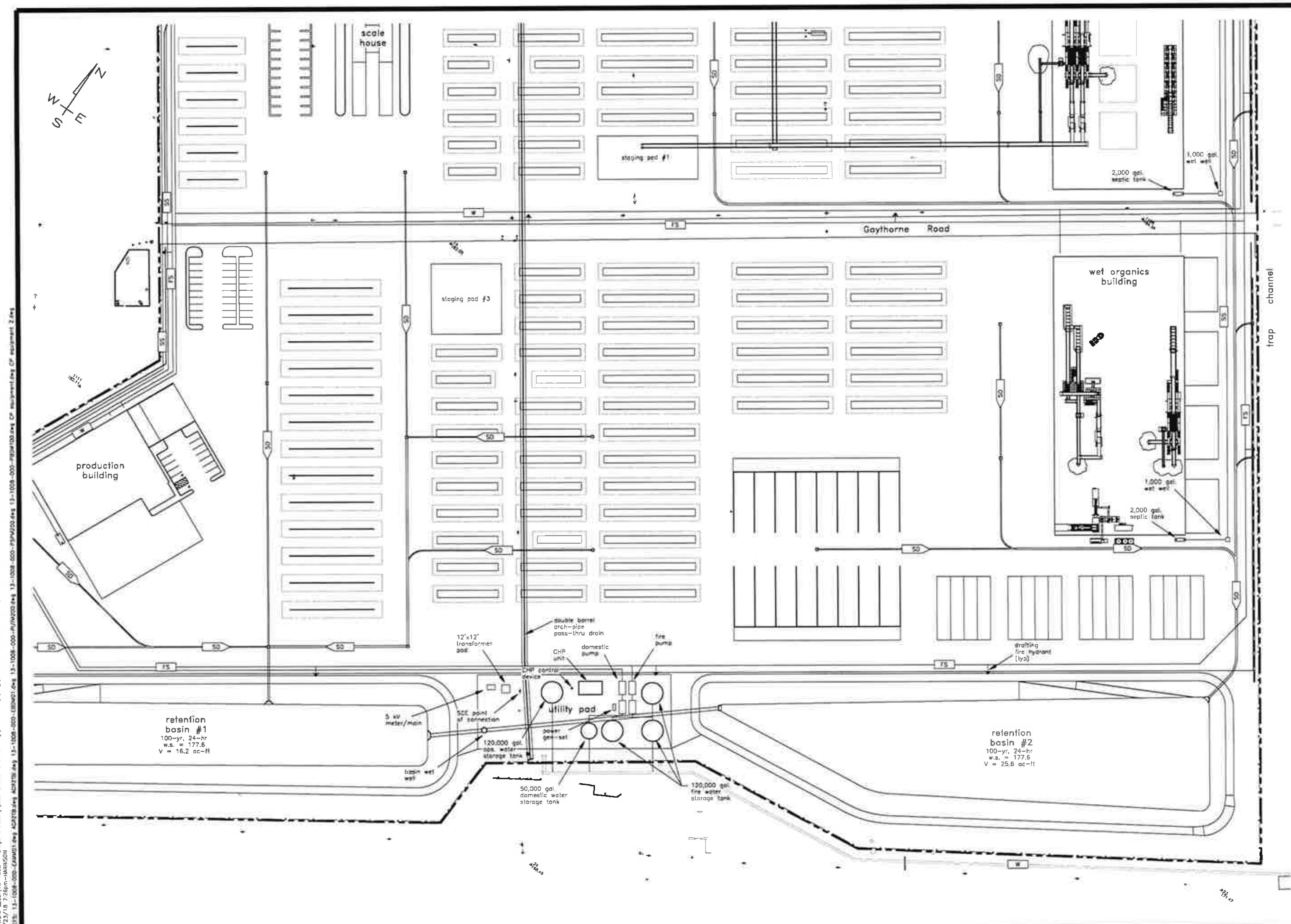
Commercial Organics Processing Facility
Entitlement Planning
Proposed Utility Plan
County of Ventura
AGROMIN
Soil for a Greener World
scale: 1" = 60'
date: November 30, 2018
sheet 24 of 33



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11/23/18 7:26pm–HARRISON

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Commercial Organics Processing Facility

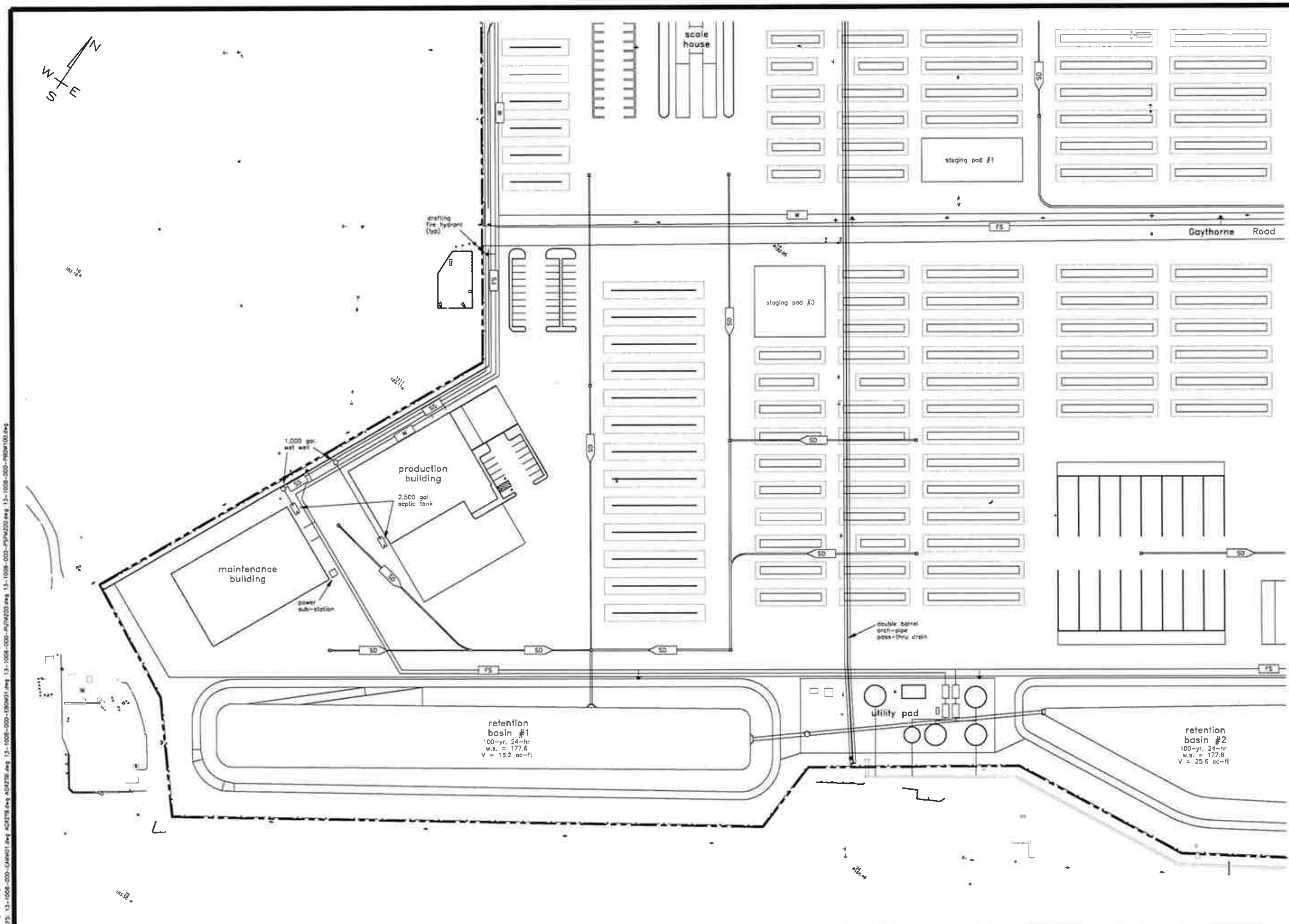
Entitlement Planning
Proposed Utility Plan

County of Ventura

AGROMIN
Soil for a Greener World

scale: 1" = 60'
date: November 30, 2018
sheet 25 of 33

13-1008.230 1st entitlement submittal – preliminary



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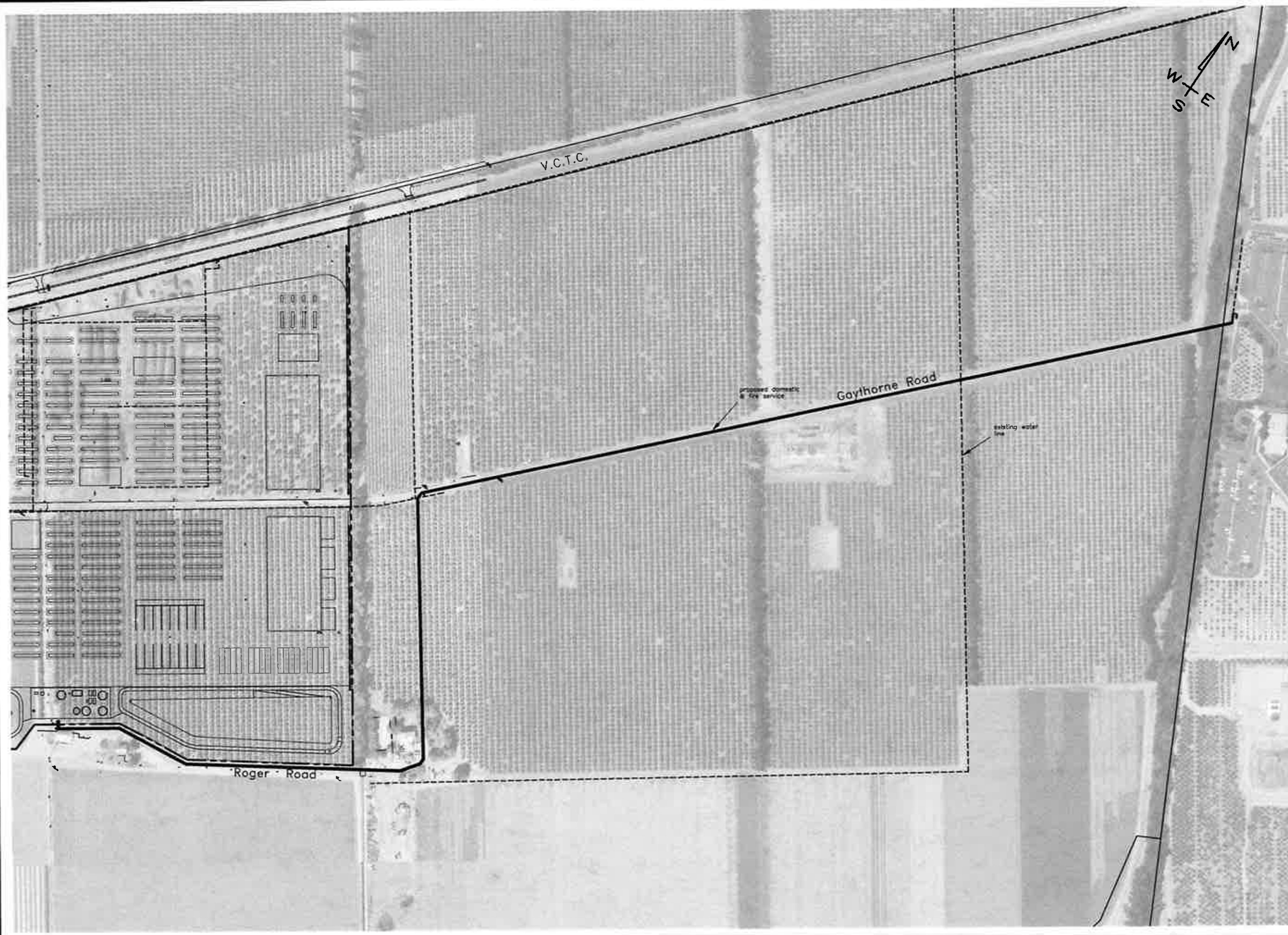
Commercial Organics Processing Facility
Entitlement Planning
Proposed Utility Plan
County of Ventura

AGROMIN
Soil for a Greener World

scale: 1" = 60'
date November 30, 2018
sheet 26 of 33

13-1008.230 1st entitlement submittal - preliminary



Prepared By:

Harrison

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Commercial Organics Processing Facility

Entitlement Planning
Proposed Off-Site Water Plan

County of Ventura

AGROMIN
Soil for a Greener World

scale: 1" = 150'
date: November 30, 2018
sheet 27 of 33

13-1008.230 1st entitlement submittal - preliminary

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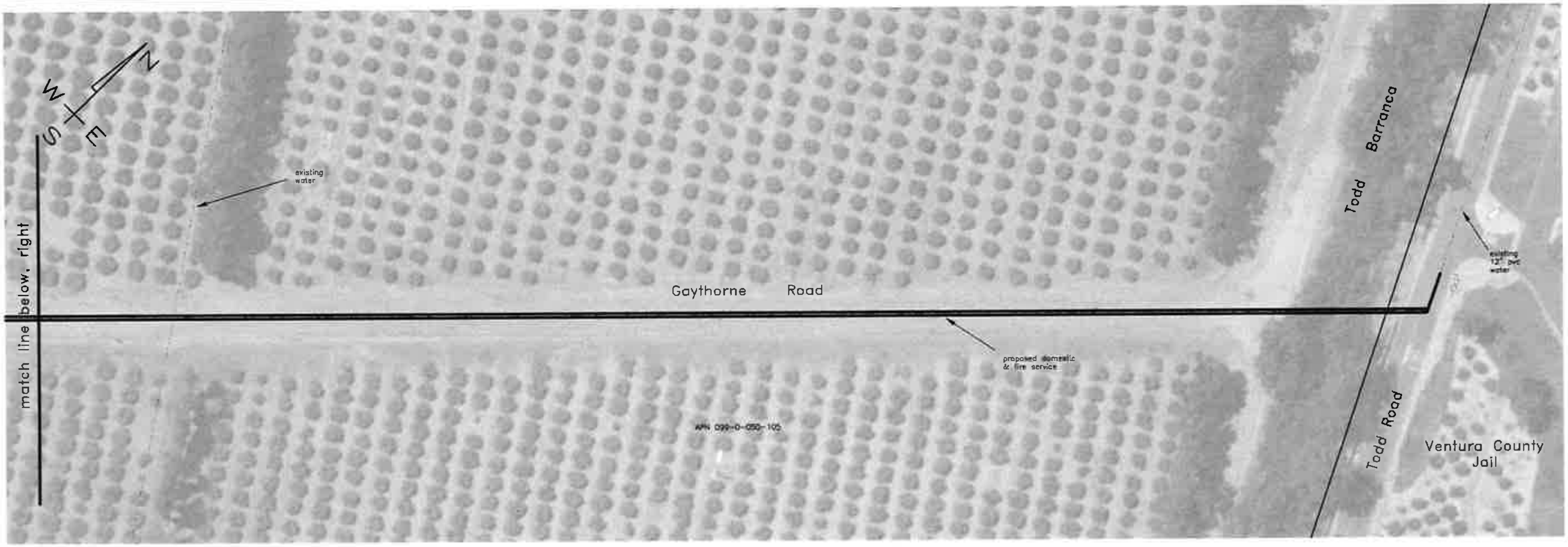
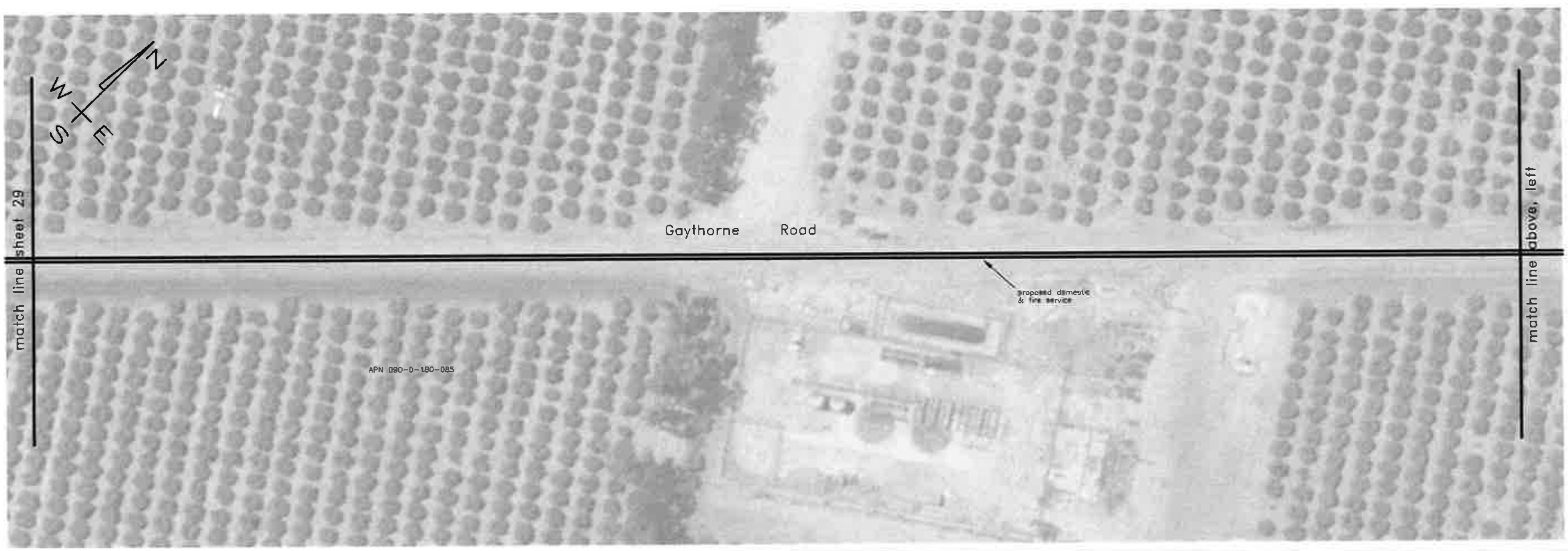
11/26/18 1:30pm-HARRISON





Commercial Organics Processing Facility

Entitlement Planning
Proposed Off-Site Water Plan

County of Ventura

Prepared By

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Prepared under the direction of
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AGROMIN
Soil for a Greener World

scale: 1" = 40'
date: November 30, 2018
sheet 28 of 33

13-1008.230 1st entitlement submittal - preliminary

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Commercial Organics Processing Facility

Entitlement Planning
Proposed Off-Site Water Plan

County of Ventura

AGROMIN
Soil for a Greener World

scale: 1" = 40'
date: November 30, 2018
sheet 29 of 33

13-1008.230 1st entitlement submittal - preliminary

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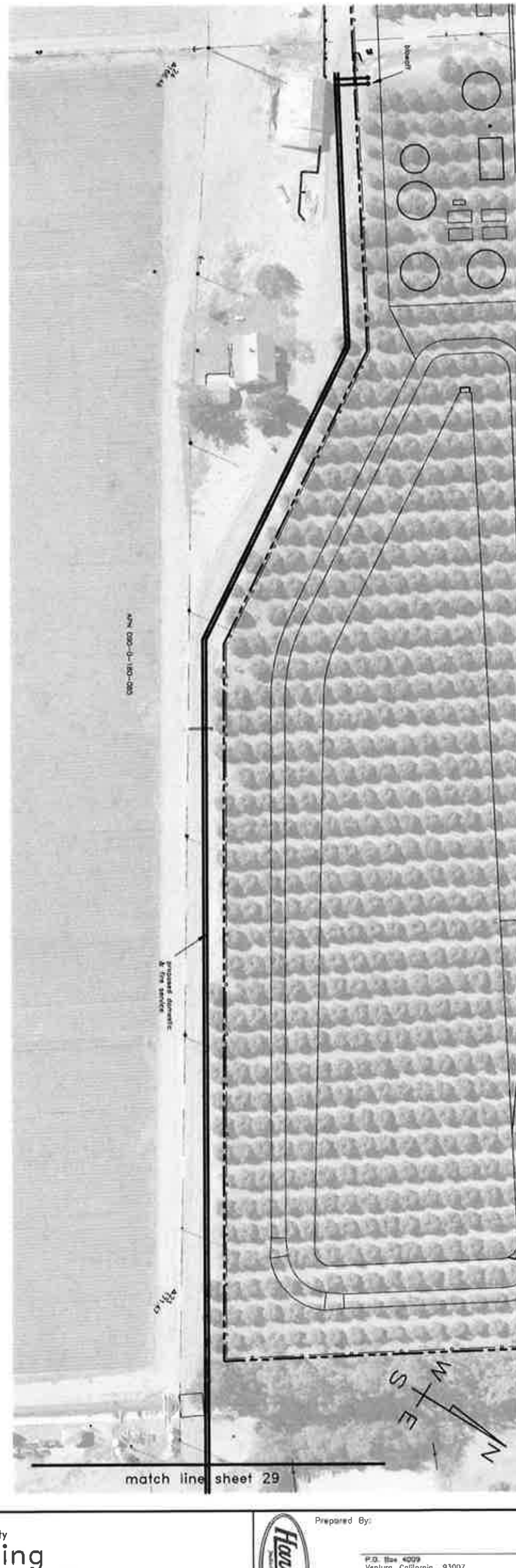
11/26/18 1:48pm-HARRISON



Commercial Organics Processing Facility

Entitlement Planning
Proposed Off-Site Water Plan

County of Ventura

AGROMIN
Soil for a Greener World.

scale: 1" = 40'
date: November 30, 2018
sheet 30 of 33

Prepared By:
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Prepared under the direction of:
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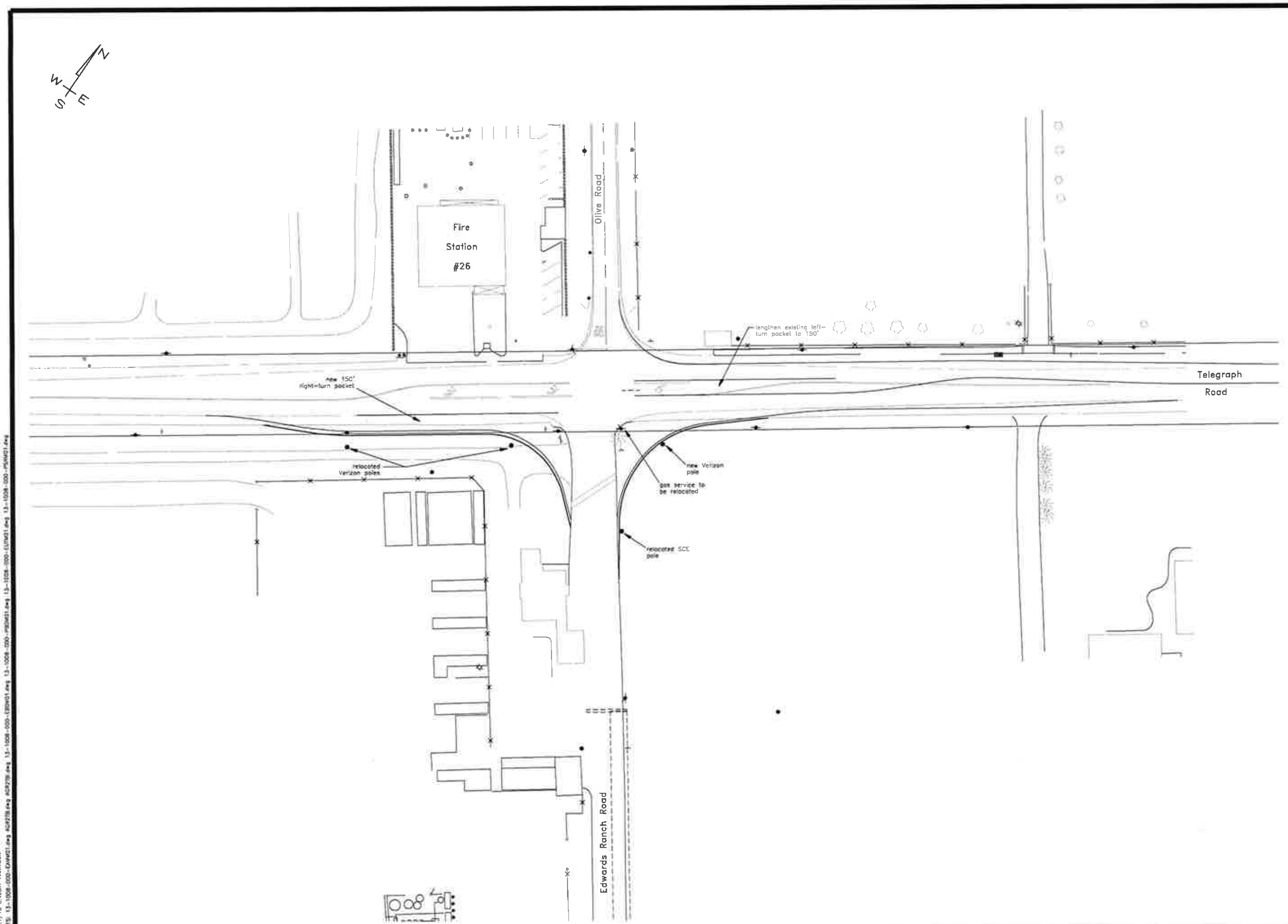
13-1008.230 1st entitlement submittal - preliminary



Commercial Organics Processing Facility
Entitlement Planning
Proposed Street Improvements
County of Ventura

Prepared By:

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www.ejharrison.com

Prepared under the direction of:
Mike Harrison RCE 37,320

AGROMIN
Soil for a Greener World

scale: 1" = 30'
date: November 30, 2018
sheet 31 of 33

13-1008.230 1st entitlement submittal - preliminary

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11/27/18 5:40am-HARRISON
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AGROMIN
Soil for a Greener World

scale: 1" = 600'
date: November 30, 2018
sheet 32 of 33

Commercial Organics Processing Facility

Entitlement Planning Drainage Area Map

County of Ventura

Harrison

Prepared By:

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Ventura, California 93007
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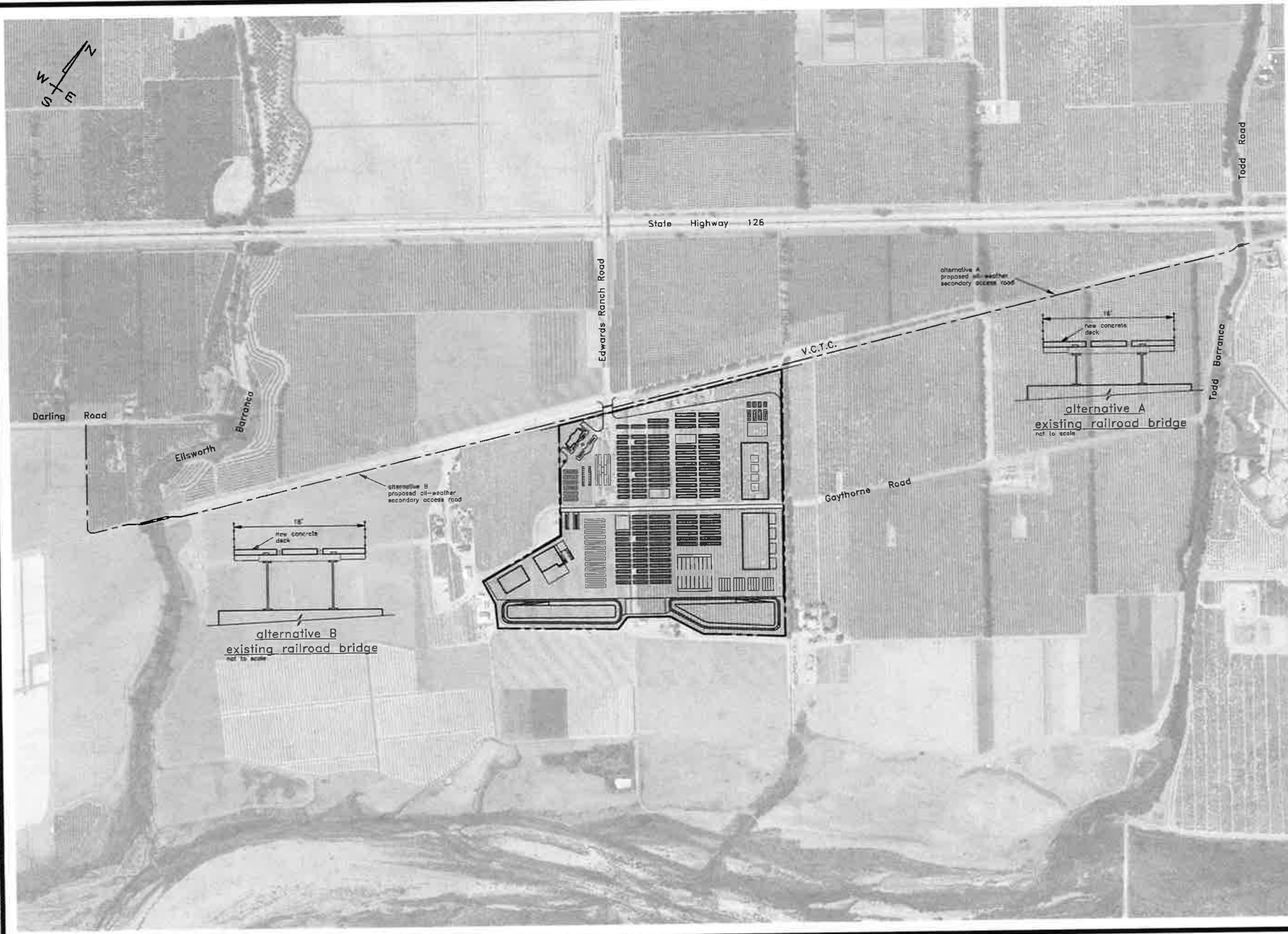
Facsimile: (805) 659-9656
www.ejharrison.com

Prepared under the direction of:
Mike Harrison RCE 57,320

13-1008 230 1st entitlement submittal - preliminary



Commercial Organics Processing Facility

Entitlement Planning

Proposed Off-Site Secondary Access Plan

County of Ventura

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Prepared under the direction of
Mike Harrison RCE 57,320

AGROMIN
Soil for a Greener World

scale: 1" = 300'
date: November 30, 2018
sheet 33 of 33

13-1008.230 1st entitlement submittal - preliminary

11/27/18 5:52am—HARRISON

VICINITY MAP - NOT TO SCALE

REFERENCE DOCUMENT:

CHICAGO TITLE COMPANY'S PRELIMINARY TITLE REPORT (PTR) ORDER NO. 1313032[illegible]-CH, DATED AS OF SEPTEMBER 27, 2013

LEGAL DESCRIPTION:

PARCEL 1:

THAT PORTION OF LOTS 38, 39 AND 40, RANCHO SANTA PAULA Y SATICOY, IN THE COUNTY OF VENTURA, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK "A", PAGE 290 OF MISCELLANEOUS RECORDS (TRANSCRIBED RECORDS FROM SANTA BARBARA COUNTY), IN THE OFFICE OF THE COUNTY RECORDER OF SAID VENTURA COUNTY, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTHWESTERLY LINE OF SAID LOT 40, RANCHO SANTA PAULA Y SATICOY, SAID [illegible]

1ST: SOUTH 40° 53' 15" EAST 214.06 FEET, AT 30.32 FEET A POINT ON THE [illegible]

2ND: SOUTH 40° 53' 30" EAST 390.19 FEET TO A POINT WHICH BEARS SOUTH 47° 31' 30" WEST 24 FEET FROM A 2 INCH IRON PIPE SET IN THE NORTHEASTERLY BANK OF SAID BARRANCA [illegible]

3RD: SOUTH 44° 02' 50" EAST 284.81 FEET TO A POINT WHICH BEARS SOUTH [illegible]

4TH: SOUTH 41° 30' 15" EAST 300.51 FEET TO A POINT WHICH BEARS SOUTH [illegible]

5TH: SOUTH 63° 57' 40" EAST 363.65 FEET TO A POINT WHICH BEARS SOUTH [illegible]

6TH: SOUTH 31° 00' 25" EAST 103.56 FEET TO A POINT WHICH BEARS SOUTH [illegible]

7TH: SOUTH 32° 32' 05" EAST 245.38 FEET TO A POINT ON THE NORTHWESTERLY LINE OF PARCEL 1 OF THE LAND DESCRIBED IN THE DEED TO THE STATE OF CALIFORNIA, RECORDED AUGUST 16, 1962 [illegible]

8TH: NORTH 55° 01' 56" EAST 172.79 FEET TO AN ANGLE POINT; THENCE,

9TH: SOUTH 34° 58' 04" EAST 37 FEET TO AN ANGLE POINT; THENCE,

10TH: NORTH 55° 01' 56" EAST 3,171.07 FEET TO THE SOUTHWESTERLY LINE OF [illegible]

11TH: NORTH 36° 00' 30" WEST 1,101.32 FEET, MORE OR LESS, TO THE MOST EASTERLY CORNER OF THE LAND CONVEYED TO FRANCES HENDERSON, BY DEED RECORDED IN BOOK 4, PAGE 276 OF DEEDS; THENCE, ALONG THE SOUTHEASTERLY LINE OF SAID LAND OF HENDERSON,

12TH: SOUTH 53° 51' 00" WEST 1,284.73 FEET TO THE EASTERLY LINE OF THE LAND CONVEYED TO SAMUEL H. FLINT, BY DEED RECORDED IN BOOK 9, PAGE 276 OF DEEDS; THENCE, ALONG THE BOUNDARY OF SAID LAND OF FLINT BY THE FOLLOWING THREE COURSES:

13TH: SOUTH 38° 00' 30" EAST 512.33 FEET TO THE MOST EASTERLY CORNER THEREOF; THENCE,

14TH: SOUTH 53° 50' WEST 1,283.50 FEET TO THE MOST SOUTHERLY CORNER THEREOF; THENCE,

15TH: NORTH 38° 10' 00" WEST 1,799.82 FEET TO THE CENTERLINE OF SAID TELEGRAPH ROAD; THENCE ALONG SAID CENTERLINE,

16TH: SOUTH 54° 00' 00" WEST 30 FEET TO MOST NORTHERLY CORNER OF THE LAND DESCRIBED IN THE DEED TO SAMUEL EDWARDS ASSOCIATES, RECORDED AUGUST 18, 1921 [illegible]

17TH: SOUTH 36° 10' 00" EAST 2,607.35 FEET TO THE MOST EASTERLY CORNER THEREOF; THENCE,

18TH: SOUTH 54° 00' 00" WEST 231 FEET TO THE MOST SOUTHERLY CORNER THEREOF; THENCE,

19TH: NORTH 36° 10' 00" WEST 2,823.33 FEET TO THE CENTERLINE OF SAID TELEGRAPH ROAD; THENCE, ALONG SAID CENTERLINE,

20TH: SOUTH 54° 00' 00" WEST 2,299.50 FEET TO THE NORTHEASTERLY CORNER OF SAID LOT 40; THENCE,

21ST: SOUTH 54° 04' 40" WEST 315.81 FEET TO THE POINT OF BEGINNING.

EXCEPT ALL THE OIL AND GAS RIGHTS, MINERALS AND MINERAL RIGHTS [illegible]

CONTINUING LEGAL DESCRIPTION:

PARCEL 2:

PART OF LOTS 37, 38, 39, 64, 65, 66, 67, 80, 81, 82 AND 83 OF RANCHO SANTA PAULA Y SATICOY, IN THE COUNTY OF VENTURA, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK "A", PAGE 290 OF MISCELLANEOUS RECORDS (TRANSCRIBED RECORDS FROM SANTA BARBARA COUNTY), IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT IN THE WESTERLY LINE OF THE LAND OF HANNAH W. EDWARDS AS SHOWN ON REGISTERED ENGINEER'S MAP FILED IN BOOK 14, PAGE 63, 64 AND 65 OF RECORDS OF SURVEY, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY, AT THE MOST SOUTHERLY CORNER OF PARCEL 1 OF THE LAND DESCRIBED IN DEED TO THE STATE OF CALIFORNIA, RECORDED JANUARY 23, 1964, BOOK 2462, PAGE 487 OF OFFICIAL RECORDS; THENCE, ALONG SAID WESTERLY LINE OF HANNAH W. EDWARDS AS SHOWN ON SAID REGISTERED ENGINEER'S MAP BY THE FOLLOWING FIFTEEN COURSES:

1ST: SOUTH 24° 00' EAST 389.24 FEET; THENCE,

2ND: SOUTH 39° 00' EAST 799.69 FEET; THENCE

3RD: SOUTH 1° 55' EAST 191.40 FEET; THENCE

4TH: SOUTH 53° 55' WEST 50.05 FEET; THENCE,

5TH: SOUTH 8° 45' WEST 711.48 FEET; THENCE,

6TH: SOUTH 38° 31' EAST 406.98 FEET; THENCE,

7TH: SOUTH 61° 56' EAST 230.09 FEET; THENCE,

8TH: SOUTH 19° 45' EAST 412.23 FEET; THENCE,

9TH: SOUTH 18° 45' EAST 902.63 FEET; THENCE

10TH: NORTH 54° 00' EAST 89.62 FEET; THENCE,

11TH: SOUTH 27° 30' EAST 129.32 FEET; THENCE,

12TH: SOUTH 20° 30' WEST 390.06 FEET; THENCE,

13TH: SOUTH 55° 30' EAST 148.50 FEET; THENCE,

14TH: SOUTH 11° 15' WEST 487.74 FEET; THENCE,

15TH: SOUTH 37° 15' EAST 1331 FEET TO THE MOST SOUTHERLY CORNER OF THE SECOND PARCEL OF LAND DESCRIBED IN DEED TO SAMUEL EDWARDS, DATED MARCH 23, 1880, RECORDED IN BOOK 8, PAGE 453 OF DEEDS; THENCE, ALONG THE BOUNDARY OF SAID LAST MENTIONED LAND BY THE FOLLOWING TWELVE COURSES,

16TH: NORTH 51° 44' 30" EAST 1519.51 FEET; THENCE,

17TH: NORTH 28° 59' 30" EAST 1138.50 FEET; THENCE,

18TH: NORTH 10° 14' 30" EAST 990 FEET; THENCE,

19TH: NORTH 8° 14' 30" EAST 143.88 FEET; THENCE,

20TH: NORTH 20° 44' 30" EAST 157.74 FEET; THENCE,

21ST: NORTH 27° 59' 30" EAST 233.66 FEET; THENCE,

22ND: NORTH 48° 44' 30" EAST 347.76 FEET; THENCE,

23RD: NORTH 48° 29' 30" EAST 308.02 FEET; THENCE,

24TH: NORTH 54° 59' 30" EAST 315.48 FEET; THENCE,

25TH: NORTH 59° 29' 30" EAST 452.76 FEET; THENCE,

26TH: NORTH 48° 59' 30" EAST 331.30 FEET; THENCE,

27TH: NORTH 63° 44' 30" EAST 2,143.14 FEET, TO THE SOUTHWESTERLY LINE AND OR PROLONGATION OF THE BECKWITH PARTITION, AS PER MAP RECORDED IN BOOK 5, PAGE 50 OF MAPS; THENCE, ALONG SAID SOUTHWESTERLY LINE AND OR PROLONGATION,

28TH: NORTH 28° 13' 30" WEST 4681.35 FEET TO THE MOST EASTERLY CORNER OF SAID PARCEL 1 OF THE LAND DESCRIBED IN DEED TO THE STATE OF CALIFORNIA; THENCE, ALONG THE BOUNDARY OF SAID PARCEL 1 BY THE FOLLOWING SIX COURSES,

29TH: SOUTH 57° 37' 00" WEST 540.34 FEET; THENCE,

30TH: SOUTH 55° 01' 56" WEST 500 FEET; THENCE,

31ST: SOUTH 58° 27' 59" WEST 200.36 FEET; THENCE,

32ND: SOUTH 55° 01' 56" WEST 5775 FEET; THENCE,

33RD: SOUTH 34° 58' 04" EAST 37 FEET; THENCE,

34TH: SOUTH 55° 01' 56" WEST 268.09 FEET; TO THE POINT OF BEGINNING.

EXCEPT THAT PORTION OF SAID LAND LYING WITHIN THE STRIP OF LAND, 100 FEET WIDE, AS CONVEYED TO SOUTHERN PACIFIC BRANCH RAILWAY COMPANY, BY DEED RECORDED APRIL 12, 1887, IN BOOK 18, PAGE 383 OF DEEDS.

ALSO EXCEPT ANY PORTION OF SAID LAND WITHIN THE BOUNDARIES OF THE BECKWITH PARTITION, AS PER MAP RECORDED IN BOOK 5, PAGE 50 OF MAPS.

ALSO EXCEPT ANY PORTION OF LOTS 80, 81, 82 AND 83 LYING SOUTHERLY OF THE AGREED BOUNDARY LINE AS SET FORTH IN EXHIBIT "C" OF THAT CERTAIN BOUNDARY LINE AGREEMENT, RECORDED MAY 20, 1988, AS DOCUMENT NO. 88-[illegible] OF OFFICIAL RECORDS.

ALSO EXCEPT THAT PORTION OF LOT 83 CONDEMNED BY UNITED WATER CONSERVATION DISTRICT, IN THAT CERTAIN ORDER OF POSSESSION, CASE NO. [illegible], SUPERIOR COURT OF CALIFORNIA FOR THE COUNTY OF VENTURA, A CERTIFIED COPY OF WHICH WAS RECORDED JULY 26, 1988, AS DOCUMENT NO. 88-103132 OF OFFICIAL RECORDS, AND AS FURTHER DESCRIBED IN DEED RECORDED JUNE 22, 1994, AS DOCUMENT NO. 94-106476 OF OFFICIAL RECORDS.

ALSO EXCEPT THAT PORTION OF LOT 80 CONDEMNED BY UNITED WATER CONSERVATION DISTRICT, IN THAT CERTAIN ORDER OF POSSESSION, CASE NO. [illegible], SUPERIOR COURT OF CALIFORNIA FOR THE COUNTY OF VENTURA, A CERTIFIED COPY OF WHICH WAS RECORDED SEPTEMBER 1, 1989, AS DOCUMENT NO. 89-139833 OF OFFICIAL RECORDS, AND AS FURTHER DESCRIBED IN DEED RECORDED JUNE 22, 1994, AS DOCUMENT 94-106477 OF OFFICIAL RECORDS.

ALSO EXCEPT THAT PORTION OF LOT 83 CONVEYED BY UNITED WATER CONSERVATION DISTRICT, BY DEED RECORDED JUNE 22, 1994, AS DOCUMENT NO. 94-106478 OF OFFICIAL RECORDS.

ALSO EXCEPT ALL THE OIL AND GAS RIGHTS, MINERALS AND MINERAL RIGHTS INCLUDING BUT NOT LIMITED TO ROCK SAND AND GRAVEL CONCENTRATED IN QUANTITIES SUFFICIENT TO WARRANT COMMERCIAL QUARRYING OPERATION THAT MAY BE ON, WITHIN OR UNDER, OR THAT MAY BE PRODUCED FROM SAID LAND, TOGETHER WITH THE EXCLUSIVE AND PERPETUAL RIGHT OF DRILLING, MINING, EXPLORING AND OPERATING THEREFORE AND REMOVING THE SAME FROM SAID LAND, INCLUDING THE RIGHT TO WHIPSTOCK OR DIRECTIONALLY DRILL AND MINE FROM SAID LAND TO OTHER LANDS, AND FROM OTHER LANDS IN AND TO SAID LAND AND WITH THE RIGHT TO STORE, TREAT, HANDLE, MARKET AND REMOVE SAID OIL, GAS, MINERALS, ROCK, SAND AND GRAVEL THEREFROM, WITH REASONABLE RIGHTS OF INGRESS AND EGRESS FOR SUCH PURPOSES, AS CONVEYED TO EDWARD MINERAL GROUP, A CALIFORNIA LIMITED PARTNERSHIP, BY DEED RECORDED MAY 29, 1985, BOOK 5651, PAGE 685 OF OFFICIAL RECORDS.

SHEET INDEX:

SHEET 1 - LEGAL DESCRIPTION, NOTES AND SURVEYOR'S CERTIFICATION

SHEET 2 - SHEET OF TITLE ITEMS PER PRELIMINARY TITLE REPORT.

SHEETS 3-6 - RECORD BOUNDARY MAP

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA COORDINATE SYSTEM, ZONE 5, NORTH AMERICAN DATUM 1983 CSRC EPOCH 2011.00, AS DETERMINED LOCALLY BY A LINE BETWEEN CONTINUOUS OPERATING REFERENCE STATIONS (CORS) [illegible] AND [illegible] BEING NORTH 82°47'53" WEST AS DERIVED FROM GEODETIC VALUES PUBLISHED BY THE CALIFORNIA SPATIAL REFERENCE CENTER (CSRC).

REFERENCED BEARINGS FROM OTHER DOCUMENTS/DEEDS MAY OR MAY NOT BE IN TERMS OF SAID SYSTEM.

THE BEARING OF NORTH 54°55'33" EAST OF THE NORTHWESTERLY LINE OF LOT 38 OF RANCHO SANTA PAULA Y SATICOY IS SHOWN AS NORTH 54°50' EAST ON RECORD OF SURVEY MAP 9 RS 23, RECORDS OF VENTURA COUNTY, STATE OF CALIFORNIA.

ALL DISTANCES SHOWN ON THIS MAP ARE GROUND VALUES UNLESS OTHERWISE SPECIFIED. THE GROUND VALUES WERE CALCULATED BASED ON GRID COORDINATES OF ALL MEASURED POINTS UTILIZING RAPID STATIC AND RTK GPS TECHNIQUES AND ADJUSTED TO CSRC CONTINUOUS OPERATING REFERENCE STATIONS [illegible]

THE AVERAGE COMBINED SCALE FACTOR OF 0.99994411818 WAS USED TO OBTAIN GROUND DISTANCES.

(GRID DISTANCE = GROUND DISTANCE x COMBINED SCALE FACTOR).

FOR REFERENCE SEE COORDINATE TABLE AND GPS VECTOR LOCATION DIAGRAM ON SHEET 2.

BENCH MARK DATA:

SOURCE: VENTURA COUNTY PUBLIC WORKS AGENCY

DATUM: NAVD 1988

ADJUSTMENT: VEN CO ADJ PUB 1992

[illegible]

DESIGNATION: 102-9

[illegible]

ELEV = 190.382 US SURVEY FEET

POINT NO. 1201 FOR THIS SURVEY AS SHOWN ON SHEET 3.

DESCRIPTION: FD BRASS DISK IN CONC. COLLAR UP 8" STAMPED "102-9, 1969; VENTURA COUNTY SURVEYOR, BENCHMARK".

LOCATION: [illegible]

APROXIMATE SITE AREA:

GROSS AREA OF PAR. 1 PER PTR = [illegible] SQ. FT. or [illegible] ACRES

GROSS AREA OF PAR. 2 PER PTR = 34,662,196 SQ. FT. or 796 ACRES (EXCLUDING SOUTHER PACIFIC RAILROAD RIGHT-OF-WAY)

GROSS AREA OF PROPOSED DEVELOPMENT AREA = 1,742,400 SQ. FT. OR 40 ACRES

ASSESSOR'S PARCEL NUMBERS PER PTR:

APNs: 090-0-180-0[illegible], 090-0-180-060, [illegible] and 090-0-180-020

SURVEYOR'S STATMENT:

I HEREBY STATE THAT I AM A LICENSED LAND SURVEYOR OF THE STATE OF CALIFORNIA; THAT THIS MAP, CONSISTING OF 6 SHEETS, REPRESENTS A SURVEY MADE UNDER MY SUPERVISION; THAT ALL MONUMENTS SHOWN HEREON ACTUALLY EXIST AND THEIR POSITIONS ARE CORRECTLY SHOWN.

CENTERLINES, RIGHT-OF-WAY LINES, BOUNDARY LINES, AND EASEMENT LINES AS SHOWN ON THIS MAP ARE PLOTTED PER RECORD INFORMATION OBTAINED FROM RELIABLE AND RESPONSIBLE SOURCES NOT CONNECTED WITH THIS COMPANY. EXACT POSITION OF THE SAID LINES CANNOT BE DETERMINED PER THE RECORD INFORMATION. NO GUARANTEE, WARRANTY OR REPRESENTATION, EITHER EXPRESS OR IMPLIED, IS MADE AS TO THE ACCURACY OR THOROUGHNESS OF SUCH INFORMATION.

04/01/2014

DATE

MICHAEL H. KAZNOCHA, PLS
PROFESSIONAL LAND SURVEYOR
PLS-8330 EXP. 12-31-15
FOR & ON BEHALF OF
DIAMOND WEST INC.

THIS SURVEY HAS BEEN PREPARED FOR ARCHITECTURAL DESIGN PURPOSES:

[illegible]

If we were not furnished a title report no easements, recorded or unrecorded, and no setbacks disclosed by covenants, conditions and restrictions have been shown.

Legal description for this survey obtained from Chicago Title Company's Preliminary Title Report order No. 1313032[illegible]-CH, dated as of September 27, 2013.

DATE OF ORIGINAL ISSUANCE NOVEMBER [illegible], 2013

DATE OF LAST FIELD INSPECTION JANUARY 6, 2014

ISSUANCE NO. [illegible] DATE APRIL 1, 2014

DIAMOND WEST INCORPORATED

[illegible]

RECORD BOUNDARY MAP

SHOWING

POR. LOTS 37 TO 40, 64 TO 67, 80 TO 83 INCLUSIVE
RANCHO SANTA PAULA Y SATICOY
BK. A PG. 290 OF M.R.

COUNTY OF VENTURA
STATE OF CALIFORNIA

PREPARED BY OR UNDER THE DIRECTION OF:

MICHAEL H. KAZNOCHA, P.L.S. 8330
04-01-14
DATE

DATE OF SURVEY:	10/31/13
SURVEYED:	MHK,TCF
DRAWN:	MHK,TCF
CHECKED:	MHK
DRAWING SCALE:	N/A
DWI JOB NUMBER:	13-1008

SURVEY PREPARED FOR:
AGROMIN
BILL CAMARILLO
201 KINETIC DR.
OXNARD, CA 93030

SHEET NO.

1

OF 6 SHEETS

DIGEST OF TITLE ITEMS PER CHICAGO TITLE COMPANY'S PRELIMINARY TITLE REPORT (PTR) NO. 13130323B-DH, DATED AS OF SEPTEMBER 27, 2013.

NOTE: This condensation of items in the PTR is prepared for the convenience of those persons using this survey. For full details of title items, refer to the complete report and to those documents referred to therein.

[box] = DENOTES PLOTTED ITEM ON THE MAP

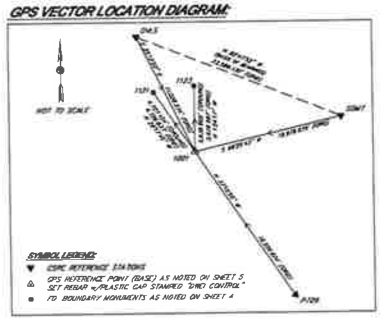
ITEM NO.	PURPOSE	FOR	GRANTOR / PARTY	GRANTEE / PARTY	RECORDING DATA	COMMENTS
1	PROPERTY TAXES	FISCAL YEAR 2013-2014				AFFECTS PARCEL 1 PER PTR
2	PROPERTY TAXES	FISCAL YEAR 2013-2014				AFFECTS PORTION OF PARCEL 2 PER PTR
3	PROPERTY TAXES	FISCAL YEAR 2013-2014				AFFECTS PORTION OF PARCEL 2 PER PTR
4	PROPERTY TAXES	FISCAL YEAR 2013-2014				AFFECTS PORTION OF PARCEL 2 PER PTR
5	PROPERTY TAXES	FISCAL YEAR 2013-2014				AFFECTS PORTION OF PARCEL 2 PER PTR
6	PROPERTY TAXES					AFFECTS PORTION OF PARCEL 2 PER PTR
7	LIEN OF SUPPLEMENTARY TAXES					
8	ADVERSE CLAIMS					
9	EASEMENT	DITCHES AND CANALS	EDWARDS FARMING GROUP	FARMERS CANAL AND WATER COMPANY	09-12-1874, BK. 1, PG. 190 OF M.R.	THE EXACT LOCATION CANNOT BE PLOTTED PER RECORD
10	EASEMENT	TO TRAVEL TO/FROM THE SANTA CLARA RIVER	ISAAC Y. CROSS		BK. 3 PG. 508 OF DEEDS	THE EXACT LOCATION CANNOT BE PLOTTED PER RECORD
11	EASEMENT	TRAVEL AND INCIDENTAL PURPOSES	ISAAC Y. CROSS	T. J. KNOX	BK. 10 PG. 292 OF DEEDS	THE EXACT LOCATION CANNOT BE PLOTTED PER RECORD
12	EASEMENT	PUBLIC ROAD AND/OR HIGHWAY	VENTURA ABSTRACT COMPANY	COUNTY OF VENTURA	11-18-1916, BK. 151, PG. 288 OF DEEDS	AFFECTS A PORTION OF PARCEL 1 PER PTR
13	EASEMENT	TO LAY, MAINTAIN, REPAIR AND OPERATE A MAIN OR PIPE	LIMONEIRA COMPANY	FARMERS IRRIGATION COMPANY	01-02-1924, BK. 126, PG. 104 OF O.R.	AFFECTS A PORTION OF PARCEL 1 PER PTR
14	AGREEMENT	MATTERS CONTAINED IN THAT CERTAIN DOCUMENT	ROGER G. EDWARDS	SOUTHERN COUNTIES GAS COMPANY OF CALIFORNIA	04-29-1946, BK. 810, PG. 23 OF O.R.	
15a	LEASE/EASEMENT	OIL AND GAS LEASE AND EASEMENT	ROGER G. EDWARDS	GENERAL PETROLEUM CORP., A DELAWARE CORP.	08-12-1952, BK. 1082, PG. 383 OF O.R.	THE EXACT LOCATION CANNOT BE PLOTTED PER RECORD
15b	LEASE/EASEMENT	OIL AND GAS LEASE AND EASEMENT	ROGER G. EDWARDS	GENERAL PETROLEUM CORP., A DELAWARE CORP.	10-02-1958, BK. 1384, PG. 54 OF O.R.	THE EXACT LOCATION CANNOT BE PLOTTED PER RECORD
16	DISCREPANCIES	BOUNDARY LINES			BK. 14, PG. 43 OF RECORD OF SURVEYS	RECORD OF SURVEY DOES NOT CLOSE. SEE SURVEYOR'S NOTE NO. 3 ON SHEET 3
17	EASEMENT	PIPELINES, TOGETHER WITH THE RIGHT OF INGRESS/EGRESS	ROGER G. EDWARDS	SOUTHERN CALIFORNIA GAS COMPANY	11-14-1953, BK. 1153, PG. 23 OF O.R.	AFFECTS A PORTION OF SAID LAND
18	COVENANTS, CONDITIONS AND RESTRICTIONS				11-14-1953, BK. 1163, PG. 33 OF O.R.	
19	EASEMENT	PUBLIC UTILITIES AND INCIDENTAL PURPOSES	ROGER G. EDWARDS	SOUTHERN CALIFORNIA EDISON COMPANY	04-14-1959, BK. 1722, PG. 426 OF O.R.	AFFECTS A PORTION OF SAID LAND
20	COVENANTS, CONDITIONS AND RESTRICTIONS				04-14-1959, BK. 1722, PG. 476 OF O.R.	
21	EASEMENT	PIPELINES	ROGER G. EDWARDS	SHELL OIL COMPANY	11-23-1959, BK. 1789, PG. 313 OF O.R.	AFFECTS A PORTION OF SAID LAND
22	COVENANTS, CONDITIONS AND RESTRICTIONS				11-23-1959, BK. 1789, PG. 313 OF O.R.	
23	EASEMENT	DRAINAGE	J.W. "SHARP" COMPANY	STATE OF CALIFORNIA	08-16-1962, BK. 2192, PG. 450 OF O.R.	AFFECTS A PORTION OF PARCEL 1 PER PTR
24	THE OWNERSHIP OF SAID LAND DOES NOT INCLUDE RIGHTS OF ACCESS TO OR FROM THE FREEWAY		J.W. "SHARP" COMPANY	STATE OF CALIFORNIA	08-16-1962, BK. 2192, PG. 450 OF O.R.	DOES NOT AFFECT THE PROPERTY IN QUESTION
25	UNRECORDED LEASE		ROGER G. EDWARDS	SOUTH PACIFIC MILLING COMPANY	02-26-1963, BK. 2272, PG. 113 OF O.R.	AFFECTS A PORTION OF PARCEL 2 PER PTR
26	EASEMENT	DRAINAGE	HAROLD E. EDWARDS	STATE OF CALIFORNIA	01-23-1964, BK. 2467, PG. 497 & 505 OF O.R.	AFFECTS A PORTION OF PARCELS 1 AND 2 PER PTR
27	THE OWNERSHIP OF SAID LAND DOES NOT INCLUDE RIGHTS OF ACCESS TO OR FROM THE FREEWAY		THE SAMUEL EDWARDS ASSOCIATES	STATE OF CALIFORNIA	01-23-1964, BK. 2467, PG. 497 & 505 OF O.R.	AFFECTS SAID LAND ABUTTING FREEWAY
28	UNRECORDED LEASE		C. WILLIAM EDWARDS	SOUTH PACIFIC MILLING COMPANY	05-09-1968, BK. 3302, PG. 42 OF O.R.	AFFECTS A PORTION OF PARCEL 2 PER PTR
29	COVENANTS, CONDITIONS AND RESTRICTIONS				05-14-1969, BK. 3486, PG. 48 OF O.R.	BUILDING RESTRICTIONS
30	EASEMENT	PUBLIC UTILITIES AND INCIDENTAL PURPOSES	EDWARDS FARMING GROUP	SOUTHERN CALIFORNIA EDISON COMPANY	11-26-1969, BK. 3575, PG. 485 OF O.R.	AFFECTS A PORTION OF PARCELS 1 AND 2 PER PTR
31	COVENANTS, CONDITIONS AND RESTRICTIONS				02-18-1972, BK. 3921, PG. 912 OF O.R. AMENDED 02-18-1972, BK. 3921, PG. 919 OF O.R.	
32	COVENANTS, CONDITIONS AND RESTRICTIONS				02-18-1972, BK. 3921, PG. 920 OF O.R. AMENDED 02-18-1972, BK. 3921, PG. 928 OF O.R.	
33	COVENANTS, CONDITIONS AND RESTRICTIONS				02-18-1972, BK. 3921, PG. 940 OF O.R. AMENDED 02-18-1972, BK. 3921, PG. 938 OF O.R.	
34	COVENANTS, CONDITIONS AND RESTRICTIONS				02-18-1972, BK. 3921, PG. 931 OF O.R. AMENDED 02-18-1972, BK. 3921, PG. 948 OF O.R.	
35	EASEMENT	PUBLIC UTILITIES AND INCIDENTAL PURPOSES	EDWARDS FARMING GROUP	SOUTHERN CALIFORNIA EDISON COMPANY	08-30-1973, BK. 4166, PG. 319 OF O.R.	AFFECTS A PORTION OF PARCEL 2 PER PTR
36	EASEMENT	CONSTRUCTION AND MAINTENANCE OF 2 GROINS	EDWARDS FARMING GROUP	SOUTHERN CALIFORNIA GAS COMPANY	10-05-1973, BK. 4175, PG. 245 OF O.R.	THE EXACT LOCATION CANNOT BE PLOTTED PER RECORD
37	COVENANTS, CONDITIONS AND RESTRICTIONS					
38	EASEMENT	FLOOD CONTROL, WATER CONSERVATION AND RELATED PURPOSES	EDWARDS FARMING GROUP	VENTURA COUNTY FLOOD CONTROL DISTRICT	11-12-1975, BK. 4490, PG. 373 OF O.R.	AFFECTS A PORTION OF PARCEL 2 PER PTR
39	EASEMENT	DRILLING, MINING, EXPLORING AND OPERATING WITH RIGHT TO STORE, TREAT, HANDLE, MARKET AND REMOVE, WITH REASONABLE RIGHTS OF INGRESS AND EGRESS FOR SUCH PURPOSE	EDWARDS FARMING GROUP	EDWARDS MINERAL GROUP, A CALIFORNIA LIMITED PARTNERSHIP	05-29-1980, BK. 5661, PG. 585 OF O.R.	BLANKET IN NATURE OVER PARCELS 1 AND 2 PER PTR
40	COVENANTS, CONDITIONS AND RESTRICTIONS					
41	EASEMENT	DIKE	LIMONEIRA COMPANY	UNITED WATER CONSERVATION DISTRICT	04-25-1988, DOC. NO. 88-139823 OF O.R.	AFFECTS A PORTION OF PARCEL 2 PER PTR
42	EASEMENT	ROAD	LIMONEIRA COMPANY	SOUTHERN CALIFORNIA EDISON COMPANY	07-31-1991, DOC. NO. 91-107790 OF O.R.	THE EXACT LOCATION CANNOT BE PLOTTED PER RECORD. REPRESENTS 20' ROAD EASEMENT LABLED AS E. GAITHORNE RD. (PRIVATE)
43	EASEMENT	DIKES, INGRESS/EGRESS	LIMONEIRA COMPANY	UNITED WATER CONSERVATION DISTRICT	06-22-1994, DOC. NO. 94-108422 OF O.R.	AFFECTS A PORTION OF PARCEL 2 PER PTR
44	MATTERS CONTAINED IN THAT CERTAIN DOCUMENT	GROUNDWATER USE			12-21-1998, DOC. NO. 98-179025 OF O.R.	REFERENCE IS HEREBY MADE TO SAID DOCUMENT FOR FULL PARTICULARS
45	DEED OF TRUST				12-29-2008, DOC. NO. 20081229-183979 OF O.R. AMENDED 03-19-2009, DOC. NO. 20090319-41474 OF O.R. AMENDED 11-25-2011, DOC. NO. 20111125-176384 OF O.R.	REFERENCE IS HEREBY MADE TO SAID DOCUMENT FOR FULL PARTICULARS. AFFECTS THE HEREIN DESCRIBED LAND AND OTHER LAND
46	A NOTICE	NOTICE OF LAND USE ENTITLEMENT			04-13-2009, DOC. NO. 20090413-58430 OF O.R.	
47	UNRECORDED LEASE	LEASE SUBORDINATION AGREEMENT			05-19-2009, DOC. NO. 20090519-81475 OF O.R. AMENDED 12-29-2008, DOC. NO. 20081229-183979 OF O.R.	
48	UNRECORDED LEASE	LEASE SUBORDINATION AGREEMENT			05-19-2009, DOC. NO. 20090519-81476 OF O.R. AMENDED 12-29-2008, DOC. NO. 20081229-183979 OF O.R.	
49	UNRECORDED LEASE	LEASE SUBORDINATION AGREEMENT			05-19-2009, DOC. NO. 20090519-81477 OF O.R. AMENDED 12-29-2008, DOC. NO. 20081229-183979 OF O.R.	
50	UNRECORDED LEASE	LEASE SUBORDINATION AGREEMENT			05-19-2009, DOC. NO. 20090519-81478 OF O.R. AMENDED 12-29-2008, DOC. NO. 20081229-183979 OF O.R.	
51	UNRECORDED LEASE	LEASE SUBORDINATION AGREEMENT			05-19-2009, DOC. NO. 20090519-81480 OF O.R. AMENDED 12-29-2008, DOC. NO. 20081229-183979 OF O.R.	
52	UNRECORDED LEASE	LEASE SUBORDINATION AGREEMENT			05-19-2009, DOC. NO. 20090519-81481 OF O.R. AMENDED 12-29-2008, DOC. NO. 20081229-183979 OF O.R.	
53	UNRECORDED LEASE	LEASE SUBORDINATION AGREEMENT			05-19-2009, DOC. NO. 20090519-81482 OF O.R. AMENDED 12-29-2008, DOC. NO. 20081229-183979 OF O.R.	
54	UNRECORDED LEASE	LEASE SUBORDINATION AGREEMENT			05-19-2009, DOC. NO. 20090519-81483 OF O.R. AMENDED 12-29-2008, DOC. NO. 20081229-183979 OF O.R.	
55	UNRECORDED LEASE	LEASE SUBORDINATION AGREEMENT			05-19-2009, DOC. NO. 20090519-81484 OF O.R. AMENDED 12-29-2008, DOC. NO. 20081229-183979 OF O.R.	
56	UNRECORDED LEASE	LEASE SUBORDINATION AGREEMENT			05-19-2009, DOC. NO. 20090519-81749 OF O.R. AMENDED 12-29-2008, DOC. NO. 20081229-183979 OF O.R.	
57	UNRECORDED LEASE	LEASE SUBORDINATION AGREEMENT			05-19-2009, DOC. NO. 20090519-81750 OF O.R. AMENDED 12-29-2008, DOC. NO. 20081229-183979 OF O.R.	
58	UNRECORDED LEASE	LEASE SUBORDINATION AGREEMENT			05-19-2009, DOC. NO. 20090519-81751 OF O.R. AMENDED 12-29-2008, DOC. NO. 20081229-183979 OF O.R.	
59	UNRECORDED LEASE	LEASE SUBORDINATION AGREEMENT			05-19-2009, DOC. NO. 20090519-81752 OF O.R. AMENDED 12-29-2008, DOC. NO. 20081229-183979 OF O.R.	
60	EASEMENT	PUBLIC ROAD AND/OR HIGHWAY	LIMONEIRA COMPANY	COUNTY OF VENTURA	04-28-2010, DOC. NO. 20100428-53253 OF O.R.	A PORTION OF PARCEL 1 PER PTR
61	WATER RIGHTS					

COORDINATE TABLE:

POINT NO.	NORTHING (FEET)	EASTING (FEET)	GROUND NORTHING (FEET)	GROUND EASTING (FEET)	ELIP. ELEV. (FEET)	ORTH. ELEV. (FEET)
1001	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1121	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1122	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0143	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
P728	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2047	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

HORIZONTAL DATA: CCS 83, ZONE 5, CSRC EPOCH 2011.00
VERTICAL DATA: ORTHOMETRIC HEIGHTS CALCULATED BASED ON GEOID 2012 AND ELLIPSOIDAL HEIGHTS (ELLIPSOID GRS-80) OBTAINED PER GPS OBSERVATIONS

GPS VECTOR LOCATION DIAGRAM:



SYMBOL LEGEND:
▼ CSRC REFERENCE STATIONS
△ GPS REFERENCE POINT (BASE) AS NOTED ON SHEET 5 SET REBAR w/PLASTIC CAP STAMPED "DWEI CONTROL"
● FD BOUNDARY MONUMENTS AS NOTED ON SHEET 4

DIAMOND WEST
civil engineering • land surveying • land planning
www.diamondwest.net

DATE | REVISION | BY

RECORD BOUNDARY MAP

SHOWING

POR. LOTS 37 TO 40, 64 TO 67, 80 TO 83 INCLUSIVE
RANCHO SANTA PAULA Y SATICOY
BK. A PG. 290 OF M.R.

COUNTY OF VENTURA
STATE OF CALIFORNIA

PREPARED BY OR UNDER THE DIRECTION OF:

MICHAEL H. KAZNOCHA, P.L.S. [illegible]
04-01-14
DATE

DATE OF SURVEY:	10/21/13
SURVEYED:	MHK,TCF
DRAWN:	MHK,TCF
CHECKED:	MHK
DRAWING SCALE:	N/A
DWEI JOB NUMBER:	13-1008

SURVEY PREPARED FOR:
AGROMIN
BILL CAMARILLO
201 KINETIC DR.
OXNARD, CA 93030

SHEET NO.
2
OF 6 SHEETS

BOUNDARY MAP

INGRESS/EGRESS NOTES:

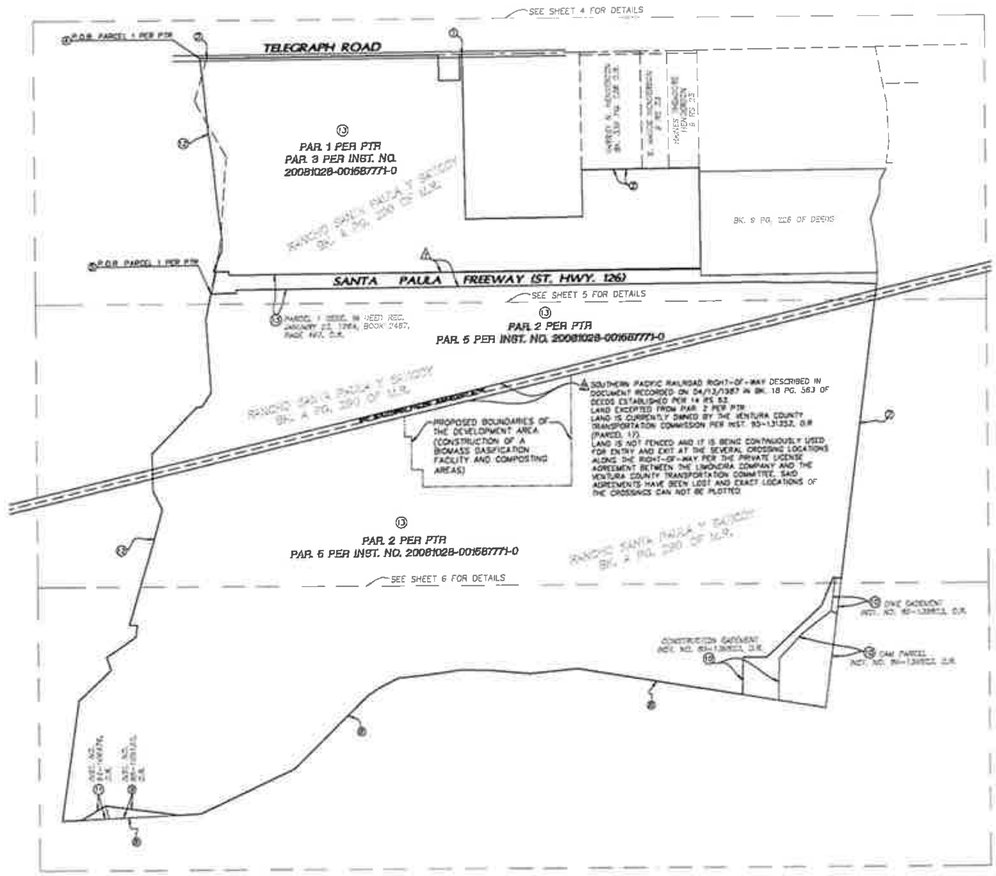
THE DEVELOPMENT AREA WILL BE ACCESSED FROM THE INTERSECTION OF TELEGRAPH ROAD AND OLIVE ROAD (BOTH PUBLIC RIGHT-OF-WAYS), GOING SOUTHERLY ALONG EDWARDS RANCH ROAD (PRIVATE ROAD), CROSSING SANTA PAULA FREEWAY (STATE HIGHWAY 126) UTILIZING AN OVERPASS, AND CROSSING AT THE SOUTHERN PACIFIC RAILROAD RIGHT-OF-WAY, AS SHOWN ON THIS MAP.

1. THE CROSSING VIA THE CALTRANS OVERPASS, BRIDGE NO. 52-248, AS SHOWN ON CALTRANS AS-BUILT PLANS 07-03404, DOC. NO. [illegible], IS NOT RESTRICTED AS THE BRIDGE WAS BUILT FOR PUBLIC PURPOSES, ALLOWING FOR VEHICULAR AND PEDESTRIAN RIGHTS OF INGRESS AND EGRESS.

2. THE CROSSING VIA THE SOUTHERN PACIFIC RAILROAD RIGHT-OF-WAY HAS BEEN GRANTED BY THE PRIVATE LICENSE AGREEMENT BETWEEN THE LIMONEIRA COMPANY AND THE VENTURA COUNTY TRANSPORTATION COMMITTEE.

SURVEYOR'S NOTES:

1. COMMON POINT OF INSERTION FOR 14 RS 65 AND 9 RS 23 FOR THIS SURVEY.
2. COMMON BEARING FOR 14 RS 65 AND 9 RS 23 FOR THIS SURVEY. DUE TO THE COMMON POINT OF INSERTION DESCRIBED UNDER NOTE 1, AND THE COMMON BEARING, THERE IS A GAP OF 1.77' BETWEEN RECORD OF SURVEYS.
3. NW'LY COR. OF 14 RS 63 ESTABLISHED PER RECORD PER SAID R/S FROM NE'LY COR. OF LOT 40 OF RANCHO SANTA PAULA Y SATICOY PER A MR 290.
LAND AS SHOWN ON 14 RS 63 PLOTTED FROM SAID NW'LY COR. IN CLOCKWISE DIRECTION PER SAID RS WITH A MISCLOSURE ERROR AT THAT POINT AS N 77°26'38" E 3.55'.
4. P.O.B. PARCEL 1 PER PTR ESTABLISHED FROM EAST FROM NE'LY COR OF LOT 40 OF RANCHO SANTA PAULA Y SATICOY PER A MR 290. PARCEL 1 PER PTR INSERTED INTO THE COORDINATE SYSTEM HOLDING THE COMMON BEARING DESCRIBED IN NOTE 2.
LEGAL DESCRIPTION INTRODUCES THE MISCLOSURE ERROR AT THE P.O.B. OF N 35°12'21" W 81.06'.
5. P.O.B. PARCEL 2 PER PTR ESTABLISHED AT INTERSECTION OF THE W'LY LINE OF 14 RS 65 WITH THE N'LY LINE OF SAID PARCEL 2 PER PTR.
6. THE MOST E'LY COR. OF 14 RS 63 ESTABLISHED PER REC. PER SAID MAP. POINT OF INSERTION FOR PAR. 2 PER PTR WITH A COMMON BEARING ALONG THE MOST E'LY LINE OF SAID MAP.
7. THE NE'LY LINE OF PAR. 2 PER PTR APPEARS TO BE ADJACENT TO THE SW'LY LINE OF THE BOUNDARIES OF THE BECKWITH PARTITION AS PER MAP RECORDED IN BOOK 5, PAGE 50 OF MAPS. THE MAP IS ILLEGIBLE FOR ANY CALCULATIONS. EXCEPTION TO PAR. 2 PER PTR IN REFERENCE TO THE BOUNDARIES OF THE BECKWITH PARTITION DOES NOT APPLY.
8. BOUNDARY LINE AS SET FORTH IN EXHIBIT "C" OF THAT CERTAIN BOUNDARY LINE AGREEMENT, REC. MAY 20, 1988, AS DOCUMENT NO 88-070190, O.R.
9. PORTION OF LOT 83 CONDEMNED BY UNITED WATER CONSERVATION DISTRICT, IN THAT CERTAIN ORDER OF POSSESSION, CASE NO. [illegible], SUPERIOR COURT OF CALIFORNIA FOR THE COUNTY OF VENTURA, A CERTIFIED COPY OF WHICH WAS RECORDED JULY [illegible], 1986 AS DOCUMENT NO. [illegible], O.R., AND AS FURTHER DESCRIBED IN DEED RECORDED JUNE 22, 1994, AS DOCUMENT NO. 94-[illegible], O.R.
10. PORTION OF LOT 80 CONDEMNED BY UNITED WATER CONSERVATION DISTRICT, IN THAT CERTAIN ORDER OF POSSESSION, CASE NO. [illegible], SUPERIOR COURT OF CALIFORNIA FOR THE COUNTY OF VENTURA, A CERTIFIED COPY OF WHICH WAS REC. SEPTEMBER 3, 1986, AS DOCUMENT NO. 86-[illegible], O.R., AND AS FURTHER DESCRIBED IN DEED REC. JUNE 22, 1994, AS DOCUMENT 94-[illegible], O.R.
11. PORTION OF LOT 83 CONVEYED BY UNITED WATER CONSERVATION DISTRICT, BY DEED REC. JUNE 22, 1994, AS DOCUMENT NO. 94-106476, O.R.
12. SW'LY LINES OF 14 RS 63 ESTABLISHED PER RECORD PER SAID R/S
13. LOTS AND PARCELS ARE PLOTTED PER RECORD ON THIS MAP. EXACT POSITION OF THE BOUNDARY LINES OF SAID LOTS AND PARCELS CANNOT BE DETERMINED PER RECORD INFORMATION. NO GUARANTY, WARRANTY OR REPRESENTATION, EITHER EXPRESS OR IMPLIED, IS MADE AS TO THE ACCURACY OR THOROUGHNESS OF SUCH INFORMATION.



LINE TYPE LEGEND:

- CENTER LINES
- PROPERTY LINES FOR PO
- PROPOSED DEVELOPMENT AREA
- RECORD LOT LINES
- STREET RIGHT-OF-WAY LINES
- SEE SURVEYOR'S NOTES
- EASEMENT PER PTR
- SEE INGRESS/EGRESS NOTES
- FOUND SURVEY MON

SURVEY ABBREVIATIONS:

BK - BOOK
C/L - CENTER LINE
COR - CORNER
ELEV - ELEVATION
ESMT - EASEMENT
FB - FIELD BOOK
FD - FOUND
FT - FEET
INST - INSTRUMENT
LS - LAND SURVEYOR
MB - MAP BOOK
MON - MONUMENT
MR - MISCELLANEOUS RECORDS
NE'LY - NORTHEASTERLY (TYPICAL)
OR - OFFICIAL RECORDS
PG - PAGE
PL - PROPERTY LINE
PM - PUNCH MARK
PMB - PARCEL MAP BOOK
PROP - PROPERTY
REF - REFERENCE
RS - RECORD OF SURVEY
R/W - RIGHT OF WAY
SPK - SPIKE
SSDM - STANDARD SURVEY DISK MONUMENT
SSM - STANDARD SURVEY MONUMENT
(TYP) - TYPICAL
UNKN - UNKNOWN

DIAMOND WEST
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Phone: (818) 444-1800
Facsimile: (818) 223-9215
www.diamondwest.net

DATE	REVISION	BY

RECORD BOUNDARY MAP

SHOWING

POR. LOTS 37 TO 40, 64 TO 67, 80 TO 83 INCLUSIVE
RANCHO SANTA PAULA Y SATICOY
BK. A PG. 290 OF M.R.

COUNTY OF VENTURA
STATE OF CALIFORNIA

PREPARED BY OR UNDER THE DIRECTION OF:

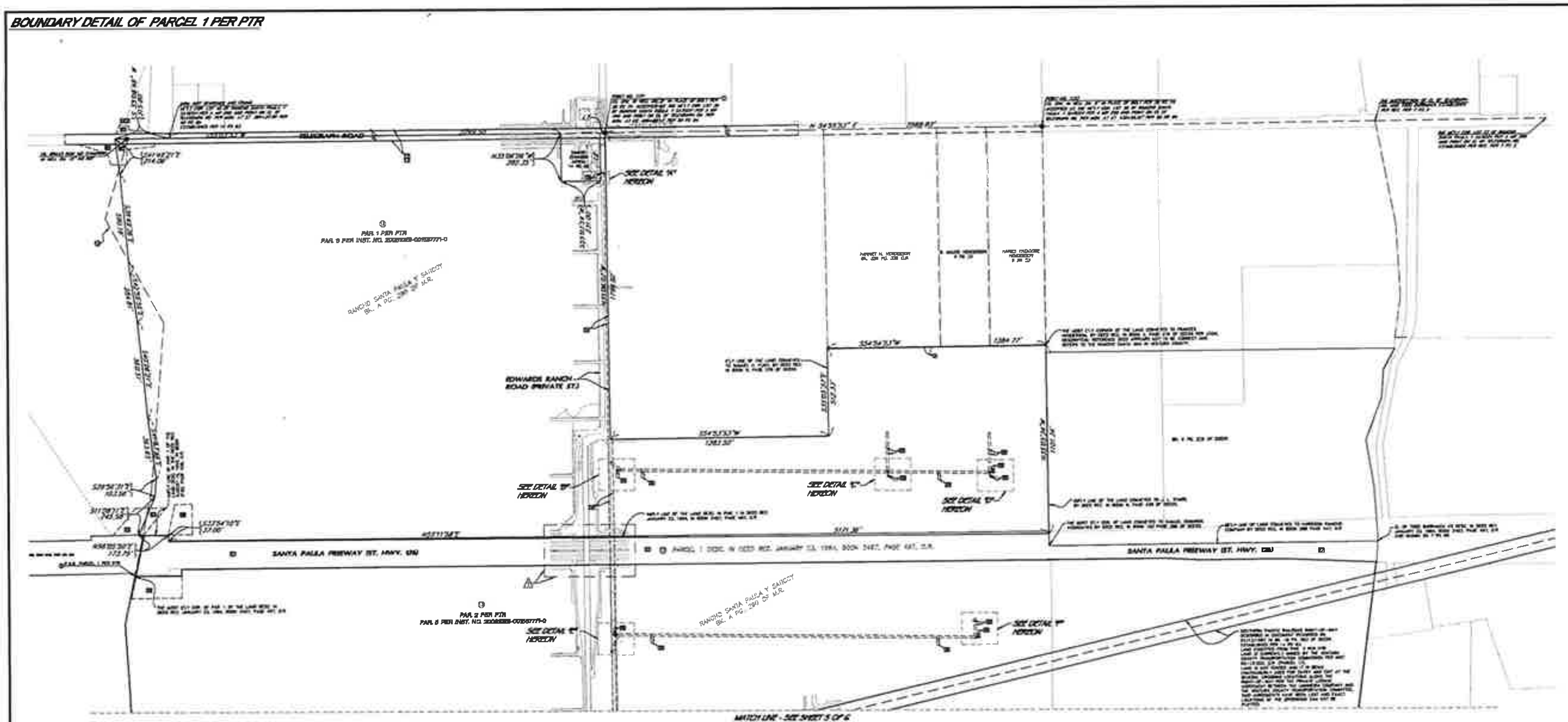
MICHAEL H. KAZNOCHA, P.L.S. 8330
04-01-14
DATE

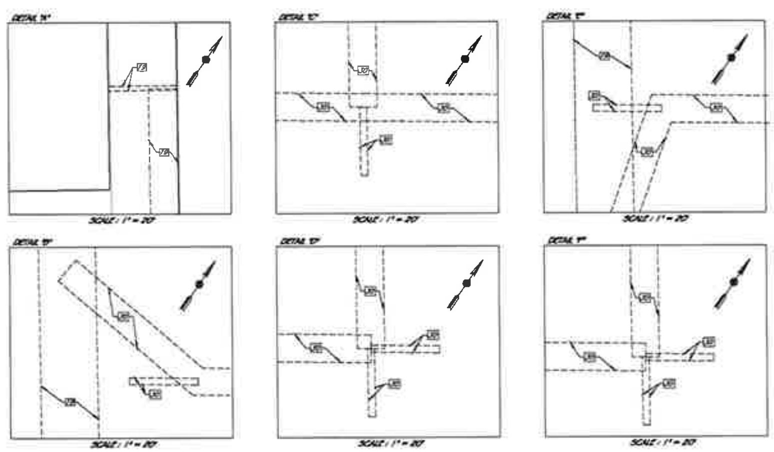
DATE OF SURVEY:	10/01/13
SURVEYED:	MHK,TCF
DRAWN:	MHK,TCF
CHECKED:	MHK
DRAWING SCALE:	1"=500'
DWI JOB NUMBER:	13-1008

SURVEY PREPARED FOR:
AGROMIN
BILL CAMARILLO
201 KINETIC DR.
OXNARD, CA 93030

SHEET NO.
3
OF 6 SHEETS

BOUNDARY DETAIL OF PARCEL 1 PER PTR





SURVEYOR'S NOTES:

#	NOTE
1	COMMON POINT OF INSERTION FOR 14 RS 63 AND 9 RS 33 FOR THIS SURVEY.
2	COMMON BEARING FOR 14 RS 63 AND 9 RS 33 FOR THIS SURVEY. DUE TO THE COMMON POINT OF INSERTION DESCRIBED UNDER NOTE 1, AND THE COMMON BEARING, THERE IS A GAP OF 1.77' BETWEEN RECORD OF SURVEYS.
3	NWLY COR. OF 14 RS 63 ESTABLISHED PER RECORD PER SAID R/S FROM NELY COR. OF LOT 43 OF RANCHO SANTA PAULA Y SATICOY PER A MR 290. LAND AS SHOWN ON 14 RS 63 PLOTTED FROM SAID NWLY COR. IN CLOCKWISE DIRECTION PER SAID RS WITH A MISCLOSURE ERROR AT THAT POINT AS N 77°26'38" E 3.55'.
4	P.O.B. PARCEL 1 PER PTR ESTABLISHED FROM EAST FROM NELY COR. OF LOT 43 OF RANCHO SANTA PAULA Y SATICOY PER A MR 290. PARCEL 1 PER PTR INSERTED INTO THE COORDINATE SYSTEM HOLDING THE COMMON BEARING DESCRIBED IN NOTE 2. LEGAL DESCRIPTION INTRODUCES THE MISCLOSURE ERROR AT THE P.O.B. OF N 25°12'21" W 81.06'.
5	P.O.B. PARCEL 2 PER PTR ESTABLISHED AT INTERSECTION OF THE WLY LINE OF 14 RS 63 WITH THE NLY LINE OF SAID PARCEL 2 PER PTR.
6	THE MOST ELY COR. OF 14 RS 63 ESTABLISHED PER REC. PER SAID MAP. POINT OF INSERTION FOR PAR. 2 PER PTR WITH A COMMON BEARING ALONG THE MOST ELY LINE OF SAID MAP.
7	THE NELY LINE OF PAR. 2 PER PTR APPEARS TO BE ADJACENT TO THE SWLY LINE OF THE BOUNDARIES OF THE BECKWITH PARTITION, AS PER MAP RECORDED IN BOOK 3, PAGE 30 OF MAPS. THE MAP IS ILLEGIBLE FOR ANY CALCULATIONS. EXCEPTION TO PAR. 2 PER PTR IN REFERENCE TO THE BOUNDARIES OF THE BECKWITH PARTITION DOES NOT APPLY.
8	BOUNDARY LINE AS SET FORTH IN EXHIBIT "C" OF THAT CERTAIN BOUNDARY LINE AGREEMENT, REC. MAY 20, 1988, AS DOCUMENT NO. 88-070180, O.R.
9	PORTION OF LOT 83 CONDEMNED BY UNITED WATER CONSERVATION DISTRICT, IN THAT CERTAIN ORDER OF POSSESSION, CASE NO. 102053, SUPERIOR COURT OF CALIFORNIA FOR THE COUNTY OF VENTURA, A CERTIFIED COPY OF WHICH WAS RECORDED JULY 26, 1988, AS DOCUMENT NO. 88-120120, O.R.; AND AS FURTHER DESCRIBED IN DEED RECORDED JUNE 20, 1994, AS DOCUMENT NO. 94-108476, O.R.
10	PORTION OF LOT 80 CONDEMNED BY UNITED WATER CONSERVATION DISTRICT, IN THAT CERTAIN ORDER OF POSSESSION, CASE NO. 106578, SUPERIOR COURT OF CALIFORNIA FOR THE COUNTY OF VENTURA, A CERTIFIED COPY OF WHICH WAS REC. SEPTEMBER 5, 1988, AS DOCUMENT NO. 88-138873, O.R.; AND AS FURTHER DESCRIBED IN DEED REC. JUNE 20, 1994, AS DOCUMENT 94-108477, O.R.
11	PORTION OF LOT 83 CONVEYED BY UNITED WATER CONSERVATION DISTRICT, BY DEED REC. JUNE 20, 1994, AS DOCUMENT NO. 94-108476, O.R.
12	SWLY LINES OF 14 RS 63 ESTABLISHED PER RECORD PER SAID R/S
13	LOTS AND PARCELS ARE PLOTTED PER RECORD ON THIS MAP. EXACT POSITION OF THE BOUNDARY LINES OF SAID LOTS AND PARCELS CANNOT BE DETERMINED PER RECORD INFORMATION. NO GUARANTY, WARRANTY OR REPRESENTATION, EITHER EXPRESS OR IMPLIED, IS MADE AS TO THE ACCURACY OR THOROUGHNESS OF SUCH INFORMATION.

INGRESS/EGRESS NOTES:

THE DEVELOPMENT AREA WILL BE ACCESSED FROM THE INTERSECTION OF TELEGRAPH ROAD AND OLIVE ROAD (BOTH PUBLIC RIGHT-OF-WAYS), GOING SOUTHERLY ALONG EDWARDS RANCH ROAD (PRIVATE ROAD), CROSSING SANTA PAULA FREEWAY (STATE HIGHWAY 126) UTILIZING AN OVERPASS, AND CROSSING AT THE SOUTHERN PACIFIC RAILROAD RIGHT-OF-WAY, AS SHOWN ON THIS MAP.

1. THE CROSSING VIA THE CALTRANS OVERPASS, BRIDGE NO. 52-249, AS SHOWN ON CALTRANS AS-BUILT PLANS 07-034104, DOC. NO. 700001111, IS NOT RESTRICTED AS THE BRIDGE WAS BUILT FOR PUBLIC PURPOSES, ALLOWING FOR VEHICULAR AND PEDESTRIAN RIGHTS OF INGRESS AND EGRESS.

2. THE CROSSING VIA THE SOUTHERN PACIFIC RAILROAD RIGHT-OF-WAY HAS BEEN GRANTED BY THE PRIVATE LICENSE AGREEMENT BETWEEN THE LIMONEIRA COMPANY AND THE VENTURA COUNTY TRANSPORTATION COMMITTEE.

LINE TYPE LEGEND:

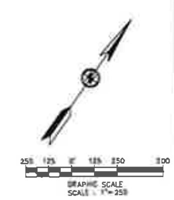
- CENTER LINES
- PROPERTY LINES FOR PRO
- PROPOSED DEVELOPMENT AREA
- RECORD LOT LINES
- STREET RIGHT-OF-WAY LINES
- SEE SURVEYOR'S NOTES
- EASEMENT PER PTR
- SEE INGRESS/EGRESS NOTES
- FOUND SURVEY MON.

LINE DATA

LINE	BEARING	DISTANCE
L1	[illegible]	[illegible]
L2	[illegible]	[illegible]

SURVEY ABBREVIATIONS:

BK - BOOK
C/L - CENTER LINE
COR - CORNER
ELEV. - ELEVATION
ESMT - EASEMENT
FB - FIELD BOOK
FD - FOUND
FT. - FEET
INST. - INSTRUMENT
LS - LAND SURVEYOR
M.B. - MAP BOOK
MON. - MONUMENT
M.R. - MISCELLANEOUS RECORDS
NE'LY - NORTHEASTERLY (TYPICAL)
O.R. - OFFICIAL RECORDS
PG - PAGE
PL - PROPERTY LINE
P.M. - PUNCH MARK
P.M.B. - PARCEL MAP BOOK
PROP. - PROPERTY
REF. - REFERENCE
RS - RECORD OF SURVEY
R/W - RIGHT OF WAY
SPK - SPIKE
S.S.D.M. - STANDARD SURVEY DISK MONUMENT
S.S.M. - STANDARD SURVEY MONUMENT
(TYP) - TYPICAL
UNKN - UNKNOWN



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Calabasas, California 91302
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Facsimile: (818) 323-9215
www.diamondwest.net

DATE | REVISION | BY

RECORD BOUNDARY MAP

SHOWING

POR. LOTS 37 TO 40, 64 TO 67, 80 TO 83 INCLUSIVE RANCHO SANTA PAULA Y SATICOY BK. A PG. 290 OF M.R.

COUNTY OF VENTURA
STATE OF CALIFORNIA

PREPARED BY OR UNDER THE DIRECTION OF:

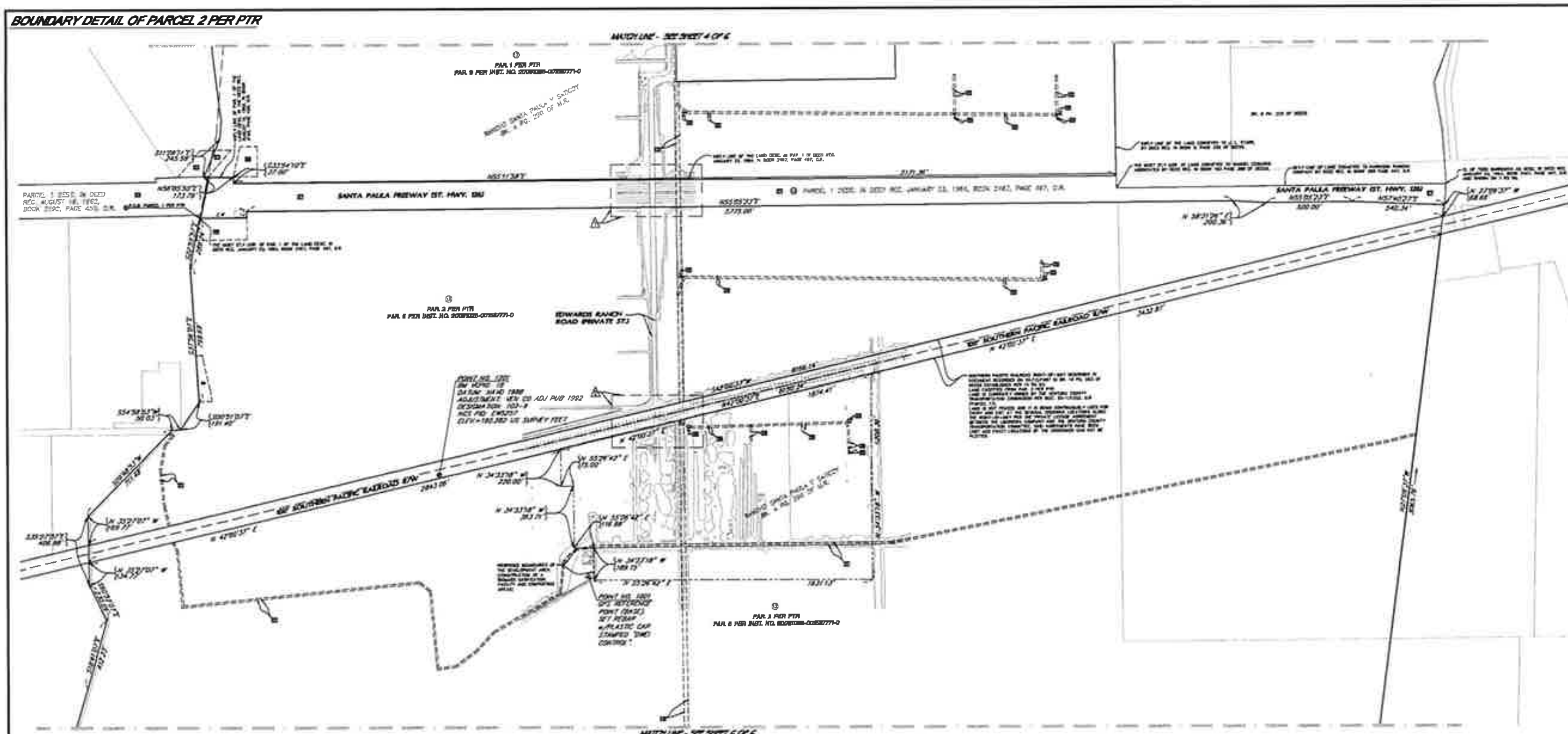
MICHAEL H. KAZNOCHA, P.L.S. 8830
04-01-14
DATE

DATE OF SURVEY:	10/31/13
SURVEYED:	MHK,TCF
DRAWN:	MHK,TCF
CHECKED:	MHK
DRAWING SCALE:	1"=250'
DWG JOB NUMBER:	13-1008

SURVEY PREPARED FOR:
AGROMIN
BILL CAMARILLO
201 KINETIC DR.
OXNARD, CA 93030

SHEET NO.
4
OF 6 SHEETS

BOUNDARY DETAIL OF PARCEL 2 PER PTR



SURVEYOR'S NOTES:

ID	NOTE
1	COMMON POINT OF INSERTION FOR 14 RS 63 AND 9 RS 22 FOR THIS SURVEY.
2	COMMON BEARING FOR 14 RS 63 AND 9 RS 22 FOR THIS SURVEY. DUE TO THE COMMON POINT OF INSERTION DESCRIBED UNDER NOTE 1, AND THE COMMON BEARING, THERE IS A GAP OF 1.77' BETWEEN RECORD OF SURVEYS.
3	NW'LY COR. OF 14 RS 63 ESTABLISHED PER RECORD PER SAID R/S FROM NE'LY COR. OF LOT 40 OF RANCHO SANTA PAULA Y SATICOY PER A MR 290. LAND AS SHOWN ON 14 RS 63 PLOTTED FROM SAID NW'LY COR. IN CLOCKWISE DIRECTION PER SAID RS WITH A MISCLOSURE ERROR AT THAT POINT AS N 77°26'38" E 2.53'.
4	P.O.B. PARCEL 1 PER PTR ESTABLISHED FROM EAST FROM NE'LY COR. OF LOT 40 OF RANCHO SANTA PAULA Y SATICOY PER A MR 290. PARCEL 1 PER PTR INSERTED INTO THE COORDINATE SYSTEM HOLDING THE COMMON BEARING DESCRIBED IN NOTE 2. LEGAL DESCRIPTION INTRODUCES THE MISCLOSURE ERROR AT THE P.O.B. OF N 35°12'21" W 81.08'.
5	P.O.B. PARCEL 2 PER PTR ESTABLISHED AT INTERSECTION OF THE W'LY LINE OF 14 RS 63 WITH THE N'LY LINE OF SAID PARCEL 2 PER PTR.
6	THE MOST E'LY COR. OF 14 RS 63 ESTABLISHED PER REC. PER SAID MAP. POINT OF INSERTION FOR PAR. 3 PER PTR WITH A COMMON BEARING ALONG THE MOST E'LY LINE OF SAID MAP.
7	THE NE'LY LINE OF PAR. 2 PER PTR APPEARS TO BE ADJACENT TO THE SW'LY LINE OF THE BOUNDARIES OF THE BECKWITH PARTITION, AS PER MAP RECORDED IN BOOK 5, PAGE 30 OF MAPS. THE MAP IS ILLEGIBLE FOR ANY CALCULATIONS. EXCEPTION TO PAR. 2 PER PTR IN REFERENCE TO THE BOUNDARIES OF THE BECKWITH PARTITION DOES NOT APPLY.
8	BOUNDARY LINE AS SET FORTH IN EXHIBIT "C" OF THAT CERTAIN BOUNDARY LINE AGREEMENT, REC. MAY 20, 1988, AS DOCUMENT NO. 88-070190, O.R.
9	PORTION OF LOT 83 CONDEMNED BY UNITED WATER CONSERVATION DISTRICT, IN THAT CERTAIN ORDER OF POSSESSION, CASE NO. [illegible], SUPERIOR COURT OF CALIFORNIA FOR THE COUNTY OF VENTURA, A CERTIFIED COPY OF WHICH WAS RECORDED JULY 25, 1988, AS DOCUMENT NO. 88-[illegible], O.R., AND AS FURTHER DESCRIBED IN DEED RECORDED JUNE 22, 1994, AS DOCUMENT NO. 94-[illegible], O.R.
10	PORTION OF LOT 80 CONDEMNED BY UNITED WATER CONSERVATION DISTRICT, IN THAT CERTAIN ORDER OF POSSESSION, CASE NO. [illegible], SUPERIOR COURT OF CALIFORNIA FOR THE COUNTY OF VENTURA, A CERTIFIED COPY OF WHICH WAS REC. SEPTEMBER 5, 1988, AS DOCUMENT NO. 88-[illegible], O.R., AND AS FURTHER DESCRIBED IN DEED REC. JUNE 22, 1994, AS DOCUMENT 94-[illegible], O.R.
11	PORTION OF LOT 83 CONVEYED BY UNITED WATER CONSERVATION DISTRICT, BY DEED REC. JUNE 22, 1994, AS DOCUMENT NO. 94-[illegible], O.R.
12	SW'LY LINES OF 14 RS 63 ESTABLISHED PER RECORD PER SAID R/S.
13	LOTS AND PARCELS ARE PLOTTED PER RECORD ON THIS MAP. EXACT POSITION OF THE BOUNDARY LINES OF SAID LOTS AND PARCELS CANNOT BE DETERMINED PER RECORD INFORMATION. NO GUARANTY, WARRANTY OR REPRESENTATION, EITHER EXPRESS OR IMPLIED, IS MADE AS TO THE ACCURACY OR THOROUGHNESS OF SUCH INFORMATION.

INGRESS/EGRESS NOTES:

THE DEVELOPMENT AREA WILL BE ACCESSED FROM THE INTERSECTION OF TELEGRAPH ROAD AND OLIVE ROAD (BOTH PUBLIC RIGHT-OF-WAYS), GOING SOUTHERLY ALONG EDWARDS RANCH ROAD (PRIVATE ROAD), CROSSING SANTA PAULA FREEWAY (STATE HIGHWAY 126) UTILIZING AN OVERPASS AND CROSSING AT THE SOUTHERN PACIFIC RAILROAD RIGHT-OF-WAY, AS SHOWN ON THIS MAP.

1. THE CROSSING VIA THE CALTRANS OVERPASS, BRIDGE NO. 52-248, AS SHOWN ON CALTRANS AS-BUILT PLANS [illegible], IS NOT RESTRICTED AS THE BRIDGE WAS BUILT FOR PUBLIC PURPOSES, ALLOWING FOR VEHICULAR AND PEDESTRIAN RIGHTS OF INGRESS AND EGRESS.

2. THE CROSSING VIA THE SOUTHERN PACIFIC RAILROAD RIGHT-OF-WAY HAS BEEN GRANTED BY THE PRIVATE LICENSE AGREEMENT BETWEEN THE LIMONEIRA COMPANY AND THE VENTURA COUNTY TRANSPORTATION COMMITTEE.

SURVEY ABBREVIATIONS:

BK - BOOK
C/L - CENTER LINE
COR - CORNER
ELEV - ELEVATION
ESMT - EASEMENT
FB - FIELD BOOK
FD - FOUND
FT - FEET
INST - INSTRUMENT
LS - LAND SURVEYOR
M.B. - MAP BOOK
MON - MONUMENT
M.R. - MISCELLANEOUS RECORDS
NE'LY - NORTHEASTERLY (TYPICAL)
O.R. - OFFICIAL RECORDS
PG - PAGE
PL - PROPERTY LINE
P.M. - PUNCH MARK
P.M.B. - PARCEL MAP BOOK
PROP. - PROPERTY
REF. - REFERENCE
RS - RECORD OF SURVEY
R/W - RIGHT OF WAY
SPK - SPIKE
S.S.D.M. - STANDARD SURVEY DISK MONUMENT
S.S.M. - STANDARD SURVEY MONUMENT
(TYP) - TYPICAL
UNKN - UNKNOWN

LINE TYPE LEGEND:

CENTER LINES
PROPERTY LINES FOR PIQ
PROPOSED DEVELOPMENT AREA
RECORD LOT LINES
STREET RIGHT-OF-WAY LINES
SEE SURVEYOR'S NOTES
EASEMENT PER PTR
SEE INGRESS/EGRESS NOTES
FOUND BENCHMARK
SET SURVEY MONUMENT AS NOTED

LINE DATA

LINE	BEARING	DISTANCE
23	N 34°34'37" W	27.00'
24	N 33°00'23" E	274.84'

250 125 0 125 250 500
GRAPHIC SCALE
SCALE : 1" = 250'

RECORD BOUNDARY MAP

SHOWING

POR. LOTS 37 TO 40, 64 TO 67, 80 TO 83 INCLUSIVE
RANCHO SANTA PAULA Y SATCOY
BK. A PG. 290 OF M.R.

COUNTY OF VENTURA
STATE OF CALIFORNIA

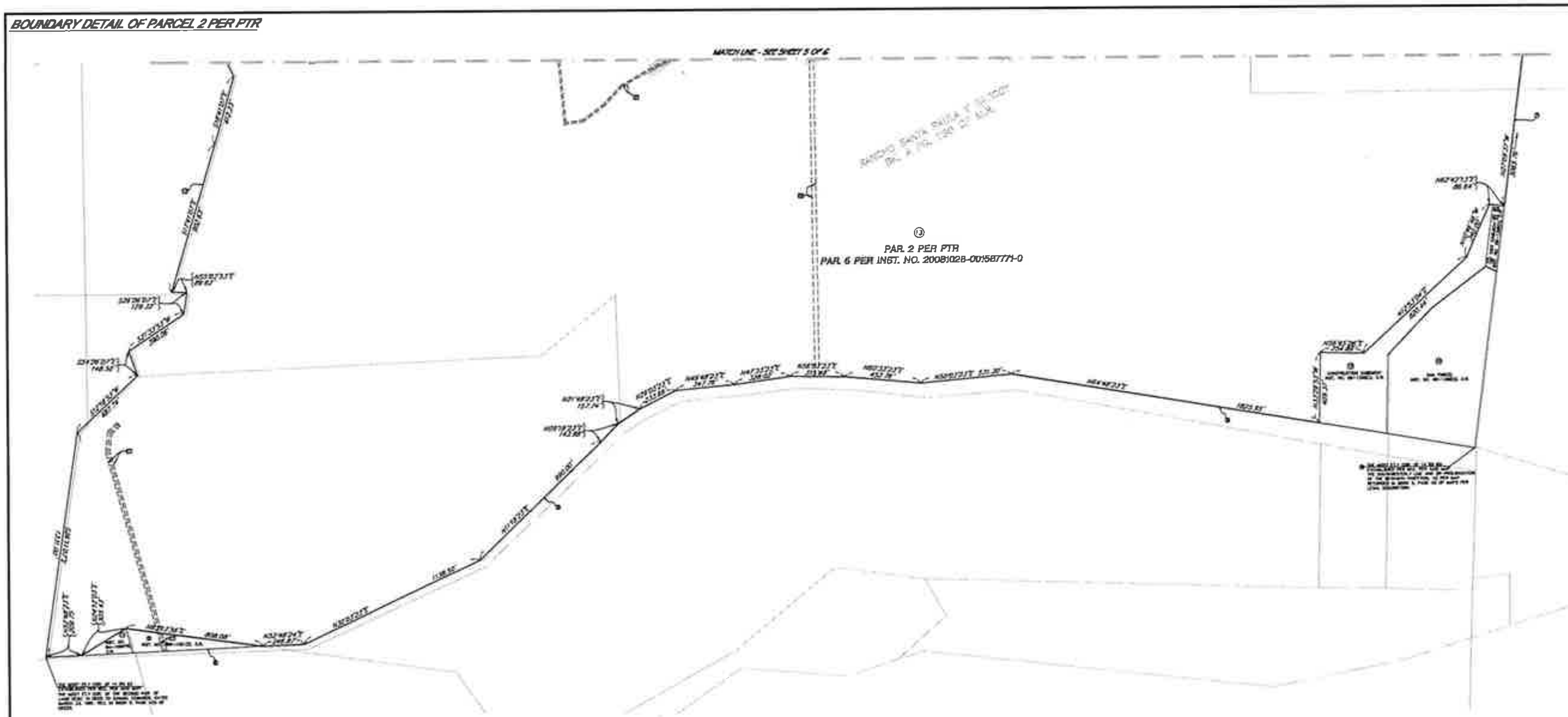
PREPARED BY OR UNDER THE DIRECTION OF:

MICHAEL H. KAZNOCHA, P.L.S. [illegible]
04-01-14
DATE

DATE OF SURVEY:	10/01/13
SURVEYED:	MHK,TCF
DRAWN:	MHK,TCF
CHECKED:	MHK
DRAWING SCALE:	1"=250'
DWI JOB NUMBER:	13-1008

SURVEY PREPARED FOR:
AGROMIN
BILL CAMARILLO
201 KINETIC DR.
OXNARD, CA 93033

SHEET NO.
5
OF 6 SHEETS



SURVEYOR'S NOTES:

①	NOTE
1	COMMON POINT OF INSERTION FOR 14 RS 63 AND 9 RS 23 FOR THIS SURVEY.
2	COMMON BEARING FOR 14 RS 63 AND 9 RS 23 FOR THIS SURVEY. DUE TO THE COMMON POINT OF INSERTION DESCRIBED UNDER NOTE 1, AND THE COMMON BEARING, THERE IS A GAP OF 1.77' BETWEEN RECORD OF SURVEYS.
3	NW'LY COR. OF 14 RS 63 ESTABLISHED PER RECORD PER SAID R/S FROM NE'LY COR. OF LOT 40 OF RANCHO SANTA PAULA Y SATICOY PER A MR 290. LAND AS SHOWN ON 14 RS 63 PLOTTED FROM SAID NW'LY COR. IN CLOCKWISE DIRECTION PER SAID RS WITH A MISCLOSURE ERROR AT THAT POINT AS N 77°29'38" E 3.55'.
4	P.O.B. PARCEL 1 PER PTR ESTABLISHED FROM EAST FROM NE'LY COR. OF LOT 40 OF RANCHO SANTA PAULA Y SATICOY PER A MR 290. PARCEL 1 PER PTR INSERTED INTO THE COORDINATE SYSTEM HOLDING THE COMMON BEARING DESCRIBED IN NOTE 2. LEGAL DESCRIPTION INTRODUCES THE MISCLOSURE ERROR AT THE P.O.B. OF N 35°12'21" W 81.06'.
5	P.O.B. PARCEL 2 PER PTR ESTABLISHED AT INTERSECTION OF THE W'LY LINE OF 14 RS 65 WITH THE N'LY LINE OF SAID PARCEL 2 PER PTR.
6	THE MOST E'LY COR. OF 14 RS 63 ESTABLISHED PER REC. PER SAID MAP. POINT OF INSERTION FOR PAR. 2 PER PTR WITH A COMMON BEARING ALONG THE MOST E'LY LINE OF SAID MAP.
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8	BOUNDARY LINE AS SET FORTH IN EXHIBIT "C" OF THAT CERTAIN BOUNDARY LINE AGREEMENT, REC. MAY 20, 1988, AS DOCUMENT NO. 88-070180, O.R.
9	PORTION OF LOT 83 CONDEMNED BY UNITED WATER CONSERVATION DISTRICT, IN THAT CERTAIN ORDER OF POSSESSION, CASE NO. 102062, SUPERIOR COURT OF CALIFORNIA FOR THE COUNTY OF VENTURA, A CERTIFIED COPY OF WHICH WAS RECORDED JULY 29, 1988, AS DOCUMENT NO. 88-109132, O.R.; AND AS FURTHER DESCRIBED IN DEED RECORDED JUNE 22, 1994, AS DOCUMENT NO. 94-108474, O.R.
10	PORTION OF LOT 80 CONDEMNED BY UNITED WATER CONSERVATION DISTRICT, IN THAT CERTAIN ORDER OF POSSESSION, CASE NO. 106570, SUPERIOR COURT OF CALIFORNIA FOR THE COUNTY OF VENTURA, A CERTIFIED COPY OF WHICH WAS REC. SEPTEMBER 5, 1988, AS DOCUMENT NO. 88-128823, O.R.; AND AS FURTHER DESCRIBED IN DEED REC. JUNE 22, 1994, AS DOCUMENT 94-108477, O.R.
11	PORTION OF LOT 83 CONVEYED BY UNITED WATER CONSERVATION DISTRICT, BY DEED REC. JUNE 22, 1994, AS DOCUMENT NO. 94-108476, O.R.
12	SW'LY LINES OF 14 RS 63 ESTABLISHED PER RECORD PER SAID R/S.
13	LOTS AND PARCELS ARE PLOTTED PER RECORD ON THIS MAP. EXACT POSITION OF THE BOUNDARY LINES OF SAID LOTS AND PARCELS CANNOT BE DETERMINED PER RECORD INFORMATION. NO GUARANTY, WARRANTY OR REPRESENTATION, EITHER EXPRESS OR IMPLIED, IS MADE AS TO THE ACCURACY OR THOROUGHNESS OF SUCH INFORMATION.

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△1 THE CROSSING VIA THE CALTRANS OVERPASS, BRIDGE NO. 52-249, AS SHOWN ON CALTRANS AS-BUILT PLANS 07-324104, DOC NO. 700001111 IS NOT RESTRICTED AS THE BRIDGE WAS BUILT FOR PUBLIC PURPOSES, ALLOWING FOR VEHICULAR AND PEDESTRIAN RIGHTS OF INGRESS AND EGRESS.

△2 THE CROSSING VIA THE SOUTHERN PACIFIC RAILROAD RIGHT-OF-WAY HAS BEEN GRANTED BY THE PRIVATE LICENSE AGREEMENT BETWEEN THE LIMONEIRA COMPANY AND THE VENTURA COUNTY TRANSPORTATION COMMITTEE.

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M.R. - MISCELLANEOUS RECORDS
NE'LY - NORTHEASTERLY (TYPICAL)
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SPK - SPIKE
S.S.D.M. - STANDARD SURVEY DISK MONUMENT
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(TYP) - TYPICAL
UNKN - UNKNOWN

LINE TYPE LEGEND:

CENTER LINES
PROPERTY LINES FOR PID
PROPOSED DEVELOPMENT AREA
RECORD LOT LINES
STREET RIGHT-OF-WAY LINES
① SEE SURVEYOR'S NOTES
E1 EASEMENT PER PTR
△ SEE INGRESS/EGRESS NOTES

250 125 0 125 250 500
GRAPHIC SCALE
SCALE: 1"=250'

DIAMOND WEST
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Calabasas, California 91302
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Facsimile: (818) 223-9315
www.diamondwest.net

REVISION | DATE | BY

RECORD BOUNDARY MAP

SHOWING

POR. LOTS 37 TO 40, 64 TO 67, 80 TO 83 INCLUSIVE
RANCHO SANTA PAULA Y SATICOY
BK. A PG. 290 OF M.R.

COUNTY OF VENTURA
STATE OF CALIFORNIA

PREPARED BY OR UNDER THE DIRECTION OF:

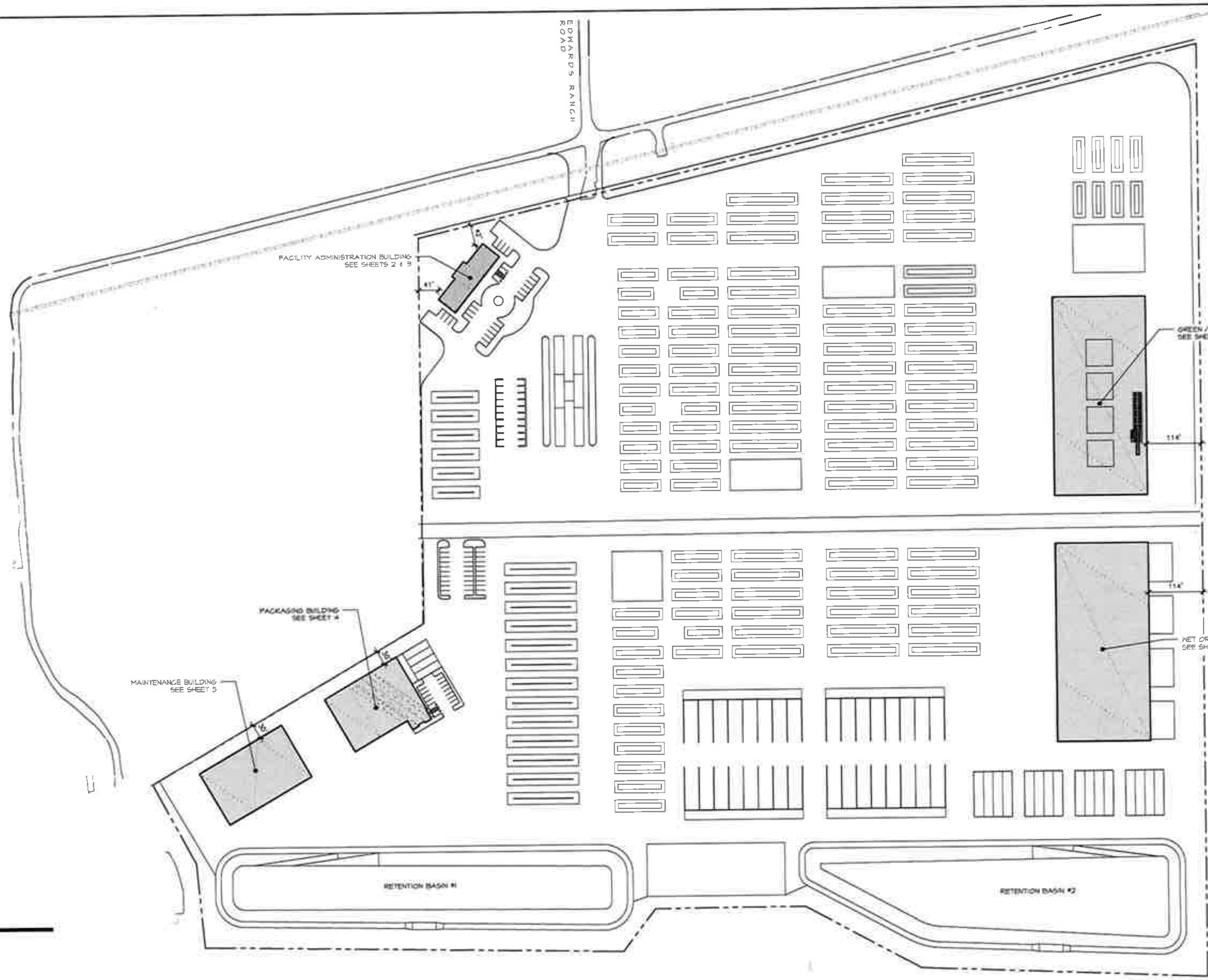
MICHAEL H. KAZNOCHA, P.L.S. 8330

DATE

DATE OF SURVEY:	10/01/13
SURVEYED:	MHK,TCF
DRAWN:	MHK,TCF
CHECKED:	MHK
DRAWING SCALE:	1"=250'
DWD. JOB NUMBER:	13-1006

SURVEY PREPARED FOR:
AGROMIN
BILL CAMARILLO
201 KINETIC DR.
OXNARD, CA 93030

SHEET NO.
6
OF 6 SHEETS



SITE PLAN

SCALE: 1" : 100'-0"

AGROMIN-LIMONEIRA

UNINCORPORATED VENTURA COUNTY

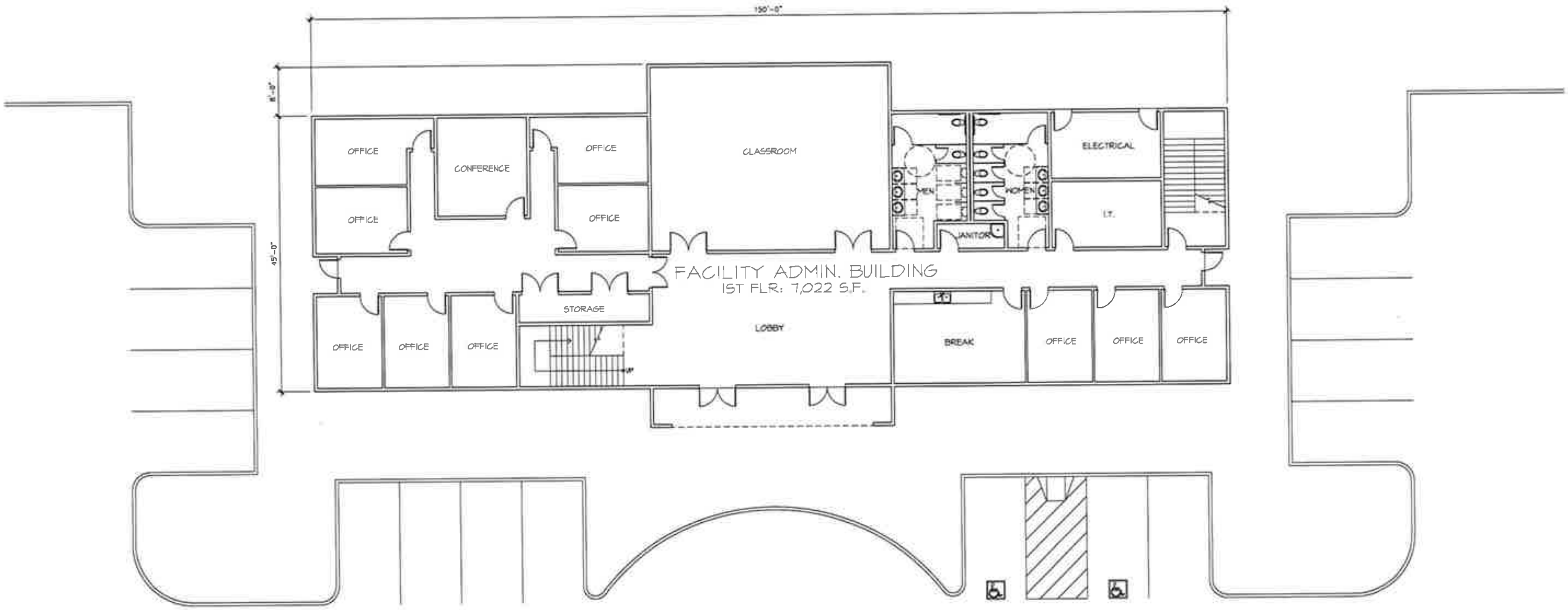
MARCH 21, 2017

RASMUSSEN & ASSOCIATES

Architecture
Planning
Interiors

21 S. CALIFORNIA STREET
VENTURA, CA 93001
VOICE: (805) 648-1234
CONTACT: JAY LOMAGNO
JLomagno@RA-Arch.com

1



FACILITY ADMINISTRATION BUILDING - FIRST FLOOR

SCALE: 1/8" : 1'-0"

AGROMIN-LIMONEIRA

UNINCORPORATED VENTURA COUNTY

MARCH 21, 2017

RASMUSSEN & ASSOCIATES
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Interiors
21 S. CALIFORNIA STREET
VENTURA, CA 93001
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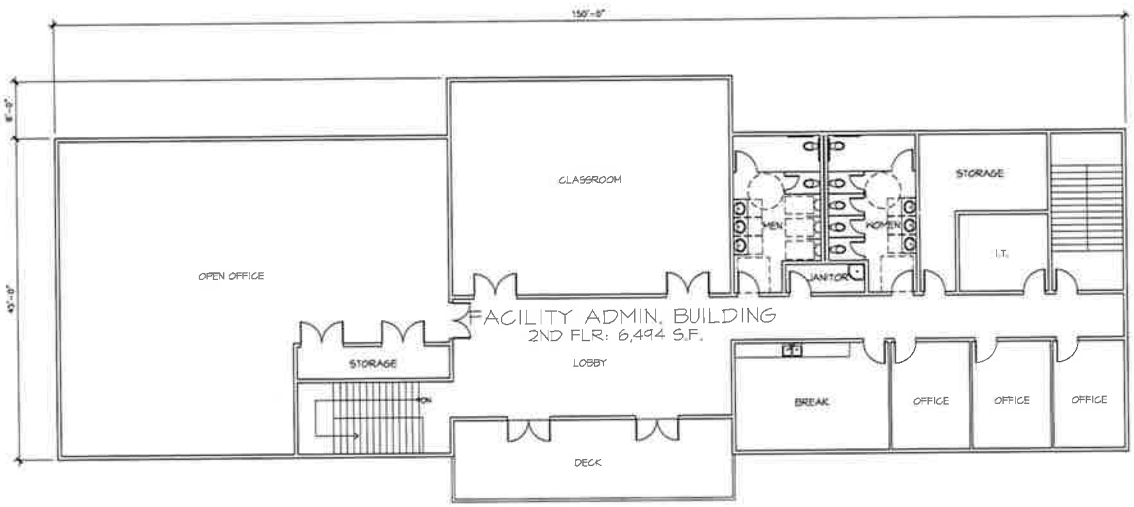

FACILITY ADMINISTRATION BUILDING - SECOND FLOOR

SCALE: 1/8" : 1'-0"

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MARCH 21, 2017

RASMUSSEN & ASSOCIATES
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Planning
Interiors

21 S. CALIFORNIA STREET
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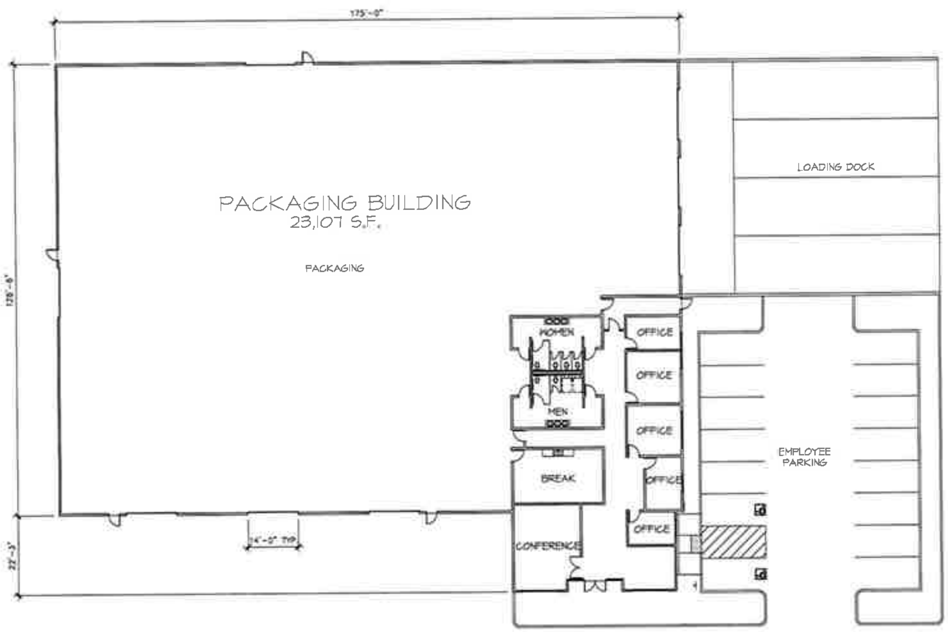
VOICE: (805) 648-1234
CONTACT: JAY LOMONO

3



PACKAGING BUILDING - FLOOR PLAN

SCALE: 1/16" : 1'-0"

AGROMIN-LIMONEIRA

UNINCORPORATED VENTURA COUNTY

MARCH 21, 2017

RASMUSSEN & ASSOCIATES

Architecture
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Interiors

21 S. CALIFORNIA STREET
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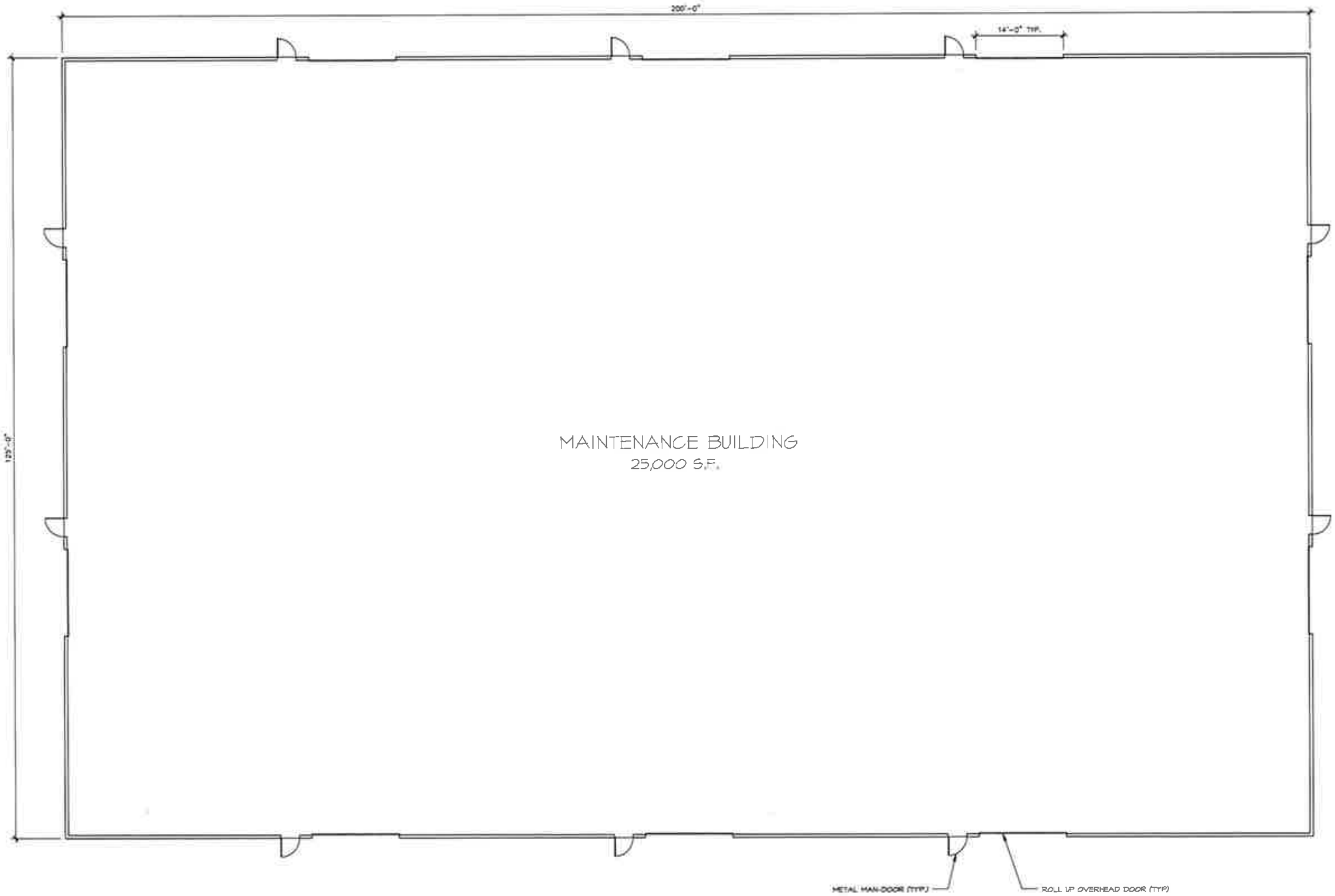
VOICE: (805) 648-1234
CONTACT: JAY LOMAGNO
JLomagno@RA-Arch.com



MAINTENANCE BUILDING - FLOOR PLAN

SCALE: 1/8" : 1'-0"

AGROMIN-LIMONEIRA

UNINCORPORATED VENTURA COUNTY

MARCH 21, 2017

RASMUSSEN & ASSOCIATES
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VENTURA, CA 93001
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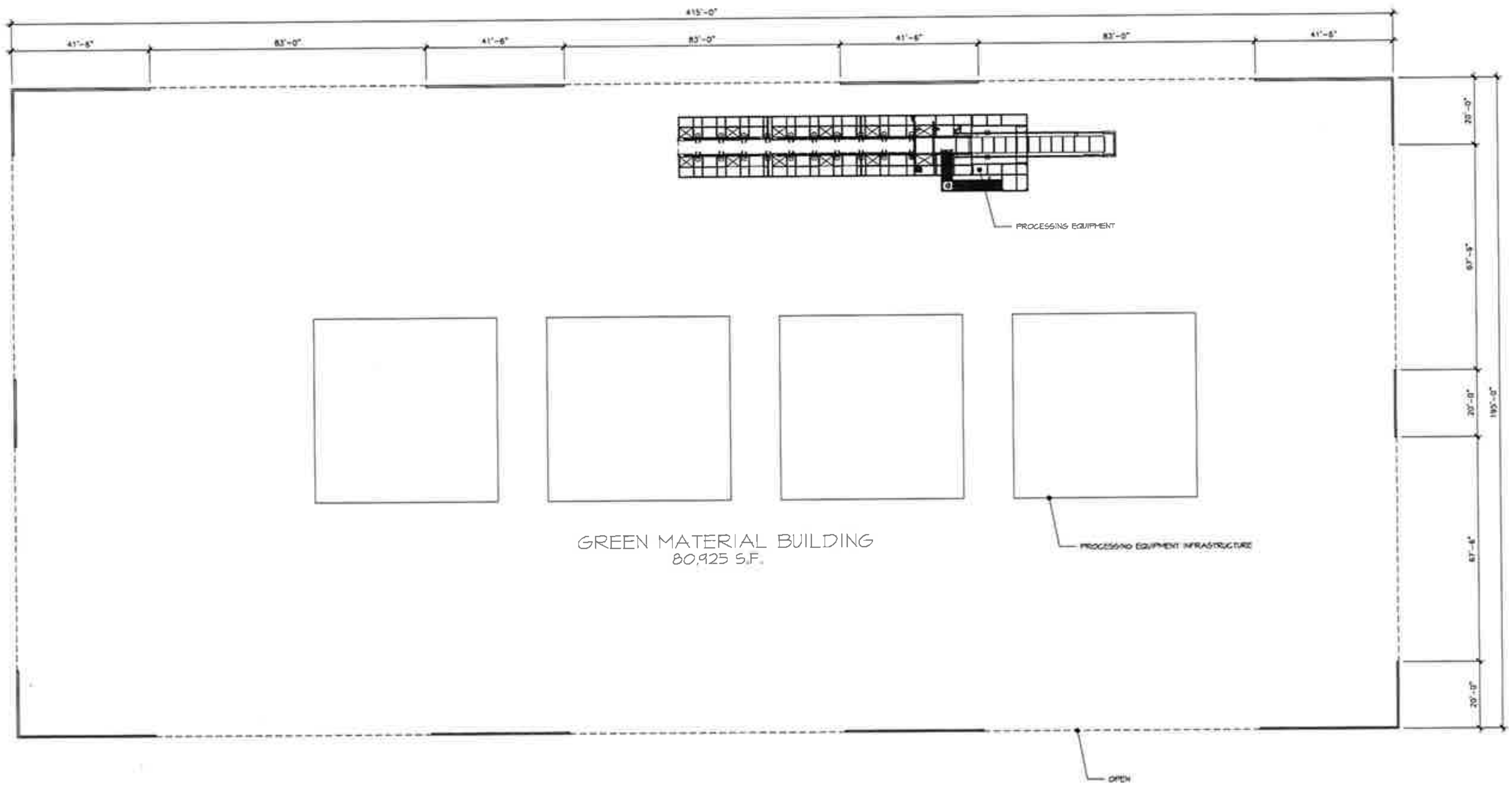


GREEN MATERIAL BUILDING - FLOOR PLAN

SCALE: 1/16" : 1'-0"

AGROMIN-LIMONEIRA

UNINCORPORATED VENTURA COUNTY

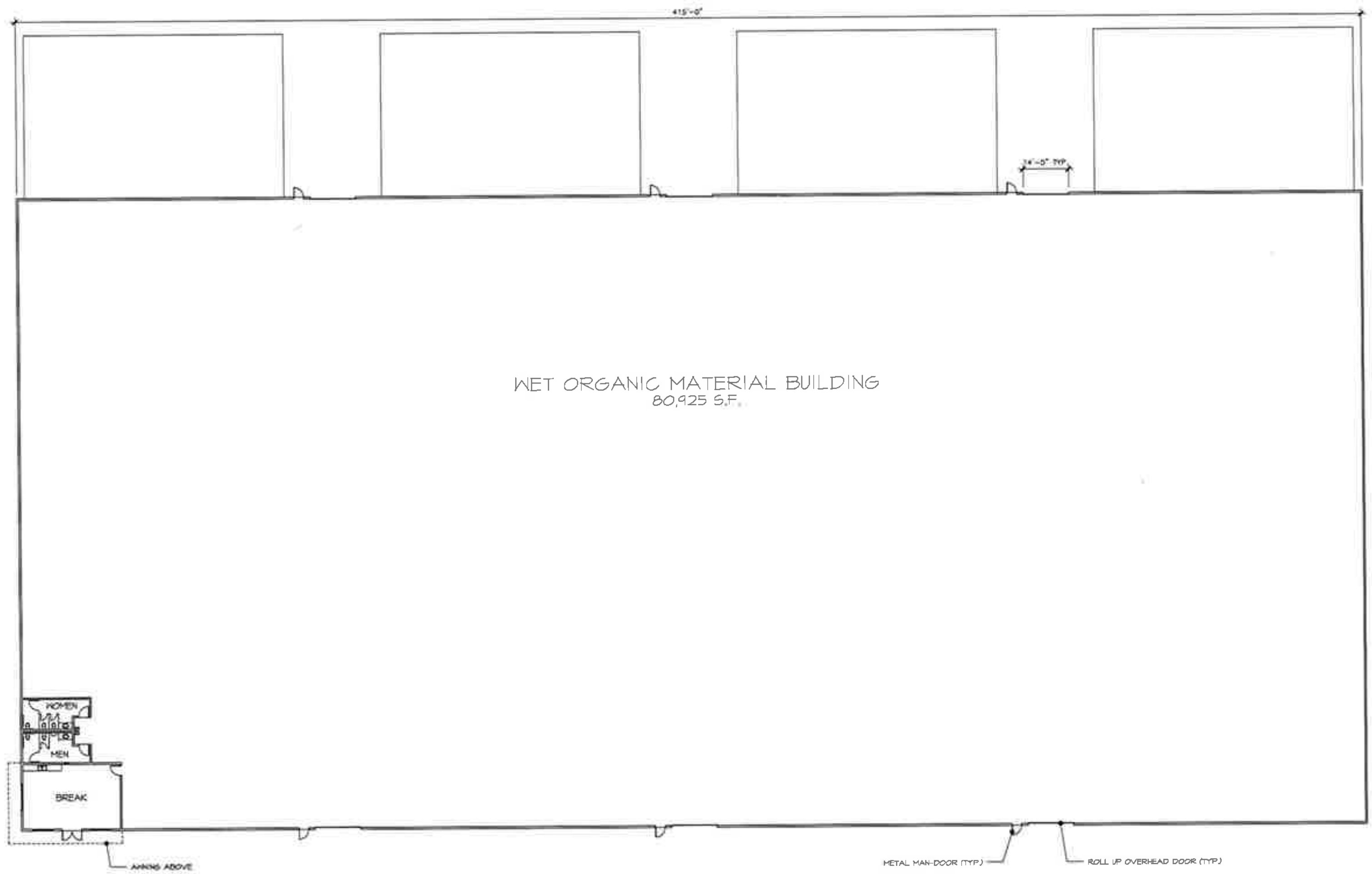
MARCH 21, 2017

RASMUSSEN & ASSOCIATES

Architecture
Planning
Interiors

21 S. CALIFORNIA STREET
VENTURA, CA 93001
VOICE: (805) 648-1234
CONTACT: JAY LOMAGNO
JLomagno@RA-Arch.com

6



WET ORGANIC MATERIAL BUILDING - FLOOR PLAN

SCALE: 1/16" = 1'-0"

AGROMIN-LIMONEIRA

UNINCORPORATED VENTURA COUNTY

MARCH 21, 2017

RASMUSSEN & ASSOCIATES
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Interiors
21 S. CALIFORNIA STREET
VENTURA, CA 93001
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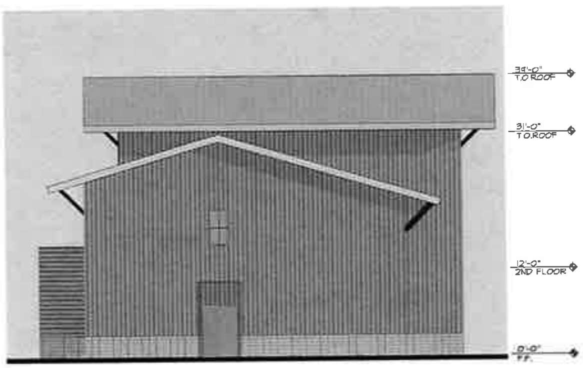
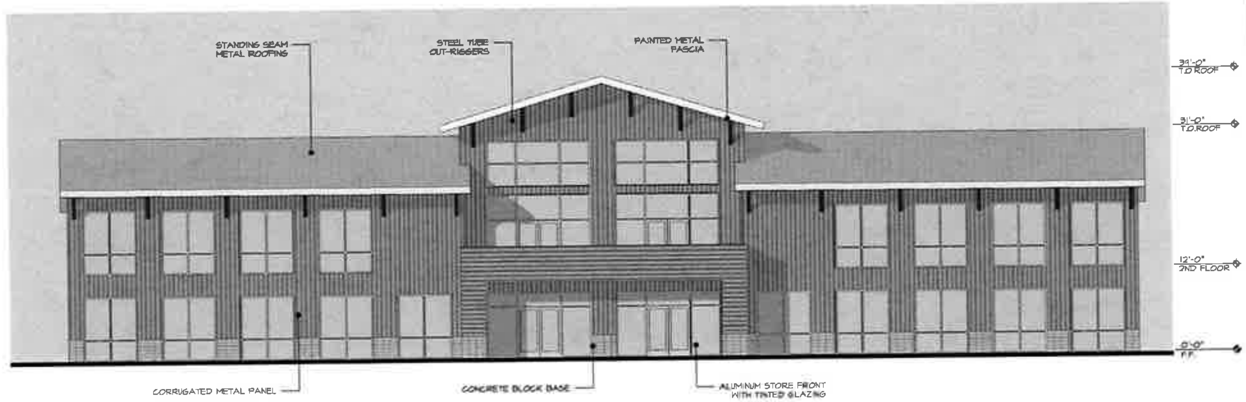
CONTACT: JAY LOMAGNO
JLomagno@RA-Arch.com



NORTH ELEVATION
SCALE 1/8" : 1'-0"
0 5 10 20



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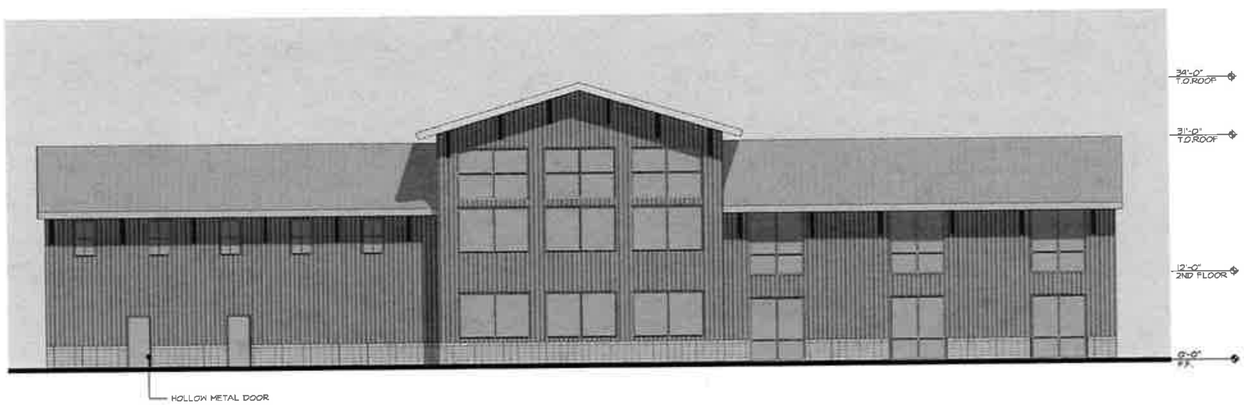

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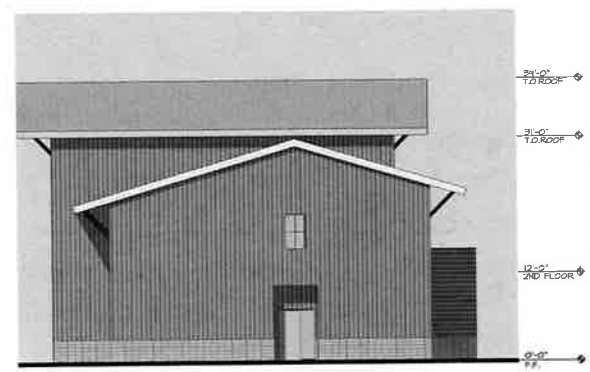

SOUTH ELEVATION
SCALE 1/8" : 1'-0"
0 5 10 20

EXTERIOR ELEVATIONS - FACILITY ADMINISTRATION BUILDING
SCALE: 1/8" : 1'-0"

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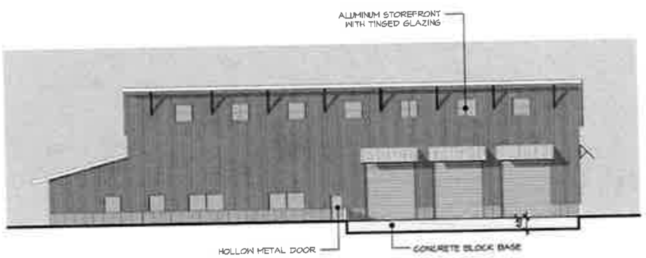
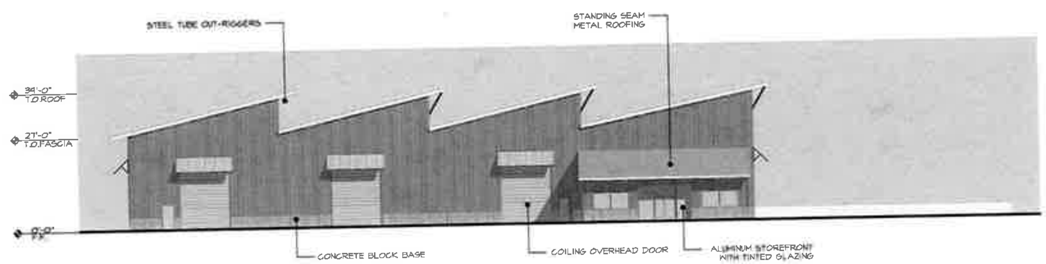


NORTH ELEVATION
SCALE 1/16" : 1'-0"
0 5 10 15 20 25 50



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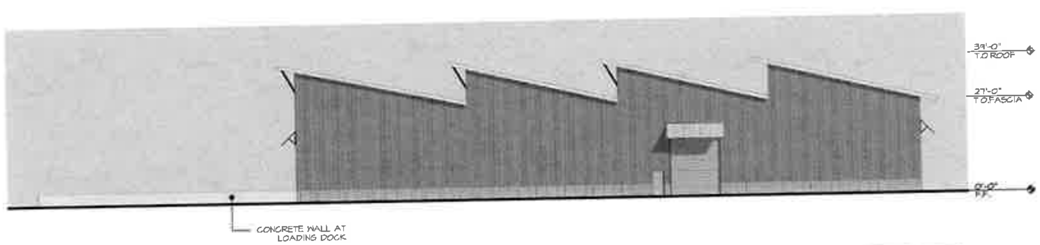
SCALE 1/16" : 1'-0"
0 5 10 15 20 25 50



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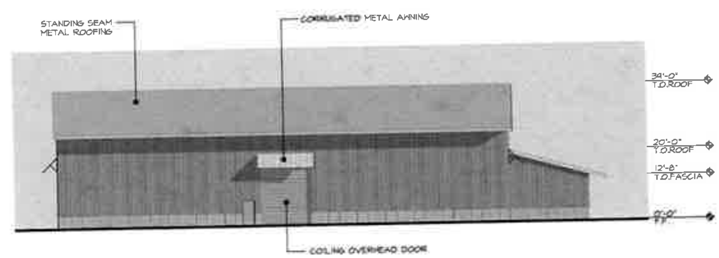

SOUTH ELEVATION
SCALE 1/16" : 1'-0"
0 5 10 15 20 25 50

EXTERIOR ELEVATIONS - PACKAGING BUILDING
SCALE: 1/16" : 1'-0"

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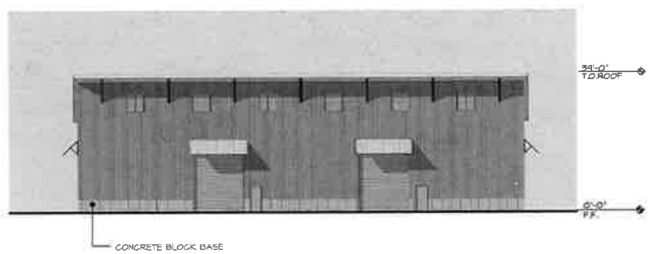

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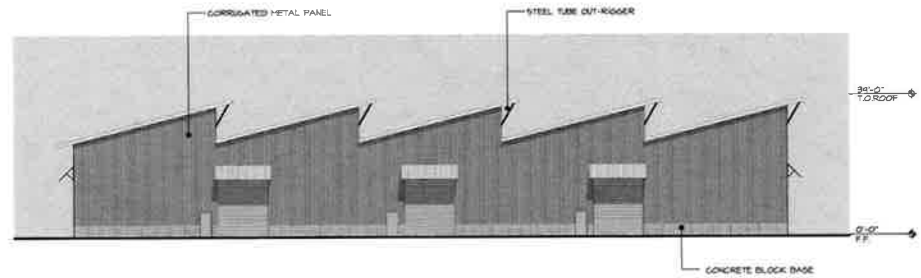

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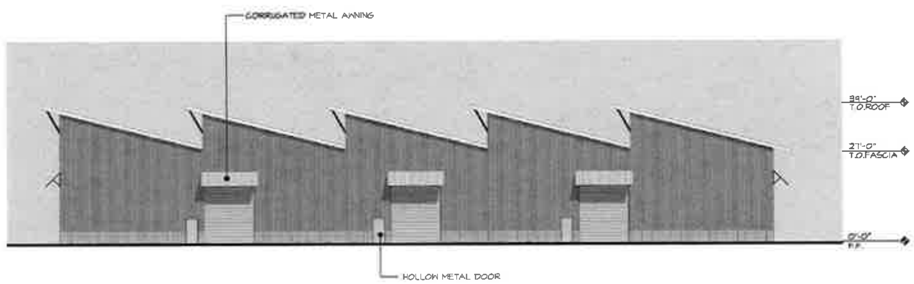

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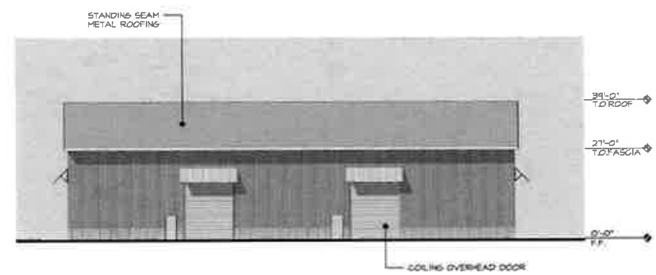

SOUTH ELEVATION
SCALE 1/16" : 1'-0"
0 5 10 15 20 25 50

EXTERIOR ELEVATIONS - MAINTENANCE BUILDING
SCALE: 1/16" : 1'-0"

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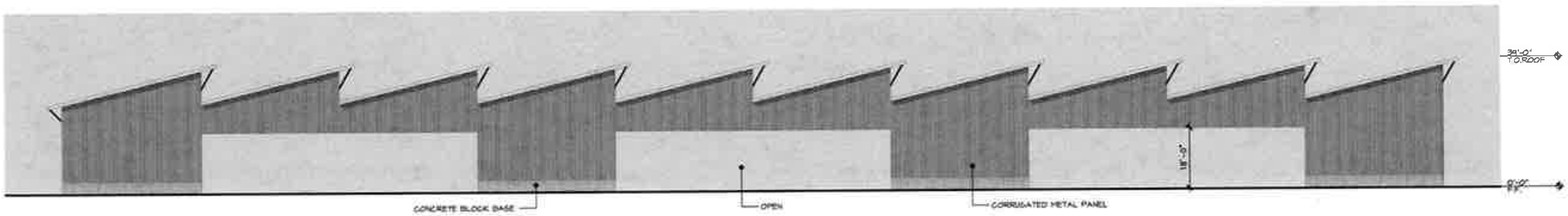

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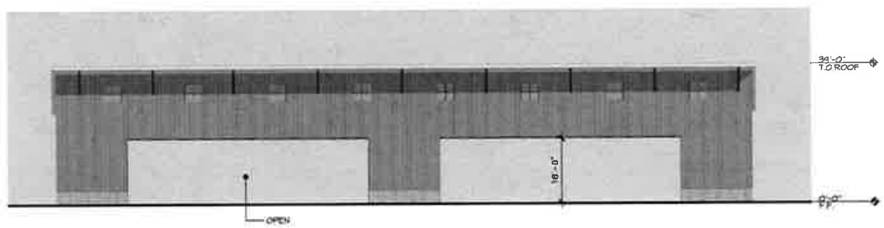

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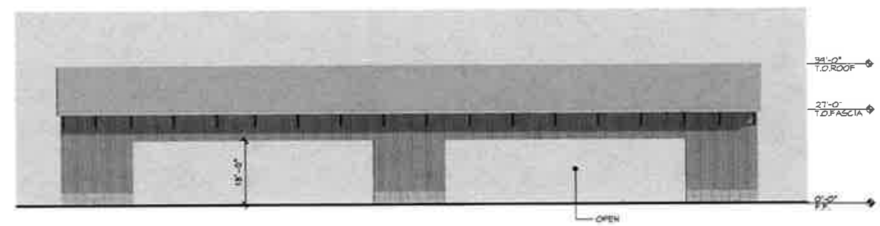

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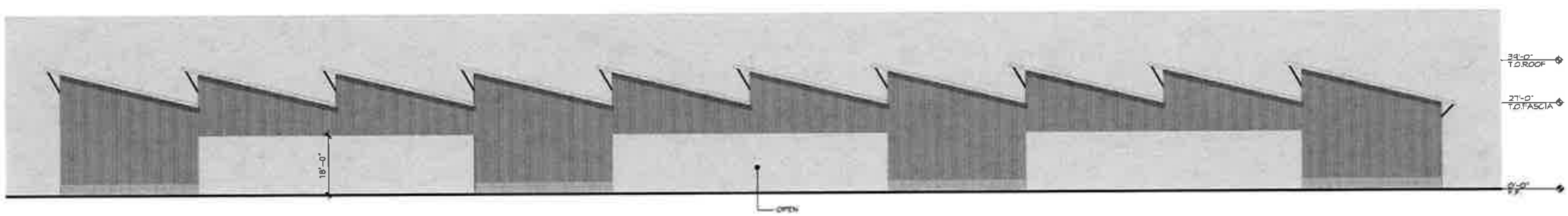

WEST ELEVATION
SCALE 1/16" : 1'-0"
0 5 10 15 20 25 50

EXTERIOR ELEVATIONS - GREEN / WOOD MATERIAL BUILDING
SCALE: 1/16" : 1'-0"

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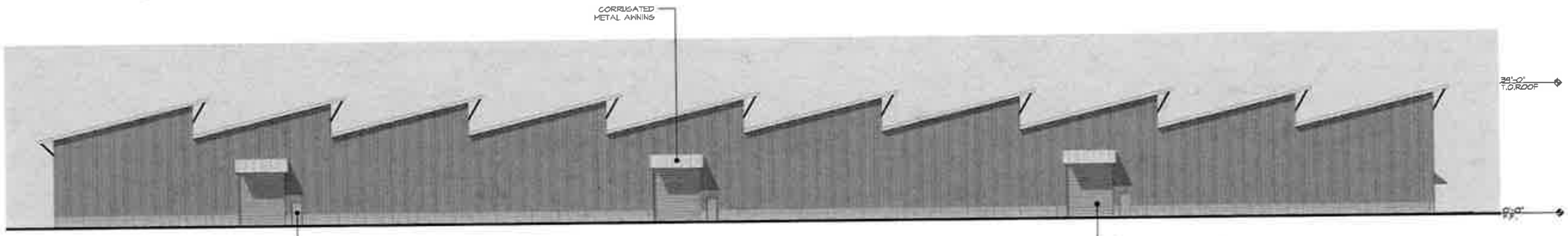

EAST ELEVATION
SCALE 1/16" : 1'-0"

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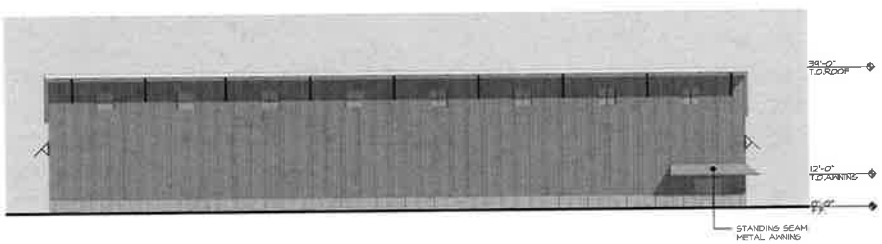

NORTH ELEVATION
SCALE 1/16" : 1'-0"

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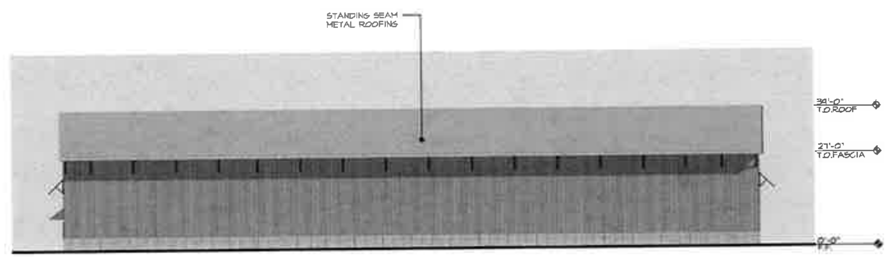

SOUTH ELEVATION
SCALE 1/16" : 1'-0"

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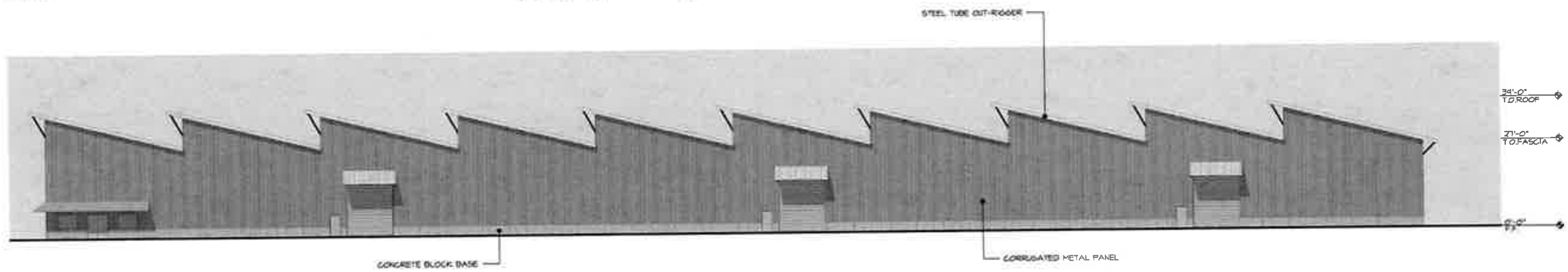

WEST ELEVATION
SCALE 1/16" : 1'-0"

0 5 10 15 20 25 50

EXTERIOR ELEVATIONS - WET ORGANIC MATERIAL BUILDING
SCALE: 1/16" : 1'-0"

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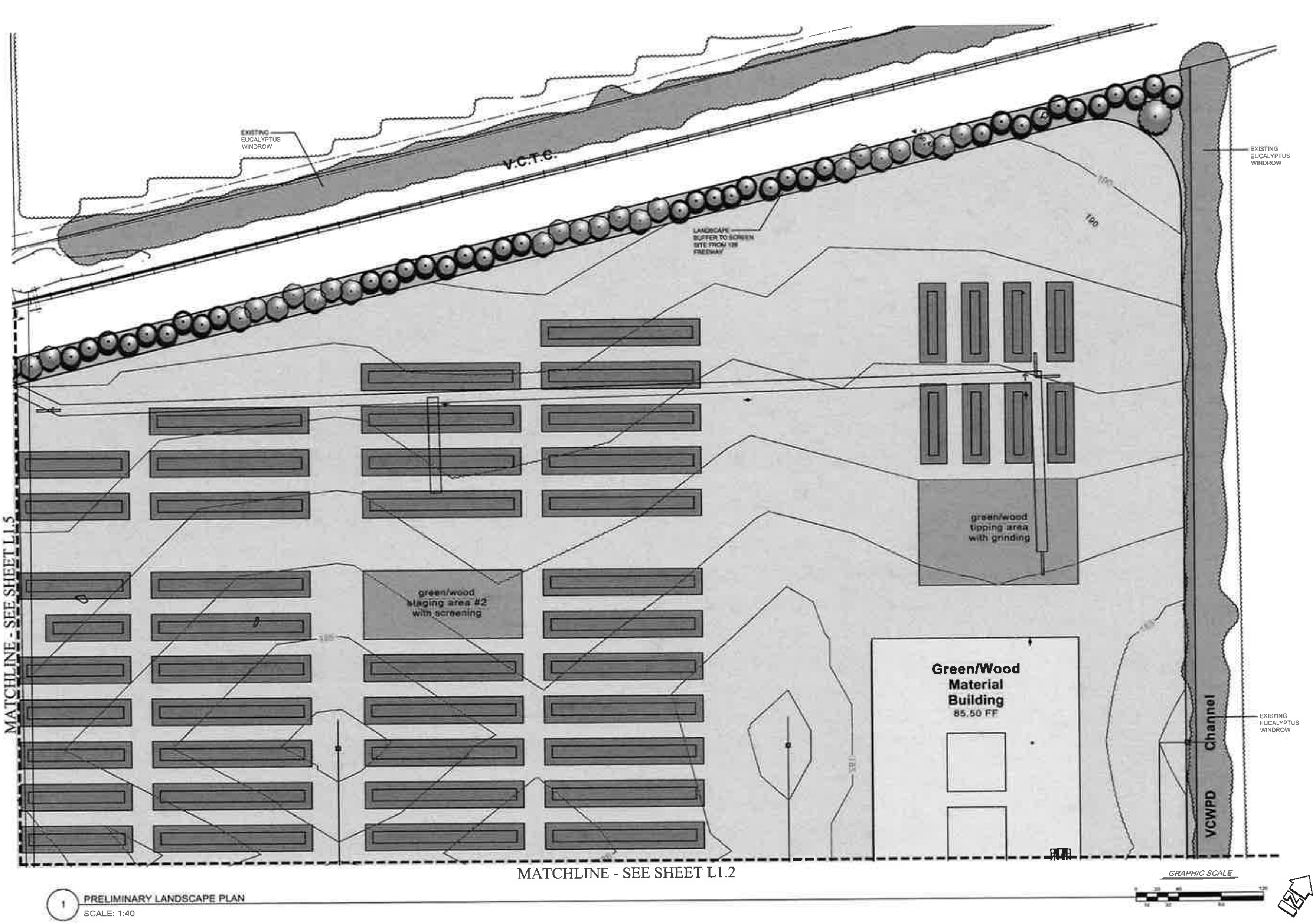

1 PRELIMINARY LANDSCAPE PLAN
SCALE: 1:40

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REVISIONS

NO.	DATE	BY	DESCRIPTION

CLIENT
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374 POLI STREET, STE. 200
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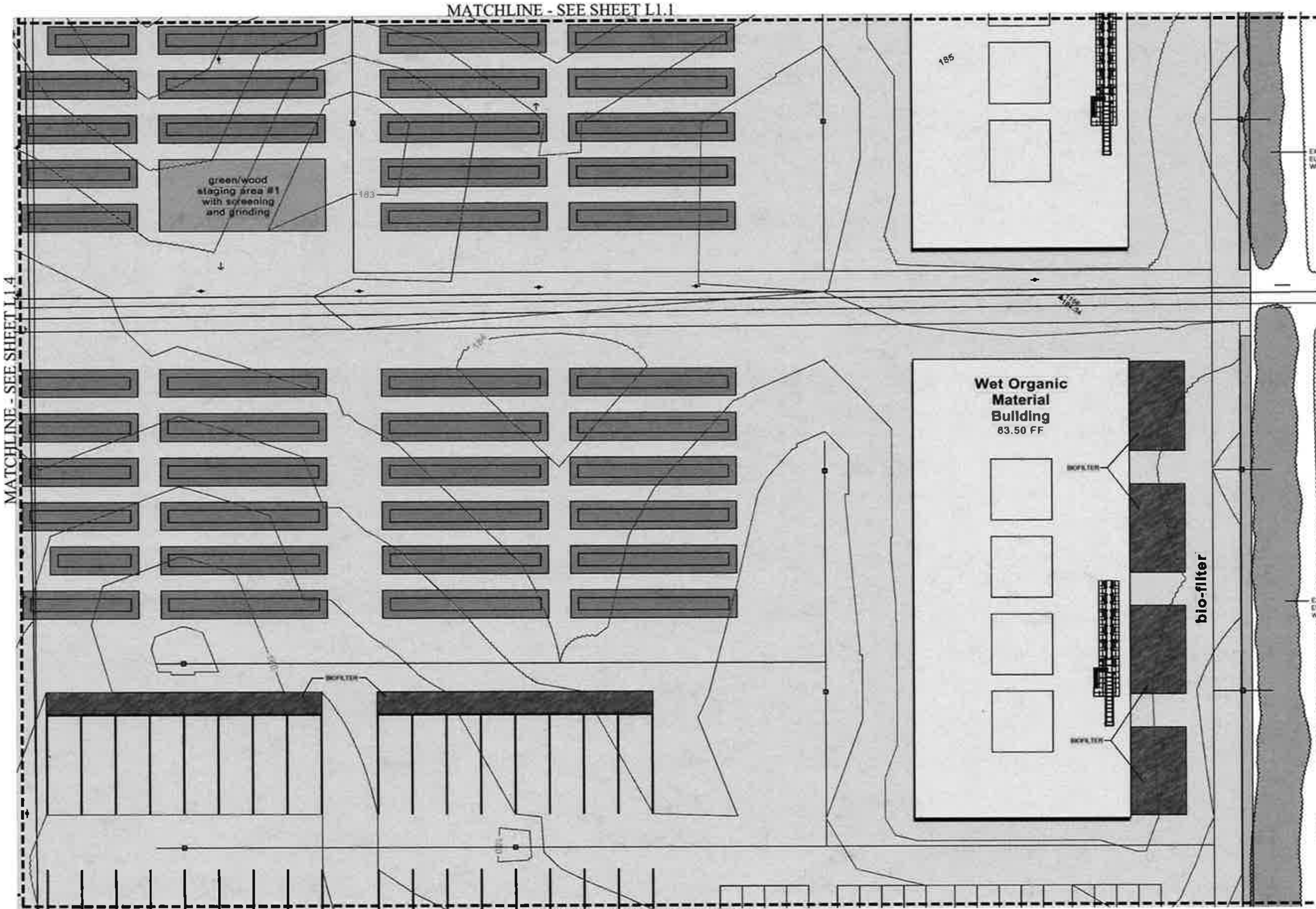
SHEET TITLE
PRELIMINARY LANDSCAPE PLAN

PROJECT
AGROMEND BIOGENIC ENERGY PARK
SANTA PAULA, CA

DRAWN MHB
CHECKED MG
PRINTED FOR:
SUBMITTAL 2/8/17
BID DATE
CONSTRUCTION DATE

DRAWING
L1.1
SHEET 1 OF 5
PROJECT No. 16.138

MATCHLINE - SEE SHEET L1.1



MATCHLINE - SEE #1, SHEET L1.3

1 PRELIMINARY LANDSCAPE PLAN
SCALE: 1:40

GRAPHIC SCALE

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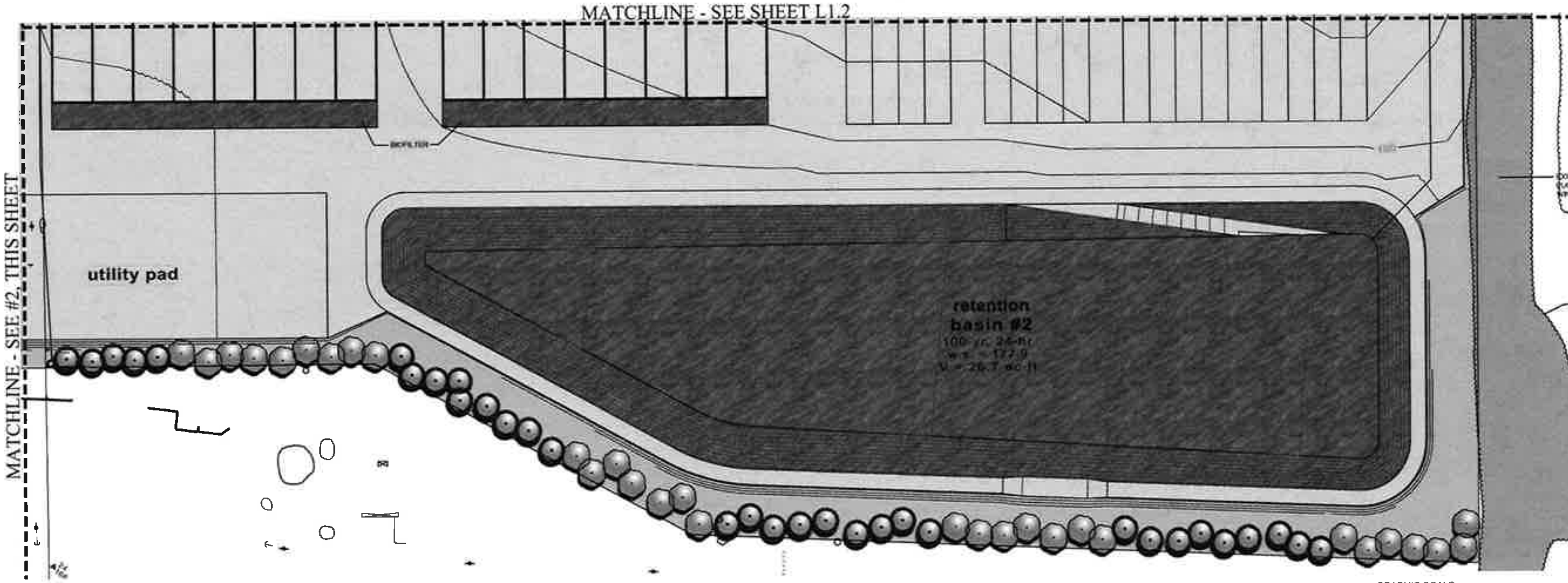
PRELIMINARY LANDSCAPE PLAN

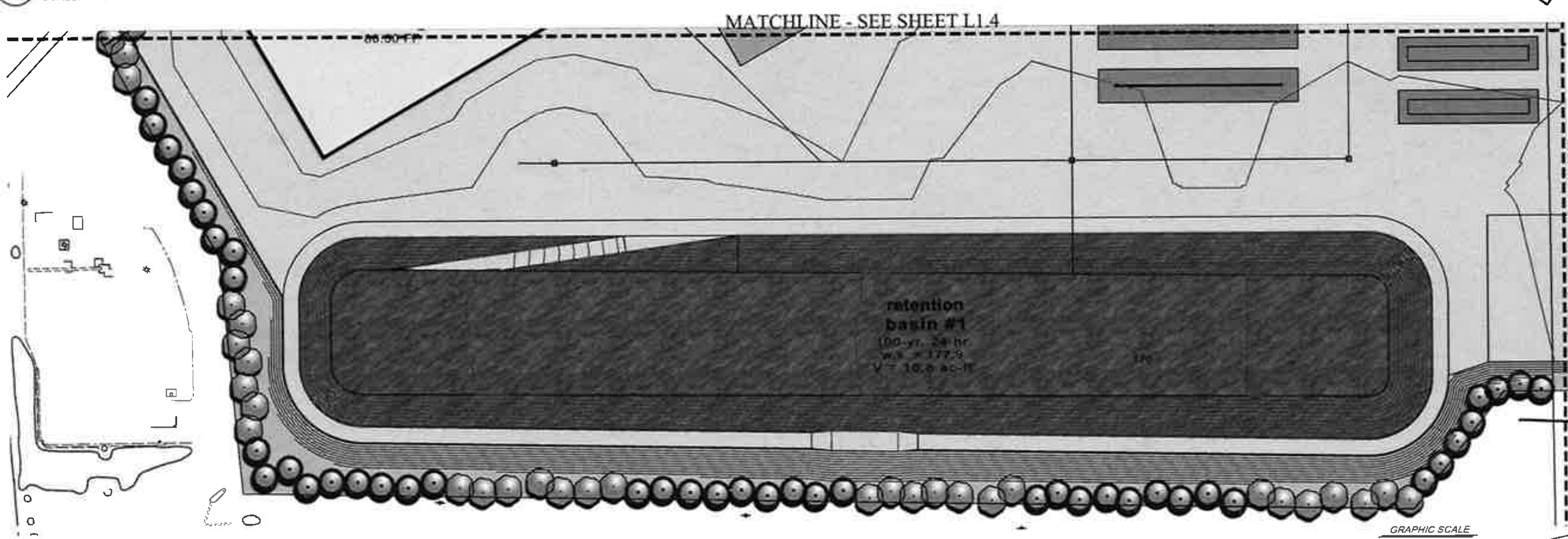
PROJECT
AGROMEND BIOGENIC ENERGY PARK
SANTA PAULA, CA

DRAWN: MHB
CHECKED: MG

DRAWING
L1.2
SHEET 2 OF 5
PROJECT No. 16.136



1 PRELIMINARY LANDSCAPE PLAN
SCALE: 1:40



2 PRELIMINARY LANDSCAPE PLAN
SCALE: 1:40

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SHEET TITLE
PRELIMINARY LANDSCAPE PLAN

PROJECT
AGROMEND BIOGENIC ENERGY PARK
SANTA PAULA, CA

DRAWN: MHS
CHECKED: MG
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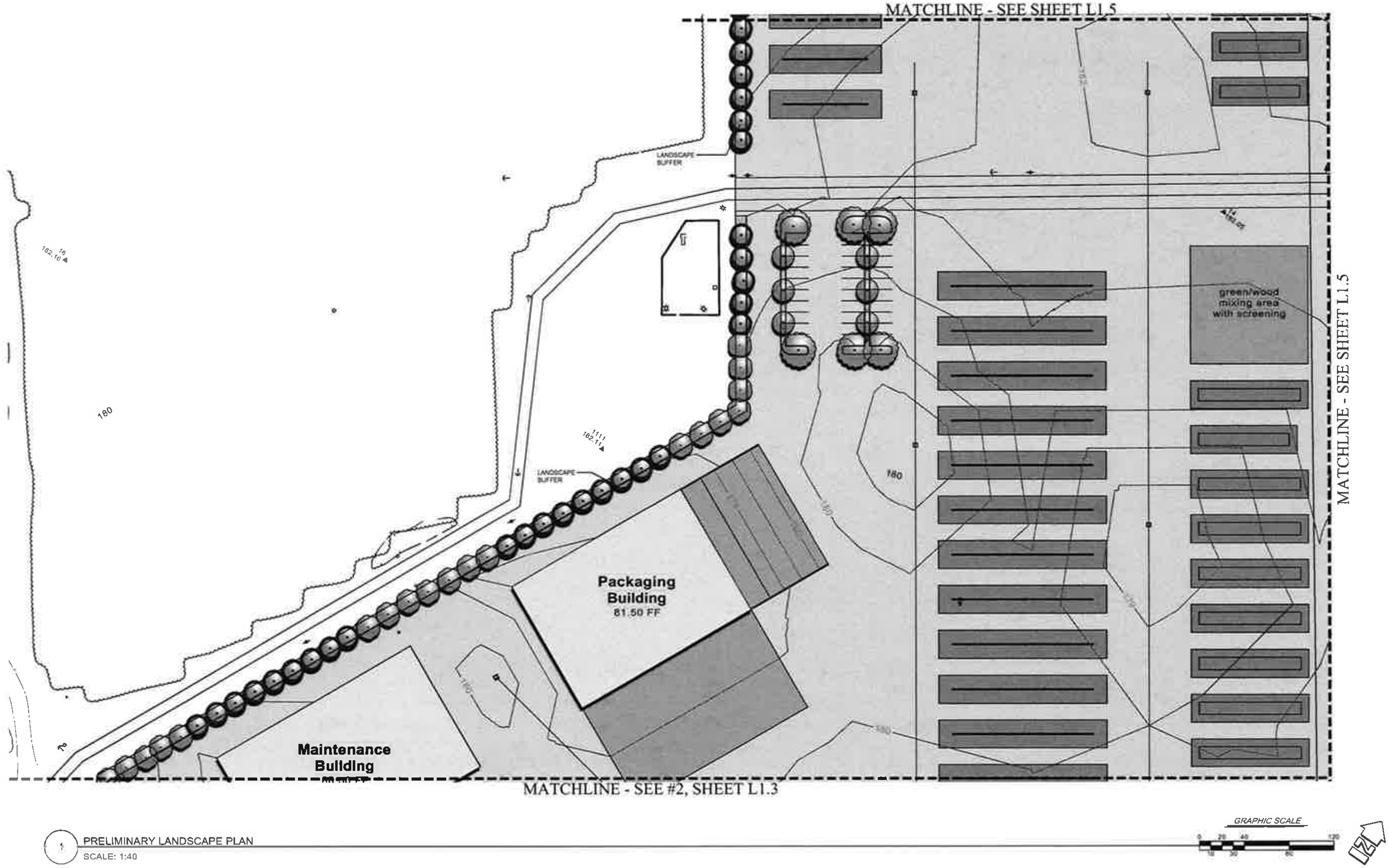
SUBMITTAL 2/8/17

DRAWING
L1.3
SHEET 3 OF 5
PROJECT No. 16.136



1 PRELIMINARY LANDSCAPE PLAN
SCALE: 1:40

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PRELIMINARY LANDSCAPE PLAN

PROJECT
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SANTA PAULA, CA

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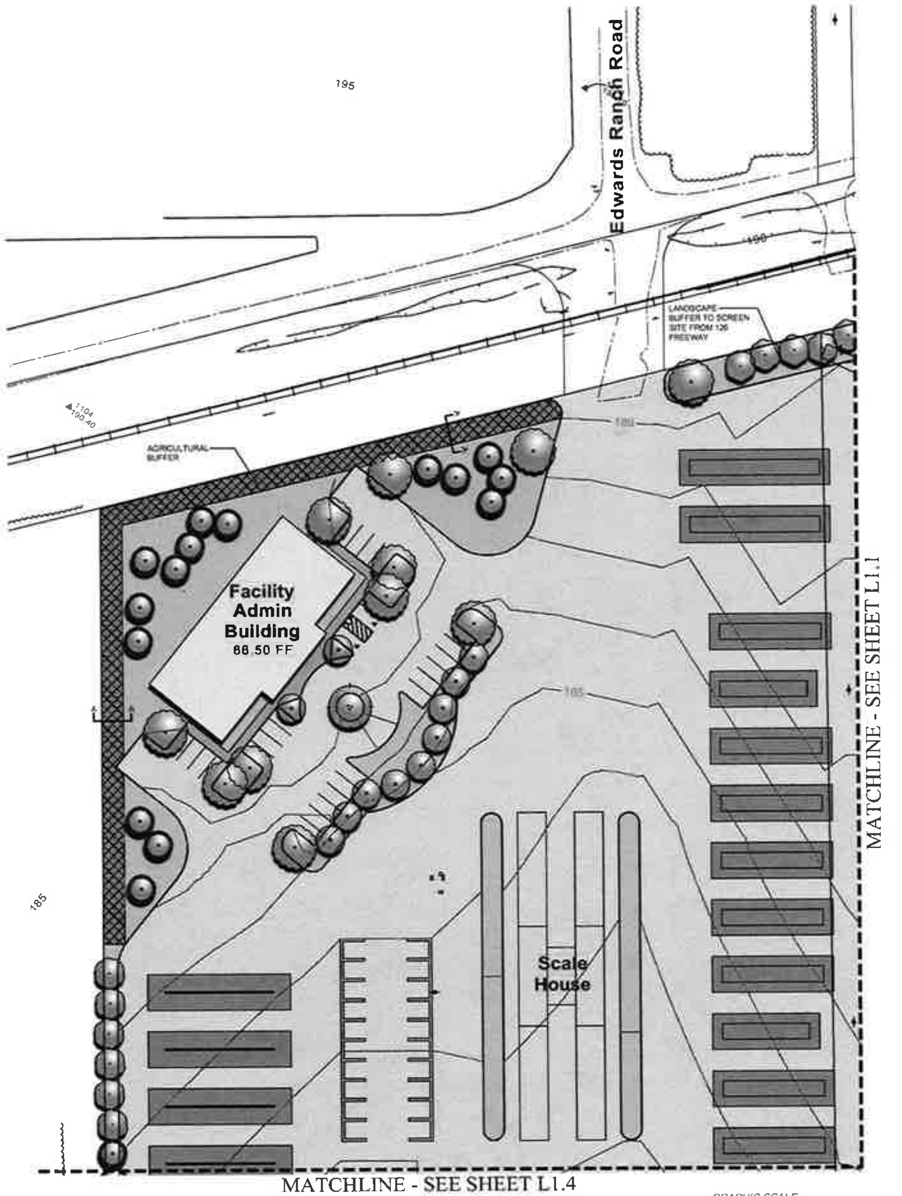
SUBMITTAL 2/10/17
CONSTRUCTION DATE

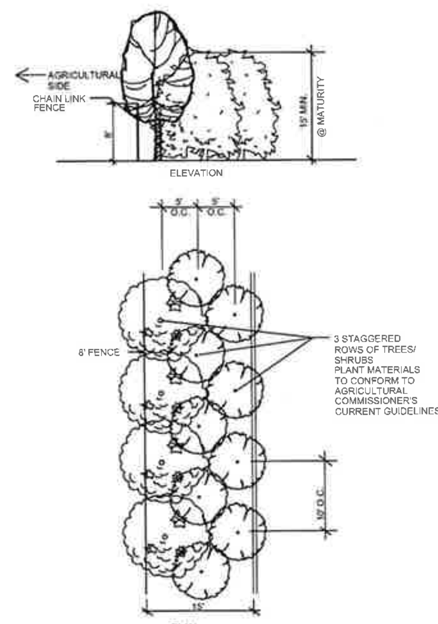
DRAWING
L1.4
SHEET 4 OF 5
PROJECT No. 16.138



1 PRELIMINARY LANDSCAPE PLAN
SCALE: 1:40

PLANT LEGEND

SYMBOL	BOTANICAL NAME	COMMON NAME
TREES	EUCALYPTUS SIDEROXYLON	RED IRON BARK
	PINUS ELDARICA	AFGHAN PINE
	PROSOPIS 'DESERT MUSEUM'	PALO VERDE TREE
	GEIJERA PARVIFLORA	AUSTRALIAN WILLOW
	EUCALYPTUS POLYANTHEMOS	SILVER DOLLAR
	QUERCUS AGRIFOLIA	COAST LIVE OAK
	PINUS CANARIENSIS	CANARY ISLAND PINE
	CORYMBIA FICIFOLIA	RED FLOWERING GUM
SHRUBS	ACACIA SPP.	ACACIA
	RHUS INTEGRIFOLIA	LEMONADE BERRY
	HETEROMELES ARBUTIFOLIA	TOYON
	LANTANA 'YELLOW'	YELLOW LANTANA
	NERIUM OLEANDER	OLEANDER
	ALOE ARBORESCENS	TREE ALOE
	LEYMUS 'CANYON PRINCE'	GIANT WILD RYE
	ACHILLEA SPP.	YARROW
	DODONEA V. 'PURPUREA'	PURPLE HOPSEED
	METROSIDEROS C. 'SPRINGFIRE'	NEW ZEALAND CHRISTMAS TREE
	AGRICULTURAL BUFFER. SEE SECTION A-A, SHEET L1.5	



A-A AGRICULTURAL/URBAN BUFFER
1/8" = 1'-0"

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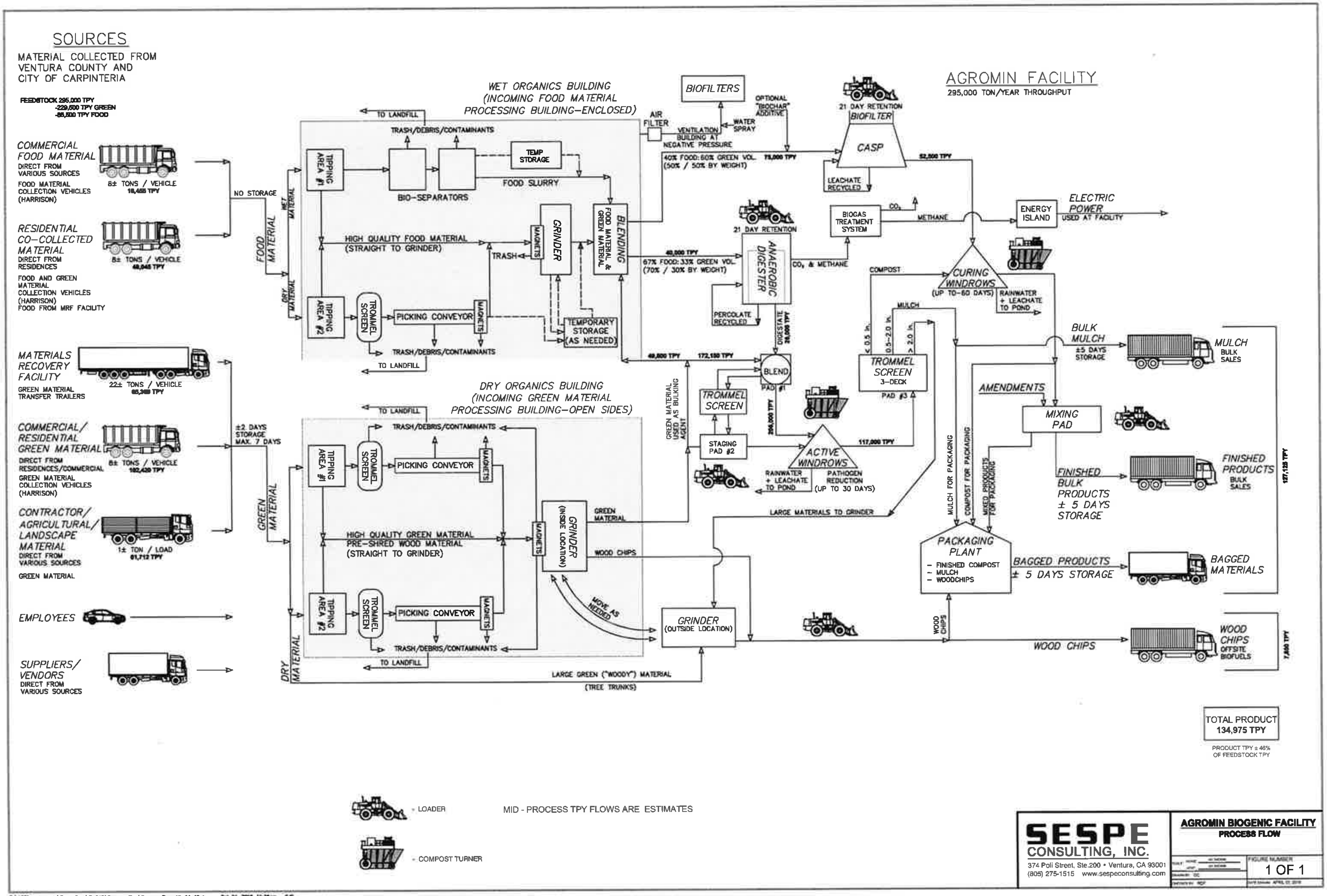
DRAWING
L1.5
SHEET 5 OF 5
PROJECT No. 16.138



SOURCES
MATERIAL COLLECTED FROM VENTURA COUNTY AND CITY OF CARPINTERIA
COMMERCIAL FOOD MATERIAL
DIRECT FROM VARIOUS SOURCES
FOOD MATERIAL COLLECTION VEHICLES (HARRISON)
8± TONS / VEHICLE
RESIDENTIAL CO-COLLECTED MATERIAL
DIRECT FROM RESIDENCES
FOOD AND GREEN MATERIAL COLLECTION VEHICLES (HARRISON)
FOOD FROM MRF FACILITY
8± TONS / VEHICLE
MATERIALS RECOVERY FACILITY
GREEN MATERIAL TRANSFER TRAILERS
22± TONS / VEHICLE
COMMERCIAL/ RESIDENTIAL GREEN MATERIAL
DIRECT FROM RESIDENCES/COMMERCIAL
GREEN MATERIAL COLLECTION VEHICLES (HARRISON)
8± TONS / VEHICLE
CONTRACTOR/ AGRICULTURAL/ LANDSCAPE MATERIAL
DIRECT FROM VARIOUS SOURCES
GREEN MATERIAL
1± TON / LOAD
EMPLOYEES
SUPPLIERS/ VENDORS
DIRECT FROM VARIOUS SOURCES
NO STORAGE
FOOD MATERIAL
WET MATERIAL
DRY MATERIAL
±2 DAYS STORAGE MAX. 7 DAYS
GREEN MATERIAL
DRY MATERIAL
WET ORGANICS BUILDING (INCOMING FOOD MATERIAL PROCESSING BUILDING-ENCLOSED)
TO LANDFILL
TRASH/DEBRIS/CONTAMINANTS
TIPPING AREA #1
BIO-SEPARATORS
TEMP STORAGE
FOOD SLURRY
HIGH QUALITY FOOD MATERIAL (STRAIGHT TO GRINDER)
TRASH
MAGNETS
GRINDER
BLENDING
FOOD MATERIAL & GREEN MATERIAL
TIPPING AREA #2
TROMMEL SCREEN
PICKING CONVEYOR
TEMPORARY STORAGE (AS NEEDED)
DRY ORGANICS BUILDING (INCOMING GREEN MATERIAL PROCESSING BUILDING-OPEN SIDES)
HIGH QUALITY GREEN MATERIAL PRE-SHRED WOOD MATERIAL (STRAIGHT TO GRINDER)
GRINDER (INSIDE LOCATION)
GREEN MATERIAL
WOOD CHIPS
MOVE AS NEEDED
GRINDER (OUTSIDE LOCATION)
LARGE GREEN ("WOODY") MATERIAL
(TREE TRUNKS)
AIR FILTER
BIOFILTERS
VENTILATION BUILDING AT NEGATIVE PRESSURE
WATER SPRAY
OPTIONAL "BIOCHAR" ADDITIVE
40% FOOD:60% GREEN VOL. (50% / 50% BY WEIGHT)
21 DAY RETENTION
BIOFILTER
CASP
LEACHATE RECYCLED
67% FOOD:33% GREEN VOL. (70% / 30% BY WEIGHT)
21 DAY RETENTION
ANAEROBIC DIGESTER
PERCOLATE RECYCLED
DIGESTATE
CO_2 & METHANE
BIOGAS TREATMENT SYSTEM
CO_2
METHANE
ENERGY ISLAND
ELECTRIC POWER
USED AT FACILITY
AGROMIN FACILITY
295,000 TON/YEAR THROUGHPUT
CURING WINDROWS
(UP TO 60 DAYS)
RAINWATER + LEACHATE TO POND
COMPOST
MULCH
BLEND PAD #1
GREEN MATERIAL USED AS BULKING AGENT
TROMMEL SCREEN
STAGING PAD #2
ACTIVE WINDROWS
RAINWATER + LEACHATE TO POND
PATHOGEN REDUCTION (UP TO 30 DAYS)
TROMMEL SCREEN 3-DECK
PAD #3
LARGE MATERIALS TO GRINDER
BULK MULCH
±5 DAYS STORAGE
MULCH
BULK SALES
AMENDMENTS
MIXING PAD
FINISHED BULK PRODUCTS ± 5 DAYS STORAGE
FINISHED PRODUCTS
BULK SALES
MULCH FOR PACKAGING
COMPOST FOR PACKAGING
MIXED PRODUCTS FOR PACKAGING
PACKAGING PLANT
- FINISHED COMPOST
- MULCH
- WOODCHIPS
BAGGED PRODUCTS ± 5 DAYS STORAGE
BAGGED MATERIALS
WOOD CHIPS
WOOD CHIPS
OFFSITE BIOFUELS
TOTAL PRODUCT 134,975 TPY
PRODUCT TPY ± 46% OF FEEDSTOCK TPY
LOADER
COMPOST TURNER
MID - PROCESS TPY FLOWS ARE ESTIMATES
SESPE CONSULTING, INC.
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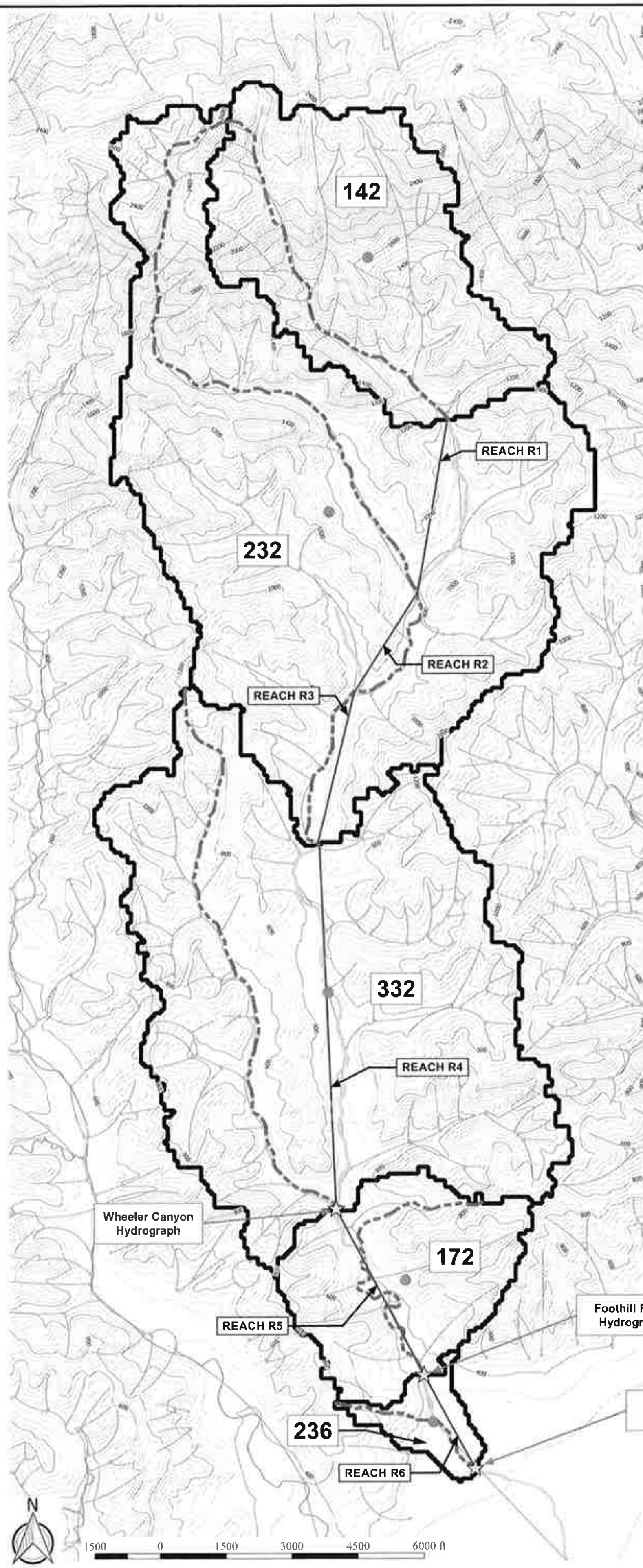
(805) 275-1515 www.sespeconsulting.com
AGROMIN BIOGENIC FACILITY
PROCESS FLOW
FIGURE NUMBER
1 OF 1



Legend

- Todd Barranca
- Sub-Basin Longest Flow Path
- Todd Barranca Reach
- Overland Water Flow Path
- 40-foot Elevation Contours
- Sub-Basin Centroid
- Hydrograph Location
- Todd Barranca Watershed Sub-Basin Boundary

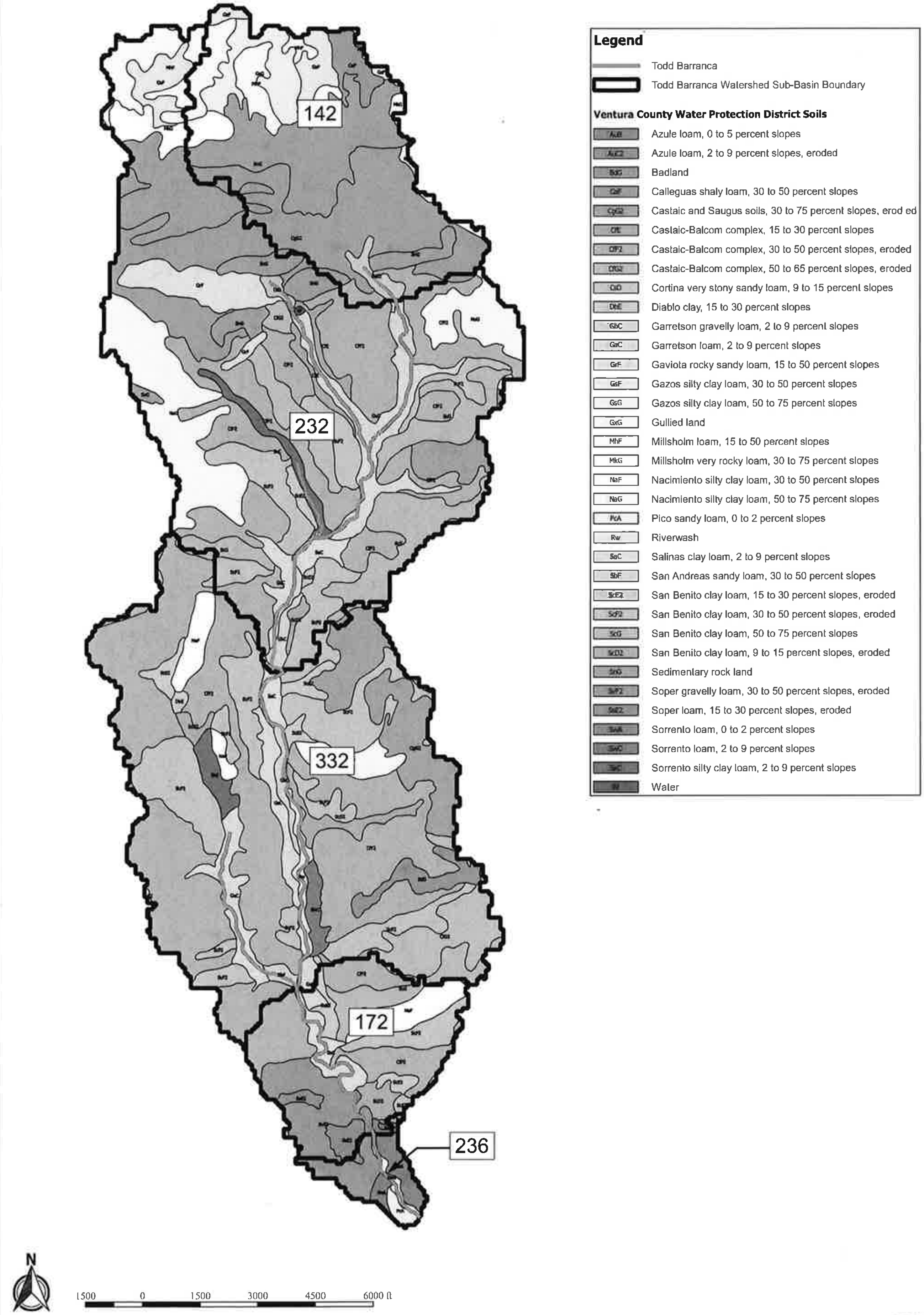
Sub-Basin	Longest Flowpath Length (mi)	Longest Flow Path to Centroid (mi)	Basin S3 Slope (ft/mi)	Basin N Factor	Elongation Ratio	Southern California Flood Exponent	Lag Time (hr)
142	1.7601	0.8842	691.154	0.055	0.2196	0.38	0.4509
232	13.1357	1.8881	150.177	0.045	0.0473	0.38	1.4118
332	2.6196	1.0657	193.663	0.045	0.2246	0.38	0.5866
172	1.5795	0.5079	190.472	0.045	0.1842	0.38	0.3663
236	0.7479	0.3129	256.063	0.055	0.1725	0.38	0.2650

NextGen ENGINEERING

Harrison Since 1932

TODD BARRANCA
VENTURA COUNTY, CA
HYDROLOGY MAP

SHEET NUMBER
1 OF 5



DATUM HORIZ: NAD 83 CA State Plane Zone 5, US feet
DATUM VERT: NADV88

DATA SOURCES:
Contours: 2005 1 foot LIDAR Contours, Ventura County; 2017 USGS 20 foot contours
Soils: 2017 Ventura County Watershed Protection District GIS
Streams: 2017 USGS
Watershed Basins: 2018 HEC-GeoHMS model for Todd Barranca 1827 feet downstream Foothills Rd.

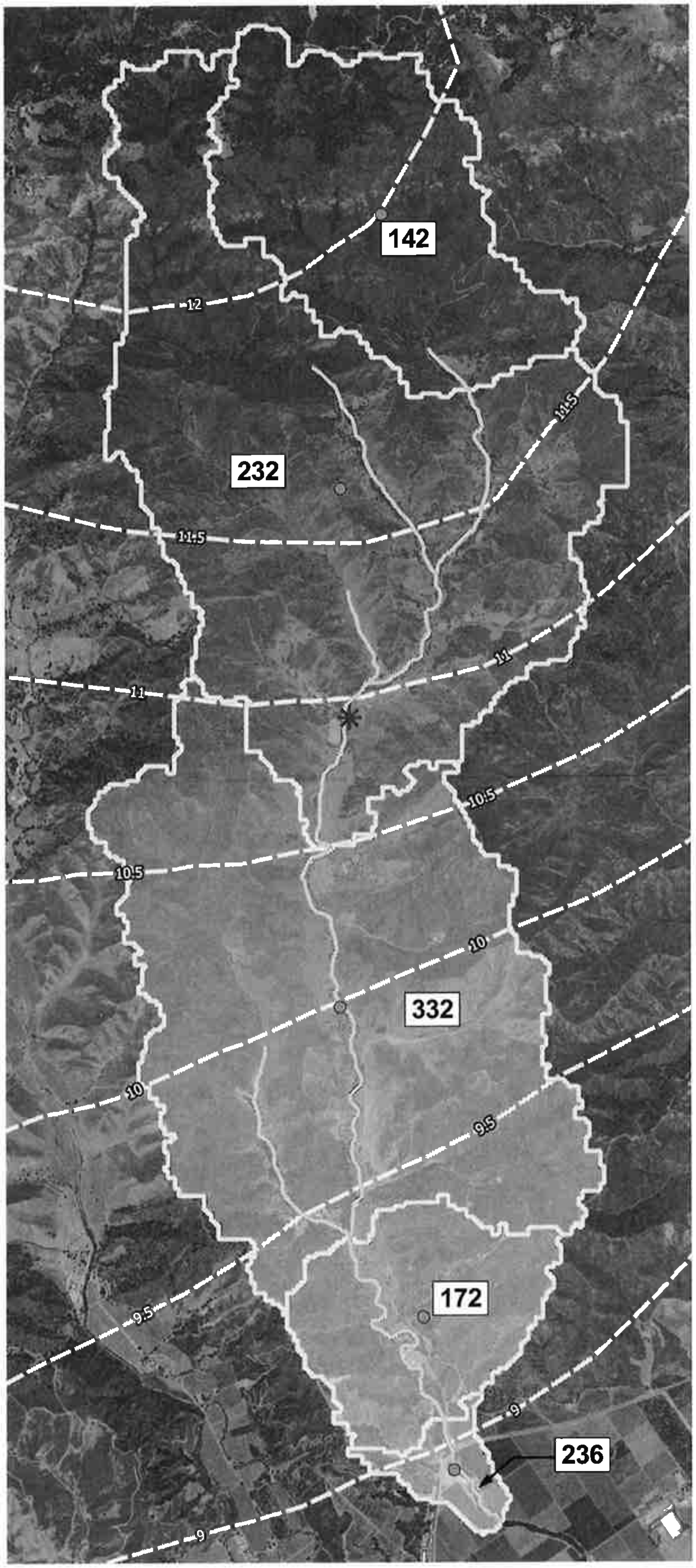
PREPARED BY: NextGen Engineering
374 Poli Street, Suite 207
Ventura, CA 93001

DESIGNED BY: Sara Harders
DRAWN BY: Sara Harders
CHECKED BY: Bill O'Brien

Harrison
Since 1932

TODD BARRANCA
VENTURA COUNTY, CA
SOILS MAP

SHEET NUMBER
2 OF 5



Legend

- Watershed Centroid
- Sub-Basin Centroid
- 24-Hour 100-Year Rainfall Isohyets (inches)
- Todd Barranca
- Todd Barranca Watershed Sub-Basin Boundary

Todd Barranca Watershed Centroid				
Sub-Basin Location	Elevation (ft)	100-Year Rainfall (in)	CA Zone 5 State Plane Coordinates (US ft)	
			Northing	Easting
232	720	10.93	1961481.948	6215420.577

Sub-Basin Centroids				
Sub-Basin	Elevation (ft)	100-Year Rainfall (in)	CA Zone 5 State Plane Coordinates (US ft)	
			Northing	Easting
142	1693	12.00	1972055.124	6215985.978
232	1120	11.60	1966291.284	6215106.586
332	562	9.99	1955394.895	6215082.197
172	521	9.23	1948883.711	6216834.184
236	353	8.95	1945672.572	6217470.209

Sub-Basin	Longest Flowpath Length (mi)	Longest Flow Path to Centroid (mi)	Basin S3 Slope (ft/mi)	Basin N Factor	Elongation Ratio	Southern California Flood Exponent	Lag Time (hr)
142	1.7601	0.8842	691.154	0.055	0.2196	0.38	0.4509
232	13.1357	1.8881	150.177	0.045	0.0473	0.38	1.4118
332	2.6196	1.0657	193.663	0.045	0.2246	0.38	0.5866
172	1.5795	0.5079	190.472	0.045	0.1842	0.38	0.3663
236	0.7479	0.3129	256.063	0.055	0.1725	0.38	0.2650

N

1500 0 1500 3000 4500 6000 ft

DATE: 11/18/2018

DATUM HORIZ: NAD 83 CA State Plane Zone 5, US feet
DATUM VERT: NADV88

DATA SOURCES:
Contours: 2005 1 foot LiDAR Contours, Ventura County; 2017 USGS 20 foot contours
Parcel Boundaries: 2017 Ventura County Public Works Department GIS
Streams: 2017 USGS
Watershed Basins: 2018 HEC-GeoHMS model for Todd Barranca 1627 feet downstream Foothills Rd.

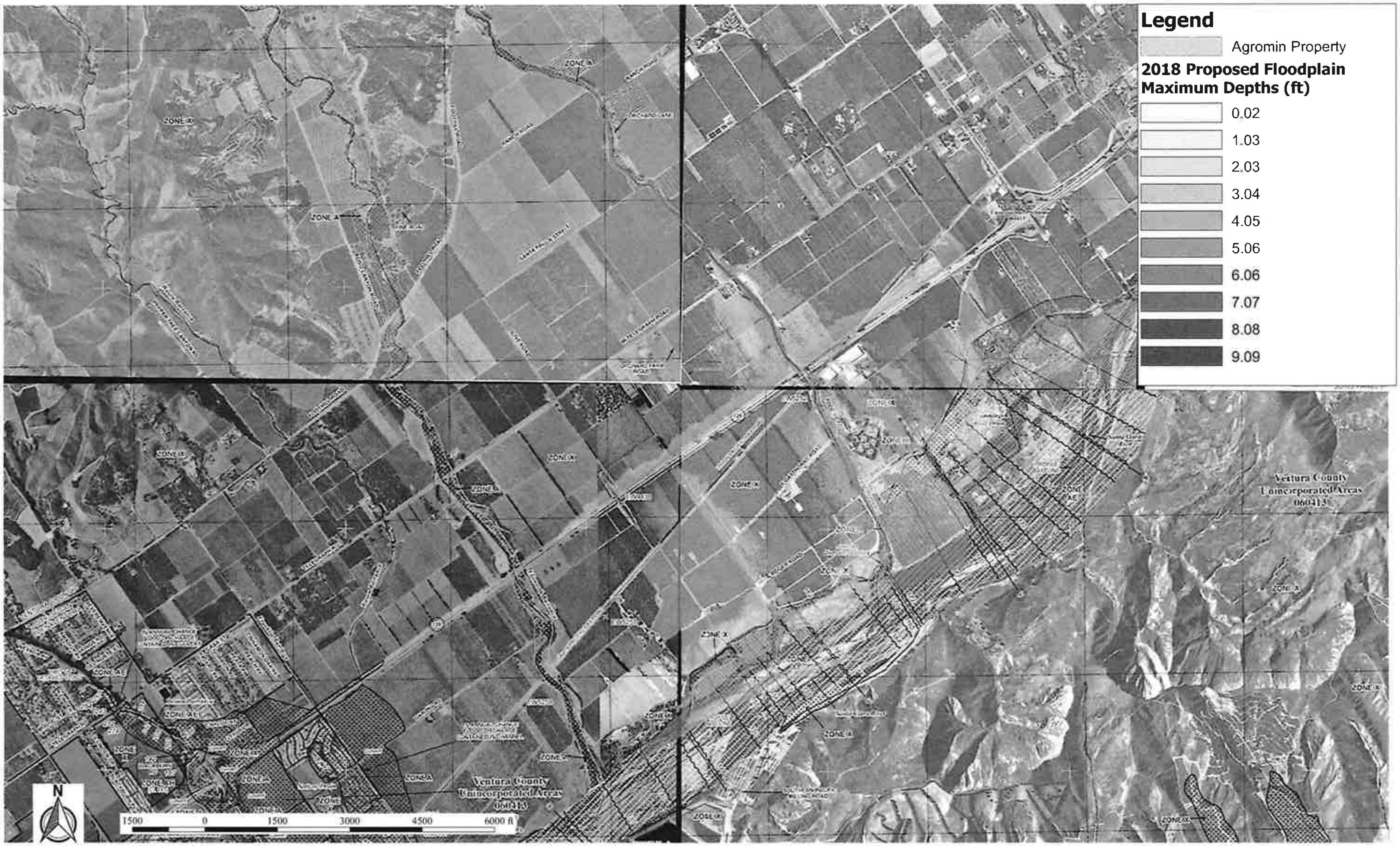
PREPARED BY
NextGen ENGINEERING

DESIGNED BY: Sara Harken
DRAWN BY: Sara Harken
CHECKED BY: Bill O'Brien

Harrison
Since 1932

TODD BARRANCA
VENTURA COUNTY, CA
ISOHYET MAP

SHEET NUMBER
3 OF 5



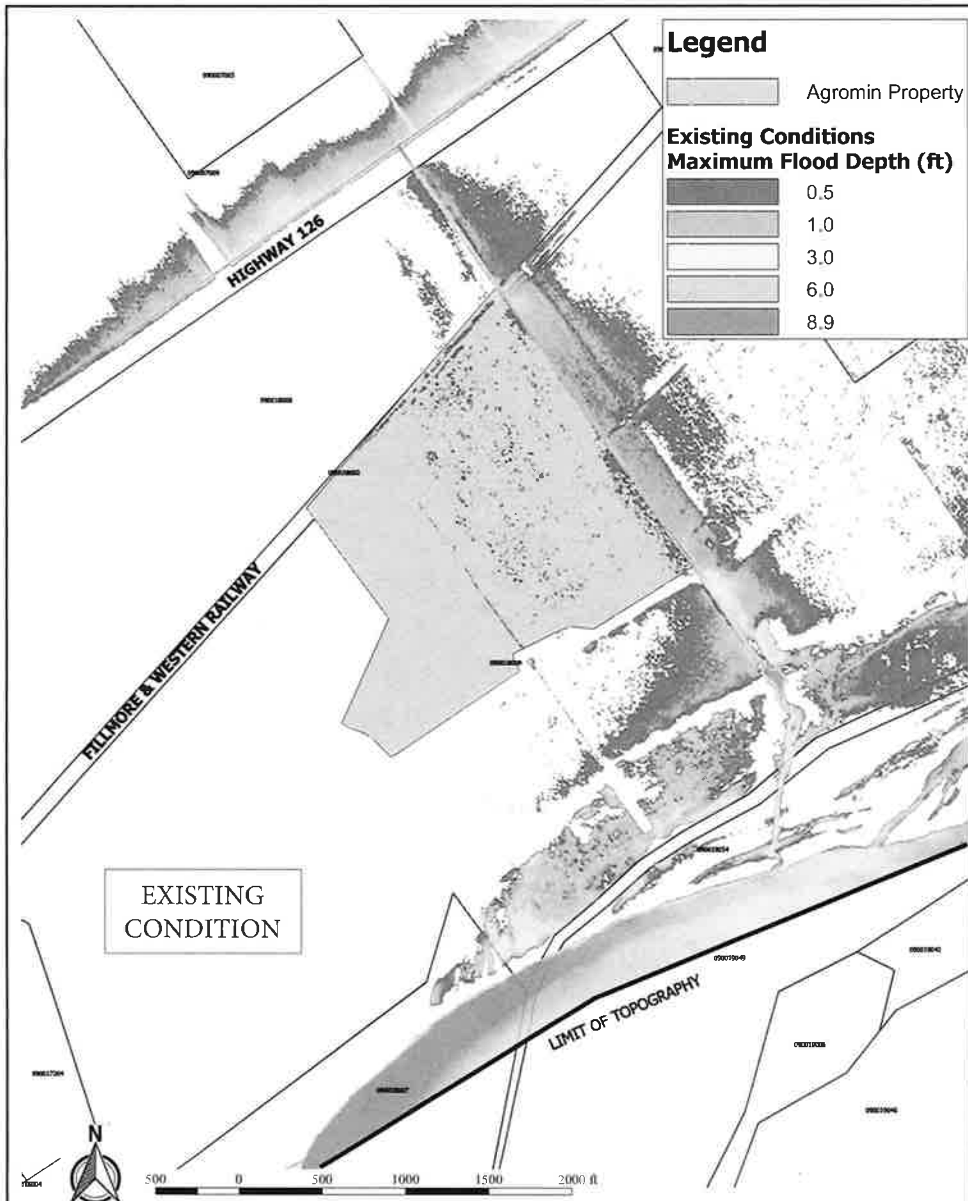
TODD BARRANCA VENTURA COUNTY, CA

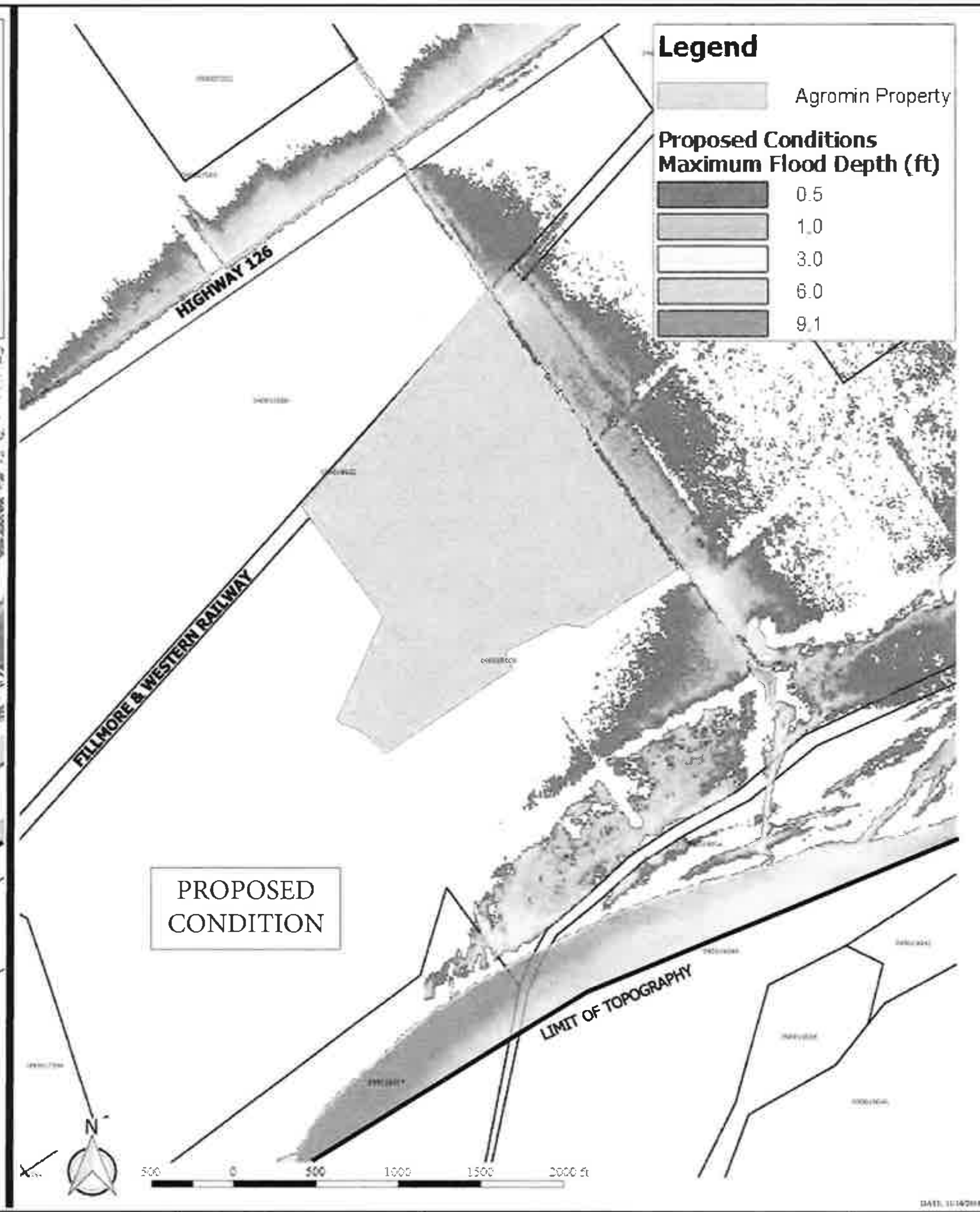
PROPOSED CONDITION ANNOTATED FIRM WITH CURB

SHEET NUMBER 4 OF 5

NextGen ENGINEERING

EJ Harrison & Sons, Inc.





NextGen ENGINEERING

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TODD BARRANCA VENTURA COUNTY, CA

PROPOSED vs EXISTING CONDITIONS

SHEET NUMBER

5 OF 5

VENTURA COUNTY AIR POLLUTION CONTROL DISTRICT
669 County Square Drive, Ventura CA 93003 805/ 645-1401 FAX 805/ 645-1444 www.vcapcd.org

OILFIELD FLARES

Complete a separate form for each flare. Attach manufacturer's literature, if available, to this form.

Information on Flare

Reason for Submitting this Form (Check One)	☐ Existing Flare Date of Installation ______	☐ Replacement of Existing Flare Specify______ ☑ New or Additional Flare
Flare Location (Include map, aerial photo, or plot plan)		
Flare Make and Model	Biogas Flare, Filius	
Flare Rated Capacity	3	☐ MMBtu/hr ☐ scf/hr
Is this a ground level flare?	☑ Yes	☐ No
Is this an enclosed flare?	☐ Yes	☐ No
Flare height above grade	14.7 feet	
Flare tip exhaust diameter	1.6	☐ feet (OR) ☐ inches
Flare equipped with a totalizing gas flow meter?	☐ Yes	☐ No
Smokeless Operation?	☑ Yes	☑ No
Air-Assist Flare?	☐ Yes	☐ No
Steam-Assist Flare?	☑ Yes	☑ No
Coanda Effect Flare?	☐ Yes	☐ No
Is flare emission factor data available? (Attach)	☑ Yes	☑ No

Flare Pilot Information

Specify the type of pilot:	Propane	
If gas pilot, total rating?	______	☐ MMBtu/hr ☐ scf/hr
If gas pilot, equipped with a totalizing gas flow meter?	☐ Yes	☐ No

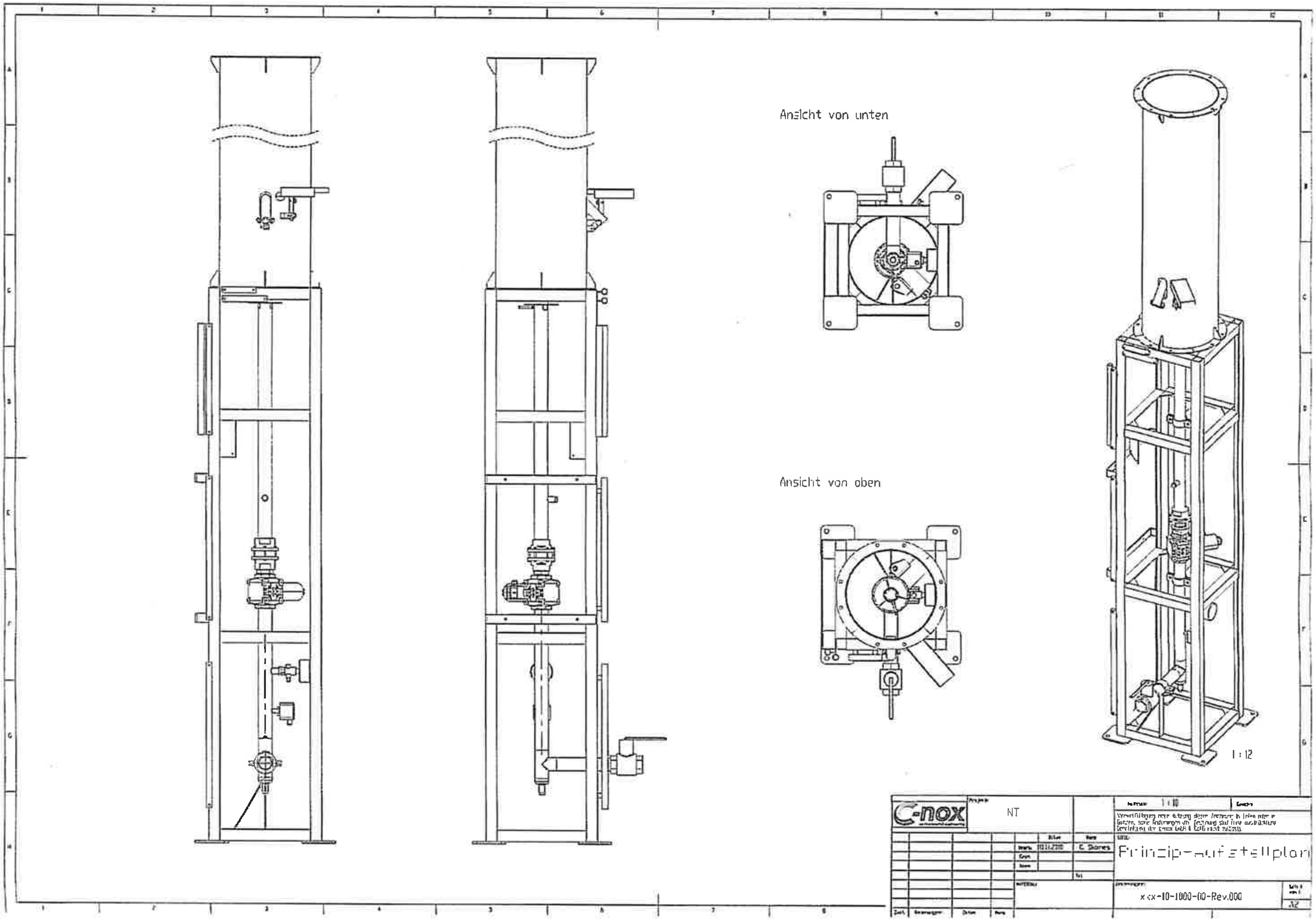
Flared Gas Data

Higher heating value	______ Btu/scf	
Maximum Sulfur Content	300	☐ ppm_v ☐ grains per 100 scf
Is the flare or process equipped with treatment equipment to meet above sulfur content? If yes, describe.	☐ Yes	☐ No
5 year maximum gas combustion Attach records	______	☐ MMBtu/yr ☐ scf/yr

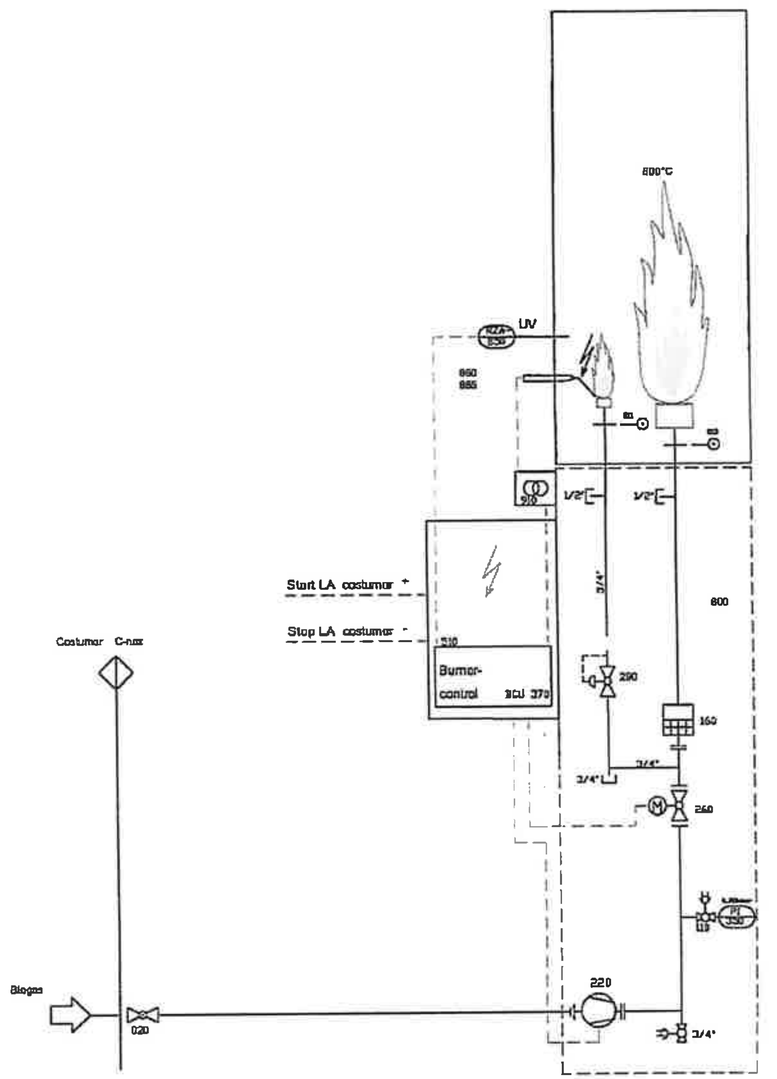
Information on Process

Describe the Process/Equipment the Flare Serves	The flare will be a back up to engines which will use biogas to provide energy.	
Is this an Emergency Flare?	☐ Yes	☐ No
Is Flare used for Planned Flaring?	☐ Yes	☑ No
Flare included in a Planned Flare Management Plan per Rule 54?	☐ Yes	☑ No

Appendix D



Ansicht von unten
Ansicht von oben
1 : 12
C-nox
NT
1 : 10
C. Skones
Prinzip-Aufstellplan
xxx-10-1000-00-Rev.000
A2



Bezeichnung der Symbolik
Indication of the symbols

Nummer number	deutsch	english
020	Kugelhahn	button valve
050	Magnetventil	solenoid valve
110	Druckknopfhahn	push-button valve
160	Deflagrationssicherung DN50	flame arrestor
161	Deflagrationssicherung DN25	flame arrestor
250	Motorventil	motoric valve
290	Druckregler	back pressure control
310	Druckwächter	pressure switch
350	Manometer	pressure gauge
850	UV-Sonde	UV-control
910	Zündtransformator	Ignition Transformer
220	Verdichter Gardner 1300	compressor Gardner 1300
010	Stauscheibe	baffle
011	Stauscheibe	baffle
500	Elektroschaltanlage	electric switchboard
501	Brennersteuerung BCU 370	burner control BCU 370
800	Fackel	flare
860	Zündelektrode	initialing electrode

örtlich local

in der Leittechnik in the control cabinet

Bezeichnung der Messstellen
Indication of the measuring elements

1. Buchstabe 1. letter	Folgebuchstaben following letters	Bedeutung	meaning
F		Durchfluss	flow
G		Position	position
L		Niveau	level
P		Druck	pressure
Q		Analyse	analysis
T		Temperatur	temperature
	A	Alarm	alarm
	C	Regelung	regulation
	I	Anzeige	visual display
	O	Endlage	final position
	Q	Aufsummierung	adding counter
	R	Registrierung	registration
	S	Schalten	switching
	Z	Noteingriff	emergency stop

Projekt | Zul. Abw. | DIN 7168-m | Maßstab | Gewicht

	Datum	Name
Bearb.	07.02.2013	
Gepr.		
Norm.		
Abt.:		Tel.:

C-nox

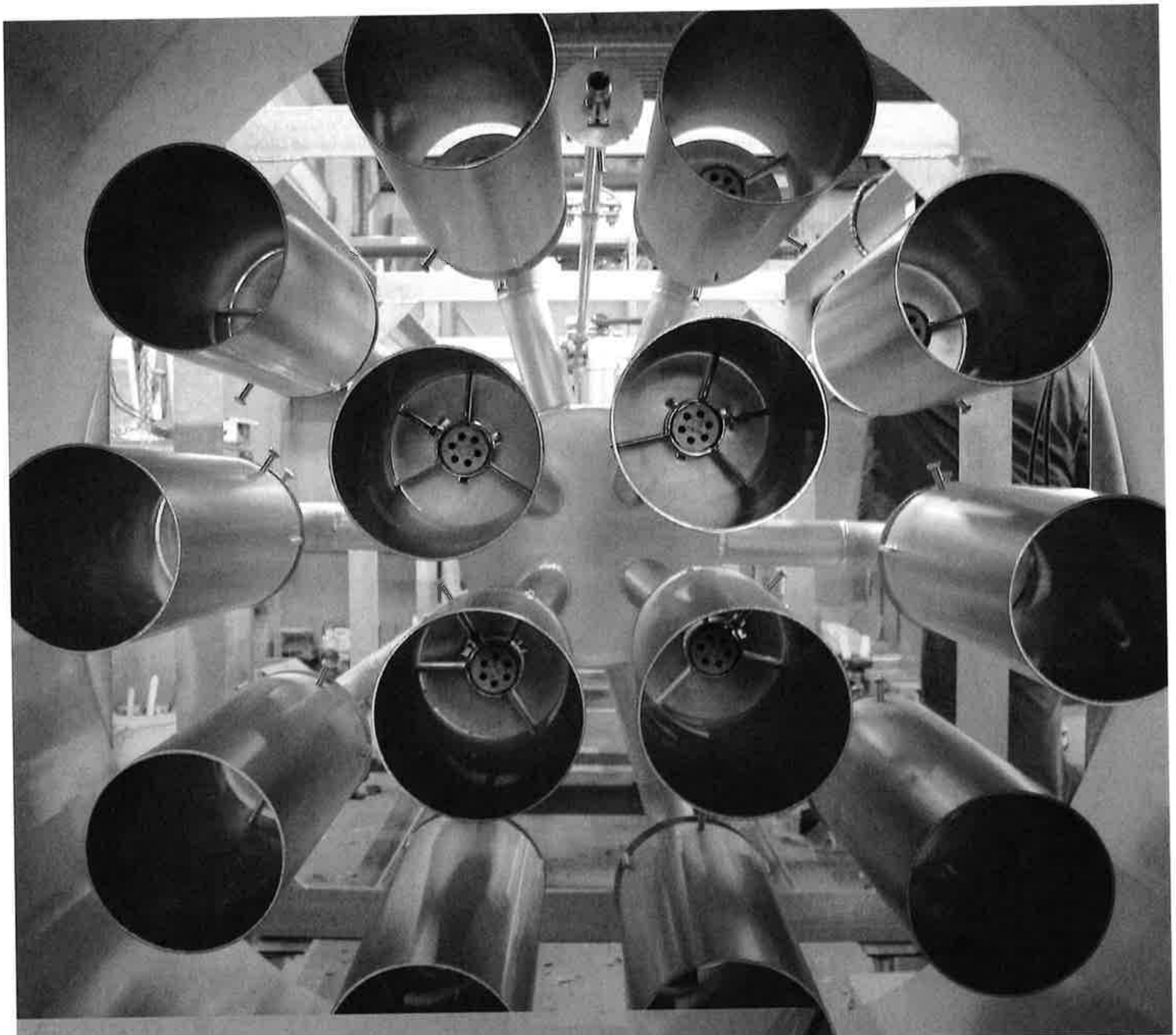
Benennung

Prinzip-Fließschema 1-Kreis
Principle P&ID diagram

Zeichnungs-Nr. | Blatt 1 | 1 Bl.

Zust. | Änderung-Nr. | Datum | Name | Urspr. | Ers. f. | Ers. d.

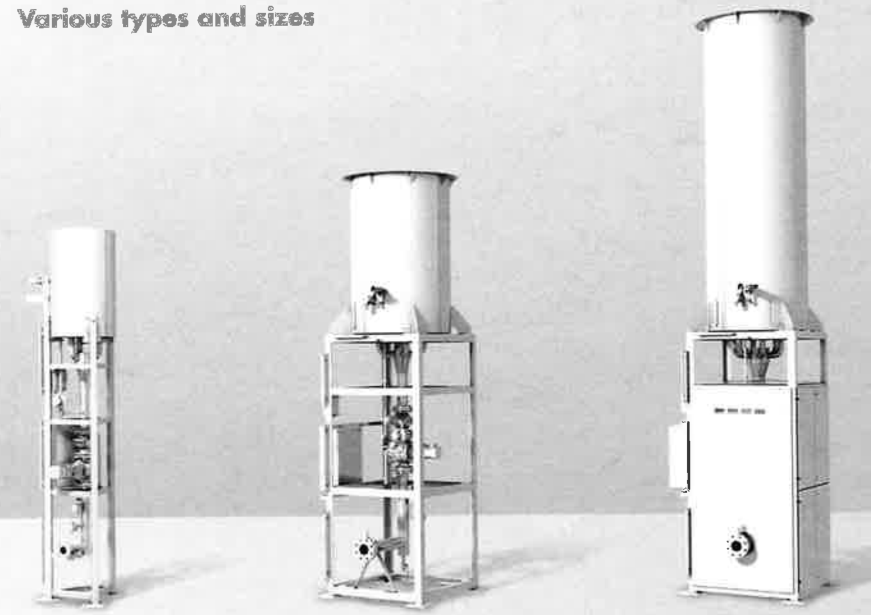
Format A1



Low temperature flares – Combustion of biogases, sewage gases and synthetic gases

C-nox
environmental engineering

Various types and sizes



Smart flare LCN

NTO* flare
here: without housing
*NTO = open, visible combustion

NTV* flare
here: with housing
*NTV = covered combustion

Professional design at a good price

The C-nox low temperature flares are distinguished by their simple and robust construction. The maintenance and operating costs have therefore been reduced to a minimum. Exclusively high quality components are used which fulfil all technical safety requirements (e.g. ATEX, DIN EN 746-2, DIN EN 298). Thanks to the modular system, the most economical solution is available for every application. Design examples for all biogases, sewage gases or synthetic gases for combustion temperatures of up to 850°C:

- Visible or covered combustion
- With or without pressure booster ventilator (compressor)
- Installation on a foundation or container roof
- Support gas burner
- Bivalent applications (separate gas feeds)
- Multi-level
- Winter package with housing and electric heating
- In conformity with guidelines by the German Commission of Process Safety (KAS) and the technical circular on protection against air pollution (TA Luft)
- Commissioning as well as maintenance and service

Unbeatable price/performance ratio

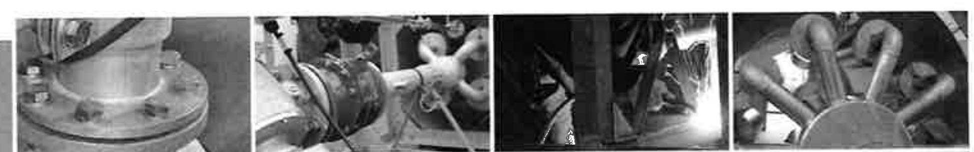
SMART flares, the light variant for retrofitting

Design size	Gas quantity	Combustion capacity	Electr. combined heat & power plant	Gas connection
(Type)	Q [Nm³/h], single stage	P [kW] at 55 vol.% CH_4	P [kW] at η=40%	
LCN 0,4	approx. 20 to 70	approx. 110 to 400	approx. 160	DN 40
LCN 0,8	approx. 40 to 145	approx. 220 to 800	approx. 320	DN 50
LCN 1,2	approx. 55 to 220	approx. 300 to 1,200	approx. 480	DN 65
LCN 1,6	approx. 75 to 290	approx. 400 to 1600	approx. 640	DN 80
LCN 2,0	approx. 90 to 365	approx. 500 to 2,000	approx. 800	DN 80

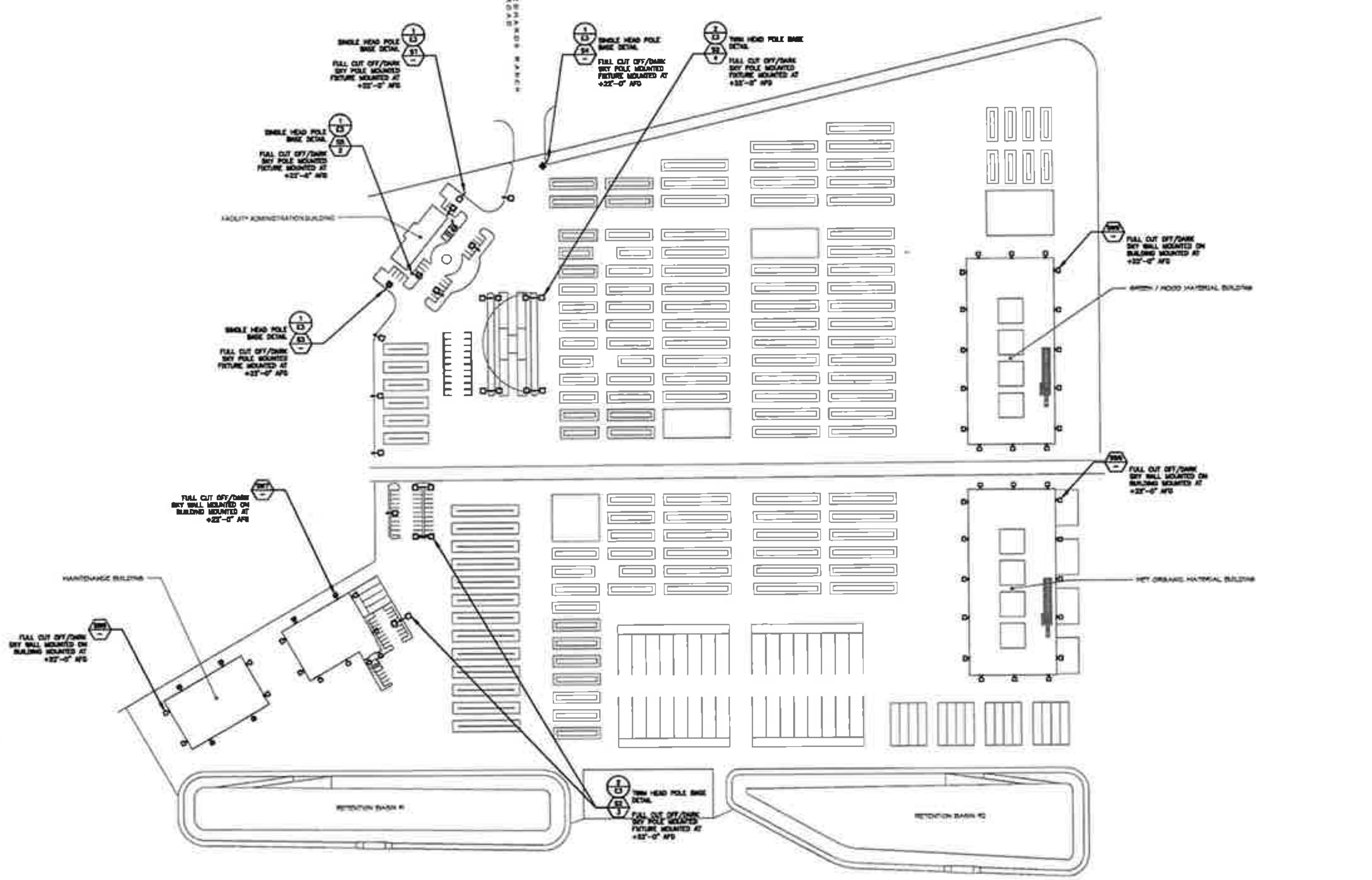
NT flares, the professional variant for all applications

Design size	Gas quantity	Combustion capacity	Electr. combined heat & power plant	Gas connection
(Type)	Q [Nm³/h], single stage	P [kW] at 55 vol.% CH_4	P [kW] at η=40%	
NTO, NTV 0,4	approx. 20 to 70	approx. 110 to 400	approx. 160	DN 40
NTO, NTV 0,8	approx. 40 to 145	approx. 220 to 800	approx. 320	DN 50
NTO, NTV 1,2	approx. 55 to 220	approx. 300 to 1,200	approx. 480	DN 65
NTO, NTV 1,6	approx. 75 to 290	approx. 400 to 1,600	approx. 640	DN 80
NTO, NTV 2,0	approx. 90 to 365	approx. 500 to 2,000	approx. 800	DN 80
NTO, NTV 2,4	approx. 110 to 440	approx. 600 to 2,400	approx. 960	DN 100
NTO, NTV 2,8	approx. 130 to 510	approx. 700 to 2,800	approx. 1,120	DN 100
NTO, NTV 3,2	approx. 145 to 580	approx. 800 to 3,200	approx. 1,280	DN 100
NTO, NTV 3,6	approx. 165 to 655	approx. 900 to 3,600	approx. 1,440	DN 100
NTO, NTV 4,0	approx. 181 to 725	approx. 1,000 to 4,000	approx. 1,600	DN 125
NTO, NTV 4,4	approx. 200 to 800	approx. 1,100 to 4,400	approx. 1,760	DN 125
NTO, NTV 4,8	approx. 220 to 870	approx. 1,250 to 4,800	approx. 1,920	DN 150
NTO, NTV 5,2	approx. 236 to 945	approx. 1,250 to 5,200	approx. 2,080	DN 150
NTO, NTV 5,6	approx. 255 to 1,020	approx. 1,250 to 5,600	approx. 2,240	DN 150
NTO, NTV 6,0	approx. 275 to 1,100	approx. 1,500 to 6,000	approx. 2,400	DN 150

Other sizes on request.
We reserve the right to make technical modifications.



C-nox GmbH & Co. KG
Haberstraße 23 · D-24537 Neumünster · Tel.: +49 4321-85199-0 · Fax: +49 4321-85199-10 · E-mail: info@c-nox.de
www.c-nox.de



1 SITE LIGHTING PLAN
SCALE: 1" = 100'

PLAN NORTH

C. HOOD & ASSOCIATES, INC.
838 East Front Street, Ventura, California 93001
Phone (805) 641-4012 Fax (805) 641-0450
www.choodassociates.com

AGROMIN-LIMONEIRA
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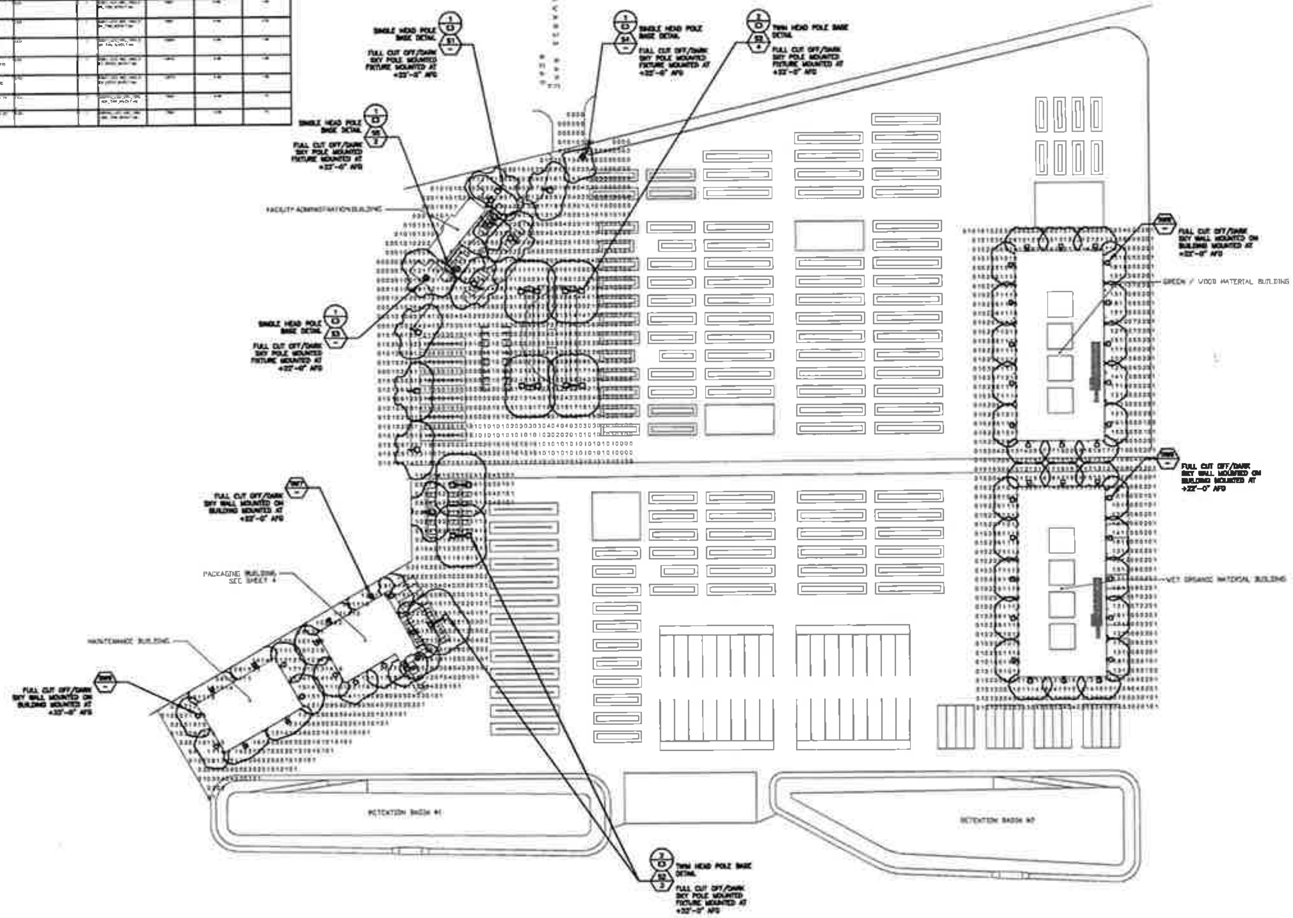
E1

	S1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	S2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	S3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	S4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	S5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	SW6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	SW7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]



1 SITE LIGHTING POINT BY POINT PHOTOMETRIC CALCULATIONS AND PLAN
SCALE: 1" = 100'

PLAN NORTH

C. Hood & Associates, Inc.
Consulting Electrical Engineers
858 East Front Street, Ventura, California 93001
Phone (805) 641-4012 Fax (805) 641-0450

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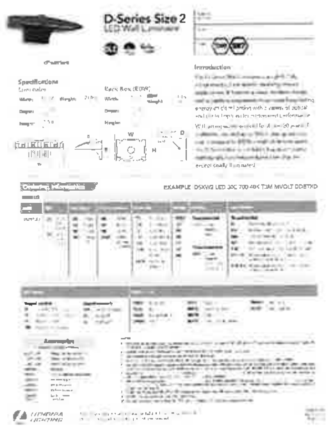
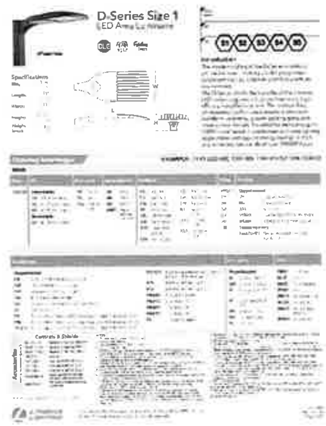


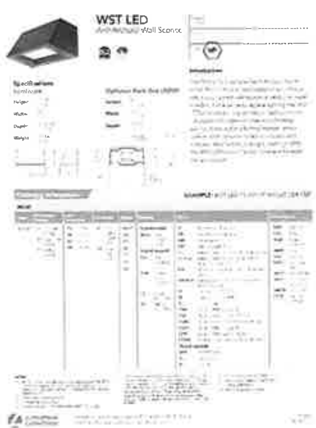


OUTDOOR LIGHTING FIXTURE SCHEDULE

TAG	SYMBOL	WATT	DESCRIPTION	LAMP - TYPE AND QUANTITY	MOUNTING	MANUFACTURER AND MODEL NUMBER	REMARKS
[illegible]	[illegible]	138	FULL CUT OFF/DARK SKY LED SINGLE HEAD POLE MOUNTED LUMINAIRE	LED [illegible]	POLE MOUNT 22'-0"	LITHONIA [illegible]	[illegible]
[illegible]	[illegible]	276	FULL CUT OFF/DARK SKY LED TWIN HEAD POLE MOUNTED LUMINAIRE	LED [illegible]	POLE MOUNT [illegible]	LITHONIA [illegible]	[illegible]
[illegible]	[illegible]	138	FULL CUT OFF/DARK SKY LED SINGLE HEAD POLE MOUNTED LUMINAIRE	LED [illegible]	POLE MOUNT [illegible]	LITHONIA [illegible]	[illegible]
[illegible]	[illegible]	138	FULL CUT OFF/DARK SKY LED SINGLE HEAD POLE MOUNTED LUMINAIRE	LED [illegible]	POLE MOUNT [illegible]	LITHONIA [illegible]	[illegible]
[illegible]	[illegible]	138	FULL CUT OFF/DARK SKY LED SINGLE HEAD POLE MOUNTED LUMINAIRE	LED [illegible]	POLE MOUNT [illegible]	LITHONIA [illegible]	[illegible]
[illegible]	H1	73	FULL CUT OFF/DARK SKY LED BUILDING WALL MOUNTED LUMINAIRE	LED [illegible]	BUILDING WALL MOUNTED [illegible]	LITHONIA [illegible]	[illegible]
[illegible]	H2	73	FULL CUT OFF/DARK SKY LED BUILDING WALL MOUNTED LUMINAIRE	42 LED [illegible]	BUILDING WALL MOUNTED [illegible]	LITHONIA [illegible]	[illegible]
[illegible]	[illegible]	[illegible]	FULL CUT OFF/DARK SKY ARCHITECTURAL LED EXTERIOR WALL SCONCE	LED [illegible]	SURFACE MOUNTED [illegible]	LITHONIA [illegible]	FULL CUT OFF WALL PACK MOUNTED [illegible]

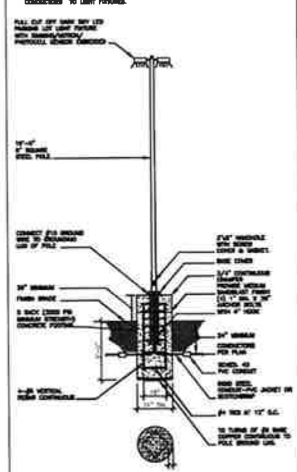
FIXTURE SCHEDULE NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR [illegible] PROPER TYPE OF TRIMS FOR ALL RECESSED FLUORESCENT FIXTURES TO FIT THE CEILING BEING INSTALLED.
2. ALL FLUORESCENT LAMPS SHALL BE [illegible]
3. ALL BALLASTS SHALL BE ELECTRONIC SOLID STATE.
4. FIXTURES TYPE IN CONTACT WITH INSULATION SHALL HAVE U.L. LISTED THERMAL [illegible]
5. CONTRACTOR SHALL VERIFY THE TYPE OF CEILING BEFORE ORDERING NEW FIXTURES. CONTRACTOR IS FULLY RESPONSIBLE TO PROVIDE ALL MOUNTING BRACKETS TO FIT CEILING CONDITIONS AT NO EXTRA CHARGE TO THE OWNER.
6. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF LIGHTING FIXTURES.
7. SEE ARCHITECTURAL PLANS FOR EXACT DIMENSIONS, CEILING CONFIGURATION AND LIGHTING PLACEMENT.
8. FIXTURE TYPE / QUANTITY (WHERE NO NUMERIC QUANTITY IS LISTED, FIXTURE TYPE IS TYPICAL FOR ENTIRE AREA)
9. EXIT SIGN CURRENT POWER SUPPLY TO ONE OF THE LAMPS SHALL BE PROVIDED BY THE PREMISES' WIRING SYSTEM. POWER SUPPLY TO THE OTHER LAMP SHALL BE FROM STORAGE BATTERIES OR AN ON-SITE GENERATOR. IN THE EVENT OF A POWER FAILURE, ILLUMINATION SHALL AUTOMATICALLY BE PROVIDED BY AN EMERGENCY SYSTEM FOR A DURATION OF 90 MIN. THE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.



DETAIL NOTES:

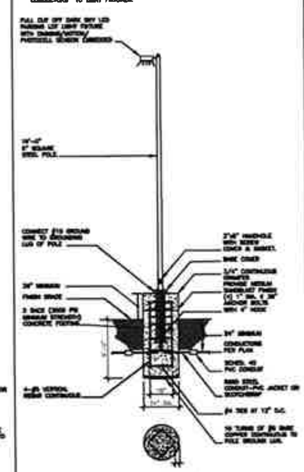
1. USE COMPRESSION LUGS TO TERMINATE CONDUCTORS TO LIGHT FIXTURES.



② TWIN HEAD TYPICAL PARKING LOT LIGHTING 24" CONCRETE BASE MOUNT DETAIL
SCALE: NONE

DETAIL NOTES:

1. USE COMPRESSION LUGS TO TERMINATE CONDUCTORS TO LIGHT FIXTURES.



① SINGLE HEAD TYPICAL PARKING LOT LIGHTING 24" CONCRETE BASE MOUNT DETAIL
SCALE: NONE

C. HOOD & ASSOCIATES, INC.
CONSULTING ELECTRICAL ENGINEERS

AGROMIN-LIMONEIRA
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01/04/2017

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GENERAL NOTES

A. GENERAL

1. SCOPE
THE DRAWINGS AND THESE GENERAL NOTES DESCRIBE THE SYSTEMS. THE MATERIAL REQUIRED FOR THE WORK SHALL BE CONTRACTOR FURNISHED AND CONTRACTOR INSTALLED, UNLESS SPECIFICALLY NOTED OTHERWISE. THE WORK INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING PRINCIPAL SYSTEMS AND EQUIPMENT.

2. PERMITS AND CHARGES
OBTAIN AND PAY FOR ALL NECESSARY CONSTRUCTION PERMITS, INSPECTION FEES, AND OTHER CHARGES BY AGENCIES HAVING JURISDICTION.

3. REGULATIONS AND CODES
PROVIDE AND INSTALL ALL MATERIALS IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE, CALIFORNIA ADMINISTRATIVE CODE TITLE 8, AND OTHER CODES AND REGULATIONS HAVING JURISDICTION. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH THE REQUIREMENTS OF THE INSPECTING AUTHORITY AND THE MANUFACTURERS RECOMMENDATIONS.

4. VERIFYING EXISTING CONDITIONS
BEFORE SUBMITTING BID, BECOME THOROUGHLY FAMILIAR WITH ACTUAL EXISTING CONDITION AT THE BUILDING. THE INTENT OF THE WORK IS SHOWN ON THE DRAWINGS AND DESCRIBED HEREINAFTER. BY THE ACT OF SUBMITTING A BID PROPOSAL FOR THE WORK, THE CONTRACTOR SHALL BE DEEMED TO HAVE MADE SUCH STUDY AND EXAMINATION AND TO ACCEPT ALL CONDITIONS PRESENT AT THE SITE. NO REQUEST FOR ADDITIONAL PAYMENT WILL BE CONSIDERED AS VALID, DUE TO FAILURE TO ALLOW FOR CONDITIONS WHICH MAY EXIST.

5. COORDINATION
COORDINATE ALL WORK WITH OTHER TRADES AND UTILITY COMPANY. OBTAIN ALL DRAWINGS THAT WILL REQUIRE COORDINATION AND PROVIDE ALL ELECTRICAL CONNECTION REQUIRED WHETHER SHOWN ON ELECTRICAL DRAWINGS OR NOT. THIS CONTRACTOR TO OBTAIN AND REFER TO H.V.A.C., PLUMBING AND OTHER DRAWINGS AND PROVIDE ALL CONTROL WIRING, RELAYS, STARTERS, TIME SWITCHES, CONDUIT, ETC. INDICATED THEREON AS BEING PROVIDED UNDER THE ELECTRICAL WORK. ELECTRICAL EQUIPMENT LOCATIONS INDICATED ARE SHOWN DIAGRAMMATICALLY, EXACT LOCATION SHALL BE VERIFIED.

6. SERVICE CONTINUITY
UNINTERRUPTED EXISTING ELECTRICAL POWER SHALL BE MAINTAINED TO ALL AREAS OF THE SITE DURING CONSTRUCTION. PROVIDE ANY TEMPORARY SERVICES AS MAY BE REQUIRED. IDENTIFY AT BID TIME, ALL WORK TO BE DONE ON PREMIUM TIME AND THE TOTAL OVERTIME MAN-HOURS REQUIRED FOR COMPLETION.

7. AS BUILT
PROVIDE RECORD DRAWINGS TO THE OWNER WITH ALL CHANGES NOTED THEREON AT THE COMPLETION OF THE PROJECT. RECORD DRAWINGS SHALL BE SIGNED AND DATED BY CONTRACTOR.

8. GUARANTEE
CONTRACTOR SHALL UNCONDITIONALLY GUARANTEE ALL LABOR AND MATERIALS ON ALL WORK AGAINST DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE YEAR.

9. SHOP DRAWINGS
SUBMIT SHOP DRAWINGS AND MATERIAL LIST FOR REVIEW PRIOR TO COMMENCING ANY WORK. ALL EQUIPMENT TO BEAR U.L. LABEL OR THAT OF ANOTHER ACCEPTABLE TESTING LABORATORY. SHOP DRAWINGS MUST BE STAMPED BY THE CONTRACTOR FOR CONFORMANCE PRIOR TO SUBMITTAL.

SUBMIT SIX SETS OF SHOP DRAWINGS FOR REVIEW PRIOR TO PURCHASING ALL BREAKER MOUNTING HARDWARE, DISCONNECT SWITCHES, FUSES, CONTROLLERS, LIGHTING FIXTURES, LIGHT SWITCHES, RECEPTACLES, ETC.

10. CONTRACTOR BID
CONTRACTOR'S BID SHALL BE BASED ON ALL WORK SHOWN ON THE PLANS AND AS SPECIFIED. IF CONTRACTOR PROPOSES TO SUBSTITUTE FOR EQUIPMENT SPECIFIED, HE SHALL SUBMIT HIS REQUEST FOR CONSIDERATION OF THE OWNER AND ENGINEER PRIOR TO BID IN WRITING. ALL SUBSTITUTIONS MUST BE REVIEWED BY THE ENGINEER IN WRITING. SUCH REVIEW SHALL NOT RELIEVE THE CONTRACTOR COMPLYING WITH THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS, AND THE CONTRACTOR SHALL BE RESPONSIBLE AT HIS OWN EXPENSE FOR ANY CHARGES RESULTING FROM HIS PROPOSED SUBSTITUTIONS WHICH AFFECT OTHER PARTS OF HIS OWN WORK OR THE WORK OF OTHER CONTRACTORS.

B. MATERIAL AND INSTALLATION
ALL WORK AND MATERIAL SHALL CONFORM TO THE LATEST RULES OF THE CALIFORNIA ELECTRICAL CODE AND INSTALLATION SHALL BE OF THE LATEST INDUSTRY STANDARDS OF WORKMANSHIP.

ALL MATERIAL SHALL BE NEW AND LISTED BY UNDERWRITERS LABORATORY (U.L.).

1. CONDUITS
CONDUIT SHALL BE EMT, RIGID OR FLEXIBLE STEEL TYPE. CONDUIT SHALL BE MANUFACTURED IN ACCORDANCE WITH UL-1. A GROUND WIRE IS REQUIRED IN ALL CONDUIT RUNS.

2. SWITCHES AND RECEPTACLES
PROVIDE 20AMP NEMA RATED SWITCHES AND RECEPTACLES OF SPECIFICATION GRADE. ALL SWITCHES SHALL BE RATED FOR 277 VOLT AND RECEPTACLES SHALL BE NEMA 5-20R. SPECIAL RECEPTACLE SHALL MATCH THE EQUIPMENT AS LISTED.

3. FEEDERS AND BRANCH CIRCUITS IDENTIFICATION
IDENTIFY FEEDERS WITH THE CORRESPONDING CIRCUIT DESIGNATION AT THE OVER-CURRENT DEVICE, LOAD END, AND IN PULL BOXES WITH E-Z CODE OR OTHER APPROVED WIRE MARKER.

IDENTIFY BRANCH CIRCUITS WITH I.D. MARKERS, THE CORRESPONDING CIRCUIT DESIGNATION AT THE OVER-CURRENT DEVICE, AT ALL SPLICES, IN JUNCTION BOXES, AND IN OUTLETS. USE PLASTIC COATED SELF-STICKING MARKERS SUCH AS THOMAS & BETTS E-Z CODE FOR IDENTIFICATION OF CONDUCTORS.

IDENTIFY SIGNAL & COMMUNICATION CABLES AT TERMINAL AND OUTLET.

4. CONDUCTORS
DELIVER ALL CONDUCTORS TO THE JOB SITE IN ORIGINAL UNBROKEN CARTON OR REEL PROPERLY TAGGED WITH U.L. LABEL, SIZE, TYPE, MANUFACTURER, TRADE NAME AND THE DATE OF MANUFACTURE. (MUST BE MANUFACTURED WITHIN 6 MONTHS)

PROVIDE COPPER CONDUCTORS #12 AWG MINIMUM UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS. PROVIDE SOLID CONDUCTORS, #12 AWG AND SMALLER. PROVIDE STRANDED CONDUCTORS, #10 AWG AND LARGER UNLESS OTHERWISE NOTED.

USE CONDUCTORS WITH THHN/THWN 600 VOLTS INSULATION, UNLESS OTHERWISE NOTED.

5. LIGHTING FIXTURES
PROVIDE BUILDING STANDARD LIGHTING FIXTURES WITH MOTOROLA HIGH-PERFORMANCE ELECTRONIC BALLAST AND G.E. TRIMLINE T-8 LAMPS. LAMPS FOR THE FIXTURES SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.

6. PANELBOARDS
PROVIDE BREAKER TO MATCH EXISTING MANUFACTURER AND BREAKER RATING TO EXCEED AVAILABLE FAULT. PROVIDE PANEL IDENTIFICATION NAMEPLATE AND UPDATE TYPEWRITTEN LIST OF CIRCUITS IN THE DIRECTORY FRAME AS REQUIRED.

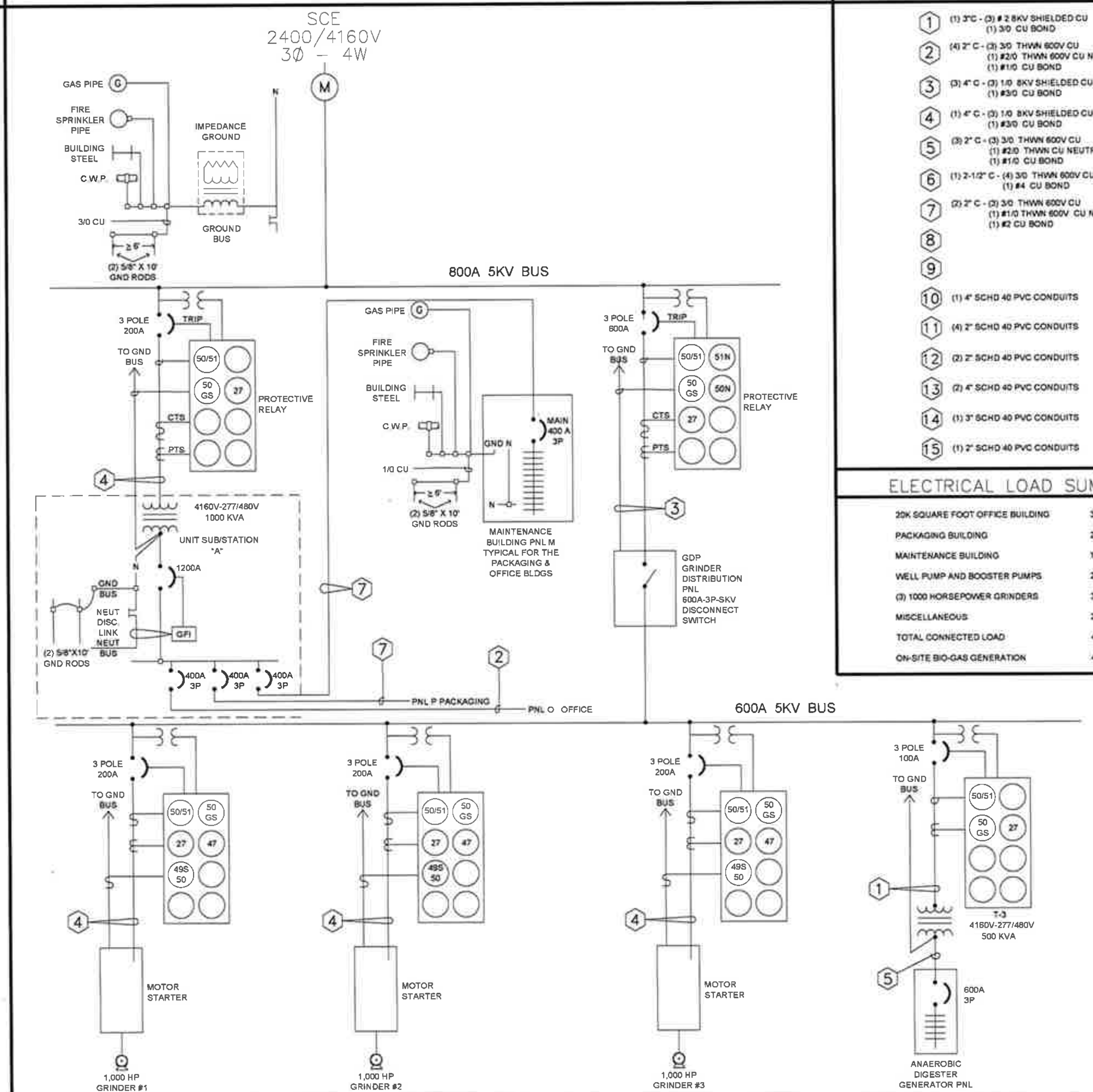
7. LIGHTING CONTROLS
ALL LIGHTING CONTROLS SHALL BE +48" TO +15" AND WITHIN SIGHT OF THE LIGHTING FIXTURES. CCR 24

8. RECEPTACLES
ALL CONVENIENCE RECEPTACLES SHALL BE ABOVE +15". CCR 24

9. MACHINERY
FOR SPECIFIC ITEMS OF EQUIPMENT, MACHINERY OR MATERIAL THEY SHALL BE LISTED AS REQUIRED BY ART. 90-7.

C. EXISTING ELECTRICAL SYSTEMS
1. ALL EXISTING ELECTRICAL SYSTEMS SHALL COMPLY WITH THE CURRENT NATIONAL ELECTRICAL CODE.

PROPOSED SERVICE ONE LINE



CONDUIT & WIRE TABLE

1	(1) 3"C - (3) # 2 8KV SHIELDED CU (1) 3/0 CU BOND
2	(4) 2" C - (3) 3/0 THWN 600V CU (1) #2/0 THWN 600V CU NEUTRAL (1) #1/0 CU BOND
3	(3) 4" C - (3) 1/0 8KV SHIELDED CU (1) #3/0 CU BOND
4	(1) 4" C - (3) 1/0 8KV SHIELDED CU (1) #3/0 CU BOND
5	(3) 2" C - (3) 3/0 THWN 600V CU (1) #2/0 THWN CU NEUTRAL (1) #1/0 CU BOND
6	(1) 2-1/2" C - (4) 3/0 THWN 600V CU (1) #4 CU BOND
7	(2) 2" C - (3) 3/0 THWN 600V CU (1) #1/0 THWN 600V CU NEUTRAL (1) #2 CU BOND
8	
9	
10	(1) 4" SCHD 40 PVC CONDUITS
11	(4) 2" SCHD 40 PVC CONDUITS
12	(2) 2" SCHD 40 PVC CONDUITS
13	(2) 4" SCHD 40 PVC CONDUITS
14	(1) 3" SCHD 40 PVC CONDUITS
15	(1) 2" SCHD 40 PVC CONDUITS

ELECTRICAL LOAD SUMMARY

20K SQUARE FOOT OFFICE BUILDING	300KVA
PACKAGING BUILDING	200KVA
MAINTENANCE BUILDING	100KVA
WELL PUMP AND BOOSTER PUMPS	200KVA
(3) 1000 HORSEPOWER GRINDERS	3000KVA
MISCELLANEOUS	200KVA
TOTAL CONNECTED LOAD	4000KVA
ON-SITE BIO-GAS GENERATION	400KVA

REV. NO. | BY | DATE | DESCRIPTION

CALKINS ELECTRIC, INC.
ENGINEERING
11596 BARRANCA RD., CAMARILLO, CA 93012
805 551-8591

PERCY B. CALKINS
E 8238
09/30/18
ELECTRICAL

PROJECT: BIOGENIC ENERGY PARK

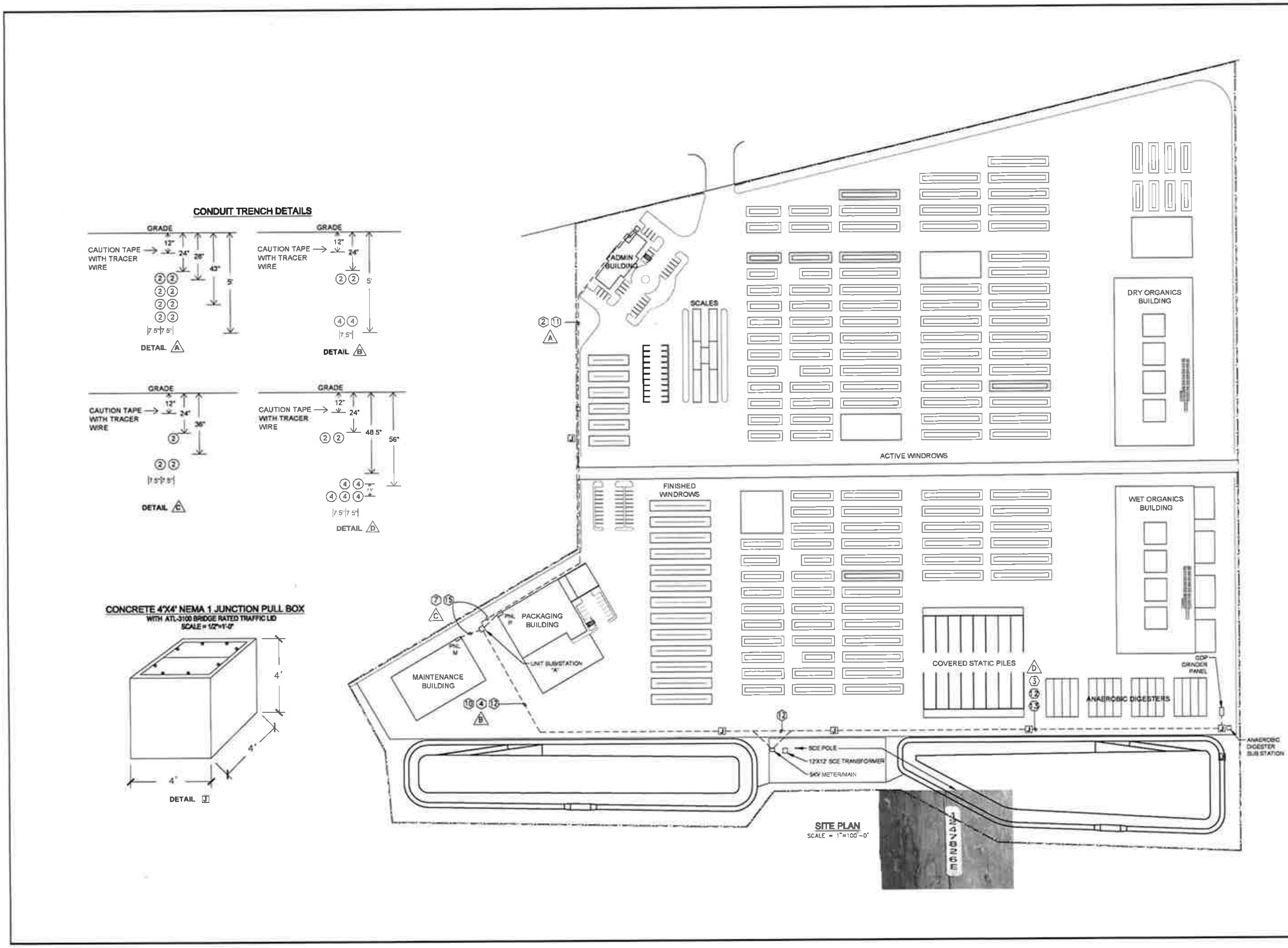
SHEET TITLE: GENERAL NOTES, SCHEDULES & ELECTRICAL ONE LINES

PROJECT MANAGER: MIKE HARRISON (805) 904-5634
PROJECT DESIGNER: PERCY B. CALKINS
CLIENT: EJ HARRISON & SONS, INC. 1589 LIRIO AVENUE VENTURA, CA 93004

DATE: JANUARY 9, 2017
SCALE
DRAWN BW
CHECKED PBC
APPROVED

NOTICE: CONTRACTOR SHALL VERIFY ALL CONDITIONS ON JOB SITE AND NOTIFY PROJECT MANAGER OF ANY VARIATIONS FROM INFORMATION SHOWN ON THESE DRAWINGS BEFORE PROCEEDING W/ANY CONST.

SHEET NO. E-1
OF SHEETS REV.
BLDG/AREA NO. ACCOUNT NO. E0603



CALKINS ELECTRIC, INC.
ENGINEERING
11596 BARRANCA RD., CAMARILLO, CA 93012
805 551-6591

PROJECT: BIOGENIC ENERGY PARK

SHEET TITLE: SITE PLAN

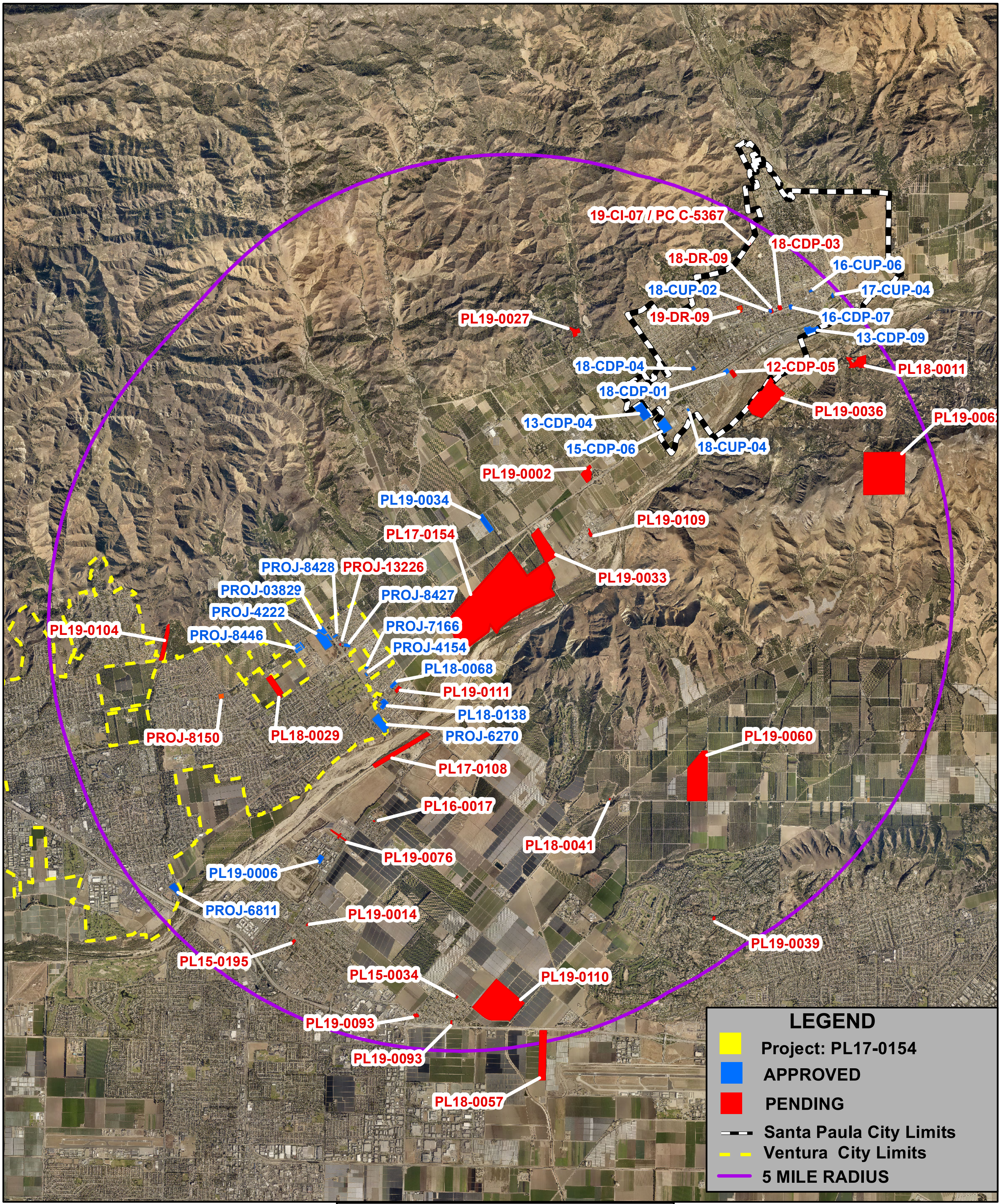
DATE: JANUARY 9, 2017
SCALE
DRAWN BY
CHECKED: PRC
APPROVED

PROJECT MANAGER: MIKE HARRISON (805) 904-3634
PROJECT DESIGNER: PERCY R. CALKINS
CLIENT: EJ HARRISON & SONS, INC, 1589 LIRIO AVENUE, VENTURA, CA 93004

NOTICE: CONTRACTOR SHALL VERIFY ALL CONDITIONS ON JOB SITE AND NOTIFY PROJECT MANAGER OF ANY VARIATIONS FROM INFORMATION SHOWN ON THESE DRAWINGS BEFORE PROCEEDING W/ANY CONST.

SHEET NO. E-2

ACCOUNT NO. E0603



Ventura County,California
Resource Management Agency
GIS Development & Mapping Services
Map Created on 11-21--2019
This aerial imagery is under the
copyrights of Pictometry
Source: Pictometry, 2018

RMAgis

Attachment 3 - Map and List of Pending Projects

5 Miles Radius Map of Project: PL17-0154 APN: 090-0-180-085

0 0.75 1.5 Miles

Disclaimer: This Map was created by the Ventura County Resource Management Agency, Mapping Services - GIS which is designed and operated solely for the convenience of the County and related public agencies. The County does no twarrant the accuracy of this mapand no decision involving a risk of economic loss or physical injury should be made in reliance thereon.

RH

County of Ventura - List of Pending and Approved Projects

APN	NAME_1	MAIL_ADDR	CTY_STA	ZIP	APN10	SITUS	OID_	STATUS	RECORD_ID	APN10_1
149004118	GARDEN ACRES MUTUAL WATER CO	650 HOBSON WAY STE 102	OXNARD CA	93030	1490041185	FRIEDRICH RD	48	Pending	PL15-0034	1490041185
145015303	CH FIRST SAMOAN CONGR OXNARD	P O BOX 7021	OXNARD CA	93031	1450153030	250 E COLLINS ST	57	Pending	PL15-0195	1450153030
147002405	MUTUAL WTR CO OF STRICKLAND	4908 STRICKLAND DR	OXNARD CA	93036	1470024050	4952 JOAN WY	59	Pending	PL16-0017	1470024050
149008205	BATELAAN WILLIAM J-SHIRLEY J	2207 KLAMATH DR	CAMARILLO CA	93010	1490082055	2971 VENTURA BL	66	Pending	PL16-0121	1490082055
132001007	THE NATURE CONSERVANCY	201 MISSION ST FL 4	SAN FRANCISCO CA	94105	1320010070	3360 JOHNSON DR	76	Pending	PL17-0049	1320010070
149008209	SAEMESH EYAL TR	PO BOX 570283	TARZANA CA	91357	1490082090	2945 VENTURA BL	77	Pending	PL17-0077	1490082090
128004005	VENTURA COUNTY FL CTRL DIST	800 S VICTORIA AVE	VENTURA CA	93009	1280040050		84	Pending	PL17-0108	1280040050
090018008	LIMONEIRA COMPANY	1141 CUMMINGS RD	SANTA PAULA CA	93060	0900180085		94	Pending	PL17-0154	0900180085
064030004	LIMONEIRA COMPANY	1141 CUMMINGS RD	SANTA PAULA CA	93060	0640300040		7	Approved	PL18-0006	0640300040
064030004	LIMONEIRA COMPANY	1141 CUMMINGS RD	SANTA PAULA CA	93060	0640300040		7	Approved	PL18-0006	0640300040
107005044	GREEN THOUGHT LLC	15332 ANTIOCH ST #106	PACIFIC PALISADES CA	90272	1070050445	18000 S MOUNTAIN RD	97	Pending	PL18-0011	1070050445
089001128	MCCONICA JOHN II-G TR ET AL	3714 FOOTHILL RD	VENTURA CA	93003	0890011285		104	Pending	PL18-0029	0890011285
109004111	SEACOAST FARMS LLC LESSOR	PO BOX 14607	IRVINE CA	92623	1090041110		107	Pending	PL18-0041	1090041110
216004065	VACCA LAND & FARMING	330 N WOOD #L	CAMARILLO CA	93010	2160040655		114	Pending	PL18-0057	2160040655
090014112	CA CLASSIC STORAGE SATICOY	23622 CALABASAS RD #220	CALABASAS CA	91302	0900141125	11299 NARDO	13	Approved	PL18-0068	0900141125
128002207	WALKER AND WALKER PROPERTIES	PO BOX 111	AGOURA HILLS CA	91376	1280022075	NARDO ST	26	Approved	PL18-0138	1280022075
090019016	MISSION ROCK ENERGY CTR LLC	717 TEXAS AV #1000	HOUSTON TX	77002	0900190165	1025 MISSION ROCK RD	141	Pending	PL18-0139	0900190165
096003013	BALL HORTICULTURAL CO	622 TOWN RD	WEST CHICAGO IL	60185	0960030135	335 S BRIGGS RD	155	Pending	PL19-0002	0960030135
133003109	MARGUS LIMITED	PO BOX 1088	CAMARILLO CA	93011	1330031090	262 MONTGOMERY AV	159	Pending	PL19-0006	1330031090
145001210	CH OXNARD KOREAN METHODIST	272 CORSICANA DR	OXNARD CA	93036	1450012100	272 CORSICANA DR	164	Pending	PL19-0014	1450012100
038013012	STRATA HOLDINGS LP ET AL	14950 HAPPY TALK RANCH RD	SANTA PAULA CA	93060	0380130125	14950 HAPPY TALK RANCH RD	171	Pending	PL19-0027	0380130125
099005009	VENTURA COUNTY OF	800 S VICTORIA AVE	VENTURA CA	93009	0990050095		176	Pending	PL19-0033	0990050095
090007008	GONZALEZ JOSE J-ADRIANA R TR	PO BOX 1031	SANTA PAULA CA	93061	0900070080	12908 W TELEGRAPH RD	37	Approved	PL19-0034	0900070080
107014033	WISHTOYO FOUNDATION	9452 TELEPHONE RD #432	VENTURA CA	93004	1070140335	16799 S SOUTH MOUNTAIN RD	178	Pending	PL19-0036	1070140335
152034106	CRESTVIEW MUTUAL WATER CO	328 VALLEY VISTA DR	CAMARILLO CA	93010	1520341065	ALVISO DR	181	Pending	PL19-0039	1520341065
109004209	GRETHER SURV ADMIN TR ET AL	4049 WALNUT AV	SOMIS CA	93066	1090042090		199	Pending	PL19-0060	1090042090
107009003	GUNDERSON VIRGINIA TR ET AL	1228 WOODLAND DR	SANTA PAULA CA	93060	1070090035	17802 S SOUTH MOUNTAIN RD	201	Pending	PL19-0062	1070090035

NAME_1	APN10	STATUS	RECORD_ID
8324 TELEGRAPH RD	0880281040	Pending	PROJ-8150
5445 THILLE ST_ORCHARD GARDENS	0830050570	Pending	PROJ-13448
RAVELLO HOLDINGS	1320080275	Approved	PROJ-6811
NORTHBANK	1280060125	Approved	PROJ-6270
THE FARM - UC HANSEN TR SP - WH VENTURA	0890012325	Approved	PROJ-8446
EAST VILLAGE RESIDENTIAL	0900280255	Approved	PROJ-4154
DARLING APARTMENTS	0900280225	Approved	PROJ-7166
WESTWOOD/PARKLANDS	0690012045	Approved	PROJ-03829
CITRUS DR - CITRUS II -	0900250305	Approved	PROJ-8427
76 Station_11008 Citrus Dr	0900250285	Pending	PROJ-13226
GISLER RANCH	0900250255	Approved	PROJ-8428
PARKLANDS APARTMENTS	0890012140	Approved	PROJ-4222

NAME_1	APN10	STATUS	RECORD_ID
King Building - 6 New Apartments	1030112155	Pending	18-CDP-03
Airpark Specific Plan	1040107095	Approved	13-CDP-09
SP Business Park West	0980010165	Approved	13-CDP-04
Santa Maria Industrial Park	1040240085	Pending	12-CDP-05
BESS (5MW)	1010241185	Approved	16-CUP-06
Staples Construction Yard	0990040575	Approved	18-CUP-04
3-Bar Breaking & Excavating	1010260455	Approved	17-CDP-04
O'Kote Pipe Factory	0990030345	Approved	15-CDP-06
La Terraza Event Center	1010214165	Approved	16-CDP-07
Anna's Cider	1030101135	Approved	18-CUP-02
Gunsmoke Barbeque Restaurant	1030101125	Pending	18-DR-09
Harvard Professional Center	1020221015	Approved	18-CDP-04
Santa Paula Self Storage Too	1040240015	Approved	18-CDP-01
Saint Sebastian Catholic School	1030051305	Pending	19-DR-09
Mesa Tanks Telecom	1000300025	Pending	19-CI-07 / PC C-5367

SESPE
CONSULTING, INC.

374 Poli Street, Suite 200 • Ventura, California 93001

AIR QUALITY, CLIMATE CHANGE IMPACT AND HEALTH RISK ASSESSMENT

Agromin
Commercial Organics Processing Operation
Edwards Ranch Road
Santa Paula, California 93060

May 20, 2017

Prepared for: Agromin
201 Kinetic Drive
Oxnard, CA 93030

Prepared by: Sespe Consulting, Inc.
374 Poli Street, Suite 200
Ventura, CA 93001
(805) 275-1515

County of Ventura
Notice of Preparation of an EIR
PL17-0154
Attachment 4 - Air Quality Analysis, Climate Change Impact and Health Risk Assessment and Update Memo

SESPE CONSULTING, INC.

374 Poli Street, Suite 200 • Ventura, California 93001

AIR QUALITY, CLIMATE CHANGE IMPACT AND HEALTH RISK ASSESSMENT

Agromin
Commercial Organics Processing Operation
Edwards Ranch Road
Santa Paula, California 93060

May 20, 2017

EXECUTIVE SUMMARY

This Air Quality and Climate Change Impact Assessment (AQCCIA) has been prepared to quantify and determine the significance of air quality and climate change impacts associated with the construction and operation of Agromin's proposed Commercial Organics Processing Operation (Facility) located near the City of Santa Paula, Ventura County, California. Agromin is proposing to expand their existing 15-acre agricultural composting operation into a 70-acre commercial composting facility (Project). This AQCCIA follows methodologies and guidance presented in the Ventura County Air Pollution Control District's (VCAPCD) *Ventura County Air Quality Assessment Guidelines*.

Criteria pollutant, greenhouse gas (GHG), and toxic air contaminant (TAC) emissions resulting from both the construction and operation of the proposed Facility are quantified and compared to the appropriate significance thresholds within this AQCCIA. This AQCCIA also qualitatively addresses Project consistency with the Ventura County *Air Quality Management Plan* (AQMP), fugitive dust impacts, carbon monoxide, and odor impacts.

This AQCCIA has the following findings:

- The Project results in less than significant Construction phase emissions impacts with standard mitigation measures.
- The Project results in beneficial regional criteria pollutant impacts.
- The Project results in beneficial greenhouse gasses impacts.
- The Project results in less than significant localized health risk impacts.
- The Project is consistent with the Ventura County Air Quality Management Plan.
- The Project results in less than significant fugitive dust impacts.
- The Project results in less than significant odor impacts.
- The Project results in less than significant localized carbon monoxide impacts.

AIR QUALITY AND CLIMATE CHANGE IMPACT ASSESSMENT

Agromin
Commercial Organics Processing Operation
Edwards Ranch Road
Santa Paula, California 93060

TABLES

APPENDICES

AIR QUALITY AND CLIMATE CHANGE IMPACT ASSESSMENT

Agromin
Commercial Organics Processing Operation
Edwards Ranch Road
Santa Paula, California 93060

May 20, 2017

1.0 INTRODUCTION

This Air Quality and Climate Change Impact Assessment (AQCCIA) has been prepared to quantify and determine the significance of air quality and climate change impacts associated with the construction and operation of Agromin's proposed Commercial Organics Processing Operation (Facility) located near the City of Santa Paula, Ventura County, California. Agromin is proposing to expand their existing 15-acre agricultural composting operation into a 70-acre commercial composting facility (Project). This AQCCIA follows methodologies and guidance presented in the Ventura County Air Pollution Control District's (VCAPCD) *Ventura County Air Quality Assessment Guidelines*.

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2.0 PROJECT DESCRIPTION

This section presents the portions of the Project Description that are applicable to air quality. For more detailed and complete Project information, please see the Project Description.

2.1 Project Operation

The Project is located at the south end of Edwards Ranch Road in unincorporated Ventura County, south of the City of Santa Paula (see Figure 1, Appendix A). Agromin currently operates the site as a 15-acre green and agricultural materials compost facility, called the Limoneira/Agromin Agricultural Composting Operation, which processes approximately 55,000 tons of green material per year. Current operations here include material receiving and sorting, pre-processing using a grinder and trommel screens, and composting of organics in open windrows. The Project involves transforming this existing 15-acre operation into a 70-acre commercial composting facility.

Also as part of the Project, Agromin will close down their existing compost facility located in Oxnard, commonly known as the Oxnard-Shoreline facility, transferring all operations to the new Facility in Santa Paula. Current operations at the Oxnard-Shoreline facility include feedstock receiving and sorting, pre-processing using grinders and trommel screens, green material composting in open windrows, food materials composting using a Covered Aerated Static Pile (CASP) pilot program, as well as bagging and bulk sales activities. Many of the existing operations at the 11-acre Oxnard-Shoreline facility (e.g. windrow composting, preprocessing and grinding, bagging and bulk sales, mobile and stationary processing equipment, etc.) are the same operations proposed for this Project.

Once constructed, the new Facility will process and compost approximately 295,000 tons per year of green and food materials, using a combination of open windrows, Covered Aerated Static Piles (CASP), and Anaerobic Digesters (AD). Feedstock material will be collected from various residential and commercial sources throughout Ventura County as well as the City of Carpentaria and delivered to the Facility via haul trucks for processing. The Facility will also receive additional feedstocks from self-haulers (e.g. landscapers, contractors, residents) as well as shipments of soil amendment products (e.g. peat moss, gypsum, mulch, etc.) which are blended with compost to produce specialty organic products. Once received, green and food material feedstocks will be sorted and screened, then processed in chippers and grinders prior to composting. Processed green materials will be composted in open windrows while a combination of food and green materials will be composted within the CASP and AD systems. Finished products are either sold onsite in bulk or are bagged/packaged onsite for sale to retail outlets throughout the County. See Figure 2 for a site plan and Figure 3 for a process flow diagram in Appendix A, which display the Facility layout and processing operations.

The Project includes the following sources of criteria pollutant, greenhouse gas (GHG), and toxic air contaminant (TAC) emissions:

- **Stationary Equipment/Processes –** The following stationary sources are part of the Project:
    - **Open Windrows –** Open windrow composting will be greatly expanded at the new Facility, processing approximately 180,000 tons of green and agricultural materials per year. Open windrows aerobically compost feedstock material in elongated piles. Green and agricultural material "unders" generated after chipping and grinding are formed into windrow piles using front-end loaders. Emissions from open windrows result from decomposition of organic materials within the piles.

- **Covered Aerated Static Pile (CASP) –** Two (2), eight-bay CASP systems will be installed in the southeast portion of the Facility to aerobically decompose up to 75,000 tons per year of mixed green and food material feedstocks into compost. The CASP systems will incorporate a GORE™ Cover System, a concrete in-floor aeration system, aeration blowers, oxygen/temperature control systems, and a cover handling system. The GORE™ Cover System is a multi-layer laminate cover that can achieve up to 97% reduction in odor concentrations. Feedstocks will be placed in the open CASP "bunkers" with a front-end loader. Leachate from the CASP is collected via drainage channels and reused to water the piles in a closed loop system. The CASP process takes approximately 22 days to complete. Emissions will be generated from the top of the pile as well as during pile buildup, turning and breakdown using front-end loaders.
- **Anaerobic Digester (AD) –** Four (4), four-bay AD units will be installed in the southeast portion of the Facility to compost up to 40,000 tons per year of mixed green and food materials within a state-of-the-art dry system for organic waste processing in a non-continuous "batch" process. Agromin is proposing to install SmartFerm® AD systems designed and manufactured by Zero Waste Energy (ZWE). Feedstocks will be placed into the AD chambers using front-end loaders, where microorganisms will decompose the material into useable compost within a completely enclosed system. In addition to composting, the system also collects produced biogas which can be converted to compressed natural gas (CNG) and used to fuel an internal combustion combined heat and power (CHP) engine that will generate electrical power. This power can then be used to serve the parasitic loads of the system as well as support other facility operations. A portion of the biomethane may also be used to produce compressed natural gas (CNG) or liquefied natural gas (LNG) for use as transportation fuel within trash collection trucks. Microorganism percolate is applied to the feedstocks to promote decomposition then collected and reused within a close loop system. Each AD batch takes approximately 21 days total to process. The primary AD emissions sources are the 100kW CHP engine and a waste gas flare.

- **Mobile Equipment –** Mobile sources of emissions are not permitted by the VCAPCD. The following mobile sources are associated with the Project:
  - **Off-Road Equipment –** Agromin proposes to utilized the following off-road mobile equipment at the Facility (also see Appendix C for more details):
    - Six (6), 211 HP, Tier 4, Wheeled Loaders operating 7.5 hours/day
    - One (1), 71 HP, Tier 4, Skid Steer Loaders operating 7.5 hours/day
    - One (1), 630 HP, Tier 4, Windrow Pile Turners operating 7.5 hours/day
    - Two (2), 51 HP, Tier 3, Forklifts operating 7.5 hours/day
    - Two (2), 375 HP, Trucks (one water truck & one dump truck) operating 7.5 hours/day
    - Two (2) Grinders
      - One (1) 1050 HP, Tier 4i (green material) operating 6.5 hours/day
      - One (1) 650 HP, electrified (food material) operating 7.5 hours/day
    - Five (5) Screens
      - Two (2) 97 HP, Tier 3 operating 6.5 hours/day
      - Three (3) 140 HP, electrified operating 6.5 hours/day

    The facility is also proposing to utilize conveyor belts to move ground green material to centralized staging pads in the windrow areas. This will reduce the amount of loader time needed to move green material around the site.

- **Haul Trucks –** The Project utilizes haul trucks (front/side loaders, semi-transfer trailers, flatbed/roll-off, etc.) to transport green and food material feedstocks to the Facility as well as transfer finished products from the Facility. Haul truck trips proposed for the Project total average is estimated at 323 loads (646 one-way trips) per day.
- **Employee and Visitor Vehicles –** Employees and visitors will travel to and from the Facility in passenger vehicles. The Project includes a total of 124 one-way worker trips per day.

Table 1 compares the operation hours of the existing 15-acre Limoneira/Agromin Agricultural Composting Operation to the proposed Project. See Appendix B for a list of activity level assumptions utilized to calculate the Project emissions.

Table 1 Facility Operating Hours

Operation/Activity	Existing (Limoneira/Agromin Agricultural Composting Operation)		Proposed (Commercial Organics Processing Operation)	
	Days/Week	Hours of Operation	Days/Week	Hours of Operation
Waste Receiving	Mon. – Fri.	6:00 AM – 6:00 PM	Mon. – Sat.	7:00 AM – 5:00 PM
Outdoor Processing	Mon. – Fri.	6:00 AM – 6:00 PM	Mon. – Sun.	6:00 AM – 6:00 PM
Material Processing Buildings	---	---	Mon. – Sun.	6:00 AM – 10:00 PM
Packaging	---	---	Mon. – Sat.	6:00 AM – 10:00 PM
Maintenance	---	---	Mon. – Sat.	7:00 AM – 5:00 PM
Office	---	---	Mon. – Fri.	7:00 AM – 5:00 PM

2.2 Project Construction

Facility construction is expected to begin in early 2019, following Project approval. The existing 15-acre operation will be significantly expanded to accommodate the new Facility structures and organics processing operations. Primary construction activities include removal of existing vegetation and agricultural fields, minor grading of the site, installation of building foundations and compost area working surfaces, construction of the buildings and retention basins, and installation of processing equipment. Construction equipment anticipated to be utilized includes graders, excavators, dozers, backhoes, front-end/skid steer loaders, and dump trucks. Based on estimates provided by Agromin, the entire construction phase is anticipated to last approximately 8 months. Specifically the following construction activities and schedules are proposed:

- **Demolition (14 Days):** Approximately 55 acres of the Project site is currently active orchards and row crops, which will need to be removed to accommodate the expanded Project. Portions of the existing 15-acre compost facility will also need to be demolished/cleared.
- **Site Preparation (21 Days):** Following clearing of existing agricultural fields/vegetation, construction materials and equipment will be brought onsite. Existing compost equipment and areas not demolished will be temporarily relocated to allow for the construction of the new Facility structures and compost working surfaces.
- **Grading (28 Days):** The Project area is nearly flat, however minor grading will be required across the entire 70-acre site to prepare the working surface and building areas. Additionally, two (2) retention basins will be excavated along the south boundary of the Facility. A system of underground storm drains connecting to the basins may also be trenched throughout the Facility during the grading phase.

- **Building Construction (90 Days):** The Dry Organics and Wet Organics Buildings, Administration Building, Production Building (i.e. Packaging Building), and Maintenance Building will be constructed. Working surfaces for windrow composting areas as well as the CASP and AD systems are also expected to be installed during this construction phase. Ancillary equipment such as the scale house, staging pads and tipping areas, as well as utility structures (e.g. utility pad and transformers) may also be installed during the building phase.
- **Architectural Coatings (60 Days):** Following construction of the buildings, painting and finishing of surfaces will occur. This phase may also entail treating of the native soil with cement in the open windrow composting areas. Portions of architectural coatings phase may occur concurrently with the building and paving construction phases.
- **Paving (21 Days):** Portions of the site will be paved with either cement or asphalt concrete to accommodate vehicle and equipment operations. Parking spaces for employees and visitors will be installed adjacent to the scale house near the administration and maintenance buildings. Portions of the paving phase may occur concurrently with the building and architectural coatings phases.

3.0 EXISTING SETTING

3.1 Regulatory Setting

This section discusses the Federal, State, and local air quality regulations applicable to the Project. These air quality regulations and standards form the basis of the significance thresholds described in Section 4 within this AQCCIA.

3.1.1 Federal

The Federal Clean Air Act (CAA) provides the principal framework for national, state, and local efforts to protect air quality. Under the Clean Air Act, the United States Environmental Protection Agency (USEPA) is responsible for setting standards, also known as National Ambient Air Quality Standards (NAAQS), for pollutants that are considered harmful to people and the environment.

A group of common air pollutants that have detrimental effects on human health, harm the environment, and cause property damage are called criteria air pollutants because the EPA has established health-based criteria for their regulation. One set of criteria (the primary standard) protects health; another set of criteria (the secondary standard) is intended to prevent environmental and property damage. A geographic area that meets or does better than the primary standard is called an attainment area while areas that don't meet the primary standard are called nonattainment areas. Each state containing nonattainment areas is required to develop a written plan for cleaning the air in those areas. These plans are called state implementation plans (SIP).

Areas that do not meet the federal one-hour ozone standard are classified according to the severity of each area's respective ozone problem. Ozone classifications include: Marginal, Moderate, Serious, Severe, and Extreme. Marginal areas are closest to meeting the federal one-hour ozone standard. Extreme areas have the worst air quality problems. Areas with more severe ozone problems have progressively more stringent requirements to meet under the federal CAA.

3.1.2 California

The California Clean Air Act (CCAA) was enacted on September 30, 1988, and became effective January 1, 1989. The purpose of the CCAA is to achieve the health-based state clean air standards at the earliest possible date. The state standards are more stringent than the federal air quality standards. Table 2 below presents the Federal and State Ambient Air Quality Standards (AAQS).

Table 2 State and Federal AAQS

Pollutant	Averaging Time	California Standard	Federal Standards	
			Primary	Secondary
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	---	Same as Primary Std.
	8 Hour	0.070 ppm (137 µg/m^3)	0.070 ppm (137 µg/m^3)	
Respirable Particulate Matter (PM_{10})	24 Hour	50 µg/m^3	150 µg/m^3	Same as Primary Std.
	AAM	20 µg/m^3	---	
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	---	35 µg/m^3	Same as Primary Std.
	AAM	12 µg/m^3	12 µg/m^3	15 µg/m^3
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	---
	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)	---	
Lead	30 day average	1.5 µg/m^3	---	---
	Calendar Quarter	---	1.5 µg/m^3*	Same as Primary Std.
	Rolling 3-Month Avg.	---	0.15 µg/m^3	

Pollutant	Averaging Time	California Standard	Federal Standards	
			Primary	Secondary
Nitrogen Dioxide (NO_2)	1 Hour	0.18 ppm (339 μg/m^3)	100 ppb (188 μg/m^3)	---
	AAM	0.030 ppm (57 μg/m^3)	0.053 ppm (100 μg/m^3)	Same as Primary Std.
Sulfur Dioxide (SO_2)	1 Hour	0.25 ppm (655 μg/m^3)	75 ppb (196 μg/m^3)	---
	3 Hour	---	---	0.5 ppm (1,300 μg/m^3)
	24 Hour	0.04 ppm (105 μg/m^3)	0.14 ppm (365 μg/m^3)*	---
	AAM	---	0.030 ppm (80 μg/m^3)*	---
Visibility Reducing Particulates	8 Hour	Extinction coefficient of 0.23 per kilometer Statewide and 0.07 per kilometer for the Lake Tahoe Air Basin.	No Federal Standards	
Sulfates	24 Hour	25 μg/m^3		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 μg/m^3)		
Vinyl Chloride	24 Hour	0.01 ppm (26 μg/m^3)		

AAM = Annual Arithmetic Mean
* For certain areas only.
Source: www.arb.ca.gov/research/aaqs/aaqs2.pdf (2/7/2017) See this source for additional information regarding the AAQS.

Toxic air contaminants (TAC) are pollutants listed by the State of California that pose acute, chronic, and/or cancer health risks to exposed individuals. The Office of Environmental Health Hazard Assessment (OEHHA) is responsible for research and identification of TACs.

CARB is responsible for implementing airborne toxic control measures (ATCM) to reduce TAC emissions. While ATCMs have been enacted for a number of different TACs, the most important ATCMs with respect to this Facility are the diesel ATCMs. Diesel ATCMs have been promulgated to control diesel emissions from heavy duty on-road vehicles, off-road equipment, generators, and other sources that burn diesel. The regulations phase in progressively more stringent emissions standards over time, requiring equipment operators to retrofit, replace, and retire equipment to meet the standards.

In 1987, the AB 2588 air toxics “hot spots” program was established. This program requires subject facilities to report their air toxics emissions, determine localized health risks, and notify nearby residents of significant risks. The program was amended in 1992 to require facilities to reduce any significant risks through the development of a risk management plan. The Hotspots Analysis and Reporting Program (HARP) is a tool that is used to assist with calculating TAC emission inventories and performing health risk assessments under the AB 2588 Program.

Diesel particulate matter (DPM) is identified as a TAC and accounts for roughly 70% of the cancer risk from air pollution in urban areas where on-road sources dominate the inventory. Diesel engines are a ubiquitous source and thus it is not surprising that stationary source TAC effects "are generally much lower than region-wide risk levels, region-wide risks tend to overwhelm any potential local ‘hot spots.’” (SCAQMD Mates II Study, Section 7.3).

The On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation was adopted in December 2010. The regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Heavier trucks must be retrofitted with PM filters beginning January 1, 2012, and older trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent. The regulation applies to nearly all privately and federally owned diesel fueled trucks and buses and to privately and publicly owned school buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds.

3.1.3 Local

This Project is located within the Ventura County Air Pollution Control District's (VCAPCD) jurisdiction. In 2003, the VCAPCD published a CEQA advisory document entitled Ventura County *Air Quality Assessment Guidelines* (CEQA Guidelines) in order to provide lead agencies, consultants, and project applicants with a framework and uniform methods for preparing air quality evaluations for environmental documents. This AQCCIA follows the methodologies outlined in the CEQA Guidelines.

At the Ventura County Air Pollution Control Board's request, the VCAPCD has also published *Greenhouse Gas Thresholds of Significance Options for Land Use Development Projects in Ventura County* (GHG Guidance) in 2011. However, the Ventura County Air Pollution Control Board has not yet adopted a significance threshold for GHG emissions and the CEQA Guidelines have not been updated to include GHG assessment methodologies.

In 2017, the VCAPCD updated their *Air Quality Management Plan* (AQMP) to satisfy the planning requirements of the California Clean Air Act. The AQMP presents Ventura County's strategies for attaining the 2008 federal 8-hour ozone standard. It contains an attainment demonstration showing that Ventura County will attain the 2008 federal 8-hour ozone standard by 2020, Ventura County's official ozone attainment year under the CAAA.

3.1.4 Criteria Pollutants

As shown in Table 2, criteria air pollutants include sulfur oxides (SO_x), nitrogen oxides (NO_x), particulate matter (PM), carbon monoxide (CO), lead (Pb), and ground-level ozone (O_3). Ventura County is an attainment area for all criteria pollutant standards shown in Table 2, except for the following standards shown in Table 3.

Table 3 Ventura County Nonattainment Pollutants

Pollutant	Standard	Attainment Status
Ozone	1 hour	State Nonattainment
	8 hour	State and Federal Nonattainment
Particulate Matter (PM_{10})	24 Hour	State Nonattainment*
	AAM	
Particulate Matter ($PM_{2.5}$)	24 Hour	
	AAM	

AAM = Annual Arithmetic Mean
* The state does not make separate designations for different particle size particulate matter, but rather designates an area attainment or nonattainment for particulate matter generally.
Source: http://www.vcapcd.org/air_quality_standards.htm (Last checked 2/7/2017).

3.1.5 Toxic Air Contaminants

Toxic air contaminants (TACs) are air pollutants that may reasonably be anticipated to cause cancer, developmental effects, reproductive dysfunction, neurological disorders, heritable gene mutations, or other serious or irreversible acute or chronic health effects in humans. These pollutants generally consist of four types: organic chemicals (i.e. benzene, dioxins, toluene, and percholorethylene), inorganic chemicals (i.e. chlorine and arsenic), fibers (i.e. asbestos), and metals (i.e. mercury, cadmium, chromium, and nickel). Currently, more than 900 substances are regulated TACs under federal, state, and local regulations.

One TAC to which special attention has been paid in recent years is diesel exhaust, or diesel particulate matter (DPM). Diesel exhaust is a complex mixture of gases, vapors, and fine particles. Some of the exhaust components, like arsenic, benzene, and nickel, are known to cause cancer in humans. At least 40 other components are listed by the EPA as hazardous air pollutants (HAPs) and by CARB as TACs. The unit risk value of DPM is the sum of the unit risk values for its toxic components. DPM accounts for roughly 70% of the cancer risk from air pollution in urban areas where on-road sources dominate the inventory.

The EPA's National Air Toxics Assessment (NATA) risk maps show that ambient air in the Project region exhibits a total cancer risk of 33 excess cancer cases per one million people (https://gispub.epa.gov/NATA).

3.1.6 Greenhouse Gasses

Greenhouse gasses (GHGs) in the atmosphere contribute to global warming. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction of the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems (AB 1066).

Table 4 below provides a summary of the statewide GHG emissions for 2014 by sector. Carbon dioxide equivalents (CO_2e) is a single unit used to represent all the different GHGs. The variation of effect between gases is known as global warming potential (GWP). Individual GHGs are weighted by their GWP (i.e., their capacity to heat the atmosphere) and then summed to determine the CO_2e. For example, one unit of methane emissions has the same GWP as 21 units of carbon dioxide. Therefore, one (1) metric ton of methane is equivalent to 21 metric tons of CO_2.

Table 4 Summary of California's 2014 GHG Emissions

Sector	CO_2e (million metric tons)	Percentage of Total
Transportation	163.02	37%
Electric Power*	88.37	20%
Commercial & Residential	49.03	11%
Industrial	104.22	24%
Agriculture & Forestry	36.11	8%
Not Specified	0.79	<1%
Total	**441.5**	**100%**

Source: *California Greenhouse Gas Inventory for 2000-2014 — by Category as Defined in the Scoping Plan* (2/7/2017) http://www.arb.ca.gov/cc/inventory/data/data.htm
*Represents electricity generate both in State and imports

3.2 Environmental Setting

The environmental setting includes local topography, meteorology, and air quality conditions in the region, at the proposed Project site, and at nearby receptors.

3.2.1 Meteorology

The air above Ventura County often exhibits weak vertical and horizontal dispersion characteristics, which limit the dispersion of emissions and cause increased ambient air pollutant levels. Persistent temperature inversions prevent vertical dispersion. These temperature inversions act as a "ceiling" that prevents pollutants from rising and dispersing. Mountain ranges act as "walls" that inhibit horizontal dispersion of air pollutants.

The diurnal (daily reoccurring) land/sea breeze pattern common in Ventura County re-circulates air contaminants. Air pollutants are pushed toward the ocean (southwest) during the early morning by the land breeze, and toward the east during the afternoon by the sea breeze. This creates a "sloshing" effect, causing pollutants to remain in the area for several days. Residual emissions from previous days accumulate and chemically react with new emissions in the presence of sunlight, thereby increasing ambient air pollutant levels. This pollutant "sloshing" effect happens most predominantly from May through October ("smog" season). Air temperatures are usually higher and sunlight more intense during the "smog" season. This explains why Ventura County experiences the most exceedances of the state and federal ozone standards during this six-month period.

According to the Western Regional Climate Center (WRCC), the Santa Paula Station (047957) located within 2 miles of the Project site, is the nearest climatological monitoring station. Based on the period of record (7/1/1948 to 12/31/2005), average monthly temperature has ranged from a minimum of 41.0° F to a maximum of 81.7° F. December and January are typically the coldest months with July and August the warmest (WRCC, 2005).

In the winter, low pressure weather systems originating in the northern Pacific Ocean can bring clouds, rain and strong winds into Ventura County. Inland high pressure areas also bring periods of dry, warm offshore "Santa Ana" winds during the fall. The annual rainfall totals approximately 18.07 inches and mostly occurs between November and April (WRCC, 2005). Summer rainfall is minimal and generally limited to very light scattered showers.

3.2.2 Nearby Receptors

Receptors are locations where people are expected to be found (i.e., residences, workplaces, schools, etc.) that could be adversely impacted by the proposed Project. For the purposes of this AQCCIA, receptors have been grouped into separate receptor areas. One receptor in each receptor area (the receptor closest to the sources of Project emissions) is utilized to determine the significance of health risk impacts for all receptors in that receptor area. The residential and workplace receptor areas analyzed in this AQCCIA are described below. See Figures 4 and 5 in Appendix A for the location of the receptor areas.

- **Residential Receptor Areas 1, 2, and 3 (R1 – R3)** include the nearest residential receptors to the Facility. They are located along the southern boundary of the Project.
- **Residential Receptor Areas 4 (R4)** includes the Todd Road Jail to the east of the Project.
- **Residential Receptor Area 5 (R5)** is located along the haul route, near the intersection of Edwards Ranch Road and West Telegraph Road.
- **Residential Receptor Area 6 (R6)** is located along the haul route, on the stretch of West Telegraph Road between Edwards Ranch Road and South Wells Road.
- **Residential Receptor Area 7 (R7)** is located to the west of the Project, near Ellsworth Barranca.
- **Residential Receptor Area 8 (R8)** is located along the haul route, in the densely populated area to the south of West Telegraph Road near South Wells Road.
- **Residential Receptor Areas 9, 10 and 11 (R9 – R11)** are located along the haul route, at the intersection of West Telegraph Road and South Wells Road.
- **Workplace Receptor Area 1 (W1)** includes the nearest workplace to the Facility. It is located at the southwestern corner of the Project.
- **Workplace Receptor Areas 2 and 3 (W2 and W3)** are located along the haul route, at the intersection of Edwards Ranch Road and West Telegraph Road.
- **Workplace Receptor Area 4 (W4)** is south of the Project, in the agricultural area.
- **Workplace Receptor Area 5 (W5)** is located along the haul route, off of South Wells Road.

The Project proposes two paths of travel from the Facility to the freeway, one using South Wells Road to the west and one using Briggs Road to the east. However, the large majority of truck trips will follow the western path using South Wells Road. For the purposes of the health risk assessment in this AQCCIA, all Project haul truck trips are assumed to travel the western path to the freeway (i.e., via South Wells Road). This results in conservative health risk impact results for receptors along that route. Furthermore, if those receptors experience less than significant health risk impacts, the few receptors along the eastern path (who will be exposed to fewer Project haul truck trips) will also be less than significant.

3.3 Project Baseline

3.3.1 Existing Compost Operations

Agromin's existing compost operations in Santa Paula and Oxnard are considered baseline existing sources of emissions since both operations will be combined at the Project location. Air emissions from both existing facilities have been calculated and are included as part of the baseline to determine total post-Project impacts. Appendix B contains baseline data and assumptions used in this analysis:

- Table B2 provides 2013 and 2014 baseline data for green and food material quantities historically processed at Santa Paula and Oxnard as well as associated inbound and outbound vehicle loads.
- Table B3 summarizes the baseline traffic assumptions for the combined Santa Paula and Oxnard operations as well as traffic going to the Toland Road landfill (see discussion below).
- Table B7 provides the assumptions and calculations used to estimate baseline trip distances for haul trucks and other vehicles.

3.3.2 Existing Waste to Landfills

Emissions associated with existing food and green material currently being sent to a landfill is included in the estimation of the baseline since this material is currently being generated and the Project will divert this material from the landfills to the Project site for processing.

The estimated green and food material available for diversion to the Project was estimated using CalRecycle's 2014 Waste Characterization Report and the 2014 Disposal Rate Statistics found on the CalRecycle website (http://www.calrecycle.ca.gov/LGCentral/Reports/jurisdiction/diversiondisposal.aspx).

Table B8 in Appendix B summarizes the calculation of "new tons" of green and food material available for the Project from Ventura's West County area, the area assumed to be serviced by the Project. The results showed:

Available compostable material (food & green) going to landfill:	212,984 tons/year
Food & green material currently accepted by Agromin:	113,862 tons/year
Total tons available for the Project:	326,846 tons/year

The Project is currently designed to handle 295,000 tons/year.

The estimate of green and food material currently going to a landfill was used in a number of calculations including baseline truck trips and distances (Tables B3 and B7) and baseline emission estimates (Appendix C). The calculation of baseline trip distances included a number of assumptions associated with current material travel to the existing operations at Oxnard and Santa Paula and to the Toland Road landfill:

- Green and food material currently going to the Toland Road landfill is first delivered by trash trucks to the Gold Coast Material Recovery Facility (MRF) located on Colt Street in Ventura, where it is separated from other refuse. It is then transported to the landfill in transfer trailers. Accordingly, there are two segments to the baseline trip distances for the material currently going to the landfill.

- Green and food material currently going to the existing operations at Oxnard and Santa Paula are primarily direct trips from the source of generation. Although roughly 40% of the baseline incoming material is delivered by transfer trailers from the MRF, this only accounts for 15% of the loads. This is due to the difference in weight capacity of the vehicles (16 tons/load for transfer trailer, 6.7 tons/load for trash trucks).

- The source of generation for incoming trips was assumed to be the same as CalRecycle's waste generation profile by area:

Location	Waste Generation 2014 (ton/year)	% of Total Trips
Camarillo	45,359	8.6%
Carpinteria	9,240	1.8%
Ojai	7,070	1.3%
Oxnard	249,317	47.4%
Port Hueneme	15,324	2.9%
San Buenaventura	116,973	22.2%
Santa Paula	20,442	3.9%
Unincorporated	62,162	11.8%
Totals:	525,886	100%

- The trip distance for incoming trips was assumed to be from a central point at each municipality to either the MRF or the existing operations at Oxnard or Santa Paula (see Table B7, Appendix B).

When calculating regional criteria pollutant impacts, baseline emissions were assumed to include emissions associated with the existing operations at Oxnard and Santa Paula and the compostable material currently being sent to the landfill. When calculating localized criteria and air toxic pollutant impacts, baseline emissions were assumed to include only emissions from the existing operations at Santa Paula.

4.0 SIGNIFICANCE THRESHOLDS

The VCAPCD's *Ventura County Air Quality Assessment Guidelines* (CEQA Guidelines) form the basis of this AQCCIA. Significance thresholds from the Guidelines are presented below. Note that significance thresholds are meant to be applied to the incremental impacts associated with the Project only.

Table 5 presents the criteria pollutant significance thresholds. The VCAPCD has only included thresholds for the ozone precursors oxides of nitrogen (NO_x) and reactive organic compounds (ROC). Note that, according to the CEQA Guidelines, these thresholds are only applied to unpermitted sources of emissions. Emissions from equipment requiring VCAPCD permits, specifically stationary equipment, are not counted towards these air quality significance thresholds. However, emissions from stationary sources are still quantified within this AQCCIA for informational purposes.

Table 5 Criteria Pollutant Significance Thresholds

Source	ROC (lbs/day)	NO_x (lbs/day)
Sources Not Requiring Permit	25	25

The CEQA Guidelines have not yet been updated to include a threshold for GHGs. As directed by the VCAPCD, this AQCCIA utilizes the South Coast Air Quality Management District's (SCAQMD) threshold for GHG impacts from industrial projects, as presented in Table 6.

Table 6 GHG Significance Thresholds

Source	CO_2e (MT/yr)
All Project Sources	10,000

Impacts from TAC emissions are estimated by conducting a health risk assessment (HRA). Table 7 presents the significance thresholds for health risk impacts, which are from the CEQA Guidelines.

Table 7 Health Risk Significance Thresholds

Source	Cancer Risk	Chronic Risk	Acute Risk
All Project Sources	10 cases in a million	1.0 hazard index	1.0 hazard index

In addition to the criteria pollutant, GHG, and TAC quantitative thresholds presented above, the CEQA Guidelines also requires that consistency with the Ventura County AQMP, fugitive dust impacts, odor impacts, and localized carbon monoxide impacts be addressed. Quantitative thresholds do not exist for these impacts. Rather, the following qualitative thresholds are employed:

- A project is **consistent with the AQMP** if it does not cause population growth beyond the population forecasts in the most recent AQMP.
- **Fugitive dust and odor impacts** are considered insignificant if they are not expected to "*...cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which may endanger the comfort, repose, health, or safety of any such person or the public, or which may cause, or have a natural tendency to cause, injury or damage to business or property.*"
- **Localized carbon monoxide** impacts are considered less than significant if a project does not significantly impact roadway intersections that are currently operating at, or are expected to operate at, Levels of Service (LOS) E or F. If a project does significantly impact such roadway intersections, a more detailed assessment of localized carbon monoxide impacts should be conducted to determine the significance of CO emissions.

With regard to emissions from Project construction activities, the CEQA Guidelines indicate that:

> *"Construction-related emissions … of ROC and NOx are not counted towards the two significance thresholds, since these emissions are temporary. However, construction-related emissions should be mitigated if estimates of ROC and NOx emissions from the heavy-duty construction equipment anticipated to be used for a particular project exceed … the 25 pounds per day threshold..."*

5.0 CONSTRUCTION EMISSIONS & IMPACTS

Criteria pollutant impacts associated with Project construction are presented and compared to the mitigation thresholds from the CEQA Guidelines. Construction impacts are temporary impacts and typically include some or all of the following; fugitive dust from grading, demolition, and dirt hauling, emissions of criteria pollutants and GHG's from heavy equipment/haul trucks, employee and vendor vehicle emissions, and ROC emissions from paints/architectural coatings. Construction emissions can vary substantially from day to day, depending on the construction activities and weather conditions.

Construction phase emissions were calculated using the South Coast Air Quality Management District's (SCAQMD) *California Emissions Estimator Model* (CalEEMod) Version 2016.3.1, using the construction phase and equipment information described presented in Section 2.2. See Appendix E for the CalEEMod model results.

As described in Section 2.2, construction is expected to begin in 2019. The construction schedule presented in Table 8 below represents the construction schedule assessed within CalEEMod, which was estimated by Agromin. Also see Appendix E for more detail.

Table 8 Estimated Construction Schedule

Construction Phase	Phase Start	Phase End	Duration (days)
Demolition	1/1/2019	1/15/2019	14
Site Preparation	1/16/2019	2/6/2019	21
Grading	2/7/2019	3/7/2019	28
Building	3/8/2019	6/6/2019	90
Architectural Coating	6/7/2019	8/6/2019	60
Paving & Landscaping	8/7/2019	8/28/2019	21

In addition to the construction schedule in Table 8, Agromin has provided the following information that was used in the CalEEMod construction phase emissions calculations:

- The total size of the Project property and the nature of construction (replacement of existing structures, demolition activities, etc.);
- The portions of the Project property that require clearing and/or grading;
- The total material handling required (i.e., cut and/or fill);
- The amount of material that needs to be transported to and/or from the Project site; and
- The total size of the proposed structures, hardscaped areas, and landscaped areas.

The type, number, and hours of usage for the on/off-road equipment for each construction phase has been estimated based on the CalEEMod default values for the appropriate project size and adjusted to accurately reflect the Project scope. Agromin has reviewed these assumptions to ensure their consistency with the planned construction activities. Using the information and assumptions presented in Section 2.2, Table 9 presents the Project construction emissions calculated in CalEEMod. Please see Appendix E for the full CalEEMod output file. Note that mitigation is required for ozone precursors, please see Section 7.0.

Table 9 Project Construction Impacts (lbs/day)

Parameter	ROC	CO	NO_x	PM_{10}	$PM_{2.5}$
Construction Impacts	48.5	23.5	39.3	16.4	8.3
Mitigation Threshold	25	---	25	---	---
Mitigation Required	**Yes**	---	**Yes**	---	---

5.1 Construction Greenhouse Gas Emissions

Construction phase GHG emissions were calculated for the same sources and using CalEEMod model. Rather than the pound per day basis that is used for criteria pollutants, a metric ton per year basis is used for GHG's.

Table 10 presents the Project's construction CO_2e emissions impacts and compares it to the significance threshold. The peak year is the 1-year timeframe (i.e. 2019) with the most GHG emissions, which also represents the total overall emissions that will occur throughout Project construction, is utilized to determine significance. Please note that the GHG emission impacts are below the industrial threshold presented in Table 6.

Table 10 Project Construction GHG Emissions

Parameter	CO_2e Emissions – Peak Year & Overall (MT/year)
Project Construction Phase	333.0
Significance Threshold (Industrial)	10,000
Significant?	No

6.0 EMISSION CALCULATIONS AND PROJECT OPERATION IMPACTS

This section discusses results of the baseline and Project emission calculations and the impacts associated with the Project. Criteria pollutant, GHG, and TAC emissions from the Project operation were calculated based on the following methodologies and assumptions (see Appendices B, C, D and E for assumptions and calculations):

- **Stationary Source Emissions:** An inventory of stationary sources was developed based on consultations with Agromin and review of the equipment and processes currently utilized at Agromin's existing facilities (i.e. Santa Paula and Oxnard) as well as those proposed for the Project. Criteria pollutant, GHG (i.e., methane) and toxic air contaminant emissions from the processing equipment (grinders, screens, conveyors, etc.) and composting systems (windrows, CASP's, AD's) are based on applicable VCAPCD, SCAQMD and CARB emissions factors. See the calculations in Appendix C for emissions factors used and assumptions utilized to calculate stationary source emissions.

- **Off-Road Equipment Emissions**: An inventory of off-road mobile equipment was developed based on consultation with Agromin and a review of the equipment currently operating at Agromin's existing Santa Paula and Oxnard facilities. As described in Section 2.1, Agromin is proposing to utilize a combination of loaders, forklifts, screens, windrow pile turners, grinders, a water truck and a dump truck to facilitate processing of compostable materials and maintain facility operations. Criteria pollutant and GHG emissions from off-road equipment are calculated based on emissions factors from CARB's OFFROAD2014 model, including deterioration due to equipment age. It should be noted that Agromin will purchase a new fleet of loaders (i.e. engine year 2019) following completion of facility construction activities. The TAC associated with diesel combustion from off-road equipment is Diesel Particulate Matter (DPM), which is equivalent to exhaust PM_{10} emissions. DPM is speciated into its individual components for acute risk analysis based on CARB's speciation profiles.

- **Haul Truck Trips & Emissions**: Criteria and GHG emissions from haul trucks, collection and delivery vehicles are calculated using emissions factors from CARB's EMFAC2014 model. DPM emissions are equivalent to the exhaust PM_{10} emissions. DPM is speciated into its individual components for acute risk analysis based on CARB's speciation profiles.

  Haul truck emissions were calculated for existing operations (Agromin's Santa Paula/Oxnard facilities and material currently going to landfill) and for the proposed Project. Existing haul truck emissions are considered part of the baseline within this AQCCIA and therefore subtracted from the total post-Project haul truck emissions.

  Please see Appendix B which shows the anticipated haul truck activity generated by the Project. Haul truck emissions were calculated regionally for vehicles traveling offsite on County roadways and locally while vehicles travel onsite to unload and transport materials.

- **Employee Trips & Emissions**: Due to the increase Facility operations, processing capacity, and employees working onsite, the proposed Project will increase the total VMT by light-duty trucks and employee vehicles. Criteria pollutant and GHG emissions from employee trips are calculated using emissions factors from the CARB's EMFAC2014 model. Because the majority of employee trips are gasoline, and gasoline does not cause substantial health risk impacts when compared to diesel, employee trips are not included in the health risk assessment.

6.1 Criteria Pollutant and GHG Emission Impacts

Table 11 summarizes the baseline, Project and total Project increment criteria pollutant and GHG emissions (see Appendix C for calculations).

Table 11 Criteria Pollutant and GHG Emissions

BASELINE:	Peak Day Emissions (lb/day)						Peak Year Emissions (ton/year)						
Source	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**NH3**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**NH3**	**CO2e (MT)**
Stationary													
Material Handling Fugitive Dust				4.22	1.74					0.59	0.25		
Windrow/CASP/AD Volatiles	1473.4					395	244.5					65.6	
Avoided Landfill GHG*													58,891
Avoided Landfill Flare Emissions	26.2	157.0	523.4	52.3	52.3		4.8	28.7	95.5	9.6	9.6		
Stationary Total	1,499.6	157.0	523.4	56.6	54.1	395.1	249.2	28.7	95.5	10.1	9.8	65.6	58,891
Mobile													
Off Road Engine Exhaust **	8.2	118.9	189.6	4.7	4.3		1.29	18.55	29.58	0.74	0.68		2,547
Motor Vehicle Fugitive PM				23.22	2.32					3.96	0.40		
Motor Vehicle Exhaust	3.45	110.36	36.43	0.71	0.68		0.538	17.2	5.7	0.11	0.11		3217
Mobile Total	11.7	229.3	226.1	28.7	7.3	0.0	1.8	35.8	35.3	4.8	1.2	0.0	5,764

*Alternative avoided landfill GHG emissions using CARB CERFs: 88,676 MT CO2e/year

** Does not account for emissions from landfill handling of diverted compostables

PROJECT:	Peak Day Emissions (lb/day)						Peak Year Emissions (ton/year)						
Source	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**NH3**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**NH3**	**CO2e (MT)**
Stationary													
Material Handling Fugitive Dust				8.79	3.07					1.36	0.51		
Windrow/CASP/AD Volatiles	1,602					391	265.75					64.935	
AD CHP Engine Exhaust	7.4	38.9	58.3	0.7	0.6		1.35	7.09	10.64	0.12	0.11		8.06
AD Flare Emissions	0.2	0.2	1.3	0.018	0.016		0.03	0.04	0.24	0.003	0.003		0.24
Stationary Total	1,609.3	39.1	59.6	9.5	3.7	391.4	267.1	7.1	10.9	1.5	0.6	64.9	8
Mobile													
Off Road Engine Exhaust	4.4	26.3	126.0	1.1	1.0		0.81	4.81	22.99	0.20	0.19		2,172
Motor Vehicle Fugitive PM				3.02	0.30					0.39	0.04		
Motor Vehicle Exhaust	2.17	68.49	40.25	0.30	0.28		0.28	8.90	5.23	0.04	0.04		2,835
Mobile Total	6.6	94.8	166.2	4.4	1.6	0.0	1.1	13.7	28.2	0.6	0.3	0.0	5,007

PROJECT INCREMENT:	Peak Day Emissions (lb/day)						Peak Year Emissions (ton/year)						
Source	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**NH3**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**NH3**	**CO2e (MT)**
Stationary													
Material Handling Fugitive Dust				4.58	1.33					0.77	0.26		
Windrow/CASP/AD Volatiles	128.34					-3.71	21.29					-0.62	
Avoided Landfill GHG													-58,891
Avoided Landfill Flare Emissions	-26.2	-157.0	-523.4	-52.3	-52.3		-4.8	-28.7	-95.5	-9.6	-9.6		
AD CHP Engine Exhaust	7.38	38.85	58.28	0.66	0.61		1.35	7.09	10.64	0.12	0.11		8.06
AD Flare Emissions	0.18	0.24	1.30	0.02	0.02		0.03	0.04	0.24	0.00	0.00		0.24
Stationary Total	109.7	-117.9	-463.8	-47.1	-50.4	-3.7	17.9	-21.5	-84.6	-8.7	-9.2	-0.6	-58,883.1
Mobile													
Off Road Engine Exhaust	-3.8	-92.6	-63.7	-3.6	-3.3		-0.48	-13.74	-6.59	-0.53	-0.49		-375
Motor Vehicle Fugitive PM				-20.20	-2.02					-3.56	-0.36		
Motor Vehicle Exhaust	-1.28	-41.87	3.82	-0.42	-0.40		-0.26	-8.31	-0.45	-0.07	-0.07		382
Mobile Total	-5.1	-134.4	-59.8	-24.2	-5.7	0.0	-0.7	-22.1	-7.0	-4.2	-0.9	0.0	-757

Table 12 compares the Project increment ROC and NO_x emissions from mobile (i.e., unpermitted) sources to the applicable significance thresholds (see Appendix C for calculations). Note that both impacts are less than the applicable significance threshold.

Table 12 Incremental Project Mobile Emissions (lb/day)

Parameter	ROC	NOx
Project Increment Emissions	-5.1	-134.4
Significance Threshold	25	25
Significant?	No	No

Table 13 presents the total Project increment GHG emissions compared to the applicable significance threshold. Note that Project GHG emissions are less than significant (see Appendix C for calculations).

Table 13 Project GHG Emissions Increase (MT/yr)

Parameter	CO2e
Project Increment GHG Emissions (reduction primarily due to avoided GHG Emissions from diversion of organics from landfill)	-59,648
Significance Threshold	10,000
Significant?	**No**

6.2 Toxic Air Emissions and Health Risk Assessment

TACs are pollutants that cause a health risk impact to exposed populations. TAC emissions from Project sources are calculated in Appendix D.

Air dispersion modeling is conducted to determine offsite concentrations of TAC emissions. For this Project, dispersion modeling was conducted using the Lakes AERMOD View (Version 9.4.0) implementation of the industry standard AERMOD dispersion model. Source and receptor locations are illustrated on Figures 4 and 5(Appendix A). The VCAPCD's Oxnard meteorological data was chosen due to proximity to the Project. The model was run for the entire duration of the Oxnard meteorological data (from January 1, 2009 to January 2, 2014) and the year that produced the highest risk was automatically utilized to calculate cancer and chronic risks. Modeling parameters are based on guidance from the Santa Barbara County Air Pollution Control District (SBCAPCD) *Modeling Guidelines for Health Risk Assessments* (November 2016) and are summarized in Appendix D. Air dispersion modeling files are included on a CD provided with this AQCCIA.

After determining offsite TAC concentrations, health risk impacts are calculated using California Air Resources Board's (CARB) Hotspots Analysis and Reporting Program 2 (HARP 2, dated 17052). None of the pollutants emitted by had multipathway risk factors, so the multipathway risk assessment was not necessary. Residential cancer risk was calculated based on 30-year exposure and the "Risk Management Policy using the Derived Method" intake rate percentile; worker risk was calculated based on 25 year exposure and the "OEHHA Derrived Method" intake rate percentile; and chronic risk was also calculated using the "OEHHA Derrived Method" intake rate percentile. Additional information regarding the dispersion modeling parameters used is provided in Appendix D. Health risk modeling files are included on a CD provided with this AQCCIA.

Project cancer risk impacts are presented in Table 14. Note that the Project cancer risk impact is less than the significance threshold at all receptors. Receptors located near the Project actually experience a reduction in health risk associated with the Project, primarily due to the use of cleaner offroad equipment and the electrification of some equipment. Cancer risk impacts are less than the significance threshold at all locations, so no cancer risk contour figure is necessary.

Table 14 Project Cancer Risk (Cases in a Million)

Parameter	Residential Receptors											Workplace Receptors				
	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	W1	W2	W3	W4	W5
Cancer Risk	-22	-17	-0.6	-0.6	0.0	0.5	-4.7	1.9	2.1	0.4	0.2	-0.8	0.1	0.0	0.0	0.0
Sig. Threshold	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Significant?	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

Project chronic risk impacts are presented in Table 15. Note that the Project chronic risk impact is less than significance threshold at all receptors. Chronic risk impacts are less than the significance threshold at all locations, so no cancer risk contour figure is necessary.

Table 15 Project Chronic Risk (Hazard Index)

Parameter	Residential Receptors											Workplace Receptors				
	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	W1	W2	W3	W4	W5
Chronic Risk	0.18	0.20	0.13	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00
Sig. Threshold	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Significant?	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

Project acute risk impacts are presented in Table 16. Note that the Project acute risk impact is less than significance threshold at all receptors and at the offsite point of maximum impact (PMI), which is located at the northeastern corner of the Project (see Figure 4). Acute risk impacts are less than the significance threshold at all locations, so no cancer risk contour figure is necessary.

Table 16 Project Acute Risk (Hazard Index)

Parameter	Residential Receptors											Workplace Receptors					PMI
	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	W1	W2	W3	W4	W5	
Acute Risk	0.42	0.49	0.35	0.14	0.11	0.09	0.16	0.07	0.06	0.05	0.05	0.36	0.10	0.10	0.14	0.06	0.61
Sig. Threshold	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Significant?	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

6.3 Consistency with the Ventura County Air Quality Management Plan

In order to demonstrate consistency with the AQMP, a Project must demonstrate consistency with the population forecasts contained therein. Due to its industrial/commercial nature, this Project is not expected to cause an increase in population. Since this Project is not growth inducing, it is consistent with the AQMP population forecasts. Furthermore, the Project will remain consistent with the control strategies outlined in the AQMP by complying with stationary source regulations and BACT requirements as well as by complying with CARB's on-road heavy-duty diesel vehicle regulation.

6.4 Fugitive Dust Impacts

The CEQA Guidelines recommend that, rather than quantifying fugitive dust emissions, mitigation measures should be utilized to control emissions from dust generating operations and activities. Table 11 presents the baseline and Project estimated fugitive dust emissions (PM_{10}, $PM_{2.5}$), and also displays the total Project increment. As shown in the Table 11, it is estimated the Project will result in a net decrease of fugitive dust emissions due to consolidation of equipment and process from Agromin's existing facilities in Oxnard and Santa Paula at the new Facility. For these reasons, Project fugitive dust impacts are considered less than significant. Please see Appendix C for more details regarding fugitive dust emissions calculations.

Although a net decrease in fugitive dust emissions is estimated for the Project, there remains a potential for fugitive dust generation resulting from mobile (e.g. loaders) and stationary (e.g. screens, grinders) equipment operation, material moving, and vehicles on unpaved roads. To address fugitive dust concerns, a *Dust Control Plan* has been prepared for the facility. This plan provides a toolbox for Agromin field personnel to properly recognize dust sources and aid in the proper implementation of dust suppression best management practices (BMP's) at the new Facility. This plan also complies with CalRecycle's minimum dust control operating standards for compost facilities. Dust control BMP's that will be implemented at the Facility include the following:

- For heavily traveled and disturbed areas, wet suppression (watering), chemical dust suppression, gravel and/or asphalt surfacing, temporary gravel entrances, equipment wash-out areas, and haul truck/equipment covers can be employed as dust control applications. Water used for dust suppression should be applied by means of pressure-type distributors or pipelines equipped with a spray system or hoses and nozzles that will ensure even distribution.
- At least one (1) mobile unit (water truck) should be available at all times to apply water to the exposed roadways and working surfaces as needed.
- Permanent or temporary vegetation and mulching can be employed for areas of occasional and/or no construction traffic.
- Preventive measures would include minimizing surface areas to be disturbed, limiting on-site vehicle traffic to 5 mph, and controlling the number and activity of vehicles on site at any given time.
- Remove dust deposited by vehicles and equipment on paved surfaces as soon as possible, through the use of vacuum trucks, street sweepers, and brooms. Provide rapid clean-up of sediments deposited on paved roads.

Additional preventative operational measures include but are not limited to the following:

- Preventative measures can also be employed on pieces of equipment (such as chippers, grinders, screens, etc.) capable of producing airborne particulates, which would include covered conveyor belts, use of integrated misting systems, and maximizing the physical separation of dust generating activities from sensitive receptors.
- Schedule dust generating activities during periods of light winds and minimize exposed materials and process areas. Wind conditions should be monitored daily by onsite personnel.
- Quickly stabilize exposed soils using vegetation, mulching, and stone/gravel layering as appropriate and feasible.
- Direct feedstock delivery traffic to stabilized roadways within the facility. Signs should be installed onsite to direct vendor and customer vehicles while onsite.
- All distribution equipment shall be equipped with a positive means of shutoff.
- Construct natural or artificial windbreaks or windscreens. These may be designed as enclosures for small dust sources (chippers, grinders, mixers, etc.). Major grinding and size reductions should be conducted within one of the Organic Waste Recovery Buildings.
- Furnish stabilized construction road entrances and vehicle wash-down areas to prevent track-out.

Please see the *Dust Control Plan* dated February 2017 for more detailed and complete information related to fugitive dust emissions sources and controls at the Facility.

6.5 Odor Impacts

VCAPCD has no quantitative odor significance thresholds, but rather considers nuisance odors significant if they "*...cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which may endanger the comfort, repose, health, or safety of any such person or the public, or which may cause, or have a natural tendency to cause, injury or damage to business or property.*" However, the CEQA Guidelines recommend a close examination of "potential odor impacts on residential areas, schools, day care centers, playgrounds, retirement homes, convalescent homes, hospitals, and job sites." For projects that may generate odorous emissions, such as composting facilities, potential receptors surrounding the project site within 1-mile should be assessed. Per the CEQA Guidelines, a significant odor impact may occur if the odor source has:

- More than one (1) confirmed odor complaint per year with the District, averaged over a three-year period.
- Three (3) unconfirmed odor complaints per year with the District, averaged over a three-year period.

To date, neither of Agromin's existing facilities in Oxnard or Santa Paula has received an odor complaint. However, the Project includes the increased processing and storage capacity of food material and compost. As such, the Project has an increased potential to generate objectionable odors due to the decomposition of organic matter.

To assess and mitigate odor emissions generated at the Facility, Agromin has completed an *Odor Impact Minimization Plan* (OIMP) that will be implemented upon commencement of Facility operations. The OIMP provides Agromin personnel with the proper tools to monitor onsite conditions and resulting odor emissions, eliminate origins of odor from the facility, and implement corrective actions if odor impacts are observed or complaints received.

As described within the OIMP, the Project includes the following control measures and design considerations to mitigate the release of objectionable odors from the facility:

- Feedstock Receiving & Processing
    - Onsite personnel, specifically scale house operators, will be trained to properly screen incoming feedstocks and vehicles for unacceptable wastes. All loads will be checked prior to loading the material into the processing equipment or windrows. Unacceptable material that does not pose an immediate threat to public health and safety and the environment will be collected at the composting facility and segregated, handled, and disposed of by trained personnel in accordance with applicable law and regulation. Debris boxes shall be maintained at all times for placement of unacceptable materials. These debris boxes shall be removed for legal offsite disposal at a permitted landfill and replaced within 7 days of initial placement.
    - The wet organics building (food material receiving) will be fully enclosed and subject to negative pressure with air ventilated through biofilters to control volatile organics (VOCs) and odor emissions.
    - Storage of unprocessed feedstocks will be limited to no more than 7 days for green material and 48-hours for food materials.
    - If feedstock material is observed to be generating verifiable, acute odor impacts, this material will be removed from the facility and transported to nearby landfills for disposal.
- Windrow Odor Mitigation:
    - To the greatest extent possible, all excess debris and contaminates shall be removed prior to

windrow formation.

  - Windrows suspected of generating excessive odors shall be turned and/or covered with a layer of finished compost.
  - Food Material will never be placed into windrows.
  - Excess moisture observed between windrows shall be collected using the onsite vacuum truck and reapplied to the windrow piles. Ponded water in contact organic materials has the potential to generate excess odors.
  - Windrow moisture content will be maintained between 45% and 60%.
  - During the pathogen reduction phase, adequate stockpile temperatures of at least 55° C will be maintained.
- CASP Odor Mitigation:
  - It is anticipated that the CASP system will incorporate a "GORE™ Cover System", a multi-layer laminate cover that can achieve up to 97% reduction in odor concentrations.
- AD Odor Mitigation:
  - Digestate storage shall be consistently monitored to ensure proper storage and leaks/spills should be remedied immediately if observed.
  - Should feedstock and digestate storage create odor impacts with outdoor storage, all storage could be moved indoors and/or covered. Additionally, digestate composting could be moved to the CASP research operation, if needed, to eliminate odors from windrow composting of the same materials
- Agromin will provide nearby citizens with a means to report odor issue to facility operators so complaints can be quickly received, investigated, and remedied.

As described in the OIMP, odor mitigation procedures will be reviewed annually by Agromin, and revised as necessary. A copy of the OIMP will be kept at the Facility's Administrative Office and will be accessible to all employees during normal operating hours. The OIMP will be revised within 30 days to reflect significant changes to operations that affect the information and/or procedures found within this OIMP. If more than one (1) confirmed or three (3) unconfirmed complaints are received within a calendar year, Agromin will thoroughly reassess the OIMP and current control procedures to ensure nuisance odors impacts to nearby receptors are effectively mitigated. Please see the OIMP for more detail.

6.6 Carbon Monoxide Impacts

The Guidelines indicate that a screening analysis of localized carbon monoxide impacts should be conducted if a project may significantly impact roadway intersections that are operating at, or are expected to operate at, a level of service (LOS) of E or F. Based on the *Traffic Study* completed by Associated Traffic Engineers (ATE), this Project will not affect any intersections with a LOS of E or F (ATE, 2017). The intersections through which Project traffic will travel will continue to operate at LOS A and B. Therefore, the Project will have a less than significant impact on CO hotspots.

6.7 San Joaquin Valley Fever Impacts

Fugitive dust emissions can also lead to the spread of San Joaquin Valley Fever, a potential health hazard caused by a fungus that lives in the soil. The VCAPCD has not recommended threshold for a significant San Joaquin Velley Fever impact. However, the CEQA Guidelines present the following factors that may indicate a project's potential to create significant Valley Fever impacts:

- Disturbance of the top soil of undeveloped land (to a depth of about 12 inches)
- Dry, alkaline, sandy soils.
- Virgin, undisturbed, non-urban areas.
- Windy areas.
- Archaeological resources probable or known to exist in the area (Native American midden sites).
- Special events (fairs, concerts) and motorized activities (motocross track, All Terrain Vehicle activities) on un-vegetated soil (non-grass).
- Non-native population (i.e., out-of-area construction workers).

Based on the above factors, the Project has the greatest potential to generate Valley Fever impacts during construction, specifically during the site preparation and grading phases when disturbance of top soil will occur. The CEQA Guidelines recommend Valley Fever mitigation measures focus on fugitive dust control to minimize fungal spore entrainment, as well as minimized worker exposure. Please see the construction phase mitigations in Section 7.1 for mitigation measures related to fugitive dust control.

7.0 MITIGATION MEASURES

7.1 Construction Phase Mitigations

As discussed in the CEQA Guidelines, ozone precursor emissions from mobile construction equipment are not counted against the significance thresholds (CEQA Guidelines, page 7-5). However, construction emissions should be mitigated if emissions exceed the thresholds presented in Table 5. Furthermore, fugitive dust emissions should also be minimized during construction to mitigate nuisance impacts to nearby receptors and prevent the spread of San Joaquin Valley Fever. Note that construction activities for this Project are expected to be relatively short in duration (approximately 80 days). The Project will implement the following measures to mitigate ozone precursors and fugitive dust emissions during construction:

AQ-1. Minimize equipment idling time.

AQ-2. Maintain equipment engines in good condition and in proper tune as per manufacturers' specifications.

AQ-3. All trucks shall be required to cover their loads as required by California Vehicle Code §23114.

AQ-4. All graded and excavated material, exposed soil areas, and active portions of the construction site, including unpaved on-site roadways, shall be treated to prevent fugitive dust. Treatment shall include, but not necessarily be limited to, periodic watering, application of environmentally-safe soil stabilization materials, and/or roll-compaction as appropriate. Watering shall be done as often as necessary and reclaimed water shall be used whenever possible.

AQ-5. Signs shall be posted onsite limiting traffic to 15 miles per hour or less.

AQ-6. During periods of high winds (i.e., wind speed sufficient to cause fugitive dust to impact adjacent properties), all clearing, grading, earth moving, and excavation operations shall be curtailed to the degree necessary to prevent fugitive dust created by on-site activities and operations from being a nuisance or hazard, either off-site or on-site. The site superintendent/supervisor shall use his/her discretion in conjunction with the APCD in determining when winds are excessive.

AQ-7. Adjacent streets and roads shall be swept at least once per day, preferably at the end of the day, if visible soil material is carried over to adjacent streets and roads.

7.2 Operation Phase Mitigations

All operation phase impacts are less than the applicable significance threshold without mitigation. Therefore, mitigation is not required.

However, note that the impacts presented herein are based on the Applicant's decision to purchase new offroad equipment and to electrify a portion of the equipment. The Applicant will be investing a significant amount of money into ensuring that the Project results in net benefits to the local air quality. While this would generally be presented as a mitigation measure, the Applicant has included it as part of the Project description in this case.

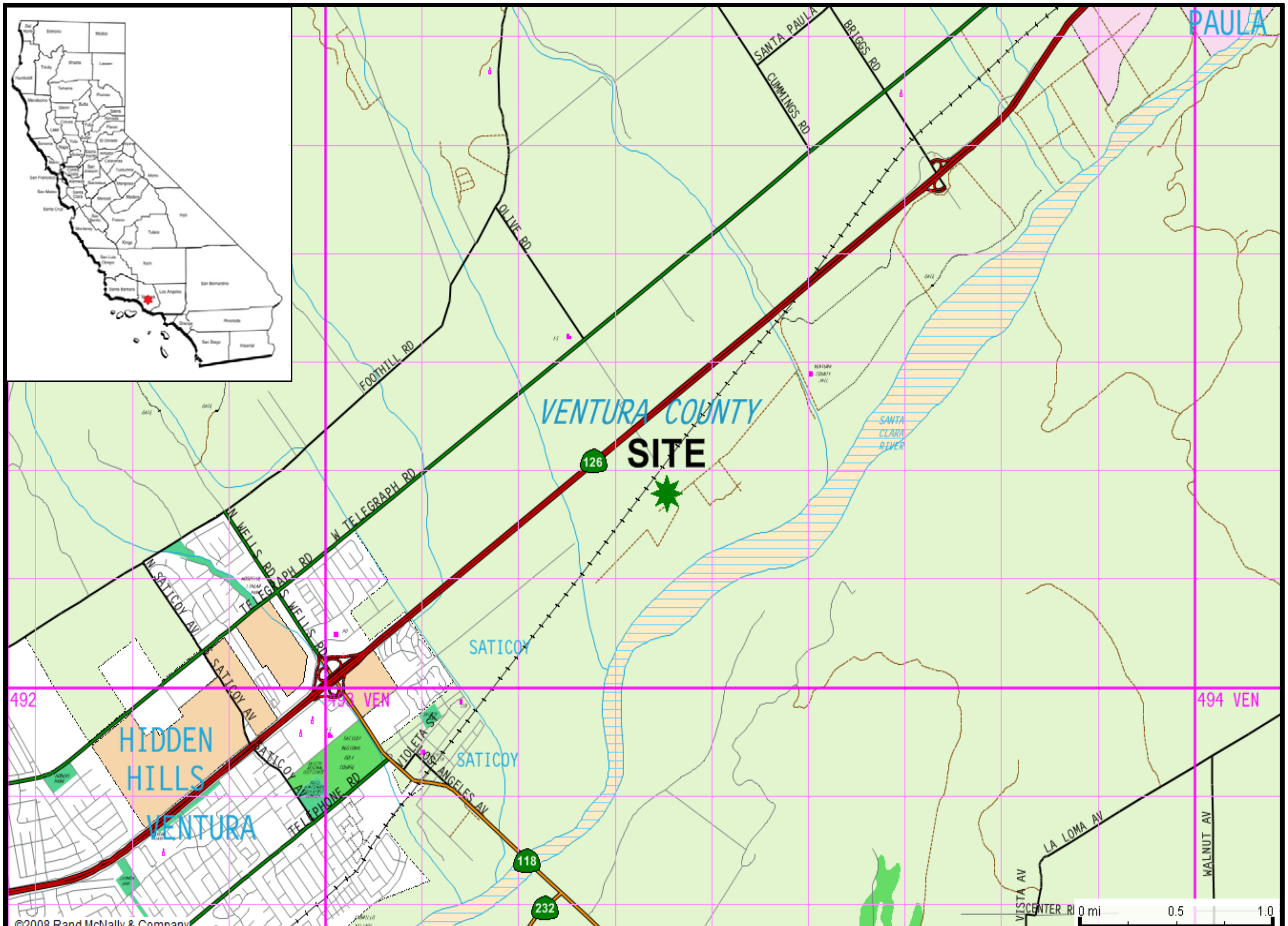
8.0 CONCLUSIONS

This AQCCIA has the following findings:

- The Project results in less than significant Construction phase emissions impacts with standard mitigation measures.
- The Project results in beneficial regional criteria pollutant impacts.
- The Project results in beneficial greenhouse gasses impacts.
- The Project results in less than significant localized health risk impacts.
- The Project is consistent with the Ventura County Air Quality Management Plan.
- The Project results in less than significant fugitive dust impacts.
- The Project results in less than significant odor impacts.
- The Project results in less than significant localized carbon monoxide impacts.

APPENDIX A

FIGURES



Source: 2008 Rand McNally & Company

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SESPE
CONSULTING, INC.

FIGURE	REGIONAL LOCATION MAP Agromin Commercial Organics Processing Operations Santa Paula, California 93060		
1			
PROJECT #:	AG01.11.02	DATE:	1/7/17
SCALE:	as shown	DRAWN BY:	GPS

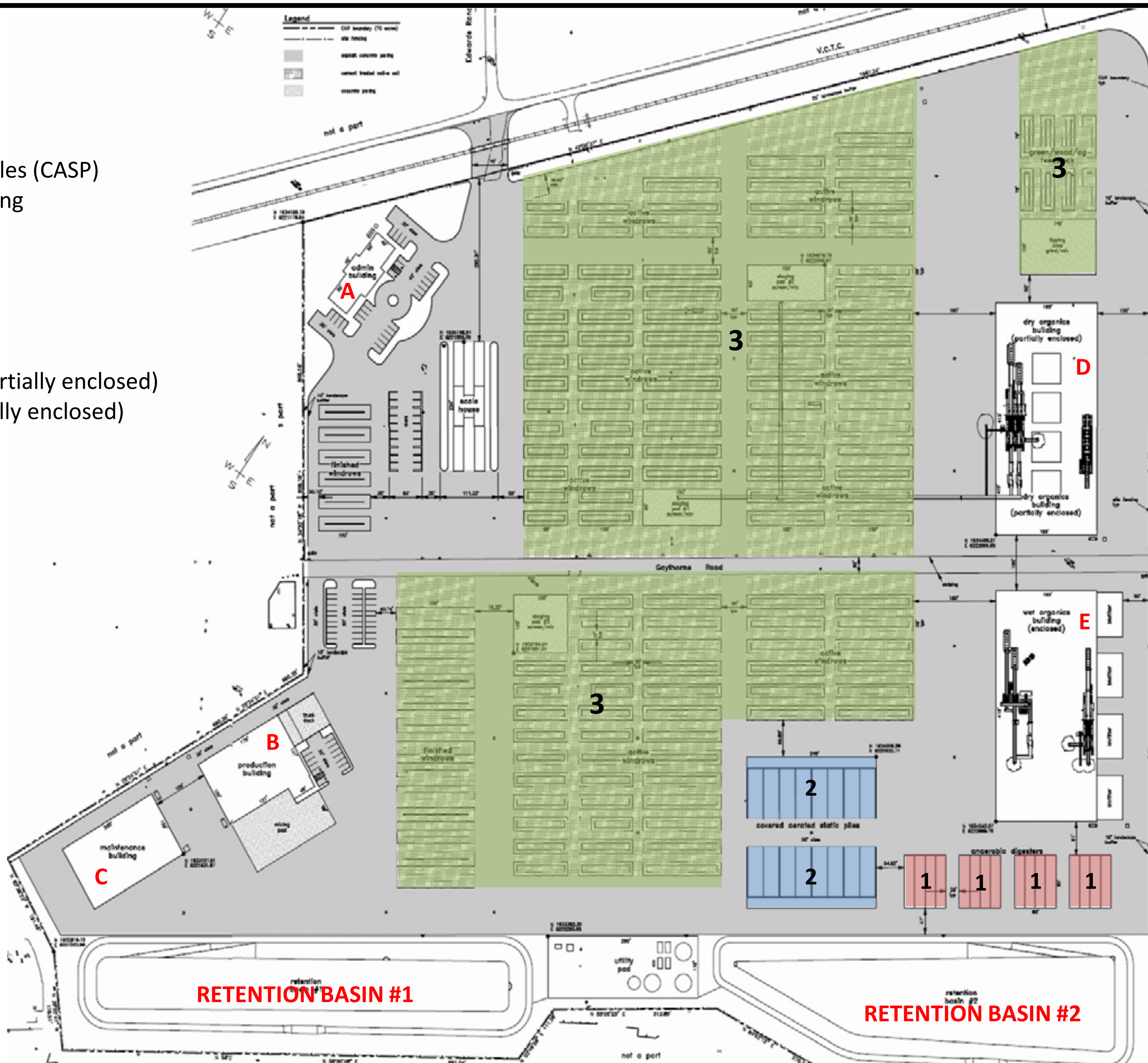
LEGEND

Noise Source Areas

1 - Anaerobic Digesters (AD)
2 - Covered Aerated Static Piles (CASP)
3 - Open Windrow Composting

Buildings

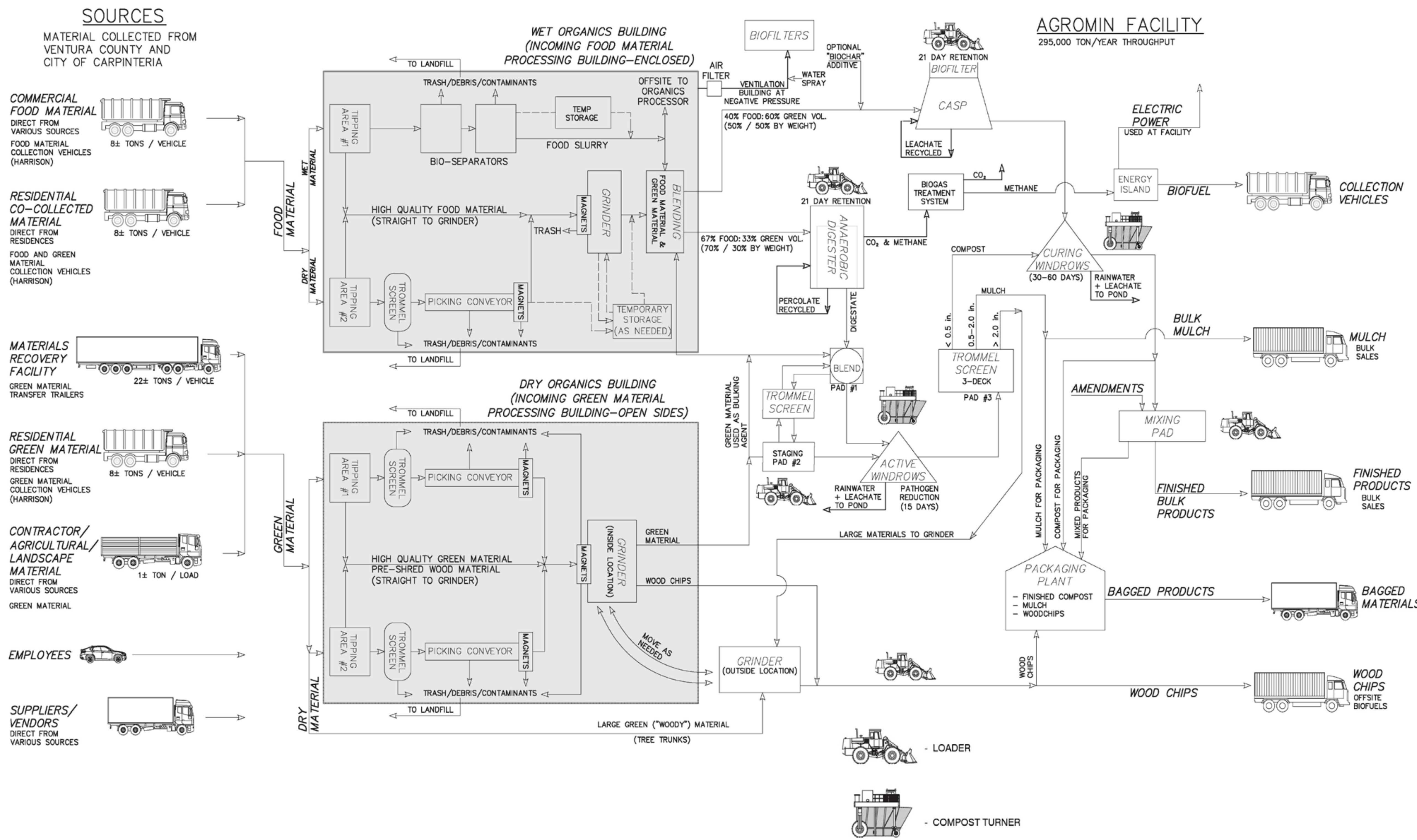
A - Administration Building
B - Production Building
C - Maintenance Building
D - Dry Organics Building (partially enclosed)
E - Wet Organics Building (fully enclosed)



Source: Agromin/E.J. Harrison

SESPE CONSULTING, INC.

FIGURE 2	FACILITY SITE PLAN Agromin Commercial Organics Processing Operation Santa Paula, California 93060		
PROJECT #:	AG01.11.02	DATE:	1/7/17
SCALE:	not to scale	DRAWN BY:	GPS



Source: Sesppe Consulting, Inc.

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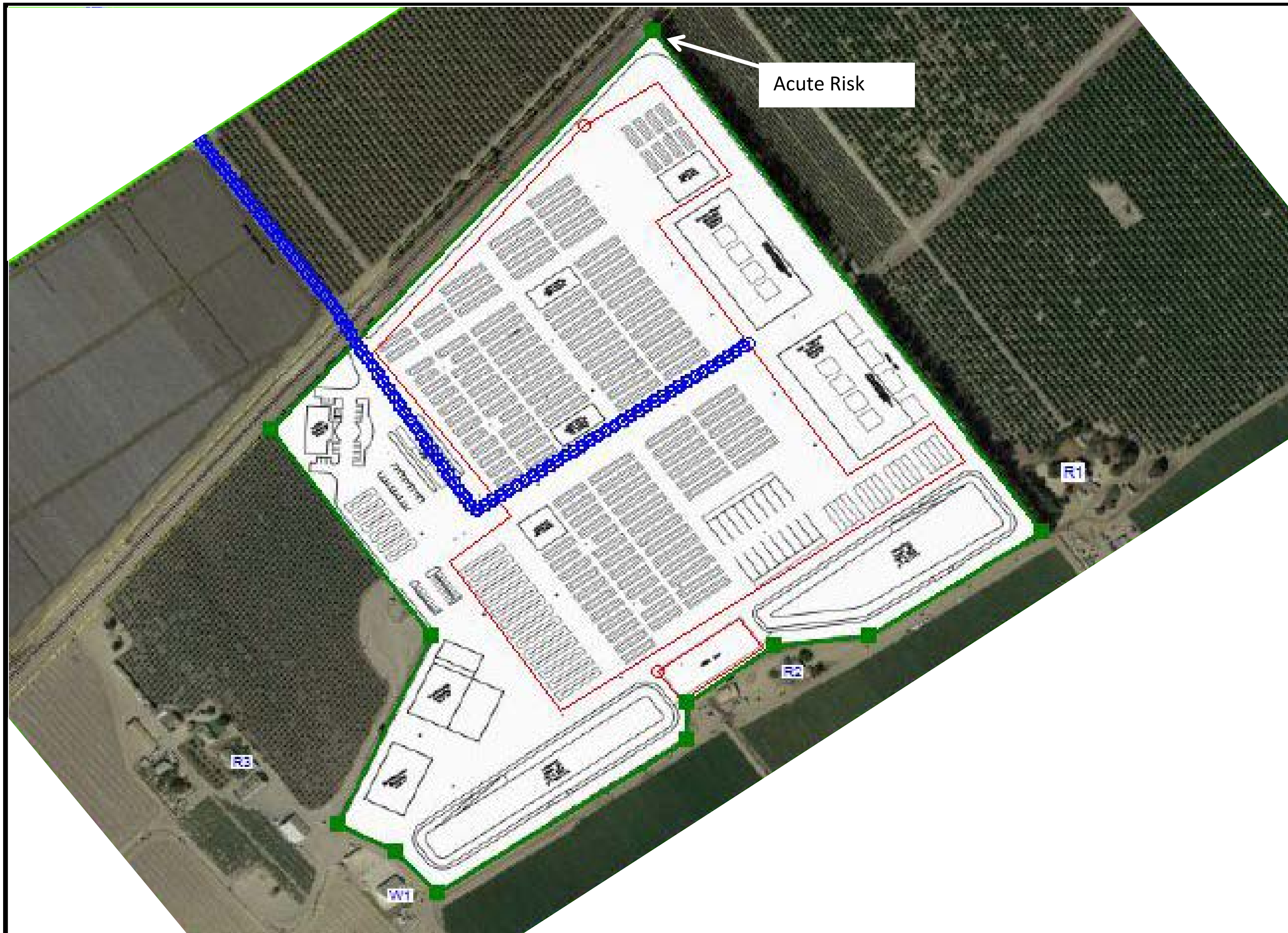
SESPE CONSULTING, INC.

FIGURE	FACILITY PROCESS FLOW		
3	Agromin Commercial Organics Processing Operation Santa Paula, California 93060		
PROJECT #:	AG01.11.02	DATE:	1/7/17
SCALE:	N/A	DRAWN BY:	GPS



Area Source Boundaries
Road Source
R# = Residential Receptor Area
W# = Workplace Receptor Area
PMI = point of maximum impact

N

SESPE CONSULTING, INC.

FIGURE 4	Onsite Sources and Nearby Receptors Agromin Commercial Organics Processing Operations Santa Paula, California 93060		
PROJECT #:	AG01.11.02	DATE:	5/18/17
SCALE:	as shown	DRAWN BY:	GLZ

Source: Google Earth 2017

R# = Residential Receptor Area

W# = Worker Receptor Area

Modeled Road Source

In order to ensure conservative health risk impact results, all Facility haul trips are assumed to utilize South Wells Road (see Section 3.2.2).

N

SESPE CONSULTING, INC.

FIGURE	HAUL ROUTE SOURCE AND Agromin Commercial Organics Processing Operation Santa Paula, California 93060		
5			
PROJECT #:	AG01.11.02	DATE:	5/18/17
SCALE:	N/A	DRAWN BY:	GLZ

APPENDIX B

BASELINE AND PROJECT OPERATIONAL DATA AND ASSUMPTIONS

Key to Abbreviations

AD	anaerobic digester
BH	business haul (landscapers)
CASP	covered aerobic static pile
CNG	compressed natural gas
CYY	cubic yards per year
FL	front loader
FW	food waste
GW	green waste
P	‘process’ or load/unload
SH	self haul
SL	side loader
TPY	tons per year
WW	wood waste
BT	Bobtail truck
TT	transfer trailer semi
RO	roll off truck

Table B1 - Truck Types

Category	Trip Type	Vehicle Type	Axles	EMFAC Vehicle Type
Incoming Waste	Commerical (FL)	Front Loader	3	40% HHD Diesel Solid Waste, 60% HHD CNG/LNG
	Residential (SL)	Side Loader	3	40% HHD Diesel Solid Waste, 60% HHD CNG/LNG
	MRF- Ventura	Transfer Trailer Semi	5	HHD Diesel Fleet
	MRF - Santa Barbara	Transfer Trailer Semi	5	HHD Diesel Fleet
	Business haul	Pickup or Flat Bed	2	50 LDT Gas, 50% diesel
	Self haul	Pickup or Flat Bed	2	50 LDT Gas, 50% diesel
	Roll-off	Roll Off	3	HHD Diesel Fleet
	Other	Transfer Trailer Semi	5	HHD Diesel Fleet
Incoming Deliveries	Organics	Transfer Trailer Semi	5	HHD Diesel Fleet
	Packing and fertilizer	Transfer Trailer Semi	5	HHD Diesel Fleet
	Sand and soil	Transfer Trailer Semi	5	HHD Diesel Fleet
	Miscellaneous	Transfer Trailer Semi	5	HHD Diesel Fleet
Outgoing Sales	Bobtail (BT)	Bobtail Truck	3	HHD Diesel Fleet
	Roll-off	Roll Off	3	HHD Diesel Fleet
	Transfer trailer	Transfer Trailer Semi	5	HHD Diesel Fleet
	Sales yard delivered	Dump Truck	3	HHD Diesel Fleet
	Sales yard self haul	Pickup or Flat Bed	2	50 LDT Gas, 50% diesel
Employees	Employee	Passenger Cars	2	Passenger Cars, Gas
	Visitor	Passenger Cars	2	Passenger Cars, Gas
	TBD			

TRANSFER TRAILER SEMI

ROLL OFF

BOBTAIL

DUMP TRUCK

SIDE LOADER

FRONT LOADER

Table B2 -Baseline Santa Paula & Oxnard Data (2013 & 2014)

2014 Totals

	tons
total green:	98,225
total food:	15,637
	113,862

Baseline 2014 Tons Incoming (by Vehicle type)

	Oxnard	SP	Total
Front Loader	0	0	0
Side Loader	20,057	24,057	44,114
[1]Transfer Trailer (Ventura)	18,442	25,792	44,234
[1]Transfer Trailer (SB)	4,610	0	4,610
Business haul	5,124	4,175	9,299
Self haul	5,075	824	5,899
Roll Off	1,935	3,771	5,706
	55,243	58,619	113,862

1 - assumes 80% of TT from Ventura, 20% from SB (MH assumption for project)

Baseline 2014 Tons Incoming by Waste Type

	Oxnard	SP	Total
Commercial Food (SL & TT)	10,876	0	10,876
Residential Green Material (SL)	17,465	24,057	41,522
Residential Co-Collected Green and Food Material			0
Materials Recovery Facility Green (TT)	10,007	25,792	35,799
Materials Recovery Facility Food (TT)	4,761		4,761
Green Contractor/Ag/ Landscape/ Self Haul (BH, SH, RO)	12,134	8,770	20,904
	55,243	58,619	113,862

Baseline 2014 Loads Incoming

	Oxnard	SP	Total
Front Loader	0	0	0
Side Loader	3,080	3,496	6,576
[1]Transfer Trailer (Ventura)	1,211	1,547	2,758
[1]Transfer Trailer (SB)	303	0	303
Business haul	1,000	1,410	2,410
Self haul	4,029	1,081	5,110
Roll Off	432	772	1,204
	10,055	8,306	18,361

1 - assumes 80% of TT from Ventura, 20% from SB (MH assumption for project)

Daily Inbound Loads

	Oxnard	SP	Total
Front Loader	0.0	0.0	0.0
Side Loader	9.9	11.2	21.1
1Transfer Trailer (Ventura)	3.9	5.0	8.8
1Transfer Trailer (SB)	1.0	0.0	1.0
Business haul	3.2	4.5	7.7
Self haul	12.9	3.5	16.4
Roll Off	1.4	2.5	3.9
	32	27	59

Baseline Assumptions

312	Incoming Waste Trip Days/Year
260	Outgoing Sales/Incoming Vendor/Visitor/ Trip Days/Year

Baseline 2013 Tons Outound

	Oxnard	SP	Total by Truck
Bobtail Truck (BT)	20	0	**20**
Roll Off (RO)	3765	309	**4074**
Transfer Trailer (TT)	20556	13343	**33899**
Customer Pickup (dump truck)	5995	983	6978
Customer Pickup (trailer - pickup truck)	299	785	1085
Total by Location:	**30636**	**15420**	
Total Tons:	**46056**		

Baseline 2013 Loads Outbound

	Oxnard	SP	Total by Truck
Bobtail Truck (BT)	1	0	**1**
Roll Off (RO)	402	47	**449**
Transfer Trailer (TT)	1065	1140	2205
Customer Pickup (dump truck)	2398	393	2791
Customer (trailer or pickup)	600	1572	2172
Total by Location:	**4466**	**3153**	
Total Loads:	**7618**		

Daily Outbound Loads

	Oxnard	SP	Total
Bobtail Truck (BT)	0.0	0.0	**0.0**
Roll Off (RO)	1.5	0.2	**1.7**
Transfer Trailer (TT)	4.1	4.4	**8.5**
Customer Pickup (dump truck)	9.2	1.5	**10.7**
Customer (trailer or pickup)	2.3	6.0	**8.4**
Total by Location:	**17**	**12**	
Total Loads:	**29**		

		For SP only
Total baseline (without vendor) loads Oxnard + Limoneira, inbound + outbound (annual):	25,979	11,459
Total baseline loads (without vendor) Oxnard + Limoneira, inbound + outbound (per day):	100	

Table B3 - Baseline Traffic Assumptions

Category	Trip Type	Vehicle Information: EMFAC Vehicle Type	Vehicle Information: Avg Capacity (Tons/Truck)	Shipped Material (Tons/Year)	Trucks Loads (roundtrips): Loads per Year	Trucks Loads (roundtrips): Average Day Loads	Trucks Loads (roundtrips): Peak Day Loads	Vehicle Miles Traveled (VMT): Avg Distance Per Roundtrip	Vehicle Miles Traveled (VMT): VMT per Year	Vehicle Miles Traveled (VMT): Peak Day VMT
Incoming Waste	Commerical (FL)	60% HHD Diesel Solid Waste, 40% HHD CNG/LNG	0.0	0	0	0	0	18.3	0	0
	Residential (SL)	60% HHD Diesel Solid Waste, 40% HHD CNG/LNG	6.7	44,114	6,576	22	25	18.3	120,481	458
	MRF- Ventura (TT)	HHD Diesel Fleet	16.0	44,234	2,758	9	10	24.5	67,540	245
	MRF-Santa Barbara (TT)	HHD Diesel Fleet	15.2	4,610	303	1	2	24.5	7,415	49
	Business haul	50 LDT Gas, 50% diesel	3.9	9,299	2,410	8	9	18.3	44,154	165
	Self haul	50 LDT Gas, 50% diesel	1.2	5,899	5,110	17	19	18.3	93,622	348
	Roll-off	HHD Diesel Fleet	4.7	5,706	1,204	4	5	18.3	22,059	92
			TOTAL:	**113,862**	**18,361**	**61**	**70**		**355,272**	**1,356**
Incoming Deliveries	Organics	HHD Diesel Fleet	15	10,350	85	1	2	50	4,266	100
	Packing and fertilizer	HHD Diesel Fleet			28	1	2		1,405	100
	Sand and soil	HHD Diesel Fleet			469	2	3		23,536	151
	Miscellaneous	HHD Diesel Fleet			108	1	2		5,420	100
			TOTAL:	**10,350**	**690**	**5**	**9**		**34,626**	**452**
Outgoing Sales	BT	HHD Diesel Fleet	19.7	20	1	0	0	30	30	0
	Roll-off	HHD Diesel Fleet	9.1	4,074	449	2	3	30	13,470	90
	Transfer trailer	HHD Diesel Fleet	15.4	33,899	2,205	8	9	30	66,150	270
	Sales yard delivered	HHD Diesel Fleet	2.5	6,978	2,791	11	13	30	83,736	390
	Sales yard self haul	50 LDT Gas, 50% diesel	0.5	1,085	2,172	8	9	30	65,160	270
			TOTAL:	**46,056**	**7,618**	**29**	**34**		**228,546**	**1,020**
Employees	Employee	Passenger Cars, Gas			10,608	34	38	20	212,160	760
	Visitor	Passenger Cars, Gas			2,600	10	11	20	52,000	220
	TBD	Passenger Cars, Gas			0	0	0	20	0	0
			TOTAL:		**13,208**	**44**	**49**		**264,160**	**980**
Existing to Landfill	To Ventura MRF (SL\FL)	HHD Diesel Fleet	6.4	181,138	28,147	108	119	18.8	529,533	2,239
	MRF to Toland (TT)	HHD Diesel Fleet	17.8		10,158	39	43	38	385,989	1,634
			TOTAL:		**38,304**	**147**	**162**		**915,522**	**3,873**
				BASELINE TOTAL:	78,182	286	324		1,798,126	7,681
				WITHOUT LANDFILL OR EMPLOYEES:	26,669	95	113			

Assumes:

18 of 46 vehicles per day from commercial/residential are CNG, hence 40%

Half of business haul and self haul vehicles are gasoline

Where do outbound vehicles go?

BASELINE INBOUND/OUTBOUND ROUNDTRIP DISTANCES:

Commercial/Residential:	18.3	
Other (Business, self, roll, other)	18.3	
Current material going through MRF first:	24.5	average ADT
SL/FL going to Gold Coast (new tons):	18.8	
TT from Gold Coast to Toland (new tons):	38	
Inbound Deliveries:	50	
Outbound Sales:	30	
Employee/Visitor:	20	

% of waste through MRF: 43%

Baseline Employees

11	at Santa Paula (per dave Green 8/31/16)
13	at Shoreline (13 - from 2016 Shoreline CUP application)
10	at Oxnard headquarters
34	
10	baseline visitors per day (assume same as proposed project)

Average load per FL/SL (tons):	6.7
Average load per TT (tons):	16.0

Summary by Vehicle Type

Vehicle Information: Vehicle Type	Vehicle Information: Fuel Type	Baseline Trucks Loads (roundtrips): Peak Year Loads	Baseline Trucks Loads (roundtrips): Average Day Loads	Baseline Trucks Loads (roundtrips): Peak Day Loads	Baseline VMT: VMT per Year	Baseline VMT: Peak Day VMT
HHD Solid Waste Collection Truck	Diesel	20,834	78	86	390,009	1,618
HHD Solid Waste Collection Truck	CNG	13,889	52	58	260,006	1,079
HHD Fleet Truck	Diesel	20,559	79	94	681,015	3,221
Light Duty Truck	Gasoline	4,846	17	19	101,468	391
Light Duty Truck	Diesel	4,846	17	19	101,468	391
Passenger Cars	Gasoline	13,208	44	49	264,160	980
	Total Haul:	**64,974**	**242**	**275**	**1,533,966**	**6,701**
	Total Worker:	**13,208**	**44**	**49**	**264,160**	**980**
	Total Overall:	**78,182**	**286**	**324**	**1,798,126**	**7,681**

Baseline Assumptions

312	Incoming Waste Trip Days/Year
260	Outgoing Sales/Incoming Vendor/Visitor/ Trip Days/Year
10%	Increase From Average to Peak Day (per M. Harrison 11/30/16 - add 10% for peak loading.)
10	Incoming waste deliveries hours per day (7AM - 5PM)
312	feedstock processing days/year
10	feedstock processing hours/day (7AM - 5PM Dave Green 9/26/16)
312	Windrow & outdoor material processing days/year (7AM - 5PM M-F, 7AM - 3PM Sat., Dave Green 9/26/16)
12	Windrow & outdoor material processing hours/day

Agromin-Project

Throughput Analysis

Build-Out Scenario 2

Table B4 - Project Throughput Calculations

	units	facility qty./description	AD [5.] qty./description	CASP [5.] qty./description	windrow qty./description	gasification qty./description
facility throughput [6.]	tpy	295,000	40,000	75,000	180,000	0
pre-processing method			mixing	mix/screen/grind	mix/screen/grind	mix/screen/grind
average throughput [4.]	tpd	1,135	154	288	692	0
average volume	cyd		327	656	1,731	0
peak throughput	tpd	1,362	185	346	831	
peak volume	cyd					
residual	%		10	8	10	
output	%		80	95		5
output product			digestate	digestate	compost	biochar
material processed	tpy		40,000	75,000	256,350	0
volume processed	cyy		76,596	156,818	640,875	0
retention time	days		21	21	90	
feedstock storage duration [2. 7.]	days		0	0	2	0
feedstock storage volume	cy		***0***	***0***	***3,462***	***0***
product storage duration [3.]	days		22	22	64	
product storage volume	cy				***133,271***	
annual production volume	cyy				416,569	
annual production	ton				134,968	
output storage duration [2.]	days					0
output storage volume	cyd					0
residual storage duration [2.]	days		5	5	5	
residual storage volume	cyd		33	52	173	
output/residual storage	cy		***164***	***262***	***865***	***0***
units required			11	16		

	AD	**CASP**	**Windrow**
Cubic yard/ton	1.91	2.09	2.50
Ton/cubic yard	0.52	0.48	0.40

Total in (ton/yr): 295,000
Total out (ton/yr): 134,968
% out/in: 46%

16.59 # of AD & CASP turnovers

2014 Totals
tons
total green: 98,225
total food: 15,637
113,862

Expected storage:		for PD:
green feed:	3,462	
AD feed:	0	0
CASP feed:	0	0
in windrows:		
in AD:	4,617	5,000
in CASP:	9,452	10,000
finished product:		

waste delivery days/year: 260

1. not used
2. duration in business days
3. duration in calendar days
4. based on 260 business days per year
5. AD unit size(60F/40GWA by weight) - 95'x18'x8.5', CASP unit size (50F/50GWA by weight) - 90'x30'x8'
6. w. county 330k tpy organics - Limoneira 235,000 tpy green, wood, & ag, 60,000 tpy food - GCR 35,000 tpy food
7. storage not required based on unit cycle times

For use in - CARB Waste Diversion GHG Emission Reduction Calculator for FY 2015-16 (.xlsx)

181,138	New tons diverted from landfill
61%	New tons percent of total project feedstock
22%	% Food
40,000	New tons - Feedstock Diverted for AD Producing Electricity & Digestate is Composted (Short Tons)
0	New tons - Feedstock Diverted for AD Producing Vehicle Fuel & Digestate that is Composted (Short Tons)
66,138	New tons - Feedstock Diverted for Windrow Composting (Short Tons)
75,000	New tons - Feedstock Diverted for ASP System Composting (Short Tons)
181,138	sum check (new tons)

Agromin- Project

inbound material circulation

Table B5 - Project Process Flow

material (TPY)

customer type	county	vehicle type	pre-technology material: green	food	ag	wood	technology: AD	CASP	windrow	chip/gas	post-technology material: green	food	wood	ag	other	total material: green	food	ag	wood	Annual Tons
commerical	Ventura	SL/FL	35,225	16,455	0	0	21,425	2,914	27,341	0	0	0	0	0	0	35,225	16,455	0	0	51,680
residential	Ventura	SL/FL	67,195	3,399	0	0	0	6,799	63,795	0	0	0	0	0	0	67,195	3,399	0	0	70,594
material recovery facility	Ventura	TT	50,103	36,517	50	2,142	14,860	52,230	21,722	0	0	1,733	0	0	0	50,103	38,250	50	2,142	88,812
material recovery facility	Santa Barbara	TT	12,526	9,129	12	536	3,715	13,058	5,430	0	0	0	0	0	0	12,526	9,129	12	536	22,203
business haul	Ventura	BH	11,055	0	4,596	6,161	0	0	21,813	0	0	0	0	0	0	11,055	0	4,596	6,161	21,813
self haul	Ventura	SH	12,665	0	0	20,119	0	0	32,784	0	0	0	0	0	0	12,665	0	0	20,119	32,784
roll-off	Ventura	RO	782	0	1,449	4,884	0	0	7,115	0	0	0	0	0	0	782	0	1,449	4,884	7,115
sub-total			189,551	65,500	6,108	33,841	40,000	75,000	180,000	0	0	1,733	0	0	0	189,551	67,233	6,108	33,841	
total			295,000				295,000				1,733					296,733				295,000
		% of total from MRFs	38%	111,015 tons																

trips per year

customer type	county	vehicle type	pre-technology material: green	food	ag	wood	technology: AD	CASP	windrow	chip/gas	post-technology material: green	food	wood	ag	other	total material: green	food	ag	wood	Annual Loads
commerical	Ventura	SL/FL	5,514	3,309	0	0	4,461	372	3,990	0	0	0	0	0	0	5,514	3,309	0	0	8,823
residential	Ventura	SL/FL	9,743	434	0	0	0	868	9,309	0	0	0	0	0	0	9,743	434	0	0	10,177
material recovery facility	Ventura	TT	2,732	2,036	4	208	913	2,795	1,273	0	0	206	0	0	0	2,732	2,242	4	208	4,980
material recovery facility	Santa Barbara	TT	683	509	1	52	228	699	318	0	0	0	0	0	0	683	509	1	52	1,245
business haul	Ventura	BH	2,600	0	687	2,170	0	0	5,457	0	0	0	0	0	0	2,600	0	687	2,170	5,457
self haul	Ventura	SH	7,612	0	0	19,090	0	0	26,702	0	0	0	0	0	0	7,612	0	0	19,090	26,702
roll-off	Ventura	RO	82	0	209	1,149	0	0	1,439	0	0	0	0	0	0	82	0	209	1,149	1,439
sub-total			28,966	6,288	900	22,669	5,602	4,734	48,488	0	0	206	0		0	28,966	6,494	900	22,669	
total			58,824				58,824				206					59,030				58,824
		% of total from MRFs	11%																	

inbound vehicles per day

customer type	county	vehicle type	pre-technology material: green	food	ag	wood	technology: AD	CASP	windrow	chip/gas	post-technology material: green	food	wood	ag	other	total material: green	food	ag	wood	totals
commerical	Ventura	SL/FL	21	13	0	0	17	1	15	0	0	0	0	0	0	21	13	0	0	34
residential	Ventura	SL/FL	37	2	0	0	0	3	36	0	0	0	0	0	0	37	2	0	0	39
material recovery facility	Ventura	TT	11	8	0	1	4	11	5	0	0	1	0	0	0	11	9	0	1	20
material recovery facility	Santa Barbara	TT	3	2	0	0	1	3	1	0	0	0	0	0	0	3	2	0	0	5
business haul	Ventura	BH	10	0	3	8	0	0	21	0	0	0	0	0	0	10	0	3	8	21
self haul	Ventura	SH	29	0	0	73	0	0	103	0	0	0	0	0	0	29	0	0	73	103
roll-off	Ventura	RO	0	0	1	4	0	0	6	0	0	0	0	0	0	0	0	1	4	6
sub-total			111	24	3	87	22	18	186	0	0	1	0	0	0	111	25	3	87	
		Day/yr	260.00																	
total			226				226				1					227				
		% of total from MRFs	11%																	

TOTAL TONS

green mat'l	food mat'l		
35,225	16,455		
67,195	3,399		
52,295	36,517		
13,074	9,129	7.5%	% from SB County
21,813	0		
32,784	0	22%	% Food
7,115	0		
229,500	65,500		15,637
			98,225

2014 baseline	Project	
10,876	16,455	commercial food
41,522	105,819	residential green & co-collected
35,799	65,368	Material Recovery Facility (green)
4,761	45,646	Material Recovery Facility (food)
20,904	61,712	Contractor/Ag/ Landscape / Self Haul
113,862	295,000	2.6 :ratio
	181,138	diff

Additional waste from 2014 CalRecycle

95,185	Food (industrial, commercial, residential sources)
117,799	Other compostable (green, wood, paper, lumber)
212,984	
326,846	Theoretical total available waste (tons)

For Project Desc:

51,680	52,000	commercial food
70,594	71,000	residential green & co-collected
111,015	110,000	Material Recovery Facility
61,712	62,000	Contractor/Ag/ Landscape / Self Haul
295,000	295,000	

Summary of daily trips by vehicle type:

	Loads	ADT	Time Period	
incoming waste SL/FL (side loader/front loader)	73	146	7AM - 5PM M-F	
incoming waste TT (transfer trailer)	25	49	7AM - 5PM M-F	could be on Saturday
incoming waste BH (business haul)	124	247	7AM - 5PM M-F	
incoming waste RO (roll off)	6	11	7AM - 5PM M-F	
Incoming supplies deliveries (TT)	8	16	7AM - 5PM M-F	
Outgoing sales (RO)	5	10	7AM - 5PM M-F	
Outgoing sales (TT)	25	50	7AM - 5PM M-F	
Outgoing sales (dump truck)	31	63	7AM - 5PM M-F	
Outgoing sales (customer self pickup/trailer)	24	49	7AM - 5PM M-F	
Employees (office)	10	20	7AM - 5PM M-F	
Employees (waste receiving & maintenance)	8	16	7AM - 5PM M-Sat	
Employees (material processing bldg.)	10	20	6AM - 3PM M-Sun	
Employees (material processing bldg.)	10	20	3PM - 10PM M-Sun	
Employees (packaging)	5	10	6AM - 3PM M-Sat	
Employees (packaging)	5	10	3PM - 10PM M-Sat	
Employees (outdoor processing)	4	8	sunrise - sunset	
Visitors	10	20	7AM - 5PM M-Sat	
Total	383	766		

Shoreline trips from 5/23/14 meeting from Agromin

1149	total customer invoices out of City side yard at Shoreline
690	number that had a delivery charge
459	self pickup (pickup truck - 5 cubic yard average)
40%	% self pickup
	NOTE: these trips did not go thru the scale house. It's also based on tickets so trips for multi-truck sales are not counted. 1 ticket could be multi trips.

	Loads	ADT
Incoming waste total	227	454
Outgoing sales total	86	172
Incoming deliveries total	8	16
Employee/visitor total	62	124
	383	766
Not counting employees:	321	642
Employees Only:	52	

Table B6 - Project Traffic Assumptions

Category	Trip Type	Vehicle Information: EMFAC Vehicle Type	Vehicle Information: Avg Capacity (Tons/Truck)	Shipped Material (Tons/Year)	Trucks Loads (roundtrips): Loads per Year	Trucks Loads (roundtrips): Average Day Loads	Trucks Loads (roundtrips): Peak Day Loads	Vehicle Miles Traveled (VMT): Avg Distance Per Roundtrip	Vehicle Miles Traveled (VMT): VMT per Year	Vehicle Miles Traveled (VMT): Peak Day VMT
Incoming Waste	Commerical (FL)	60% HHD Diesel Solid Waste, 40% HHD CNG/LNG	5.9	51,680	8,823	34	38	24.8	218,454	941
	Residential (SL)	60% HHD Diesel Solid Waste, 40% HHD CNG/LNG	6.9	70,594	10,177	40	44	24.8	251,983	1,089
	MRF- Ventura (TT)	HHD Diesel Fleet	17.8	88,812	4,980	20	22	23.9	119,034	526
	MRF-Santa Barbara (TT)	HHD Diesel Fleet	17.8	22,203	1,245	5	6	23.9	29,759	143
	Business haul	50 LDT Gas, 50% diesel	4.0	21,813	5,457	21	24	24.8	135,113	594
	Self haul	50 LDT Gas, 50% diesel	1.2	32,784	26,702	103	114	24.8	661,136	2,823
	Roll-off	HHD Diesel Fleet	4.9	7,115	1,439	6	7	24.8	35,641	173
			TOTAL:	**295,000**	**58,824**	**229**	**255**		**1,451,119**	**6,290**
Incoming Deliveries	Organics	HHD Diesel Fleet	15	26,815	220	1	2	46	10,222	93
	Packing and fertilizer	HHD Diesel Fleet			73	1	2		3,367	93
	Sand and soil	HHD Diesel Fleet			1215	5	6		56,402	279
	Miscellaneous	HHD Diesel Fleet			280	2	3		12,988	139
			TOTAL:	**26,815**	**1788**	**9**	**13**		**82,980**	**603**
Outgoing Sales	BT	HHD Diesel Fleet	19.7	58	3	0	0	24	70	0
	Roll-off	HHD Diesel Fleet	9.1	11,940	1,316	5	6	24	31,579	144
	Transfer trailer	HHD Diesel Fleet	15.4	99,342	6,462	25	28	24	155,084	672
	Sales yard delivered	HHD Diesel Fleet	2.5	20,449	8,180	31	35	24	196,313	840
	Sales yard self haul	50 LDT Gas, 50% diesel	0.5	3,179	6,365	24	27	24	152,763	648
			TOTAL:	**134,968**	**22,325**	**85**	**96**		**535,809**	**2,304**
Employees	Employee	Passenger Cars, Gas			13,520	52	58	20	270,400	1,160
	Visitor	Passenger Cars, Gas			2,600	10	11	20	52,000	220
	TBD	Passenger Cars, Gas			0	0	0	20	0	0
			TOTAL:		**16,120**	**62**	**69**		**322,400**	**1,380**
				BASELINE TOTAL:	99,057	385	433		2,392,308	10,577

Summary by Vehicle Type

Vehicle Information: Vehicle Type	Vehicle Information: Fuel Type	Project Trucks Loads (roundtrips): Peak Year Loads	Project Trucks Loads (roundtrips): Average Day Loads	Project Trucks Loads (roundtrips): Peak Day Loads	Project VMT: VMT per Year	Project VMT: Peak Day VMT
HHD Solid Waste Collection Truck	Diesel	11,400	44	49	282,263	1,218
HHD Solid Waste Collection Truck	CNG	7,600	30	33	188,175	812
HHD Fleet Truck	Diesel	25,413	101	117	650,459	3,102
Light Duty Truck	Gasoline	19,262	74	83	474,506	2,032
Light Duty Truck	Diesel	19,262	74	83	474,506	2,032
Passenger Cars	Gasoline	16,120	62	69	322,400	1,380
	Total Haul:	**82,937**	**323**	**364**	**2,069,908**	**9,197**
	Total Worker:	**16,120**	**62**	**69**	**322,400**	**1,380**
	Total Overall:	**99,057**	**385**	**433**	**2,392,308**	**10,577**

Assumes:

18 of 46 vehicles per day from commercial/residential are CNG, hence 40%

Half of business haul and self haul vehicles are gasoline

PROJECT INBOUND/OUTBOUND ROUNDTRIP DISTANCES:

Commercial/Residential:	24.8
Other (Business, self, roll, other)	24.8
Material going through MRF first:	23.9
Inbound Deliveries:	46
Outbound Sales:	24
Employee/Visitor:	20
% of waste through MRF:	38%

Project Employees

52	at Santa Paula
0	at Shoreline (closed)
0	at Oxnard headquarters
52	
10	Project visitors per day

Average load per FL/SL (tons):	6.4
Average load per TT (tons):	17.8
Baseline product (ton/year):	46,056
Project product (ton/year):	134,968
Project:Baseline outgoing product ratio:	2.93
Baseline incoming waste (ton/year):	113,862
Project incoming waste (ton/year):	295,000
Project:Baseline incoming waste ratio:	2.59

Project Assumptions

260	Incoming Waste Trip Days/Year
260	Outgoing Sales/Incoming Vendor/Visitor/ Trip Days/Year (per M. Harrison 1/17/17)
10%	Increase From Average to Peak Day (per M. Harrison 11/30/16 - add 10% for peak loading.)
10	Incoming waste deliveries hours per day (7AM - 5PM)
365	feedstock processing days/year
16	feedstock processing hours/day
365	Windrow & outdoor material processing days/year
12	Windrow & outdoor material processing hours/day

Table B7 - Trip Distance Assumptions

- Esssentially any waste that has come in or will come in via a Transfer Trailer (TT) is considered as coming from an MRF facility.
- For distance estimates, the MRF facility is considered to be Gold Coast

BASELINE TRIP DISTANCES: (based on how much trash is generated by city/area)

Estimating waste delivery trip distance from total West County waste generation split (based on CalRecycle Disposal Rate Statistics - New Tons)

Incoming Material To Santa Paula Facility	Total Waste ton/yr	% of total	One way distance (mi.)	% x miles	
San Buenaventura	116,973	63.3%	10	6.3	
1/4 of Unincorporated	31,081	16.8%	5	0.8	
Ojai	7,070	3.8%	28	1.1	
Carpinteria	9,240	5.0%	27	1.3	
Santa Paula	20,442	11.1%	6	0.7	
	184,806	1.0		10.3	
Incoming Material To Oxnard Facility					
1/4 of Unincorporated	31,081	9.1%	5	0.5	
Camarillo	45,359	13.3%	15	2.0	101 to Rice
Oxnard	249,317	73.1%	8	5.8	
Port Hueneme	15,324	4.5%	6	0.3	
	341,080	1.0		8.6	
	525,886				

Ave. Incoming Waste Material going directly to Agromin facilities (mi.):	**9.16**	One Way Trip
Ave. Incoming Waste Material going directly to Agromin facilities (mi.):	**18.3**	Round Trip
Average inbound vendor one way trip to Oxnard (mi.):	25	
Average outbound sales one way trip from Oxnard (mi):	15	1/2 way to County lines
Average employee & visitor trip one way (mi):	10	

Trash hauling: Essentially all EJH landfill bound trash from west Ventura County is taken straight to Gold Coast recycling first in a variety of trucks (SL, FL, etc.) for processing. No loads go direct to Toland. After separation it is sent to Toland landfill in 20 ton/load transfer trailers (TT). ±17 ton/truck - M. Harrison 9/1/16

Location	Total Waste ton/yr	% of total	One way distance to Gold Coast (mi.)	% x miles	
Camarillo	45,359	8.6%	13	1.1	
Carpinteria	9,240	1.8%	22	0.4	
Ojai	7,070	1.3%	21	0.3	
Oxnard	249,317	47.4%	7	3.3	
Port Hueneme	15,324	2.9%	10	0.3	
San Buenaventura	116,973	22.2%	6	1.3	
Santa Paula	20,442	3.9%	14	0.5	
1/2 of Unincorporated	62,162	11.8%	18	2.1	
	525,886	1	one way	9.4	Ave. miles to Gold Coast
			one way	19.0	From Gold Coast to Toland

Trip distance for current lanfill bound waste that goes to Gold Coast first, then to Toland

For Baseline:

Average load per FL/SL (tons):	6.7
Average load per TT (tons):	16.0

Current Material Going Through MRF:

	Tons	Loads	Project VMT
Waste to MRF First:	48,844	7,290	137,151
Waste from MRF to Santa Paula:	48,844	3,061	116,318
Totals:		10,351	253,469
Average round trip through MRF (miles)			**24.5**
Average one way trip through MRF (miles)			**12.2**

				Tot. Miles	
2014 West County compostable tons to landfill (new tons)			181,138		
Loads to Gold Coast assuming	6.4	ton/truck (FL/SL):	28,147	264,767	Average
Loads to Toland assuming	17.8	ton/truck (FL/SL):	10,158	192,994	Trip Distance
			one way miles	457,761	12.0
			round trip (x2)	**915,522**	23.9

TOTAL MILES FOR COMPOSTABLE WASTE CURRENTLY GOING TO LANDFILL
ASSUMES ALL "NEW TONS" ARE CURRENTLY GOING THROUGH GOLD COAST

VMT/ton check:	Total VMT	Total Tons Moved [1]	Total VMT/ton	Waste VMT	Waste in Tons Only [2]	Waste VMT/ton
Baseline:	1,798,126	351,406	5.12	1,270,794	295,000	4.31
Project:	2,392,308	456,784	5.24	1,451,119	295,000	4.92

1 - includes inbound waste, inbound deliveries, outgoing sales, employees & visitors
2 - Includes only inbound waste tons
Looks like miles saved by not going through Gold Coast are offset by the extra miles related to additional product deliveries

PROJECT TRIP DISTANCES: (based on how much trash is generated by city/area)

Estimating waste delivery trip distance from total West County waste generation split (based on CalRecycle Disposal Rate Statistics - New Tons)

Incoming Material To Santa Paula Facility	Total Waste ton/yr	% of total	One way distance (mi.)	% x miles	
Camarillo	45,359	8.6%	16	1.4	
Carpinteria	9,240	1.8%	27	0.5	
Ojai	7,070	1.3%	28	0.4	
Oxnard	249,317	47.4%	13	6.2	
Port Hueneme	15,324	2.9%	20	0.6	
San Buenaventura	116,973	22.2%	10	2.2	
Santa Paula	20,442	3.9%	6	0.2	TRIP DISTANCE FOR WASTE
1/2 of Unincorporated	62,162	11.8%	8	0.9	THAT GOES DIRECTLY TO SP
	525,886	1		**12.4**	ave one way waste delivery trip
				24.8	ave round trip miles

Average inbound vendor one way trip to SP (mi.):	23	
Average outbound sales one way trip from SP (mi):	12	roughly 1/2 way to County lines
Average employee & visitor trip one way (mi):	10	

New Project VMT:

	Tons	Loads	Project VMT	
Straight to Santa Paula:	183,985	28,589	707,868	
Going Through MRF:				
Waste to MRF First:	111,015	17,250	324,537	
Waste from MRF to Santa Paula:	111,015	6,225	236,562	
Totals:		52,065	1,268,967	Total for project
Totals:		23,476	561,099	←Total VMT through the MRF (miles)
			23.9	←Average round trip through MRF (miles)
			12.0	←Average one way trip through MRF (miles)
Waste loads from Project sheet:			58,824	
% of waste direct to Santa Paula			62%	
% of waste through MRF (Gold Coast)			38%	
RATIO CHECK (project:baseline):			2.59	baseline:project waste ratio
incoming waste VMT:			1.00	
incoming delivery VMT:			2.40	OK that < waste ratio, project ave trip is shorter
outgoing sales VMT:			2.34	OK- same as baseline:project waste ratio
employee/visitor VMT:			1.22	OK - not many new employees proposed
incoming waste tons:			2.59	

Main increase due to more incoming deliveries (fertillizer, etc.) and more outgoing sales, neither of which are "inelastic" since they did not exist for landfilled tons

PROJECT vs BASELINE VMT: (Using method to left - slightly different project miles than the method used on Project tab):

	Direct To OX + SP	Through Gold Coast	Total		
baseline incoming waste	355,272	915,522	1,270,794		
baseline incoming deliveries	34,626	0	34,626		
baseline outgoing sales	228,546	0	228,546		
baseline employee/visitor	264,160	0	264,160	1,798,126	miles
	Direct To SP	**Through Gold Coast**	**Total**		
project incoming waste	707,868	561,099	1,268,967		
project incoming deliveries	82,980	0	82,980		
project outgoing sales	535,809	0	535,809		
project employee/visitor	322,400	0	322,400	2,210,155	miles
			diff	412,030	
			diff project:baseline	23%	
			Total miles from Project tab:	2,392,308	
			diff this method vs project tab method	8.2%	

County of Ventura

Waste Disposal Report

by Jurisdiction

Table B8 - Cal Recycle Disposal Rate Statistics - New Tons

(CalRecycle report only accounts for landfilled material, not what is currently being composted)

(http://www.calrecycle.ca.gov/LGCentral/Reports/jurisdiction/diversiondisposal.aspx)

	Jurisdiction	2014 (most current)			2013			2012		
		disposal (tons)	population	disposal rate (lb/per./d)	disposal (tons)	population	disposal rate (lb/per./d)	disposal (tons)	population	disposal rate (lb/per./d)
West County	Camarillo	45,359	66,752	3.7	50,607	66,428	4.2	47,898	66,407	4.0
West County	Carpinteria (SB County)	9,240	13,442	3.8	10,336	13,099	4.3	10,990	13,076	4.6
West County	Ojai	7,070	7,594	5.1	8,209	7,548	6.0	8,612	7,535	6.3
West County	Oxnard	249,317	203,645	6.7	239,868	200,855	6.5	228,729	200,390	6.3
West County	Port Hueneme	15,324	22,399	3.7	15,510	22,024	3.9	14,884	21,682	3.8
West County	San Buenaventura	116,973	108,961	5.9	113,462	108,294	5.7	111,834	107,166	5.7
West County	Santa Paula	20,442	30,448	3.7	20,284	29,953	3.7	19,149	29,882	3.5
West County	1/2 of Unincorporated	62,162	48,657	7.0	58,116	48,295	6.6	56,687	47,388	6.6
East County	Fillmore	9,939	15,339	3.6	10,228	15,175	3.7	10,861	15,145	3.9
East County	Moorpark	23,226	35,172	3.6	23,012	34,904	3.6	22,131	34,826	3.5
East County	Simi Valley	89,646	126,305	3.9	90,875	125,558	4.0	88,397	125,317	3.9
East County	Thousand Oaks	104,095	129,039	4.4	105,824	128,143	4.5	104,424	128,031	4.5
East County	1/2 of Unincorporated	62,162	48,657	7.0	58,116	48,295	6.6	56,687	47,388	6.6
	Total	**814,955**	856,409	5.2	**804,447**	848,570	5.2	**781,282**	844,232	5.1

East County	289,068	354,512	4.5	35%
West County	525,886	501,898	5.7	65%
West West County	157,320	175,554	4.9	

<u>2008 Cal Recycle Waste Characterization Report</u>

Other Organics Fraction:	32.4%
Food (included in Other Organics Fraction):	15.5%
Paper:	17.3%
Remainder/Composite Paper (included in Paper):	5.2%
(This % used to estimate soiled paper that is not recycled)	
Total organics & paper fraction:	37.6%

Countywide New Tons	**Percent of Total Waste**	**Ton/year**
total compostable/mulch [1.]	40.5%	330,057
food waste fraction [1.]	18.1%	147,507

PROJECT

West County New Tons	**Percent of Total Waste**	**Ton/year**
total compostable/mulch [1.]	**40.5%**	**212,984**
food waste fraction [1.]	**18.1%**	**95,185**

2014 baseline tons Oxnard & SP:	green:	98,225
(M. Harrison update 5/13/16)	food:	15,637
		113,862
Total potential tons for Santa	green:	216,023
Paula project:	food:	110,822
		326,846

West, West County - 6859 Arnold Road [2,3.]	**Percent of Total Waste**	**Ton/year**
total organics & paper fraction [1.]	40.5%	63,715
food waste fraction [1.]	18.1%	28,475

<u>FINAL 2014 Cal Recycle Waste Characterization Report - Disposal Facility Based</u>

Table 33: Selected Compost/Mulch Material Types, Disposed Composition by Sector		**WEST COUNTY 2014 TONS**
Other Miscellaneous Paper - Compostable	0.2%	1,052
Remainder/Composite Paper - Compostable	6.6%	34,708
Food	18.1%	95,185
Leaves and Grass	3.8%	19,984
Prunings and Trimmings	3.1%	16,302
Branches and Stumps	1.7%	8,940
Lumber - Clean Dimensional Lumber	3.2%	16,828
Lumber - Clean Engineered Wood	1.7%	8,940
Lumber - Clean Pallets & Crates	2.1%	11,044
	40.5%	212,984

1. source: 2014 Cal Recycle Waste Characterization Report (latest study)
2. west, west county - Camarillo, Ojai, Port Hueneme, half Ventura, & 25% unincorporated
3. current site receiving 100% of the other organic waste demand and only 15% of the food waste demand

NOTE: Food above includes post consumer waste. Food is defined in CalRecycle 2014 study as:

Food means food material resulting from the processing, storage, preparation, cooking, handling, or consumption of food. This type includes material from industrial, commercial, or <u>residential sources</u>. Examples include discarded meat scraps, dairy products, eggshells, fruit or vegetable peels, and other food items from homes, stores, and restaurants. This type includes grape pomace and other processed residues or material from canneries, wineries, or other industrial sources.

APPENDIX C

CRITERIA POLLUTANT AND GHG EMISSIONS CALCULATIONS

Activity Level Assumptions (pg 1 of 2)

Stationary Source Activities

Parameter	Baseline (Oxnard + Santa Paula)			Post-Project Total			Project Increment		
	Peak Year	Peak Day	Peak Hour	Peak Year	Peak Day	Peak Hour	Peak Year	Peak Day	Peak Hour
Stockpiling and Processing (tons)	113,862	343	34	295,000	889	56	181,138	546	22
Windrow Composting (tons)	98,225	296	30	180,000	542	34	81,775	246	4
Anaerobic Digestion (AD) Throughput	0	0	0	40,000	121	8	40,000	121	8
Covered Aerated Storage Piles (CASP, tons)	15,637	47	5	75,000	226	14	59,363	179	9
Finished compost storage and loadout	56,406	239	24	134,968	571	36	78,562	332	12

Open windrow active and curing phase composting - includes post AD & CASP material	256,350
Windrow turning - includes post AD & CASP material	256,350
Screening processs-post composting, CASP and AD	134,968
Screening drops - post composting, CASP and AD	134,968

	Baseline	Project	SCAQMD 1133-3	SJVAPCD 4566
Green material stockpile storage pre-processing (days)	5	2	NA	3
Food material stockpile storage pre-processing (days) [1]	0	0	2	3

1 - Currently food waste is processed immediately, for Project it will go directly to a biofilter controlled building

On Road Vehicle Source Activities

Vehicle Type	Baseline VMT (Oxnard + Santa Paula)			Post-Project Total VMT			Project Increment		
	Per Year	Peak Day	Peak Hour	Per Year	Peak Day	Peak Hour	Per Year	Peak Day	Peak Hour
HHD Solid Waste Collection Truck (Diesel)	390,009	1,618	162	282,263	1,218	122	-107,746	-400	-40
HHD Solid Waste Collection Truck (CNG)	260,006	1,079	108	188,175	812	81	-71,831	-267	-27
HHD Fleet Truck (Diesel)	681,015	3,221	322	650,459	3,102	310	-30,556	-119	-12
Light Duty Truck (Gasoline)	101,468	391	39	474,506	2,032	203	373,038	1,641	164
Light Duty Truck (Diesel)	101,468	391	39	474,506	2,032	203	373,038	1,641	164
Passenger Cars (Gasoline)	264,160	980	98	322,400	1,380	138	58,240	400	40
Totals:	**1,798,126**	**7,680**	**768**	**2,392,309**	**10,576**	**1,057**	**594,183**	**2,896**	**289**

On-Site Vehicle Miles

Vehicle	Route	BASELINE (Oxnard + Santa Paula)			PROJECT		
		Vehicles per year	Miles/trip	Ave. Weight (tons)[1]	Vehicles per year	Miles/trip	Ave. Weight (tons)[1]
HHD Solid Waste Collection Truck	Entrance-Tipping	6,576	0.24	20.4	19,000	0.73	20.5
HHD Fleet Truck from MRFs	Entrance-Tipping	3,061	0.24	23.0	6,225	0.73	23.9
Light Duty Truck - Business/Self Haul	Entrance-Tipping	7,520	0.24	3.5	32,159	0.73	3.3
HHD Fleet - Roll off	Entrance-Tipping	1,204	0.24	17.4	1,439	0.73	17.5
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Entr.-Sales Yard	690	0.19	22.5	1,788	0.30	22.5
HHD Fleet Truck - Finished Compost, Mulch, etc.	Sales Yard-Entr.	5,446	0.45	19.1	15,960	0.45	19.1
Light Duty Truck - Outgoing Sales	Sales Yard-Entr.	2,172	0.45	2.8	6,365	0.45	2.8
Avoided Landfill Trips- HHD from MRF	@ Landfill	10,158	1.67	23.9	---	---	---
1 - average of loaded & empty vehicle	Total:	**36,827**		Total:	**82,937**		

Activity Level Assumptions (pg 2 of 2)

Freeway to Entrance Vehicle Miles (for HRA)

Vehicle	BASELINE (SP) Vehicles per year	PROJECT Vehicles per year	Miles
HHD Solid Waste Collection Truck (Diesel)	2,098	11,400	6.20
HHD Solid Waste Collection Truck (CNG)	1,398	7,600	6.20
HHD Fleet Truck from MRFs	1,547	6,225	6.20
Light Duty Truck - Business/Self Haul	2,491	32,159	6.20
HHD Fleet - Roll off	772	1,439	6.20
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	0	1,788	6.20
HHD Fleet Truck - Finished Compost, Mulch, etc.	1,580	15,960	6.20
Light Duty Truck	1,572	6,365	6.20
Total:	**11,459**	**82,937**	

Project Assumptions

Parameter	Baseline	Project
Incoming Waste Trip Days/Year	312	260
Incoming waste deliveries hours per day (7AM - 5P	10	10
Outgoing Sales/Incoming Vendor/Visitor/ Trip Day	260	260
Increase From Average to Peak Day (per M. Harris	10%	10%
feedstock processing days/year	312	365
feedstock processing hours/day	10	16
active composting	365	365
Windrow & outdoor material processing days/year	312	365
Windrow & outdoor material processing hours/day	12	12

Throughputs	Food	Green	Total
2014 baseline incoming feedstock (tons)	15,637	98,225	113,862
Project incoming feedstock (tons)	65,500	229,500	295,000
Project increment (tons)	49,863	131,275	181,138
Project:Baseline ratio	4.19	2.34	2.59

Criteria & GHG Summary

BASELINE:

	Peak Day Emissions (lb/day)						Peak Year Emissions (ton/year)						
Source	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**NH3**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**NH3**	**CO2e (MT)**
Stationary													
Material Handling Fugitive Dust				4.22	1.74					0.59	0.25		
Windrow/CASP/AD Volatiles	1473.4					395	244.5					65.6	
Avoided Landfill GHG*													58,891
Avoided Landfill Flare Emissions	26.2	157.0	523.4	52.3	52.3		4.8	28.7	95.5	9.6	9.6		
Stationary Total	1,499.6	157.0	523.4	56.6	54.1	395.1	249.2	28.7	95.5	10.1	9.8	65.6	58,891
Mobile													
Off Road Engine Exhaust **	8.2	118.9	189.6	4.7	4.3		1.29	18.55	29.58	0.74	0.68		2,547
Motor Vehicle Fugitive PM				23.22	2.32					3.96	0.40		
Motor Vehicle Exhaust	3.45	110.36	36.43	0.71	0.68		0.538	17.2	5.7	0.11	0.11		3217
Mobile Total	11.7	229.3	226.1	28.7	7.3	0.0	1.8	35.8	35.3	4.8	1.2	0.0	5,764

*Alternative avoided landfill GHG emissions using CARB CERFs: 88,676 MT CO2e/year

** Does not account for emissions from landfill handling of diverted compostables

PROJECT:

	Peak Day Emissions (lb/day)						Peak Year Emissions (ton/year)						
Source	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**NH3**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**NH3**	**CO2e (MT)**
Stationary													
Material Handling Fugitive Dust				8.79	3.07					1.36	0.51		
Windrow/CASP/AD Volatiles	1,602					391	265.75					64.935	
AD CHP Engine Exhaust	7.4	38.9	58.3	0.7	0.6		1.35	7.09	10.64	0.12	0.11		8.06
AD Flare Emissions	0.2	0.2	1.3	0.018	0.016		0.03	0.04	0.24	0.003	0.003		0.24
Stationary Total	1,609.3	39.1	59.6	9.5	3.7	391.4	267.1	7.1	10.9	1.5	0.6	64.9	8
Mobile													
Off Road Engine Exhaust	4.4	26.3	126.0	1.1	1.0		0.81	4.81	22.99	0.20	0.19		2,172
Motor Vehicle Fugitive PM				3.02	0.30					0.39	0.04		
Motor Vehicle Exhaust	2.17	68.49	40.25	0.30	0.28		0.28	8.90	5.23	0.04	0.04		2,835
Mobile Total	6.6	94.8	166.2	4.4	1.6	0.0	1.1	13.7	28.2	0.6	0.3	0.0	5,007

PROJECT INCREMENT:

	Peak Day Emissions (lb/day)						Peak Year Emissions (ton/year)						
Source	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**NH3**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**NH3**	**CO2e (MT)**
Stationary													
Material Handling Fugitive Dust				4.58	1.33					0.77	0.26		
Windrow/CASP/AD Volatiles	128.34					-3.71	21.29					-0.62	
Avoided Landfill GHG													-58,891
Avoided Landfill Flare Emissions	-26.2	-157.0	-523.4	-52.3	-52.3		-4.8	-28.7	-95.5	-9.6	-9.6		
AD CHP Engine Exhaust	7.38	38.85	58.28	0.66	0.61		1.35	7.09	10.64	0.12	0.11		8.06
AD Flare Emissions	0.18	0.24	1.30	0.02	0.02		0.03	0.04	0.24	0.00	0.00		0.24
Stationary Total	109.7	-117.9	-463.8	-47.1	-50.4	-3.7	17.9	-21.5	-84.6	-8.7	-9.2	-0.6	-58,883.1
Mobile													
Off Road Engine Exhaust	-3.8	-92.6	-63.7	-3.6	-3.3		-0.48	-13.74	-6.59	-0.53	-0.49		-375
Motor Vehicle Fugitive PM				-20.20	-2.02					-3.56	-0.36		
Motor Vehicle Exhaust	-1.28	-41.87	3.82	-0.42	-0.40		-0.26	-8.31	-0.45	-0.07	-0.07		382
Mobile Total	-5.1	-134.4	-59.8	-24.2	-5.7	0.0	-0.7	-22.1	-7.0	-4.2	-0.9	0.0	-757

Emissions Factors

Assumptions:

Drop points: Material receiving, processing, stockpile: Total of 5 drop points (a) 1-drop point at tipping floor; (b) 2-drop points transfer to trommel screen and screen to picking line; (c) 1 drop point out of grinder (d) 1 drop point at destination(windrow, CASP or AD).
Open windrow active and curing phase composting. Total of 2 drops for forming the compost pile from the ground material stockpile or for loading CASP or for loading AD.
Post composting, CASP and AD screening: 2 drops, one into screen, one out of screen
Finished compost storage and loadout operation: 2 drops, one to final product storage pile and one into sales delivery vehicle.
Controls - water sprays as needed. Incoming moisture content of feedsock is already high. Water sprays used during processing (see below). AD system is enclosed.

Screening: Generally no controls are used due to high feedstock moisture content - except for screening inside the food material building (building exhaust PM filter). Water sprays available throughout process if needed.

Grinding: Generally no controls are used due to high feedstock moisture content - except for grinding inside the food material building (building exhaust PM filter). Water sprays available throughout process if needed.

Post-Grind Compost Windrows: Piles are water sprayed to maintain moisture content of piles.

Material moisture content:	Incoming green material: 25%	Digestate out of AD: 45%	CASP feedstock: 55% (taken from CASP research report) Correct
(D. Green email 9/30/36)	Incoming food material: 85%	Curing piles: 25%- 45%	In CASP material: 43.3% (taken from CASP research report) Correct
		Composting windrows: 25% - 45%	

Assumed Baseline Landfill Emissions: Assume no processing and 2 drop points - from waste hauler truck to tipping location, from a loader to final disposition.

Emission Factors: (see Air Quality and Greenhouse Gas Technical Report, Tajiguas Landfill Resource Recovery Project Santa Barbara County, California, July 2014) `

Process Fugitive PM - Drop points: From SJVAPCD "2006 Area Source Emissions Inventory Methodology, 199 – COMPOSTING WASTE DISPOSAL"
- use the AP-42 crushed stone emission factor (AP-42, Table 11.19.2-2) as a conservative estimate

uncontrolled emission factor:	0.0011	lb-PM10/ton (AP-42, Table 11.19.2-2)
Control efficiency:	70%	water sprays (SJVAPCD & VCAPCD 2012 emissions inventory)
controlled emission factor:	0.000330	lb-PM10/ton
PM2.5 : PM10 ratio:	0.034	lb-PM2.5/lb-PM10 (assuming grain elevator fraction- SCAQMD CEIDARS "Methodology to Calculate Particulate Matter (PM) 2.5" October 2006
controlled emission factor:	0.000011	lb-PM2.5/ton

For drops in food material building assume 99% PM10 control due to use of particulate filter on building exhaust:

controlled emission factor:	0.00001	lb-PM10/ton
controlled emission factor:	0.0000004	lb-PM2.5/ton

Process Fugitive PM - Screening From AP-42, Table 11.19.2-2 Crushed Stone Processing and Pulverized Mineral Processing

uncontrolled emission factor:	0.0087	lb-PM10/ton
controlled emission factor:	0.00074	lb-PM10/ton - water sprays
controlled emission factor:	0.000050	lb-PM2.5/ton - water sprays

For screening in food material building assume 99% PM10 control due to use of particulate filter on building exhaust:

controlled emission factor:	0.00009	lb-PM10/ton
controlled emission factor:	0.0000059	lb-PM2.5/ton

Process Fugitive PM - Grinding: From BAAQMD District Permit Handbook, Section 11.13 Tub Grinders - emission factor for “Log Debarking” from a previous edition of AP-42, Table 10.3-1

uncontrolled emission factor:	0.024	lb-TSP/ton
uncontrolled emission factor:	0.0117432	lb-PM10/ton (48.93% of TSP - VCAPCD 2012 emissions inventory)
Control efficiency:	50%	water sprays (BAAQMD & VCAPCD 2012 emissions inventory)
controlled emission factor:	0.005872	lb-PM10/ton
PM2.5 : PM10 ratio:	0.708	lb-PM2.5/lb-PM10 (assuming wood product sawing fraction- SCAQMD CEIDARS "Methodology to Calculate Particulate Matter (PM) 2.5" October 2006
uncontrolled emission factor:	0.008314	lb-PM2.5/ton
controlled emission factor:	0.004157	lb-PM2.5/ton

For grinding in food material building assume 99% PM10 control due to use of particulate filter on building exhaust:

controlled emission factor:	0.00012	lb-PM10/ton
controlled emission factor:	0.00008	lb-PM2.5/ton

Process Fugitive PM - Compost Windrows Windrow PM10 stockpile wind blown emissions not addressed in Tajiguas Landfill air study. **Windrow turning treated like a drop point. Windows turned 5 times during composting.**

Stockpile & Windrow Turning: From SJVAPCD "2006 Area Source Emissions Inventory Methodology, 199 – COMPOSTING WASTE DISPOSAL"
- PM10 emissions during the turning of the active phase windrows and forming of the curing phase windrows are assumed to be negligible due to the high moisture content of materials handled (moisture content is typically 40% to 65%).

On-site mobile vehicle dust emissions: Considers delivery vehicle travel only. Dust emissions from loader and other onsite mobile travel not considered because they move too slow.
For Project - on-site roads will be paved or cement treated (M. Harrison 10/7/16 email). For baseline all on-site roads are essentially unpaved (D. Green 10/7/16).

Unpaved Industrial Roads (AP42 13.2.2)

Baseline dust supression watering = as needed about once an hour minimum, 20,000 gallons per day (D. Green 10/10/16)

EF = $k * (s / 12)$^a * (W / 3)^b or $k * (6.4/12)^{0.9} * (W / 3)^{0.45}$

k=	Constants (AP42)	k for PM10	1.5	k for PM2.5	0.15	
a, b =	Constants (AP42)	a=	0.9	b=	0.45	
s =	Silt content of unpaved surface in percent (%)			s =	6.4	AP42 for landfill - also mean for crushed gravel/limestone roads
W =	Average vehicle weight in tons			W =	vehicle specific (see tables below)	

SCAQMD CEQA Table XI-D unpaved road control factors:

84%	Apply chemical dust suppressant annually
99%	Pave unpaved roads

% control baseline =	**84%**	assuming 15 MPH limit, hourly watering plus high moisture retention of compost on roads inside facility is equivalent to chemical dust supression
% control project =	**99%**	assuming 15 MPH limit, cement treated roads, watering 3X daily, high moisture content of compost on roads inside facility nearly equivalent to paving

Assumed Baseline Landfill Emissions: Assume all waste delivery vehilces are HHD tractor trailers and onsite travel distance is from scale house to center of landfill.

8,800	(feet)	1.67	(miles) round trip distance from Toland scale house to center of landfill on existing landfill roads (Google Earth)

Assume paved roads (best case lowest emissions) and water used to supress dust.

Baseline Emissions

Process Fugitive PM: peak day factor: 110% mass reduction from composting: 50%

Parameter	Throughput (wet tons)			Days/year	# of drops	Emission Factor (lb/ton)		Fugitive PM Emissions: Annual (lb/year)		Average Day (lb/day)		Peak Day (lb/day)	
	Per year	Average Day	Peak Day			PM10	PM2.5	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Material receiving, processing, stockpile	113,862	365	401	312	5	0.000330	0.000011	188	6.4	0.60	0.020	0.66	0.02
Grinding - green & food material	113,862	365	401	312	1	0.005872	0.004157	669	473.3	2.14	1.517	2.36	1.67
Open windrow active and curing phase composting	113,862	365	401	312	2	0.000330	0.000011	75	2.6	0.24	0.008	0.26	0.01
Windrow turning	85,397	274	301	312	5	0.000330	0.000011	141	4.8	0.45	0.015	0.50	0.02
Screening process - post composting, CASP and AD	56,931	182	201	312	1	0.00074	0.000050	42	2.8	0.14	0.009	0.15	0.01
Screening drops	56,931	182	201	312	2	0.000330	0.000011	38	1.3	0.12	0.004	0.13	0.00
Finished compost storage and loadout operation	56,406	217	239	260	2	0.000330	0.000011	37	1.3	0.14	0.005	0.16	0.01
							TOTALS:	**1,189**	**492**	**3.8**	**1.6**	**4.2**	**1.7**

On-Site Motor Vehicle Fugitive PM:

Vehicle	Use	Route	Trip Count		Distance	Daily VMT	Avg Weight	Days/year	Emission Factor (lb/mile)		Control (%)	Emissions (lb/year)		Emissions (lb/day)	
			Annual (#/yr)	Daily (#/day)	(Miles/trip)	(Miles/day)	(tons)[1]		PM10	PM2.5		PM10	PM2.5	PM10	PM2.5
HHD Solid Waste Collection Truck	Feedstock Delivery	Entrance-Tipping	6,576	21.1	0.24	5.05	20.4	312	2.02	0.20	84%	508	50.8	1.63	0.16
HHD Fleet Truck from MRFs	Feedstock Delivery	Entrance-Tipping	3,061	9.8	0.24	2.35	23.0	312	2.13	0.21	84%	250	25.0	0.80	0.08
Light Duty Truck - Business/Self Haul	Feedstock Delivery	Entrance-Tipping	7,520	24.1	0.24	5.77	3.5	312	0.92	0.09	84%	264	26.4	0.85	0.08
HHD Fleet - Roll off	Feedstock Delivery	Entrance-Tipping	1,204	3.9	0.24	0.92	17.4	312	1.88	0.19	84%	87	8.7	0.28	0.03
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Resale Delivery	Entrance-Sales Yard	690	2.7	0.19	0.50	22.5	260	2.11	0.21	84%	44	4.4	0.17	0.02
HHD Fleet Truck - Finished Compost, Mulch, etc.	Outgoing Sales	Sales Yard-Entrance	5,446	20.9	0.45	9.32	19.1	260	1.96	0.20	84%	761	76.1	2.93	0.29
Light Duty Truck	Outgoing Sales	Sales Yard-Entrance	2,172	8.4	0.45	3.72	2.8	260	0.82	0.08	84%	127	12.7	0.49	0.05
Avoided Landfill Trips- HHD from MRF	Trash to Landfill	@ Toland Landfill	10,158	27.8	1.67	46.38	23.9	365	2.17	0.22	84%	5871	587.1	16.09	1.61
		Totals:	**36,827**	**119**		**74**					**Totals:**	**7,912**	**791**	**23.22**	**2.32**

1 - average of loaded & empty vehicle

Project Emissions

Process Fugitive PM: peak day factor: 110%

Parameter	Throughput (wet tons)			Days/year	# of drops	Emission Factor (lb/ton)		Fugitive PM Emissions: Annual (lb/year)		Average Day (lb/day)		Peak Day (lb/day)	
	Per year	Average Day	Peak Day			PM10	PM2.5	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Material receiving, processing, stockpile - green	229,500	883	971	260	5	0.000330	0.000011	379	12.87	1.46	0.05	1.60	0.05
Material receiving, processing, stockpile - food	65,500	252	277	260	5	0.00001	0.0000004	4	0.12	0.01	0.00	0.02	0.00
Screening - green material building	229,500	629	692	365	1	0.00074	0.000050	170	11.48	0.47	0.03	0.51	0.03
Screening - food material building	65,500	179	197	365	1	0.00009	0.0000059	6	0.39	0.02	0.00	0.02	0.00
Grinding - green material building	229,500	629	692	365	1	0.005872	0.004157	1,348	954.05	3.69	2.61	4.06	2.88
Grinding - food material building	65,500	179	197	365	1	0.00012	0.00008	8	5.45	0.02	0.01	0.02	0.02
Open windrow active and curing phase composting	256,350	702	773	365	2	0.000330	0.000011	169	5.75	0.46	0.02	0.51	0.02
Windrow turning	256,350	702	773	365	5	0.000330	0.000011	423	14.38	1.16	0.04	1.27	0.04
Screening processs-post composting, CASP and AD	134,968	370	407	365	1	0.000330	0.000011	45	1.51	0.12	0.00	0.13	0.00
Screening drops - post composting, CASP and AD	134,968	370	407	365	2	0.000330	0.000011	89	3.03	0.24	0.01	0.27	0.01
Finished compost storage and loadout operation	134,968	519	571	260	2	0.000330	0.000011	89	3.03	0.34	0.01	0.38	0.01
							TOTALS:	**2,728**	**1,012**	**8.0**	**2.8**	**8.8**	**3.1**

On-Site Motor Vehicle Fugitive PM:

Vehicle	Use	Route	Trip Count		Distance	Daily VMT	Avg Weight	Days/year	Emission Factor (lb/mile)		Control (%)	Emissions (lb/year)		Emissions (lb/day)	
			Annual (#/yr)	Daily (#/day)	(Miles/trip)	(Miles/day)	(tons)[1]		PM10	PM2.5		PM10	PM2.5	PM10	PM2.5
HHD Solid Waste Collection Truck	Feedstock Delivery	Entrance-Tipping	19,000	73.1	0.73	53.40	20.5	260	2.02	0.20	99%	281	28.1	1.08	0.11
HHD Fleet Truck from MRFs	Feedstock Delivery	Entrance-Tipping	6,225	23.9	0.73	17.50	23.9	260	2.17	0.22	99%	99	9.9	0.38	0.04
Light Duty Truck - Business/Self Haul	Feedstock Delivery	Entrance-Tipping	32,159	123.7	0.73	90.39	3.3	260	0.89	0.09	99%	210	21.0	0.81	0.08
HHD Fleet - Roll off	Feedstock Delivery	Entrance-Tipping	1,439	5.5	0.73	4.05	17.5	260	1.88	0.19	99%	20	2.0	0.08	0.01
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Resale Delivery	Entrance-Sales Yard	1,788	6.9	0.30	2.08	22.5	260	2.11	0.21	99%	11	1.1	0.04	0.00
HHD Fleet Truck - Finished Compost, Mulch, etc.	Outgoing Sales	Sales Yard-Entrance	15,960	61.4	0.45	27.90	19.1	260	1.96	0.20	99%	142	14.2	0.55	0.05
Light Duty Truck	Outgoing Sales	Sales Yard-Entrance	6,365	24.5	0.45	11.13	2.8	260	0.82	0.08	99%	24	2.4	0.09	0.01
		Totals:	**82,937**	**319**		**206**					**Totals:**	**786**	**79**	**3.0**	**0.3**

1 - average of loaded & empty vehicle

Project Increment Emissions

	Avg. Annual Emissions (lbs/year)		Avg. Day Emissions (lbs/day)		Peak Day Emissions (lbs/day)	
	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Incremental Process Fugitive PM:	1,538	520	4.16	1.21	4.58	1.33
Incremental On-Site Motor Vehicle Fugitive PM:	-7,125	-713	-20.20	-2.02	-22.22	-2.22
Total Fugitive PM Project Increment:	**-5,587**	**-193**	**-16**	**-0.8**	**-18**	**-0.9**

Fugitive VOC Emissions

Emissions Factor

Parameter	Factor	Unit	Source of Emission Factor
Stockpiling VOC	0.20	lbs/wet ton-day	ARB Emissions Inventory Methodology for Composting Facilities, Table III-1, 3/2/2015
Stockpiling NH3	N/A	lbs/wet ton-day	ARB Emissions Inventory Methodology for Composting Facilities, Table III-1, 3/2/2015
Compost + Cure VOC	3.58	lbs/wet ton	ARB Emissions Inventory Methodology for Composting Facilities, Table III-1, 3/2/2015
Compost + Cure NH3	0.78	lbs/wet ton	ARB Emissions Inventory Methodology for Composting Facilities, Table III-1, 3/2/2015
Compost + Cure CH4	0.049	MT CO2e/wet ton	CARB, Table 5 "Method for Estimating Greenhouse Gas Emission Reductions from Diversion of Organic Waste from Landfills to Compost Facilities", March 2016
Compost + Cure N2O	0.021	MT CO2e/wet ton	
Compost + Cure CO2e*	0.07	MT CO2e/wet ton	Total of CH4 and N2O
Landfill VOC (NMOC)**	3.50	lbs/wet ton	NMOC Landgem Model - E.F. in 2018 for long term stream (812.6 tons NMOC for 181,138 tons landfilled) 39% of NMOC is VOC - AP42 2.4 MUNICIPAL SOLID WASTE LANDFILLS - Table 2.4-2
Landfill Methane	208.68	lbs/wet ton	NMOC Landgem Model - 2018 E.F. (18,900 tons Methane for 181,138 tons landfilled)
Landfill NH3 ***	1.461	lbs/wet ton	Landfill NH3 emissions = 0.7% NH3 to methane (Eggleston, 1992)
Landfill CO2e - food	0.69	MT CO2e/wet ton	CARB, Table 11 "Method for Estimating Greenhouse Gas Emission Reductions from Diversion of Organic Waste from Landfills to Compost Facilities", March 2016
Landfill CO2e - green	0.51	MT CO2e/wet ton	
Landfill CO2e - mixed	0.63	MT CO2e/wet ton	
Anaerobic Digester Fugitive VOC, NH3	NA	NA	Assumed to be negligible since gases generated will be collected and either treated and burned in an IC engine (to generate electricity) or flared.

* Note that, according to the CARB source referenced, CO2 emissions from composting are not included in the CO2e calculation because they are biogenic.
**Landgem - the NMOC Concentration CAA default is 4000 ppmv as hexane. Landfill gas is assumed to be 50 % methane and 50% CO2

Emissions Control Efficiency

Emission Source	VOC Control (%)	NH3 Control (%)	Comment
Windrow Composting/Cure	40%	20%	assumes Project piles managed in compliance with SCAQMD's Rule 1133-3.
Covered Aerated Pile	90%	70%	assumes postive air and CARB control factor
Landfill Flare	75.0%	75.0%	approx. combined VOC capture & control efficiency - 75% x 97.7% (AP42 2.4 DRAFT)

Baseline Emissions:

peak day factor: 110%

Parameter	Throughput (wet ton/yr)	Peak Year Emissions GHG CO2e (MT/year)	Avg. Year Emissions VOC (lb/year)	Avg. Year Emissions NH3 (lb/year)	Average Day Emissions VOC (lb/day)	Average Day Emissions NH3 (lb/day)	Peak Day Emissions VOC (lb/day)	Peak Day Emissions NH3 (lb/day)
Stockpiling	113,862	0	113,862	0	312	0	343	0
Windrow Composting & Cure	98,225	6,876	210,987	61,292	578	168	636	185
CASP Composting	15,637	1,095	5,598	3,659	15	10	17	11
Landfill (avoided emissions)[1]	181,138	101,356	158,457	66,150	434	181	478	199
	Totals:	109,326	488,904	131,101	1,339	359	1,473	395

1 - one year emissions for long term stream in landfill

Project Total Emissions:

peak day factor: 110%

Parameter	Throughput (wet ton/yr)	Peak Year Emissions GHG CO2e (MT/year)	Avg. Year Emissions VOC (lb/year)	Avg. Year Emissions NH3 (lb/year)	Average Day Emissions VOC (lb/day)	Average Day Emissions NH3 (lb/day)	Peak Day Emissions VOC (lb/day)	Peak Day Emissions NH3 (lb/day)
Stockpiling	295,000	0	118,000	0	323	0	356	0
Windrow Composting & Cure	180,000	12,600	386,640	112,320	1,059	308	1,165	338
Anaerobic Digestion (AD) [1]	40,000	2,800	0	0	0	0	0	0
CASP Composting	75,000	5,250	26,850	17,550	74	48	81	53
	Totals:	20,650	531,490	129,870	1,456	356	1,602	391

1 - Methane and VOC emissions from AD process are assumed to be captured and controlled 99+% by flare or boiler or IC engine. GHG emissions addressed under combustion estimates

Project Increment Emissions

Parameter	Throughput (wet ton/yr)	Peak Year Emissions GHG CO2e (MT/year)	Avg. Year Emissions VOC (lb/year)	Avg. Year Emissions NH3 (lb/year)	Average Day Emissions VOC (lb/day)	Average Day Emissions NH3 (lb/day)	Peak Day Emissions VOC (lb/day)	Peak Day Emissions NH3 (lb/day)
Project Increment	181,138	-88,676	42,586	-1,231	117	-3	128	-4

1 - Increment for Project vs Santa Paula + Oxnard. For analysis above, overall increment = 0.

Based on Cornerstone VCAPCD ATC Application (Sept. 2012) & VCAPCD Engineering Analysis (4/9/2013):

5,000 ton/year material processed assumed in 2012/2013 analysis

Assumptions:

The anaerobioc digester is enclosed. Emissions are collected and treated in the biogas treatment system. No fugitive emissions.

67% green waste and 33% food waste

3,000 Biogas production ft3/ton (ZWE estimates

600 Biogas energy content btu/ft3

60% methane content of biogas

8,760 hrs/year max.

a single 3.2 MMBtu/hr flare will handle all waste gas

40,000 tons/year of material processed

1050 APCD btu/ft3 for pipeline natural gas

Engine - 100kW (145 kW thermal) 2G Cenergy Technologies model 2G 100BG:

100 kW generated
147 BHP
27 ft3/min fuel consumption
14,191,200 ft3/year fuel consumption based on max. hours
229 ft3/min exhaust gas flow
356 °F exhaust gas temperature

Enclosed Emergency Backup Flare (used during engine maintenance, biogas is processed through a carbon filter pre-treatment system for hydrogen sulfide (H2S) and SOx control:

3.2 MMBtu/hr
88 ft3/min fuel consumption max.
400 max. hrs per year

60% max. methane content of biogas (flared gas is same as biogas produced)
2.11 MMcf/yr based on max. hours
99.5% flare ROC control

biogas is processed through a carbon filter pre-treatment system for hydrogen sulfide (H2S) and SOx control

Biofilter, for control of odors from digesters during start-up and termination exhausts (at process termination methane decreases for 20% to 1% methane):

ROC emissions from the biofilter are considered negligible. This is consistent with how the District permits wastewater treatment plants.

Emergency Backup Generator/Diesel Engine (exempt from permit- Rule 23.D.6):

9.38 BHP

Scale up calculations:

120,000,000 expected ft3/year total biogas generated
72,000,000 expected ft3/year total treated biogas (methane) burned in all engines
14,191,200 max. ft3/year of gas burned by one engine
5 # of engines required to burn all gas - used to ratio up emissions from a single engine

AD Engine (2G-Cynergy Lean Biogas Engine)

	Emission Factor (g/BHP-hr) [1]						lb/MMscf
	ROC	NOx	CO	PM [2]	PM2.5 [3]	SO2 [4]	CO2e [5]
AD Engine	0.19	1.00	1.5	0.017	0.016	0.03	247

1 - Emission factors from VCAPCD 4/9/13 as provided by 2G Cenergy
2 - Total PM assumed to be equal to PM10.
3 - PM2.5 emissions factor assumed to be 92% of PM10 based on SCAQMD's *Updated CEIDARS Table with PM2.5 Fractions* for offroad equipment.
4 - SOx emission factor based on 20 ppm H2S in the biogas.
5 - AP42 Table 1.4-2

CO2e emission factor:	lb/MMscf	GWP	Adjusted	
CO2	120000.0	1	120000	
CH4	2.3	21	48.3	
N20	0.64	310	198.4	
		Anthropogenic Gas	120247	lb/MMscf
		Biogenic gas	247	lb/MMscf

	Emissions (lb/hr)							Emissions (ton/year) [1]						
	ROC	NOx	CO	PM	PM2.5	SO2	CO2e	ROC	NOx	CO	PM	PM2.5	SO2	CO2e (MT)
AD Engine	0.31	1.62	2.43	0.03	0.03	0.05	2.0	1.35	7.09	10.64	0.12	0.11	0.21	8.06

1 - Assuming 8,760 hours/year

Backup Flare Emissions:

	Emission Factor (lb/MMBtu) [1]					
	ROC	NOx	CO	PM [2]	PM2.5 [3]	SO2 [4]
Backup Flare	0.0518	0.0680	0.3700	0.0050	0.0046	0.006

1 - Emission factors from VCAPCD 4/9/13 - VCAPCD default factors for waste gas flares
2 - Total PM assumed to be equal to PM10.
3 - PM2.5 emissions factor assumed to be 92% of PM10
4 - SOx emission factor based on 20 ppm H2S in the biogas.

SOx emission factor [g/scf] = 20 [ppmv sulfur] x 10^{-6} x 64 [lb/lb-mole SO2] / 385.5 [scf/lb-mole] x 453.6 g/lb

0.00151 g/scf
0.0000025 g/btu @ 600 btu/ft3
0.000000006 lb/btu
0.006 lb/MMbtu

	Emissions (lb/hr)							Emissions (ton/year) [1]						
	ROC	NOx	CO	PM [2]	PM2.5 [3]	SO2 [4]	CO2e	ROC	NOx	CO	PM	PM2.5	SO2	CO2e (MT)
Backup Flare	0.17	0.22	1.18	0.02	0.01	0.02	1.3	0.03	0.04	0.24	0.003	0.003	0.004	0.24

1 - Assuming 400 hours/year

Emissions Factors

Equipment Information							Base EF (g/hp-hr) [1]							Location
Equipment	**Type**	**Model**	**HP**	**Engine Year**	**Tier**	**Hours/Day**	**NMHC+NOx**	**THC**	**NOx**	**CO**	**PM**	**PM2.5**	**CO2e**	
Baseline														
CATERPILLAR	Excavators	320CL	138	2004	T2	7.5	4.9	0.25	4.66	3.7	0.22	0.202	539.9	Ox
MANITOU	Forklifts	TMT315FL	25	2006	T2	7.5	5.60	0.28	5.32	4.10	0.45	0.414	539.9	Ox
CATERPILLAR	Rubber Tired Loaders	950G	183	2003	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	SP
CATERPILLAR	Rubber Tired Loaders	950G II	183	2005	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	SP
CATERPILLAR	Rubber Tired Loaders	950G	183	2003	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	SP
CATERPILLAR	Rubber Tired Loaders	950H	196	2006	T3	7.5	3.00	0.15	2.85	2.60	0.15	0.138	539.9	Ox
CATERPILLAR	Rubber Tired Loaders	950G	183	2003	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	Ox
CATERPILLAR	Rubber Tired Loaders	950GII	183	2004	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	Ox
CATERPILLAR	Rubber Tired Loaders	950G II	183	2004	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	Ox
CATERPILLAR	Rubber Tired Loaders	950G	207	2004	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	Ox
CATERPILLAR	Rubber Tired Loaders	950G II	183	2004	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	Ox
CATERPILLAR	Skid Steer Loaders	256C	74	2007	T2	7.5	5.60	0.28	5.32	3.70	0.30	0.276	539.9	Ox
CATERPILLAR	Skid Steer Loaders	242B3	71	2012	T4I	7.5	3.50	0.18	3.33	3.70	0.22	0.202	539.9	Ox
NEW HOLLAND	Backhoes	7810	75	1986	T0	4	N/A	1.30	6.00	15.50	0.60	0.552	539.9	SP
NEW HOLLAND	Backhoes	7810	75	1987	T0	4	N/A	1.30	6.00	15.50	0.60	0.552	539.9	SP
Int'l MaxxForce 13	Water Truck	---	475	2009	---	6.5	1.2	0.06	1.14	15.5	0.01	0.009	539.9	Ox
Navistar E210	Dump Truck	---	210	1992	---	6.5	N/A	1.20	5.00	15.50	0.25	0.230	539.9	Ox
Water Truck	Water Truck	---	475	2004	---	6.5	2.5	0.125	2.375	15.5	0.1	0.092	539.9	SP
Dump Truck	Dump Truck	---	210	2010	---	4.0	N/A	0.14	0.20	15.50	0.01	0.009	539.9	SP
MOORBARK	Grinder	1300A	860	2006	T2	6.5	4.80	0.24	4.56	2.60	0.15	0.138	539.9	SP
MORBARK	Grinder	6600 WOODHOG	650	2005	T2	6.5	4.80	0.24	4.56	2.60	0.15	0.138	539.9	Ox
Powerscreen	Screen	3300	275	2010	T3	6.5	3.00	0.15	2.85	2.60	0.15	0.138	539.9	Ox
CEC	Screen	5x12	91	2010	T3	6.5	3.50	0.18	3.33	3.70	0.30	0.276	539.9	Ox
CEC	Screen	5X12	91	2010	T3	6.5	3.50	0.18	3.33	3.70	0.30	0.276	539.9	Ox
WILDCAT	Screen	521	99	2012	T4	6.5	N/A	0.14	0.3	3.70	0.015	0.014	539.9	Ox
WILDCAT	Screen	626	125	2012	T4	6.5	N/A	0.14	0.3	3.70	0.015	0.014	539.9	Ox
WILDCAT	Screen	626	125	2012	T4	6.5	N/A	0.14	0.3	3.70	0.015	0.014	539.9	SP
WILDCAT	Screen	626	125	2012	T4	6.5	N/A	0.14	0.3	3.70	0.015	0.014	539.9	SP
Project														
CATERPILLAR	Wheel Loader	950K	211	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
CATERPILLAR	Wheel Loader	950K	211	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
CATERPILLAR	Wheel Loader	950K	211	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
CATERPILLAR	Wheel Loader	950K	211	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
CATERPILLAR	Wheel Loader	950K	211	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
CATERPILLAR	Wheel Loader	950K	211	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
CATERPILLAR	Skid Steer Loader	242B Series 3	71	2019	T4F	7.5	3.5	0.18	3.33	3.7	0.022	0.020	539.9	SP
SCARAB	Windrow Turner	Model 27	630	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
Freightliner	Water Truck - Diesel	FL110	375	2010	---	7.5	N/A	0.14	0.20	15.5	0.01	0.009	539.9	SP
Freightliner	Dump Truck - Diesel	FL110	375	2010	---	7.5	N/A	0.14	0.20	15.5	0.01	0.009	539.9	SP
Toyota	Forklift	8FGU30	51	2010	T3	7.5	3.5	0.175	3.325	3.7	0.3	0.276	539.9	SP
Toyota	Forklift	8FGU30	51	2010	T3	7.5	3.5	0.175	3.325	3.7	0.3	0.276	539.9	SP
MORBARK	Grinder - green	4600XL	1050	2013	T4i	6.5	N/A	0.3	2.6	2.6	0.075	0.069	539.9	SP
MORBARK	Grinder	6600 WOODHOG	650	2005	Electrified	7.5	0	0	0	0	0	0	0	SP
CEC	Screen-It	6X16	97	2010	T3	6.5	3.5	0.175	3.325	3.7	0.3	0.276	539.9	SP
CEC	Screen-It	6X16	97	2010	T3	6.5	3.5	0.175	3.325	3.7	0.3	0.276	539.9	SP
Wildcat	Screen	626	140	2012	Electrified	6.5	0	0	0	0	0	0	0	SP
Wildcat	Screen	626	140	2012	Electrified	6.5	0	0	0	0	0	0	0	SP
Wildcat	Screen	626	140	2012	Electrified	6.5	0	0	0	0	0	0	0	SP

1 - Emission factors assumed the same as emission standards - for both off-road and on-road used off road.

Where standard is for NMHC+NOx emissions assumed to be 5 percent ROC and 95 percent NOx, from Table D-25 of 2011 Carl Moyer Program Guidelines - http://www.arb.ca.gov/msprog/moyer/guidelines/current.htm

CO2e emission factor (includes CO2, N2O, and CH4) based on TCR's "2015 Climate Registry Default Emission Factors" and the brake specific fuel consumption of 0.367 lb/hp-hr from OFFROAD2011.

PM2.5 emissions factor assumed to be 92% of PM10 based on SCAQMD's *Updated CEIDARS Table with PM2.5 Fractions* for offroad equipment.

Total PM assumed to be equal to PM10.

Load factors (below) based on the California Air Resources Board's OFFROAD2011 model documentation (see attached) or from Table D-10 of 2011 Carl Moyer Program Guidelines

Off Road Equipment Emissions (pg 2 of 2)

Baseline Emissions

Material processing: 312 days/year

Equipment Information						Peak Year Emis. (MT/yr)	Emissions (lb/day)					Santa Paula Emissions for HRA (lbs/day)		
Equipment	Type	Horsepower	Load Factor	Hours/Year	Hours/Day	CO2e	ROC	NOx	CO	PM10	PM2.5	Location	ROC	PM10
CATERPILLAR	Excavators	138	0.38	2,340	7.5	66.2	0.21	4.03	3.21	0.19	0.18	Ox	0	0
MANITOU	Forklifts	25	0.2	2,340	7.5	6.3	0.02	0.44	0.34	0.04	0.03	Ox	0	0
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	SP	0.27	0.16
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	SP	0.27	0.16
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	SP	0.27	0.16
CATERPILLAR	Rubber Tired Loaders	196	0.36	2,340	7.5	89.1	0.17	3.32	3.03	0.17	0.16	Ox	0	0
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	Ox	0	0
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	Ox	0	0
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	Ox	0	0
CATERPILLAR	Rubber Tired Loaders	207	0.36	2,340	7.5	94.1	0.30	5.73	3.20	0.18	0.17	Ox	0	0
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	Ox	0	0
CATERPILLAR	Skid Steer Loaders	74	0.37	2,340	7.5	34.6	0.13	2.41	1.67	0.14	0.12	Ox	0	0
CATERPILLAR	Skid Steer Loaders	71	0.37	2,340	7.5	33.2	0.08	1.44	1.61	0.10	0.09	Ox	0	0
NEW HOLLAND	Backhoes	75	0.37	1,248	4.0	18.7	0.32	1.47	3.79	0.15	0.13	SP	0.32	0.15
NEW HOLLAND	Backhoes	75	0.37	1,248	4.0	18.7	0.32	1.47	3.79	0.15	0.13	SP	0.32	0.15
Int'l MaxxForce 13	Water Truck	475	0.38	2,028	6.5	197.5	0.16	2.95	40.06	0.03	0.02	Ox	0	0
Navistar E210	Dump Truck	210	0.38	2,028	6.5	87.3	1.37	5.71	17.71	0.29	0.26	Ox	0	0
Water Truck	Water Truck	475	0.38	2,028	6.5	197.5	0.32	6.14	40.06	0.26	0.24	SP	0.32	0.26
Dump Truck	Dump Truck	210	0.38	1,248	4.0	53.7	0.10	0.14	10.90	0.01	0.01	SP	0.10	0.01
MOORBARK	Grinder	860	0.4	2,028	6.5	376.3	1.18	22.46	12.81	0.74	0.68	SP	1.18	0.74
MORBARK	Grinder	650	0.4	2,028	6.5	284.4	0.89	16.97	9.68	0.56	0.51	Ox	0	0
Powerscreen	Screen	275	0.4	2,028	6.5	120.3	0.24	4.49	4.09	0.24	0.22	Ox	0	0
CEC	Screen	91	0.4	2,028	6.5	39.8	0.09	1.73	1.93	0.16	0.14	Ox	0	0
CEC	Screen	91	0.4	2,028	6.5	39.8	0.09	1.73	1.93	0.16	0.14	Ox	0	0
WILDCAT	Screen	99	0.4	2,028	6.5	43.3	0.08	0.17	2.10	0.01	0.01	Ox	0	0
WILDCAT	Screen	125	0.4	2,028	6.5	54.7	0.10	0.21	2.65	0.01	0.01	Ox	0	0
WILDCAT	Screen	125	0.4	2,028	6.5	54.7	0.10	0.21	2.65	0.01	0.01	SP	0.10	0.01
WILDCAT	Screen	125	0.4	2,028	6.5	54.7	0.10	0.21	2.65	0.01	0.01	SP	0.10	0.01
					Total:	**2,546.78**	**8.24**	**118.91**	**189.64**	**4.72**	**4.34**		**3.24**	**1.81**

Post-Project Total Emissions

Material processing: 365 days/year

Equipment Information						Peak Year Emis. (MT/yr)	Emissions (lb/day)				
Equipment	Type	Horsepower	Load Factor	Hours/Year	Hours/Day	CO2e	ROC	NOx	CO	PM10	PM2.5
CATERPILLAR	Wheel Loader	211	0.36	2,738	7.5	112.2	0.18	0.38	3.26	0.02	0.02
CATERPILLAR	Wheel Loader	211	0.36	2,738	7.5	112.2	0.18	0.38	3.26	0.02	0.02
CATERPILLAR	Wheel Loader	211	0.36	2,738	7.5	112.2	0.18	0.38	3.26	0.02	0.02
CATERPILLAR	Wheel Loader	211	0.36	2,738	7.5	112.2	0.18	0.38	3.26	0.02	0.02
CATERPILLAR	Wheel Loader	211	0.36	2,738	7.5	112.2	0.18	0.38	3.26	0.02	0.02
CATERPILLAR	Wheel Loader	211	0.36	2,738	7.5	112.2	0.18	0.38	3.26	0.02	0.02
CATERPILLAR	Skid Steer Loader	71	0.37	2,738	7.5	38.8	0.08	1.44	1.61	0.01	0.01
SCARAB	Windrow Turner	630	0.4	2,738	7.5	372.1	0.58	1.25	10.82	0.06	0.06
Freightliner	Water Truck - Diesel	375	0.38	2,738	7.5	210.4	0.33	0.47	36.49	0.02	0.02
Freightliner	Dump Truck - Diesel	375	0.38	2,738	7.5	210.4	0.33	0.47	36.49	0.02	0.02
Toyota	Forklift	51	0.2	2,738	7.5	15.1	0.03	0.56	0.62	0.05	0.05
Toyota	Forklift	51	0.2	2,738	7.5	15.1	0.03	0.56	0.62	0.05	0.05
MORBARK	Grinder - green	1050	0.4	2,373	6.5	537.5	1.80	15.63	15.63	0.45	0.41
MORBARK	Grinder	650	0.4	2,738	7.5	0	0	0	0	0	0
CEC	Screen-It	97	0.4	2,373	6.5	49.7	0.10	1.85	2.06	0.17	0.15
CEC	Screen-It	97	0.4	2,373	6.5	49.7	0.10	1.85	2.06	0.17	0.15
Wildcat	Screen	140	0.4	2,373	6.5	0	0	0	0	0	0
Wildcat	Screen	140	0.4	2,373	6.5	0	0	0	0	0	0
Wildcat	Screen	140	0.4	2,373	6.5	0	0	0	0	0	0
					Total:	**2,171.63**	**4.43**	**26.34**	**125.97**	**1.12**	**1.03**

Project Increment Emissions

Parameter	Peak Year Emis. (MT/yr)	Peak Day Emissions (lb/day)				
	CO2e	ROC	CO	NOx	PM10	PM2.5
Baseline	2,546.8	8.24	118.91	189.64	4.72	4.34
Project	2,171.6	4.43	125.97	26.34	1.12	1.03
Project Increment:	**-375.15**	**-3.81**	**7.06**	**-163.30**	**-3.60**	**-3.31**

Onroad Vehicle Emissions

Emissions Factors (g/VMT)

Vehicle Information		Baseline 2016 Emission Factors (g/VMT)							
Vehicle Type	**Fuel Type**	**ROC**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CO2e**
HHD Solid Waste Collection Truck (Diesel)	Diesel	0.3939	**5.066**	13.14	0.0254	0.0168	0.0161	4,170.0	4,378.4
HHD Solid Waste Collection Truck (CNG)	CNG	0.1249	3.237	6.57	0.0127	0.0017	0.0016	---	418.6
HHD Fleet Truck (Diesel)	Diesel	0.2321	1.026	6.70	0.0159	0.0902	0.0863	1,724.7	1,810.9
Light Duty Truck (Gasoline)	Gasoline	0.0297	1.261	0.15	0.0042	0.0017	0.0016	416.2	437.0
Light Duty Truck (Diesel)	Diesel	0.0186	0.146	0.07	0.0035	0.0066	0.0063	371.1	389.7
Passenger Cars (Gasoline)	Gasoline	0.0271	1.017	0.10	0.0031	0.0018	0.0017	310.5	326.0

Vehicle Information		Project 2019 Emission Factors (g/VMT)							
Vehicle Type	**Fuel Type**	**ROC**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CO2e**
HHD Solid Waste Collection Truck (Diesel)	Diesel	0.3165	**7.319**	9.95	0.0194	0.0133	0.0127	3,916.7	4,112.6
HHD Solid Waste Collection Truck (CNG)	CNG	0.1003	4.677	4.97	0.0097	0.0013	0.0013	---	418.6
HHD Fleet Truck (Diesel)	Diesel	0.1374	0.793	4.68	0.0152	0.0324	0.0310	1,662.2	1,745.3
Light Duty Truck (Gasoline)	Gasoline	0.0183	0.892	0.10	0.0038	0.0018	0.0016	384.0	403.2
Light Duty Truck (Diesel)	Diesel	0.0175	0.149	0.05	0.0034	0.0055	0.0053	351.1	368.7
Passenger Cars (Gasoline)	Gasoline	0.0146	0.716	0.07	0.0029	0.0019	0.0017	285.9	300.2

Diesel and gasoline emissions factors are from the EMFAC2011 web tool, utilizng the following assumptions (except where specifically identified as otherwise below): Ventura County, 2019, annual average, combined model year, combined speeds, and the CO2 EF includes the LCFS.

HHD Solid Waste Collection Truck = T7 SWCV vehicle type, diesel

HHD Fleet Truck = HHDT vehicle type (aggregate), diesel

Light Duty Truck = LDT2 vehicle type, diesel and gasoline

Passenger Cars = LDA vehicle type, gasoline

CO2e emissions factor determined by scaling CO2 factor up by 5%, per the methodologies found in the BAAQMD GHG Model (BGM). This accounts for emissions of CH4, N2O, and air conditioner evaporative loss.

CNG Emissions factor (except for CO2e) based on the diesel emissions factors for the same category from EMFAC2011 multiplied by the following diesel to CNG modifiers, which are the bus modifiers from "Emissions of Criteria Pollutants, Toxic Air Pollutants, and Greenhouse Gases, from the Use of Alternative Transportation Modes and Fuels", Institute of Transportation Studies, UC Davis, last updated in 2006. SOx emissions factor is assumed to be half of the diesel factor.

ROC = 0.317	NOx= 0.5	PM10= 0.1
CO= 0.639	SOx= 0.5	PM2.5= 0.1

CNG emissions factor for CO2e (includes CO2, N2O, and CH4) based on TCR's "2014 Climate Registry Default Emissions Factors" and fuel efficiency of 44.8 miles/MMBtu.

Baseline Emissions

Vehicle Type	Baseline VMT		Peak Year Emissions	Peak Day Emissions (lb/day)					
	Peak Year	**Peak Day**	**CO2e (MT/y)**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**SOx**
HHD Solid Waste Collection Truck (Diesel)	390,009	1,618	1,706.1	1.40	46.83	18.05	0.06	0.06	0.09
HHD Solid Waste Collection Truck (CNG)	260,006	1,079	108.7	0.30	15.62	7.69	0.00	0.00	0.03
HHD Fleet Truck (Diesel)	681,015	3,221	1,232.2	1.65	47.50	7.28	0.64	0.61	0.11
Light Duty Truck (Gasoline)	101,468	391	44.3	0.03	0.13	1.09	0.00	0.00	0.00
Light Duty Truck (Diesel)	101,468	391	39.5	0.02	0.06	0.13	0.01	0.01	0.00
Passenger Cars (Gasoline)	264,160	980	86.0	0.06	0.21	2.20	0.00	0.00	0.01
Total Haul:	**1,533,966**	**6,700**	**3,130.8**	**3.39**	**110.15**	**34.23**	**0.71**	**0.68**	**0.24**
Total Worker:	**264,160**	**980**	**86.0**	**0.06**	**0.21**	**2.20**	**0.00**	**0.00**	**0.01**
Total Overall:	**1,798,126**	**7,680**	**3,216.9**	**3.45**	**110.36**	**36.43**	**0.71**	**0.68**	**0.25**

Post-Project Total Emissions

Vehicle Type	Post-Project Total VMT		Peak Year Emissions	Peak Day Emissions (lb/day)					
	Peak Year	**Peak Day**	**CO2e (MT/y)**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**SOx**
HHD Solid Waste Collection Truck (Diesel)	282,263	1,218	1,159.8	0.85	26.69	19.63	0.04	0.03	0.05
HHD Solid Waste Collection Truck (CNG)	188,175	812	78.7	0.18	8.90	8.36	0.00	0.00	0.02
HHD Fleet Truck (Diesel)	650,459	3,102	1,134.2	0.94	32.01	5.42	0.22	0.21	0.10
Light Duty Truck (Gasoline)	474,506	2,032	191.2	0.08	0.45	3.99	0.01	0.01	0.02
Light Duty Truck (Diesel)	474,506	2,032	174.8	0.08	0.24	0.67	0.02	0.02	0.02
Passenger Cars (Gasoline)	322,400	1,380	96.7	0.04	0.20	2.18	0.01	0.01	0.01
Total Haul:	**2,069,909**	**9,196**	**2,738.7**	**2.13**	**68.29**	**38.07**	**0.29**	**0.28**	**0.21**
Total Worker:	**322,400**	**1,380**	**96.7**	**0.04**	**0.20**	**2.18**	**0.01**	**0.01**	**0.01**
Total Overall:	**2,392,309**	**10,576**	**2,835.4**	**2.17**	**68.49**	**40.25**	**0.30**	**0.28**	**0.21**

Project Increment Emissions

Vehicle Type	Project Increment VMT		Peak Year Emissions	Peak Day Emissions (lb/day)					
	Peak Year	**Peak Day**	**CO2e (MT/y)**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**SOx**
HHD Solid Waste Collection Truck (Diesel)	-107,746	-400	-546.3	-0.55	-20.15	1.58	-0.02	-0.02	-0.04
HHD Solid Waste Collection Truck (CNG)	-71,831	-267	-30.0	-0.12	-6.72	0.67	0.00	0.00	-0.01
HHD Fleet Truck (Diesel)	-30,556	-119	-98.0	-0.71	-15.49	-1.86	-0.42	-0.40	-0.01
Light Duty Truck (Gasoline)	373,038	1,641	146.9	0.06	0.31	2.91	0.01	0.01	0.01
Light Duty Truck (Diesel)	373,038	1,641	135.3	0.06	0.18	0.54	0.02	0.02	0.01
Passenger Cars (Gasoline)	58,240	400	10.6	-0.01	-0.01	-0.02	0.00	0.00	0.00
Total Haul:	**535,943**	**2,496**	**-392.2**	**-1.26**	**-41.86**	**3.84**	**-0.42**	**-0.40**	**-0.03**
Total Worker:	**58,240**	**400**	**10.6**	**-0.01**	**-0.01**	**-0.02**	**0.00**	**0.00**	**0.00**
Total Overall:	**594,183**	**2,896**	**-381.5**	**-1.28**	**-41.87**	**3.82**	**-0.42**	**-0.40**	**-0.03**

GHG Emissions from Diverted Throughput (i.e GHG Emissions that would Occur Without Project)
From CARB "Waste Diversion GHG Emission Reduction Calculator for FY 2015-16 (.xlsx)"

Avoided Emissions from Composting in Windrows, CASP and Anaerobic Digester

Compost Worksheet

Year	Feedstock Diverted for Windrow Composting (Short Tons)	Feedstock Diverted for ASP System Composting (Short Tons)	Composition of Feedstock (% Food Waste)	Composition of Feedstock (% Green Waste)	Residual Material Sent to Landfill (Short Tons)	Net Tons of Material Diverted (Short Tons)	Net GHG Benefit (MTCO2e)
2016	180,000	75,000	22%	78%	0	255,000	48,891

Standalone Anaerobic Digestion (AD) Worksheet

Year	Feedstock Diverted for Anaerobic Digestion Producing Vehicle Fuel & Digestate that is Landfilled (Short Tons)	Feedstock Diverted for Anaerobic Digestion Producing Vehicle Fuel & Digestate that is Composted (Short Tons)	Feedstock Diverted for Anaerobic Digestion Producing Electricity & Digestate is Landfilled (Short Tons)	Feedstock Diverted for Anaerobic Digestion Producing Electricity & Digestate is Composted (Short Tons)	Feedstock Diverted for Anaerobic Digestion to Inject into Pipeline & Digestate is Landfilled (Short Tons)	Feedstock Diverted for Anaerobic Digestion to Inject into Pipeline & Digestate is Composted (Short Tons)	Residual Material Sent to Landfill (Short Tons)	Net Tons of Material Diverted (Short Tons)	Net GHG Benefit (MTCO2e)
2016	0	0	0	40,000	0	0	0	40,000	10,000

295,000	**Total material diverted from landfill (short tons)**
58,891	**Total Estimated GHG Emission Reductions per year ($MTCO_2e$)**

ALTERNATE METHOD

CARB "Method for Estimating Greenhouse Gas Emission Reductions from Diversion of Organic Waste from Landfills to Compost Facilities", March 2016

Final Compost Emission Reduction Factor

The CERF is determined by subtracting the composting emissions from the composting emission reductions for each waste type. The results are included in Table 11.

Table 11. CERF values by waste type.

Waste Type	Composting Benefits (Btotal)	Composting Emissions	Final CERF (MT CO2e/ ton waste input)
Food Waste	0.69	0.07	0.62
Yard Trimmings	0.51	0.07	0.44
Mixed Organics	0.63	0.07	0.56

This leads to a CERF of **0.44 – 0.62 MTCO2E/ton of feedstock.**

49,863	Quantity of food diverted from landfill (tons)
131,275	Quantity of green diverted from landfill (tons)
181,138	Total quantity of compostable diverted (tons)
88,676	Net benefit MTCO2e per year
101,437	Net benefit MTCO2e per year using Mixed Organics CERF

Avoided LF Flare Emissions

Material will be diverted from Toland Landill to the Project. Toland Landfill utilizes a flare to control volatile emissions, so this spreadsheet calculates flaring emissions avoided by the Project. These emissions are then included in the Project Baseline for the significance determination in this AQCCIA.

Quantity of Gas Diverted from Toland Road (based on Landgem model for 2018)

5.15E+07	m3/year total landfill gas
25,760,000	m3/year methane
1,819,411,798	ft3/year total landfill gas
909,705,899	ft3/year methane

Toland Road Flare Emission Factors (VCAPCD Emissions Factors for Toland Road Landfill, 1/24/17)

Units	ROC	NOx	PM	CO
lb/MMBTU	0.010	0.060	0.020	0.200
lb/MMcf landfill gas	5.0	30.0	10.0	100.0
lb/MMcf CH_4	10.5	63	21	210

Emissions

Parameter	ROC	NOx	PM10	PM2.5	CO
EF (lb/10^6 dscf CH_4)	11	63	21	21	210
Throughput (10^6 dscf CH_4/year)	910	910	910	910	910
Emissions (lb/year)	9,552	57,311	19,104	19,104	191,038
Emissions (ton/year)	4.8	28.7	9.6	9.6	95.5
Emissions (lb/day)	26.2	157.0	52.3	52.3	523.4

Conversions:

50.0%	% methane in landfill gas
500	Btu/scf for landfill gas (VCAPCD assumption)
1050	Btu/scf for CH_4
35.31467	ft3/m3

APPENDIX D

TAC EMISSIONS CALCULATIONS AND MODELING ASSUMPTIONS

Peak Year Emissions (lb/yr)

Source	DPM	ETHYL BENZENE	STYRENE	1,3-BUT ADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPION ALDEHYDE	MTBE	FORM ALDEHYDE	2,2,4-TRIME THYLPENTANE	METHANOL	BENZENE
Offroad Source (Source 1)														
Off Road Diesel	-157													
Fugitive Organics (Source 3)														
Windrow/CASP/AD Organics		4.03E+01	7.44E+01			2.60E+02					1.35E+03		161,401	
AD Source (Source 2)														
AD CHP Engines		2.7E-01				5.4E-01	1.1E+00	5.4E-01			2.2E+01			3.0E+00
AD Flare		6.6E-03				1.3E-02	2.7E-02	1.3E-02			5.4E-01			7.3E-02
Total:		2.8E-01				5.5E-01	1.1E+00	5.5E-01			2.2E+01			3.0E+00
Road Source (Source 4)														
On Road Various	9.66	4.6E-02	5.4E-03	2.3E-02	5.8E-03	3.6E-01	2.5E-01	6.7E-02	1.7E-03	8.2E-02	1.4E-01	7.3E-02	3.4E-02	1.2E-01

Source	ACETALD EHYDE	MEK	NAPHTHA LENE	(1-METHYL ETHYL) BENZENE	propylene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium	Isopropyl alcohol	Dichloro Benzene
Offroad Source (Source 1)														
Off Road Diesel														
Fugitive Organics (Source 3)														
Windrow/CASP/AD Organics	992					93,292							62,782	2.7E+02
AD Source (Source 2)														
AD CHP Engines	8.1E-01				4.6E+01									
AD Flare	2.0E-02				1.1E+00									
Total:	8.3E-01				4.7E+01									
Road Source (Source 4)														
On Road Various	1.3E-02	8.3E-04	2.1E-03	8.3E-04	1.4E-01									

Peak Hour Emissions (lb/h)

Source	DPM	ETHYL BENZENE	STYRENE	1,3-BUT ADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPION ALDEHYDE	MTBE	FORM ALDEHYDE	2,2,4-TRIME THYLPENTANE	METHANOL	BENZENE
Offroad Source (Source 1)														
Off Road Diesel			4.0E-06		1.8E-06	7.2E-05	1.0E-04				1.0E-03		2.1E-06	1.4E-04
Fugitive Organics (Source 3)														
Windrow/CASP/AD Organics		5.39E-03	9.9E-03			3.5E-02					1.8E-01		2.2E+01	
AD Source (Source 2)														
AD CHP Engines		4.6E-05				9.2E-05	1.8E-04	9.2E-05			3.7E-03			5.1E-04
AD Flare		1.1E-06				2.3E-06	4.5E-06	2.3E-06			9.2E-05			1.2E-05
Total:		4.7E-05				9.5E-05	1.9E-04	9.5E-05			3.8E-03			5.2E-04
Road Source (Source 4)														
On Road Various		1.8E-05	2.1E-05	9.1E-06	1.1E-05	4.8E-04	5.7E-04	2.6E-05	6.5E-07	3.2E-05	4.8E-03	2.9E-05	2.3E-05	6.6E-04

Source	ACETALD EHYDE	MEK	NAPHTHA LENE	(1-METHYL ETHYL) BENZENE	propylene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium	Isopropyl alcohol	Dichloro Benzene
Offroad Source (Source 1)														
Off Road Diesel		1.0E-04				-2.7E-04	-4.0E-07	-2.8E-05	-2.0E-06	-2.4E-06	-1.5E-06	-2.3E-06		
Fugitive Organics (Source 3)														
Windrow/CASP/AD Organics	1.3E-01					1.2E+01							8.4E+00	3.6E-02
AD Source (Source 2)														
AD CHP Engines	1.4E-04				7.8E-03									
AD Flare	3.4E-06				1.9E-04									
Total:	1.4E-04				8.0E-03									
Road Source (Source 4)														
On Road Various	5.1E-06	4.7E-04	8.1E-07	3.3E-07	5.7E-05	1.3E-05	1.9E-08	1.3E-06	9.7E-08	1.2E-07	7.4E-08	1.1E-07		

Biogas TAC Emissions

Emissions Factor

Parameter	propylene	hexane	formaldehyde	acetaldehyde	xylenes (mixed)	benzene	toluene	ethyl benzene
% of ROC	1.69%	0.02%	0.81%	0.03%	0.02%	0.11%	0.04%	0.01%

% of ROC emissions based on CARB's CATEF database for natural gas burned in ICE reciprocating engines (#719).

Baseline Emissions

Source not present in baseline

Post-Project Emissions

Parameter	ROC Emissions (lbs/hr,	Emissions							
		propylene	hexane	formaldehyde	acetaldehyde	xylenes (mixed)	benzene	toluene	ethyl benzene
Hourly (lbs/hr)									
AD CHP Engines	0.461	7.8E-03	9.2E-05	3.7E-03	1.4E-04	9.2E-05	5.1E-04	1.8E-04	4.6E-05
AD Flare	0.011	1.9E-04	2.3E-06	9.2E-05	3.4E-06	2.3E-06	1.2E-05	4.5E-06	1.1E-06
Yearly (lbs/yr)									
AD CHP Engines	2,695	45.54	0.54	21.83	0.81	0.54	2.96	1.08	0.27
AD Flare	66.3	1.12	0.01	0.54	0.02	0.01	0.07	0.03	0.01

Project Increment Emissions

Parameter	ROC Emissions (lbs/hr,	Emissions							
		propylene	hexane	formaldehyde	acetaldehyde	xylenes (mixed)	benzene	toluene	ethyl benzene
Hourly (lbs/hr)									
AD CHP Engines	0.461	7.8E-03	9.2E-05	3.7E-03	1.4E-04	9.2E-05	5.1E-04	1.8E-04	4.6E-05
AD Flare	0.011	1.9E-04	2.3E-06	9.2E-05	3.4E-06	2.3E-06	1.2E-05	4.5E-06	1.1E-06
Yearly (lbs/yr)									
AD CHP Engines	2,695	45.54	0.54	21.83	0.81	0.54	2.96	1.08	0.27
AD Flare	66.3	1.12	0.01	0.54	0.02	0.01	0.07	0.03	0.01

Onsite Equipment TAC Emissions

TAC Emissions Factors

ROC Based Components	Benzene	Toluene	Xylenes	Formaldehyde	Acrolein	Methanol	MEK	Styrene
Fraction of ROC EF:	2.0E-02	1.5E-02	1.0E-02	1.5E-01	2.6E-04	3.0E-04	1.5E-02	5.8E-04

DPM Based Components	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
Fraction of DPM EF:	3.4E-03	5.0E-06	3.4E-04	2.5E-05	3.0E-05	1.9E-05	2.9E-05

Baseline TAC Emissions

Parameter	DPM			ROC	
	lb/day	lb/year	lb/hr	lb/day	lb/hr
Off Road Engine Exhaust	1.81	564	0.15	3.24	0.27

Source	Yearly Emissions	Hourly Emissions (lbs/hr)																
	DPM (lbs/year)	DPM (lb/hr)	ROC (lbs/hr)	Benzene	Toluene	Xylenes	Formaldehyde	Acrolein	Methanol	MEK	Styrene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
Off Road Engine Exhaust	564.4	1.5E-01	2.7E-01	5.4E-03	4.0E-03	2.8E-03	4.0E-02	7.1E-05	8.1E-05	4.0E-03	1.6E-04	5.1E-04	7.5E-07	5.2E-05	3.8E-06	4.5E-06	2.9E-06	4.4E-06

Post-Project Emissions

Source	Yearly Emissions	Hourly Emissions (lbs/hr)																
	DPM (lbs/year)	DPM (lb/hr)	ROC (lbs/hr)	Benzene	Toluene	Xylenes	Formaldehyde	Acrolein	Methanol	MEK	Styrene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
Off Road Engine Exhaust	407.9	7.0E-02	2.8E-01	5.5E-03	4.1E-03	2.9E-03	4.1E-02	7.3E-05	8.3E-05	4.1E-03	1.6E-04	2.4E-04	3.5E-07	2.4E-05	1.7E-06	2.1E-06	1.3E-06	2.0E-06

Project Increment Emissions

Source	Yearly Emissions	Hourly Emissions (lbs/hr)																
	DPM (lbs/year)	DPM (lb/hr)	ROC (lbs/hr)	Benzene	Toluene	Xylenes	Formaldehyde	Acrolein	Methanol	MEK	Styrene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
Off Road Engine Exhaust	-156.5	-8.1E-02	6.9E-03	1.4E-04	1.0E-04	7.2E-05	1.0E-03	1.8E-06	2.1E-06	1.0E-04	4.0E-06	-2.7E-04	-4.0E-07	-2.8E-05	-2.0E-06	-2.4E-06	-1.5E-06	-2.3E-06

Hours/day =	12
Days/Year (Baseline) =	312

Modeled Road Length (Onsite) = 0.24 miles/round trip   Hours/Day = 10
Modeled Road Length (Offsite) = 6.2 miles/round trip
Modeled Road Length (Total) = 6.44 miles/round trip

TAC Emissions Factors

Diesel Speciation (Acute Risk Assessment Only)

ROC Based Components	Benzene	Toluene	Xylenes	Formaldehyde	Acrolein	Methanol	MEK	Styrene
% of ROC EF:	2.00%	1.47%	1.04%	14.71%	0.03%	0.03%	1.48%	0.06%

DPM Based Components	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
% of DPM EF:	0.337%	0.001%	0.034%	0.003%	0.003%	0.002%	0.003%

Note: ROC fractions calculated from emission factors from CARB diesel speciation for diesel fueled farm equipment except acrolein, which is from AP42 Section 3-3. DPM speciation also from CARB for diesel fueled automobiles.

CNG ROC Speciation

ROC Based Components	propylene	hexane	formaldehyde	acetaldehyde	xylenes (mixed)	benzene	toluene	ethyl benzene
% of ROC EF:	1.69%	0.02%	0.81%	0.03%	0.02%	0.11%	0.04%	0.01%

CARB Speciation organics profile 719 - ICE-reciprocating-natural gas

Gasoline ROC Speciation

ROC Based Components	ETHYLBENZENE	STYRENE	1,3-BUTADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPIONALDEHYDE	MTBE	FORMALDEHYDE	2,2,4-TRIMETHYLPENTANE	METHANOL	BENZENE	ACETALDEHYDE	MEK	NAPHTHALENE	(1-METHYLETHYL) BENZENE
% of ROC EF:	1.09%	0.13%	0.56%	0.14%	8.70%	5.99%	1.61%	0.04%	1.97%	1.73%	1.75%	0.83%	2.68%	0.25%	0.02%	0.05%	0.02%

CARB Speciation organics profile 438 - Gasoline - catalyst - stabilized exhaust - ARB IUS summer 1999 as referenced by "PREPARATION OF EMISSIONINVENTORIES OF TOXIC AIRCONTAMINANTS FOR THE BAY AREA"

Baseline TAC Emissions

		VMT Calculation					DPM Emissions			ROC Emissions		
Vehicle	Fuel Type	Vehicles per year	VMT/year	Days / Year	VMT / Day	VMT / hr	EF (g/VMT)	(lb/yr)	(lb/hr)	EF (g/VMT)	(lb/yr)	(lb/hr)
HHD Solid Waste Collection Truck	Diesel	2,098	13,509	312	43	4.3	0.017	0.50	1.6E-04	0.394	---	3.8E-03
HHD Solid Waste Collection Truck	CNG	1,398	9,006	312	29	2.9	---	---	---	0.125	2.48	7.9E-04
HHD Fleet Truck from MRFs	Diesel	1,547	9,963	312	32	3.2	0.090	1.98	6.3E-04	0.232	---	1.6E-03
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel	1,246	8,021	312	26	2.6	0.007	0.12	3.7E-05	0.019	---	1.1E-04
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline	1,246	8,021	312	26	2.6	---	---	---	0.030	0.53	1.7E-04
HHD Fleet - Roll off	Diesel	772	4,972	260	19	1.9	0.090	0.99	3.8E-04	0.232	---	9.8E-04
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel	0	0	260	0	0.0	0.090	0.00	0.0E+00	0.232	---	0
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel	1,580	10,176	260	39	3.9	0.090	2.02	7.8E-04	0.232	---	2.0E-03
Light Duty Truck (Diesel Half)	Diesel	786	5,063	260	19	1.9	0.007	0.07	2.8E-05	0.019	---	8.0E-05
Light Duty Truck (Gas Half)	Gasoline	786	5,063	260	19	1.9	---	---	---	0.030	0.33	1.3E-04

Pounds per Year

Vehicle	Fuel Type	DPM (lb/yr)	ETHYLBENZENE	STYRENE	1,3-BUTADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPIONALDEHYDE	MTBE	FORMALDEHYDE	2,2,4-TRIMETHYLPENTANE	METHANOL	BENZENE	ACETALDEHYDE	MEK	NAPHTHALENE	(1-METHYLETHYL) BENZENE	propylene
HHD Solid Waste Collection Truck	Diesel	0.50																		
HHD Solid Waste Collection Truck	CNG		2.5E-04				5.0E-04	9.9E-04	5.0E-04			2.0E-02			2.7E-03	7.4E-04				4.2E-02
HHD Fleet Truck from MRFs	Diesel	1.98																		
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel	0.12																		
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline		5.7E-03	6.8E-04	2.9E-03	7.4E-04	4.6E-02	3.1E-02	8.5E-03	2.1E-04	1.0E-02	9.1E-03	9.2E-03	4.4E-03	1.4E-02	1.3E-03	1.1E-04	2.6E-04	1.1E-04	
HHD Fleet - Roll off	Diesel	0.99																		
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel	0.00																		
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel	2.02																		
Light Duty Truck (Diesel Half)	Diesel	0.07																		
Light Duty Truck (Gas Half)	Gasoline		3.6E-03	4.3E-04	1.9E-03	4.6E-04	2.9E-02	2.0E-02	5.3E-03	1.3E-04	6.5E-03	5.7E-03	5.8E-03	2.8E-03	8.9E-03	8.3E-04	6.6E-05	1.7E-04	6.6E-05	
	Total:	**5.68**	**9.6E-03**	**1.1E-03**	**4.8E-03**	**1.2E-03**	**7.5E-02**	**5.2E-02**	**1.4E-02**	**3.4E-04**	**1.7E-02**	**3.5E-02**	**1.5E-02**	**7.1E-03**	**2.6E-02**	**2.9E-03**	**1.7E-04**	**4.3E-04**	**1.7E-04**	**4.2E-02**

Pounds per Hour

Vehicle	Fuel Type	ETHYLBENZENE	STYRENE	1,3-BUTADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPIONALDEHYDE	MTBE	FORMALDEHYDE	2,2,4-TRIMETHYLPENTANE	METHANOL	BENZENE	ACETALDEHYDE	MEK	NAPHTHALENE	(1-METHYLETHYL) BENZENE	propylene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
HHD Solid Waste Collection Truck	Diesel		2.2E-06		9.9E-07	3.9E-05	5.5E-05				5.5E-04		1.1E-06	7.5E-05		5.5E-05				5.4E-07	8.0E-10	5.5E-08	4.0E-09	4.8E-09	3.0E-09	4.6E-09
HHD Solid Waste Collection Truck	CNG	7.9E-08				1.6E-07	3.2E-07	1.6E-07			6.4E-06			8.7E-07	2.4E-07				1.3E-05							
HHD Fleet Truck from MRFs	Diesel		9.5E-07		4.3E-07	1.7E-05	2.4E-05				2.4E-04		4.9E-07	3.3E-05		2.4E-05				2.1E-06	3.2E-09	2.2E-07	1.6E-08	1.9E-08	1.2E-08	1.8E-08
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel		6.1E-08		2.8E-08	1.1E-06	1.5E-06				1.5E-05		3.2E-08	2.1E-06		1.6E-06				1.3E-07	1.9E-10	1.3E-08	9.4E-10	1.1E-09	7.1E-10	1.1E-09
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline	1.8E-06	2.2E-07	9.4E-07	2.4E-07	1.5E-05	1.0E-05	2.7E-06	6.7E-08	3.3E-06	2.9E-06	2.9E-06	1.4E-06	4.5E-06	4.2E-07	3.4E-08	8.4E-08	3.4E-08								
HHD Fleet - Roll off	Diesel		5.7E-07		2.6E-07	1.0E-05	1.4E-05				1.4E-04		2.9E-07	2.0E-05		1.4E-05				1.3E-06	1.9E-09	1.3E-07	9.5E-09	1.1E-08	7.2E-09	1.1E-08
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel		0		0	0	0				0		0	0		0				0	0	0	0	0	0	0
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel		1.2E-06		5.3E-07	2.1E-05	2.9E-05				2.9E-04		6.0E-07	4.0E-05		3.0E-05				2.6E-06	3.9E-09	2.7E-07	1.9E-08	2.3E-08	1.5E-08	2.3E-08
Light Duty Truck (Diesel Half)	Diesel		4.6E-08		2.1E-08	8.3E-07	1.2E-06				1.2E-05		2.4E-08	1.6E-06		1.2E-06				9.6E-08	1.4E-10	9.8E-09	7.1E-10	8.5E-10	5.4E-10	8.2E-10
Light Duty Truck (Gas Half)	Gasoline	1.4E-06	1.7E-07	7.1E-07	1.8E-07	1.1E-05	7.6E-06	2.1E-06	5.1E-08	2.5E-06	2.2E-06	2.2E-06	1.1E-06	3.4E-06	3.2E-07	2.5E-08	6.4E-08	2.5E-08								
	Total:	**3.3E-06**	**5.3E-06**	**1.7E-06**	**2.7E-06**	**1.1E-04**	**1.4E-04**	**4.9E-06**	**1.2E-07**	**5.8E-06**	**1.3E-03**	**5.2E-06**	**5.0E-06**	**1.8E-04**	**9.8E-07**	**1.3E-04**	**1.5E-07**	**5.9E-08**	**1.3E-05**	**6.8E-06**	**1.0E-08**	**6.9E-07**	**5.0E-08**	**6.1E-08**	**3.8E-08**	**5.9E-08**

Project TAC Emissions

Vehicle	Fuel Type	VMT Calculation					DPM Emissions			ROC Emissions		
		Vehicles per year	VMT/year	Days / Year	VMT / Day	VMT / hr	EF (g/VMT)	(lb/yr)	(lb/hr)	EF (g/VMT)	(lb/yr)	(lb/hr)
HHD Solid Waste Collection Truck	Diesel	11,400	73,416	260	282	28.2	0.013	2.15	8.3E-04	0.316	---	2.0E-02
HHD Solid Waste Collection Truck	CNG	7,600	48,944	260	188	18.8	---	---	---	0.100	10.82	4.2E-03
HHD Fleet Truck from MRFs	Diesel	6,225	40,091	260	154	15.4	0.032	2.86	1.1E-03	0.137	---	4.7E-03
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel	16,079	103,551	260	398	39.8	0.006	1.26	4.9E-04	0.018	---	1.5E-03
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline	16,079	103,551	260	398	39.8	---	---	---	0.018	4.18	1.6E-03
HHD Fleet - Roll off	Diesel	1,439	9,270	260	36	3.6	0.032	0.66	2.5E-04	0.137	---	1.1E-03
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel	1,788	11,513	260	44	4.4	0.032	0.82	3.2E-04	0.137	---	0.00134
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel	15,960	102,784	260	395	39.5	0.032	7.33	2.8E-03	0.137	---	1.2E-02
Light Duty Truck (Diesel Half)	Diesel	3,183	20,496	260	79	7.9	0.006	0.25	9.6E-05	0.018	---	3.0E-04
Light Duty Truck (Gas Half)	Gasoline	3,183	20,496	260	79	7.9	---	---	---	0.018	0.83	3.2E-04

Pounds per Year

Vehicle	Fuel Type	DPM (lb/yr)	ETHYLBENZENE	STYRENE	1,3-BUTADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPIONALDEHYDE	MTBE	FORMALDEHYDE	2,2,4-TRIMETHYLPENTANE	METHANOL	BENZENE	ACETALDEHYDE	MEK	NAPHTHALENE	(1-METHYLETHYL) BENZENE	propylene
HHD Solid Waste Collection Truck	Diesel	2.15																		
HHD Solid Waste Collection Truck	CNG		1.1E-03				2.2E-03	4.3E-03	2.2E-03			8.8E-02			1.2E-02	3.2E-03				1.8E-01
HHD Fleet Truck from MRFs	Diesel	2.86																		
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel	1.26																		
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline		4.6E-02	5.4E-03	2.3E-02	5.8E-03	3.6E-01	2.5E-01	6.7E-02	1.7E-03	8.2E-02	7.2E-02	7.3E-02	3.5E-02	1.1E-01	1.0E-02	8.4E-04	2.1E-03	8.4E-04	
HHD Fleet - Roll off	Diesel	0.66																		
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel	0.82																		
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel	7.33																		
Light Duty Truck (Diesel Half)	Diesel	0.25																		
Light Duty Truck (Gas Half)	Gasoline		9.0E-03	1.1E-03	4.6E-03	1.2E-03	7.2E-02	5.0E-02	1.3E-02	3.3E-04	1.6E-02	1.4E-02	1.4E-02	6.9E-03	2.2E-02	2.1E-03	1.7E-04	4.1E-04	1.7E-04	
	Total:	**15.34**	**5.6E-02**	**6.5E-03**	**2.8E-02**	**7.0E-03**	**4.4E-01**	**3.0E-01**	**8.3E-02**	**2.0E-03**	**9.9E-02**	**1.7E-01**	**8.8E-02**	**4.2E-02**	**1.5E-01**	**1.6E-02**	**1.0E-03**	**2.5E-03**	**1.0E-03**	**1.8E-01**

Pounds per Hour

Vehicle	Fuel Type	ETHYLBENZENE	STYRENE	1,3-BUTADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPIONALDEHYDE	MTBE	FORMALDEHYDE	2,2,4-TRIMETHYLPENTANE	METHANOL	BENZENE	ACETALDEHYDE	MEK	NAPHTHALENE	(1-METHYLETHYL) BENZENE	propylene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
HHD Solid Waste Collection Truck	Diesel		1.1E-05		5.2E-06	2.0E-04	2.9E-04				2.9E-03		5.9E-06	3.9E-04		2.9E-04				2.8E-06	4.1E-09	2.8E-07	2.1E-08	2.5E-08	1.6E-08	2.4E-08
HHD Solid Waste Collection Truck	CNG	4.2E-07				8.3E-07	1.7E-06	8.3E-07			3.4E-05			4.6E-06	1.2E-06				7.0E-05							
HHD Fleet Truck from MRFs	Diesel		2.7E-06		1.2E-06	4.9E-05	6.9E-05				6.9E-04		1.4E-06	9.3E-05		6.9E-05				3.7E-06	5.5E-09	3.8E-07	2.8E-08	3.3E-08	2.1E-08	3.2E-08
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel		8.9E-07		4.1E-07	1.6E-05	2.3E-05				2.3E-04		4.6E-07	3.1E-05		2.3E-05				1.6E-06	2.4E-09	1.7E-07	1.2E-08	1.5E-08	9.2E-09	1.4E-08
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline	1.8E-05	2.1E-06	9.0E-06	2.2E-06	1.4E-04	9.6E-05	2.6E-05	6.4E-07	3.2E-05	2.8E-05	2.8E-05	1.3E-05	4.3E-05	4.0E-06	3.2E-07	8.0E-07	3.2E-07								
HHD Fleet - Roll off	Diesel		6.3E-07		2.9E-07	1.1E-05	1.6E-05				1.6E-04		3.2E-07	2.2E-05		1.6E-05				8.6E-07	1.3E-09	8.8E-08	6.4E-09	7.6E-09	4.8E-09	7.4E-09
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel		7.8E-07		3.5E-07	1.4E-05	2.0E-05				2.0E-04		4.0E-07	0.0E+00		2.0E-05				1.1E-06	1.6E-09	1.1E-07	7.9E-09	9.5E-09	6.0E-09	9.2E-09
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel		6.9E-06		3.2E-06	1.2E-04	1.8E-04				1.8E-03		3.6E-06	2.4E-04		1.8E-04				9.5E-06	1.4E-08	9.7E-07	7.1E-08	8.5E-08	5.4E-08	8.2E-08
Light Duty Truck (Diesel Half)	Diesel		1.8E-07		8.0E-08	3.2E-06	4.5E-06				4.5E-05		9.1E-08	6.1E-06		4.5E-06				3.2E-07	4.8E-10	3.3E-08	2.4E-09	2.9E-09	1.8E-09	2.8E-09
Light Duty Truck (Gas Half)	Gasoline	3.5E-06	4.1E-07	1.8E-06	4.5E-07	2.8E-05	1.9E-05	5.1E-06	1.3E-07	6.3E-06	5.5E-06	5.6E-06	2.6E-06	8.5E-06	8.0E-07	6.4E-08	1.6E-07	6.4E-08								
	Total:	**2.1E-05**	**2.6E-05**	**1.1E-05**	**1.3E-05**	**5.9E-04**	**7.1E-04**	**3.2E-05**	**7.7E-07**	**3.8E-05**	**6.0E-03**	**3.4E-05**	**2.8E-05**	**8.4E-04**	**6.1E-06**	**6.0E-04**	**9.6E-07**	**3.9E-07**	**7.0E-05**	**2.0E-05**	**2.9E-08**	**2.0E-06**	**1.5E-07**	**1.8E-07**	**1.1E-07**	**1.7E-07**

Project Increment TAC Emissions

Pounds per Year

Vehicle	Fuel Type	DPM (lb/yr)	ETHYLBENZENE	STYRENE	1,3-BUTADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPIONALDEHYDE	MTBE	FORMALDEHYDE	2,2,4-TRIMETHYLPENTANE	METHANOL	BENZENE	ACETALDEHYDE	MEK	NAPHTHALENE	(1-METHYLETHYL) BENZENE	propylene
HHD Solid Waste Collection Truck	Diesel	1.65																		
HHD Solid Waste Collection Truck	CNG		8.3E-04				1.7E-03	3.3E-03				6.8E-02			9.2E-03	2.5E-03				1.4E-01
HHD Fleet Truck from MRFs	Diesel	0.88																		
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel	1.15																		
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline		4.0E-02	4.7E-03	2.0E-02	5.1E-03	3.2E-01	2.2E-01	5.9E-02	1.5E-03	7.2E-02	6.3E-02	6.4E-02	3.0E-02	9.8E-02	9.1E-03	7.3E-04	1.8E-03	7.3E-04	
HHD Fleet - Roll off	Diesel	-0.33																		
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel	0.82																		
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel	5.31																		
Light Duty Truck (Diesel Half)	Diesel	0.18																		
Light Duty Truck (Gas Half)	Gasoline		5.4E-03	6.4E-04	2.8E-03	6.9E-04	4.3E-02	3.0E-02	8.0E-03	2.0E-04	9.8E-03	8.6E-03	8.7E-03	4.1E-03	1.3E-02	1.2E-03	9.9E-05	2.5E-04	9.9E-05	
	Total:	**9.66**	**4.6E-02**	**5.4E-03**	**2.3E-02**	**5.8E-03**	**3.6E-01**	**2.5E-01**	**6.7E-02**	**1.7E-03**	**8.2E-02**	**1.4E-01**	**7.3E-02**	**3.4E-02**	**1.2E-01**	**1.3E-02**	**8.3E-04**	**2.1E-03**	**8.3E-04**	**1.4E-01**

Pounds per Hour

Vehicle	Fuel Type	ETHYLBENZENE	STYRENE	1,3-BUTADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPIONALDEHYDE	MTBE	FORMALDEHYDE	2,2,4-TRIMETHYLPENTANE	METHANOL	BENZENE	ACETALDEHYDE	MEK	NAPHTHALENE	(1-METHYLETHYL) BENZENE	propylene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
HHD Solid Waste Collection Truck	Diesel		9.2E-06		4.2E-06	1.7E-04	2.3E-04				2.3E-03		4.8E-06	3.2E-04		2.4E-04				2.2E-06	3.3E-09	2.3E-07	1.7E-08	2.0E-08	1.3E-08	1.9E-08
HHD Solid Waste Collection Truck	CNG	3.4E-07				6.7E-07	1.3E-06				2.7E-05			3.7E-06	1.0E-06				5.7E-05							
HHD Fleet Truck from MRFs	Diesel		1.8E-06		8.0E-07	3.2E-05	4.5E-05				4.5E-04		9.1E-07	6.1E-05		4.5E-05				1.6E-06	2.3E-09	1.6E-07	1.2E-08	1.4E-08	8.9E-09	1.4E-08
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel		8.3E-07		3.8E-07	1.5E-05	2.1E-05				2.1E-04		4.3E-07	2.9E-05		2.1E-05				1.5E-06	2.2E-09	1.5E-07	1.1E-08	1.3E-08	8.5E-09	1.3E-08
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline	1.6E-05	1.9E-06	8.1E-06	2.0E-06	1.3E-04	8.6E-05	2.3E-05	5.8E-07	2.8E-05	2.5E-05	2.5E-05	1.2E-05	3.9E-05	3.6E-06	2.9E-07	7.2E-07	2.9E-07								
HHD Fleet - Roll off	Diesel		5.9E-08		2.7E-08	1.1E-06	1.5E-06				1.5E-05		3.0E-08	2.0E-06		1.5E-06				-4.2E-07	-6.3E-10	-4.3E-08	-3.1E-09	-3.8E-09	-2.4E-09	-3.6E-09
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel		0		0	0	0				0		0	0		0				0	0	0	0	0	0	0
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel		5.8E-06		2.6E-06	1.0E-04	1.5E-04				1.5E-03		3.0E-06	2.0E-04		1.5E-04				6.9E-06	1.0E-08	7.0E-07	5.1E-08	6.1E-08	3.9E-08	5.9E-08
Light Duty Truck (Diesel Half)	Diesel		1.3E-07		5.9E-08	2.3E-06	3.3E-06				3.3E-05		6.7E-08	4.5E-06		3.3E-06				2.3E-07	3.4E-10	2.3E-08	1.7E-09	2.0E-09	1.3E-09	2.0E-09
Light Duty Truck (Gas Half)	Gasoline	2.1E-06	2.5E-07	1.1E-06	2.7E-07	1.7E-05	1.1E-05	3.1E-06	7.6E-08	3.8E-06	3.3E-06	3.3E-06	1.6E-06	5.1E-06	4.8E-07	3.8E-08	9.5E-08	3.8E-08								
	Total:	**1.8E-05**	**2.1E-05**	**9.1E-06**	**1.1E-05**	**4.8E-04**	**5.7E-04**	**2.6E-05**	**6.5E-07**	**3.2E-05**	**4.8E-03**	**2.9E-05**	**2.3E-05**	**6.6E-04**	**5.1E-06**	**4.7E-04**	**8.1E-07**	**3.3E-07**	**5.7E-05**	**1.3E-05**	**1.9E-08**	**1.3E-06**	**9.7E-08**	**1.2E-07**	**7.4E-08**	**1.1E-07**

Organic TAC Emissions

Emissions Factors

Parameter	Acetaldehyde	Isopropyl Alcohol	Methanol	Formaldehyde	Xylene	Ethyl Benzene	Styrene	Dichlorobenzene Isomers	Ammonia
Fraction of VOC Ef (lb/lb)	3.20E-03	2.03E-01	5.21E-01	4.35E-03	8.40E-04	1.30E-04	2.40E-04	8.80E-04	---

*Emission factors are derived from the VOC profile 1616, "Green Waste Composting" from *EPA Speciate 4.4* , test data from the 2011 article *Volatile organic compound emissions from green waste composting: Characterization and ozone formation* in the journal, *Atmospheric Environment* ,(45, 2011, 1841-1848).

Ammonia emissions calculated directly as part of criteria pollutant calculations and assume 20% control

Baseline Emissions

Parameter	Throughput (wet ton/yr)	VOC (lbs/ton)	VOC (lbs/year)	VOC (lbs/hr)	NH3 (lbs/ton)	NH3 (lbs/year)	NH3 (lbs/hr)
Stockpiling	58,619	0.2	11,724	1.3	0	0	0.0
Windrow Composting & Cure	58,619	3.58	209,856	24.0	0.624	36,578	4.2
		Total:	**221,580**	**25.3**	**Total:**	**36,578**	**4.2**

Parameter	VOC Emissions	Acetaldehyde	Isopropyl Alcohol	Methanol	Formaldehyde	Xylene	Ethyl Benzene	Styrene	Dichlorobenzene Isomers	NH3
Hourly Emissions (lbs/hr)	25.3	0.08	5.12	13.17	0.11	0.02	0.00	0.01	0.02	4.18
Yearly Emissions (lbs/year)	221,580	709	44,888	115,399	964	186	29	53	195	36,578

Post-Project Total Emissions

Parameter	VOC Emissions	Acetaldehyde	Isopropyl Alcohol	Methanol	Formaldehyde	Xylene	Ethyl Benzene	Styrene	Dichlorobenzene Isomers	NH3
Hourly Emissions (lbs/hr)	66.7	0.21	13.52	34.76	0.29	0.06	0.01	0.02	0.06	16.31
Yearly Emissions (lbs/year)	531,490	1,701	107,669	276,800	2,312	446	69	128	468	129,870

Project Increment Emissions

Parameter	VOC Emissions	Acetaldehyde	Isopropyl Alcohol	Methanol	Formaldehyde	Xylene	Ethyl Benzene	Styrene	Dichlorobenzene Isomers	NH3
Hourly Emissions (lbs/hr)	41.4	0.13	8.40	21.58	0.18	0.03	0.01	0.01	0.04	12.13
Yearly Emissions (lbs/year)	309,910	992	62,782	161,401	1,348	260	40	74	273	93,292

Hours/day =	24
Days/year =	365

AERMOD Input Parameters

Source			Source Parameters	
Name	**ID**	**Source Type**	**Release/Stack Height (m)**	**Initial Vertical Dim. (m)**
Off Road Equipment	PAREA1	Area	5	2.3
Fugitive VOCs	PAREA3	Area	3.05	0.0
Anaerobic Digester	PAREA2	Area	5	2.3
Haul Road	SLINE1	Line (Adj. Vol.)	2.55	2.37

Lakes Version: 9.3.0

Met Data:

File Name:	723927.sfc & 723927.pfl
Date Range:	1/1/2009 to 1/2/2014
Location:	Oxnard Airport

Grid Receptors:

Grid Points	x = 130 y = 80
Grid Spacing (m)	50
Flagpole Ht (m)	1.5
Onsite Receptors	Disabled

Elevation Data:

Source:	WebGIS
Location:	Saticoy and Santa Paula

Boundary Receptors:

Receptor Spacing (m)	25
Flagpole ht (m)	1.5

AERMOD Dispersion Options

Regulatory Default Options	**Yes**	Were regulatory defaults options utilized?
If no, which non-default options were utilized:	---	N/A
	---	N/A
	---	N/A
Averaging Times Utilized	**1-hr**	Acute risk averaging time
	Period	Chronic/cancer risk averaging time ("period" = met data duration)
Dispersion Coefficient	**Rural**	Rural or Urban
Terrain Height Options	**Elevated**	Elevated (default), flat, or flat & elevated

HARP2 - HRACalc (dated 17023) 5/18/2017 8:53:01 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: Cancer
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: -0.25
Total Exposure Duration: 30

Exposure Duration Bin Distribution
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 0
2<16 Years Bin: 14
16<30 Years Bin: 14
16 to 70 Years Bin: 0

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: True
Water: False
Fish: False
Homegrown crops: True
Beef: False
Dairy: False
Pig: False
Chicken: True
Egg: True

****
INHALATION

Daily breathing rate: RMP

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
3rd Trimester to 16 years: OFF
16 years to 70 years: OFF

****
SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.05
Soil mixing depth (m): 0.01
Dermal climate: Warm

****
HOMEGROWN CROP PATHWAY SETTINGS

Household type: HouseholdsthatGarden
Fraction leafy: 0.137
Fraction exposed: 0.137
Fraction protected: 0.137
Fraction root: 0.137

****
PIG, CHICKEN, & EGG PATHWAY SETTINGS

Surface area (m^2): 0
Volume (kg): 0
Volume changes per year: 0

Pig
Fraction consumed from contaminated water source: 0
Fraction consumed of contaminated leafy crop: 0.25
Fraction consumed of contaminated exposed crop: 0.25
Fraction consumed of contaminated protected crop: 0.25
Fraction consumed of contaminated root crop: 0.25

Chicken
Fraction consumed from contaminated water source: 0
Fraction consumed of contaminated leafy crop: 0.25
Fraction consumed of contaminated exposed crop: 0.25
Fraction consumed of contaminated protected crop: 0.25
Fraction consumed of contaminated root crop: 0.25

Egg
Fraction consumed from contaminated water source: 0

Fraction consumed of contaminated leafy crop: 0.25
Fraction consumed of contaminated exposed crop: 0.25
Fraction consumed of contaminated protected crop: 0.25
Fraction consumed of contaminated root crop: 0.25

****
TIER 2 SETTINGS
Tier2 not used.

****

Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to:
E:\Modeling\Agromin\hra\Cancer ResidentCancerRisk.csv
Cancer risk total by receptor saved to: E:\Modeling\Agromin\hra\Cancer
ResidentCancerRiskSumByRec.csv
HRA ran successfully

APPENDIX E

CONSTRUCTION EMISSIONS (CALEEMOD)

Agromin Commercial Organics Processing Op.

Ventura County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Manufacturing	236.99	1000sqft	70.00	236,989.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction Model_v5

Land Use - Project Site = 70 acres
Buildings = 236,989 sq. ft.

Construction Phase - Phase durations estimated by client.

Off-road Equipment -

Off-road Equipment - Equipment #'s adjusted to Project scope.

Off-road Equipment - Equipment #'s adjusted to Project scope.

Off-road Equipment - Equipment #'s adjusted to Project scope.

Off-road Equipment - Equipment #'s adjusted to Project scope.

Off-road Equipment - Equipment #'s adjusted to Project scope.

Trips and VMT - Total haul trip #'s adjusted to Project scope.
Demolition - SP Material Existing Onsite = 8,190 tons (10/19/2016)

Grading - Total Project Site = 70 acres
Ag. Fields (to remove) = 55 acres

Architectural Coating - Interior Buildings = 236,989 sq. ft.
Assume VCAPCD compliant low-VOC paints (75 g/L).

Consumer Products -

Area Coating - Interior = 236,989 sq. ft.
Parking = 53,690 sq. ft.
Assume VCAPCD compliant low-VOC paint (75 g/L).

Energy Use -

Water And Wastewater -

Solid Waste -

Land Use Change - Approx 55 acres of orchard removed.

Sequestration - Approx 100+ new trees planted (Landscape Plan).

Construction Off-road Equipment Mitigation - Assume T3 for all equipment.
Assume water truck = 2 times/day.

Mobile Land Use Mitigation -

Area Mitigation - Assume VCAPCD compliant low-VOC paints utilized (75 g/L).

Energy Mitigation -

Water Mitigation - Assume low-flow for all water fixtures.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	118,500.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	355,500.00	236,989.00
tblArchitecturalCoating	ConstArea_Parking	0.00	53,690.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	75.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	75.00
tblArchitecturalCoating	EF_Parking	250.00	75.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	75

tblAreaCoating	Area_EF_Nonresidential_Interior	250	75
tblAreaCoating	Area_EF_Parking	250	75
tblAreaCoating	Area_Nonresidential_Exterior	118500	0
tblAreaCoating	Area_Nonresidential_Interior	355500	236989
tblAreaCoating	Area_Parking	0	53690
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	250	75
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	250	75
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	75.00	21.00
tblConstructionPhase	NumDays	1,110.00	90.00
tblConstructionPhase	NumDays	70.00	14.00
tblConstructionPhase	NumDays	110.00	28.00

tblConstructionPhase	NumDays	75.00	60.00
tblConstructionPhase	NumDays	40.00	21.00
tblGrading	AcresOfGrading	42.00	70.00
tblGrading	AcresOfGrading	0.00	55.00
tblLandUse	LotAcreage	5.44	70.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblProjectCharacteristics	OperationalYear	2018	2021
tblSequestration	NumberOfNewTrees	0.00	100.00
tblTripsAndVMT	HaulingTripNumber	810.00	80.00
tblTripsAndVMT	HaulingTripNumber	0.00	40.00
tblTripsAndVMT	HaulingTripNumber	0.00	80.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	48.4628	39.3059	23.4675	0.0450	14.9370	1.7215	16.4301	6.9512	1.5838	8.3250	0.0000	4,455.6178	4,455.6178	1.3744	0.0000	4,489.9770
Maximum	**48.4628**	**39.3059**	**23.4675**	**0.0450**	**14.9370**	**1.7215**	**16.4301**	**6.9512**	**1.5838**	**8.3250**	**0.0000**	**4,455.6178**	**4,455.6178**	**1.3744**	**0.0000**	**4,489.9770**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	48.4628	39.3059	23.4675	0.0450	6.7851	1.7215	8.2781	3.1450	1.5838	4.5188	0.0000	4,455.6178	4,455.6178	1.3744	0.0000	4,489.9770
Maximum	**48.4628**	**39.3059**	**23.4675**	**0.0450**	**6.7851**	**1.7215**	**8.2781**	**3.1450**	**1.5838**	**4.5188**	**0.0000**	**4,455.6178**	**4,455.6178**	**1.3744**	**0.0000**	**4,489.9770**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**54.58**	**0.00**	**49.62**	**54.76**	**0.00**	**45.72**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3507	2.2000e-004	0.0243	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0519	0.0519	1.4000e-004		0.0553
Energy	0.1468	1.3349	1.1213	8.0100e-003		0.1015	0.1015		0.1015	0.1015		1,601.8241	1,601.8241	0.0307	0.0294	1,611.3430
Mobile	1.4350	5.5306	17.8925	0.0623	5.5949	0.0507	5.6456	1.4943	0.0473	1.5416		6,306.1411	6,306.1411	0.2527		6,312.4592
Total	**6.9325**	**6.8657**	**19.0381**	**0.0704**	**5.5949**	**0.1522**	**5.7472**	**1.4943**	**0.1489**	**1.6431**		**7,908.0171**	**7,908.0171**	**0.2836**	**0.0294**	**7,923.8575**

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	4.9715	2.2000e-004	0.0243	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0519	0.0519	1.4000e-004		0.0553
Energy	0.1468	1.3349	1.1213	8.0100e-003		0.1015	0.1015		0.1015	0.1015		1,601.8241	1,601.8241	0.0307	0.0294	1,611.3430
Mobile	1.4350	5.5306	17.8925	0.0623	5.5949	0.0507	5.6456	1.4943	0.0473	1.5416		6,306.1411	6,306.1411	0.2527		6,312.4592
Total	**6.5533**	**6.8657**	**19.0381**	**0.0704**	**5.5949**	**0.1522**	**5.7472**	**1.4943**	**0.1489**	**1.6431**		**7,908.0171**	**7,908.0171**	**0.2836**	**0.0294**	**7,923.8575**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	5.47	0.00	0.00	0.00	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	Demolition	Demolition	1/1/2019	1/18/2019	5	14	
2	Site Preparation	Site Preparation	1/19/2019	2/18/2019	5	21	
3	Grading	Grading	2/19/2019	3/28/2019	5	28	
4	Building Construction	Building Construction	3/29/2019	8/1/2019	5	90	
5	Paving	Paving	8/2/2019	10/24/2019	5	60	
6	Architectural Coating	Architectural Coating	10/25/2019	11/22/2019	5	21	

Acres of Grading (Site Preparation Phase): 55

Acres of Grading (Grading Phase): 70

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 236,989; Non-Residential Outdoor: 0; Striped Parking Area: 53,690 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	2	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	1	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

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
Demolition	5	13.00	0.00	80.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	4	10.00	0.00	40.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	100.00	39.00	80.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	20.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Clean Paved Roads

3.2 Demolition - 2019

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					12.6746	0.0000	12.6746	1.9194	0.0000	1.9194			0.0000			0.0000
Off-Road	3.2526	33.1011	18.7968	0.0336		1.6656	1.6656		1.5507	1.5507		3,305.7738	3,305.7738	0.9001		3,328.2766
Total	**3.2526**	**33.1011**	**18.7968**	**0.0336**	**12.6746**	**1.6656**	**14.3402**	**1.9194**	**1.5507**	**3.4701**		**3,305.7738**	**3,305.7738**	**0.9001**		**3,328.2766**

3.2 Demolition - 2019

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	0.0469	1.6820	0.3456	4.3700e-003	0.0995	8.7900e-003	0.1083	0.0273	8.4100e-003	0.0357		476.7699	476.7699	0.0455		477.9084
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	0.0511	0.0320	0.3942	1.0700e-003	0.1068	7.7000e-004	0.1076	0.0283	7.1000e-004	0.0290		106.5607	106.5607	3.0900e-003		106.6379
Total	**0.0980**	**1.7140**	**0.7397**	**5.4400e-003**	**0.2063**	**9.5600e-003**	**0.2159**	**0.0556**	**9.1200e-003**	**0.0647**		**583.3306**	**583.3306**	**0.0486**		**584.5462**

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	lb/day										lb/day					
Fugitive Dust					5.7036	0.0000	5.7036	0.8637	0.0000	0.8637			0.0000			0.0000
Off-Road	3.2526	33.1011	18.7968	0.0336		1.6656	1.6656		1.5507	1.5507	0.0000	3,305.7738	3,305.7738	0.9001		3,328.2766
Total	**3.2526**	**33.1011**	**18.7968**	**0.0336**	**5.7036**	**1.6656**	**7.3691**	**0.8637**	**1.5507**	**2.4144**	**0.0000**	**3,305.7738**	**3,305.7738**	**0.9001**		**3,328.2766**

3.2 Demolition - 2019

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	0.0469	1.6820	0.3456	4.3700e-003	0.0995	8.7900e-003	0.1083	0.0273	8.4100e-003	0.0357		476.7699	476.7699	0.0455		477.9084
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	0.0511	0.0320	0.3942	1.0700e-003	0.1068	7.7000e-004	0.1076	0.0283	7.1000e-004	0.0290		106.5607	106.5607	3.0900e-003		106.6379
Total	**0.0980**	**1.7140**	**0.7397**	**5.4400e-003**	**0.2063**	**9.5600e-003**	**0.2159**	**0.0556**	**9.1200e-003**	**0.0647**		**583.3306**	**583.3306**	**0.0486**		**584.5462**

3.3 Site Preparation - 2019

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					14.8217	0.0000	14.8217	6.9204	0.0000	6.9204			0.0000			0.0000
Off-Road	2.7348	28.8236	13.1736	0.0233		1.4896	1.4896		1.3704	1.3704		2,305.9407	2,305.9407	0.7296		2,324.1801
Total	**2.7348**	**28.8236**	**13.1736**	**0.0233**	**14.8217**	**1.4896**	**16.3112**	**6.9204**	**1.3704**	**8.2907**		**2,305.9407**	**2,305.9407**	**0.7296**		**2,324.1801**

3.3 Site Preparation - 2019

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	0.0156	0.5607	0.1152	1.4600e-003	0.0332	2.9300e-003	0.0361	9.0800e-003	2.8000e-003	0.0119		158.9233	158.9233	0.0152		159.3028
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	0.0393	0.0246	0.3032	8.2000e-004	0.0822	5.9000e-004	0.0827	0.0218	5.5000e-004	0.0223		81.9698	81.9698	2.3700e-003		82.0291
Total	**0.0550**	**0.5853**	**0.4184**	**2.2800e-003**	**0.1153**	**3.5200e-003**	**0.1188**	**0.0309**	**3.3500e-003**	**0.0342**		**240.8931**	**240.8931**	**0.0176**		**241.3319**

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					6.6698	0.0000	6.6698	3.1142	0.0000	3.1142			0.0000			0.0000
Off-Road	2.7348	28.8236	13.1736	0.0233		1.4896	1.4896		1.3704	1.3704	0.0000	2,305.9407	2,305.9407	0.7296		2,324.1801
Total	**2.7348**	**28.8236**	**13.1736**	**0.0233**	**6.6698**	**1.4896**	**8.1593**	**3.1142**	**1.3704**	**4.4845**	**0.0000**	**2,305.9407**	**2,305.9407**	**0.7296**		**2,324.1801**

3.3 Site Preparation - 2019

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	0.0156	0.5607	0.1152	1.4600e-003	0.0332	2.9300e-003	0.0361	9.0800e-003	2.8000e-003	0.0119		158.9233	158.9233	0.0152		159.3028
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	0.0393	0.0246	0.3032	8.2000e-004	0.0822	5.9000e-004	0.0827	0.0218	5.5000e-004	0.0223		81.9698	81.9698	2.3700e-003		82.0291
Total	**0.0550**	**0.5853**	**0.4184**	**2.2800e-003**	**0.1153**	**3.5200e-003**	**0.1188**	**0.0309**	**3.3500e-003**	**0.0342**		**240.8931**	**240.8931**	**0.0176**		**241.3319**

3.4 Grading - 2019

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					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.4408	39.2690	23.0127	0.0438		1.7206	1.7206		1.5830	1.5830		4,332.6631	4,332.6631	1.3708		4,366.9334
Total	**3.4408**	**39.2690**	**23.0127**	**0.0438**	**8.6733**	**1.7206**	**10.3940**	**3.5965**	**1.5830**	**5.1795**		**4,332.6631**	**4,332.6631**	**1.3708**		**4,366.9334**

3.4 Grading - 2019

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	0.0590	0.0369	0.4548	1.2300e-003	0.1232	8.9000e-004	0.1241	0.0327	8.2000e-004	0.0335		122.9547	122.9547	3.5600e-003		123.0437
Total	**0.0590**	**0.0369**	**0.4548**	**1.2300e-003**	**0.1232**	**8.9000e-004**	**0.1241**	**0.0327**	**8.2000e-004**	**0.0335**		**122.9547**	**122.9547**	**3.5600e-003**		**123.0437**

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					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	3.4408	39.2690	23.0127	0.0438		1.7206	1.7206		1.5830	1.5830	0.0000	4,332.6631	4,332.6631	1.3708		4,366.9333
Total	**3.4408**	**39.2690**	**23.0127**	**0.0438**	**3.9030**	**1.7206**	**5.6236**	**1.6184**	**1.5830**	**3.2014**	**0.0000**	**4,332.6631**	**4,332.6631**	**1.3708**		**4,366.9333**

3.4 Grading - 2019

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	0.0590	0.0369	0.4548	1.2300e-003	0.1232	8.9000e-004	0.1241	0.0327	8.2000e-004	0.0335		122.9547	122.9547	3.5600e-003		123.0437
Total	**0.0590**	**0.0369**	**0.4548**	**1.2300e-003**	**0.1232**	**8.9000e-004**	**0.1241**	**0.0327**	**8.2000e-004**	**0.0335**		**122.9547**	**122.9547**	**3.5600e-003**		**123.0437**

3.5 Building Construction - 2019

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	1.9975	17.6053	13.9547	0.0227		1.0427	1.0427		0.9853	0.9853		2,171.1606	2,171.1606	0.4983		2,183.6186
Total	**1.9975**	**17.6053**	**13.9547**	**0.0227**		**1.0427**	**1.0427**		**0.9853**	**0.9853**		**2,171.1606**	**2,171.1606**	**0.4983**		**2,183.6186**

3.5 Building Construction - 2019

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	7.3000e-003	0.2617	0.0538	6.8000e-004	0.0155	1.3700e-003	0.0169	4.2400e-003	1.3100e-003	5.5500e-003		74.1642	74.1642	7.0800e-003		74.3413
Vendor	0.1589	4.6344	1.1933	0.0101	0.2636	0.0375	0.3011	0.0759	0.0359	0.1117		1,086.3660	1,086.3660	0.0913		1,088.6490
Worker	0.3932	0.2459	3.0322	8.2300e-003	0.8215	5.9200e-003	0.8274	0.2179	5.4500e-003	0.2234		819.6979	819.6979	0.0237		820.2912
Total	**0.5593**	**5.1420**	**4.2792**	**0.0190**	**1.1006**	**0.0448**	**1.1453**	**0.2980**	**0.0426**	**0.3406**		**1,980.2281**	**1,980.2281**	**0.1221**		**1,983.2815**

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	1.9975	17.6053	13.9547	0.0227		1.0427	1.0427		0.9853	0.9853	0.0000	2,171.1606	2,171.1606	0.4983		2,183.6186
Total	**1.9975**	**17.6053**	**13.9547**	**0.0227**		**1.0427**	**1.0427**		**0.9853**	**0.9853**	**0.0000**	**2,171.1606**	**2,171.1606**	**0.4983**		**2,183.6186**

3.5 Building Construction - 2019

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	7.3000e-003	0.2617	0.0538	6.8000e-004	0.0155	1.3700e-003	0.0169	4.2400e-003	1.3100e-003	5.5500e-003		74.1642	74.1642	7.0800e-003		74.3413
Vendor	0.1589	4.6344	1.1933	0.0101	0.2636	0.0375	0.3011	0.0759	0.0359	0.1117		1,086.3660	1,086.3660	0.0913		1,088.6490
Worker	0.3932	0.2459	3.0322	8.2300e-003	0.8215	5.9200e-003	0.8274	0.2179	5.4500e-003	0.2234		819.6979	819.6979	0.0237		820.2912
Total	**0.5593**	**5.1420**	**4.2792**	**0.0190**	**1.1006**	**0.0448**	**1.1453**	**0.2980**	**0.0426**	**0.3406**		**1,980.2281**	**1,980.2281**	**0.1221**		**1,983.2815**

3.6 Paving - 2019

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	1.2415	12.9875	12.1414	0.0187		0.7126	0.7126		0.6556	0.6556		1,853.6832	1,853.6832	0.5865		1,868.3453
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2415**	**12.9875**	**12.1414**	**0.0187**		**0.7126**	**0.7126**		**0.6556**	**0.6556**		**1,853.6832**	**1,853.6832**	**0.5865**		**1,868.3453**

3.6 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.7400e-003	0.0981	0.0202	2.5000e-004	5.8100e-003	5.1000e-004	6.3200e-003	1.5900e-003	4.9000e-004	2.0800e-003		27.8116	27.8116	2.6600e-003		27.8780
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	0.0511	0.0320	0.3942	1.0700e-003	0.1068	7.7000e-004	0.1076	0.0283	7.1000e-004	0.0290		106.5607	106.5607	3.0900e-003		106.6379
Total	**0.0539**	**0.1301**	**0.4143**	**1.3200e-003**	**0.1126**	**1.2800e-003**	**0.1139**	**0.0299**	**1.2000e-003**	**0.0311**		**134.3723**	**134.3723**	**5.7500e-003**		**134.5158**

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	1.2415	12.9875	12.1414	0.0187		0.7126	0.7126		0.6556	0.6556	0.0000	1,853.6832	1,853.6832	0.5865		1,868.3453
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2415**	**12.9875**	**12.1414**	**0.0187**		**0.7126**	**0.7126**		**0.6556**	**0.6556**	**0.0000**	**1,853.6832**	**1,853.6832**	**0.5865**		**1,868.3453**

3.6 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.7400e-003	0.0981	0.0202	2.5000e-004	5.8100e-003	5.1000e-004	6.3200e-003	1.5900e-003	4.9000e-004	2.0800e-003		27.8116	27.8116	2.6600e-003		27.8780
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	0.0511	0.0320	0.3942	1.0700e-003	0.1068	7.7000e-004	0.1076	0.0283	7.1000e-004	0.0290		106.5607	106.5607	3.0900e-003		106.6379
Total	**0.0539**	**0.1301**	**0.4143**	**1.3200e-003**	**0.1126**	**1.2800e-003**	**0.1139**	**0.0299**	**1.2000e-003**	**0.0311**		**134.3723**	**134.3723**	**5.7500e-003**		**134.5158**

3.7 Architectural Coating - 2019

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					
Archit. Coating	48.1178					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288		281.4481	281.4481	0.0238		282.0423
Total	**48.3842**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**		**281.4481**	**281.4481**	**0.0238**		**282.0423**

3.7 Architectural Coating - 2019

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	0.0786	0.0492	0.6064	1.6500e-003	0.1643	1.1800e-003	0.1655	0.0436	1.0900e-003	0.0447		163.9396	163.9396	4.7500e-003		164.0582
Total	**0.0786**	**0.0492**	**0.6064**	**1.6500e-003**	**0.1643**	**1.1800e-003**	**0.1655**	**0.0436**	**1.0900e-003**	**0.0447**		**163.9396**	**163.9396**	**4.7500e-003**		**164.0582**

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					
Archit. Coating	48.1178					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288	0.0000	281.4481	281.4481	0.0238		282.0423
Total	**48.3842**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**	**0.0000**	**281.4481**	**281.4481**	**0.0238**		**282.0423**

3.7 Architectural Coating - 2019

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	0.0786	0.0492	0.6064	1.6500e-003	0.1643	1.1800e-003	0.1655	0.0436	1.0900e-003	0.0447		163.9396	163.9396	4.7500e-003		164.0582
Total	**0.0786**	**0.0492**	**0.6064**	**1.6500e-003**	**0.1643**	**1.1800e-003**	**0.1655**	**0.0436**	**1.0900e-003**	**0.0447**		**163.9396**	**163.9396**	**4.7500e-003**		**164.0582**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.4350	5.5306	17.8925	0.0623	5.5949	0.0507	5.6456	1.4943	0.0473	1.5416		6,306.1411	6,306.1411	0.2527		6,312.4592
Unmitigated	1.4350	5.5306	17.8925	0.0623	5.5949	0.0507	5.6456	1.4943	0.0473	1.5416		6,306.1411	6,306.1411	0.2527		6,312.4592

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Manufacturing	905.30	353.12	146.93	2,096,442	2,096,442
Total	905.30	353.12	146.93	2,096,442	2,096,442

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Manufacturing	9.50	7.30	7.30	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
Manufacturing	0.583307	0.042169	0.188993	0.113757	0.020157	0.006497	0.019402	0.017654	0.001149	0.000992	0.003948	0.000375	0.001600

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	0.1468	1.3349	1.1213	8.0100e-003		0.1015	0.1015		0.1015	0.1015		1,601.8241	1,601.8241	0.0307	0.0294	1,611.3430
NaturalGas Unmitigated	0.1468	1.3349	1.1213	8.0100e-003		0.1015	0.1015		0.1015	0.1015		1,601.8241	1,601.8241	0.0307	0.0294	1,611.3430

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					
Manufacturing	13615.5	0.1468	1.3349	1.1213	8.0100e-003		0.1015	0.1015		0.1015	0.1015		1,601.8241	1,601.8241	0.0307	0.0294	1,611.3430
Total		**0.1468**	**1.3349**	**1.1213**	**8.0100e-003**		**0.1015**	**0.1015**		**0.1015**	**0.1015**		**1,601.8241**	**1,601.8241**	**0.0307**	**0.0294**	**1,611.3430**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Manufacturing	13.6155	0.1468	1.3349	1.1213	8.0100e-003		0.1015	0.1015		0.1015	0.1015		1,601.8241	1,601.8241	0.0307	0.0294	1,611.3430
Total		**0.1468**	**1.3349**	**1.1213**	**8.0100e-003**		**0.1015**	**0.1015**		**0.1015**	**0.1015**		**1,601.8241**	**1,601.8241**	**0.0307**	**0.0294**	**1,611.3430**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

Use Low VOC Cleaning Supplies

	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	4.9715	2.2000e-004	0.0243	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0519	0.0519	1.4000e-004		0.0553
Unmitigated	5.3507	2.2000e-004	0.0243	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0519	0.0519	1.4000e-004		0.0553

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	0.2768					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.0716					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.2700e-003	2.2000e-004	0.0243	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0519	0.0519	1.4000e-004		0.0553
Total	**5.3507**	**2.2000e-004**	**0.0243**	**0.0000**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**		**0.0519**	**0.0519**	**1.4000e-004**		**0.0553**

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	0.2768					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.6924					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.2700e-003	2.2000e-004	0.0243	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0519	0.0519	1.4000e-004		0.0553
Total	**4.9715**	**2.2000e-004**	**0.0243**	**0.0000**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**		**0.0519**	**0.0519**	**1.4000e-004**		**0.0553**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Agromin Commercial Organics Processing Op.

Ventura County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Manufacturing	236.99	1000sqft	70.00	236,989.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction Model_v5

Land Use - Project Site = 70 acres
Buildings = 236,989 sq. ft.

Construction Phase - Phase durations estimated by client.

Off-road Equipment -

Off-road Equipment - Equipment #'s adjusted to Project scope.

Off-road Equipment - Equipment #'s adjusted to Project scope.

Off-road Equipment - Equipment #'s adjusted to Project scope.

Off-road Equipment - Equipment #'s adjusted to Project scope.

Off-road Equipment - Equipment #'s adjusted to Project scope.

Trips and VMT - Total haul trip #'s adjusted to Project scope.
Demolition - SP Material Existing Onsite = 8,190 tons (10/19/2016)

Grading - Total Project Site = 70 acres
Ag. Fields (to remove) = 55 acres

Architectural Coating - Interior Buildings = 236,989 sq. ft.
Assume VCAPCD compliant low-VOC paints (75 g/L).

Consumer Products -

Area Coating - Interior = 236,989 sq. ft.
Parking = 53,690 sq. ft.
Assume VCAPCD compliant low-VOC paint (75 g/L).

Energy Use -

Water And Wastewater -

Solid Waste -

Land Use Change - Approx 55 acres of orchard removed.

Sequestration - Approx 100+ new trees planted (Landscape Plan).

Construction Off-road Equipment Mitigation - Assume T3 for all equipment.
Assume water truck = 2 times/day.

Mobile Land Use Mitigation -

Area Mitigation - Assume VCAPCD compliant low-VOC paints utilized (75 g/L).

Energy Mitigation -

Water Mitigation - Assume low-flow for all water fixtures.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	118,500.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	355,500.00	236,989.00
tblArchitecturalCoating	ConstArea_Parking	0.00	53,690.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	75.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	75.00
tblArchitecturalCoating	EF_Parking	250.00	75.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	75

tblAreaCoating	Area_EF_Nonresidential_Interior	250	75
tblAreaCoating	Area_EF_Parking	250	75
tblAreaCoating	Area_Nonresidential_Exterior	118500	0
tblAreaCoating	Area_Nonresidential_Interior	355500	236989
tblAreaCoating	Area_Parking	0	53690
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	250	75
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	250	75
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	75.00	21.00
tblConstructionPhase	NumDays	1,110.00	90.00
tblConstructionPhase	NumDays	70.00	14.00
tblConstructionPhase	NumDays	110.00	28.00

tblConstructionPhase	NumDays	75.00	60.00
tblConstructionPhase	NumDays	40.00	21.00
tblGrading	AcresOfGrading	42.00	70.00
tblGrading	AcresOfGrading	0.00	55.00
tblLandUse	LotAcreage	5.44	70.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblProjectCharacteristics	OperationalYear	2018	2021
tblSequestration	NumberOfNewTrees	0.00	100.00
tblTripsAndVMT	HaulingTripNumber	810.00	80.00
tblTripsAndVMT	HaulingTripNumber	0.00	40.00
tblTripsAndVMT	HaulingTripNumber	0.00	80.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.7649	2.5456	1.8290	3.6700e-003	0.4237	0.1232	0.5470	0.1521	0.1149	0.2670	0.0000	331.2033	331.2033	0.0724	0.0000	333.0134
Maximum	**0.7649**	**2.5456**	**1.8290**	**3.6700e-003**	**0.4237**	**0.1232**	**0.5470**	**0.1521**	**0.1149**	**0.2670**	**0.0000**	**331.2033**	**331.2033**	**0.0724**	**0.0000**	**333.0134**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.7649	2.5456	1.8290	3.6700e-003	0.2226	0.1232	0.3458	0.0771	0.1149	0.1919	0.0000	331.2030	331.2030	0.0724	0.0000	333.0131
Maximum	**0.7649**	**2.5456**	**1.8290**	**3.6700e-003**	**0.2226**	**0.1232**	**0.3458**	**0.0771**	**0.1149**	**0.1919**	**0.0000**	**331.2030**	**331.2030**	**0.0724**	**0.0000**	**333.0131**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**47.48**	**0.00**	**36.78**	**49.33**	**0.00**	**28.11**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2019	3-31-2019	1.2106	1.2106
2	4-1-2019	6-30-2019	0.8224	0.8224
3	7-1-2019	9-30-2019	0.5980	0.5980
		Highest	1.2106	1.2106

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9763	2.0000e-005	2.1900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.2300e-003	4.2300e-003	1.0000e-005	0.0000	4.5200e-003
Energy	0.0268	0.2436	0.2046	1.4600e-003		0.0185	0.0185		0.0185	0.0185	0.0000	916.0942	916.0942	0.0320	0.0104	919.9987
Mobile	0.1950	0.8341	2.5447	8.6900e-003	0.7930	7.3400e-003	0.8003	0.2121	6.8500e-003	0.2190	0.0000	797.3259	797.3259	0.0330	0.0000	798.1518
Waste						0.0000	0.0000		0.0000	0.0000	59.6550	0.0000	59.6550	3.5255	0.0000	147.7927
Water						0.0000	0.0000		0.0000	0.0000	17.3875	227.3785	244.7660	1.7953	0.0441	302.7921
Total	**1.1980**	**1.0777**	**2.7515**	**0.0102**	**0.7930**	**0.0259**	**0.8188**	**0.2121**	**0.0254**	**0.2375**	**77.0425**	**1,940.8028**	**2,017.8453**	**5.3858**	**0.0545**	**2,168.7398**

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	0.9071	2.0000e-005	2.1900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.2300e-003	4.2300e-003	1.0000e-005	0.0000	4.5200e-003
Energy	0.0268	0.2436	0.2046	1.4600e-003		0.0185	0.0185		0.0185	0.0185	0.0000	916.0942	916.0942	0.0320	0.0104	919.9987
Mobile	0.1950	0.8341	2.5447	8.6900e-003	0.7930	7.3400e-003	0.8003	0.2121	6.8500e-003	0.2190	0.0000	797.3259	797.3259	0.0330	0.0000	798.1518
Waste						0.0000	0.0000		0.0000	0.0000	59.6550	0.0000	59.6550	3.5255	0.0000	147.7927
Water						0.0000	0.0000		0.0000	0.0000	13.9100	181.9028	195.8128	1.4362	0.0353	242.2337
Total	**1.1288**	**1.0777**	**2.7515**	**0.0102**	**0.7930**	**0.0259**	**0.8188**	**0.2121**	**0.0254**	**0.2375**	**73.5650**	**1,895.3271**	**1,968.8921**	**5.0267**	**0.0457**	**2,108.1814**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**5.78**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**4.51**	**2.34**	**2.43**	**6.67**	**16.17**	**2.79**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	70.8000
Vegetation Land Change	-341.0000
Total	**-270.2000**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2019	1/18/2019	5	14	
2	Site Preparation	Site Preparation	1/19/2019	2/18/2019	5	21	
3	Grading	Grading	2/19/2019	3/28/2019	5	28	
4	Building Construction	Building Construction	3/29/2019	8/1/2019	5	90	
5	Paving	Paving	8/2/2019	10/24/2019	5	60	
6	Architectural Coating	Architectural Coating	10/25/2019	11/22/2019	5	21	

Acres of Grading (Site Preparation Phase): 55

Acres of Grading (Grading Phase): 70

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 236,989; Non-Residential Outdoor: 0; Striped Parking Area: 53,690 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	2	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	1	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

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
Demolition	5	13.00	0.00	80.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	4	10.00	0.00	40.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	100.00	39.00	80.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	20.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Clean Paved Roads

3.2 Demolition - 2019

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					0.0887	0.0000	0.0887	0.0134	0.0000	0.0134	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2317	0.1316	2.4000e-004		0.0117	0.0117		0.0109	0.0109	0.0000	20.9926	20.9926	5.7200e-003	0.0000	21.1355
Total	**0.0228**	**0.2317**	**0.1316**	**2.4000e-004**	**0.0887**	**0.0117**	**0.1004**	**0.0134**	**0.0109**	**0.0243**	**0.0000**	**20.9926**	**20.9926**	**5.7200e-003**	**0.0000**	**21.1355**

3.2 Demolition - 2019

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	3.3000e-004	0.0121	2.5000e-003	3.0000e-005	6.9000e-004	6.0000e-005	7.5000e-004	1.9000e-004	6.0000e-005	2.5000e-004	0.0000	3.0081	3.0081	2.9000e-004	0.0000	3.0154
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.5000e-004	2.6700e-003	1.0000e-005	7.3000e-004	1.0000e-005	7.4000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6492	0.6492	2.0000e-005	0.0000	0.6496
Total	**6.9000e-004**	**0.0123**	**5.1700e-003**	**4.0000e-005**	**1.4200e-003**	**7.0000e-005**	**1.4900e-003**	**3.8000e-004**	**6.0000e-005**	**4.5000e-004**	**0.0000**	**3.6573**	**3.6573**	**3.1000e-004**	**0.0000**	**3.6651**

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					0.0399	0.0000	0.0399	6.0500e-003	0.0000	6.0500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2317	0.1316	2.4000e-004		0.0117	0.0117		0.0109	0.0109	0.0000	20.9926	20.9926	5.7200e-003	0.0000	21.1355
Total	**0.0228**	**0.2317**	**0.1316**	**2.4000e-004**	**0.0399**	**0.0117**	**0.0516**	**6.0500e-003**	**0.0109**	**0.0169**	**0.0000**	**20.9926**	**20.9926**	**5.7200e-003**	**0.0000**	**21.1355**

3.2 Demolition - 2019

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	3.3000e-004	0.0121	2.5000e-003	3.0000e-005	6.9000e-004	6.0000e-005	7.5000e-004	1.9000e-004	6.0000e-005	2.5000e-004	0.0000	3.0081	3.0081	2.9000e-004	0.0000	3.0154
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.5000e-004	2.6700e-003	1.0000e-005	7.3000e-004	1.0000e-005	7.4000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6492	0.6492	2.0000e-005	0.0000	0.6496
Total	**6.9000e-004**	**0.0123**	**5.1700e-003**	**4.0000e-005**	**1.4200e-003**	**7.0000e-005**	**1.4900e-003**	**3.8000e-004**	**6.0000e-005**	**4.5000e-004**	**0.0000**	**3.6573**	**3.6573**	**3.1000e-004**	**0.0000**	**3.6651**

3.3 Site Preparation - 2019

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					0.1556	0.0000	0.1556	0.0727	0.0000	0.0727	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0287	0.3027	0.1383	2.4000e-004		0.0156	0.0156		0.0144	0.0144	0.0000	21.9651	21.9651	6.9500e-003	0.0000	22.1388
Total	**0.0287**	**0.3027**	**0.1383**	**2.4000e-004**	**0.1556**	**0.0156**	**0.1713**	**0.0727**	**0.0144**	**0.0871**	**0.0000**	**21.9651**	**21.9651**	**6.9500e-003**	**0.0000**	**22.1388**

3.3 Site Preparation - 2019

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	1.7000e-004	6.0300e-003	1.2500e-003	2.0000e-005	3.4000e-004	3.0000e-005	3.7000e-004	9.0000e-005	3.0000e-005	1.2000e-004	0.0000	1.5041	1.5041	1.5000e-004	0.0000	1.5077
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	4.2000e-004	2.9000e-004	3.0800e-003	1.0000e-005	8.5000e-004	1.0000e-005	8.5000e-004	2.2000e-004	1.0000e-005	2.3000e-004	0.0000	0.7490	0.7490	2.0000e-005	0.0000	0.7496
Total	**5.9000e-004**	**6.3200e-003**	**4.3300e-003**	**3.0000e-005**	**1.1900e-003**	**4.0000e-005**	**1.2200e-003**	**3.1000e-004**	**4.0000e-005**	**3.5000e-004**	**0.0000**	**2.2531**	**2.2531**	**1.7000e-004**	**0.0000**	**2.2573**

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					0.0700	0.0000	0.0700	0.0327	0.0000	0.0327	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0287	0.3027	0.1383	2.4000e-004		0.0156	0.0156		0.0144	0.0144	0.0000	21.9651	21.9651	6.9500e-003	0.0000	22.1388
Total	**0.0287**	**0.3027**	**0.1383**	**2.4000e-004**	**0.0700**	**0.0156**	**0.0857**	**0.0327**	**0.0144**	**0.0471**	**0.0000**	**21.9651**	**21.9651**	**6.9500e-003**	**0.0000**	**22.1388**

3.3 Site Preparation - 2019

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	1.7000e-004	6.0300e-003	1.2500e-003	2.0000e-005	3.4000e-004	3.0000e-005	3.7000e-004	9.0000e-005	3.0000e-005	1.2000e-004	0.0000	1.5041	1.5041	1.5000e-004	0.0000	1.5077
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	4.2000e-004	2.9000e-004	3.0800e-003	1.0000e-005	8.5000e-004	1.0000e-005	8.5000e-004	2.2000e-004	1.0000e-005	2.3000e-004	0.0000	0.7490	0.7490	2.0000e-005	0.0000	0.7496
Total	**5.9000e-004**	**6.3200e-003**	**4.3300e-003**	**3.0000e-005**	**1.1900e-003**	**4.0000e-005**	**1.2200e-003**	**3.1000e-004**	**4.0000e-005**	**3.5000e-004**	**0.0000**	**2.2531**	**2.2531**	**1.7000e-004**	**0.0000**	**2.2573**

3.4 Grading - 2019

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					0.1214	0.0000	0.1214	0.0504	0.0000	0.0504	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0482	0.5498	0.3222	6.1000e-004		0.0241	0.0241		0.0222	0.0222	0.0000	55.0274	55.0274	0.0174	0.0000	55.4626
Total	**0.0482**	**0.5498**	**0.3222**	**6.1000e-004**	**0.1214**	**0.0241**	**0.1455**	**0.0504**	**0.0222**	**0.0725**	**0.0000**	**55.0274**	**55.0274**	**0.0174**	**0.0000**	**55.4626**

3.4 Grading - 2019

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	8.3000e-004	5.8000e-004	6.1600e-003	2.0000e-005	1.6900e-003	1.0000e-005	1.7100e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.4980	1.4980	4.0000e-005	0.0000	1.4991
Total	**8.3000e-004**	**5.8000e-004**	**6.1600e-003**	**2.0000e-005**	**1.6900e-003**	**1.0000e-005**	**1.7100e-003**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**	**0.0000**	**1.4980**	**1.4980**	**4.0000e-005**	**0.0000**	**1.4991**

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					0.0546	0.0000	0.0546	0.0227	0.0000	0.0227	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0482	0.5498	0.3222	6.1000e-004		0.0241	0.0241		0.0222	0.0222	0.0000	55.0273	55.0273	0.0174	0.0000	55.4626
Total	**0.0482**	**0.5498**	**0.3222**	**6.1000e-004**	**0.0546**	**0.0241**	**0.0787**	**0.0227**	**0.0222**	**0.0448**	**0.0000**	**55.0273**	**55.0273**	**0.0174**	**0.0000**	**55.4626**

3.4 Grading - 2019

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	8.3000e-004	5.8000e-004	6.1600e-003	2.0000e-005	1.6900e-003	1.0000e-005	1.7100e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.4980	1.4980	4.0000e-005	0.0000	1.4991
Total	**8.3000e-004**	**5.8000e-004**	**6.1600e-003**	**2.0000e-005**	**1.6900e-003**	**1.0000e-005**	**1.7100e-003**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**	**0.0000**	**1.4980**	**1.4980**	**4.0000e-005**	**0.0000**	**1.4991**

3.5 Building Construction - 2019

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	0.0899	0.7922	0.6280	1.0200e-003		0.0469	0.0469		0.0443	0.0443	0.0000	88.6340	88.6340	0.0203	0.0000	89.1425
Total	**0.0899**	**0.7922**	**0.6280**	**1.0200e-003**		**0.0469**	**0.0469**		**0.0443**	**0.0443**	**0.0000**	**88.6340**	**88.6340**	**0.0203**	**0.0000**	**89.1425**

3.5 Building Construction - 2019

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	3.3000e-004	0.0121	2.5000e-003	3.0000e-005	6.9000e-004	6.0000e-005	7.5000e-004	1.9000e-004	6.0000e-005	2.5000e-004	0.0000	3.0081	3.0081	2.9000e-004	0.0000	3.0154
Vendor	7.3100e-003	0.2118	0.0570	4.5000e-004	0.0117	1.7000e-003	0.0134	3.3700e-003	1.6300e-003	5.0000e-003	0.0000	43.9048	43.9048	3.8400e-003	0.0000	44.0008
Worker	0.0179	0.0125	0.1321	3.6000e-004	0.0363	2.7000e-004	0.0366	9.6400e-003	2.5000e-004	9.8800e-003	0.0000	32.1009	32.1009	9.4000e-004	0.0000	32.1245
Total	**0.0255**	**0.2364**	**0.1915**	**8.4000e-004**	**0.0487**	**2.0300e-003**	**0.0507**	**0.0132**	**1.9400e-003**	**0.0151**	**0.0000**	**79.0138**	**79.0138**	**5.0700e-003**	**0.0000**	**79.1407**

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	0.0899	0.7922	0.6280	1.0200e-003		0.0469	0.0469		0.0443	0.0443	0.0000	88.6339	88.6339	0.0203	0.0000	89.1424
Total	**0.0899**	**0.7922**	**0.6280**	**1.0200e-003**		**0.0469**	**0.0469**		**0.0443**	**0.0443**	**0.0000**	**88.6339**	**88.6339**	**0.0203**	**0.0000**	**89.1424**

3.5 Building Construction - 2019

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	3.3000e-004	0.0121	2.5000e-003	3.0000e-005	6.9000e-004	6.0000e-005	7.5000e-004	1.9000e-004	6.0000e-005	2.5000e-004	0.0000	3.0081	3.0081	2.9000e-004	0.0000	3.0154
Vendor	7.3100e-003	0.2118	0.0570	4.5000e-004	0.0117	1.7000e-003	0.0134	3.3700e-003	1.6300e-003	5.0000e-003	0.0000	43.9048	43.9048	3.8400e-003	0.0000	44.0008
Worker	0.0179	0.0125	0.1321	3.6000e-004	0.0363	2.7000e-004	0.0366	9.6400e-003	2.5000e-004	9.8800e-003	0.0000	32.1009	32.1009	9.4000e-004	0.0000	32.1245
Total	**0.0255**	**0.2364**	**0.1915**	**8.4000e-004**	**0.0487**	**2.0300e-003**	**0.0507**	**0.0132**	**1.9400e-003**	**0.0151**	**0.0000**	**79.0138**	**79.0138**	**5.0700e-003**	**0.0000**	**79.1407**

3.6 Paving - 2019

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	0.0372	0.3896	0.3642	5.6000e-004		0.0214	0.0214		0.0197	0.0197	0.0000	50.4490	50.4490	0.0160	0.0000	50.8480
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0372**	**0.3896**	**0.3642**	**5.6000e-004**		**0.0214**	**0.0214**		**0.0197**	**0.0197**	**0.0000**	**50.4490**	**50.4490**	**0.0160**	**0.0000**	**50.8480**

3.6 Paving - 2019

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	8.0000e-005	3.0200e-003	6.3000e-004	1.0000e-005	1.7000e-004	2.0000e-005	1.9000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.7520	0.7520	7.0000e-005	0.0000	0.7539
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5500e-003	1.0900e-003	0.0114	3.0000e-005	3.1400e-003	2.0000e-005	3.1700e-003	8.4000e-004	2.0000e-005	8.6000e-004	0.0000	2.7821	2.7821	8.0000e-005	0.0000	2.7841
Total	**1.6300e-003**	**4.1100e-003**	**0.0121**	**4.0000e-005**	**3.3100e-003**	**4.0000e-005**	**3.3600e-003**	**8.9000e-004**	**3.0000e-005**	**9.2000e-004**	**0.0000**	**3.5341**	**3.5341**	**1.5000e-004**	**0.0000**	**3.5380**

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	0.0372	0.3896	0.3642	5.6000e-004		0.0214	0.0214		0.0197	0.0197	0.0000	50.4489	50.4489	0.0160	0.0000	50.8480
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0372**	**0.3896**	**0.3642**	**5.6000e-004**		**0.0214**	**0.0214**		**0.0197**	**0.0197**	**0.0000**	**50.4489**	**50.4489**	**0.0160**	**0.0000**	**50.8480**

3.6 Paving - 2019

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	8.0000e-005	3.0200e-003	6.3000e-004	1.0000e-005	1.7000e-004	2.0000e-005	1.9000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.7520	0.7520	7.0000e-005	0.0000	0.7539
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5500e-003	1.0900e-003	0.0114	3.0000e-005	3.1400e-003	2.0000e-005	3.1700e-003	8.4000e-004	2.0000e-005	8.6000e-004	0.0000	2.7821	2.7821	8.0000e-005	0.0000	2.7841
Total	**1.6300e-003**	**4.1100e-003**	**0.0121**	**4.0000e-005**	**3.3100e-003**	**4.0000e-005**	**3.3600e-003**	**8.9000e-004**	**3.0000e-005**	**9.2000e-004**	**0.0000**	**3.5341**	**3.5341**	**1.5000e-004**	**0.0000**	**3.5380**

3.7 Architectural Coating - 2019

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					
Archit. Coating	0.5052					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.8000e-003	0.0193	0.0193	3.0000e-005		1.3500e-003	1.3500e-003		1.3500e-003	1.3500e-003	0.0000	2.6809	2.6809	2.3000e-004	0.0000	2.6866
Total	**0.5080**	**0.0193**	**0.0193**	**3.0000e-005**		**1.3500e-003**	**1.3500e-003**		**1.3500e-003**	**1.3500e-003**	**0.0000**	**2.6809**	**2.6809**	**2.3000e-004**	**0.0000**	**2.6866**

3.7 Architectural Coating - 2019

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	8.3000e-004	5.8000e-004	6.1600e-003	2.0000e-005	1.6900e-003	1.0000e-005	1.7100e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.4980	1.4980	4.0000e-005	0.0000	1.4991
Total	**8.3000e-004**	**5.8000e-004**	**6.1600e-003**	**2.0000e-005**	**1.6900e-003**	**1.0000e-005**	**1.7100e-003**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**	**0.0000**	**1.4980**	**1.4980**	**4.0000e-005**	**0.0000**	**1.4991**

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					
Archit. Coating	0.5052					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.8000e-003	0.0193	0.0193	3.0000e-005		1.3500e-003	1.3500e-003		1.3500e-003	1.3500e-003	0.0000	2.6809	2.6809	2.3000e-004	0.0000	2.6866
Total	**0.5080**	**0.0193**	**0.0193**	**3.0000e-005**		**1.3500e-003**	**1.3500e-003**		**1.3500e-003**	**1.3500e-003**	**0.0000**	**2.6809**	**2.6809**	**2.3000e-004**	**0.0000**	**2.6866**

3.7 Architectural Coating - 2019

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	8.3000e-004	5.8000e-004	6.1600e-003	2.0000e-005	1.6900e-003	1.0000e-005	1.7100e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.4980	1.4980	4.0000e-005	0.0000	1.4991
Total	**8.3000e-004**	**5.8000e-004**	**6.1600e-003**	**2.0000e-005**	**1.6900e-003**	**1.0000e-005**	**1.7100e-003**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**	**0.0000**	**1.4980**	**1.4980**	**4.0000e-005**	**0.0000**	**1.4991**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1950	0.8341	2.5447	8.6900e-003	0.7930	7.3400e-003	0.8003	0.2121	6.8500e-003	0.2190	0.0000	797.3259	797.3259	0.0330	0.0000	798.1518
Unmitigated	0.1950	0.8341	2.5447	8.6900e-003	0.7930	7.3400e-003	0.8003	0.2121	6.8500e-003	0.2190	0.0000	797.3259	797.3259	0.0330	0.0000	798.1518

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Manufacturing	905.30	353.12	146.93	2,096,442	2,096,442
Total	905.30	353.12	146.93	2,096,442	2,096,442

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Manufacturing	9.50	7.30	7.30	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
Manufacturing	0.583307	0.042169	0.188993	0.113757	0.020157	0.006497	0.019402	0.017654	0.001149	0.000992	0.003948	0.000375	0.001600

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	650.8942	650.8942	0.0269	5.5600e-003	653.2228
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	650.8942	650.8942	0.0269	5.5600e-003	653.2228
NaturalGas Mitigated	0.0268	0.2436	0.2046	1.4600e-003		0.0185	0.0185		0.0185	0.0185	0.0000	265.2000	265.2000	5.0800e-003	4.8600e-003	266.7759
NaturalGas Unmitigated	0.0268	0.2436	0.2046	1.4600e-003		0.0185	0.0185		0.0185	0.0185	0.0000	265.2000	265.2000	5.0800e-003	4.8600e-003	266.7759

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Manufacturing	4.96966e+006	0.0268	0.2436	0.2046	1.4600e-003		0.0185	0.0185		0.0185	0.0185	0.0000	265.2000	265.2000	5.0800e-003	4.8600e-003	266.7759
Total		**0.0268**	**0.2436**	**0.2046**	**1.4600e-003**		**0.0185**	**0.0185**		**0.0185**	**0.0185**	**0.0000**	**265.2000**	**265.2000**	**5.0800e-003**	**4.8600e-003**	**266.7759**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Manufacturing	4.96966e+006	0.0268	0.2436	0.2046	1.4600e-003		0.0185	0.0185		0.0185	0.0185	0.0000	265.2000	265.2000	5.0800e-003	4.8600e-003	266.7759
Total		**0.0268**	**0.2436**	**0.2046**	**1.4600e-003**		**0.0185**	**0.0185**		**0.0185**	**0.0185**	**0.0000**	**265.2000**	**265.2000**	**5.0800e-003**	**4.8600e-003**	**266.7759**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Manufacturing	2.04285e +006	650.8942	0.0269	5.5600e-003	653.2228
Total		**650.8942**	**0.0269**	**5.5600e-003**	**653.2228**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Manufacturing	2.04285e +006	650.8942	0.0269	5.5600e-003	653.2228
Total		**650.8942**	**0.0269**	**5.5600e-003**	**653.2228**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

Use Low VOC Cleaning Supplies

	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	0.9071	2.0000e-005	2.1900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.2300e-003	4.2300e-003	1.0000e-005	0.0000	4.5200e-003
Unmitigated	0.9763	2.0000e-005	2.1900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.2300e-003	4.2300e-003	1.0000e-005	0.0000	4.5200e-003

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	0.0505					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.9256					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-004	2.0000e-005	2.1900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.2300e-003	4.2300e-003	1.0000e-005	0.0000	4.5200e-003
Total	**0.9763**	**2.0000e-005**	**2.1900e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.2300e-003**	**4.2300e-003**	**1.0000e-005**	**0.0000**	**4.5200e-003**

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	0.0505					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8564					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-004	2.0000e-005	2.1900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.2300e-003	4.2300e-003	1.0000e-005	0.0000	4.5200e-003
Total	**0.9071**	**2.0000e-005**	**2.1900e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.2300e-003**	**4.2300e-003**	**1.0000e-005**	**0.0000**	**4.5200e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	195.8128	1.4362	0.0353	242.2337
Unmitigated	244.7660	1.7953	0.0441	302.7921

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Manufacturing	54.8062 / 0	244.7660	1.7953	0.0441	302.7921
Total		**244.7660**	**1.7953**	**0.0441**	**302.7921**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Manufacturing	43.845 / 0	195.8128	1.4362	0.0353	242.2337
Total		**195.8128**	**1.4362**	**0.0353**	**242.2337**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	59.6550	3.5255	0.0000	147.7927
Unmitigated	59.6550	3.5255	0.0000	147.7927

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Manufacturing	293.88	59.6550	3.5255	0.0000	147.7927
Total		**59.6550**	**3.5255**	**0.0000**	**147.7927**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Manufacturing	293.88	59.6550	3.5255	0.0000	147.7927
Total		**59.6550**	**3.5255**	**0.0000**	**147.7927**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	-270.2000	0.0000	0.0000	-270.2000

11.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Cropland	55 / 0	-341.0000	0.0000	0.0000	-341.0000
Total		**-341.0000**	**0.0000**	**0.0000**	**-341.0000**

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Miscellaneous	100	70.8000	0.0000	0.0000	70.8000
Total		**70.8000**	**0.0000**	**0.0000**	**70.8000**

SESPE
CONSULTING, INC.

MEMORANDUM

374 Poli Street, Suite 200 • Ventura, California 93001

Date: February 28, 2020

To: Nicole Collazo (VCAPCD)
Sent by email with attached Excel files

From: Rob Dal Farra

Cc: Ali Ghasemi (VCAPCD)
John Oquendo (VCRMA Planning Division)

Re: Project VOC Emissions for Agromin Limoneira Composting Facility Project

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As discussed during our meeting on 1/30/20, Sespe has re-evaluated the expected baseline landfill VOC emissions for the proposed Agromin Limoneira composting project using a methodology based on flared landfill gas from the local landfills that receive organic waste which can be diverted to the proposed Agromin project. In conducting the re-evaluation, Sespe has reconsidered a number of the assumptions utilized in the original Air Quality and Climate Change Impact Assessment (AQCCIA) for the project and discussed in follow up meetings with the VCAPCD. The calculations provided in the attached spreadsheets are now based on the following (using 2014 as the baseline year);

- As the project was designed to only consider West County divertible compostable waste, previous discussions assumed 100% of the divertible waste was coming from Toland landfill so only Toland flared landfill gas was being considered. In reality a large portion of West County waste goes to the Simi Valley landfill (see ***CalRecycle-CountywideDestinationDetail.xls***). Based on the CalRecycle Countywide Destination Detail for 2014, 85% of the waste deposited in Toland landfill and 42% of the waste deposited in Simi Valley landfill originated from West Ventura County. Consequently, the updated VOC calculations assumed 85% of the landfill gas flared at Toland in 2014 and 42% of the landfill gas flared at Simi Valley in 2014 was attributed to West County waste.

- 2014 flared gas volumes for Toland and Simi Valley were obtained from the EPA's Greenhouse Gas Reporting Program (GHGRP https://www.epa.gov/ghgreporting) which contains information including annual landfill gas (LFG) collected for landfill sites across the country (see spreadsheet ***EPA Landfill GHG Reporting - Toland and Simi 2014.xlsx***).

- The percentage of landfill gas attributed to West County divertible compostable waste was estimated at 67.5% (see spreadsheet ***Profile for Landfill Gas Generating Waste_WARM.xlsx***). This is based on information found in:

- *FINAL 2014 Cal Recycle Waste Characterization Report - Disposal Facility Based* in *Table 46: Composition of California's Overall Disposed Waste Stream Using Expanded Material Types*
- *Table 33: Selected Compost/Mulch Material Types, Disposed Composition by Sector*
- EPA's Waste Reduction Model. WARM was used to identify the waste streams that generate landfill gas.

Calculations based on these references show that 60.9% of the waste going to landfills has the potential to degrade and generate 100% of the landfill gas, and that 41.1% of all waste going into landfills can be diverted for composting. Consequently, 67.5% of the landfill gas is created by divertible waste (41.1% ÷ 60.9% = 67.5%).

- The Draft 2008 AP42 2.4 - MUNICIPAL SOLID WASTE LANDFILLS recommends using site specific landfill gas data if it is available for non-methane organics (NMOC) content. Sespe located a 2009 Source Test Summary for the Toland Landfill that showed the inlet NMOC concentration to the landfill flare was 7,820 ppmv as CH_4 or 1,306 ppmv as hexane. This value was used in the calculations and is consistent with the range of NMOC levels (31 to 5,387 ppmv as hexane) found in the testing results referenced in the "*Background Information Document for Updating AP42 Section 2.4 for Estimating Emissions from Municipal Solid Waste Landfills, September 2008*". Similar information for the Simi landfill could not be found.

- % VOCs in NMOC was taken from the Draft 2008 AP42 2.4 -*Table 2.4-1. DEFAULT CONCENTRATIONS FOR LFG CONSTITUENTS FOR LANDFILLS WITH WASTE IN PLACE ON OR AFTER 1992*. That table shows % VOCs in NMOC as 99.7%, based on speciated emission test data.

The revised baseline landfill VOC emissions are shown in the spreadsheet ***AG01-Emission Calcs_v10 - Landfill VOC Using Flared Gas.xlsm*** on the tab ***LANDFILL BASELINE VOC***. The resulting calculations now show the project incremental VOC emissions applicable to CEQA significance thresholds is 22.05 lb./day which is below the 25 lb./day CEQA significance threshold (see tab ***Criteria & GHG Summary***).

Attached Excel Files:

AG01-Emission Calcs_v10 - Landfill VOC Using Flared Gas.xlsm
CalRecycle-CountywideDestinationDetail.xls
EPA Landfill GHG Reporting - Toland and Simi 2014.xlsx
Profile for Landfill Gas Generating Waste_WARM.xlsx

Activity Level Assumptions (pg 1 of 2)

Stationary Source Activities

Parameter	Baseline (Oxnard + Santa Paula)			Post-Project Total			Project Increment		
	Peak Year	Peak Day	Peak Hour	Peak Year	Peak Day	Peak Hour	Peak Year	Peak Day	Peak Hour
Stockpiling and Processing (tons)	113,862	343	34	295,000	889	56	181,138	546	22
Windrow Composting (tons)	98,225	296	30	180,000	542	34	81,775	246	4
Anaerobic Digestion (AD) Throughput	0	0	0	40,000	121	8	40,000	121	8
Covered Aerated Storage Piles (CASP, tons)	15,637	47	5	75,000	226	14	59,363	179	9
Finished compost storage and loadout	56,406	239	24	134,968	571	36	78,562	332	12

Open windrow active and curing phase composting - includes post AD & CASP material	256,350
Windrow turning - includes post AD & CASP material	256,350
Screening processs-post composting, CASP and AD	134,968
Screening drops - post composting, CASP and AD	134,968

	Baseline	Project	SCAQMD 1133-3	SJVAPCD 4566
Green material stockpile storage pre-processing (days)	5	2	NA	3
Food material stockpile storage pre-processing (days) [1]	0.5	0.5	2	3

1 - Currently food waste is processed immediately, for Project it will go directly to a biofilter controlled building

On Road Vehicle Source Activities

Vehicle Type	Baseline VMT (Oxnard + Santa Paula)			Post-Project Total VMT			Project Increment		
	Per Year	Peak Day	Peak Hour	Per Year	Peak Day	Peak Hour	Per Year	Peak Day	Peak Hour
HHD Solid Waste Collection Truck (Diesel)	390,009	1,618	162	282,263	1,218	122	-107,746	-400	-40
HHD Solid Waste Collection Truck (CNG)	260,006	1,079	108	188,175	812	81	-71,831	-267	-27
HHD Fleet Truck (Diesel)	681,015	3,221	322	650,459	3,102	310	-30,556	-119	-12
Light Duty Truck (Gasoline)	101,468	391	39	474,506	2,032	203	373,038	1,641	164
Light Duty Truck (Diesel)	101,468	391	39	474,506	2,032	203	373,038	1,641	164
Passenger Cars (Gasoline)	264,160	980	98	322,400	1,380	138	58,240	400	40
Totals:	**1,798,126**	**7,680**	**768**	**2,392,309**	**10,576**	**1,057**	**594,183**	**2,896**	**289**

On-Site Vehicle Miles

Vehicle	Route	BASELINE (Oxnard + Santa Paula)			PROJECT		
		Vehicles per year	Miles/trip	Ave. Weight (tons)[1]	Vehicles per year	Miles/trip	Ave. Weight (tons)[1]
HHD Solid Waste Collection Truck	Entrance-Tipping	6,576	0.24	20.4	19,000	0.73	20.5
HHD Fleet Truck from MRFs	Entrance-Tipping	3,061	0.24	23.0	6,225	0.73	23.9
Light Duty Truck - Business/Self Haul	Entrance-Tipping	7,520	0.24	3.5	32,159	0.73	3.3
HHD Fleet - Roll off	Entrance-Tipping	1,204	0.24	17.4	1,439	0.73	17.5
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Entr.-Sales Yard	690	0.19	22.5	1,788	0.30	22.5
HHD Fleet Truck - Finished Compost, Mulch, etc.	Sales Yard-Entr.	5,446	0.45	19.1	15,960	0.45	19.1
Light Duty Truck - Outgoing Sales	Sales Yard-Entr.	2,172	0.45	2.8	6,365	0.45	2.8
Avoided Landfill Trips- HHD from MRF	@ Landfill	10,158	1.67	23.9	---	---	---
	Total:	**36,827**		Total:	**82,937**		

1 - average of loaded & empty vehicle

Activity Level Assumptions (pg 2 of 2)

Freeway to Entrance Vehicle Miles (for HRA)

	BASELINE (SP)	PROJECT	
Vehicle	**Vehicles per year**	**Vehicles per year**	**Miles**
HHD Solid Waste Collection Truck (Diesel)	2,098	11,400	6.20
HHD Solid Waste Collection Truck (CNG)	1,398	7,600	6.20
HHD Fleet Truck from MRFs	1,547	6,225	6.20
Light Duty Truck - Business/Self Haul	2,491	32,159	6.20
HHD Fleet - Roll off	772	1,439	6.20
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	0	1,788	6.20
HHD Fleet Truck - Finished Compost, Mulch, etc.	1,580	15,960	6.20
Light Duty Truck	1,572	6,365	6.20
Total:	**11,459**	**82,937**	

Project Assumptions

Parameter	Baseline	Project
Incoming Waste Trip Days/Year	312	260
Incoming waste deliveries hours per day (7AM - 5P	10	10
Outgoing Sales/Incoming Vendor/Visitor/ Trip Day	260	260
Increase From Average to Peak Day (per M. Harris	10%	10%
feedstock processing days/year	312	365
feedstock processing hours/day	10	16
active composting	365	365
Windrow & outdoor material processing days/year	312	365
Windrow & outdoor material processing hours/day	12	12

Throughputs	Food	Green	Total
2014 baseline incoming feedstock (tons)	15,637	98,225	113,862
Project incoming feedstock (tons)	65,500	229,500	295,000
Project increment (tons)	49,863	131,275	181,138
Project:Baseline ratio	4.19	2.34	2.59

Criteria & GHG Summary

BASELINE:

	Peak Day Emissions (lb/day)						Peak Year Emissions (ton/year)						
Source	ROC	NOx	CO	PM10	PM2.5	NH3	ROC	NOx	CO	PM10	PM2.5	NH3	CO2e (MT)
Stationary													
Material Handling Fugitive Dust				4.22	1.74					0.59	0.25		
Stockpile/Windrow/CASP Volatiles	1176.0					198	195.1					32.9	
Avoided Landfill Volatiles	295.5					257	49.0					42.6	
Avoided Landfill GHG*													58,891
Avoided Landfill Flare Emissions	26.2	157.0	523.4	52.3	52.3		4.8	28.7	95.5	9.6	9.6		
Stationary Total	1,497.6	157.0	523.4	56.6	54.1	454.9	248.9	28.7	95.5	10.1	9.8	75.5	58,891
Mobile													
Off Road Engine Exhaust **	8.2	118.9	189.6	4.7	4.3		1.29	18.55	29.58	0.74	0.68		2,547
Motor Vehicle Fugitive PM				23.22	2.32					3.96	0.40		
Motor Vehicle Exhaust	3.45	110.36	36.43	0.71	0.68		0.538	17.2	5.7	0.11	0.11		3217
Mobile Total	11.7	229.3	226.1	28.7	7.3	0.0	1.8	35.8	35.3	4.8	1.2	0.0	5,764

*Alternative avoided landfill GHG emissions using CARB CERFs: 88,676 MT CO2e/year

** Does not account for emissions from landfill handling of diverted compostables

PROJECT:

	Peak Day Emissions (lb/day)						Peak Year Emissions (ton/year)						
Source	ROC	NOx	CO	PM10	PM2.5	NH3	ROC	NOx	CO	PM10	PM2.5	NH3	CO2e (MT)
Stationary													
Material Handling Fugitive Dust				8.79	3.07					1.36	0.51		
Stockpile/Windrow/CASP/AD Volatiles	1,525					391	252.97					64.935	
AD CHP Engine Exhaust	7.4	38.9	58.3	0.7	0.6		1.35	7.09	10.64	0.12	0.11		8.06
AD Flare Emissions	0.2	0.2	1.3	0.018	0.016		0.03	0.04	0.24	0.003	0.003		0.24
Stationary Total	1,532.3	39.1	59.6	9.5	3.7	391.4	254.4	7.1	10.9	1.5	0.6	64.9	8
Mobile													
Off Road Engine Exhaust	4.4	26.3	126.0	1.1	1.0		0.81	4.81	22.99	0.20	0.19		2,172
Motor Vehicle Fugitive PM				3.02	0.30					0.39	0.04		
Motor Vehicle Exhaust	2.17	68.49	40.25	0.30	0.28		0.28	8.90	5.23	0.04	0.04		2,835
Mobile Total	6.6	94.8	166.2	4.4	1.6	0.0	1.1	13.7	28.2	0.6	0.3	0.0	5,007

PROJECT INCREMENT:

	Peak Day Emissions (lb/day)						Peak Year Emissions (ton/year)						
Source	ROC	NOx	CO	PM10	PM2.5	NH3	ROC	NOx	CO	PM10	PM2.5	NH3	CO2e (MT)
Stationary													
Material Handling Fugitive Dust				4.58	1.33					0.77	0.26		
Stockpile/Windrow/CASP/AD Volatiles	348.76					193.34	57.86					32.08	
Avoided Landfill Volatiles	-295.45					-256.88	-49.02					-42.62	
Avoided Landfill GHG													-58,891
Avoided Landfill Flare Emissions	-26.2	-157.0	-523.4	-52.3	-52.3		-4.8	-28.7	-95.5	-9.6	-9.6		
AD CHP Engine Exhaust (APCD permitted)	7.38	38.85	58.28	0.66	0.61		1.35	7.09	10.64	0.12	0.11		8.06
AD Flare Emissions (APCD permitted)	0.18	0.24	1.30	0.02	0.02		0.03	0.04	0.24	0.00	0.00		0.24
Stationary Total	34.7	-117.9	-463.8	-47.1	-50.4	-63.5	5.4	-21.5	-84.6	-8.7	-9.2	-10.5	-58,883.1
Mobile													
Off Road Engine Exhaust	-3.8	-92.6	-63.7	-3.6	-3.3		-0.48	-13.74	-6.59	-0.53	-0.49		-375
Motor Vehicle Fugitive PM				-20.20	-2.02					-3.56	-0.36		
Motor Vehicle Exhaust	-1.28	-41.87	3.82	-0.42	-0.40		-0.26	-8.31	-0.45	-0.07	-0.07		-382
Mobile Total	-5.1	-134.4	-59.8	-24.2	-5.7	0.0	-0.7	-22.1	-7.0	-4.2	-0.9	0.0	-757

Project Increment Total:	29.6	-252.4	-523.7	-71.3	-56.1	-63.5	4.7	-43.6	-91.7	-12.8	-10.1	-10.5	-59,639.7
Applicable to CEQA significance thresholds	22.05	-291.5	-583.2	-72.0	-56.7	-63.5	3.3	-50.7	-102.6	-13.0	-10.2	-10.5	-59,639.7
Not applicable to CEQA significance thresholds (VCAPCD permitted)	7.6	39.1	59.6	0.7	0.6	0.0	1.4	7.1	10.9	0.1	0.1	0.0	

Emissions Factor

Parameter	Factor	Unit	Source of Emission Factor
Stockpiling VOC	0.20	lbs/wet ton-day	ARB Emissions Inventory Methodology for Composting Facilities, Table III-1, 3/2/2015 (green & food mat'l)
Stockpiling NH3	N/A	lbs/wet ton-day	ARB Emissions Inventory Methodology for Composting Facilities, Table III-1, 3/2/2015 (green & food mat'l)
Compost + Cure VOC	3.58	lbs/wet ton	ARB Emissions Inventory Methodology for Composting Facilities, Table III-1, 3/2/2015 (green & food mat'l)
Compost + Cure NH3	0.78	lbs/wet ton	ARB Emissions Inventory Methodology for Composting Facilities, Table III-1, 3/2/2015 (green & food mat'l)
Compost + Cure CH4	0.049	MT CO2e/wet ton	CARB, Table 5 "Method for Estimating Greenhouse Gas Emission Reductions from Diversion of Organic Waste from Landfills to Compost Facilities", March 2016
Compost + Cure N2O	0.021	MT CO2e/wet ton	
Compost + Cure CO2e*	0.07	MT CO2e/wet ton	Total of CH4 and N2O
Landfill % NH3	0.7%	% NH3 to methane	0.7% NH3 to methane (Eggleston, 1992) %NH3 x methane mmscf/day x1,000,000 x NH3 density lb/ft3 x 365 day/year
Landfill CO2e - food	0.69	MT CO2e/wet ton	CARB, Table 11 "Method for Estimating Greenhouse Gas Emission Reductions from Diversion of Organic Waste from Landfills to Compost Facilities", March 2016
Landfill CO2e - green	0.51	MT CO2e/wet ton	
Landfill CO2e - mixed	0.63	MT CO2e/wet ton	
Anaerobic Digester Fugitive VOC, NH3	NA	NA	Assumed to be negligible since gases generated will be collected and either treated and burned in an IC engine (to generate electricity) or flared.

* Note that, according to the CARB source referenced, CO2 emissions from composting are not included in the CO2e calculation because they are biogenic.

Emissions Control Efficiency

Emission Source	VOC Control (%)	NH3 Control (%)	Comment
Project Windrow Composting/Cure	40%	20%	assumes Project piles managed in compliance with SCAQMD's Rule 1133-3.
Baseline Windrow Composting/Cure	19%	19%	assumes existing composting practices meet SJVAPCD water management requirements
Covered Aerated Pile	90%	70%	assumes postive air and CARB control factor
Landfill Flare	73.3%	50.0%	Approx. combined VOC capture & control efficiency - 75% x 97.7% (AP42 2.4 DRAFT) Ammonia capture and control assumed to be 50% (no literature found)*

***Ammonia combustion:** The combustion of ammonia in air is very difficult in the absence of a catalyst (such as platinum gauze or warm chromium(III) oxide), due to the relatively low heat of combustion, a lower laminar burning velocity, high auto-ignition temperature, high heat of vaporization, and a narrow flammability range. Ammonia does not burn readily or sustain combustion, except under narrow fuel-to-air mixtures of 15–25% air.

Baseline Emissions: peak day factor: 110%

Parameter	Throughput (wet ton/yr)	Peak Year Emissions GHG CO2e (MT/year)	Avg. Year Emissions VOC (lb/year)	Avg. Year Emissions NH3 (lb/year)	Average Day Emissions VOC (lb/day)	Average Day Emissions NH3 (lb/day)	Peak Day Emissions VOC (lb/day)	Peak Day Emissions NH3 (lb/day)
Stockpiling (green material)	98,225	0	98,225	0	269	0	296	0
Food material stockpiling	15,637	0	1,564	0	4		5	0
Windrow Composting & Cure	98,225	6,876	284,833	62,059	780	170	858	187
CASP Composting	15,637	1,095	5,598	3,659	15	10	17	11
Totals without landfill component:		7,970	390,220	65,718	1,069	180	1,176	198
Landfill (avoided emissions)[1]	181,138	101,356	98,037	85,239	269	234	295	257
Totals:		109,326	488,256	150,956	1,338	414	1,471	455

1 - From LANDFILL BASELINE VOC tab

Project Total Emissions: peak day factor: 110%

Parameter	Throughput (wet ton/yr)	Peak Year Emissions GHG CO2e (MT/year)	Avg. Year Emissions VOC (lb/year)	Avg. Year Emissions NH3 (lb/year)	Average Day Emissions VOC (lb/day)	Average Day Emissions NH3 (lb/day)	Peak Day Emissions VOC (lb/day)	Peak Day Emissions NH3 (lb/day)
Stockpiling (green material)	229,500	0	91,800	0	252	0	277	0
Wet organic bldg - 90% control biofilter (food stockpiling)[2]	65,500	0	655	0	2	0	2	0
Windrow Composting & Cure	180,000	12,600	386,640	112,320	1,059	308	1,165	338
Anaerobic Digestion (AD) [1]	40,000	2,800	0	0	0	0	0	0
CASP Composting	75,000	5,250	26,850	17,550	74	48	81	53
Totals:		20,650	505,945	129,870	1,386	356	1,525	391

1 - Methane and VOC emissions from AD process are assumed to be captured and controlled 99+% by flare or boiler or IC engine. GHG emissions addressed under combustion estimates

2 - Food material is taken into a biofilter controlled building and processed (90% control)

PROJECT (ton/yr):	Incoming green:	229,500	Incoming Food:	65,500	Total:	295,000
BASELINE LIMONEIRA ONLY (ton/yr):	Incoming green:	58,619	Incoming Food:	0	Total:	58,619
BASELINE OXNARD ONLY (ton/yr):	Incoming green:	39,606	Incoming Food:	15,637	Total:	55,243
	Baseline Green:	98,225	Baseline Food:	15,637	Baseline Total:	113,862
					Project Increment:	181,138

Project Increment Emissions

Parameter	Throughput (wet ton/yr)	Peak Year Emissions GHG CO2e (MT/year)	Avg. Year Emissions VOC (lb/year)	Avg. Year Emissions NH3 (lb/year)	Average Day Emissions VOC (lb/day)	Average Day Emissions NH3 (lb/day)	Peak Day Emissions VOC (lb/day)	Peak Day Emissions NH3 (lb/day)
Project Increment (with landfill)	181,138	-88,676	17,689	-21,086	48	-58	53	-64
		Tons/year:	8.8	-10.5				

1 - Increment for Project vs Santa Paula + Oxnard. For analysis above, overall increment = 0.

48.46215644

ARB Emissions Inventory Methodology for Composting Facilities (3/2/2015)

III. Recommended Emission Estimation Approaches

Total Annual Emissions = (CPEF x (1-CE) x TP) + (SEF x SD x TP);

Where

o CPEF = Composting Process Emission Factor (lbs/wet-ton)

o SEF = Stockpile Emission Factor (lbs/wet ton-day)

o SD = Average number of days material is stockpiled (days)

o CE = Control Efficiency (Percentage)

o TP = Total annual facility throughput (wet-tons)

Table III-1: Recommended Emission Factors for Greenwaste and Foodwaste[1]

Pollutant	Stockpile(lbs/wet ton-day)	Composting Process(lbs/wet ton)
VOC	0.20	3.58
NH3	N/A	0.78

1-Foodwaste, biosolids, and manure can be a maximum of 15% by weight of the total mixture with greenwaste.

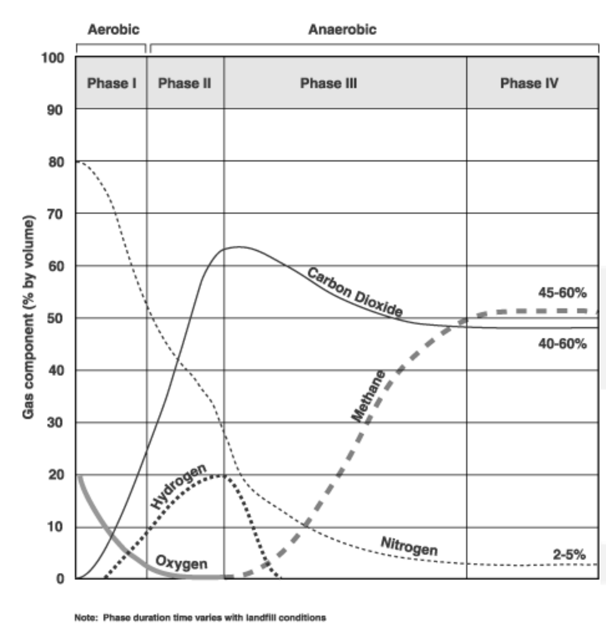
ARB Emissions Inventory Methodology for Composting Facilities (3/2/2015)

Table III-3: Control Techniques for Composting Operations

Control Type	Aeration	Control Efficiency VOC	Control Efficiency NH3
Windrow			
Static Pile – No Biofilter	Passive	0%	0%
Managed Windrow – No Biofilter	Passive	0%	0%
Water Management Requirements[1]	Passive	19%	19%
Static Pile/Passively Aerated Windrow covered 15 days with a biofilter [2]	Passive	40%	20%
Static Pile/Passively Aerated Windrow covered 22 days with a biofilter[1]	Passive	60%	20%
Aerated Static Pile (ASP)			
Negative ASP with Biofilter (classic)	Forced, Negative Air	26%	23%
Positive ASP with Biofilter Cover	Forced, Positive Air	80%-98%	53%

1 - Requires compliance with pile management and/or watering requirements in SJVAPCD's rule 4566.

2 - Requires compliance with pile management and/or watering requirements in SCAQMD's rule 1133.3



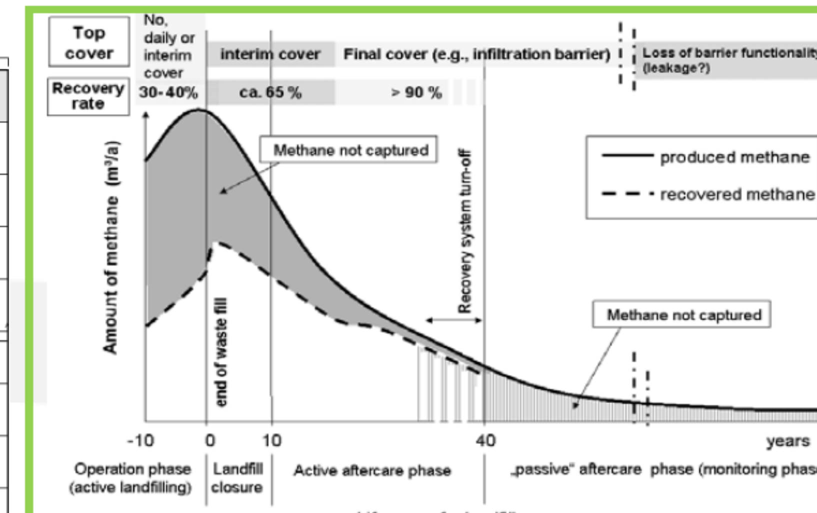


Figure 2. Methane production and recovery over a landfill lifetime (Humer-Huber et al, 2008)
Reprinted with permission, Sage Publication, UK

Methane collection at a landfill often does not begin until the active portion of the landfill ("the cell") where the wastes are buried is "capped' (covered with an impermeable membrane).

The USEPA estimates that over the life of a landfill 25% of the methane generated in a landfill with gas collection will escape. Some advocates of bioreactors put that number as low as 10%, while some critics put it as high as 80%.

ANALYSIS OF BASELINE VOC EMISSIONS FROM LANDFILLS DUE TO COMPOSTABLE MATERIALS PLANNED FOR DIVERSION:
CALCULATIONS BASED ON LANDFILL GAS COLLECTED AT TOLAND AND SIMI LANDFILLS

1. Background Information:

2014	Baseline year
41.1%	% of total landfilled waste stream available for diversion and composting (FINAL 2014 Cal Recycle Waste Characterization Report - Disposal Facility Based)
205,113	2014 Available Divertable West County Waste (tons) - see 2. below
181,138	Proposed project diverted tons/year
88.3%	Correction factor proposed/available diverted waste

2. Calculation of landfil gas generated due to West County waste:
Cal Recycle Countywide Destination Detail for 2014 (see CalRecycle-CountywideDestinationDetail.xls for waste volume calculations):

2014 Total Waste Disposal (tons)	Waste Disposed from West County	Waste Disposed from East County	Total	% of waste from West County	2014 total landfill gas collected* (mmscf/day)	Landfill Gas Due to West County Waste (mmscf/d)	Tonnage check vs original Project Description: CalRecycle % Divertable Waste	2014 Divertable West County Waste (tons)	2014 divertable tons from original P.D. calculations
Toland	341,187	57,938	399,125	85%	2.26	1.93	41.1%	140,228	
Simi Valley	157,871	214,155	372,026	42%	5.49	2.33	41.1%	64,885	
Totals:	499,058	272,093	771,151			**4.26**		205,113	212,984

% of West County waste to Toland:	68.4%
% of West County waste to Simi:	31.6%

* EPA's Greenhouse Gas Reporting Program (GHGRP) - https://www.epa.gov/ghgreporting
*Facility Level Information on GreenHouse gases Tool (FLIGHT)
See EPA Landfill GHG Reporting - Toland and Simi 2014.xlsx
https://ghgdata.epa.gov/ghgp/main.do#

2014 Gas Collection Systems details - Toland

Annual Volume FGCollected Gas Volumetric Flow	824,985,804	(scf) Measured Value
	2.26	mmscf/day
	46.00%	Methane % reported

2014 Gas Collection Systems details - Simi Valley

Annual Volume FGCollected Gas Volumetric Flow	2,004,573,200	(scf) Measured Value
	5.49	mmscf/day
	48.68%	Methane % reported

3. Calculation of percentage of landfil gas generated by organic waste that is compostable and diveratble from landfills:
(based on Table 46: Composition of California's Overall Disposed Waste Stream Using Expanded Material Types found in FINAL 2014 Cal Recycle Waste Characterization Report - Disposal Facility Based)

WHAT % OF WASTE GENERATES LANDFILL GAS? (see Excel sheet *Profile for Landfill Gas Generating Waste_WARM.xlsx*)
(Note: specific waste composition mix for Toland & Simi not available from CalRecycle)

% of organics CalRecycle considers divertable:	41.1%
organic waste that generates 100% of landfill gas:	60.9%
% of gas created by divertable/compostable waste	**67.5%**

4. Calculation of baseline VOC emissions from landfills due to West County compostable materials planned for diversion:

Landfill gas collected in 2017 due to West County waste:	**4.26**	mmscf/day (see 2. above)
Gas collection system efficiency:	73.3%	Default AP42 2.4 DRAFT
Toland landfill gas emitted (not collected):	1.555	mmscf/day
Average percent methane in landfill gas (%):	47.90%	EPA's GHGRP - see 2. above
Methane gas not collected:	0.74	mmscf/day
Non-methane organics (NMOC) fraction (% by vol.):	**0.1306%**	2006 Toland flare source test inlet concentration
NMOC emissions:	0.00203	mmscf/day
% VOCs in NMOC (by volume):	**99.7%**	AP42 2.4 DRAFT for post 1992 landfills
VOC emitted:	0.00202	mmscf/day
VOC emitted:	2,023.6	scf/day
Assumed VOC density (as hexane):	0.2227	lb/ft3
Total VOC emissions from landfill gas:	450.67	VOC lb/day
	164,493	VOC lb/yr
	82.25	VOC ton/yr
% of landfill gas created by divertable compostables:	**67.5%**	see 3. above
Correction factor proposed/available diverted waste:	**88.3%**	see 1. above
Total baseline VOC emissions from landfill gas:	**98,037**	VOC lb/yr
	49.02	VOC ton/yr

SOURCES OF NMOC AND VOC DATA FOR LANDFILL GAS:
Table 2-1: Typical Landfill Gas Components

	% by Volume	Characteristics
methane	45–60	Methane is a naturally occurring gas. Landfills are the single largest source of U.S. man-made methane emissions.
carbon dioxide	40–60	Carbon dioxide is naturally found at small concentrations in the atmosphere (0.03%).
nitrogen	2–5	Nitrogen comprises approximately 79% of the atmosphere. It is odorless, tasteless, and colorless.
oxygen	0.1–1	Oxygen comprises approximately 21% of the atmosphere. It is odorless, tasteless, and colorless.
ammonia	0.1–1	Ammonia is a colorless gas with a pungent odor.
NMOCs	0.01–0.6	NMOCs are organic compounds (i.e., compounds that contain carbon). (Methane is an organic compound but is not considered an NMOC.) NMOCs may occur naturally or be formed by synthetic chemical processes. NMOCs most commonly found in landfills include acrylonitrile, benzene, 1,1-dichloroethane, 1,2-cis dichloroethylene, dichloromethane, carbonyl sulfide, ethyl-benzene, hexane, methyl ethyl ketone, tetrachloroethylene, toluene, trichloroethylene, vinyl chloride, and xylenes.
sulfides	0–1	Sulfides (e.g., hydrogen sulfide, dimethyl sulfide, mercaptans) are naturally occurring gases that give the landfill gas mixture its rotten-egg smell. Sulfides can cause unpleasant odors even at very low concentrations.
hydrogen	0–0.2	Hydrogen is an odorless, colorless gas.
carbon monoxide	0–0.2	Carbon monoxide is an odorless, colorless gas

Source: Tchobanoglous, Theisen, and Vigil 1993; EPA 1995

EPA LANDGEM MODEL:

0.40%	**EPA's Landgem CAA default NMOC in landfill gas (4,000 ppmv as hexane or 0.4%)**

Draft 2008 AP42 2.4 MUNICIPAL SOLID WASTE LANDFILLS - Tables 2.4-1 and 2.4-2 (NMOC reported as hexane)

landfill gas:	NMOC ppmv	VOC ppmv	% VOC in NMOC	EF Rating	
	595		39%	A	for landfills having a majority of the waste in place before 1992
	838	835	99.7%	A	for landfills having a majority of the waste in place on or after 1992
NMOC range (ppmv)	31 - 5,387				
EPA Landgem (ppmv)	4,000	% methane:	55%		

gas densities at STP	lb/ft3	
Benzene (C_6H_6)	0.20643	
Hexane (C_6H_{14})	0.2227	
Toluene (C_7H_8)	0.2435	
Xlene (C_8H_{10})	0.2858	vapor density 3.8 x air density
Air	0.07521	
Methane (CH_4)	0.04171	MW methane: 16.04
Ammonia (NH_3)	0.0448	MW hexane: 86.17

Toland VCAPCD Part 70 Annual Compliance Certification Report, 2/11/2010
2009 Source Test Summary Toland Landfill Table 3-2

Flare Inlet TGNMO as CH4 (ppmv):	7,820	
Conversion from as CH4 to as hexane:	5.99	from source test Table 3-2
Flare Inlet TGNMO as hexane (ppmv):	1,306	

Emissions Factors

Assumptions:

Drop points: Material receiving, processing, stockpile: Total of 5 drop points (a) 1-drop point at tipping floor; (b) 2-drop points transfer to trommel screen and screen to picking line; (c) 1 drop point out of grinder (d) 1 drop point at destination(windrow, CASP or AD).
Open windrow active and curing phase composting. Total of 2 drops for forming the compost pile from the ground material stockpile or for loading CASP or for loading AD.
Post composting, CASP and AD screening: 2 drops, one into screen, one out of screen
Finished compost storage and loadout operation: 2 drops, one to final product storage pile and one into sales delivery vehicle.
Controls - water sprays as needed. Incoming moisture content of feedsock is already high. Water sprays used during processing (see below). AD system is enclosed.

Screening: Generally no controls are used due to high feedstock moisture content - except for screening inside the food material building (building exhaust PM filter). Water sprays available throughout process if needed.

Grinding: Generally no controls are used due to high feedstock moisture content - except for grinding inside the food material building (building exhaust PM filter). Water sprays available throughout process if needed.

Post-Grind Compost Windrows: Piles are water sprayed to maintain moisture content of piles.

Material moisture content:	Incoming green material: 25%	Digestate out of AD: 45%	CASP feedstock: 55% (taken from CASP research report) Correct
(D. Green email 9/30/36)	Incoming food material: 85%	Curing piles: 25%- 45%	In CASP material: 43.3% (taken from CASP research report) Correct
		Composting windrows: 25% - 45%	

Assumed Baseline Landfill Emissions: Assume no processing and 2 drop points - from waste hauler truck to tipping location, from a loader to final disposition.

Emission Factors: (see Air Quality and Greenhouse Gas Technical Report, Tajiguas Landfill Resource Recovery Project Santa Barbara County, California, July 2014) `

Process Fugitive PM - Drop points: From SJVAPCD "2006 Area Source Emissions Inventory Methodology, 199 – COMPOSTING WASTE DISPOSAL"
- use the AP-42 crushed stone emission factor (AP-42, Table 11.19.2-2) as a conservative estimate

uncontrolled emission factor:	0.0011	lb-PM10/ton (AP-42, Table 11.19.2-2)
Control efficiency:	70%	water sprays (SJVAPCD & VCAPCD 2012 emissions inventory)
controlled emission factor:	0.000330	lb-PM10/ton
PM2.5 : PM10 ratio:	0.034	lb-PM2.5/lb-PM10 (assuming grain elevator fraction- SCAQMD CEIDARS "Methodology to Calculate Particulate Matter (PM) 2.5" October 2006
controlled emission factor:	0.000011	lb-PM2.5/ton

For drops in food material building assume 99% PM10 control due to use of particulate filter on building exhaust:

controlled emission factor:	0.00001	lb-PM10/ton
controlled emission factor:	0.0000004	lb-PM2.5/ton

Process Fugitive PM - Screening From AP-42, Table 11.19.2-2 Crushed Stone Processing and Pulverized Mineral Processing

uncontrolled emission factor:	0.0087	lb-PM10/ton
controlled emission factor:	0.00074	lb-PM10/ton - water sprays
controlled emission factor:	0.000050	lb-PM2.5/ton - water sprays

For screening in food material building assume 99% PM10 control due to use of particulate filter on building exhaust:

controlled emission factor:	0.00009	lb-PM10/ton
controlled emission factor:	0.0000059	lb-PM2.5/ton

Process Fugitive PM - Grinding: From BAAQMD District Permit Handbook, Section 11.13 Tub Grinders - emission factor for “Log Debarking” from a previous edition of AP-42, Table 10.3-1

uncontrolled emission factor:	0.024	lb-TSP/ton
uncontrolled emission factor:	0.0117432	lb-PM10/ton (48.93% of TSP - VCAPCD 2012 emissions inventory)
Control efficiency:	50%	water sprays (BAAQMD & VCAPCD 2012 emissions inventory)
controlled emission factor:	0.005872	lb-PM10/ton
PM2.5 : PM10 ratio:	0.708	lb-PM2.5/lb-PM10 (assuming wood product sawing fraction- SCAQMD CEIDARS "Methodology to Calculate Particulate Matter (PM) 2.5" October 2006
uncontrolled emission factor:	0.008314	lb-PM2.5/ton
controlled emission factor:	0.004157	lb-PM2.5/ton

For grinding in food material building assume 99% PM10 control due to use of particulate filter on building exhaust:

controlled emission factor:	0.00012	lb-PM10/ton
controlled emission factor:	0.00008	lb-PM2.5/ton

Process Fugitive PM - Compost Windrows Windrow PM10 stockpile wind blown emissions not addressed in Tajiguas Landfill air study. **Windrow turning treated like a drop point. Windrows turned 5 times during composting.**

Stockpile & Windrow Turning: From SJVAPCD "2006 Area Source Emissions Inventory Methodology, 199 – COMPOSTING WASTE DISPOSAL"
- PM10 emissions during the turning of the active phase windrows and forming of the curing phase windrows are assumed to be negligible due to the high moisture content of materials handled (moisture content is typically 40% to 65%).

On-site mobile vehicle dust emissions: Considers delivery vehicle travel only. Dust emissions from loader and other onsite mobile travel not considered because they move too slow.
For Project - on-site roads will be paved or cement treated (M. Harrison 10/7/16 email). For baseline all on-site roads are essentially unpaved (D. Green 10/7/16).

Unpaved Industrial Roads (AP42 13.2.2)

Baseline dust supression watering = as needed about once an hour minimum, 20,000 gallons per day (D. Green 10/10/16)

EF = k * (s / 12)^a * (W / 3)^b or $k * (6.4/12)^{0.9} * (W / 3)^{0.45}$

k=	Constants (AP42)	k for PM10	1.5	k for PM2.5	0.15	
a, b =	Constants (AP42)	a=	0.9	b=	0.45	
s =	Silt content of unpaved surface in percent (%)			s =	6.4	AP42 for landfill - also mean for crushed gravel/limestone roads
W =	Average vehicle weight in tons		W = vehicle specific (see tables below)			

SCAQMD CEQA Table XI-D unpaved road control factors:

84%	Apply chemical dust suppressant annually
99%	Pave unpaved roads

% control baseline =	**84%**	assuming 15 MPH limit, hourly watering plus high moisture retention of compost on roads inside facility is equivalent to chemical dust supression
% control project =	**99%**	assuming 15 MPH limit, cement treated roads, watering 3X daily, high moisture content of compost on roads inside facility nearly equivalent to paving

Assumed Baseline Landfill Emissions: Assume all waste delivery vehilces are HHD tractor trailers and onsite travel distance is from scale house to center of landfill.
8,800 (feet) 1.67 (miles) round trip distance from Toland scale house to center of landfill on existing landfill roads (Google Earth)
Assume paved roads (best case lowest emissions) and water used to supress dust.

Baseline Emissions

Process Fugitive PM: peak day factor: 110% mass reduction from composting: 50%

Parameter	Throughput (wet tons)			Days/year	# of drops	Emission Factor (lb/ton)		Fugitive PM Emissions: Annual (lb/year)		Average Day (lb/day)		Peak Day (lb/day)	
	Per year	Average Day	Peak Day			PM10	PM2.5	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Material receiving, processing, stockpile	113,862	365	401	312	5	0.000330	0.000011	188	6.4	0.60	0.020	0.66	0.02
Grinding - green & food material	113,862	365	401	312	1	0.005872	0.004157	669	473.3	2.14	1.517	2.36	1.67
Open windrow active and curing phase composting	113,862	365	401	312	2	0.000330	0.000011	75	2.6	0.24	0.008	0.26	0.01
Windrow turning	85,397	274	301	312	5	0.000330	0.000011	141	4.8	0.45	0.015	0.50	0.02
Screening process - post composting, CASP and AD	56,931	182	201	312	1	0.00074	0.000050	42	2.8	0.14	0.009	0.15	0.01
Screening drops	56,931	182	201	312	2	0.000330	0.000011	38	1.3	0.12	0.004	0.13	0.00
Finished compost storage and loadout operation	56,406	217	239	260	2	0.000330	0.000011	37	1.3	0.14	0.005	0.16	0.01
							TOTALS:	**1,189**	**492**	**3.8**	**1.6**	**4.2**	**1.7**

On-Site Motor Vehicle Fugitive PM:

Vehicle	Use	Route	Trip Count		Distance	Daily VMT	Avg Weight	Days/year	Emission Factor (lb/mile)		Control (%)	Emissions (lb/year)		Emissions (lb/day)	
			Annual (#/yr)	Daily (#/day)	(Miles/trip)	(Miles/day)	(tons)[1]		PM10	PM2.5		PM10	PM2.5	PM10	PM2.5
HHD Solid Waste Collection Truck	Feedstock Delivery	Entrance-Tipping	6,576	21.1	0.24	5.05	20.4	312	2.02	0.20	84%	508	50.8	1.63	0.16
HHD Fleet Truck from MRFs	Feedstock Delivery	Entrance-Tipping	3,061	9.8	0.24	2.35	23.0	312	2.13	0.21	84%	250	25.0	0.80	0.08
Light Duty Truck - Business/Self Haul	Feedstock Delivery	Entrance-Tipping	7,520	24.1	0.24	5.77	3.5	312	0.92	0.09	84%	264	26.4	0.85	0.08
HHD Fleet - Roll off	Feedstock Delivery	Entrance-Tipping	1,204	3.9	0.24	0.92	17.4	312	1.88	0.19	84%	87	8.7	0.28	0.03
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Resale Delivery	Entrance-Sales Yard	690	2.7	0.19	0.50	22.5	260	2.11	0.21	84%	44	4.4	0.17	0.02
HHD Fleet Truck - Finished Compost, Mulch, etc.	Outgoing Sales	Sales Yard-Entrance	5,446	20.9	0.45	9.32	19.1	260	1.96	0.20	84%	761	76.1	2.93	0.29
Light Duty Truck	Outgoing Sales	Sales Yard-Entrance	2,172	8.4	0.45	3.72	2.8	260	0.82	0.08	84%	127	12.7	0.49	0.05
Avoided Landfill Trips- HHD from MRF	Trash to Landfill	@ Toland Landfill	10,158	27.8	1.67	46.38	23.9	365	2.17	0.22	84%	5871	587.1	16.09	1.61
1 - average of loaded & empty vehicle		**Totals:**	**36,827**	**119**		**74**					**Totals:**	**7,912**	**791**	**23.22**	**2.32**

Project Emissions

Process Fugitive PM: peak day factor: 110%

Parameter	Throughput (wet tons)			Days/year	# of drops	Emission Factor (lb/ton)		Fugitive PM Emissions: Annual (lb/year)		Average Day (lb/day)		Peak Day (lb/day)	
	Per year	Average Day	Peak Day			PM10	PM2.5	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Material receiving, processing, stockpile - green	229,500	883	971	260	5	0.000330	0.000011	379	12.87	1.46	0.05	1.60	0.05
Material receiving, processing, stockpile - food	65,500	252	277	260	5	0.00001	0.0000004	4	0.12	0.01	0.00	0.02	0.00
Screening - green material building	229,500	629	692	365	1	0.00074	0.000050	170	11.48	0.47	0.03	0.51	0.03
Screening - food material building	65,500	179	197	365	1	0.00009	0.0000059	6	0.39	0.02	0.00	0.02	0.00
Grinding - green material building	229,500	629	692	365	1	0.005872	0.004157	1,348	954.05	3.69	2.61	4.06	2.88
Grinding - food material building	65,500	179	197	365	1	0.00012	0.00008	8	5.45	0.02	0.01	0.02	0.02
Open windrow active and curing phase composting	256,350	702	773	365	2	0.000330	0.000011	169	5.75	0.46	0.02	0.51	0.02
Windrow turning	256,350	702	773	365	5	0.000330	0.000011	423	14.38	1.16	0.04	1.27	0.04
Screening processs-post composting, CASP and AD	134,968	370	407	365	1	0.000330	0.000011	45	1.51	0.12	0.00	0.13	0.00
Screening drops - post composting, CASP and AD	134,968	370	407	365	2	0.000330	0.000011	89	3.03	0.24	0.01	0.27	0.01
Finished compost storage and loadout operation	134,968	519	571	260	2	0.000330	0.000011	89	3.03	0.34	0.01	0.38	0.01
							TOTALS:	**2,728**	**1,012**	**8.0**	**2.8**	**8.8**	**3.1**

On-Site Motor Vehicle Fugitive PM:

Vehicle	Use	Route	Trip Count		Distance	Daily VMT	Avg Weight	Days/year	Emission Factor (lb/mile)		Control (%)	Emissions (lb/year)		Emissions (lb/day)	
			Annual (#/yr)	Daily (#/day)	(Miles/trip)	(Miles/day)	(tons)[1]		PM10	PM2.5		PM10	PM2.5	PM10	PM2.5
HHD Solid Waste Collection Truck	Feedstock Delivery	Entrance-Tipping	19,000	73.1	0.73	53.40	20.5	260	2.02	0.20	99%	281	28.1	1.08	0.11
HHD Fleet Truck from MRFs	Feedstock Delivery	Entrance-Tipping	6,225	23.9	0.73	17.50	23.9	260	2.17	0.22	99%	99	9.9	0.38	0.04
Light Duty Truck - Business/Self Haul	Feedstock Delivery	Entrance-Tipping	32,159	123.7	0.73	90.39	3.3	260	0.89	0.09	99%	210	21.0	0.81	0.08
HHD Fleet - Roll off	Feedstock Delivery	Entrance-Tipping	1,439	5.5	0.73	4.05	17.5	260	1.88	0.19	99%	20	2.0	0.08	0.01
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Resale Delivery	Entrance-Sales Yard	1,788	6.9	0.30	2.08	22.5	260	2.11	0.21	99%	11	1.1	0.04	0.00
HHD Fleet Truck - Finished Compost, Mulch, etc.	Outgoing Sales	Sales Yard-Entrance	15,960	61.4	0.45	27.90	19.1	260	1.96	0.20	99%	142	14.2	0.55	0.05
Light Duty Truck	Outgoing Sales	Sales Yard-Entrance	6,365	24.5	0.45	11.13	2.8	260	0.82	0.08	99%	24	2.4	0.09	0.01
1 - average of loaded & empty vehicle		**Totals:**	**82,937**	**319**		**206**					**Totals:**	**786**	**79**	**3.0**	**0.3**

Project Increment Emissions

	Avg. Annual Emissions (lbs/year)		Avg. Day Emissions (lbs/day)		Peak Day Emissions (lbs/day)	
	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Incremental Process Fugitive PM:	1,538	520	4.16	1.21	4.58	1.33
Incremental On-Site Motor Vehicle Fugitive PM:	-7,125	-713	-20.20	-2.02	-22.22	-2.22
Total Fugitive PM Project Increment:	**-5,587**	**-193**	**-16**	**-0.8**	**-18**	**-0.9**

Based on Cornerstone VCAPCD ATC Application (Sept. 2012) & VCAPCD Engineering Analysis (4/9/2013):

5,000 ton/year material processed assumed in 2012/2013 analysis

Assumptions:

The anaerobioc digester is enclosed. Emissions are collected and treated in the biogas treatment system. No fugitive emissions.

67% green waste and 33% food waste — a single 3.2 MMBtu/hr flare will handle all waste gas

3,000 Biogas production ft3/ton (ZWE estimates — 40,000 tons/year of material processed

600 Biogas energy content btu/ft3 — 1050 APCD btu/ft3 for pipeline natural gas

60% methane content of biogas

8,760 hrs/year max.

Engine - 100kW (145 kW thermal) 2G Cenergy Technologies model 2G 100BG:

100 kW generated
147 BHP
27 ft3/min fuel consumption
14,191,200 ft3/year fuel consumption based on max. hours
229 ft3/min exhaust gas flow
356 °F exhaust gas temperature

Enclosed Emergency Backup Flare (used during engine maintenance, biogas is processed through a carbon filter pre-treatment system for hydrogen sulfide (H2S) and SOx control:

3.2 MMBtu/hr — 60% max. methane content of biogas (flared gas is same as biogas produced)
88 ft3/min fuel consumption max. — 2.11 MMcf/yr based on max. hours
400 max. hrs per year — 99.5% flare ROC control

biogas is processed through a carbon filter pre-treatment system for hydrogen sulfide (H2S) and SOx control

Biofilter, for control of odors from digesters during start-up and termination exhausts (at process termination methane decreases for 20% to 1% methane):

ROC emissions from the biofilter are considered negligible. This is consistent with how the District permits wastewater treatment plants.

Emergency Backup Generator/Diesel Engine (exempt from permit- Rule 23.D.6):

9.38 BHP

Scale up calculations:

120,000,000 expected ft3/year total biogas generated
72,000,000 expected ft3/year total treated biogas (methane) burned in all engines
14,191,200 max. ft3/year of gas burned by one engine
5 # of engines required to burn all gas - used to ratio up emissions from a single engine

AD Engine (2G-Cynergy Lean Biogas Engine)

	Emission Factor (g/BHP-hr) [1]						lb/MMscf
	ROC	NOx	CO	PM [2]	PM2.5 [3]	SO2 [4]	CO2e [5]
AD Engine	0.19	1.00	1.5	0.017	0.016	0.03	247

1 - Emission factors from VCAPCD 4/9/13 as provided by 2G Cenergy
2 - Total PM assumed to be equal to PM10.
3 - PM2.5 emissions factor assumed to be 92% of PM10 based on SCAQMD's *Updated CEIDARS Table with PM2.5 Fractions* for offroad equipment.
4 - SOx emission factor based on 20 ppm H2S in the biogas.
5 - AP42 Table 1.4-2

CO2e emission factor:	lb/MMscf	GWP	Adjusted	
CO2	120000.0	1	120000	
CH4	2.3	21	48.3	
N20	0.64	310	198.4	
		Anthropogenic Gas	120247	lb/MMscf
		Biogenic gas	247	lb/MMscf

	Emissions (lb/hr)							Emissions (ton/year) [1]						
	ROC	NOx	CO	PM	PM2.5	SO2	CO2e	ROC	NOx	CO	PM	PM2.5	SO2	CO2e (MT)
AD Engine	0.31	1.62	2.43	0.03	0.03	0.05	2.0	1.35	7.09	10.64	0.12	0.11	0.21	8.06

1 - Assuming 8,760 hours/year

Backup Flare Emissions:

	Emission Factor (lb/MMBtu) [1]					
	ROC	NOx	CO	PM [2]	PM2.5 [3]	SO2 [4]
Backup Flare	0.0518	0.0680	0.3700	0.0050	0.0046	0.006

1 - Emission factors from VCAPCD 4/9/13 - VCAPCD default factors for waste gas flares
2 - Total PM assumed to be equal to PM10.
3 - PM2.5 emissions factor assumed to be 92% of PM10
4 - SOx emission factor based on 20 ppm H2S in the biogas.

SOx emission factor [g/scf] = 20 [ppmv sulfur] x 10^{-6} x 64 [lb/lb-mole SO2] / 385.5 [scf/lb-mole] x 453.6 g/lb

0.00151 g/scf
0.0000025 g/btu @ 600 btu/ft3
0.000000006 lb/btu
0.006 lb/MMbtu

	Emissions (lb/hr)							Emissions (ton/year) [1]						
	ROC	NOx	CO	PM [2]	PM2.5 [3]	SO2 [4]	CO2e	ROC	NOx	CO	PM	PM2.5	SO2	CO2e (MT)
Backup Flare	0.17	0.22	1.18	0.02	0.01	0.02	1.3	0.03	0.04	0.24	0.003	0.003	0.004	0.24

1 - Assuming 400 hours/year

Emissions Factors														
Equipment Information							Base EF (g/hp-hr) [1]							Location
Equipment	Type	Model	HP	Engine Year	Tier	Hours/Day	NMHC+NOx	THC	NOx	CO	PM	PM2.5	CO2e	
Baseline														
CATERPILLAR	Excavators	320CL	138	2004	T2	7.5	4.9	0.25	4.66	3.7	0.22	0.202	539.9	Ox
MANITOU	Forklifts	TMT315FL	25	2006	T2	7.5	5.60	0.28	5.32	4.10	0.45	0.414	539.9	Ox
CATERPILLAR	Rubber Tired Loaders	950G	183	2003	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	SP
CATERPILLAR	Rubber Tired Loaders	950G II	183	2005	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	SP
CATERPILLAR	Rubber Tired Loaders	950G	183	2003	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	SP
CATERPILLAR	Rubber Tired Loaders	950H	196	2006	T3	7.5	3.00	0.15	2.85	2.60	0.15	0.138	539.9	Ox
CATERPILLAR	Rubber Tired Loaders	950G	183	2003	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	Ox
CATERPILLAR	Rubber Tired Loaders	950GII	183	2004	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	Ox
CATERPILLAR	Rubber Tired Loaders	950G II	183	2004	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	Ox
CATERPILLAR	Rubber Tired Loaders	950G	207	2004	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	Ox
CATERPILLAR	Rubber Tired Loaders	950G II	183	2004	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	Ox
CATERPILLAR	Skid Steer Loaders	256C	74	2007	T2	7.5	5.60	0.28	5.32	3.70	0.30	0.276	539.9	Ox
CATERPILLAR	Skid Steer Loaders	242B3	71	2012	T4I	7.5	3.50	0.18	3.33	3.70	0.22	0.202	539.9	Ox
NEW HOLLAND	Backhoes	7810	75	1986	T0	4	N/A	1.30	6.00	15.50	0.60	0.552	539.9	SP
NEW HOLLAND	Backhoes	7810	75	1987	T0	4	N/A	1.30	6.00	15.50	0.60	0.552	539.9	SP
Int'l MaxxForce 13	Water Truck	---	475	2009	---	6.5	1.2	0.06	1.14	15.5	0.01	0.009	539.9	Ox
Navistar E210	Dump Truck	---	210	1992	---	6.5	N/A	1.20	5.00	15.50	0.25	0.230	539.9	Ox
Water Truck	Water Truck	---	475	2004	---	6.5	2.5	0.125	2.375	15.5	0.1	0.092	539.9	SP
Dump Truck	Dump Truck	---	210	2010	---	4.0	N/A	0.14	0.20	15.50	0.01	0.009	539.9	SP
MOORBARK	Grinder	1300A	860	2006	T2	6.5	4.80	0.24	4.56	2.60	0.15	0.138	539.9	SP
MORBARK	Grinder	6600 WOODHOG	650	2005	T2	6.5	4.80	0.24	4.56	2.60	0.15	0.138	539.9	Ox
Powerscreen	Screen	3300	275	2010	T3	6.5	3.00	0.15	2.85	2.60	0.15	0.138	539.9	Ox
CEC	Screen	5x12	91	2010	T3	6.5	3.50	0.18	3.33	3.70	0.30	0.276	539.9	Ox
CEC	Screen	5X12	91	2010	T3	6.5	3.50	0.18	3.33	3.70	0.30	0.276	539.9	Ox
WILDCAT	Screen	521	99	2012	T4	6.5	N/A	0.14	0.3	3.70	0.015	0.014	539.9	Ox
WILDCAT	Screen	626	125	2012	T4	6.5	N/A	0.14	0.3	3.70	0.015	0.014	539.9	Ox
WILDCAT	Screen	626	125	2012	T4	6.5	N/A	0.14	0.3	3.70	0.015	0.014	539.9	SP
WILDCAT	Screen	626	125	2012	T4	6.5	N/A	0.14	0.3	3.70	0.015	0.014	539.9	SP
Project														
CATERPILLAR	Wheel Loader	950K	211	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
CATERPILLAR	Wheel Loader	950K	211	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
CATERPILLAR	Wheel Loader	950K	211	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
CATERPILLAR	Wheel Loader	950K	211	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
CATERPILLAR	Wheel Loader	950K	211	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
CATERPILLAR	Wheel Loader	950K	211	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
CATERPILLAR	Skid Steer Loader	242B Series 3	71	2019	T4F	7.5	3.5	0.18	3.33	3.7	0.022	0.020	539.9	SP
SCARAB	Windrow Turner	Model 27	630	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
Freightliner	Water Truck - Diesel	FL110	375	2010	---	7.5	N/A	0.14	0.20	15.5	0.01	0.009	539.9	SP
Freightliner	Dump Truck - Diesel	FL110	375	2010	---	7.5	N/A	0.14	0.20	15.5	0.01	0.009	539.9	SP
Toyota	Forklift	8FGU30	51	2010	T3	7.5	3.5	0.175	3.325	3.7	0.3	0.276	539.9	SP
Toyota	Forklift	8FGU30	51	2010	T3	7.5	3.5	0.175	3.325	3.7	0.3	0.276	539.9	SP
MORBARK	Grinder - green	4600XL	1050	2013	T4i	6.5	N/A	0.3	2.6	2.6	0.075	0.069	539.9	SP
MORBARK	Grinder	6600 WOODHOG	650	2005	Electrified	7.5	0	0	0	0	0	0	0	SP
CEC	Screen-It	6X16	97	2010	T3	6.5	3.5	0.175	3.325	3.7	0.3	0.276	539.9	SP
CEC	Screen-It	6X16	97	2010	T3	6.5	3.5	0.175	3.325	3.7	0.3	0.276	539.9	SP
Wildcat	Screen	626	140	2012	Electrified	6.5	0	0	0	0	0	0	0	SP
Wildcat	Screen	626	140	2012	Electrified	6.5	0	0	0	0	0	0	0	SP
Wildcat	Screen	626	140	2012	Electrified	6.5	0	0	0	0	0	0	0	SP

1 - Emission factors assumed the same as emission standards - for both off-road and on-road used off road.
Where standard is for NMHC+NOx emissions assumed to be 5 percent ROC and 95 percent NOx, from Table D-25 of 2011 Carl Moyer Program Guidelines - http://www.arb.ca.gov/msprog/moyer/guidelines/current.htm
CO2e emission factor (includes CO2, N2O, and CH4) based on TCR's "2015 Climate Registry Default Emission Factors" and the brake specific fuel consumption of 0.367 lb/hp-hr from OFFROAD2011.
PM2.5 emissions factor assumed to be 92% of PM10 based on SCAQMD's *Updated CEIDARS Table with PM2.5 Fractions* for offroad equipment.
Total PM assumed to be equal to PM10.
Load factors (below) based on the California Air Resources Board's OFFROAD2011 model documentation (see attached) or from Table D-10 of 2011 Carl Moyer Program Guidelines

Baseline Emissions

Material processing: 312 days/year

Equipment Information						Peak Year Emis. (MT/yr)	Emissions (lb/day)					Santa Paula Emissions for HRA (lbs/day)		
Equipment	Type	Horsepower	Load Factor	Hours/Year	Hours/Day	CO2e	ROC	NOx	CO	PM10	PM2.5	Location	ROC	PM10
CATERPILLAR	Excavators	138	0.38	2,340	7.5	66.2	0.21	4.03	3.21	0.19	0.18	Ox	0	0
MANITOU	Forklifts	25	0.2	2,340	7.5	6.3	0.02	0.44	0.34	0.04	0.03	Ox	0	0
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	SP	0.27	0.16
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	SP	0.27	0.16
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	SP	0.27	0.16
CATERPILLAR	Rubber Tired Loaders	196	0.36	2,340	7.5	89.1	0.17	3.32	3.03	0.17	0.16	Ox	0	0
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	Ox	0	0
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	Ox	0	0
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	Ox	0	0
CATERPILLAR	Rubber Tired Loaders	207	0.36	2,340	7.5	94.1	0.30	5.73	3.20	0.18	0.17	Ox	0	0
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	Ox	0	0
CATERPILLAR	Skid Steer Loaders	74	0.37	2,340	7.5	34.6	0.13	2.41	1.67	0.14	0.12	Ox	0	0
CATERPILLAR	Skid Steer Loaders	71	0.37	2,340	7.5	33.2	0.08	1.44	1.61	0.10	0.09	Ox	0	0
NEW HOLLAND	Backhoes	75	0.37	1,248	4.0	18.7	0.32	1.47	3.79	0.15	0.13	SP	0.32	0.15
NEW HOLLAND	Backhoes	75	0.37	1,248	4.0	18.7	0.32	1.47	3.79	0.15	0.13	SP	0.32	0.15
Int'l MaxxForce 13	Water Truck	475	0.38	2,028	6.5	197.5	0.16	2.95	40.06	0.03	0.02	Ox	0	0
Navistar E210	Dump Truck	210	0.38	2,028	6.5	87.3	1.37	5.71	17.71	0.29	0.26	Ox	0	0
Water Truck	Water Truck	475	0.38	2,028	6.5	197.5	0.32	6.14	40.06	0.26	0.24	SP	0.32	0.26
Dump Truck	Dump Truck	210	0.38	1,248	4.0	53.7	0.10	0.14	10.90	0.01	0.01	SP	0.10	0.01
MOORBARK	Grinder	860	0.4	2,028	6.5	376.3	1.18	22.46	12.81	0.74	0.68	SP	1.18	0.74
MORBARK	Grinder	650	0.4	2,028	6.5	284.4	0.89	16.97	9.68	0.56	0.51	Ox	0	0
Powerscreen	Screen	275	0.4	2,028	6.5	120.3	0.24	4.49	4.09	0.24	0.22	Ox	0	0
CEC	Screen	91	0.4	2,028	6.5	39.8	0.09	1.73	1.93	0.16	0.14	Ox	0	0
CEC	Screen	91	0.4	2,028	6.5	39.8	0.09	1.73	1.93	0.16	0.14	Ox	0	0
WILDCAT	Screen	99	0.4	2,028	6.5	43.3	0.08	0.17	2.10	0.01	0.01	Ox	0	0
WILDCAT	Screen	125	0.4	2,028	6.5	54.7	0.10	0.21	2.65	0.01	0.01	Ox	0	0
WILDCAT	Screen	125	0.4	2,028	6.5	54.7	0.10	0.21	2.65	0.01	0.01	SP	0.10	0.01
WILDCAT	Screen	125	0.4	2,028	6.5	54.7	0.10	0.21	2.65	0.01	0.01	SP	0.10	0.01
					Total:	**2,546.78**	**8.24**	**118.91**	**189.64**	**4.72**	**4.34**		**3.24**	**1.81**
							ROC	**NOx**	**CO**	**PM10**	**PM2.5**			

Post-Project Total Emissions

Material processing: 365 days/year

Equipment Information						Peak Year Emis. (MT/yr)	Emissions (lb/day)				
Equipment	Type	Horsepower	Load Factor	Hours/Year	Hours/Day	CO2e	ROC	NOx	CO	PM10	PM2.5
CATERPILLAR	Wheel Loader	211	0.36	2,738	7.5	112.2	0.18	0.38	3.26	0.02	0.02
CATERPILLAR	Wheel Loader	211	0.36	2,738	7.5	112.2	0.18	0.38	3.26	0.02	0.02
CATERPILLAR	Wheel Loader	211	0.36	2,738	7.5	112.2	0.18	0.38	3.26	0.02	0.02
CATERPILLAR	Wheel Loader	211	0.36	2,738	7.5	112.2	0.18	0.38	3.26	0.02	0.02
CATERPILLAR	Wheel Loader	211	0.36	2,738	7.5	112.2	0.18	0.38	3.26	0.02	0.02
CATERPILLAR	Wheel Loader	211	0.36	2,738	7.5	112.2	0.18	0.38	3.26	0.02	0.02
CATERPILLAR	Skid Steer Loader	71	0.37	2,738	7.5	38.8	0.08	1.44	1.61	0.01	0.01
SCARAB	Windrow Turner	630	0.4	2,738	7.5	372.1	0.58	1.25	10.82	0.06	0.06
Freightliner	Water Truck - Diesel	375	0.38	2,738	7.5	210.4	0.33	0.47	36.49	0.02	0.02
Freightliner	Dump Truck - Diesel	375	0.38	2,738	7.5	210.4	0.33	0.47	36.49	0.02	0.02
Toyota	Forklift	51	0.2	2,738	7.5	15.1	0.03	0.56	0.62	0.05	0.05
Toyota	Forklift	51	0.2	2,738	7.5	15.1	0.03	0.56	0.62	0.05	0.05
MORBARK	Grinder - green	1050	0.4	2,373	6.5	537.5	1.80	15.63	15.63	0.45	0.41
MORBARK	Grinder	650	0.4	2,738	7.5	0	0	0	0	0	0
CEC	Screen-It	97	0.4	2,373	6.5	49.7	0.10	1.85	2.06	0.17	0.15
CEC	Screen-It	97	0.4	2,373	6.5	49.7	0.10	1.85	2.06	0.17	0.15
Wildcat	Screen	140	0.4	2,373	6.5	0	0	0	0	0	0
Wildcat	Screen	140	0.4	2,373	6.5	0	0	0	0	0	0
Wildcat	Screen	140	0.4	2,373	6.5	0	0	0	0	0	0
					Total:	**2,171.63**	**4.43**	**26.34**	**125.97**	**1.12**	**1.03**

Project Increment Emissions

Parameter	Peak Year Emis. (MT/yr)	Peak Day Emissions (lb/day)				
	CO2e	ROC	NOx	CO	PM10	PM2.5
Baseline	2,546.8	8.24	118.91	189.64	4.72	4.34
Project	2,171.6	4.43	26.34	125.97	1.12	1.03
Project Increment:	**-375.15**	**-3.81**	**-92.57**	**-63.67**	**-3.60**	**-3.31**

Onroad Vehicle Emissions

Emissions Factors (g/VMT)

Vehicle Information		Baseline 2016 Emission Factors (g/VMT)							
Vehicle Type	**Fuel Type**	**ROC**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CO2e**
HHD Solid Waste Collection Truck (Diesel)	Diesel	0.3939	**5.066**	13.14	0.0254	0.0168	0.0161	4,170.0	4,378.4
HHD Solid Waste Collection Truck (CNG)	CNG	0.1249	3.237	6.57	0.0127	0.0017	0.0016	---	418.6
HHD Fleet Truck (Diesel)	Diesel	0.2321	1.026	6.70	0.0159	0.0902	0.0863	1,724.7	1,810.9
Light Duty Truck (Gasoline)	Gasoline	0.0297	1.261	0.15	0.0042	0.0017	0.0016	416.2	437.0
Light Duty Truck (Diesel)	Diesel	0.0186	0.146	0.07	0.0035	0.0066	0.0063	371.1	389.7
Passenger Cars (Gasoline)	Gasoline	0.0271	1.017	0.10	0.0031	0.0018	0.0017	310.5	326.0

Vehicle Information		Project 2019 Emission Factors (g/VMT)							
Vehicle Type	**Fuel Type**	**ROC**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CO2e**
HHD Solid Waste Collection Truck (Diesel)	Diesel	0.3165	**7.319**	9.95	0.0194	0.0133	0.0127	3,916.7	4,112.6
HHD Solid Waste Collection Truck (CNG)	CNG	0.1003	4.677	4.97	0.0097	0.0013	0.0013	---	418.6
HHD Fleet Truck (Diesel)	Diesel	0.1374	0.793	4.68	0.0152	0.0324	0.0310	1,662.2	1,745.3
Light Duty Truck (Gasoline)	Gasoline	0.0183	0.892	0.10	0.0038	0.0018	0.0016	384.0	403.2
Light Duty Truck (Diesel)	Diesel	0.0175	0.149	0.05	0.0034	0.0055	0.0053	351.1	368.7
Passenger Cars (Gasoline)	Gasoline	0.0146	0.716	0.07	0.0029	0.0019	0.0017	285.9	300.2

Diesel and gasoline emissions factors are from the EMFAC2011 web tool, utilizng the following assumptions (except where specifically identified as otherwise below): Ventura County, 2019, annual average, combined model year, combined speeds, and the CO2 EF includes the LCFS.

HHD Solid Waste Collection Truck = T7 SWCV vehicle type, diesel
HHD Fleet Truck = HHDT vehicle type (aggregate), diesel
Light Duty Truck = LDT2 vehicle type, diesel and gasoline
Passenger Cars = LDA vehicle type, gasoline

CO2e emissions factor determined by scaling CO2 factor up by 5%, per the methodologies found in the BAAQMD GHG Model (BGM). This accounts for emissions of CH4, N2O, and air conditioner evaporative loss.

CNG Emissions factor (except for CO2e) based on the diesel emissions factors for the same category from EMFAC2011 multiplied by the following diesel to CNG modifiers, which are the bus modifiers from "Emissions of Criteria Pollutants, Toxic Air Pollutants, and Greenhouse Gases, from the Use of Alternative Transportation Modes and Fuels", Institute of Transportation Studies, UC Davis, last updated in 2006. SOx emissions factor is assumed to be half of the diesel factor.

ROC = 0.317	NOx= 0.5	PM10= 0.1
CO= 0.639	SOx= 0.5	PM2.5= 0.1

CNG emissions factor for CO2e (includes CO2, N2O, and CH4) based on TCR's "2014 Climate Registry Default Emissions Factors" and fuel efficiency of 44.8 miles/MMBtu.

Baseline Emissions

Vehicle Type	Baseline VMT		Peak Year Emissions	Peak Day Emissions (lb/day)					
	Peak Year	**Peak Day**	**CO2e (MT/y)**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**SOx**
HHD Solid Waste Collection Truck (Diesel)	390,009	1,618	1,706.1	1.40	46.83	18.05	0.06	0.06	0.09
HHD Solid Waste Collection Truck (CNG)	260,006	1,079	108.7	0.30	15.62	7.69	0.00	0.00	0.03
HHD Fleet Truck (Diesel)	681,015	3,221	1,232.2	1.65	47.50	7.28	0.64	0.61	0.11
Light Duty Truck (Gasoline)	101,468	391	44.3	0.03	0.13	1.09	0.00	0.00	0.00
Light Duty Truck (Diesel)	101,468	391	39.5	0.02	0.06	0.13	0.01	0.01	0.00
Passenger Cars (Gasoline)	264,160	980	86.0	0.06	0.21	2.20	0.00	0.00	0.01
Total Haul:	**1,533,966**	**6,700**	**3,130.8**	**3.39**	**110.15**	**34.23**	**0.71**	**0.68**	**0.24**
Total Worker:	**264,160**	**980**	**86.0**	**0.06**	**0.21**	**2.20**	**0.00**	**0.00**	**0.01**
Total Overall:	**1,798,126**	**7,680**	**3,216.9**	**3.45**	**110.36**	**36.43**	**0.71**	**0.68**	**0.25**

Post-Project Total Emissions

Vehicle Type	Post-Project Total VMT		Peak Year Emissions	Peak Day Emissions (lb/day)					
	Peak Year	**Peak Day**	**CO2e (MT/y)**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**SOx**
HHD Solid Waste Collection Truck (Diesel)	282,263	1,218	1,159.8	0.85	26.69	19.63	0.04	0.03	0.05
HHD Solid Waste Collection Truck (CNG)	188,175	812	78.7	0.18	8.90	8.36	0.00	0.00	0.02
HHD Fleet Truck (Diesel)	650,459	3,102	1,134.2	0.94	32.01	5.42	0.22	0.21	0.10
Light Duty Truck (Gasoline)	474,506	2,032	191.2	0.08	0.45	3.99	0.01	0.01	0.02
Light Duty Truck (Diesel)	474,506	2,032	174.8	0.08	0.24	0.67	0.02	0.02	0.02
Passenger Cars (Gasoline)	322,400	1,380	96.7	0.04	0.20	2.18	0.01	0.01	0.01
Total Haul:	**2,069,909**	**9,196**	**2,738.7**	**2.13**	**68.29**	**38.07**	**0.29**	**0.28**	**0.21**
Total Worker:	**322,400**	**1,380**	**96.7**	**0.04**	**0.20**	**2.18**	**0.01**	**0.01**	**0.01**
Total Overall:	**2,392,309**	**10,576**	**2,835.4**	**2.17**	**68.49**	**40.25**	**0.30**	**0.28**	**0.21**

Project Increment Emissions

Vehicle Type	Project Increment VMT		Peak Year Emissions	Peak Day Emissions (lb/day)					
	Peak Year	**Peak Day**	**CO2e (MT/y)**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**SOx**
HHD Solid Waste Collection Truck (Diesel)	-107,746	-400	-546.3	-0.55	-20.15	1.58	-0.02	-0.02	-0.04
HHD Solid Waste Collection Truck (CNG)	-71,831	-267	-30.0	-0.12	-6.72	0.67	0.00	0.00	-0.01
HHD Fleet Truck (Diesel)	-30,556	-119	-98.0	-0.71	-15.49	-1.86	-0.42	-0.40	-0.01
Light Duty Truck (Gasoline)	373,038	1,641	146.9	0.06	0.31	2.91	0.01	0.01	0.01
Light Duty Truck (Diesel)	373,038	1,641	135.3	0.06	0.18	0.54	0.02	0.02	0.01
Passenger Cars (Gasoline)	58,240	400	10.6	-0.01	-0.01	-0.02	0.00	0.00	0.00
Total Haul:	**535,943**	**2,496**	**-392.2**	**-1.26**	**-41.86**	**3.84**	**-0.42**	**-0.40**	**-0.03**
Total Worker:	**58,240**	**400**	**10.6**	**-0.01**	**-0.01**	**-0.02**	**0.00**	**0.00**	**0.00**
Total Overall:	**594,183**	**2,896**	**-381.5**	**-1.28**	**-41.87**	**3.82**	**-0.42**	**-0.40**	**-0.03**

GHG Emissions from Diverted Throughput (i.e GHG Emissions that would Occur Without Project)
From CARB "Waste Diversion GHG Emission Reduction Calculator for FY 2015-16 (.xlsx)"

Avoided Emissions from Composting in Windrows, CASP and Anaerobic Digester
Compost Worksheet

Year	Feedstock Diverted for Windrow Composting (Short Tons)	Feedstock Diverted for ASP System Composting (Short Tons)	Composition of Feedstock (% Food Waste)	Composition of Feedstock (% Green Waste)	Residual Material Sent to Landfill (Short Tons)	Net Tons of Material Diverted (Short Tons)	Net GHG Benefit (MTCO2e)
2016	180,000	75,000	22%	78%	0	255,000	48,891

Standalone Anaerobic Digestion (AD) Worksheet

Year	Feedstock Diverted for Anaerobic Digestion Producing Vehicle Fuel & Digestate that is Landfilled (Short Tons)	Feedstock Diverted for Anaerobic Digestion Producing Vehicle Fuel & Digestate that is Composted (Short Tons)	Feedstock Diverted for Anaerobic Digestion Producing Electricity & Digestate is Landfilled (Short Tons)	Feedstock Diverted for Anaerobic Digestion Producing Electricity & Digestate is Composted (Short Tons)	Feedstock Diverted for Anaerobic Digestion to Inject into Pipeline & Digestate is Landfilled (Short Tons)	Feedstock Diverted for Anaerobic Digestion to Inject into Pipeline & Digestate is Composted (Short Tons)	Residual Material Sent to Landfill (Short Tons)	Net Tons of Material Diverted (Short Tons)	Net GHG Benefit (MTCO2e)
2016	0	0	0	40,000	0	0	0	40,000	10,000

295,000	**Total material diverted from landfill (short tons)**
58,891	**Total Estimated GHG Emission Reductions per year ($MTCO_2e$)**

ALTERNATE METHOD

CARB "Method for Estimating Greenhouse Gas Emission Reductions from Diversion of Organic Waste from Landfills to Compost Facilities", March 2016

Final Compost Emission Reduction Factor

The CERF is determined by subtracting the composting emissions from the composting emission reductions for each waste type. The results are included in Table 11.

Table 11. CERF values by waste type.

Waste Type	Composting Benefits (Btotal)	Composting Emissions	Final CERF (MT CO2e/ ton waste input)
Food Waste	0.69	0.07	0.62
Yard Trimmings	0.51	0.07	0.44
Mixed Organics	0.63	0.07	0.56

This leads to a CERF of **0.44 – 0.62 MTCO2E/ton of feedstock.**

49,863	Quantity of food diverted from landfill (tons)
131,275	Quantity of green diverted from landfill (tons)
181,138	Total quantity of compostable diverted (tons)
88,676	Net benefit MTCO2e per year
101,437	Net benefit MTCO2e per year using Mixed Organics CERF

Avoided LF Flare Emissions

Material will be diverted from Toland Landill to the Project. Toland Landfill utilizes a flare to control volatile emissions, so this spreadsheet calculates flaring emissions avoided by the Project. These emissions are then included in the Project Baseline for the significance determination in this AQCCIA.

Quantity of Gas Diverted from Toland Road (based on Landgem model for 2018)

5.15E+07	m3/year total landfill gas
25,760,000	m3/year methane
1,819,411,798	ft3/year total landfill gas
909,705,899	ft3/year methane

Toland Road Flare Emission Factors (VCAPCD Emissions Factors for Toland Road Landfill, 1/24/17)

Units	ROC	NOx	PM	CO
lb/MMBTU	0.010	0.060	0.020	0.200
lb/MMcf landfill gas	5.0	30.0	10.0	100.0
lb/MMcf CH_4	10.5	63	21	210

Emissions

Parameter	ROC	NOx	PM10	PM2.5	CO
EF (lb/10^6 dscf CH_4)	11	63	21	21	210
Throughput (10^6 dscf CH_4/year)	910	910	910	910	910
Emissions (lb/year)	9,552	57,311	19,104	19,104	191,038
Emissions (ton/year)	4.8	28.7	9.6	9.6	95.5
Emissions (lb/day)	26.2	157.0	52.3	52.3	523.4

Conversions:

50.0%	% methane in landfill gas
500	Btu/scf for landfill gas (VCAPCD assumption)
1050	Btu/scf for CH_4
35.31467	ft3/m3

Peak Year Emissions (lb/yr)

Source	DPM	ETHYL BENZENE	STYRENE	1,3-BUT ADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPION ALDEHYDE	MTBE	FORM ALDEHYDE	2,2,4-TRIME THYLPENTANE	METHANOL	BENZENE
Offroad Source (Source 1)														
Off Road Diesel	-157													
Fugitive Organics (Source 3)														
Windrow/CASP/AD Organics		3.70E+01	6.82E+01			2.39E+02					1.24E+03		148,097	
AD Source (Source 2)														
AD CHP Engines		2.7E-01				5.4E-01	1.1E+00	5.4E-01			2.2E+01			3.0E+00
AD Flare		6.6E-03				1.3E-02	2.7E-02	1.3E-02			5.4E-01			7.3E-02
Total:		2.8E-01				5.5E-01	1.1E+00	5.5E-01			2.2E+01			3.0E+00
Road Source (Source 4)														
On Road Various	9.66	4.6E-02	5.4E-03	2.3E-02	5.8E-03	3.6E-01	2.5E-01	6.7E-02	1.7E-03	8.2E-02	1.4E-01	7.3E-02	3.4E-02	1.2E-01

Source	ACETALD EHYDE	MEK	NAPHTHA LENE	(1-METHYL ETHYL) BENZENE	propylene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium	Isopropyl alcohol	Dichloro Benzene
Offroad Source (Source 1)														
Off Road Diesel														
Fugitive Organics (Source 3)														
Windrow/CASP/AD Organics	910					93,292							57,607	2.5E+02
AD Source (Source 2)														
AD CHP Engines	8.1E-01				4.6E+01									
AD Flare	2.0E-02				1.1E+00									
Total:	8.3E-01				4.7E+01									
Road Source (Source 4)														
On Road Various	1.3E-02	8.3E-04	2.1E-03	8.3E-04	1.4E-01									

Peak Hour Emissions (lb/h)

Source	DPM	ETHYL BENZENE	STYRENE	1,3-BUT ADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPION ALDEHYDE	MTBE	FORM ALDEHYDE	2,2,4-TRIME THYLPENTANE	METHANOL	BENZENE
Offroad Source (Source 1)														
Off Road Diesel			4.0E-06		1.8E-06	7.2E-05	1.0E-04				1.0E-03		2.1E-06	1.4E-04
Fugitive Organics (Source 3)														
Windrow/CASP/AD Organics		4.97E-03	9.2E-03			3.2E-02					1.7E-01		2.0E+01	
AD Source (Source 2)														
AD CHP Engines		4.6E-05				9.2E-05	1.8E-04	9.2E-05			3.7E-03			5.1E-04
AD Flare		1.1E-06				2.3E-06	4.5E-06	2.3E-06			9.2E-05			1.2E-05
Total:		4.7E-05				9.5E-05	1.9E-04	9.5E-05			3.8E-03			5.2E-04
Road Source (Source 4)														
On Road Various		1.8E-05	2.1E-05	9.1E-06	1.1E-05	4.8E-04	5.7E-04	2.6E-05	6.5E-07	3.2E-05	4.8E-03	2.9E-05	2.3E-05	6.6E-04

Source	ACETALD EHYDE	MEK	NAPHTHA LENE	(1-METHYL ETHYL) BENZENE	propylene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium	Isopropyl alcohol	Dichloro Benzene
Offroad Source (Source 1)														
Off Road Diesel		1.0E-04				-2.7E-04	-4.0E-07	-2.8E-05	-2.0E-06	-2.4E-06	-1.5E-06	-2.3E-06		
Fugitive Organics (Source 3)														
Windrow/CASP/AD Organics	1.2E-01					1.2E+01							7.7E+00	3.4E-02
AD Source (Source 2)														
AD CHP Engines	1.4E-04				7.8E-03									
AD Flare	3.4E-06				1.9E-04									
Total:	1.4E-04				8.0E-03									
Road Source (Source 4)														
On Road Various	5.1E-06	4.7E-04	8.1E-07	3.3E-07	5.7E-05	1.3E-05	1.9E-08	1.3E-06	9.7E-08	1.2E-07	7.4E-08	1.1E-07		

Biogas TAC Emissions

Emissions Factor

Parameter	propylene	hexane	formaldehyde	acetaldehyde	xylenes (mixed)	benzene	toluene	ethyl benzene
% of ROC	1.69%	0.02%	0.81%	0.03%	0.02%	0.11%	0.04%	0.01%

% of ROC emissions based on CARB's CATEF database for natural gas burned in ICE reciprocating engines (#719).

Baseline Emissions

Source not present in baseline

Post-Project Emissions

Parameter	ROC Emissions (lbs/hr,	Emissions							
		propylene	hexane	formaldehyde	acetaldehyde	xylenes (mixed)	benzene	toluene	ethyl benzene
Hourly (lbs/hr)									
AD CHP Engines	0.461	7.8E-03	9.2E-05	3.7E-03	1.4E-04	9.2E-05	5.1E-04	1.8E-04	4.6E-05
AD Flare	0.011	1.9E-04	2.3E-06	9.2E-05	3.4E-06	2.3E-06	1.2E-05	4.5E-06	1.1E-06
Yearly (lbs/yr)									
AD CHP Engines	2,695	45.54	0.54	21.83	0.81	0.54	2.96	1.08	0.27
AD Flare	66.3	1.12	0.01	0.54	0.02	0.01	0.07	0.03	0.01

Project Increment Emissions

Parameter	ROC Emissions (lbs/hr,	Emissions							
		propylene	hexane	formaldehyde	acetaldehyde	xylenes (mixed)	benzene	toluene	ethyl benzene
Hourly (lbs/hr)									
AD CHP Engines	0.461	7.8E-03	9.2E-05	3.7E-03	1.4E-04	9.2E-05	5.1E-04	1.8E-04	4.6E-05
AD Flare	0.011	1.9E-04	2.3E-06	9.2E-05	3.4E-06	2.3E-06	1.2E-05	4.5E-06	1.1E-06
Yearly (lbs/yr)									
AD CHP Engines	2,695	45.54	0.54	21.83	0.81	0.54	2.96	1.08	0.27
AD Flare	66.3	1.12	0.01	0.54	0.02	0.01	0.07	0.03	0.01

Onsite Equipment TAC Emissions

TAC Emissions Factors

ROC Based Components	Benzene	Toluene	Xylenes	Formaldehyde	Acrolein	Methanol	MEK	Styrene
Fraction of ROC EF:	2.0E-02	1.5E-02	1.0E-02	1.5E-01	2.6E-04	3.0E-04	1.5E-02	5.8E-04

DPM Based Components	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
Fraction of DPM EF:	3.4E-03	5.0E-06	3.4E-04	2.5E-05	3.0E-05	1.9E-05	2.9E-05

Baseline TAC Emissions

Parameter	DPM			ROC	
	lb/day	lb/year	lb/hr	lb/day	lb/hr
Off Road Engine Exhaust	1.81	564	0.15	3.24	0.27

Source	Yearly Emissions	Hourly Emissions (lbs/hr)																
	DPM (lbs/year)	DPM (lb/hr)	ROC (lbs/hr)	Benzene	Toluene	Xylenes	Formaldehyde	Acrolein	Methanol	MEK	Styrene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
Off Road Engine Exhaust	564.4	1.5E-01	2.7E-01	5.4E-03	4.0E-03	2.8E-03	4.0E-02	7.1E-05	8.1E-05	4.0E-03	1.6E-04	5.1E-04	7.5E-07	5.2E-05	3.8E-06	4.5E-06	2.9E-06	4.4E-06

Post-Project Emissions

Source	Yearly Emissions	Hourly Emissions (lbs/hr)																
	DPM (lbs/year)	DPM (lb/hr)	ROC (lbs/hr)	Benzene	Toluene	Xylenes	Formaldehyde	Acrolein	Methanol	MEK	Styrene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
Off Road Engine Exhaust	407.9	7.0E-02	2.8E-01	5.5E-03	4.1E-03	2.9E-03	4.1E-02	7.3E-05	8.3E-05	4.1E-03	1.6E-04	2.4E-04	3.5E-07	2.4E-05	1.7E-06	2.1E-06	1.3E-06	2.0E-06

Project Increment Emissions

Source	Yearly Emissions	Hourly Emissions (lbs/hr)																
	DPM (lbs/year)	DPM (lb/hr)	ROC (lbs/hr)	Benzene	Toluene	Xylenes	Formaldehyde	Acrolein	Methanol	MEK	Styrene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
Off Road Engine Exhaust	-156.5	-8.1E-02	6.9E-03	1.4E-04	1.0E-04	7.2E-05	1.0E-03	1.8E-06	2.1E-06	1.0E-04	4.0E-06	-2.7E-04	-4.0E-07	-2.8E-05	-2.0E-06	-2.4E-06	-1.5E-06	-2.3E-06

Hours/day =	12
Days/Year (Baseline) =	312

Modeled Road Length (Onsite) =	0.24 miles/round trip	Hours/Day = 10
Modeled Road Length (Offsite) =	6.2 miles/round trip	
Modeled Road Length (Total) =	6.44 miles/round trip	

TAC Emissions Factors

Diesel Speciation (Acute Risk Assessment Only)

ROC Based Components	Benzene	Toluene	Xylenes	Formaldehyde	Acrolein	Methanol	MEK	Styrene
% of ROC EF:	2.00%	1.47%	1.04%	14.71%	0.03%	0.03%	1.48%	0.06%

DPM Based Components	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
% of DPM EF:	0.337%	0.001%	0.034%	0.003%	0.003%	0.002%	0.003%

Note: ROC fractions calculated from emission factors from CARB diesel speciation for diesel fueled farm equipment except acrolein, which is from AP42 Section 3-3. DPM speciation also from CARB for diesel fueled automobiles.

CNG ROC Speciation

ROC Based Components	propylene	hexane	formaldehyde	acetaldehyde	xylenes (mixed)	benzene	toluene	ethyl benzene
% of ROC EF:	1.69%	0.02%	0.81%	0.03%	0.02%	0.11%	0.04%	0.01%

CARB Speciation organics profile 719 - ICE-reciprocating-natural gas

Gasoline ROC Speciation

ROC Based Components	ETHYLBENZENE	STYRENE	1,3-BUTADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPIONALDEHYDE	MTBE	FORMALDEHYDE	2,2,4-TRIMETHYLPENTANE	METHANOL	BENZENE	ACETALDEHYDE	MEK	NAPHTHALENE	(1-METHYLETHYL) BENZENE
% of ROC EF:	1.09%	0.13%	0.56%	0.14%	8.70%	5.99%	1.61%	0.04%	1.97%	1.73%	1.75%	0.83%	2.68%	0.25%	0.02%	0.05%	0.02%

CARB Speciation organics profile 438 - Gasoline - catalyst - stabilized exhaust - ARB IUS summer 1999 as referenced by "PREPARATION OF EMISSIONINVENTORIES OF TOXIC AIRCONTAMINANTS FOR THE BAY AREA"

Baseline TAC Emissions

		VMT Calculation					DPM Emissions			ROC Emissions		
Vehicle	Fuel Type	Vehicles per year	VMT/year	Days / Year	VMT / Day	VMT / hr	EF (g/VMT)	(lb/yr)	(lb/hr)	EF (g/VMT)	(lb/yr)	(lb/hr)
HHD Solid Waste Collection Truck	Diesel	2,098	13,509	312	43	4.3	0.017	0.50	1.6E-04	0.394	---	3.8E-03
HHD Solid Waste Collection Truck	CNG	1,398	9,006	312	29	2.9	---	---	---	0.125	2.48	7.9E-04
HHD Fleet Truck from MRFs	Diesel	1,547	9,963	312	32	3.2	0.090	1.98	6.3E-04	0.232	---	1.6E-03
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel	1,246	8,021	312	26	2.6	0.007	0.12	3.7E-05	0.019	---	1.1E-04
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline	1,246	8,021	312	26	2.6	---	---	---	0.030	0.53	1.7E-04
HHD Fleet - Roll off	Diesel	772	4,972	260	19	1.9	0.090	0.99	3.8E-04	0.232	---	9.8E-04
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel	0	0	260	0	0.0	0.090	0.00	0.0E+00	0.232	---	0
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel	1,580	10,176	260	39	3.9	0.090	2.02	7.8E-04	0.232	---	2.0E-03
Light Duty Truck (Diesel Half)	Diesel	786	5,063	260	19	1.9	0.007	0.07	2.8E-05	0.019	---	8.0E-05
Light Duty Truck (Gas Half)	Gasoline	786	5,063	260	19	1.9	---	---	---	0.030	0.33	1.3E-04

Pounds per Year

Vehicle	Fuel Type	DPM (lb/yr)	ETHYLBENZENE	STYRENE	1,3-BUTADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPIONALDEHYDE	MTBE	FORMALDEHYDE	2,2,4-TRIMETHYLPENTANE	METHANOL	BENZENE	ACETALDEHYDE	MEK	NAPHTHALENE	(1-METHYLETHYL) BENZENE	propylene
HHD Solid Waste Collection Truck	Diesel	0.50																		
HHD Solid Waste Collection Truck	CNG		2.5E-04				5.0E-04	9.9E-04	5.0E-04			2.0E-02			2.7E-03	7.4E-04				4.2E-02
HHD Fleet Truck from MRFs	Diesel	1.98																		
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel	0.12																		
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline		5.7E-03	6.8E-04	2.9E-03	7.4E-04	4.6E-02	3.1E-02	8.5E-03	2.1E-04	1.0E-02	9.1E-03	9.2E-03	4.4E-03	1.4E-02	1.3E-03	1.1E-04	2.6E-04	1.1E-04	
HHD Fleet - Roll off	Diesel	0.99																		
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel	0.00																		
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel	2.02																		
Light Duty Truck (Diesel Half)	Diesel	0.07																		
Light Duty Truck (Gas Half)	Gasoline		3.6E-03	4.3E-04	1.9E-03	4.6E-04	2.9E-02	2.0E-02	5.3E-03	1.3E-04	6.5E-03	5.7E-03	5.8E-03	2.8E-03	8.9E-03	8.3E-04	6.6E-05	1.7E-04	6.6E-05	
	Total:	**5.68**	**9.6E-03**	**1.1E-03**	**4.8E-03**	**1.2E-03**	**7.5E-02**	**5.2E-02**	**1.4E-02**	**3.4E-04**	**1.7E-02**	**3.5E-02**	**1.5E-02**	**7.1E-03**	**2.6E-02**	**2.9E-03**	**1.7E-04**	**4.3E-04**	**1.7E-04**	**4.2E-02**

Pounds per Hour

Vehicle	Fuel Type	ETHYLBENZENE	STYRENE	1,3-BUTADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPIONALDEHYDE	MTBE	FORMALDEHYDE	2,2,4-TRIMETHYLPENTANE	METHANOL	BENZENE	ACETALDEHYDE	MEK	NAPHTHALENE	(1-METHYLETHYL) BENZENE	propylene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
HHD Solid Waste Collection Truck	Diesel		2.2E-06		9.9E-07	3.9E-05	5.5E-05				5.5E-04		1.1E-06	7.5E-05		5.5E-05				5.4E-07	8.0E-10	5.5E-08	4.0E-09	4.8E-09	3.0E-09	4.6E-09
HHD Solid Waste Collection Truck	CNG	7.9E-08				1.6E-07	3.2E-07	1.6E-07			6.4E-06			8.7E-07	2.4E-07				1.3E-05							
HHD Fleet Truck from MRFs	Diesel		9.5E-07		4.3E-07	1.7E-05	2.4E-05				2.4E-04		4.9E-07	3.3E-05		2.4E-05				2.1E-06	3.2E-09	2.2E-07	1.6E-08	1.9E-08	1.2E-08	1.8E-08
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel		6.1E-08		2.8E-08	1.1E-06	1.5E-06				1.5E-05		3.2E-08	2.1E-06		1.6E-06				1.3E-07	1.9E-10	1.3E-08	9.4E-10	1.1E-09	7.1E-10	1.1E-09
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline	1.8E-06	2.2E-07	9.4E-07	2.4E-07	1.5E-05	1.0E-05	2.7E-06	6.7E-08	3.3E-06	2.9E-06	2.9E-06	1.4E-06	4.5E-06	4.2E-07	3.4E-08	8.4E-08	3.4E-08								
HHD Fleet - Roll off	Diesel		5.7E-07		2.6E-07	1.0E-05	1.4E-05				1.4E-04		2.9E-07	2.0E-05		1.4E-05				1.3E-06	1.9E-09	1.3E-07	9.5E-09	1.1E-08	7.2E-09	1.1E-08
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel		0		0	0	0				0		0	0		0				0	0	0	0	0	0	0
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel		1.2E-06		5.3E-07	2.1E-05	2.9E-05				2.9E-04		6.0E-07	4.0E-05		3.0E-05				2.6E-06	3.9E-09	2.7E-07	1.9E-08	2.3E-08	1.5E-08	2.3E-08
Light Duty Truck (Diesel Half)	Diesel		4.6E-08		2.1E-08	8.3E-07	1.2E-06				1.2E-05		2.4E-08	1.6E-06		1.2E-06				9.6E-08	1.4E-10	9.8E-09	7.1E-10	8.5E-10	5.4E-10	8.2E-10
Light Duty Truck (Gas Half)	Gasoline	1.4E-06	1.7E-07	7.1E-07	1.8E-07	1.1E-05	7.6E-06	2.1E-06	5.1E-08	2.5E-06	2.2E-06	2.2E-06	1.1E-06	3.4E-06	3.2E-07	2.5E-08	6.4E-08	2.5E-08								
	Total:	**3.3E-06**	**5.3E-06**	**1.7E-06**	**2.7E-06**	**1.1E-04**	**1.4E-04**	**4.9E-06**	**1.2E-07**	**5.8E-06**	**1.3E-03**	**5.2E-06**	**5.0E-06**	**1.8E-04**	**9.8E-07**	**1.3E-04**	**1.5E-07**	**5.9E-08**	**1.3E-05**	**6.8E-06**	**1.0E-08**	**6.9E-07**	**5.0E-08**	**6.1E-08**	**3.8E-08**	**5.9E-08**

Project TAC Emissions

Vehicle	Fuel Type	VMT Calculation					DPM Emissions			ROC Emissions		
		Vehicles per year	VMT/year	Days / Year	VMT / Day	VMT / hr	EF (g/VMT)	(lb/yr)	(lb/hr)	EF (g/VMT)	(lb/yr)	(lb/hr)
HHD Solid Waste Collection Truck	Diesel	11,400	73,416	260	282	28.2	0.013	2.15	8.3E-04	0.316	---	2.0E-02
HHD Solid Waste Collection Truck	CNG	7,600	48,944	260	188	18.8	---	---	---	0.100	10.82	4.2E-03
HHD Fleet Truck from MRFs	Diesel	6,225	40,091	260	154	15.4	0.032	2.86	1.1E-03	0.137	---	4.7E-03
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel	16,079	103,551	260	398	39.8	0.006	1.26	4.9E-04	0.018	---	1.5E-03
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline	16,079	103,551	260	398	39.8	---	---	---	0.018	4.18	1.6E-03
HHD Fleet - Roll off	Diesel	1,439	9,270	260	36	3.6	0.032	0.66	2.5E-04	0.137	---	1.1E-03
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel	1,788	11,513	260	44	4.4	0.032	0.82	3.2E-04	0.137	---	0.00134
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel	15,960	102,784	260	395	39.5	0.032	7.33	2.8E-03	0.137	---	1.2E-02
Light Duty Truck (Diesel Half)	Diesel	3,183	20,496	260	79	7.9	0.006	0.25	9.6E-05	0.018	---	3.0E-04
Light Duty Truck (Gas Half)	Gasoline	3,183	20,496	260	79	7.9	---	---	---	0.018	0.83	3.2E-04

Pounds per Year

Vehicle	Fuel Type	DPM (lb/yr)	ETHYLBENZENE	STYRENE	1,3-BUTADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPIONALDEHYDE	MTBE	FORMALDEHYDE	2,2,4-TRIMETHYLPENTANE	METHANOL	BENZENE	ACETALDEHYDE	MEK	NAPHTHALENE	(1-METHYLETHYL) BENZENE	propylene
HHD Solid Waste Collection Truck	Diesel	2.15																		
HHD Solid Waste Collection Truck	CNG		1.1E-03				2.2E-03	4.3E-03	2.2E-03			8.8E-02			1.2E-02	3.2E-03				1.8E-01
HHD Fleet Truck from MRFs	Diesel	2.86																		
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel	1.26																		
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline		4.6E-02	5.4E-03	2.3E-02	5.8E-03	3.6E-01	2.5E-01	6.7E-02	1.7E-03	8.2E-02	7.2E-02	7.3E-02	3.5E-02	1.1E-01	1.0E-02	8.4E-04	2.1E-03	8.4E-04	
HHD Fleet - Roll off	Diesel	0.66																		
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel	0.82																		
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel	7.33																		
Light Duty Truck (Diesel Half)	Diesel	0.25																		
Light Duty Truck (Gas Half)	Gasoline		9.0E-03	1.1E-03	4.6E-03	1.2E-03	7.2E-02	5.0E-02	1.3E-02	3.3E-04	1.6E-02	1.4E-02	1.4E-02	6.9E-03	2.2E-02	2.1E-03	1.7E-04	4.1E-04	1.7E-04	
	Total:	**15.34**	**5.6E-02**	**6.5E-03**	**2.8E-02**	**7.0E-03**	**4.4E-01**	**3.0E-01**	**8.3E-02**	**2.0E-03**	**9.9E-02**	**1.7E-01**	**8.8E-02**	**4.2E-02**	**1.5E-01**	**1.6E-02**	**1.0E-03**	**2.5E-03**	**1.0E-03**	**1.8E-01**

Pounds per Hour

Vehicle	Fuel Type	ETHYLBENZENE	STYRENE	1,3-BUTADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPIONALDEHYDE	MTBE	FORMALDEHYDE	2,2,4-TRIMETHYLPENTANE	METHANOL	BENZENE	ACETALDEHYDE	MEK	NAPHTHALENE	(1-METHYLETHYL) BENZENE	propylene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
HHD Solid Waste Collection Truck	Diesel		1.1E-05		5.2E-06	2.0E-04	2.9E-04				2.9E-03		5.9E-06	3.9E-04		2.9E-04				2.8E-06	4.1E-09	2.8E-07	2.1E-08	2.5E-08	1.6E-08	2.4E-08
HHD Solid Waste Collection Truck	CNG	4.2E-07				8.3E-07	1.7E-06	8.3E-07			3.4E-05			4.6E-06	1.2E-06				7.0E-05							
HHD Fleet Truck from MRFs	Diesel		2.7E-06		1.2E-06	4.9E-05	6.9E-05				6.9E-04		1.4E-06	9.3E-05		6.9E-05				3.7E-06	5.5E-09	3.8E-07	2.8E-08	3.3E-08	2.1E-08	3.2E-08
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel		8.9E-07		4.1E-07	1.6E-05	2.3E-05				2.3E-04		4.6E-07	3.1E-05		2.3E-05				1.6E-06	2.4E-09	1.7E-07	1.2E-08	1.5E-08	9.2E-09	1.4E-08
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline	1.8E-05	2.1E-06	9.0E-06	2.2E-06	1.4E-04	9.6E-05	2.6E-05	6.4E-07	3.2E-05	2.8E-05	2.8E-05	1.3E-05	4.3E-05	4.0E-06	3.2E-07	8.0E-07	3.2E-07								
HHD Fleet - Roll off	Diesel		6.3E-07		2.9E-07	1.1E-05	1.6E-05				1.6E-04		3.2E-07	2.2E-05		1.6E-05				8.6E-07	1.3E-09	8.8E-08	6.4E-09	7.6E-09	4.8E-09	7.4E-09
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel		7.8E-07		3.5E-07	1.4E-05	2.0E-05				2.0E-04		4.0E-07	0.0E+00		2.0E-05				1.1E-06	1.6E-09	1.1E-07	7.9E-09	9.5E-09	6.0E-09	9.2E-09
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel		6.9E-06		3.2E-06	1.2E-04	1.8E-04				1.8E-03		3.6E-06	2.4E-04		1.8E-04				9.5E-06	1.4E-08	9.7E-07	7.1E-08	8.5E-08	5.4E-08	8.2E-08
Light Duty Truck (Diesel Half)	Diesel		1.8E-07		8.0E-08	3.2E-06	4.5E-06				4.5E-05		9.1E-08	6.1E-06		4.5E-06				3.2E-07	4.8E-10	3.3E-08	2.4E-09	2.9E-09	1.8E-09	2.8E-09
Light Duty Truck (Gas Half)	Gasoline	3.5E-06	4.1E-07	1.8E-06	4.5E-07	2.8E-05	1.9E-05	5.1E-06	1.3E-07	6.3E-06	5.5E-06	5.6E-06	2.6E-06	8.5E-06	8.0E-07	6.4E-08	1.6E-07	6.4E-08								
	Total:	**2.1E-05**	**2.6E-05**	**1.1E-05**	**1.3E-05**	**5.9E-04**	**7.1E-04**	**3.2E-05**	**7.7E-07**	**3.8E-05**	**6.0E-03**	**3.4E-05**	**2.8E-05**	**8.4E-04**	**6.1E-06**	**6.0E-04**	**9.6E-07**	**3.9E-07**	**7.0E-05**	**2.0E-05**	**2.9E-08**	**2.0E-06**	**1.5E-07**	**1.8E-07**	**1.1E-07**	**1.7E-07**

Project Increment TAC Emissions

Pounds per Year

Vehicle	Fuel Type	DPM (lb/yr)	ETHYLBENZENE	STYRENE	1,3-BUTADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPIONALDEHYDE	MTBE	FORMALDEHYDE	2,2,4-TRIMETHYLPENTANE	METHANOL	BENZENE	ACETALDEHYDE	MEK	NAPHTHALENE	(1-METHYLETHYL) BENZENE	propylene
HHD Solid Waste Collection Truck	Diesel	1.65																		
HHD Solid Waste Collection Truck	CNG		8.3E-04				1.7E-03	3.3E-03				6.8E-02			9.2E-03	2.5E-03				1.4E-01
HHD Fleet Truck from MRFs	Diesel	0.88																		
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel	1.15																		
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline		4.0E-02	4.7E-03	2.0E-02	5.1E-03	3.2E-01	2.2E-01	5.9E-02	1.5E-03	7.2E-02	6.3E-02	6.4E-02	3.0E-02	9.8E-02	9.1E-03	7.3E-04	1.8E-03	7.3E-04	
HHD Fleet - Roll off	Diesel	-0.33																		
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel	0.82																		
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel	5.31																		
Light Duty Truck (Diesel Half)	Diesel	0.18																		
Light Duty Truck (Gas Half)	Gasoline		5.4E-03	6.4E-04	2.8E-03	6.9E-04	4.3E-02	3.0E-02	8.0E-03	2.0E-04	9.8E-03	8.6E-03	8.7E-03	4.1E-03	1.3E-02	1.2E-03	9.9E-05	2.5E-04	9.9E-05	
	Total:	**9.66**	**4.6E-02**	**5.4E-03**	**2.3E-02**	**5.8E-03**	**3.6E-01**	**2.5E-01**	**6.7E-02**	**1.7E-03**	**8.2E-02**	**1.4E-01**	**7.3E-02**	**3.4E-02**	**1.2E-01**	**1.3E-02**	**8.3E-04**	**2.1E-03**	**8.3E-04**	**1.4E-01**

Pounds per Hour

Vehicle	Fuel Type	ETHYLBENZENE	STYRENE	1,3-BUTADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPIONALDEHYDE	MTBE	FORMALDEHYDE	2,2,4-TRIMETHYLPENTANE	METHANOL	BENZENE	ACETALDEHYDE	MEK	NAPHTHALENE	(1-METHYLETHYL) BENZENE	propylene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
HHD Solid Waste Collection Truck	Diesel		9.2E-06		4.2E-06	1.7E-04	2.3E-04				2.3E-03		4.8E-06	3.2E-04		2.4E-04				2.2E-06	3.3E-09	2.3E-07	1.7E-08	2.0E-08	1.3E-08	1.9E-08
HHD Solid Waste Collection Truck	CNG	3.4E-07				6.7E-07	1.3E-06				2.7E-05			3.7E-06	1.0E-06				5.7E-05							
HHD Fleet Truck from MRFs	Diesel		1.8E-06		8.0E-07	3.2E-05	4.5E-05				4.5E-04		9.1E-07	6.1E-05		4.5E-05				1.6E-06	2.3E-09	1.6E-07	1.2E-08	1.4E-08	8.9E-09	1.4E-08
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel		8.3E-07		3.8E-07	1.5E-05	2.1E-05				2.1E-04		4.3E-07	2.9E-05		2.1E-05				1.5E-06	2.2E-09	1.5E-07	1.1E-08	1.3E-08	8.5E-09	1.3E-08
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline	1.6E-05	1.9E-06	8.1E-06	2.0E-06	1.3E-04	8.6E-05	2.3E-05	5.8E-07	2.8E-05	2.5E-05	2.5E-05	1.2E-05	3.9E-05	3.6E-06	2.9E-07	7.2E-07	2.9E-07								
HHD Fleet - Roll off	Diesel		5.9E-08		2.7E-08	1.1E-06	1.5E-06				1.5E-05		3.0E-08	2.0E-06		1.5E-06				-4.2E-07	-6.3E-10	-4.3E-08	-3.1E-09	-3.8E-09	-2.4E-09	-3.6E-09
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel		0		0	0	0				0		0	0		0				0	0	0	0	0	0	0
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel		5.8E-06		2.6E-06	1.0E-04	1.5E-04				1.5E-03		3.0E-06	2.0E-04		1.5E-04				6.9E-06	1.0E-08	7.0E-07	5.1E-08	6.1E-08	3.9E-08	5.9E-08
Light Duty Truck (Diesel Half)	Diesel		1.3E-07		5.9E-08	2.3E-06	3.3E-06				3.3E-05		6.7E-08	4.5E-06		3.3E-06				2.3E-07	3.4E-10	2.3E-08	1.7E-09	2.0E-09	1.3E-09	2.0E-09
Light Duty Truck (Gas Half)	Gasoline	2.1E-06	2.5E-07	1.1E-06	2.7E-07	1.7E-05	1.1E-05	3.1E-06	7.6E-08	3.8E-06	3.3E-06	3.3E-06	1.6E-06	5.1E-06	4.8E-07	3.8E-08	9.5E-08	3.8E-08								
	Total:	**1.8E-05**	**2.1E-05**	**9.1E-06**	**1.1E-05**	**4.8E-04**	**5.7E-04**	**2.6E-05**	**6.5E-07**	**3.2E-05**	**4.8E-03**	**2.9E-05**	**2.3E-05**	**6.6E-04**	**5.1E-06**	**4.7E-04**	**8.1E-07**	**3.3E-07**	**5.7E-05**	**1.3E-05**	**1.9E-08**	**1.3E-06**	**9.7E-08**	**1.2E-07**	**7.4E-08**	**1.1E-07**

Organic TAC Emissions

Emissions Factors

Parameter	Acetaldehyde	Isopropyl Alcohol	Methanol	Formaldehyde	Xylene	Ethyl Benzene	Styrene	Dichlorobenzene Isomers	Ammonia
Fraction of VOC Ef (lb/lb)	3.20E-03	2.03E-01	5.21E-01	4.35E-03	8.40E-04	1.30E-04	2.40E-04	8.80E-04	---

*Emission factors are derived from the VOC profile 1616, "Green Waste Composting" from *EPA Speciate 4.4* , test data from the 2011 article *Volatile organic compound emissions from green waste composting: Characterization and ozone formation* in the journal, *Atmospheric Environment* ,(45, 2011, 1841-1848).

Ammonia emissions calculated directly as part of criteria pollutant calculations and assume 20% control

Baseline Emissions

Parameter	Throughput (wet ton/yr)	VOC (lbs/ton)	VOC (lbs/year)	VOC (lbs/hr)	NH3 (lbs/ton)	NH3 (lbs/year)	NH3 (lbs/hr)
Stockpiling	58,619	0.2	11,724	1.3	0	0	0.0
Windrow Composting & Cure	58,619	3.58	209,856	24.0	0.624	36,578	4.2
		Total:	**221,580**	**25.3**	**Total:**	**36,578**	**4.2**

Parameter	VOC Emissions	Acetaldehyde	Isopropyl Alcohol	Methanol	Formaldehyde	Xylene	Ethyl Benzene	Styrene	Dichlorobenzene Isomers	NH3
Hourly Emissions (lbs/hr)	25.3	0.08	5.12	13.17	0.11	0.02	0.00	0.01	0.02	4.18
Yearly Emissions (lbs/year)	221,580	709	44,888	115,399	964	186	29	53	195	36,578

Post-Project Total Emissions

Parameter	VOC Emissions	Acetaldehyde	Isopropyl Alcohol	Methanol	Formaldehyde	Xylene	Ethyl Benzene	Styrene	Dichlorobenzene Isomers	NH3
Hourly Emissions (lbs/hr)	63.5	0.20	12.87	33.09	0.28	0.05	0.01	0.02	0.06	16.31
Yearly Emissions (lbs/year)	505,945	1,619	102,494	263,496	2,201	425	66	121	445	129,870

Project Increment Emissions

Parameter	VOC Emissions	Acetaldehyde	Isopropyl Alcohol	Methanol	Formaldehyde	Xylene	Ethyl Benzene	Styrene	Dichlorobenzene Isomers	NH3
Hourly Emissions (lbs/hr)	38.2	0.12	7.75	19.91	0.17	0.03	0.00	0.01	0.03	12.13
Yearly Emissions (lbs/year)	284,365	910	57,607	148,097	1,237	239	37	68	250	93,292

Hours/day =	24
Days/year =	365

Source			Source Parameters	
Name	**ID**	**Source Type**	**Release/Stack Height (m)**	**Initial Vertical Dim. (m)**
Off Road Equipment	PAREA1	Area	5	2.3
Fugitive VOCs	PAREA3	Area	3.05	0.0
Anaerobic Digester	PAREA2	Area	5	2.3
Haul Road	SLINE1	Line (Adj. Vol.)	2.55	2.37

Lakes Version: 9.3.0

Met Data:

File Name:	723927.sfc & 723927.pfl
Date Range:	1/1/2009 to 1/2/2014
Location:	Oxnard Airport

Elevation Data:

Source:	WebGIS
Location:	Saticoy and Santa Paula

Grid Receptors:

Grid Points	x = 130 y = 80
Grid Spacing (m)	50
Flagpole Ht (m)	1.5
Onsite Receptors	Disabled

Boundary Receptors:

Receptor Spacing (m)	25
Flagpole ht (m)	1.5

AERMOD Dispersion Options

Regulatory Default Options	**Yes**	Were regulatory defaults options utilized?
If no, which non-default options were utilized:	---	N/A
	---	N/A
	---	N/A
Averaging Times Utilized	**1-hr**	Acute risk averaging time
	Period	Chronic/cancer risk averaging time ("period" = met data duration)
Dispersion Coefficient	**Rural**	Rural or Urban
Terrain Height Options	**Elevated**	Elevated (default), flat, or flat & elevated

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374 Poli Street, Suite 200 • Ventura, California 93001

DUST CONTROL PLAN

Agromin – Commercial Organics Processing Operation
Santa Paula, California 93060

February 2017

Prepared for: Agromin
201 Kinetic Drive
Oxnard, CA 93030

Prepared by: Sespe Consulting, Inc.
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County of Ventura
Notice of Preparation of an EIR
PL17-0154
Attachment 5 - Dust Control Plan

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DUST CONTROL PLAN

Agromin – Commercial Organics Processing Operation
Santa Paula, California

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DUST CONTROL PLAN

Agromin – Commercial Organics Processing Operation
Santa Paula, California 93060

February 2017

1.0 INTRODUCTION

This Dust Control Plan provides a toolbox for Agromin field personnel to properly recognize dust sources and aid in the proper implementation of dust suppression best management practices (BMP's) at the Agromin- Commercial Organics Processing Operation facility located in Santa Paula, Ventura County, California. The control measures and operational protocols specified in this handbook were chosen to reduce and/or prevent wind transport of fugitive dust particles from disturbed soil surfaces, roadways, and drainage areas as well as transport of fine organic particles from the chipping, grinding, screening, compost storage, and vehicle operations.

In general, this handbook should be used to accomplish the following objectives:

1) Identify potential sources and migration pathways of fugitive dust emissions.
2) Eliminate potential origins of dust from the facility, as feasible.
3) Monitor dust generating activities and assess the extent of resulting dust impacts.
4) Implement corrective actions as required to mitigate significant dust impacts.

1.1 Site Description

The Agromin- Commercial Organics Processing Operation is a proposed commercial composting facility that will process and compost green material and food material collected in Ventura County (Project). The Project will expand a current 15-acre agricultural composting operation into a 70-acre Commercial Organics Processing Operation, located in an unincorporated area of Ventura County, near the City of Santa Paula (APN: 090-0-180-085). Composting processes employed at the proposed facility include the following:

- Open Windrows
- Covered Aerated Static Piles (CASP)
- Anaerobic Digestion (AD)

Nearby receptors potentially effected by fugitive dust emissions generated at the facility include the following (Figure 1, Attachment A):

- North: Avocado orchards
- South: Limoneira Farm Worker Residence
- East: Avocado orchards & residence(s)
- West: Limoneira Farm Worker Residence(s)

The primary structural and operational components of the proposed facility include the following (Figure 2, Attachment A):

- Two (2) organic material recovery buildings for unloading, processing, screening, and sorting incoming green and food material. The green material building will have open sides while the food material building will be fully enclosed and subject to negative pressure, with air ventilated through biofilters to control emissions.
- A Covered Aerated Static Pile (CASP) system to process a mixture of green and food material in aerated bunkers. Emissions from the CASP bunkers are controlled using biofilters or a multi-layer laminate cover (GORE™ Cover).
- An anaerobic digestion (AD) system to decompose green and food organic materials into useable compost within an oxygen-free environment. The AD system is fully enclosed and therefore has limited potential to generate dust emissions.
- Open windrow composting of green material only, consisting of active composting of organics through aerobic composting in long, narrow uncovered piles. Windrows will be oriented west to east to minimize the potential for fugitive dust generation resulting from prevailing winds.
- Two (2) feedstock storage grinding & mixing pad areas to store incoming green and feedstock materials in open stockpiles prior to being blended with compost.
- Mixing and blending additives such as gypsum, peat moss, and perlite with finished composted material inside a Packaging Building to produce soil amendment products. The building will be fully enclosed.
- Finished compost will be stockpile in finished compost storage areas on the western portion of the facility.

The Project also includes transferring Agromin's existing composting operations from their Shoreline facility, located at 6859 Arnold Road in Oxnard, to the Project site. The Shoreline facility's composting operations are scheduled to be shut down by 2019, at which time all equipment and processes will be transferred and integrated into the new Biogenic Energy Park facility.

1.2 Local Meteorological Data

The facility is located within the Mediterranean or subtropical dry summer climate zone, experiencing mild winters and warm, dry summers. The short "wet" season and typically long, hot "dry" season allows the soils to thoroughly dry out, which increases the chance of particulates becoming airborne. Onshore breezes from the west are typical at the facility. Strong, dry Santa Ana winds can also originate from the east, typically during the fall and winter months. The annual average mean temperature in the area is 61.2°F. The annual average minimum temperature is 47.5°F and the annual average maximum temperature is 75.0°F. Summer daytime temperatures often exceed 100°F. The average annual precipitation is 17.93 inches, and the primary months of precipitation are November through March. (*Western Regional Climate Center, 2016*)

Compiling historical wind data from nearby Oxnard and Camarillo airports from 2009 to 2014, average wind speeds in the area are estimated at 2.6 to 3.1 m/s (≈ 5.8 to 6.9 mph) and generally blow from the west/southwest (onshore). As such, sensitive receptors to the east of the Project site have a greater potential to be impacted by fugitive dust emissions originating from the facility. See the Wind Rose (Figure 3, Attachment A) for more detail. (*California Air Resources Board (CARB) Meteorological Files*)

2.0 REGULATORY SETTING

Dust control requirements for composting operations are governed by the following state and local agencies, and the regulations adopted by those agencies. These requirements form the basis of this Dust Control Plan.

California Department of Resources Recycling and Recovery (CalRecycle):

California Code of Regulations (CCR), Title 14, Division 7, Chapter 3 (Minimum Standards for Solid Waste Handling and Disposal), Section 17407.4 (Dust Control) of Article 6.2 (Operating Standards) states the following:

> *(a) The operator shall take adequate measures to minimize the creation, emission, or accumulation of excessive dust and particulates, and prevent other safety hazards to the public caused by obscured visibility. The operator shall minimize the unnecessary handling of wastes during processing to prevent the creation of excessive dust. Measures to control dust include, but are not limited to: reduced processing, periodic sweeping and cleaning, misting systems or ventilation control. One or more of the following may be an indication that dust is excessive:*
>
> *(1) safety hazards due to obscured visibility; or*
> *(2) irritation of the eyes; or*
> *(3) hampered breathing:*
> *(4) migration of dust off-site.*

Ventura County Air Pollution Control District (VCAPCD):

Rule 55 (Fugitive Dust) of the VCAPCD Rules and Regulations outlines general requirements related to fugitive dust generation and required mitigation measures. The applicable portions of this rule are addressed within this handbook, specifically those governing visible dust beyond the property line, track-out, earth-moving/bulk material handling, and truck hauling.

California Stormwater Quality Association (CASQA):

CASQA publishes a Best Management Practices (BMP) Handbooks for managing stormwater and other related impacts resulting from construction projects and industrial facility operations. The handbook outlines various BMP's related to soil stabilization and fugitive dust control. The applicable portions of this handbook are referenced throughout this document.

2.1 Airborne Dust Fundamentals

The California Air Resources Control Board (CARB) defines "dust" as particulate matter (PM), specifically solid particles which come primarily from the soil or other organic materials. "Fugitive" dust is PM suspended in the air by wind action and human activities. Fugitive dust particles are composed mainly of soil minerals (e.g. oxides of silicon, aluminum, calcium, and iron), but can also contain other particles (sea salt, pollen, spores, etc.). Dust can be carried off-site, increasing the likelihood of sedimentation and pollution of waterbodies, and damage to adjacent agricultural operations (*CARB, 2010*).

About half of fugitive dust particles (by weight) are big particles, larger than 10 microns in diameter.

These larger particles settle out more quickly, on the ground and in the upper airways of human lungs. However, the other half are particles 10 microns or smaller, known as PM10, can remain airborne for weeks. When inhaled PM10 particles can travel easily to the deep parts of the lungs and may remain there, causing respiratory illness, lung damage, and even premature death in sensitive individuals.

Additionally dust particles smaller than 2.5 microns, known as PM2.5, may contribute to an inhospitable working environment and create risk factors that may impair respiratory health. Airborne particles smaller than 2.5 microns pose an even greater threat to human health than PM10, and PM2.5 emissions are generally regulated by local air pollution control districts.

3.0 DUST SOURCES & BMP'S

The best method of controlling dust is to prevent dust production at the source. This can be best accomplished by limiting the amount of bare soil exposed at any one time and limiting dust generating activities to periods with minimal wind velocities or when wind directions would not substantially impact nearby sensitive receptors.

3.1 Potential Sources of Dust

The following facility operations have the potential to generate fugitive dust emissions:

- Driving vehicles and mobile equipment on unpaved roads and operational areas.
- Moving vehicles offsite with the potential to create sediment tracking onto paved roads (track-out).
- Constructing and maintaining material storage piles.
- Exposing soils, including vegetation removal and grading activities.
- Final grading and site stabilization.
- Batch dropping from front-end loaders.
- Transferring feedstock materials via conveyor systems.
- Tipping, grinding, screening, mixing, and other operational activities with the potential to create dust and debris that could become airborne.

3.2 Dust Control BMP's

Dust control BMPs generally stabilize exposed surfaces and minimize activities that suspend or track dust particles:

- For heavily traveled and disturbed areas, wet suppression (watering), chemical dust suppression, gravel and/or asphalt surfacing, temporary gravel entrances, equipment wash-out areas, and haul truck/equipment covers can be employed as dust control applications. Water used for dust suppression should be applied by means of pressure-type distributors or pipelines equipped with a spray system or hoses and nozzles that will ensure even distribution.

- At least one mobile unit (water truck) should be available at all times to apply water to the exposed roadways and working surfaces as needed.

- Permanent or temporary vegetation and mulching can be employed for areas of occasional and/or no construction traffic.

- Preventive measures would include minimizing surface areas to be disturbed, limiting on-site vehicle traffic to 5 mph, and controlling the number and activity of vehicles on site at any given time.

- Remove dust deposited by vehicles and equipment on paved surfaces as soon as possible, through the use of vacuum trucks, street sweepers, and brooms. Provide rapid clean-up of sediments deposited on paved roads.

Additional preventative operational measures include but are not limited to the following:

- Preventative measures can also be employed on pieces of equipment (such as chippers, grinders, screens, etc.) capable of producing airborne particulates, which would include covered conveyor belts, use of integrated misting systems, and maximizing the physical separation of dust generating activities from sensitive receptors.

- Schedule dust generating activities during periods of light winds and minimize exposed materials and process areas. Wind conditions should be monitored daily by onsite personnel.

- Quickly stabilize exposed soils using vegetation, mulching, and stone/gravel layering as appropriate and feasible.

- Direct feedstock delivery traffic to stabilized roadways within the facility. Signs should be installed onsite to direct vendor and customer vehicles while onsite.

- All distribution equipment shall be equipped with a positive means of shutoff.

- Construct natural or artificial windbreaks or windscreens. These may be designed as enclosures for small dust sources (chippers, grinders, mixers, etc.). Major grinding and size reductions should be conducted within one of the Organic Waste Recovery Buildings.

- Furnish stabilized construction road entrances and vehicle wash-down areas to prevent track-out.

The following table shows control practices that can be generally applied to the site conditions that create fugitive dust.

SITE CONDITION	Dust Control Practices						
	Speed Limits	Vegetation	Mulching	Wet/Chemical Suppression (Watering)	Entrance/Exit Stabilization	Equipment Covers	Truck Covers
Disturbed Areas with NO Traffic		X	X	X	X		
Disturbed Areas Subject to Traffic				X	X		
Material Stock Pile Stabilization				X		X	
Clearing & Excavation			X	X			X
Truck Traffic on Facility Roads	X			X			X
Mud/Dirt Carry Out				X	X		
Pre-Processing Areas				X		X	
Finishing/Mixing Areas				X		X	
Product Shipping				X			X

3.2.1 Vegetation Preservation

This BMP involves preserving existing vegetation and planting new vegetation at the facility. Vegetation preservation is an effective method for minimizing dust generation and preventing fugitive dust particles from leaving the site, as roots naturally secure surface material. Vegetation along the perimeters of the facility, specifically the existing line of windbreak trees, should be protected and preserved during construction and site operations.

The following specific measures related to vegetation preservation are recommended:

1) Prior to construction activities, including clearing, grubbing, grading, or other soil disturbing operations, vegetated areas to be protected should be clearly delineated. This can be accomplished through temporary fencing and proper signage. Prior to construction, temporary fencing and appropriate signs shall be placed along the eastern perimeter of the site to prevent disturbances to the existing line of windbreak trees (see Figure 1).

2) Instruct all employees and subcontractors onsite of the location of protected vegetation and ensure onsite personnel honor these protection areas.
3) Minimize disturbances to vegetation by placing temporary roadways, storage facilities, and parking areas as far away as feasibly possible from the protected areas.
4) Keep mobile and stationary equipment as far away as feasibly possible from preserved trees to prevent root and trunk damage. Trenching should be done as far away from tree trunks as possible, typically outside the drip line. Trenches should be filled in as soon as possible to avoid root drying and soil should be tamped down to fill in air pockets. Never expose roots to the air whenever feasibly possible.

3.2.2 Wood Mulch

This BMP consists of applying a mixture of shredded wood mulch, bark, or compost to bare soil to reduce runoff, increase infiltration, and reduce erosion due to wind or rainfall impact. Wood mulch provides temporary or short-term soil stabilization but is not a long-term mitigation option. This material should be applied to exposed soil beneath the existing tree canopy along the eastern edge of the facility. Please note that mulch should not be used for dust suppression during periods of high winds, as there is a risk that smaller particles within the mulch may dry out and also become airborne.

The following specific measures related to wood mulch application are recommended:

1) Select wood mulch appropriate for the application and site conditions. After existing vegetation has been removed, roughen soil surface before application if feasible.
2) Mulch depth depends on the product selected. Distribute shredded wood mulch evenly across the soil to a depth of 50 mm (2 in) to 75 mm (3 in). Mulch composed of recycled green material should be applied to a maximum depth of 50 mm (2 in).
3) Inspect and maintain mulch to ensure that it lasts long enough to achieve the erosion control objective desired.

3.2.3 Wet/Chemical Suppression

This BMP consists of applying water or other dust palliatives (chemical binders) to minimizing dust generation and preventing fugitive dust particles from leaving the site. Although effective for dust control, watering prevents dust only for a short period (generally less than a few hours) and should be applied daily (or more often) to be maximally effective. Water trucks and mobile mist systems will be maintained onsite and available for use if onsite employees notice dust becoming airborne and/or leaving the site in disturbed areas. If water is deemed ineffective, chemical dust suppressants which are mulch or fiber based (e.g. paper mulch with gypsum binder) may be utilized. Wet and chemical suppression techniques are highly effective for temporary dust suppression during infrequent high wind events while chemical suppression is more appropriate for long-term dust suppression in specific problem areas.

The following specific measures related to wet and chemical suppression are recommended:

1) Care should be taken when applying water or palliatives to unpaved roads to prevent the washing of sediment into storm drains or nearby receiving waters. Do not apply so much water to an area that runoff occurs. If runoff is observed, immediate cease application of suppressants.
2) When utilizing a mist system or building mounted system, the mist system shall be located as close as possible to the primary dust source to reduce the offsite transport of organic fines generated during the grinding and screening processes. Depending upon the height at which dust is generated, the equipment may need to be placed on the roof of an adjacent building to ensure maximum dust suppression.
3) Where feasible, cover small stockpiles or disturbed soil areas as an alternative to watering. This can be accomplished with mulch or plastic tarps if feasible.
4) When applying palliatives or binders for wind erosion control, refer to the manufacturer's recommendations for guidance.
    - Chemical dust suppression agents selected for use at the facility should be environmentally benign and non-hazardous.
    - Chemical dust suppressants should not be used within 100 feet of wetlands or other nearby receiving waters. Additionally, care should be taken when using chemical suppressants adjacent to the drainage ponds (see Figure 2).

3.2.4 Stabilized Entrance/Exit and Roadways

This BMP consists of stabilizing the defined entrance/exit point as well as internal roadways at the facility to reduce exposed sediment becoming airborne and prevent track-out onto public roads by vehicles. Stabilized entrances/exits and vehicle roadways are an effective method for reducing dust and erosion.

Stabilized Entrance/Exit: Stabilized entrances are generally effective in removing sediment from equipment leaving a construction site. The entrance should be built on level ground. Advantages of the stabilized construction entrance/exit is that it does remove some sediment from equipment and serves to channel construction traffic in and out of the site at specified locations. Entrance/Exit Design and Layout Considerations:

1) Design a stabilized entrance/exit to support the heaviest vehicles and equipment that will use it. The access point should be at least 35 feet in length or four times the circumference of the largest construction vehicle tire (whichever is greater). Designate access points and require all employees, subcontractors, and others to use them. Rumble racks constructed of steel panels with ridges and installed in the stabilized entrance/exit will help remove additional sediment and to keep adjacent streets clean.
2) Construct on level ground where possible.
3) During construction activities limit the points of entrance/exit to the site, preferably to a single designated location.
4) Grade entrance/exit points to prevent runoff from leaving the site. Route runoff from the entrance/exits through a sediment-trapping device, such as a silt fence or sandbag check dams, before discharge.
5) Stabilize the roadway with aggregate, AC, or PCC, depending on expected usage and site conditions. When access points are constructed from aggregate, aggregate should be 3-6 inches diameter and at least 1 foot in depth. Where feasible, aggregate should be placed over geotextile fabric.
6) Inspect and maintain stabilized entrance/exit points. Routinely check for damage and effectiveness. Remove accumulated sediment and or replace stabilization material as needed.

Stabilized Roadways: The facility design includes paving access roads, facility roads and transportation routes and parking areas. Limiting the speed of vehicles to 5 mph while onsite and use of wet suppression techniques will be used to control dust generation.

3.2.5 Equipment Covers/Dust Barriers

This BMP consist of covering dust generating equipment on-site or establishing a non-natural barrier to prevent dust contamination. Equipment coverings can range from covering individual components of processing equipment (such as covered conveyor belts, hoppers, etc.) to constructing a screen or fence barrier to limit off-site transport.

The following specific measures related to equipment covers and dust barriers are recommended:

1) In addition to covering the on-site conveyors, and/or feedstock hoppers on the grinders and screens, a mist system at the material outfall should also be considered to further reduce the chance of fugitive dust transport during equipment usage.
2) Any dust barrier should be regularly inspected for effectiveness, holes, etc. The barrier should be fully anchored into the ground surface to prevent destruction during high wind events. The barrier should not be placed adjacent to large trees or similar objects capable of generating debris that could damage the barrier. The height of said barrier shall not exceed the height of existing buildings, unless specifically allowed by the Local Enforcement Agency (LEA).

3.2.6 Buffer for Pre-Processing & Finished Compost Storage Areas

This BMP consists of locating dust generating activities, such as feedstock pre-processing, screening, grinding, and finish product storage areas, as far upwind as possible to reduce the potential impact of dust transport on sensitive receptors.

The following specific measures related to processing/storage area buffers are recommended:

1) All feedstock delivery, pre-processing, grinding, screening and finished product storage shall be sufficiently separated from nearby sensitive receptors.
2) To the extent feasible, finished product storage shall be located upwind (i.e. west) of the pre-processing/grinding/screening operation (see Figure 2). This will allow fugitive dust originating from finished product storage areas to potentially settle out over other process areas.

3.2.7 Suspension of Facility Activities

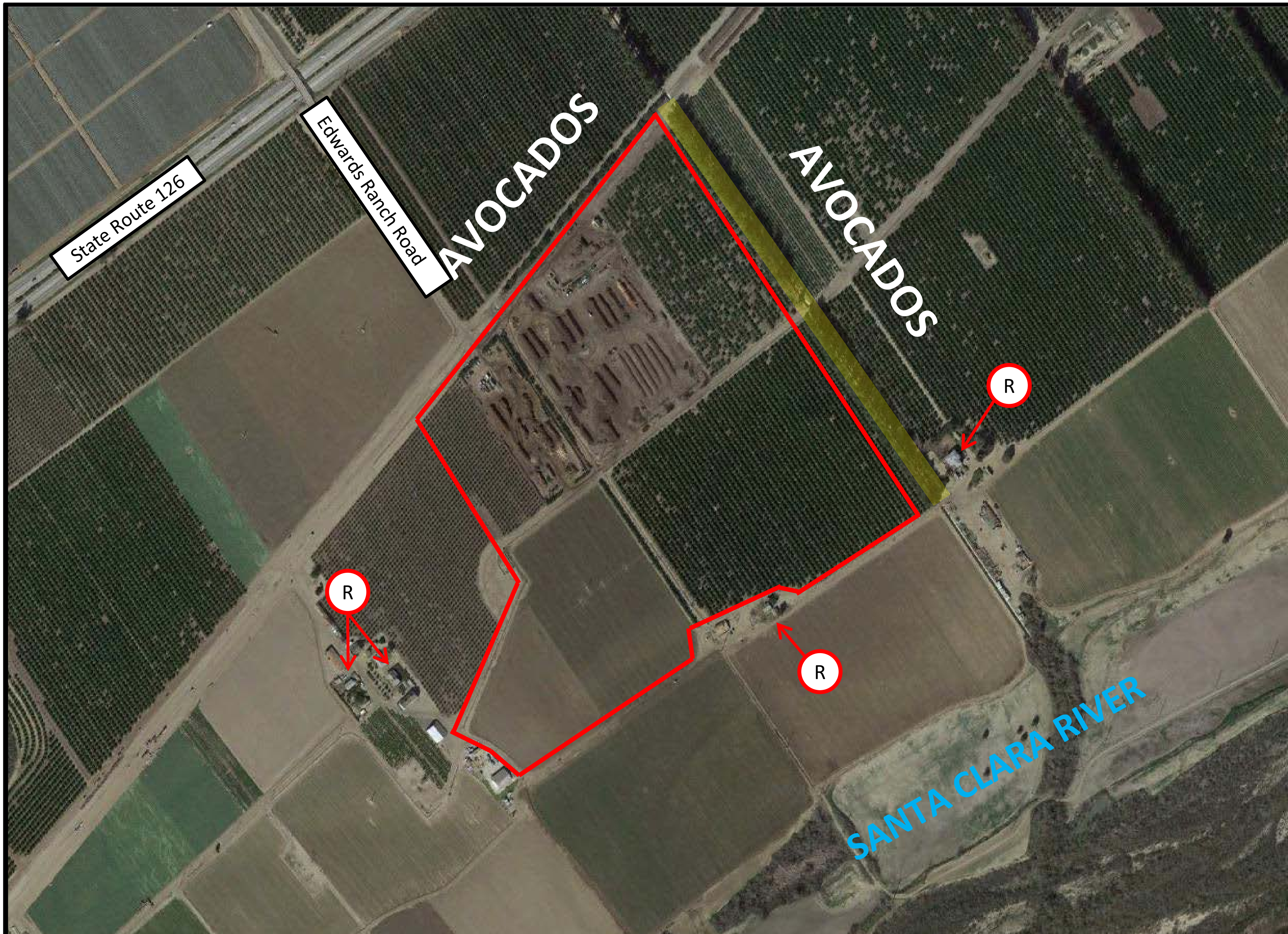
This BMP consists if ceasing or temporarily suspending facility activities and processes during high wind events in order to minimize the creation of dust. High wind events are defined as wind of such velocity as to cause fugitive dust from within the site to blow offsite.

The following specific measures related to suspension of facility activities and/or processes are recommended:

1) If fugitive dust is observed blowing offsite, the source should be investigated. Once determined, additional dust prevention measures shall be initiated. This may include:
   - The use of additional wet suppression;
   - The dust generating activities (e.g. use of equipment and processing activities) shall be immediately curtailed until the conditions abate.
2) If facility is experience extreme high wind event, all facility activities shall cease until the extreme wind event has subsided and/or no fugitive dust is observed leaving the site.

ATTACHMENT A

FIGURES



Google Maps 2016

Approximate Site Boundaries

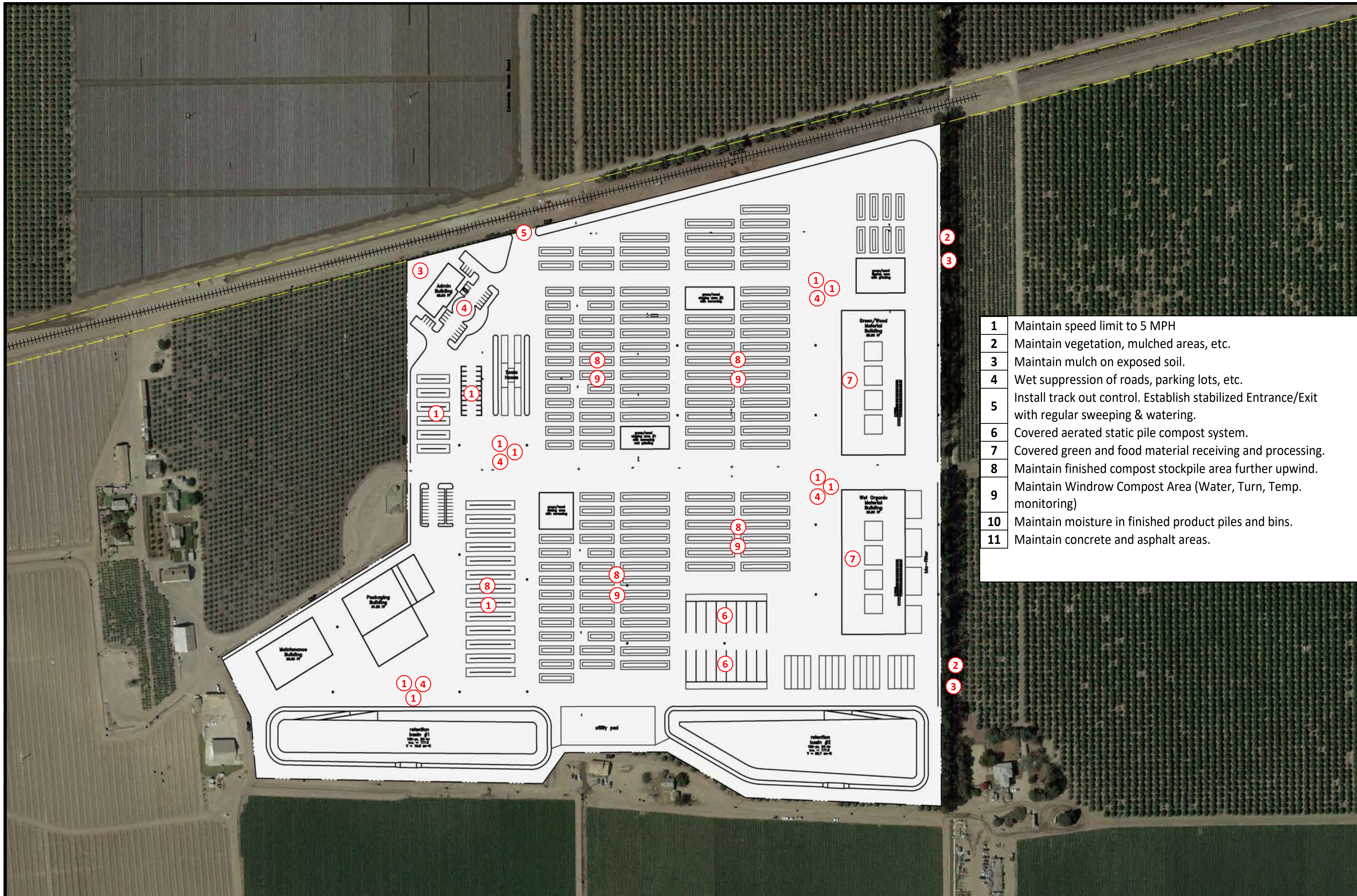
- Windbreak Trees (should be delineated and preserved)

R - Residence(s)

N

SESPE CONSULTING, INC.

FIGURE 1	SITE LOCATION & NEARBY Agromin - Biogenic Energy Park Santa Paula, California 93060		
PROJECT #:	AG01.11.02	DATE:	11/4/16
SCALE:	as shown	DRAWN BY:	GPS



1	Maintain speed limit to 5 MPH
2	Maintain vegetation, mulched areas, etc.
3	Maintain mulch on exposed soil.
4	Wet suppression of roads, parking lots, etc.
5	Install track out control. Establish stabilized Entrance/Exit with regular sweeping & watering.
6	Covered aerated static pile compost system.
7	Covered green and food material receiving and processing.
8	Maintain finished compost stockpile area further upwind.
9	Maintain Windrow Compost Area (Water, Turn, Temp. monitoring)
10	Maintain moisture in finished product piles and bins.
11	Maintain concrete and asphalt areas.

N

SESPE CONSULTING, INC.

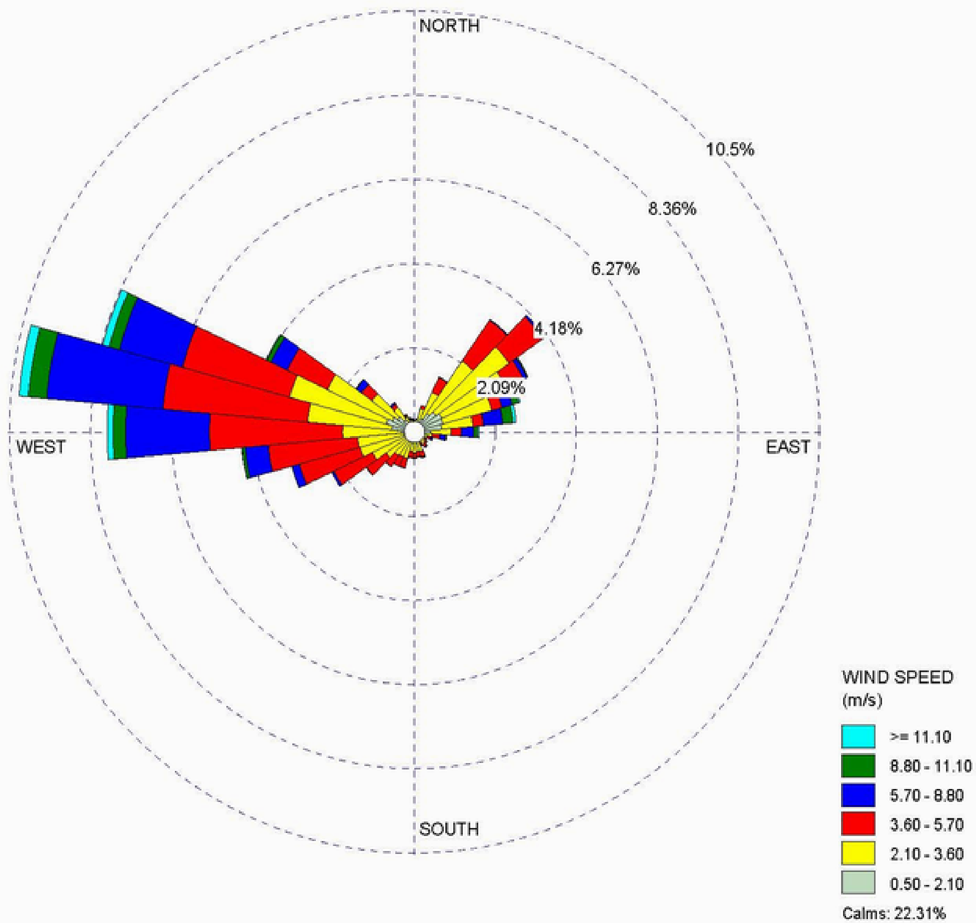
FIGURE 2

FACILITY SITE PLAN
Agromin - Biogenic Energy Park
Santa Paula, California 93060

PROJECT #:	AG01.11.02	DATE:	11/4/16
SCALE:	as shown	DRAWN BY:	GPS

WIND ROSE PLOT:
Oxnard Airport

DISPLAY:
Wind Speed
Direction (blowing from)



COMMENTS: Data taken from CARB - https://www.arb.ca.gov/toxics/harp/metfiles2.htm	DATA PERIOD: Start Date: 1/1/2009 - 00:00 End Date: 1/2/2014 - 23:59	COMPANY NAME: Sespe Consulting
		MODELER: RDF
	CALM WINDS: 22.31%	TOTAL COUNT: 42809 hrs.
	AVG. WIND SPEED: 3.08 m/s	DATE: 2/28/2017
		PROJECT NO.: Agromin Santa Paula

SESPE CONSULTING, INC.

Windrose create using WRPLOT View program (Lakes Environmental Saftware).

FIGURE 3	**WINDROSE** Agromin - Biogenic Energy Park Santa Paula, California		
PROJECT #:	AG01.11.02	DATE:	4/25/16
SCALE:	as shown	DRAWN BY:	GPS

Soil Products for a Greener World ®

ODOR IMPACT MINIMIZATION PLAN

for the

Agromin – Commercial Organics Processing Operation

Edwards Ranch Road
Santa Paula, California 93060

Submitted to:

County of Ventura Resource Management Agency
Environmental Health Division
800 S Victoria Ave
Ventura, CA 93009-1740

February 2017

County of Ventura
Notice of Preparation of an EIR
PL17-0154
Attachment 6 - Odor Impact Minimization Plan

ODOR IMPACT MINIMIZATION PLAN

Agromin – Commercial Organics Processing Operation
Edwards Ranch Road
Santa Paula, California

February 2017

TABLE OF CONTENTS

ODOR IMPACT MINIMIZATION PLAN

Agromin – Commercial Organics Processing Operation
Santa Paula, California

February 2017

1.0 INTRODUCTION

This Odor Impact Minimization Plan (OIMP) provides a toolbox for Agromin's (Operator) field personnel to properly monitor, assess, and mitigate odor impacts resulting from the handling, storage and transport of compostable organic materials at the Agromin- Commercial Organics Processing Operation. The monitoring programs, control measures, and operational protocols specified in this handbook were chosen to comply with California Code of Regulations (CCR) Title 14, Section 17863.4, which requires composting facilities to reduce and/or prevent odor impacts to onsite employees and nearby sensitive receptors.

In general, this handbook should be used to accomplish the following objectives:

1. Monitor site conditions and resulting odor emissions using accepted techniques.
2. Eliminate origins of odor from the facility, as feasible.
3. Implement corrective actions as required to mitigate odor impacts resulting from facility operations.

This OIMP will be maintained on-site and revised as necessary to reflect any changes in the design or operation of this site. A copy of revisions will be provided to Ventura County Environmental Health Department, who is the Lead Enforcement Agency (LEA), within 30 days of the changes. In addition, this OIMP will be reviewed annually to determine if any revisions are necessary.

1.1 Site Description

The Agromin- Commercial Organics Processing Operation is a proposed commercial composting facility (Project). The Project will expand a current 15-acre agricultural composting operation into a 70-acre Commercial Organics Processing Operation in an unincorporated area of Ventura County, near the City of Santa Paula (APN: 090-0-180-085). The Project site and surrounding properties are all zoned Agricultural Exclusive (AE-40).

The primary structural and operational components of the proposed facility include the following (Figure 2, Attachment A):

- Incoming green and food materials will be unloaded, processed, screened, and sorted inside two (2) 80,925 square foot buildings. The dry organics building (green material building) will process dry green/woody materials while the wet organics building will process food and other potentially odorous materials. Both buildings generally have similar designs, with initial tipping areas, trommel screens (pre-screens), picking conveyors with magnets to remove ferrous metals, and grinders. The wet organics building will also include a blending pad, where bulking agents (i.e. green material) will be added to processed food material/food slurry as needed prior to composting in anaerobic digesters or covered aerated static piles. The dry organics building will have a roof canopy and open sides, while the wet organics building will be fully enclosed and subject to negative pressure with air ventilated through four (4) biofilters to control volatile organics (VOCs) and odor emissions. Food material will be processed within 48-hours of receiving to reduce odor impacts resulting from unprocessed exposed food and other organic wastes.

- A 40,000 ton per year anaerobic digestion (AD) system will produce high-quality compost as well as methane rich biogas from mix of green and food material through anaerobic composting. The AD system is fully enclosed and therefore not expected to release odorous emissions.

- A 75,000 ton per year positive pressure covered aerated static pile (CASP) system will aerobically decompose green and food organic materials into useable compost. It is anticipated that the CASP system will incorporate a "GORE™ Cover System", a multi-layer laminate cover that can achieve up to 97% reduction in odor concentrations.

- Continued but expanded open windrow composting of organics (green material) only, consisting of active, aerobic composting of green materials in long, narrow uncovered piles. Following windrow formation, a layer of finished compost 1-2 inches thick will be placed over the top of the pile to act as a natural bio-filter to control odor emissions.

- Finished compost will be stockpile in two (2) Finished Compost Storage areas on the western portion of the facility. Only cured and stabilized compost that has undergone pathogen reduction will be stored in these areas.

- A 23,107 square foot production/packaging building containing a bagging operation producing bagged mulch, woodchips and compost products. Soil amendments, such as gypsum, peat moss, and perlite, are added to finished compost material and placed on a conveyor that feeds the electric powered bagging system.

- Just south of the packaging building, a 25,000 square foot maintenance building will be used for storage as well as maintenance of on-site mobile equipment, processing equipment and delivery vehicles.

The Project also includes transferring Agromin's existing composting operations from their Shoreline facility in Oxnard to the Project site. The Shoreline facility's composting operations are scheduled to be shut down by early 2019, at which time all equipment and processes will be transferred to the Project site.

1.2 Materials Stored Onsite

The following raw materials and process byproducts onsite have the potential to produce odor impacts:

- Unprocessed green material feedstocks
- Unprocessed food material feedstocks
- Leachate from windrows and CASP system
- Digestate from the AD systems
- Contaminants and debris removed from feedstocks

1.3 Nearby Sensitive Receptors

The closest receptors will be operations staff and management, who will be onsite during operating hours. Although the surrounding properties are all zoned Agricultural Exclusive (AE-40), rural residences exist in these areas. Additionally, residential neighborhoods further to the southwest and residential and industrial areas to the northeast have the potential to be impact by odors originating from the facility. See Figures 2 and 3 in Attachment A and Section 3.1 for the more details on nearby receptors within the vicinity of the Project site.

2.0 REGULATORY SETTING

California Code of Regulations (CCR) Title 14, Section 17863.4 requires an Odor Impact Minimization Plan (OIMP) for all compostable material handling operations and facilities.

The following OIMP is being submitted to the Ventura County Environmental Health Division to describe site-specific procedures for monitoring, assessing, and mitigating odor impacts at Agromin's Commercial Organics Processing Operation facility located in an unincorporated area of Ventura County, near the City of Santa Paula.

Facility Name:	Agromin– Commercial Organics Processing Operation
Facility Location:	Edwards Ranch Road Santa Paula, CA 93060 Phone: (805) 485-9200
Mailing Address:	201 Kinetic Drive Oxnard, CA 93033 Phone: (805) 485-9200
Land Owner:	Limoneira Company 1141 Cummings Road Santa Paula, CA 93060 Phone: (805) 525-5541 APN: 090-0-180-085
Operator:	Agromin Organics Recycling 201 Kinetic Drive Oxnard, CA 93030 Phone: (805) 485-9200
Contacts:	Mr. Bill A. Camarillo (Site Operator) 201 Kinetic Drive Oxnard, CA 93030 Phone: (805) 485-9200

2.1 Odor Fundamentals

The sensory perception of odorants has four major dimensions, specifically detectability, intensity, character, and hedonic tone.

Detectability: The theoretical minimum concentration of odorant stimulus necessary for detection in some specified percentage of the population. Usually defined as the mean, where 50% of the population can detect a noticeable odor in a stable environment.

Intensity: The perceived strength of the odor sensation. Intensity increases as a function of concentration.

Character:	Generally understood as what a substance smells like (e.g. fishy, nutty, sewer, etc). Can be difficult to quantify due to difference in perception between individuals.
Hedonic Tone:	Represents a judgment of the relative "pleasantness" or "unpleasantness" of the odor. Perception of hedonic tone outside the laboratory is influenced by such factors as subjective experience, frequency of occurrence, odor character, odor intensity, and duration of exposure.

Source: *Reference Guide to Odor Thresholds for Hazardous Air Pollutants Listed in the Clean Air Act Amendments of 1990*, US Environmental Protection Agency (March 1992).

A property of olfactory functioning includes adaptation to an odor, also known as olfactory fatigue. These terms describe a temporary desensitization after smelling an odor. After smelling a strong odor, a weaker near-threshold odor may not be detectable. This is especially important to consider when using onsite employees to monitor odor impacts, as they may experience desensitization due to prolonged exposure to onsite odor sources.

There are two basic types of odor thresholds; the detection threshold and the recognition threshold.

- **Detection Threshold:** The concentration at which the average panel member notices an odor, but cannot necessarily identify it.
- **Recognition Threshold:** The lowest concentration at which the average panelist can identify a definite character of the odor.

Source: Reference Guide to Odor Thresholds for Hazardous Air Pollutants Listed in the Clean Air Act Amendments of 1990, US Environmental Protection Agency (March 1992).

3.0 ODOR MONITORING PROTOCOL (§ 17863.4 (b) (1))

3.1 Proximity of Odor Receptors

The closest receptors will be operations staff and management, who will be onsite during operating hours. Regarding offsite receptors, the facility is located in a rural, unincorporated area of Ventura County generally away from sensitive receptors. Attached are two aerial maps (Figure 3 and Figure 4) providing an overview of the facility and the surrounding area within an approximately 1,000-foot and 2-mile radii. The 1,000-foot radius is typical of the area that must be described to the California Integrated Waste Management Board (CIWMB) when applying for a Full Solid Waste Facility Permit for landfills and other waste facilities.

The potential off-site receptors within 1,000 feet include the following (Agromin is not aware of any non-Limoneira owned receptors):

- Rural residences owned/leased by Limoneira to the west (approx. 300-feet), south (approx. 75-feet), and east (approx. 160-feet).
- Agricultural out-buildings owned by Limoneira.
- Oil & gas production facilities located on Limoneira owned land to the west.

The potential off-site receptors within 2-miles include the following (see Figure 4):

- Hundreds of residences to the southwest (primarily upwind) in Ventura.
- Correctional Institution (Ventura County Jail - Todd Road Facility) located .
- Various agricultural facilities/out-buildings throughout, primarily owned by Limoneira.
- Rural residences throughout.

3.2 Method for Assessing Odor Impacts

Each day the Operator will evaluate onsite odors and evaluate planned operations for the potential to release objectionable odors. If the operator detects an objectionable onsite odor, he will take the following actions:

1. Investigate and determine the likely source of the odor;
2. Determine if onsite management practices could remedy the problem and immediately take steps to remedy the situation;
3. Determine whether or not the odor is traveling beyond the site by patrolling the site perimeter and noting existing wind patterns; and
4. Determine whether or not the odor event is significant enough to warrant contacting the adjacent neighbors or the LEA.

In the event of significant odors where a complaint has been filed, the protocol is for the Operator to inspect the location of a received complaint. The Operator shall attempt to determine if an offensive odor exists and notify the LEA of the complaint and the determination of odor source. In the event that the complaint cannot be verified in this manner, the Operator will continue to perform self-monitoring and continue the best management practices (BMPs) described in this operating document. In the event an offensive odor is detected and cannot be remedied with the BMPs described in this document, the Operator shall present the LEA with additional or enhanced BMPs to minimize the likelihood of future odor detection.

4.0 METEOROLOGICAL DATA (§ 17863.4 (b) (2))

The facility is located within the Mediterranean or subtropical dry summer climate zone, experiencing mild winters and warm, dry summers. Onshore breezes from the west are typical at the facility. Strong, dry Santa Ana winds can also originate from the east, typically during the fall and winter months. The annual average mean temperature in the area is 61.2°F. The annual average minimum temperature is 47.5°F and the annual average maximum temperature is 75.0°F. Summer daytime temperatures often exceed 100°F. The average annual precipitation is 17.93 inches, and the primary months of precipitation are November through March. (*Western Regional Climate Center, 2016*)

Compiling historical wind data from nearby Oxnard and Camarillo airports from 2009 to 2014, average wind speeds in the area are estimated at 2.6 to 3.1 m/s (≈ 5.8 to 6.9 mph) and generally blow from the west/southwest (onshore). As such, sensitive receptors to the east of the Project site have a greater potential to be impacted by odors originating from the facility. See the Wind Rose (Figure 5, Attachment A) for more detail. (*California Air Resources Board (CARB) Meteorological Files*)

Overall, climatic conditions in Ventura County are not expected to significantly affect the composting operation. If necessary, windrow turning schedules will be altered during brief periods of wet weather to ensure proper aeration of the compost piles, maintain appropriate moisture content, and prevent erosion of the windrows.

As described above, the prevailing onshore wind direction is from the west and occasionally from the northeast during the winter (i.e. Santa Ana winds). If necessary, the transferring or processing of green materials will be curtailed or altered during brief periods of high winds to prevent odor or fugitive dust emissions from being transported toward sensitive receptors.

5.0 COMPLAINT RESPONSE PROTOCOL (§ 17863.4 (b) (3))

Complaints may be received by either the Operator or the LEA. The Operator shall document odor complaints using the form found in Attachment B. The following protocol will be followed to ensure odor complaints are received, investigated and addressed in a timely manner.

- The Operator receives and reviews the complaint.
- The Operator will go to the location of the complaint to assess if the facility may be responsible for the odor.
- The Operator documents complaints in the site operations log and on the attached odor complaint form.
- The Operator assesses complaint and responds in the onsite log within 24-hours of receiving the complaint, or 48-hours should the citizen complaint be received on a weekend or holiday. If the odor complaint is severe, it should be reported to the LEA in a timely manner.
- The Operator implements reasonable recommendations suggested by experts or regulatory agencies. The Operator will continue operations utilizing best management practices.
- The Operator and complainant (if known and choosing to participate) shall meet within a reasonable period to assess the original problem and results from implementing the recommendations.
- Results and actions must be documented in the site operations log, which serves as the operation's permanent record.

6.0 DESIGN CONSIDERATIONS AND PROCEDURES TO MINIMIZE ODORS (§ 17863.4 (b) (4))

6.1 Facility Siting

The siting of the green and food material composting operations in agricultural Ventura County away from many sensitive receptors is the optimal siting criteria to reduce the potential for odor complaints. Additionally, the facility is located on property owned and operated by Limoneira, who also owns and/or leases out many of the nearby residences. As such, Limoneira will have the ability to work directly with residents to effectively monitor and addressed odor issues at the facility.

6.2 Facility Drainage

Standing water is a potential source of odors. The majority of the operation pads (i.e. open windrow area) will be a compacted all-weather surface. The windrows will be placed atop these areas that are sloped at a minimum 1% gradient. This slope permits runoff to be routinely collected and reapplied to the windrow piles for temperature and moisture control, which in turn helps control odor emissions. Differential settlement of the pad and storage areas will be minimized through regrading of surfaces as needed. The pad will be maintained to prevent ponding.

Surface runoff from rainwater at the facility is collected on-site within the processing pads or within two (2) detention ponds located along the southern perimeter. The site will be graded to divert runoff to the ponds. Other portions of the operation occur on paved areas, which have also been graded and sloped to divert rainwater to the ponds. Standing water is minimized to the maximum extent possible.

6.3 Feedstock Characteristics

The following materials will be managed to minimize odors.

- Unprocessed wood, green and food material feedstocks.
- Amendment products such as fertilizer, gypsum, and peat moss.
- Contaminants and debris removed from feedstocks.

To add priority and aeration to the composting feedstock, loads of just processed wood chips will be added to the windrow where odors may be emanating. Finished compost can also be placed on piles to act as a biofilter.

The following procedures will be implemented during the composting processes (open windrow, CASP, AD) to prevent and mitigate odors from feedstocks:

- The workers at the facility are trained to screen incoming vehicles for presence of unacceptable wastes. All loads will be checked prior to loading the material into the processing equipment or windrows. Unacceptable material that does not pose an immediate threat to public health and safety and the environment will be collected at the composting facility and segregated, handled, and disposed of by trained personnel in accordance with applicable law and regulation. Debris boxes shall be maintained at all times for placement of unacceptable materials. These debris boxes shall be removed for legal offsite disposal at a permitted landfill and replaced within 7 days of initial placement.

- Storage limitation to no more than 7 days for incoming green material feedstock and 48-hours for food processing material prior to processing.

- Proper handling/blending to maintain proper carbon/nitrogen ratios to reduce ammonia levels; maintenance of turning schedule, by use of a compost turner, will maintain aerobic conditions.
- Proper temperature/moisture control through timely turning of windrows, monitoring of temperatures and moisture, and appropriate application of water, in accordance with Title 14 requirements for pathogen reduction and BMP's for compost operations.

In the unlikely event that at any point during the composting process verifiable odor problems occur, identified source materials will be removed and transported to nearby landfills for disposal or use as alternative daily cover.

6.4 Food Material Recovery Building

Incoming food material will be unloaded, screened and processed in the food material building which will be fully enclosed and subject to negative pressure, with air ventilated through bio-filters to control odor emissions. Also, food material will be processed within 48-hours of receiving to reduce odor impacts resulting from unprocessed exposed food and other organic wastes.

6.5 Equipment Reliability

On-site equipment is well-maintained and reliable. Routine equipment fueling, maintenance and repairs are contracted to a third party vendor and conducted onsite. In the event of severe mechanical failure, similar processing equipment can be rented from nearby vendors. The facility maintains good relationships with nearby equipment vendors who can provide back up and temporary equipment on very short notice. Major equipment repairs are conducted offsite.

6.6 Personnel Training

All facility personnel will be adequately trained in subjects pertinent to site compostable materials handling operations and maintenance, physical contaminants and hazardous materials recognition and screening, use of mechanized equipment, environmental controls, and emergency procedures.

6.7 Utility Service Interruptions

Electric and Gas: Most of the critical on-site equipment is diesel-powered and not subject to local power failures. However, should an extended power failure occur, a backup generator will be procured from a local equipment rental company to power the aeration equipment and ensure that safe conditions are maintained.

Telephone: The office staff and the key employees onsite utilize cellular telephones and/or radios to communicate and coordinate their daily and routine operating practices. Cellular phones will be utilized onsite, allowing employees to report and communicate odor issues during operating hours.

Water: Water is supplied by a Limoneira owned water well that will feed a 50,000 gallon water tank for process needs. A 2,500 and 3,500 gallon water trucks located onsite has sufficient water to meet its needs for dust and odor control as well as moisture content in the windrows.

7.0 OPERATIONAL CONSIDERATIONS & PROCEDURES TO MINIMIZE ODORS (§ 17863.4 (b) (5))

7.1 Odor Control

The compost industry has proven that with proper management techniques and use of appropriate tools, offensive and nuisance odors can be controlled. Odor emissions from the green material and food processing material feedstock will be minimized through proper management of the storage piles. The proper use of the proposed SmartFerm AD system will provide comprehensive emission and odor controls.

Odors During Grinding: If odor issues arise during grinding, mitigation measures include:

- Add light misting of water or odor neutralizer to grinder at discharge points.
- Consider grinding green materials with woodier materials.

Windrow Odor Mitigation: Mitigation measures for the open windrows include adjustments to the turning and watering schedules and increase turning. Windrows suspected of generating excessive odors shall be turned and/or covered with a layer of finished compost to help control emissions. Removal of excess debris and contaminants prior to windrow formation will also help alleviate odor issues. Food material should never be placed into windrows.

CASP Odor Mitigation: It is anticipated that the CASP system will incorporate a “GORE™ Cover System”, a multi-layer laminate cover that can achieve up to 97% reduction in odor concentrations. Mitigation measures for the CASP windrow method would also include adjustments to the turning and watering schedules. The turning and consistent monitoring of the active compost will maximize the aerobic decomposition. Maintenance of the optimum moisture content and application of water will enhance and expedite aerobic decomposition and minimize odor emissions.

AD Odor Mitigation: Mitigation measures for the proposed anaerobic digester (AD) process would include adjustments to the storage location and holding times for feedstocks and the digestate. Should feedstock and digestate storage create odor impacts with outdoor storage, all storage could be moved indoors and/or covered. Additionally, digestate composting could be moved to the CASP research operation, if needed, to eliminate odors from windrow composting of the same materials.

The operator will maintain proper drainage as to not allow ponded water to cause the material in contact with the pad to go anaerobic and cause odors.

7.2 Bio-aerosols

The primary feedstock for the compost process is green material. Potential adverse health effects associated with airborne fungal spores, specifically *Aspergillus fumigatus* and or *Aspergillus flavus,* have raised concerns by some Californians during the siting and operation of compost facilities. The staff of the California Integrated Waste Management Board in cooperation with the California Department of Health Services, and Cal/EPA’s Office of Environmental Health Hazard Assessment prepared a technical bulletin during 1993, and released the summary of findings in LEA Advisory No. 6 dated December 16, 1993. A properly operated compost facility should not present a health risk from *Aspergillus fumigatus.* Sound management practices include maintaining moisture, temperature and pH levels, aerating, turning and mixing. Reducing the dispersal of dust and spores is best to control exposure. The uses of water sprays or mists while turning piles, and refraining from turning on windy days will help accomplish this. The operator plans to follow the best management practices (BMP's) outlined in LEA Advisory No 6 for the CASP materials and the subsequent composting of the digestate blend resulting from the SMARTFERM AD system. These include:

- Covering all actively composting materials for the duration of the prescribed 45-day composting cycle.
- Maintaining stockpile moisture content between 45% and 60%.
- Maintaining adequate stockpile temperatures (above 55° C) throughout the pathogen reduction period, as mandated by 14 CCR §17868.3.

7.3 Operation Procedures

Operational procedures used to minimize odors include:

- Processing food material in a fully enclosed building and subject to negative pressure, with air ventilated through bio-filters to control odor emissions.
- Processing food material within 48-hours of receiving to reduce odor impacts resulting from unprocessed exposed food and other organic wastes
- Proper management of windrows and CASPs, including use of an odor reducing GORE™ Cover System on the CASPs.
- Covering green or food material piles with mulch, to act as a biofilter, if there will be a delay in processing the material.
- Curtailing compost turning or feedstock blending when high winds might carry odors towards sensitive receptors.
- Clean aisles of spilled material. (Particularly at the end of each day).
- Mechanically sweep paved areas at the end of each shift.
- Apply water and/or neutralizer to reduce dust during dry conditions.

7.4 Contingency Plan for Minimizing Odor

Equipment: Should the SMARTFERM AD equipment become inoperable, food containing feedstock materials could continue to be processed in the existing CASP composting operations. In the event of breakdown of other equipment, the operator will continue operations with replacement of affected equipment by:

- Renting from reputable, local equipment rental companies; and/or
- Borrowing equipment from other nearby operations, or those of affiliated companies in the region; and/or
- Purchase of new equipment as soon as feasible.

Power: Critical onsite equipment is mainly diesel-powered and not subject to local power failures. Site personnel carry mobile telephones for communication. Should an extended power failure occur, a backup generator will be procured from a local equipment rental company to power the aeration equipment.

Personnel: Additional personnel are available from other Agromin operations, or those of affiliated companies in the region.

As a last resort, materials determined to be the source of excessive odors will be removed and transported to the nearest available landfill for disposal or use as alternative daily cover.

8.0 ANNUAL REVIEW OF OIMP (§ 17863.4 (d))

The OIMP will be reviewed annually by the Operator, and revised as necessary.

A copy of this OIMP will be kept at the Facility Administrative Office and will be accessible to all employees during normal operating hours. The OIMP will be revised within 30 days to reflect significant changes to operations that affect the information and/or procedures found within this OIMP. A copy of the revisions shall be provided to the LEA when deemed significant or appropriate.

ATTACHMENT A

FIGURES

Google Maps 2015

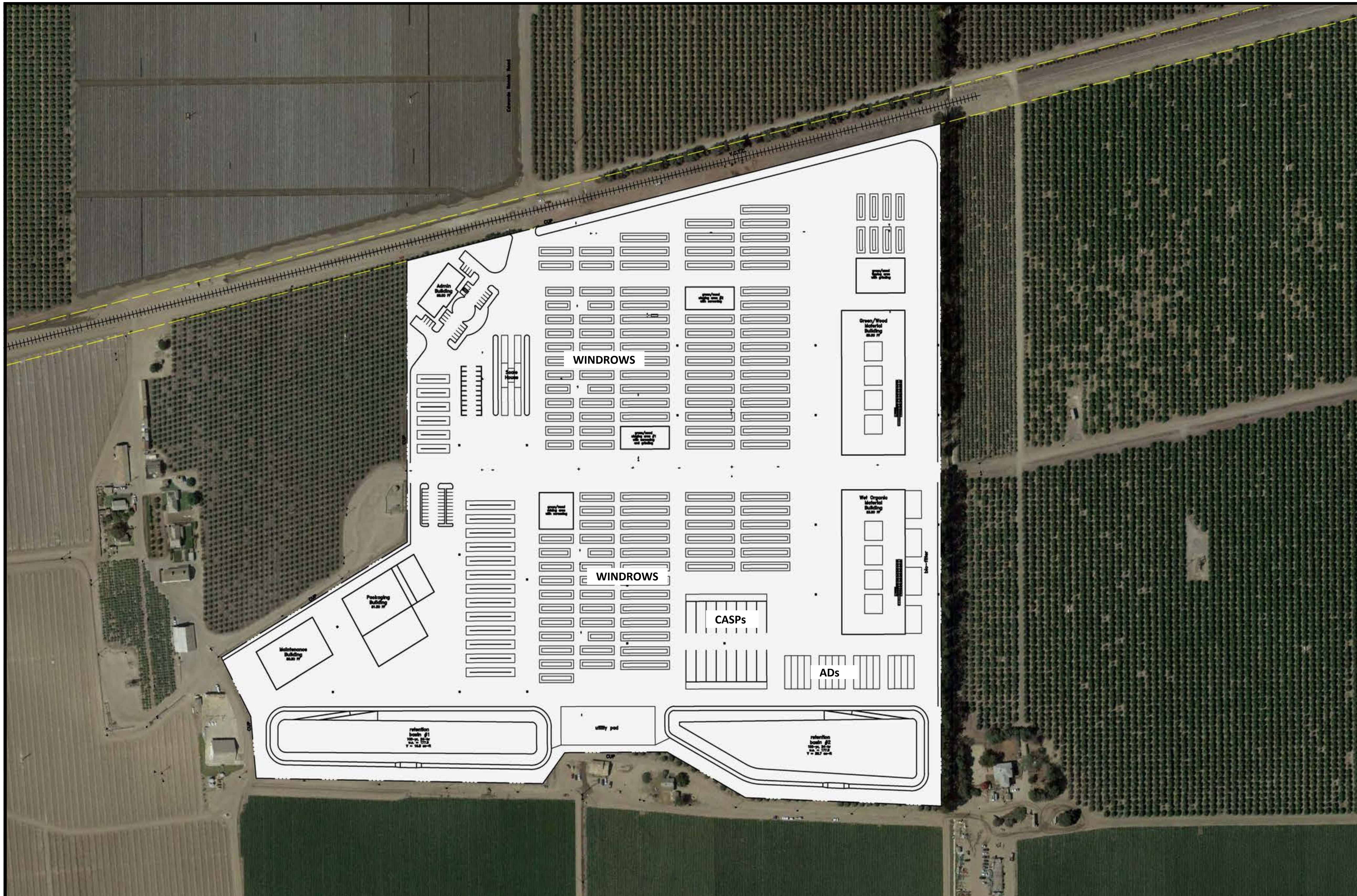
Approximate Site Boundaries

R - Residence(s)

N

SESPE CONSULTING, INC.

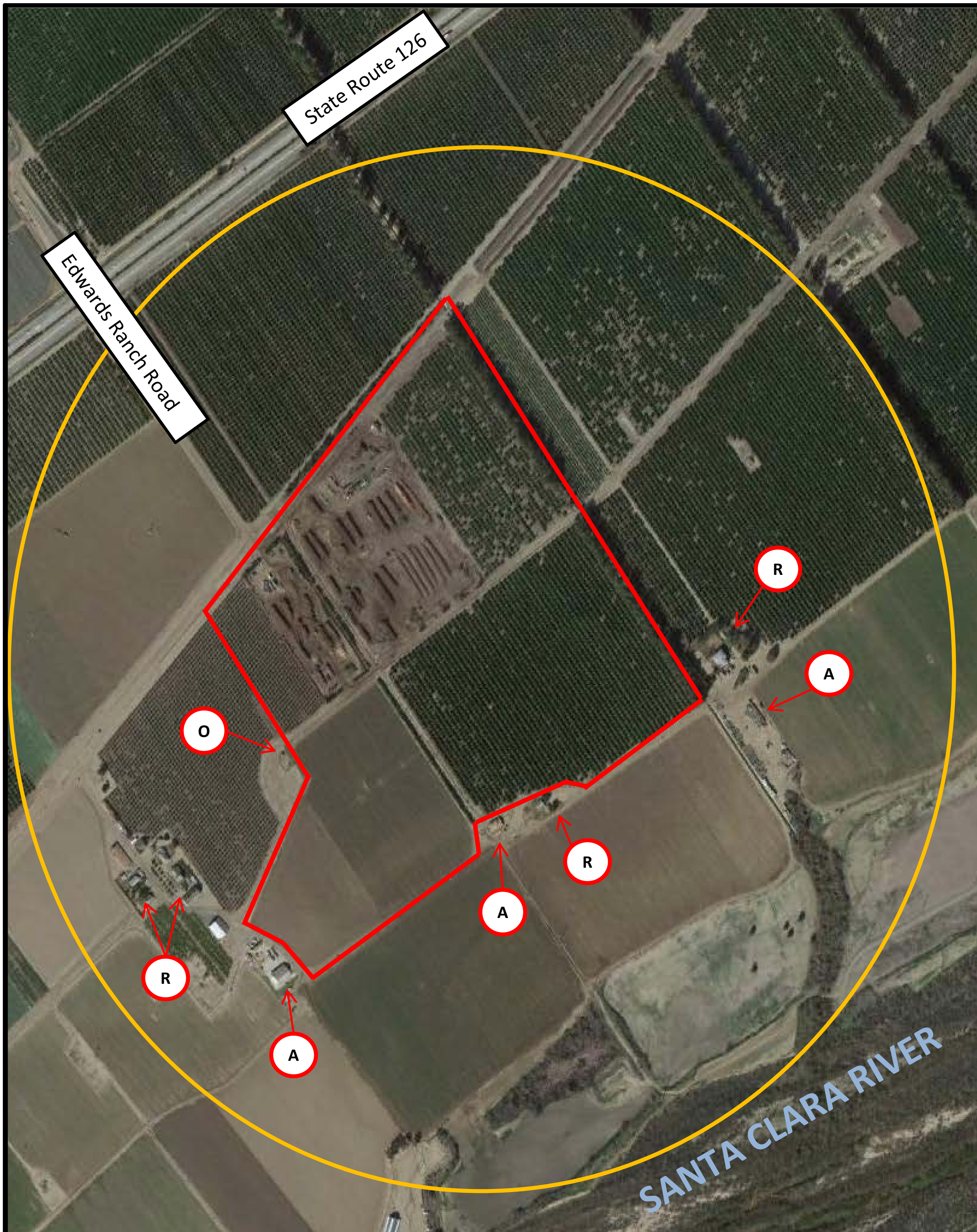
FIGURE	SITE LOCATION MAP Agromin - Biogenic Energy Park Santa Paula, California		
1			
PROJECT #:	AG01.11.02	DATE:	4/25/16
SCALE:	as shown	DRAWN BY:	GPS



N

SESPE CONSULTING, INC.

FIGURE	FACILITY SITE PLAN Agromin - Biogenic Energy Park Santa Paula, California 93060		
2			
PROJECT #:	AG01.11.02	DATE:	2/28/17
SCALE:	as shown	DRAWN BY:	RDF



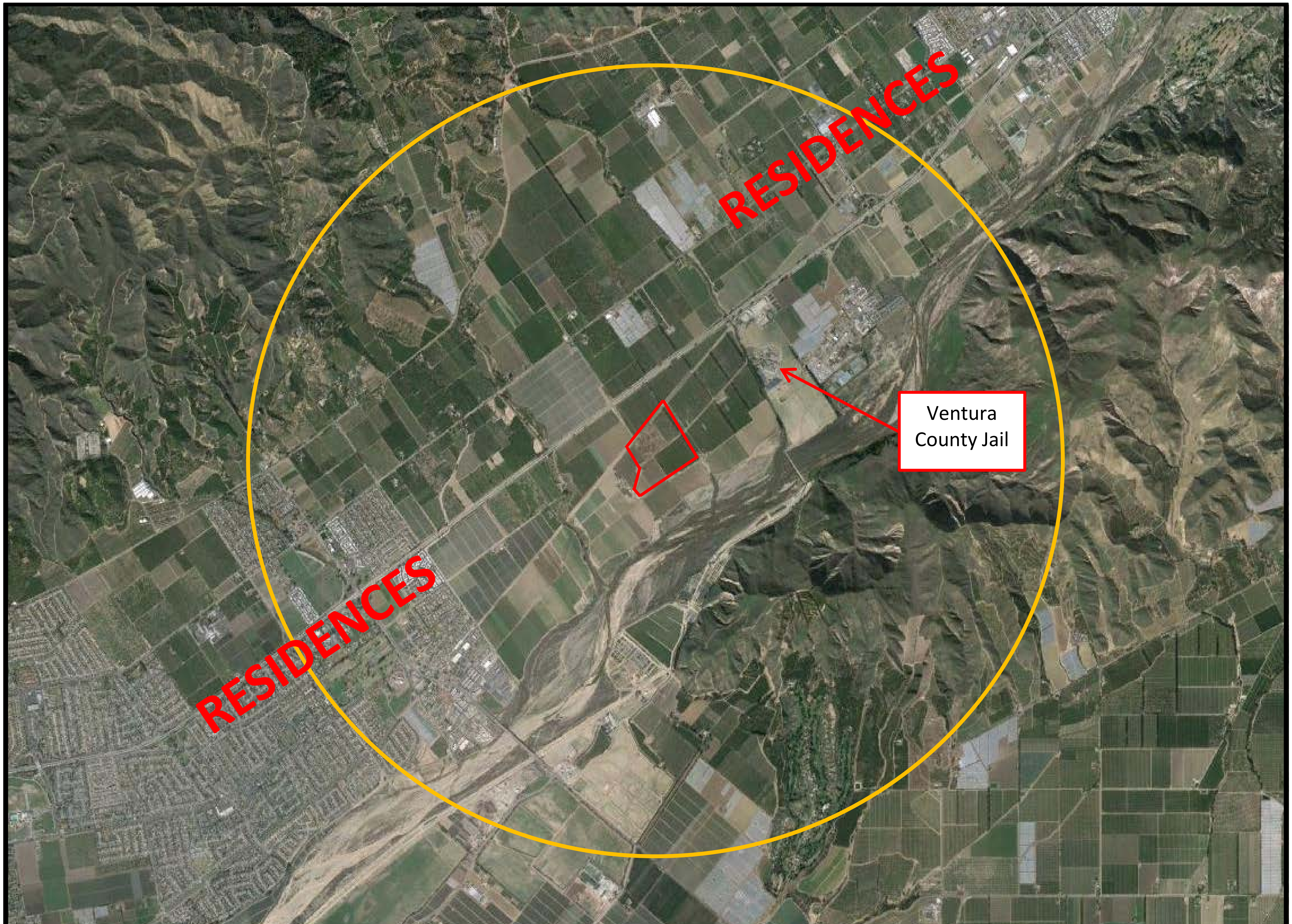
Google Maps 2015

N

SESPE CONSULTING, INC.

Approximate Site Boundaries
Approximate 1,000-Foot Radius
R - Residence
A - Agricultural-related Structure
O - Oil & Gas facility

FIGURE	1000-FOOT SENSITIVE RECEPTORS Agromin - Biogenic Energy Park Santa Paula, California		
3			
PROJECT #:	AG01.11.02	DATE:	5/2/16
SCALE:	as shown	DRAWN BY:	GPS



Google Maps 2015			
Approximate Site Boundaries			
Approximate 2-Mile Radius			

N

SESPE CONSULTING, INC.

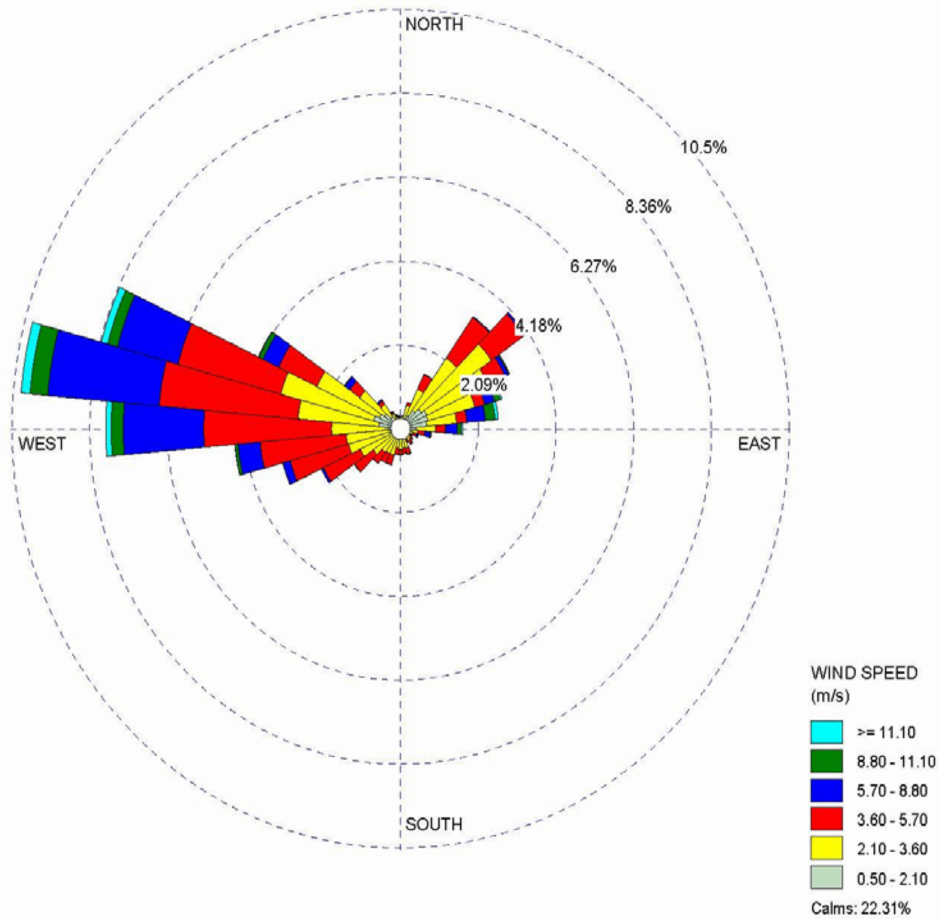
FIGURE 4	2-MILE SENSITIVE RECEPTORS Agromin - Biogenic Energy Park Santa Paula, California		
PROJECT #:	AG01.11.02	DATE:	5/2/16
SCALE:	as shown	DRAWN BY:	GPS

WIND ROSE PLOT:

Oxnard Airport

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS:	DATA PERIOD:	COMPANY NAME:	
Data taken from CARB - https://www.arb.ca.gov/toxics/harp/metfiles2.htm	**Start Date: 1/1/2009 - 00:00** **End Date: 1/2/2014 - 23:59**	**Sespe Consulting**	
		MODELER: **RDF**	
	CALM WINDS: **22.31%**	TOTAL COUNT: **42809 hrs.**	
	AVG. WIND SPEED: **3.08 m/s**	DATE: **2/28/2017**	PROJECT NO.: **Agromin Santa Paula**

SESPE CONSULTING, INC.

Windrose create using WRPLOT View program (Lakes Environmental Saftware).

FIGURE 5	WINDROSE Agromin - Biogenic Energy Park Santa Paula, California		
PROJECT #:	AG01.11.02	DATE:	2/28/17
SCALE:	as shown	DRAWN BY:	RDF

ATTACHMENT B

ODOR COMPLAINT LOG

ODOR COMPLAINT LOG

Received by: ______________________________ Date Received: __________

COMPLAINANT	
Name:	
Address:	
Contact Phone #:	

ODOR DESCRIPTION					
Date:		**Time:**		**Odor duration:**	
Location:	☐ Verified as coming from facility?				
Odor Intensity:	☐ Very faint ☐ Light ☐ Moderate ☐ Strong ☐ Very strong				
Description of Alleged Odor(s):					

INSPECTION RESOLUTION/RESULTS	
Actions taken by Operator:	
Follow-Up with Complainant (phone call, visit, etc.)	

Signature: ____________________________________ Date: __________________

"Citrus Capital of the World"

City of Santa Paula

970 Ventura Street • Santa Paula, California • Mailing Address: P.O. Box 569 • 93061 • Phone: (805) 525-4478 • Fax: (805) 525-6278

March 22, 2018

Agromin
Bill Camarillo, CEO
201 Kinetic Drive
Oxnard, California 93030

Subject: **Water Will-Serve – Commercial Organics Processing Facility APN 090-0-180-085**

Dear Mr. Camarillo:

As we understand, California Wood Recycling, Inc. dba Agromin (Agromin) is engaged in partnership with Limoneira Company (Limoneira), to develop a 70-acre Commercial Organics Processing Facility (Project) on the subject assessor's parcel.

Limoneira has an adjudicated water party allocation for use in the Santa Paula Groundwater Basin. This allocation is a result of "*United Water Conservation District v. City of San Buenaventura*", County of Ventura Superior Court, 1996, Case No. 115611.

The project development will be phased with a buildout water demand of approximately 135 acre-feet per year for operational and domestic water requirements. This is significantly less than Limoneira's current party allocation. With planned fire service storage of about 360,000 gallons, the peak water flow demand is roughly 2,000 gallons per minute.

This correspondence is to confirm that the City of Santa Paula (City) can and will furnish potable water service, groundwater service, recycled water service, or any combination thereof, to the above-mentioned project upon your agreement with and completion of the following requirements to the satisfaction of the City.

1) Agromin shall enter into a Construction and Transfer of Water Agreement with the City and Limoneira prior to commencement of the required water conveyance infrastructure plan check process. Any major improvements shall be referenced in this agreement.

County of Ventura
Notice of Preparation of an EIR
PL17-0154
Attachment 7 - City of Santa Paula
Will Serve Letter

2) All fees and charges shall be paid in accordance with City Ordinances and at the time specified in the Infrastructure Agreement before initiating plan check review and connection to public water service.

3) Agromin shall provide water (including fire flow) demand quantities. Agromin agrees to complete a Development Water Master Plan as specified in the Infrastructure Agreement. Agromin agrees to provide the City at least one-month review time for these plans.

4) The City and Agromin shall identify any other infrastructure improvements outside the Project area that may be necessary as a result of this Project. Water improvements outside the Project area may be borne by Agromin in part or in whole depending on assessment of Project benefits.

5) All documents shall show that the City is the water purveyor.

Potable water that will be supplied to the development shall satisfy the requirements of California Department of Health Services and is available for normal use and fire protection.

The City may identify additional requirements upon review of Project documents, plans, and specifications. If that occurs, the City shall notify Agromin immediately in writing.

The City looks forward to working with and providing water service to the Project in connection with its service requirements.

If you have any questions please contact me at citymanager@spcity.org

Sincerely,

Michael Rock
City Manager
City of Santa Paula

Commercial Organics Processing Facility

Normal-Season, Water Balance

		Climatic Data							Storage Pond									Operational Application					
month	days	normal-year precipitation (in) (1)	percent normal-year precipitation (%) (2)	drought-year precipitation (in) (3)	100-year, season precipitation (in) (4)	mean pan evaporation (mm) (5)	mean pan evaporation (in) (6)	evaporation (in) (7)	site runoff inflow (ac-ft) (8)	windrow absorbent outflow (ac-ft) (9)	CASP absorbent outflow (ac-ft) (10)	pond evaporation outflow (ac-ft) (11)	change in storage (ac-ft) (12)	pond storage (ac-ft) (13)	pond area (ac) (14)	pond depth (ft) (15)	compost demand (ac-ft) (16)	CASP demand (ac-ft) (17)	AD demand (ac-ft) (18)	dust control demand (ac-ft) (19)	operational water applied (ac-ft) (20)	imported water required (ac-ft) (21)
January	31	3.72	21.40	0.86	8.51	69.77	2.75	2.17	19.68	0.73	0.11	0.75	2.99	15.40	4.15	4.23	11.69	0.37	1.25	0.44	15.09	2.68
February	28	4.85	27.91	1.12	11.09	90.02	3.54	2.80	26.24	0.98	0.15	1.25	22.97	38.37	5.34	9.05	0.23	0.33	0.00	0.27	0.89	0.00
March	31	2.69	15.48	0.62	6.15	129.57	5.10	4.03	13.72	0.51	0.08	1.93	9.08	47.44	5.75	10.67	1.31	0.40	0.00	0.22	2.12	0.00
April	30	0.83	4.78	0.19	1.90	163.97	6.46	5.10	3.19	0.12	0.02	2.16	-14.75	32.69	5.07	7.97	12.30	0.46	1.25	0.22	15.66	0.00
May	31	0.35	2.01	0.08	0.80	189.37	7.46	5.89	0.81	0.03	0.00	2.40	-3.82	28.87	4.88	7.20	1.18	0.48	0.00	0.35	2.20	0.00
June	30	0.07	0.40	0.02	0.16	212.19	8.35	6.60	0.00	0.00	0.00	2.53	-5.48	23.39	4.60	6.05	1.82	0.48	0.00	0.40	2.95	0.00
July	31	0.01	0.06	0.00	0.02	239.20	9.42	7.44	0.06	0.00	0.00	2.17	-18.31	5.08	3.50	1.53	12.42	0.48	1.25	0.62	16.20	0.00
August	31	0.04	0.23	0.01	0.09	219.27	8.63	6.82	0.01	0.00	0.00	1.80	-4.56	0.52	3.17	0.17	1.21	0.48	0.00	0.88	2.76	0.00
September	30	0.16	0.92	0.04	0.37	183.26	7.22	5.70	0.14	0.01	0.00	0.00	-3.52	0.00	0.00	0.00	1.81	0.48	0.00	1.11	3.65	3.13
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
October	31	0.69	3.97	0.16	1.58	129.57	5.10	4.03	2.46	0.09	0.01	0.00	-14.36	0.00	0.00	0.00	12.33	0.47	1.25	1.24	16.71	16.71
November	30	1.44	8.29	0.33	3.29	86.81	3.42	2.70	6.57	0.24	0.04	0.76	3.29	3.29	3.37	1.01	0.97	0.44	0.00	0.66	2.23	2.23
December	31	2.53	14.56	0.58	5.79	59.80	2.35	1.86	12.79	0.48	0.07	0.62	9.11	12.41	3.97	3.49	1.34	0.41	0.00	0.57	2.52	0.00
total	365	17.38	100.00	4.00	39.75	1,772.77	69.80	55.14	85.66	3.19	0.49	16.36	-17.36	-	-	-	58.62	5.27	5.00	6.99	82.98	24.75

imported water saved	58.23

Climatic Data		Storage Pond		Operational Application	
pan coefficent	0.79	composite SCS CN	97	site area	70.00 ac
		equivalent pond bottom length	1,635.00 ft	number of equivalent windrows	101
		equivalent pond bottom width	83.50 ft	number of CASP lanes	32
		pond side slope (x:1)	3	% windrow rain volume capture	30 %
		maximum pond depth	10.00 ft	% CASP rain volume capture	20 %
		maximum pond area	5.58 ac	windrow length	150.00
		maximum pond volume	43.6 ac-ft	windrow width	25.00
				CASP open lane length	90.00
				CASP lane width	30.00
				dust control rate	0.10 in/sf
				irrigation efficiency	0.90

(1) monthly normal precipitation for Santa Paula GHCND:USC00047957 (1981-2010), National Oceanic & Atmospheric Administration (NOAA)

(2) percent of normal-year precipitation equal to monthly normal-year precipitation divided by total normal-year precipitation

(3) drought-year monthly precipitation values equal to percent normal-year precipitation times total drought-year precipitation which is assumed to be about 25% of total normal-year precipitation

(4) 100-year, monthly precipitation values equal to percent normal-year precipitation times 100-year, season precipitation for Lancaster AP 1212 (1950-2007), Calif. Department of Water Resources (DWR)

(5) mean pan evaporation equals (6) converted to millimeters

(6) mean pan evaporation equals (7) divided by pan coefficient - pan coefficient from DWR Bulletin 73-79, Elsinore average pan A coefficient

(7) evaporation from CIMIS, Landscape Coefficient Guide, Appendix A, Table 1, Zone 9 - south coast marine to desert transition

(8) site runoff calculated from TR55, Q=[(P-Ia)^2]/[P-Ia+S]; CN=97

(9) windrow absorbent outflow equals runoff times total windrow area times assumed percentage of windrow rain volume capture

(10) CASP absorbent outflow equals runoff times total exposed lane area times assumed percentage of CASP rain volume capture

(11) pond evaporation outflow equals (7) times (14) converted to ac-ft

(12) change in storage equals (8) minus (9) minus (10) minus (11) minus (20)

(13) pond storage equals running total of change in storage

(14) pond area calculated from pond storage and basin dimensions

(15) pond depth calculated by iteration from pond storage and pond area

(16) compost demand equals variable monthly windrow moisture conditioning rate times number of windrows minus (9)

(17) CASP demand equals variable monthly CASP moisture conditioning rate times number of lanes minus (10)

(18) AD demand equals adding 100,000 gallons each of make-up water for four modules quarterly

(19) dust control demand equals applying dust control rate to circulation lanes only for a variable number of days based on wind records

(20) operational demand equals ((16) + (17)) divided by irrigation efficiency plus (18) plus (19)

(21) imported water demand equals (20) minus (13)

County of Ventura
Notice of Preparation of an EIR
PL17-0154
Attachment 8 - Facility Water Balance Study

Commercial Organics Processing Facility

Dry-Season, Water Balance

		Climatic Data							Storage Pond								Operational Application					
		normal-year precipitation	percent normal-year precipitation	drought-year precipitation	100-year, season precipitation	mean pan evaporation	mean pan evaporation	evaporation	site runoff inflow	windrow absorbent outflow	CASP absorbent outflow	pond evaporation outflow	change in storage	pond storage	pond area	pond depth	compost demand	CASP demand	AD demand	dust control demand	operational water applied	imported water required
		(in)	(%)	(in)	(in)	(mm)	(in)	(in)	(ac-ft)	(ac-ft)	(ac-ft)	(ac-ft)	(ac-ft)	(ac-ft)	(ac)	(ft)	(ac-ft)	(ac-ft)	(ac-ft)	(ac-ft)	(ac-ft)	(ac-ft)
month	days	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
January	31	3.72	21.40	0.86	8.51	69.77	2.75	2.17	3.33	0.73	0.11	0.00	-12.60	0.00	0.00	0.00	11.69	0.37	1.25	0.44	15.09	15.09
February	28	4.85	27.91	1.12	11.09	90.02	3.54	2.80	4.76	0.98	0.15	0.77	1.97	1.97	3.28	0.61	0.23	0.33	0.00	0.27	0.89	0.89
March	31	2.69	15.48	0.62	6.15	129.57	5.10	4.03	2.09	0.51	0.08	1.06	-1.68	0.29	3.16	0.09	1.31	0.40	0.00	0.22	2.12	0.15
April	30	0.83	4.78	0.19	1.90	163.97	6.46	5.10	0.22	0.12	0.02	0.00	-15.57	0.00	0.00	0.00	12.30	0.46	1.25	0.22	15.66	15.36
May	31	0.35	2.01	0.08	0.80	189.37	7.46	5.89	0.01	0.03	0.00	0.00	-2.22	0.00	0.00	0.00	1.18	0.48	0.00	0.35	2.20	2.20
June	30	0.07	0.40	0.02	0.16	212.19	8.35	6.60	0.05	0.00	0.00	0.00	-2.90	0.00	0.00	0.00	1.82	0.48	0.00	0.40	2.95	2.95
July	31	0.01	0.06	0.00	0.02	239.20	9.42	7.44	0.08	0.00	0.00	0.00	-16.12	0.00	0.00	0.00	12.42	0.48	1.25	0.62	16.20	16.20
August	31	0.04	0.23	0.01	0.09	219.27	8.63	6.82	0.06	0.00	0.00	0.00	-2.70	0.00	0.00	0.00	1.21	0.48	0.00	0.88	2.76	2.76
September	30	0.16	0.92	0.04	0.37	183.26	7.22	5.70	0.01	0.01	0.00	0.00	-3.65	0.00	0.00	0.00	1.81	0.48	0.00	1.11	3.65	3.65
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
October	31	0.69	3.97	0.16	1.58	129.57	5.10	4.03	0.13	0.09	0.01	0.00	-16.68	0.00	0.00	0.00	12.33	0.47	1.25	1.24	16.71	16.71
November	30	1.44	8.29	0.33	3.29	86.81	3.42	2.70	0.73	0.24	0.04	0.00	-1.78	0.00	0.00	0.00	0.97	0.44	0.00	0.66	2.23	2.23
December	31	2.53	14.56	0.58	5.79	59.80	2.35	1.86	1.90	0.48	0.07	0.00	-1.16	0.00	0.00	0.00	1.34	0.41	0.00	0.57	2.52	2.52
total	365	17.38	100.00	4.00	39.75	1,772.77	69.80	55.14	13.39	3.19	0.49	1.83	-75.10	-	-	-	58.62	5.27	5.00	6.99	82.98	80.72

imported water saved	2.26

Climatic Data		Storage Pond		Operational Application	
pan coefficent	0.79	composite SCS CN	97	site area	70.00 ac
		equivalent pond bottom length	1,635.00 ft	number of equivalent windrows	101
		equivalent pond bottom width	83.50 ft	number of CASP lanes	32
		pond side slope (x:1)	3	% windrow rain volume capture	30 %
		maximum pond depth	10.00 ft	% CASP rain volume capture	20 %
		maximum pond area	5.58 ac	windrow length	150.00
		maximum pond volume	43.6 ac-ft	windrow width	25.00
				CASP open lane length	90.00
				CASP lane width	30.00
				dust control rate	0.10 in/sf
				irrigation efficiency	0.90

(1) monthly normal precipitation for Santa Paula GHCND:USC00047957 (1981-2010), National Oceanic & Atmospheric Administration (NOAA)

(2) percent of normal-year precipitation equal to monthly normal-year precipitation divided by total normal-year precipitation

(3) drought-year monthly precipitation values equal to percent normal-year precipitation times total drought-year precipitation which is assumed to be about 25% of total normal-year precipitation

(4) 100-year, monthly precipitation values equal to percent normal-year precipitation times 100-year, season precipitation for Lancaster AP 1212 (1950-2007), Calif. Department of Water Resources (DWR)

(5) mean pan evaporation equals (6) converted to millimeters

(6) mean pan evaporation equals (7) divided by pan coefficient - pan coefficient from DWR Bulletin 73-79, Elsinore average pan A coefficient

(7) evaporation from CIMIS, Landscape Coefficient Guide, Appendix A, Table 1, Zone 9 - south coast marine to desert transition

(8) site runoff calculated from TR55, Q=[(P-Ia)^2]/[P-Ia+S]; CN=97

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(10) CASP absorbent outflow equals runoff times total exposed lane area times assumed percentage of CASP rain volume capture

(11) pond evaporation outflow equals (7) times (14) converted to ac-ft

(12) change in storage equals (8) minus (9) minus (10) minus (11) minus (20)

(13) pond storage equals running total of change in storage

(14) pond area calculated from pond storage and basin dimensions

(15) pond depth calculated by iteration from pond storage and pond area

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(17) CASP demand equals variable monthly CASP moisture conditioning rate times number of lanes minus (10)

(18) AD demand equals adding 100,000 gallons each of make-up water for four modules quarterly

(19) dust control demand equals applying dust control rate to circulation lanes only for a variable number of days based on wind records

(20) operational demand equals ((16) + (17)) divided by irrigation efficiency plus (18) plus (19)

(21) imported water demand equals (20) minus (13)

Commercial Organics Processing Facility

Wet-Season, Water Balance

		Climatic Data							Storage Pond								Operational Application					
		normal-year precipitation (in)	percent normal-year precipitation (%)	drought-year precipitation (in)	100-year, season precipitation (in)	mean pan evaporation (mm)	mean pan evaporation (in)	evaporation (in)	site runoff inflow (ac-ft)	windrow absorbent outflow (ac-ft)	CASP absorbent outflow (ac-ft)	pond evaporation outflow (ac-ft)	change in storage (ac-ft)	pond storage (ac-ft)	pond area (ac)	pond depth (ft)	compost demand (ac-ft)	CASP demand (ac-ft)	AD demand (ac-ft)	dust control demand (ac-ft)	operational water applied (ac-ft)	imported water required (ac-ft)
month	days	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
January	31	3.72	21.40	0.86	8.51	69.77	2.75	2.17	47.53	0.73	0.11	1.22	30.37	71.92	6.75	14.55	11.69	0.37	1.25	0.44	15.09	0.00
February	28	4.85	27.91	1.12	11.09	90.02	3.54	2.80	62.59	0.98	0.15	2.04	58.53	130.45	8.74	21.98	0.23	0.33	0.00	0.27	0.89	0.00
March	31	2.69	15.48	0.62	6.15	129.57	5.10	4.03	33.81	0.51	0.08	3.21	27.89	158.34	9.56	24.96	1.31	0.40	0.00	0.22	2.12	0.00
April	30	0.83	4.78	0.19	1.90	163.97	6.46	5.10	9.17	0.12	0.02	3.93	-10.56	147.79	9.25	23.86	12.30	0.46	1.25	0.22	15.66	0.00
May	31	0.35	2.01	0.08	0.80	189.37	7.46	5.89	3.04	0.03	0.00	4.49	-3.68	144.10	9.15	23.47	1.18	0.48	0.00	0.35	2.20	0.00
June	30	0.07	0.40	0.02	0.16	212.19	8.35	6.60	0.14	0.00	0.00	4.90	-7.72	136.39	8.92	22.64	1.82	0.48	0.00	0.40	2.95	0.00
July	31	0.01	0.06	0.00	0.02	239.20	9.42	7.44	0.03	0.00	0.00	5.12	-21.29	115.10	8.26	20.21	12.42	0.48	1.25	0.62	16.20	0.00
August	31	0.04	0.23	0.01	0.09	219.27	8.63	6.82	0.02	0.00	0.00	4.56	-7.31	107.79	8.02	19.33	1.21	0.48	0.00	0.88	2.76	0.00
September	30	0.16	0.92	0.04	0.37	183.26	7.22	5.70	0.88	0.01	0.00	3.71	-6.48	101.30	7.80	18.53	1.81	0.48	0.00	1.11	3.65	0.00
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
October	31	0.69	3.97	0.16	1.58	129.57	5.10	4.03	7.35	0.09	0.01	0.00	-9.47	0.00	0.00	0.00	12.33	0.47	1.25	1.24	16.71	16.71
November	30	1.44	8.29	0.33	3.29	86.81	3.42	2.70	17.20	0.24	0.04	0.91	13.78	13.78	4.05	3.83	0.97	0.44	0.00	0.66	2.23	2.23
December	31	2.53	14.56	0.58	5.79	59.80	2.35	1.86	31.68	0.48	0.07	0.85	27.76	41.54	5.49	9.63	1.34	0.41	0.00	0.57	2.52	0.00
total	365	17.38	100.00	4.00	39.75	1,772.77	69.80	55.14	213.43	3.19	0.49	34.94	91.84	-	-	-	58.62	5.27	5.00	6.99	82.98	18.94

imported water saved	64.04

Climatic Data		Storage Pond		Operational Application	
pan coefficent	0.79	composite SCS CN	97	site area	70.00 ac
		equivalent pond bottom length	1,635.00 ft	number of equivalent windrows	101
		equivalent pond bottom width	83.50 ft	number of CASP lanes	32
		pond side slope (x:1)	3	% windrow rain volume capture	30 %
		maximum pond depth	10.00 ft	% CASP rain volume capture	20 %
		maximum pond area	5.58 ac	windrow length	150.00
		maximum pond volume	43.6 ac-ft	windrow width	25.00
				CASP open lane length	90.00
				CASP lane width	30.00
				dust control rate	0.10 in/sf
				irrigation efficiency	0.90

(1) monthly normal precipitation for Santa Paula GHCND:USC00047957 (1981-2010), National Oceanic & Atmospheric Administration (NOAA)

(2) percent of normal-year precipitation equal to monthly normal-year precipitation divided by total normal-year precipitation

(3) drought-year monthly precipitation values equal to percent normal-year precipitation times total drought-year precipitation which is assumed to be about 25% of total normal-year precipitation

(4) 100-year, monthly precipitation values equal to percent normal-year precipitation times 100-year, season precipitation for Lancaster AP 1212 (1950-2007), Calif. Department of Water Resources (DWR)

(5) mean pan evaporation equals (6) converted to millimeters

(6) mean pan evaporation equals (7) divided by pan coefficient - pan coefficient from DWR Bulletin 73-79, Elsinore average pan A coefficient

(7) evaporation from CIMIS, Landscape Coefficient Guide, Appendix A, Table 1, Zone 9 - south coast marine to desert transition

(8) site runoff calculated from TR55, Q=[(P-Ia)^2]/[P-Ia+S]; CN=97

(9) windrow absorbent outflow equals runoff times total windrow area times assumed percentage of windrow rain volume capture

(10) CASP absorbent outflow equals runoff times total exposed lane area times assumed percentage of CASP rain volume capture

(11) pond evaporation outflow equals (7) times (14) converted to ac-ft

(12) change in storage equals (8) minus (9) minus (10) minus (11) minus (20)

(13) pond storage equals running total of change in storage

(14) pond area calculated from pond storage and basin dimensions

(15) pond depth calculated by iteration from pond storage and pond area

(16) compost demand equals variable monthly windrow moisture conditioning rate times number of windrows minus (9)

(17) CASP demand equals variable monthly CASP moisture conditioning rate times number of lanes minus (10)

(18) AD demand equals adding 100,000 gallons each of make-up water for four modules quarterly

(19) dust control demand equals applying dust control rate to circulation lanes only for a variable number of days based on wind records

(20) operational demand equals ((16) + (17)) divided by irrigation efficiency plus (18) plus (19)

(21) imported water demand equals (20) minus (13)

UPDATE OF GEOTECHNICAL ENGINEERING REPORT
FOR
PROPOSED COMMERCIAL ORGANICS PROCESSING FACILITY
EDWARDS RANCH ROAD
SANTA PAULA AREA OF VENTURA COUNTY, CALIFORNIA

PROJECT NO.: VT-24872-02
May 17, 2017

PREPARED FOR
HARRISON INDUSTRIES

BY
EARTH SYSTEMS
SOUTHERN CALIFORNIA
1731-A WALTER STREET
VENTURA, CALIFORNIA

County of Ventura
Notice of Preparation of an EIR
PL17-0154
Attachment 9 - Update of
Geotechnical Engineering Report

Earth Systems
Southern California

1731-A Walter Street
Ventura, CA 93003
(805) 642-6727
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May 17, 2017

Project No.: VT-24872-02
Report No.: 17-5-68

Harrison Industries
Attention: Mike Harrison
P.O. Box 4009
Ventura, CA 93007

Project: Commercial Organics Processing Facility
Edwards Ranch Road
Santa Paula Area of Ventura County, California

Subject: Update of Geotechnical Engineering Report

References:
1) Geotechnical Engineering Report, Proposed Biogenic Energy Park, Edward Ranch Road, Santa Paula Area of Ventura County, California, by Earth Systems Southern California, Project No. VT-24872-01, Report No. 14-3-17, dated April 22, 2014.
2) Evaluation of On-Site Disposal Feasibility, APN 090-0-180-085 Proposed Biogenic Energy Park, Santa Paula Area of Ventura County, California, by Earth Systems Southern California, Project No. VT-24872-01, Report No. 14-1-60, dated February 5, 2014.

Introduction

Earth Systems Southern California (Earth Systems) has been asked to prepare an Update of Geotechnical Engineering Report for a proposed commercial organics processing facility in the Santa Paula area of Ventura County, California. A Geotechnical Engineering Investigation Report was prepared by Earth Systems in 2014 for the northwestern 40 acres of the expanded 70-acre site. A copy of our 2014 report was previously provided. If desired, a copy of the 2014 report can be provided upon request. The 30-acre expansion is proposed on property situated south-southeast of the 40-acre site. In addition to the increase in site size, the location and number of buildings has changed; the location of the detention basins has changed; and the number of employees working at the facility has increased.

Sewer service is not available to the site; thus, on-site wastewater treatment systems (OWTS, or septic systems) will be necessary for those structures that will have interior plumbing. An OWTS Report has been prepared for the subject site, and will be submitted under a separate cover.

Proposed Development

On a preliminary basis, Earth Systems understands the proposed commercial organics processing facility will include a Facility Administration Building, a Maintenance Building, a Packaging Building, a Scale House, a Wet Organic Materials Building, and a Green/Wood Material Building. Appurtenant construction will include paved parking areas, exterior flatwork, and underground utilities. Except for the proposed Facility Administration Building, Earth Systems anticipates that the proposed buildings will be tall, one-story structures with slab-on-grade floor systems. Structural loading for the proposed buildings is anticipated to be moderate to heavy. In addition, two retention basins are proposed along the site's southeastern boundary.

The proposed layout for the proposed improvements is shown on the Site Plan provided in Appendix A.

Purpose and Scope of Work

Because of the increase in site size and a change in the location and number of proposed improvements, supplemental subsurface exploration and laboratory testing programs were implemented to analyze the soil conditions in areas of the site previously not explored for any proposed improvements. The scope of work for this update report included:

1. Performing a reconnaissance of the site.
2. Drilling, sampling, and logging three (3) exploratory test borings, and the excavation of five (5) exploratory test pits to study soil and groundwater conditions.
3. Advancing a total of seven (7) cone penetrometer test (CPT) soundings to study soil properties and conditions.
4. In addition, four (4) other borings (IT-1 through IT-4) were advanced for use in infiltration testing.
5. In addition, four (4) percolation test holes were drilled and ten (10) exploratory test pits excavated to evaluate soil percolation characteristics at the project site for on-site septic system design. The percolation test holes and test pits are addressed in a separate report.
6. Laboratory testing soil samples obtained from the subsurface exploration to determine their physical and engineering properties.
7. Analyzing the geotechnical data obtained.
8. Preparing this update report.

Supplemental Field and Laboratory Testing Programs

Similar to the test borings drilled for the referenced geotechnical report, alluvial deposits were typically encountered to the maximum depths explored, with the exception of Test Pits TP-1 through TP-5 and Boring B-1. In these test pits/boring, artificial (undocumented) fill was encountered to depths ranging from approximately 0.5 to 1.5 feet below existing site grade.

In the referenced geotechnical report, undocumented fill was encountered to a depth of approximately 18 feet in Boring B-3 and 5 feet in Boring B-7. Although not encountered in any of the other test pits and borings performed for both studies, undocumented fill may be present in other areas of the site due to previous site activities. The undocumented fill encountered in the test pits/ borings consisted of soft to stiff, sandy to clayey silts and soft to medium stiff, sandy to silty clays. Some minor trash and debris were observed in the undocumented fill.

The undocumented fill encountered in the test pits and borings cited above was underlain by alluvial deposits that extended to the maximum depth explored in both borings. The alluvial soils encountered in our test borings were indicative of typical overbank stream deposits characterized by interbedded, discontinuous strata of silts, clays, sands, and gravels generally stratified planar to the ground surface. Cobbles were encountered in the borings and CPT soundings performed in the southern portion of the site. More detailed descriptions of the encountered subsurface soil conditions are included in the test pit and boring logs and CPT sounding interpretations. The test pit and boring logs and CPT sounding interpretations are presented in Attachment B, and the approximate locations are shown on the Site Plan presented in Attachment A.

In the referenced geotechnical report, testing of the near-surface soils indicated that these soils lie in both the "low" to "medium" expansion ranges based on measured expansion indices of 41 and 64. One additional sample of the near-surface soils was tested for this study that resulted in an Expansion Index (EI) of 76, which falls in the "medium" expansion range. [The locally adopted version of this classification of soil expansion, Table 1809.7(1), is included in Appendix B of this update report. Due to the variability of the near-surface soils encountered at the site, foundations and slabs should be designed based on the bearing soils being in the "medium" expansion range. It appears that soils can be cut by normal grading equipment.

In the referenced geotechnical report, groundwater was encountered at depths ranging from approximately 20.5 to 25 feet below the existing ground surface. During our 2017 field investigation, groundwater was encountered at a depth of approximately 40 feet below the existing ground surface in Boring B-1, drilled at the location of the proposed Scale House. A mapping of historic high groundwater levels in the subject area by the State shows the site to have a high historical groundwater level between 10 and 20 feet below the ground surface near the subject site (CGS, 2002 and 2003). A copy of the map of historical high groundwater levels is presented in Appendix A of the referenced geotechnical report. It should also be noted that fluctuations in the groundwater levels and soil moisture conditions do occur due to change in seasons, variations in rainfall, irrigation practices, construction impacts, and other factors.

Additional samples of near-surface soils were tested for pH, resistivity, soluble sulfates, and soluble chlorides for this update report. It should be noted that sulfate contents (330 and

890 mg/Kg) fall within the "S0" exposure class range of Table 19.3.1.1 of ACI 318-14; therefore, it appears that special concrete designs will not be necessary for the measured sulfate contents. The corrosion test results attached and those provided in Appendix B of the referenced geotechnical report should be distributed to the design team for their interpretations pertaining to the corrosivity or reactivity of various construction materials (such as concrete and piping) with the soils.

Based on criteria established by the County of Los Angeles, measurements of resistivity of additional samples of the near-surface soils ranged from 880 to 2,400 Ohms-cm indicating that they are "severely corrosive to moderately corrosive" to ferrous metal (i.e. cast iron, etc.) pipes.

Seismicity and Seismic Design

It is assumed that the 2016 CBC and ASCE 7-10 guidelines will apply for the seismic design parameters. The 2016 CBC includes several seismic design parameters that are influenced by the geographic site location with respect to active and potentially active faults, and with respect to subsurface soil or rock conditions. The seismic design parameters presented herein were determined by the U.S. Seismic Design Maps "risk-targeted" calculator on the USGS website for the jobsite coordinates (34.30214° North Latitude and 119.12341° West Longitude) at the center of the subject site. The calculator adjusts for Soil Site Class D, and for Occupancy (Risk) Category I/II/III.

The calculated 2016 California Building Code (CBC) and ASCE 7-10 seismic parameters typically used for structural design are attached to this update report and summarized in the table below.

Summary of Seismic Parameters – 2016 CBC

Site Class (Table 20.3-1 of ASCE 7-10 with 2013 update)	D
Occupancy (Risk) Category	I/II/III
Maximum Considered Earthquake (MCE) Ground Motion	
Spectral Response Acceleration, Short Period – S_s	2.811 g
Spectral Response Acceleration at 1 sec. – S_1	1.084 g
Site Coefficient – F_a	1.00
Site Coefficient – F_v	1.50
Site-Modified Spectral Response Acceleration, Short Period – S_{MS}	2.811 g
Site-Modified Spectral Response Acceleration at 1 sec. – S_{M1}	1.627 g
Design Earthquake Ground Motion	

Short Period Spectral Response – S_{DS}	1.874 g
One Second Spectral Response – S_{D1}	1.084 g
Reference: USGS, 2017 Latitude: 34.30214 N degrees; Longitude: 119.12341 W degrees	

The values presented in the table above are appropriate for a 2 percent probability of exceedance in 50 years. A listing of the calculated 2016 CBC and ASCE 7-10 seismic parameters is attached. The site peak ground acceleration (PGA) per Section 1803.5.12 of the 2016 CBC and Section 11.8.3 of ASCE 7-10 is 1.099 g.

The Fault Parameters table in Appendix D lists the significant "active" and "potentially active" faults within a 31-mile (50-kilometer) radius of the subject site. The distance between the site and the nearest portion of each fault is shown, as well as the respective estimated maximum earthquake magnitudes, and the deterministic mean site peak ground accelerations.

Liquefaction and Seismically-Induced Settlement of Dry Sands

For the referenced geotechnical report, liquefaction and seismically-induced settlement of dry sands were evaluated for Borings B-1 and B-2 drilled in 2014. The results of our analyses indicated that there was the potential for about 8 to 9 inches of seismic induced settlement in the zones above the groundwater level, and the potential for about 1 to 2 inches of seismic induced settlement due to liquefaction. Therefore, the total seismic induced settlement was estimated to be approximately 9 inches near Boring B-1, and approximately 11 inches in near Boring B-2.

For this update report, liquefaction-induced settlement and seismically-induced settlement of dry sands were evaluated for the cone penetrometer test (CPT) soundings and Boring B-2 performed for this update report using an in-house proprietary spreadsheet. In the proprietary spreadsheet, the peak ground acceleration is used for soil layers below the groundwater level to evaluate the liquefaction potential and settlement, whereas two-thirds of the peak ground acceleration is applied to soil layers above the groundwater level to evaluate the seismically-induced settlement of dry sands. The total induced subsidence shown on the attached results is the combination of liquefaction-induced settlements and seismically-induced settlement of dry sands.

A cyclic mobility analysis was undertaken to analyze the liquefaction potentials of the various soil layers. The analysis was performed in general accordance with the methods proposed by NCEER (1997). In the analysis, the design earthquake was a 7.0 moment magnitude event, an assumed historic high groundwater level of 15 feet, and a peak ground acceleration of 1.099 g were used per the referenced geotechnical report.

The volumetric strain for the potentially liquefiable zones was estimated using a chart derived by Tokimatsu and Seed (1987) after reducing the $N_{1(60)}$ values derived by the analytical program by the calculated "FC Delta" value, then adjustments are made for fines content as per Seed (1987) and SCEC (1999). Using this methodology, the volumetric strain was found to be as follows:

The Tokimatsu and Seed procedure, as implemented by Pradel, has been used to evaluate seismically-induced settlement at this site. The site acceleration was assumed to be the two-thirds of the peak ground acceleration (PGA), or 1.099 g. (Based on conversations with California Geological Survey representatives, the PGA is applicable to liquefaction analysis because of potential bearing failures that liquefaction can induce, whereas seismically-induced settlement cannot cause a bearing failure, and the reduced PGA results in more realistic analytical values.) Furthermore, at the full PGA_M, calculated shear strains are well beyond the range of 0.03% to 1%, upon which Pradel's equations are based.

The following table summarizes the total seismically-induced settlement (i.e., liquefaction-induced settlements and seismically-induced settlement of dry sands) for groundwater at a depth of 15 feet below the existing ground surface.

CPT/Boring Number	Total Seismic-Induced Settlement (inches)
CPT-1	0.3
CPT-2	2.5
CPT-3	1.0
CPT-4	0.2(1)
CPT-4a	1.4(1)
CPT-5	0.1(1)(2)
CPT-5a	0.0(1)(2)
CPT-6	11.1
CPT-7	4.0
B-2	3.2(3)

(1) CPT soundings could not extend below a depth of 15 feet for evaluating the liquefaction due to the quantity of cobbles in the underlying soils.
(2) CPT soundings could not extend to a depth of 15 feet for evaluating the seismically-induced settlement of dry sands above the assumed groundwater level.
(3) Boring B-2 met auger refusal on cobbles at a depth of approximately 41 feet below the existing ground surface.

As shown in the table, calculations indicate that the total seismically-induced settlement could be as much as 11 inches near CPT-6 for groundwater at a depth of 15 feet (see attached results).

Based on our re-evaluation of liquefaction and seismically-induced settlement of dry sands, it is the opinion of this firm that the soils underlying the site would be prone to liquefaction and/or seismically-induced settlements during a strong seismic event. Based on the estimated liquefaction settlements and seismically-induced settlements of dry sands, considerable remedial grading or some type of ground improvement (i.e., deep dynamic compaction, cemented deep soil mixed columns, stone columns, etc.) will be required for support of the proposed structures.

Cement Treated Composting Areas

Earth Systems understands that the proposed cement treated subgrade beneath the composting areas should have a maximum hydraulic conductivity (permeability) of 1×10^{-5} centimeters per second (cm/sec) to meet the regulatory requirements. In addition to meeting the minimum permeability requirement, the cement treated subgrade should also be durable enough to withstand the equipment traffic and loads from the composting operations that will take place on them.

Permeability tests and unconfined compression tests were performed on remolded test specimens of the subgrade soils. The test specimens were compacted to 95 percent of the maximum dry density at various cement contents. For this study, the cement contents used to prepare the test specimens were 6, 9, and 12 percent (by dry weight).

The following table summarizes the results of the permeability tests performed on the sample of near-surface soils collected from the composting areas.

Percent Cement Added (%)	Hydraulic Conductivity (cm/sec)
6	5.0×10^{-7}
9	1.4×10^{-7}
12	6.9×10^{-8}

The following table summarizes the results of the unconfined compressive strength tests performed on the sample of near-surface soils collected from the composting areas.

Percent Cement Added (%)	Compressive Strength (psi)
6	243.8
9	325.0
12	373.2

Based on the laboratory test results, the minimum permeability of 1×10^{-5} cm/sec may be achieved with 6 percent or more cement (by dry weight) for the subgrade soils within the upper 18 inches throughout the composting areas. The unconfined compressive strength of the cement treated soil ranged from approximately 244 psi for 6 percent cement to 373 psi for 12 percent cement.

Because the subgrade soils in the proposed composting areas consists predominantly of fine-grained soils, the use of 12 percent cement or higher may be needed to provide a workable surface that is durable enough to withstand the equipment traffic and loads from the composting operations. To increase the durability of the cement treated subgrade, while possibly reducing the percent cement needed, a layer of aggregate base material could be placed on the subgrade surface prior to cement treatment. This increase in the sand and gravel content of the treated material should result in an increase in the unconfined compressive strength, and therefore an increase in durability. Although testing was not performed on a composited sample of native soil and aggregate base material to determine the percentage of aggregate base material needed to increase the durability of the cement treated subgrade, Earth Systems anticipates that a 4- to 6-inch thick layer of aggregate base material would increase the durability considerably. If desired, additional testing can be performed on a composited sample of native soil and aggregate base material to determine the percentage of aggregate base material needed or if a reduction in the percentage of cement is possible.

Based on 12 percent Portland cement (by dry weight) and an assumed dry unit weight of 110 pcf, a minimum spread rate of 19.8 $\pm$ 0.2 pounds per square foot (psf) will be required for a treatment depth of 18 inches in the composting areas. To reduce the amount of cement needed to increase the durability of the cement treated subgrade in the composting areas, the subgrade beneath the composting areas could be treated with 6 percent cement (by dry weight) to provide 1 foot of soil with a maximum permeability no greater than 1×10^{-5} cm/sec. For the working surface, a 2-inch layer of asphalt could be placed. Should cracks develop in the asphalt layer under normal working conditions, the underlying cement treated subgrade would act as a low permeability liner.

Eighteen (18) inches of soil cement treated with 12 percent cement would provide a treated section capable for supporting equipment traffic equivalent to a traffic index (TI) of 6.2. If the TI from the anticipated equipment traffic working on the treated section will be greater than 6.2, the percentage of cement will need to be increased, or the thickness of the treated section will need to be increased, or some combination of the two will need to be considered.

Recommendations for cement treatment in the proposed composting areas is provided in Section A of this update report.

Infiltration Testing

The locations of the detention basins have changed from the referenced geotechnical report. A total of four infiltration tests (Nos. IT-1 through IT-4) were performed for the new locations of the retention basins on the subject property.

On March 3, 2017, four small diameter borings (Nos. IT-1 through IT-4) were drilled for infiltration testing in accordance with County of Ventura guidelines. Two borings were drilled in the proposed Retention Basin #1 located in the southwest corner of the site, and the two other borings were drilled in the proposed Retention Basin #2 located in the southeast corner of the site. (A site plan showing the locations of the infiltration test holes is attached)

In each of the proposed retention basins, one boring was drilled to a depth of about 2 feet below the existing ground surface, and the second boring was drilled to a depth of approximately 12.4 to 13 feet below the existing ground surface. Logs of the infiltration test borings are attached. After drilling, a 2-inch inside diameter perforated PVC casing was lowered into each hole. The annuli between the casings and holes were filled with pea gravel.

Infiltration tests were run in accordance with a procedure presented in the referenced County of Ventura guideline document. The holes were pre-saturated on the day they were drilled by adding 30 inches of water and allowing the water to percolate away two times before running the infiltration test. Because the water did not percolate away at fast enough rates to allow a same-day test, the tests were run on the following day.

Approximately 2 feet of water was added to the bottom of each hole to start the test, and the drop in the water surface was monitored by taking periodic measurements. Water was added as necessary after the holes had become nearly dry. Test results (attached) indicate that relatively steady infiltration rates were obtained:

According to the referenced guidelines, the percolation rates measured in the field are converted to infiltration rates using the following formulas:

Infiltration Rate (in minutes per inch) = Percolation Rate/Reduction Factor

Reduction Factor = $[(2d_1 - \Delta d) / \text{Diameter}] + 1$,
Where d_1 = Initial Water Depth (in inches),
Δd = Water drop of slowest reading (in inches), and
Diameter = Diameter of boring (in inches).

Infiltration Rate (in./hr.) X 0.000706 = Infiltration Rate (cm./sec.)

Based on the testing of Boring IT-1, which was located within Retention Basin #2, the recommended test infiltration rate is:

$$33.64 \text{ in./hr.} = 9.4 \times 10^{-2} \text{ cm./sec.}$$

Based on the testing of Boring IT-2, which was located within Retention Basin #2, the recommended test infiltration rate is:

$$11.32 \text{ in./hr.} = 8.0 \times 10^{-3} \text{ cm./sec.}$$

Based on the testing of Boring IT-3, which was located within Retention Basin #1, the recommended test infiltration rate is:

$$1.79 \text{ in./hr.} = 1.3 \times 10^{-3} \text{ cm./sec.}$$

Based on the testing of Borings IT-4, which was located within Retention Basin #1, the recommended test infiltration rate is:

$$29.44 \text{ in./hr.} = 2.1 \times 10^{-2} \text{ cm./sec.}$$

There are many factors that influence the infiltration rate. Clear water was used in our tests, whereas oil residue, silt, organic matter, and other deleterious material will likely be contained in the storm water. Variations in soil conditions within the limits of the proposed infiltration system will likely affect infiltration characteristics. The designer of the proposed infiltration system for the project should consider these factors in their design, as well as apply a factor-of-safety to the infiltration rate to account for future siltation in the bottoms and along the sidewalls of the proposed retention basins.

GEOTECHNICAL CONCLUSIONS AND RECOMMENDATIONS

Based on the data provided in this report, it appears that the site is suitable for the proposed development from a Geotechnical Engineering standpoint provided the recommendations provided herein are properly implemented into the project. Given the site conditions encountered, we conclude that considerable remedial grading or some type of ground improvement (i.e., deep dynamic compaction, cemented deep soil mixed columns, stone columns, etc.) should be performed for support of the proposed structures. The primary geotechnical consideration from a development standpoint is as follows:

- The potential for about 0.5 to 12.2 inches of total seismically-induced settlement (i.e., liquefaction and seismically-induced settlement of dry sands) with groundwater at its assumed historically shallowest level of 15 feet below the ground surface.

For habitable buildings, structural mitigation is commonly acceptable where total combined settlement (i.e., static plus seismic-induced) of 2 inches or less is predicted, whereas ground modification may be required where the predicted total combined settlement exceeds 2 inches. Methods to mitigate the earthquake-related ground movement hazard may include remedial grading or ground improvement (i.e., deep dynamic compaction, cemented deep soil mixed columns, stone columns, etc.) to reduce the susceptibility of the soil to seismic settlement of dry sands and liquefaction, or structural measures such as rigid foundations (i.e., mat or "waffle" foundations, reinforced structural slabs or reinforced conventional spread footings tied together with grade beams) or deep foundations that extend down to firm soil below the liquefiable soil.

The majority of the estimated seismically-induced settlement is settlement of the dry, loose soils above the assumed historically shallowest level of 15 feet below the ground surface. The following table summarizes the total seismic-induced settlement with 7.5, 10, 12.5, and 15 feet of removal and replacement.

CPT/Boring Number	Total Seismic-Induced Settlement (inches)			
	7.5 feet	10 feet	12.5 feet	15 feet
CPT-1	0.3	0.3	0.3	0.3
CPT-2	0.8	0.8	0.8	0.8
CPT-3	1.0	1.0	1.0	1.0
CPT-4	0.1	0.0	0.0	0.0
CPT-4a	0.1	0.0	0.1	0.1
CPT-5	0.0	0.0	0.0	0.0
CPT-5a	0.0	0.0	0.0	0.0
CPT-6	0.8	0.2	0.1	0.1
CPT-7	1.7	1.8	1.1	0.7
B-2	2.4	2.1	1.8	1.7
B-1 (2014)	5.2	5.1	1.1	1.1
B-2 (2014)	10.8	7.0	3.4	2.8

As shown in the table above, removal and replacement of the soils will reduce the estimated total seismically-induced settlements. The depth of removal and replacement to be carried out at each of the proposed structures should be governed by the amount of settlement the structure can tolerate. The Owner should evaluate whether remedial grading is the most cost effective mitigation measure as compared to ground improvement methods.

Specific conclusions and recommendations addressing this geotechnical consideration, as well as general recommendations regarding the geotechnical aspects of design and construction, are presented in the following sections.

A. Revised Grading Recommendations

1. Pre-Grading Considerations

   a. Plans and specifications should be provided to Earth Systems prior to grading. Plans should include the grading plans, foundation plans, and foundation details. Earth Systems will review these plans only for conformity with geotechnical parameters not including drainage. It is the responsibility of the Client and other Engineers to review and approve designs and plans for conformity with all engineering and design requirements necessary to the proper function and performance of the structures.
   b. Roof draining systems, if required by the appropriate jurisdictional agency, should be designed so that water is not discharged into bearing soils or near structures.
   c. Final site grade should be designed so that all water is diverted away from the proposed improvements over paved surfaces or over landscaped surfaces in accordance with current codes. Surface draining systems should be designed so that water is not discharged into bearing soils or near the structures. Final site grade could be such that all water is diverted away from the buildings toward either hardscapes or drain inlets, and is not allowed to pond. In landscape areas adjacent to the buildings, the 2016 California Building Code (Section 1803.3) requires a minimum gradient of 5 percent away from the edge of the building foundations for a minimum distance of 10 feet.
   d. It is recommended that Earth Systems be retained to provide Geotechnical Engineering services during site development and grading, and foundation construction phases of the work to observe compliance with the design concepts, specifications and recommendations, and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction.
   e. Compaction tests shall be made to determine the relative compaction of the fills in accordance with the following minimum guidelines: one test for each 2-foot vertical lift in any isolated fill; one test for each 1,000 cubic yards of material placed; one test at the final fill slope face for each 4-foot of slope height; and two tests in the building pads.
   f. Soils chemistry testing (pH, sulfates, chlorides, and resistivity) should be performed prior to final design to evaluate the corrosivity or reactivity of the soils to various construction materials (such as concrete and piping).

2. Rough Grading/Areas of Development
   a. Grading at a minimum should conform to Appendix J in the 2016 California Building Code (CBC), and with the recommendations of the Geotechnical Engineer during construction. Where the recommendations of this report and the cited section of the 2016 CBC are in conflict, the Owner should request clarification from the Geotechnical Engineer.
   b. The existing ground surface should be initially prepared for grading by removing all vegetation, debris, other organic material and non-complying fill within the construction limits. Organics and debris should be stockpiled away from areas to be graded, and ultimately removed from the site to prevent their inclusion in fills. Voids created by removal of such material should be properly backfilled and compacted. No compacted fill should be placed unless the underlying soil has been observed by the Geotechnical Engineer or a qualified representative.
   c. To minimize the propagation of seismic-induced ground damage to the proposed Facility Administration Building, Packaging Building, Maintenance Building, Scale House, Wet Organic Materials Building, and Green/Wood Material Building and to minimize differential settlement, Earth Systems recommends the following:
      - Native soils beneath these improvements should be excavated a minimum of 7.5 feet below the existing ground surface. The actual depth will depend on the amount of settlement the structure can tolerate. Remedial excavations should be performed laterally beyond the perimeter of the proposed structure to a distance equal to the depth of fill below the footings. If uncertified fill is still present at the remedial excavation bottom, the excavation should be deepened as necessary in those areas to remove all uncertified fill. Structural plans and details should be checked carefully during grading to establish the actual bottom of foundation elevations in the field.
      - If subgrade conditions permit, the bottom of the remedial excavation should be scarified to a depth of 6 inches; uniformly moisture conditioned to near optimum moisture content, and compacted to achieve a relative compaction of 90 percent of the ASTM D 1557 maximum dry density. **Compaction of the prepared subgrade should be verified by testing.**
      - Due to the high in-place moisture contents measured in the laboratory on soils at the bottom of the remedial excavations, unstable subgrade conditions may exist. Should unstable subgrade conditions exist, the bottom of the remedial excavations should be remediated. Typical remedial measures include discing and aerating the soils during dry weather, mixing the soil with dryer materials, stabilization with a geotextile fabric or grid, placement of aggregate base (AB) material or surge rock, or mixing the soil with an approved hydrating agent such as a lime or cement product. Earth Systems should be consulted prior to implementing any remedial measure to observe the unstable subgrade condition and provide site-specific recommendations.

- The excavated soils may be reused to backfill the remedial excavations provided they are processed to remove any deleterious materials and debris, and are properly moisture conditioned and compacted. Due to the high in-place moisture contents measured in the laboratory on the soils within the remedial excavation depths, the excavated soil will most likely be considerably above the optimum moisture content and be too wet to be reused as engineered fill with some remediation. Typical remedial measures include discing and aerating the soils during dry weather or mixing the soil with dryer materials.
- Soils used to backfill the remedial excavations should be moisture conditioned to above optimum moisture content and be uniformly compacted to achieve a relative compaction 90 percent of the ASTM D 1557 minimum dry density using mechanical compaction equipment. To aid in the compaction operation, fill should be placed in lifts not exceeding 8 inches in loose thickness. **Compaction should be verified by testing.** Additional fill lifts should not be placed if the previous lift did not meet the required relative compaction or if soil conditions are not stable.
- If the sidewalls of the remedial excavations are sloped back to the inclination recommended in Item 5 of Section A of the Grading recommendations, the soil used to backfill the remedial excavations should be benched into the sidewalls of the excavation as the backfill is brought up to finished subgrade.

d. Areas outside of the building area to receive fill, exterior slabs-on-grade, equipment pads, sidewalks, or pavement should be overexcavated a minimum of 3 feet below existing grade or as deep as necessary to remove all loose soils/fill. The resulting surface should be scarified to a depth of 6 inches; uniformly moisture conditioned to above optimum moisture, and compacted to achieve a relative compaction of 90 percent of the ASTM D 1557 maximum dry density.

e. The bottoms of all excavations should be observed by a representative of this firm prior to processing or placing fill.

f. Cobbles were encountered in the test borings and CPT soundings performed in the southern portion of the site. Earth Systems anticipates that cobbles will be encountered within the proposed depths of remedial grading beneath the structures and within the depths of the proposed retention basins. The grading contractor should expect to encounter cobbles within these areas, and plan accordingly in his bid for handling and disposal of the oversized particles.

g. On-site soils may be used for fill once they are cleaned of all organic material, rock, debris, and irreducible material larger than 8 inches.

h. Fill and backfill placed at above optimum moisture in layers with loose thickness not greater than 8 inches should be compacted to a minimum of 90 percent of the maximum dry density obtainable by the ASTM D 1557 test method. Random compaction tests by Earth Systems can assist the Grading Contractor in evaluating whether the Grading Contractor is meeting compaction requirements. However, compaction tests pertain only to a specific location and do not guaranty that all fill has been compacted to the prescribed percentage of maximum density. It is the ultimate responsibility of the Grading Contractor to achieve uniform compaction in accordance with the requirements of this report and the grading ordinance.

i. Import soils used to raise site grade should be equal to, or better than, on-site soils in strength, expansion, and compressibility characteristics. Import soil can be evaluated, but will not be prequalified by the Geotechnical Engineer. Final comments on the characteristics of the import will be given after the material is at the project site.

3. Cement Treatment of Composting Areas
   a. All trench backfill for culverts, utilities and pipes planned for beneath the composting areas should be properly placed and compacted to at least 90 percent relative compaction (ASTM D1557) up to 18 inches below finished subgrade. Since the upper 18 inches will be cement treated, compaction of this material will not be required prior to treatment. It will be compacted following the blending and mixing in of cement.
   b. Based on 12 percent Portland cement (by dry weight) and an assumed dry unit weight of 110 pcf, a minimum spread rate of 19.8 $\pm$ 0.2 pounds per square foot (psf) will be required for a treatment depth of 18 inches in the proposed composting areas. The amount of cement being placed should be monitored throughout cement treatment operations, with modifications made as necessary for existing field conditions.
   c. Portland cement should comply with the latest Specifications for Portland cement (ASTM 150, CSA A-5, or AASHTO M85) Type II.
   d. The cement should be spread with a mechanical spreader and mixed with a high-speed rotary mixer. The equipment should be capable of pulverizing and thoroughly mixing in the cement to the depth necessary to produce a compacted cement treated thickness of 18 inches.
   e. At the start of compaction, the mixture should be in a uniform, loose condition throughout its full depth. The moisture content of the mix should be wet of optimum to achieve proper hydration of the cement, and adjusted as needed to achieve the compaction requirements. Water should be clear and free from injurious amounts of oil, acid, alkali, organic matter or other deleterious substance.
   f. Cement treatment operations should not take place when the air temperature is below 45°F, unless the air temperature is 40°F and rising.
   g. No area of cement treated subgrade should be left undisturbed for longer than 30 minutes during compaction operations.
   h. The cement treated soils should be compacted to achieve a minimum relative compaction of 90 percent of the ASTM D1557 maximum dry density. The compaction equipment used during the cement treatment operations should be capable of achieving the required compaction to a depth of 18 inches. Wheel rolling with hauling equipment only is not an acceptable method of compaction. **Compaction of the cement treated subgrade should be verified by testing.**

i. Permanently exposed surfaces should be kept in a moist condition for 7 days for curing of the cement treated subgrade.
j. Experience has shown that 24-hour compressive strength results for moist cured samples are approximately 50 to 60 percent of the 7-day strength (moist cured for 6 days and soaked in water for 24 hours). A 24-hour test should be run on the cement treated subgrade soils in each area to obtain a 24-hour compressive strength which will be used to monitor the daily production. Seven day samples should also be taken for final acceptance.

4. Utility Trenches
a. Utility trench backfill should be governed by the provisions of this report relating to minimum compaction standards. In general, on-site service lines may be backfilled with native soils compacted to 90 percent of the ASTM D 1557 maximum dry density. Backfill of offsite service lines will be subject to the specifications of the jurisdictional agency or this report, whichever are greater.
b. Compacted native soils should be utilized for trench backfill below structures. Sand should not be used in trenches under structures because it provides a conduit for water to migrate under foundations.
c. Backfill operations should be observed and tested by the Geotechnical Engineer to monitor compliance with these recommendations.
d. Jetting should not be utilized for compaction in utility trenches.
e. We recommend that flexible connections should be provided where critical underground utilities enter buildings or other proposed improvements to accommodate the anticipated differential movements due to seismic-induced settlements.

B. Structural Design
1. Conventional Spread Foundations
a. Conventional continuous footings and/or isolated pad footings may be used to support the proposed structures and retaining walls (if planned).
b. All building footings should bear onto compacted fill as recommended elsewhere in this report. Foundation excavations should be observed by a representative of this firm after excavation, but prior to placing of reinforcing steel or concrete, to verify bearing conditions.
c. Based on the recommended embedment depth of 21 inches and a minimum of 15 inches in width, conventional continuous footings bearing onto at least 3.5 feet of compacted fill may be designed based on an allowable bearing value of 2,000 psf. These values have a factor of safety of at least 3.
d. Based on the recommended embedment depth of 21 inches and a minimum of 2 feet in width, isolated pad footings bearing onto at least 3.5 feet of compacted fill may be designed based on an allowable bearing value of 2,200 psf. These values have a factor of safety of at least 3.

e. Isolated pad foundations should be restrained laterally in both directions by means of tie-beams, or other approved method. We recommend that the tie-beams be embedded 21 inches.
f. Allowable bearing values are net (weight of footing and soil surcharge may be neglected) and are applicable for dead plus reasonable live loads.
g. Bearing values may be increased by one-third when transient loads such as wind and/or seismicity are included.
h. Lateral loads may be resisted by soil friction on floor slabs and foundations and by passive resistance of the soils acting on foundation stem walls. Lateral capacity is based on the assumption that any required backfill adjacent to foundations and grade beams is properly compacted.
i. The information that follows regarding reinforcement and pre-moistening for footings is the same as that given in the attached Table 1809.7(1) for the "medium" expansion range. Actual footing designs should be provided by the project Structural Engineer, but the dimensions and reinforcement recommended should not be less than the criteria set forth in the attached Table 1809.7(1) for the appropriate expansion range.
j. Continuous footings bottomed into recompacted soils in the "medium" expansion range should be reinforced, at a minimum, with one No. 4 bar along the bottom and top.
k. Bearing soils should be premoistened to 3 percent above the optimum moisture content to a depth of 18 inches below lowest adjacent grade.
l. Premoistening of slab areas should be observed and tested by this firm for compliance with these recommendations prior to placing of reinforcing steel or concrete.

2. <u>Frictional and Lateral Coefficients</u>
   a. Resistance to lateral loading may be provided by friction acting on the base of foundations. Assuming the spread footings will be found into compacted native soils, a coefficient of friction of 0.55 may be applied to dead load forces. This value does not include a factor of safety.
   b. Passive resistance acting on the sides of foundation stems in compacted native soils equal to 300 pcf of equivalent fluid weight may be included for resistance to lateral load. This value does not include a factor of safety.
   c. A minimum factor of safety of 1.5 should be used when designing for sliding or overturning.
   d. For the building foundations, passive resistance may be combined with frictional resistance provided a one-third reduction in the coefficient of friction is used.
3. <u>Slabs-on-Grade</u>
   a. Concrete slabs should be supported by at least 3.5 feet of compacted engineered fill as recommended elsewhere in this report.

b. It is recommended that perimeter slabs (walks, patios, etc.) be designed relatively independent of footing stems (i.e. free floating) so foundation adjustment will be less likely to cause cracking.
c. Earth Systems anticipates the floor slabs in the Wet Organic Material Building, Green/Wood Material Building and Packaging Building will be subjected to heavy rack loads and/or truck and fork lift traffic. The Structural Engineer should design the thickness and reinforcement of the floor slabs in these buildings to handle the anticipated loads.
c. A modulus of subgrade reaction ("k" value) of 100 kips per cubic foot may be used for design of the slab-on-grade provided the subgrade soils are prepared and compacted as recommended in Section A of this report.
d. The information that follows regarding design criteria for slabs is the same as that given in Table 1809.7(1) for the "medium" expansion range. Actual slab designs should be provided by the Structural Engineer, but the reinforcement and slab thicknesses he recommends should not be less than the criteria set forth in Table 1809.7(1) for the appropriate expansion range.
e. Slabs bottomed on soils in the "medium" expansion range should be underlain with a minimum of 4 inches of sand. Areas where floor wetness would be undesirable should be underlain with a vapor retarder (as specified by the Project Architect or Civil Engineer) to reduce moisture transmission from the subgrade soils to the slab. The retarder should be placed as specified by the structural designer.
f. Slabs bottomed on soils in the "medium" expansion range should at a minimum be reinforced at mid-slab with No. 3 bars on 24-inch centers, each way. No. 3 bars acting as dowels should also extend out of the perimeter footings, and should be bent so that they extend a minimum of 3 feet into adjacent slabs.
g. Soils underlying slabs that are in the "medium" expansion range should be premoistened to 3 percent above the optimum moisture content to a depth of 18 inches below lowest adjacent grade.
h. Premoistening of slab areas should be observed and tested by this firm for compliance with these recommendations prior to placing of sand, reinforcing steel, or concrete.

4. <u>Preliminary Asphalt Pavement Sections</u>
a. Based on the exploratory borings, the near-surface soils within the proposed paved areas are generally silts and clays that have a low traffic support capacity when recompacted and used as pavement subgrade. For preliminary pavement evaluation, an R-Value of 5 has been assumed for the anticipated subgrade soil. Following site grading, Earth Systems recommends that a representative subgrade sample be obtained and R-value testing be performed.
b. Asphalt pavement sections for untreated subgrade soils are presented below based on an R-value of 5; current Caltrans design procedures, and traffic indices ranging from 4.5 to 6.5. The traffic index (TI) is a measure of traffic wheel loading frequency and intensity of anticipated traffic. For comparison, TI's between 4 and 5 are often

suitable for design of automobile parking areas, TI's between 5 and 6 are commonly used for design of fire truck access lanes and areas subject to channelized flow with light delivery trucks, and TI's greater than 6.0 are common for design of pavements supporting light to moderate bus and truck traffic. Traffic indices assumed above should be reviewed by the project Owner, Architect, and/or Civil Engineer to evaluate their suitability for this project.

TRAFFIC INDEX	ASPHALT-CONCRETE (INCH)	AGGREGATE BASE (INCH)
4.5	3.0	8.0
5.0	3.0	10.0
5.5	3.0	12.0
6.0	4.0	11.5
6.5	4.0	13.5

c. The preliminary paving sections provided above have been designed for the type of traffic indicated. If the pavement is placed before construction on the project is complete, construction loads, which could increase the traffic index values assumed above, should be taken into account.
d. The subgrade soils in the upper 12 inches below the finished subgrade elevation should be properly moisture conditioned to above optimum moisture, and compacted to achieve a minimum relative compaction of 90 percent of the ASTM D1557 maximum dry density. The subgrade soils should be in a stable, non-pumping condition at the time the aggregate base material is placed and compacted.
e. Aggregate base materials should conform to the specifications stated in the 2015 "Greenbook" and be compacted as engineered fill to at least 90 percent compaction.
f. Asphalt paving materials and placement methods should meet specifications stated in the 2015 "Greenbook" for asphalt concrete.
g. Adequate drainage (both surface and subsurface) should be provided such that the subgrade soils and aggregate base materials are not allowed to become continuously wet.
h. All concrete curbs separating pavement and landscaped areas should extend at least 2 inches into the subgrade and below the bottom of the adjacent aggregate base to provide a barrier against lateral migration of landscape water or runoff into the pavement section.
i. Periodic maintenance should be performed to repair degraded areas and seal cracks with appropriate filler.

To reduce the thickness of aggregate base material required for pavement supported on untreated subgrade, we have provided the following pavement sections for cement treated subgrade.

RECOMMENDED CEMENT-TREATED SUBGRADE PAVEMENT SECTIONS

Traffic Index (T.I.)	Asphalt Concrete Thickness (inches)	Class 2 Aggregate Base Thickness (inches)	CTB*
4.5	2.5	4.0	12 (minimum)
5.0	2.5	4.0	12 (minimum)
5.5	3.0	4.0	12 (minimum)
6.0	3.0	4.0	12 (minimum)
6.5	3.0	4.0	12 (minimum)

*CTB = Cement-Treated Subgrade consisting of 6 percent cement treated soil. All trenching in areas to be designed for CTB conditions shall be performed prior to cement treatment.

Based on 6 percent Portland cement (by dry weight) and an assumed dry unit weight of 110 pcf, a minimum spread rate of 6.6 $\pm$ 0.2 pounds per square foot (psf) will be required for a treatment depth of 12 inches in the proposed pavement areas.

6. <u>Preliminary Concrete Paving Sections</u>
   a. For those areas that will be subjected to heavy truck traffic and will be paved with concrete, the following minimum criteria may be used for design:

      1. Concrete pavement sections should be a minimum of 6.5 inches thick for a 28-day concrete flexural strength of 625 pounds per square inch (psi), which roughly corresponds to a 28-day compressive strength of 5,000 psi. For a flexural strength of 535 psi (roughly corresponding to 4,000 psi compressive strength), the concrete pavement should be at least 7.25 inches thick.

      2. For improved support and drainage, a 4-inch thick layer of compacted aggregate base (or crushed miscellaneous base) is recommended beneath the concrete pavement.

      3. For crack control, a minimum reinforcing should be included consisting of No. 4 bars at a maximum spacing of 24-inches in each direction. Reinforcing bars should be placed at mid-height of the concrete slab and maintained at mid-height during placement of concrete. Contraction joints should be placed at intervals not exceeding 12 feet.

The preliminary paving sections discussed above have been designed for an R-Value of 5 and a traffic index of 6.5 following design methods described by the American Concrete Institute (ACI 330R-01). If the pavement is placed before construction on the project is complete, construction loads should be taken into account. If the anticipated traffic index is expected to exceed 6.5, these sections should be re-evaluated. Traffic should not be allowed on the pavement until 28 days after concrete placement, or until the 28-day design strength is achieved.

Conclusions

Based on our observations and review of the referenced geotechnical report, we conclude that the referenced information along with the additional revised information included in this update report are appropriate for the proposed construction. This update report shall serve to update the referenced geotechnical report for a period of 1 year.

Limitations and Uniformity of Conditions

The analysis and recommendations submitted herein are based upon the data obtained from the supplemental subsurface exploration and laboratory testing programs, and that provided in the referenced geotechnical report. If variations from the assumed conditions appear evident, it will be necessary to re-evaluate the recommendations of this update report.

The scope of services did not include any environmental assessment or investigation for the presence or absence of wetlands, hazardous or toxic materials in the soil, surface water, groundwater or air, on, below, or around this site. Any statements in this update report or on the soil boring logs contained in the referenced geotechnical report regarding odors noted, unusual or suspicious items or conditions observed are strictly for the information of the Client.

Findings of this update report are valid as of this date; however, changes in conditions of a property can occur with passage of time whether they be due to natural processes or works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur whether they result from legislation or broadening of knowledge. Accordingly, findings of this update report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of 1 year.

In the event that any changes in the nature, design, or location of the proposed improvements are planned, the conclusions and recommendations contained in this update report shall not be considered valid unless the changes are reviewed and conclusions of this letter report modified or verified in writing.

This update report is issued with the understanding that it is the responsibility of the Owner, or of his representative to insure that the information and recommendations contained herein are called to the attention of the Architect and Engineers for the project and incorporated into the plan and that the necessary steps are taken to see that the Contractor and Subcontractors carry out such recommendations in the field.

As the Geotechnical Engineers for this project, Earth Systems has striven to provide services in accordance with generally accepted geotechnical engineering practices in this community at this time. No warranty or guarantee is expressed or implied. This update report was prepared for the exclusive use of the Client for the purposes stated in this document for the referenced project only. No third party may use or rely on this report without express written authorization from Earth Systems for such use or reliance.

It is recommended that Earth Systems be provided the opportunity for a general review of final design and specifications in order that earthwork and foundation recommendations may be properly interpreted and implemented in the design and specifications. If Earth Systems is not accorded the privilege of making this recommended review, it can assume no responsibility for misinterpretation of the recommendations contained herein.

Prior to construction we request the opportunity to review the grading and foundation plans to verify that our recommendations are properly incorporated and make any additional recommendations that might be needed.

Please call if you have any questions, or if we can be of further service.

Respectfully submitted,

EARTH SYSTEMS SOUTHERN CALIFORNIA

Reviewed and Approved

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Attachments:
Attachment A – Figures
Attachment B – Logs of Borings, Logs of Test Pits, and CPT Sounding Interpretations
Attachment C – Laboratory Test Results
Attachment D – Seismic Design Parameters
Attachment E – Results of Seismically-Induced Settlement Analyses
Attachment F – Results of Infiltration Testing

Copies: 3 - Client (2 US Mail, 1 email)
1 - Project File

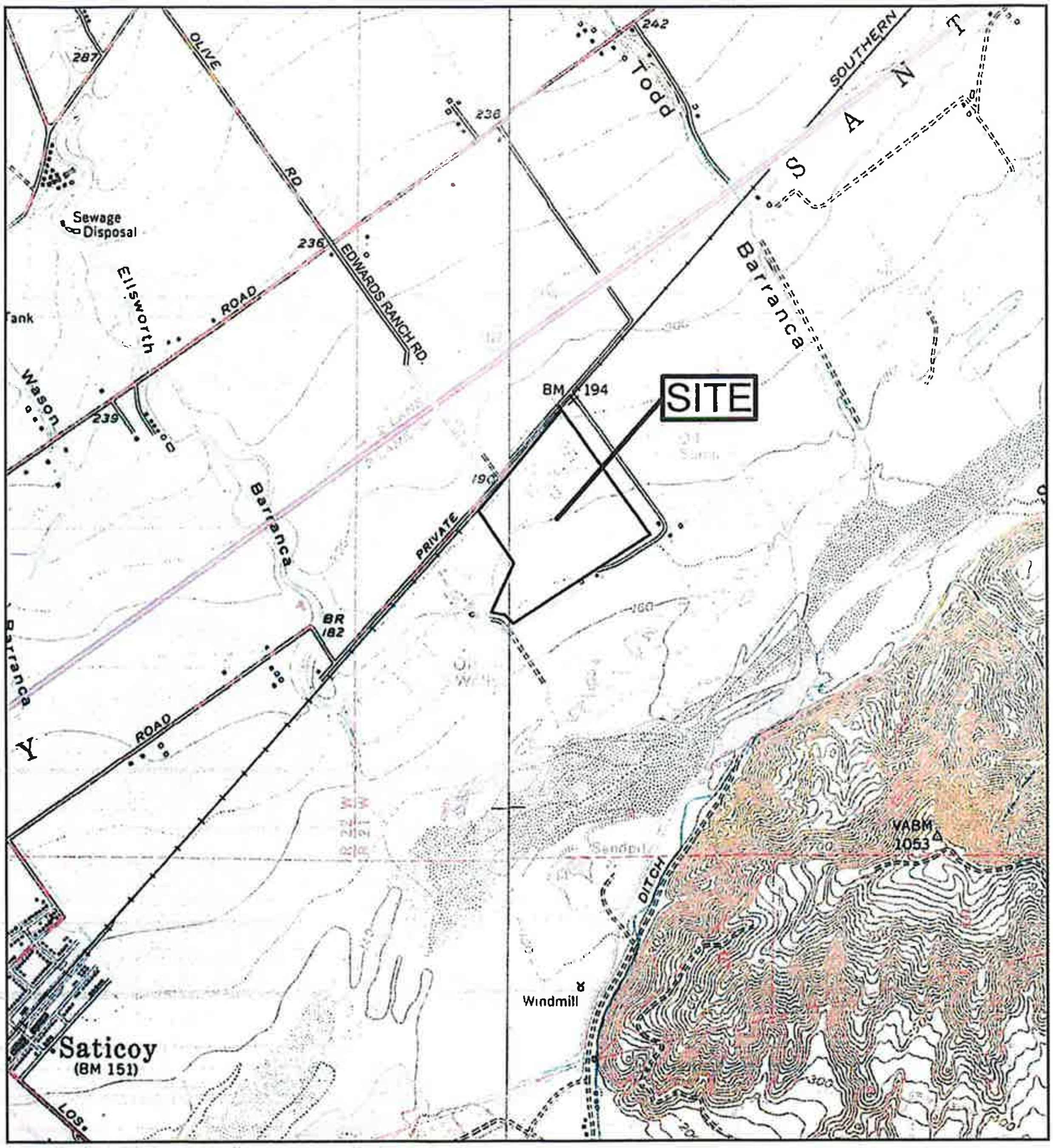
ATTACHMENT A

Vicinity Map

Regional Geologic Map

Seismic Hazard Zones Map

Site Plan



Base Map: USGS 7.5' Topographic Maps of the Saticoy and Santa Paula Quadrangles, 1967.
Scale: 1 in. = 2,000 ft.

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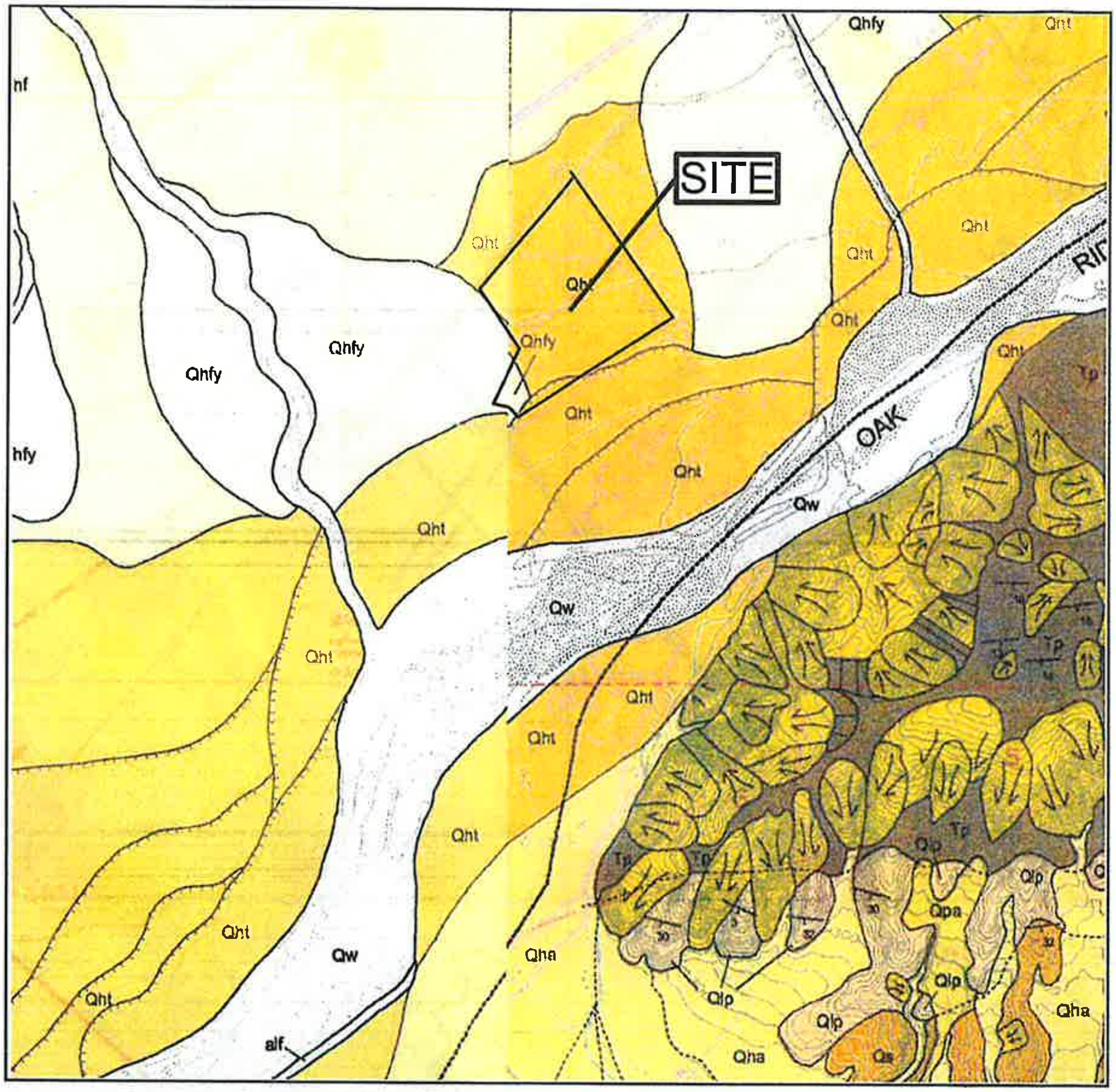
VICINITY MAP

Commercial Organics Processing Facility
Santa Paula, California

Earth Systems
Southern California

May 2017	VT-24872-02



From USGS, Geologic Maps of the Saticoy and Santa Paula Quadrangles, 2004

LEGEND

Historic
alf Artificial levee fill

Historic - Holocene
Qw Wash deposits in major river channels
Qhfy Alluvial fan deposits

Holocene
Qht Stream Terrace deposits
Qha Undivided alluvial deposits
Qhf Alluvial fan deposits

0 ft. ~ 1,000 ft. ~ 2,000 ft.

Syncline

Anticline

Geologic contact

Fault - Dashed where approximate, dotted where buried

25 Bedding Attitude

20 Overturned Bedding

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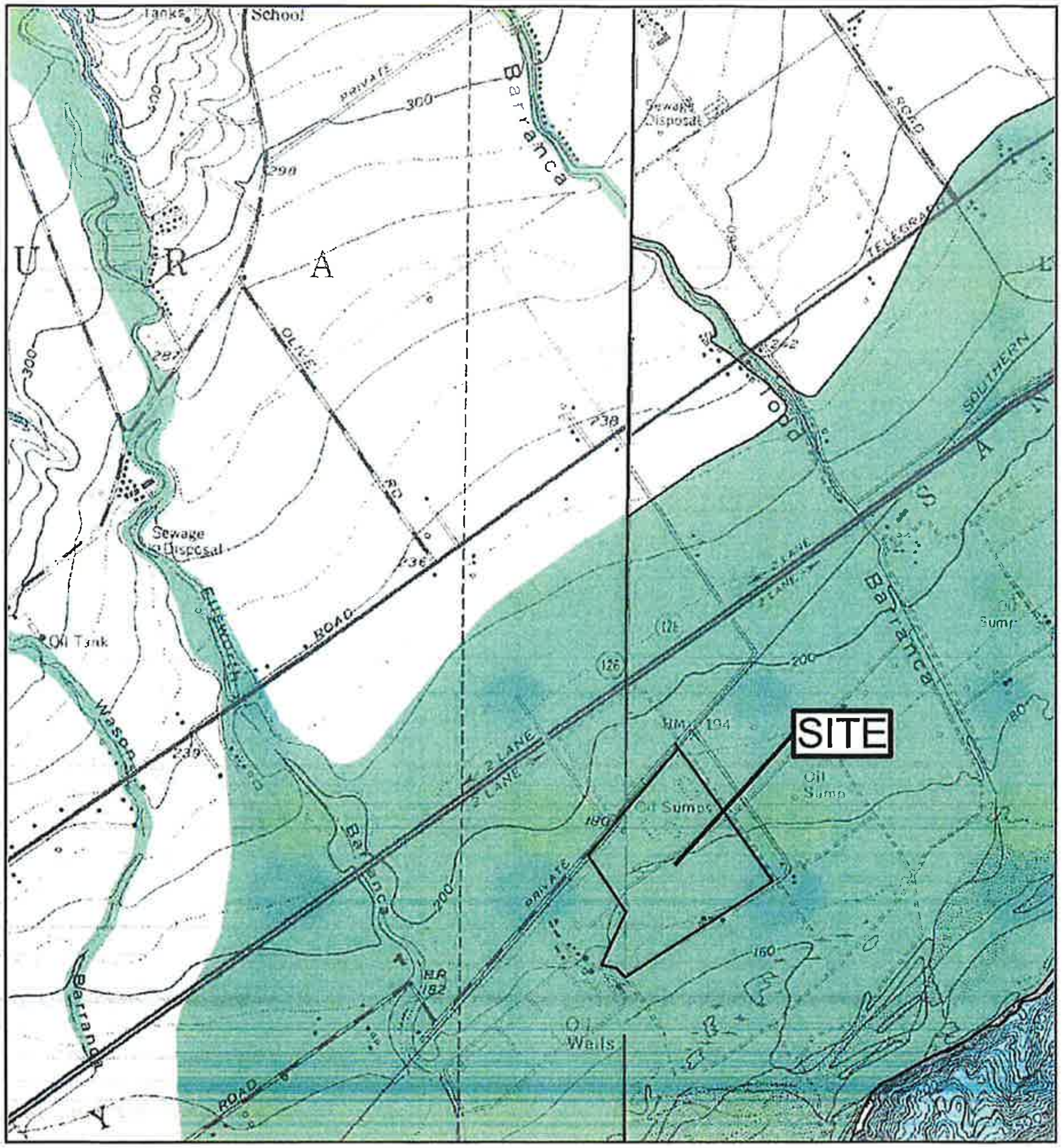
REGIONAL GEOLOGIC MAP

Commercial Organics Processing Facility
Santa Paula, California

Earth Systems
Southern California

May 2017	VT-24872-02



From California Geological Survey, 2003 AND 2002, Seismic Hazards Zones Maps - Saticoy and Santa Paula Quadrangles
Scale: 1 in. = 2000 ft.

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MAP EXPLANATION
Zones of Required Investigation

- **Liquefaction**
Areas where historical occurrence of liquefaction, or local geological, geotechnical and ground-water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693 (c) would be required.

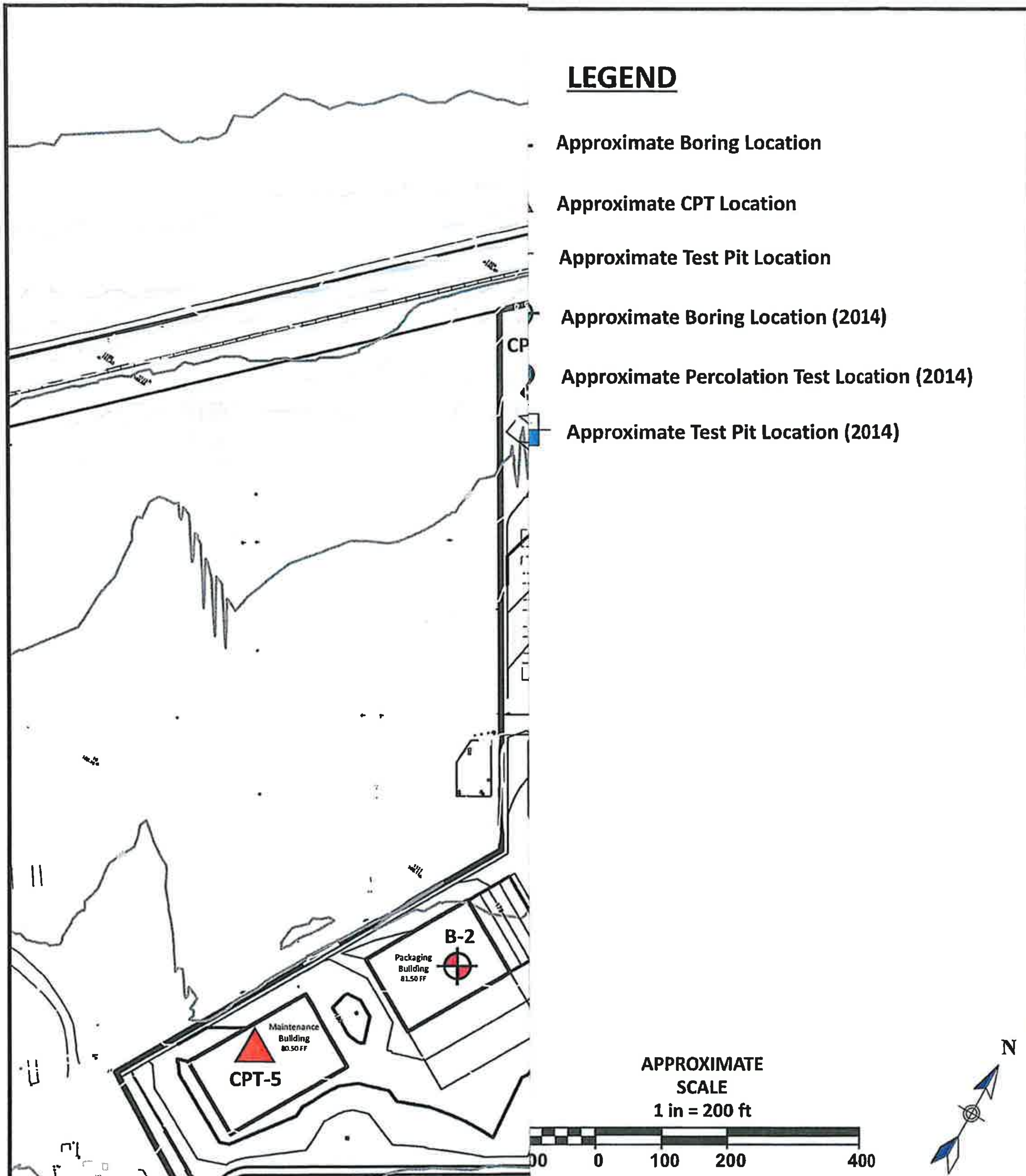
- **Earthquake-Induced Landslides**
Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693 (c) would be required.

SEISMIC HAZARD ZONES MAP

Commercial Organics Processing Facility
Santa Paula, California

Earth Systems
Southern California

May 2017	VT-24872-02



SITE PLAN

Commercial Organics Processing Facility
Santa Paula, California

Earth Systems
Southern California

May 2017	VT-24872-02

ATTACHMENT B

Logs of Borings

Logs of Test Pits

Symbols Commonly Used on Boring Logs

Unified Soil Classification System

Logs of Cone Penetrometer Test Soundings

Interpretations of Cone Penetrometer Test Soundings

Earth Systems Southern California

1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: B-1	DRILLING DATE: February 1, 2017
PROJECT NAME: Commercial Organics Processing Facility	DRILLING METHOD: 6.0" Hollow Stem Auger
PROJECT NUMBER: VT-24872-02	DRILL: Mobile B-61
BORING LOCATION: Per Plan	LOGGED BY: SC

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0	X					ML			ARTIFICIAL FILL: Medium brown clayey silt; firm; damp.
	X		X	5/8/6		ML	91.2	18.1	ALLUVIUM: Medium to yellowish brown clayey silt; stiff; moist.
5			X	5/7/9		ML	101.9	9.8	ALLUVIUM: Yellowish brown clayey silt to sandy silt; stiff; moist.
10			X	3/6/9		SM	98.3	10.7	ALLUVIUM: Pale yellowish brown silty sand; very fine grained; some iron staining; medium dense; damp.
15			X	2/6/6		SM/ ML	88.0	27.4	ALLUVIUM: Interbedded yellowish brown silty sand and sandy silt; medium dense; damp to moist.
									Total Depth: 16.5 feet. No Groundwater Encountered.
20									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

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BORING NO: B-2	DRILLING DATE: February 1, 2017
PROJECT NAME: Commercial Organics Processing Facility	DRILL RIG: Mobile B-61
PROJECT NUMBER: VT-24872-02	DRILLING METHOD: Six Inch Hollow Stem Auger
BORING LOCATION: Per Plan	LOGGED BY: SC

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0	X								ALLUVIUM: Medium brown clayey silt to sandy silt; stiff; very moist
	X		■	4/4/5		ML	84.7	30.9	
5			■	P/3/5		ML	92.1	23.1	ALLUVIUM: Yellowish brown sandy silt; loose; moist.
10			■	3/5/5		ML	93.7	28.8	ALLUVIUM: Mottled yellowish brown and gray clayey silt; stiff; moist to very moist.
15			■	3/8/16					
						SM	101.6	8.4	ALLUVIUM: Yellowish brown silty sand; fine grained; medium dense; moist. Gravels and scattered cobbles at 17.5 feet.
20			■	13/14/17		SW	114.7	5.6	ALLUVIUM: Pale grayish brown sand with gravels; well graded; medium dense; damp to moist.
25			■	9/27/50		SW	106.8	7.3	ALLUVIUM: Pale grayish brown sand with gravels; well graded; medium dense; damp to moist.
30			■	33/40		SM	121.0	4.5	ALLUVIUM: Pale grayish brown silty sand with gravels; well graded; dense; damp.
35			■	9/7/18		SM	132.7	12.0	ALLUVIUM: Gray gravelly silty sand with thin silt lenses; medium dense; moist to very moist. Scattered cobbles.

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

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BORING NO: B-2 (Continued)	DRILLING DATE: February 1, 2017
PROJECT NAME: Biogenic Park	DRILL RIG: Mobile B-61
PROJECT NUMBER: VT-24872-02	DRILLING METHOD: Six Inch Hollow Stem Auger
BORING LOCATION: Per Plan	LOGGED BY: SC

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
40			■	50-2"		SM			**ALLUVIUM:** Gray gravelly silty sand; cobbles; dense; wet. Refusal at 40.5 feet due to cobbles.
									Total Depth: 40.5 feet Groundwater Depth: 40.0 feet.
45									
50									
55									
60									
65									
70									
75									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems Southern California
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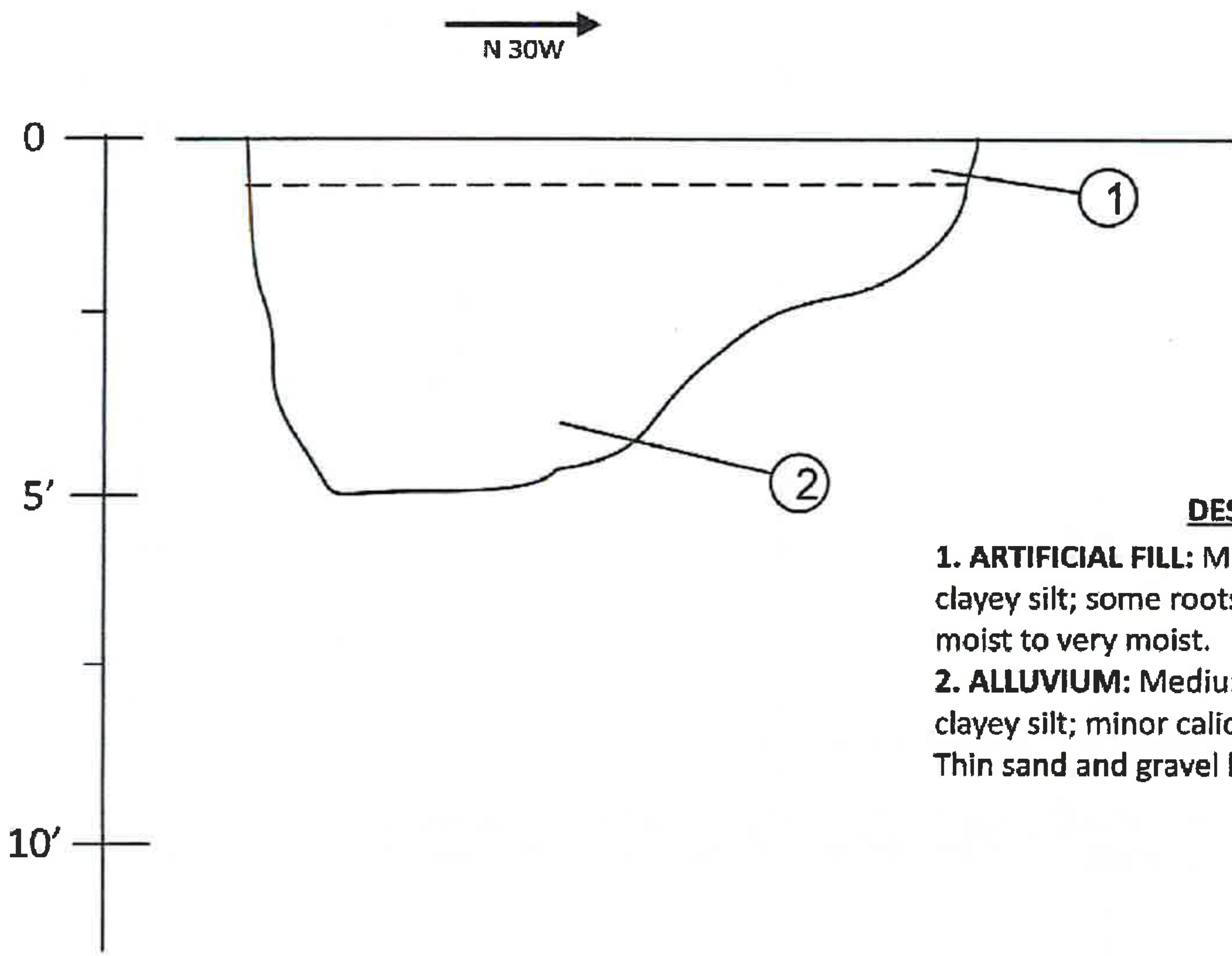
BORING NO: B-3
PROJECT NAME: Commercial Organics Processing Facility
PROJECT NUMBER: VT-24872-02
BORING LOCATION: Per Plan

DRILLING DATE: February 1, 2017
DRILLING METHOD: 6.0" Hollow Stem Auger
DRILL: Mobile B-61
LOGGED BY: SC

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0									Chipseal: 1.0 inch
			■	3/4/4		ML	90.9	21.5	ALLUVIUM: Medium to yellowish brown clayey silt; stiff; moist.
5			■	5/7/9		SM/ ML	97.3	5.2	ALLUVIUM: Interbedded yellowish brown silty fine sand and sandy silts; loose; moist.
10			■	3/5/5		SM	98.7	13.4	ALLUVIUM: Yellowish brown silty fine sand; loose; damp to moist.
15			■	2/6/6		SM/ ML	89	20.7	ALLUVIUM: Interbedded yellowish brown and reddish brown silty sands and sandy silts; loose; moist.
20									Total Depth: 16.5 feet. No Groundwater Encountered.

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.



DESCRIPTIONS

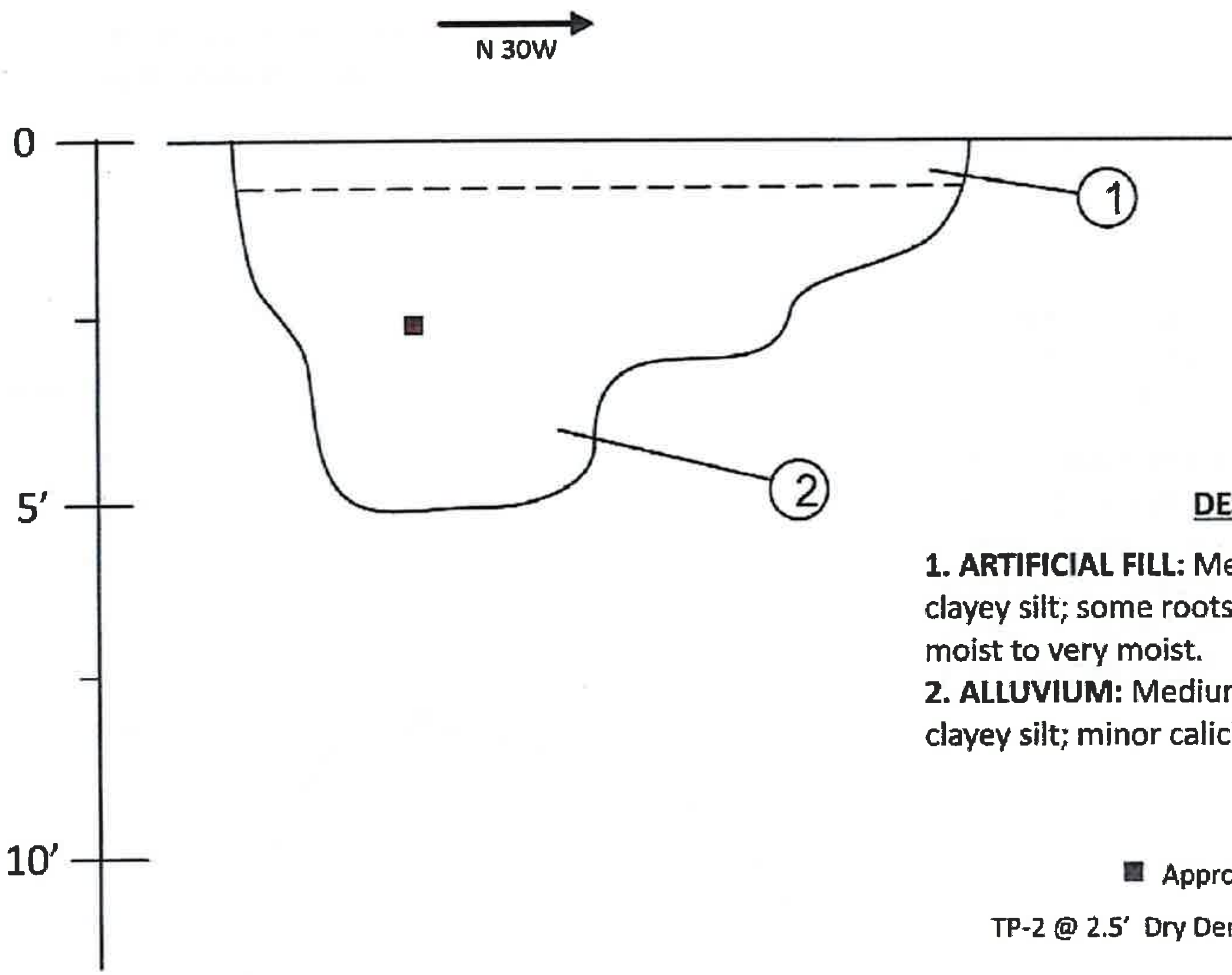
1. ARTIFICIAL FILL: Medium brown and yellowish brown clayey silt; some roots; some trash and debris; soft to firm; moist to very moist.

2. ALLUVIUM: Medium brown and yellowish brown clayey silt; minor caliche; soft to firm; moist to very moist. Thin sand and gravel lense at four feet.

TOTAL DEPTH: 5.0 FEET
NO GROUNDWATER ENCOUNTERED

SCALE: 1" = 2.5' (VERTICAL & HORIZONTAL)

TEST PIT # 1	
Commercial Organics Processing Facility Santa Paula, California	
Earth Systems Southern California	
January 17, 2017	VT-24872-02



DESCRIPTIONS

1. ARTIFICIAL FILL: Medium brown and yellowish brown clayey silt; some roots; some trash and debris; soft to firm; moist to very moist.

2. ALLUVIUM: Medium brown and yellowish brown clayey silt; minor caliche; firm to stiff; moist.

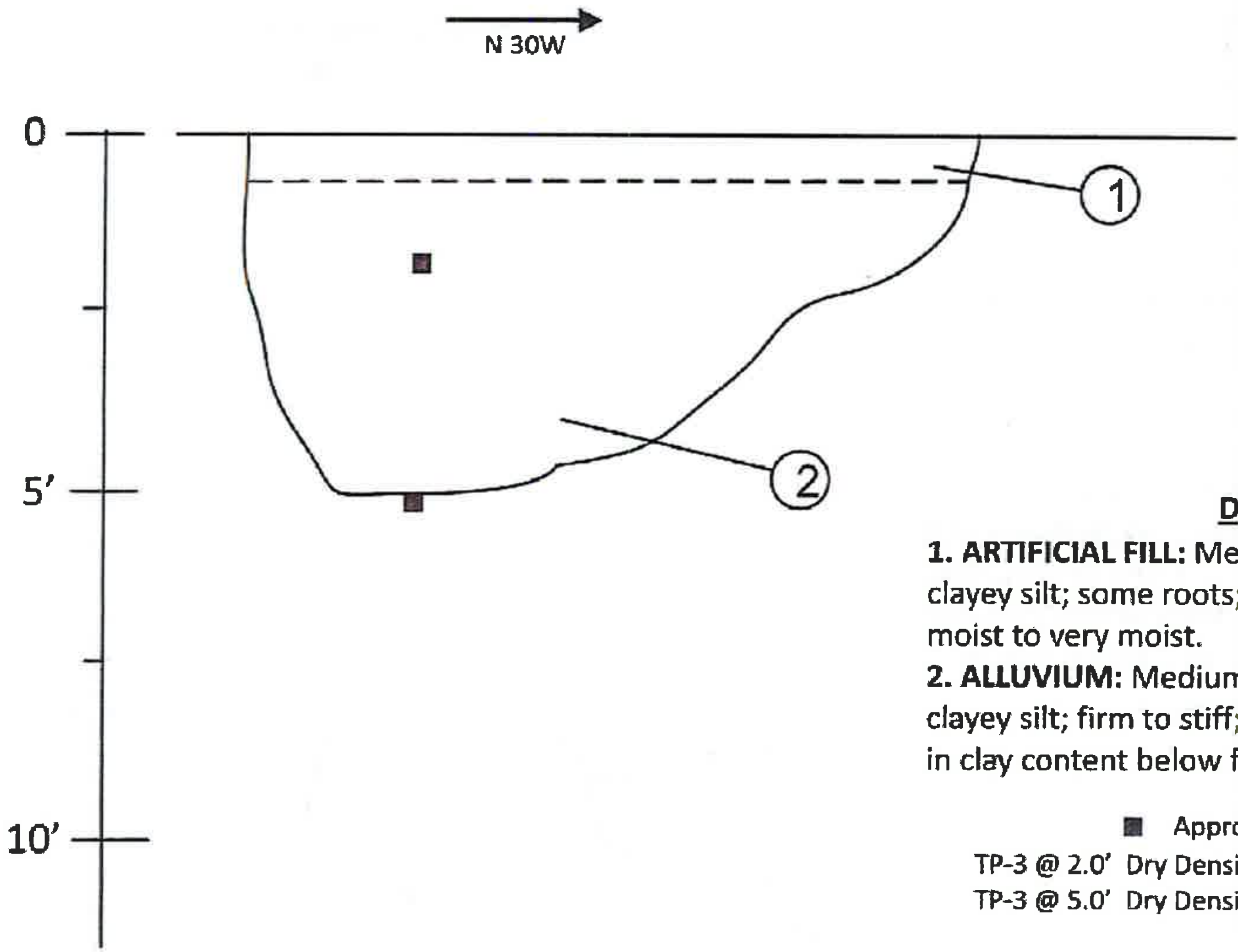
■ Approximate Sample Location

TP-2 @ 2.5′ Dry Density 83.9 lbs/ft^3, Moisture 28.7 %

TOTAL DEPTH: 5.0 FEET
NO GROUNDWATER ENCOUNTERED

SCALE: 1" = 2.5' (VERTICAL & HORIZONTAL)

TEST PIT # 2	
Commercial Organics Processing Facility Santa Paula, California	
Earth Systems Southern California	
January 17, 2017	VT-24872-02



DESCRIPTIONS

1. ARTIFICIAL FILL: Medium brown and yellowish brown clayey silt; some roots; some trash and debris; soft to firm; moist to very moist.

2. ALLUVIUM: Medium brown and yellowish brown clayey silt; firm to stiff; moist to very moist. Slight increase in clay content below four feet.

■ Approximate Sample Location

TP-3 @ 2.0' Dry Density 72.3 lbs/ft^3, Moisture 33.2 %

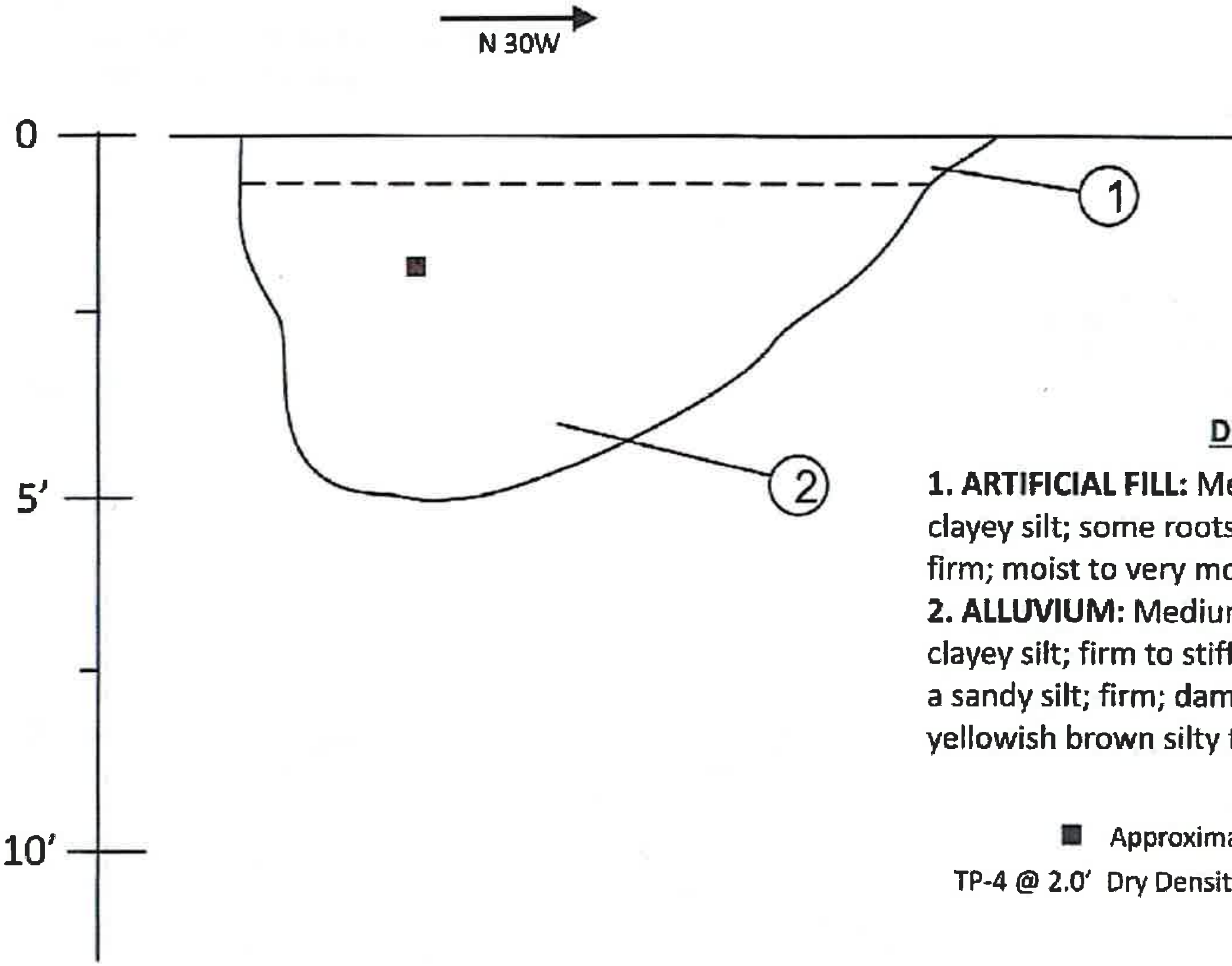
TP-3 @ 5.0' Dry Density 79.0 lbs/ft^3, Moisture 32.9 %

TOTAL DEPTH: 5.5 FEET

NO GROUNDWATER ENCOUNTERED

SCALE: 1" = 2.5' (VERTICAL & HORIZONTAL)

TEST PIT # 3	
Commercial Organics Processing Facility Santa Paula, California	
Earth Systems Southern California	
January 17, 2017	VT-24872-02



DESCRIPTIONS

1. ARTIFICIAL FILL: Medium brown and yellowish brown clayey silt; some roots; some trash and debris; soft to firm; moist to very moist.

2. ALLUVIUM: Medium brown and yellowish brown clayey silt; firm to stiff; moist. At two feet becomes a sandy silt; firm; damp. At four feet becomes a yellowish brown silty fine sand; loose; damp.

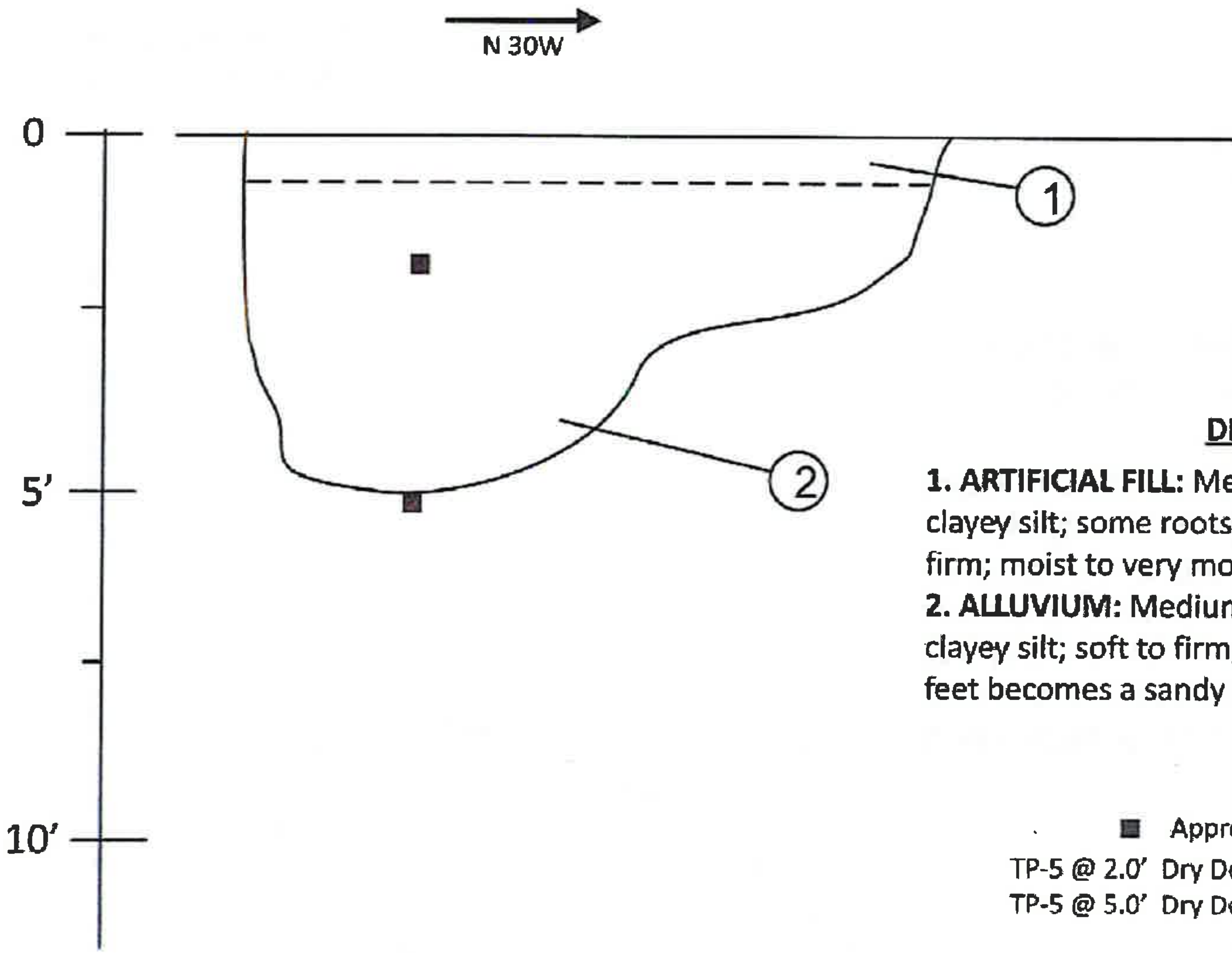
■ Approximate Sample Location

TP-4 @ 2.0' Dry Density 83.3 lbs/ft^3, Moisture 15.0 %

TOTAL DEPTH: 5.5 FEET
NO GROUNDWATER ENCOUNTERED

SCALE: 1" = 2.5' (VERTICAL & HORIZONTAL)

TEST PIT # 4	
Commercial Organics Processing Facility Santa Paula, California	
Earth Systems Southern California	
January 17, 2017	VT-24872-02



DESCRIPTIONS

1. ARTIFICIAL FILL: Medium brown and yellowish brown clayey silt; some roots; some trash and debris; soft to firm; moist to very moist.

2. ALLUVIUM: Medium brown and yellowish brown clayey silt; soft to firm; moist to very moist. At five feet becomes a sandy silt; soft; very moist.

■ Approximate Sample Location

TP-5 @ 2.0' Dry Density 77.5 lbs/ft^3, Moisture 27.2 %

TP-5 @ 5.0' Dry Density 82.9 lbs/ft^3, Moisture 31.2 %

TOTAL DEPTH: 5.5 FEET

NO GROUNDWATER ENCOUNTERED

SCALE: 1" = 2.5' (VERTICAL & HORIZONTAL)

TEST PIT # 5	
Commercial Organics Processing Facility Santa Paula, California	
Earth Systems Southern California	
January 17, 2017	VT-24872-02

Modified California Split Barrel Sampler

Modified California Split Barrel Sampler - No Recovery

Standard Penetration Test (SPT) Sampler

Standard Penetration Test (SPT) Sampler - No Recovery

Perched Water Level

Water Level First Encountered

Water Level After Drilling

Pocket Penetrometer (tsf)

Vane Shear (ksf)

1. The approximate locations of borings were determined by sighting and pacing from nearby prominent topographic or cultural features. Borehole elevations were estimated by interpolating between available plan contour intervals. The location and elevation of each boring should be considered accurate only to the degree implied by this method.

2. Stratification lines represent the approximate boundary between soil and/or rock types. The transition between statigraphic units may be gradual.

3. Water level readings taken in boreholes are approximate and apply only to the time and date of drilling. Fluctuations in the level of groundwater from the time of initial measurement may occur due to variations in rainfall, tides, barometric pressure, temperature, or other factors.

Earth Systems So. Calif.

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Symbols Commonly Used on Boring Logs

MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		G W	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				G P	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		G M	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				G C	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SAND (LITTLE OR NO FINES)		S W	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				S P	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH FINES (APPRECIABLE AMOUNT OF FINES)		S M	SILTY SANDS, SAND-SILT MIXTURES
				S C	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		M L	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				C L	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				O L	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		M H	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				C H	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				O H	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				P T	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS.

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Unified Soil Classification System (USCS)

Earth Systems
Southern California

CPT No:	**CPT-1**	**CPT Vendor:**	**Middle Earth**
Project Name:	Commercial Organics Processing Facility		Truck Mounted Electric
Project No.:	VT-24872-02		Cone with 23-ton reaction
Location:	See Site Exploration Plan	**Date:**	1/30/2017

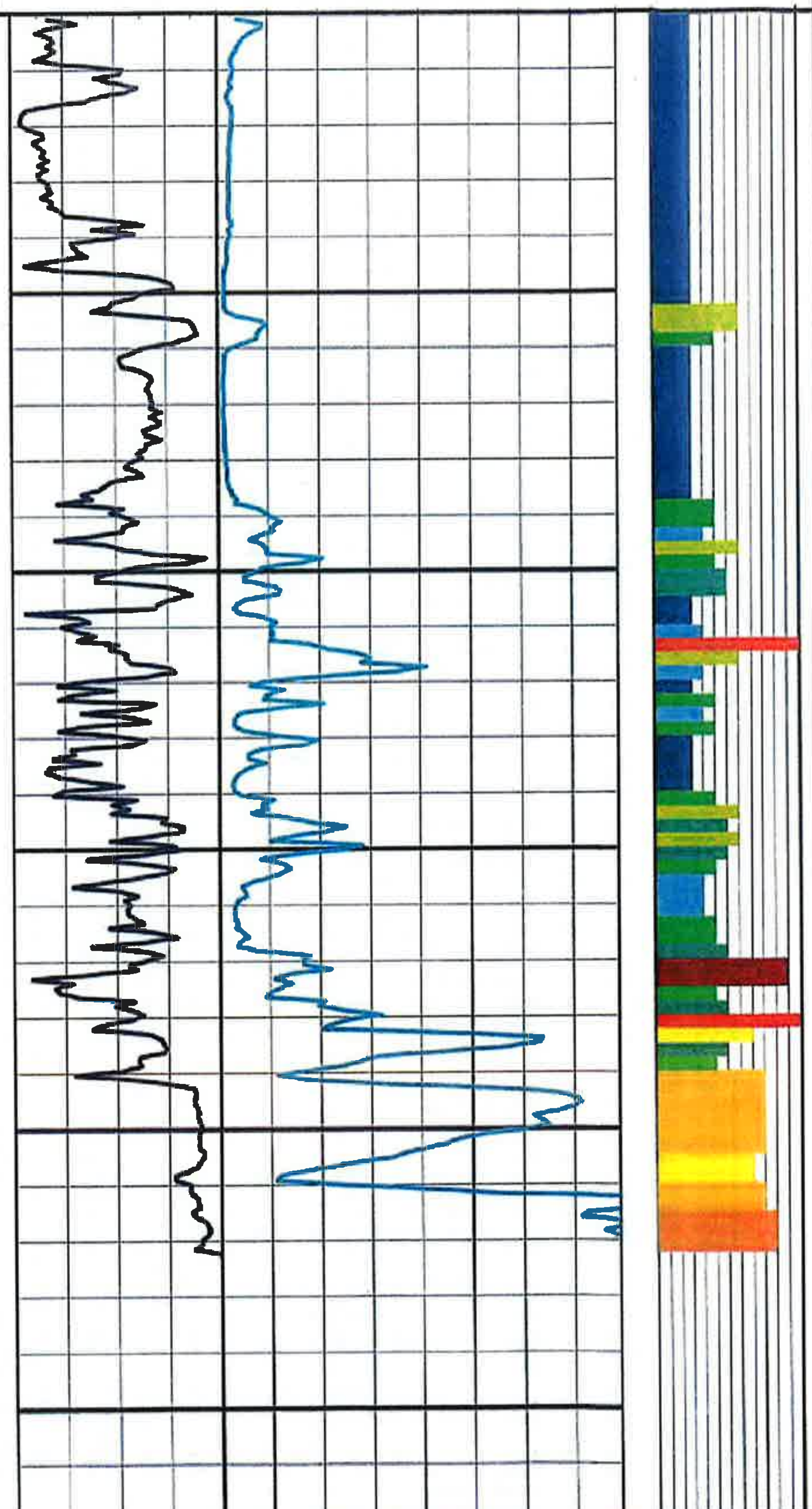
DEPTH (FEET)

Friction Ratio (%): 8 6 4 2 0

Tip Resistance, Qc (tsf): 50 100 150 200 250 300 350 400

Graphic Log (SBT): 0 12

Interpreted Soil Stratigraphy Robertson & Campanella ('89)	Density/Consistency
Clay	very stiff
Clay	stiff
Clay	stiff
Clay	stiff
Clay	stiff
Clay	stiff
Clay	stiff
Clay	stiff
Clay	firm
Clay	firm
Clayey Silt to Silty Clay	very stiff
Sandy Silt to Clayey Silt	medium dense
Clay	firm
Clay	soft
Clay	firm
Clay	firm
Clay	stiff
Silty Clay to Clay	hard
Silty Clay to Clay	hard
Sandy Silt to Clayey Silt	medium dense
Sandy Silt to Clayey Silt	medium dense
Clay	hard
Clayey Silt to Silty Clay	dense
Sandy Silt to Clayey Silt	dense
Clayey Silt to Silty Clay	hard
Clayey Silt to Silty Clay	hard
Clay	hard
Clay	very stiff
Sandy Silt to Clayey Silt	medium dense
Silty Sand to Sandy Silt	medium dense
Sandy Silt to Clayey Silt	medium dense
Silty Clay to Clay	very stiff
Clayey Silt to Silty Clay	stiff
Sandy Silt to Clayey Silt	medium dense
Overconsolidated Soil	hard
Sandy Silt to Clayey Silt	dense
Silty Sand to Sandy Silt	very dense
Sandy Silt to Clayey Silt	dense
Sand	dense
Sand	dense
Sand	medium dense
Sand to Silty Sand	medium dense
Sand	very dense
Gravelly Sand to Sand	dense



5 10 15 20 25 30 35 40 45 50

End of Sounding @ 44.8 feet

Earth Systems Southern California

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella 1989)

Project: Commercial Organics Processing Facility | Project No: VT-24672-02 | Date: 01/30/17

CPT SOUNDING: CPT-1 | Plot: 1 | Density: 1 SPT N | Program developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Est. GWT (feet): 24.0 | Dr correlation: 0 Baldi | Qc/N: 1 Robertson | Phi Correlation: 1 SPT N

Base Depth meters	Base Depth feet	Avg Tip Qc tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	Qc to N	SPT N(60)	Total po tsf	p'o tsf	F	n	Cq	Norm. Qc1n	Ic (2.6)	Kc	Clean Sand Qc1n	N1(60)	Clean Sand N1(60)	Rel. Dens. Dr (%)	Phi (deg.)	Su (tsf) (Nk: 17)	OCR
0.15	0.5	39.45	6.34	Clay	CL/CH	hard	110	1.0	30	0.014	0.014	6.34	0.79	1.70	65.4	2.62			30				2.32	####
0.30	1.0	21.92	6.47	Clay	CL/CH	very stiff	110	1.0	22	0.041	0.041	6.48	0.85	1.70	35.2	2.80			22				1.29	####
0.46	1.5	14.54	6.87	Clay	CL/CH	stiff	110	1.0	15	0.069	0.069	6.70	0.89	1.70	23.4	2.93			15				0.85	63.1
0.61	2.0	13.62	4.46	Clay	CL/CH	stiff	110	1.0	14	0.096	0.096	4.49	0.86	1.70	22.2	2.83			14				0.81	42.8
0.76	2.5	12.10	3.85	Clay	CL/CH	stiff	110	1.0	12	0.124	0.124	3.90	0.86	1.70	19.4	2.84			12				0.70	28.0
0.91	3.0	9.14	4.41	Clay	CL/CH	stiff	110	1.0	9	0.151	0.151	4.48	0.90	1.70	14.7	2.97			9				0.53	17.8
1.07	3.5	13.33	7.16	Clay	CL/CH	stiff	110	1.0	13	0.179	0.179	7.25	0.90	1.70	21.4	2.98			13				0.77	22.1
1.22	4.0	13.06	7.56	Clay	CL/CH	stiff	110	1.0	13	0.206	0.206	7.66	0.91	1.70	21.0	3.01			13				0.76	18.7
1.37	4.5	11.64	6.89	Clay	CL/CH	stiff	110	1.0	12	0.234	0.234	7.03	0.92	1.70	18.7	3.02			12				0.67	14.6
1.52	5.0	11.02	6.82	Clay	CL/CH	stiff	110	1.0	11	0.261	0.261	6.98	0.92	1.70	17.7	3.03			11				0.63	13.4
1.68	5.5	10.88	6.77	Clay	CL/CH	stiff	110	1.0	11	0.289	0.289	6.95	0.92	1.70	17.5	3.04			11				0.62	11.0
1.83	6.0	10.27	6.66	Clay	CL/CH	stiff	110	1.0	10	0.316	0.316	6.86	0.93	1.70	16.5	3.05			10				0.58	9.4
1.98	6.5	10.80	6.57	Clay	CL/CH	stiff	110	1.0	11	0.344	0.344	6.78	0.92	1.70	17.4	3.03			11				0.62	9.1
2.13	7.0	9.80	6.18	Clay	CL/CH	stiff	110	1.0	10	0.371	0.371	6.43	0.93	1.70	15.7	3.06			10				0.56	7.6
2.29	7.5	12.04	3.86	Clay	CL/CH	stiff	110	1.0	12	0.399	0.399	4.00	0.87	1.70	19.3	2.85			12				0.68	6.8
2.44	8.0	10.20	4.37	Clay	CL/CH	stiff	110	1.0	10	0.426	0.426	4.00	0.89	1.70	16.4	2.94			10				0.57	6.0
2.59	8.5	8.23	5.34	Clay	CL/CH	firm	110	1.0	8	0.454	0.454	5.60	0.93	1.70	13.2	3.07			8				0.46	5.1
2.74	9.0	7.41	6.71	Clay	CL/CH	firm	110	1.0	7	0.481	0.481	7.10	0.97	1.70	11.9	3.17			7				0.41	4.3
2.90	9.5	5.27	2.47	Clay	CL/CH	firm	110	1.0	5	0.509	0.509	2.74	0.93	1.70	8.5	3.03			5				0.28	2.8
3.05	10.0	5.39	2.68	Clay	CL/CH	firm	110	1.0	5	0.536	0.536	2.98	0.93	1.70	8.7	3.05			5				0.29	2.7
3.20	10.5	6.35	4.39	Clay	CL/CH	firm	110	1.0	6	0.564	0.564	4.82	0.95	1.70	10.2	3.11			6				0.34	3.1
3.35	11.0	35.54	1.63	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	12	0.591	0.591	1.80	0.69	1.50	50.3	2.28	1.69	84.9	15	19	40	32		
3.51	11.5	38.80	0.98	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	13	0.619	0.619	0.98	0.66	1.42	52.0	2.13	1.51	78.3	18	16	50	32		
3.66	12.0	14.26	2.72	Clayey Silt to Silty Clay	ML/CL	stiff	110	2.0	7	0.646	0.646	2.85	0.83	1.51	20.3	2.73			7				0.80	6.3
3.81	12.5	5.50	3.80	Clay	CL/CH	firm	110	1.0	5	0.674	0.674	4.33	0.97	1.55	8.1	3.17			5				0.28	2.1
3.96	13.0	4.63	2.76	Clay	CL/CH	soft	110	1.0	5	0.701	0.701	3.25	0.98	1.50	6.5	3.17			5				0.23	1.7
4.11	13.5	4.60	2.71	Clay	CL/CH	soft	110	1.0	5	0.729	0.729	3.21	0.98	1.44	6.4	3.18			5				0.23	1.6
4.27	14.0	4.72	2.61	Clay	CL/CH	soft	110	1.0	5	0.756	0.756	3.10	0.98	1.39	6.2	3.18			5				0.23	1.6
4.42	14.5	4.63	2.31	Clay	CL/CH	soft	110	1.0	5	0.784	0.784	2.86	0.98	1.34	5.9	3.18			5				0.23	1.5
4.57	15.0	5.51	2.69	Clay	CL/CH	firm	110	1.0	6	0.811	0.811	3.15	0.97	1.29	6.7	3.15			6				0.26	1.7
4.72	15.5	5.98	2.82	Clay	CL/CH	firm	110	1.0	6	0.839	0.839	3.05	0.96	1.25	7.1	3.13			6				0.30	1.8
4.88	16.0	7.16	3.38	Clay	CL/CH	firm	110	1.0	7	0.866	0.866	3.79	0.96	1.21	8.2	3.12			7				0.37	2.2
5.03	16.5	7.80	3.40	Clay	CL/CH	firm	110	1.0	8	0.894	0.894	3.84	0.95	1.17	8.7	3.11			8				0.41	2.5
5.18	17.0	11.64	4.77	Clay	CL/CH	stiff	110	1.0	12	0.921	0.921	5.18	0.94	1.14	12.4	3.08			12				0.62	3.5
5.33	17.5	23.62	4.98	Clay	CL/CH	very stiff	110	1.0	24	0.949	0.949	5.17	0.89	1.10	24.5	2.84			24				1.33	7.2
5.49	18.0	53.03	3.64	Clayey Silt to Silty Clay	ML/CL	medium dense	110	2.0	27	0.976	0.976	3.71	0.76	1.06	53.3	2.50	2.70	147.3	27	29	51	35		
5.64	18.5	46.63	4.06	Clayey Silt to Silty Clay	ML/CL	medium dense	110	2.0	24	1.004	1.004	4.17	0.78	1.04	47.9	2.57	3.13	149.9	24	30	48	34		
5.79	19.0	40.15	4.84	Silty Clay to Clay	CL	hard	110	1.5	27	1.031	1.031	4.96	0.82	1.02	38.7	2.69			27				2.30	11.4
5.94	19.5	77.80	1.42	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	26	1.059	1.059	1.43	0.64	1.00	73.5	2.11	1.45	106.3	26	22	64	35		
6.10	20.0	55.01	3.99	Clayey Silt to Silty Clay	ML/CL	hard	110	2.0	28	1.086	1.086	4.12	0.82	0.98	52.7	2.68			28				2.01	8.6
6.25	20.5	44.64	2.88	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	18	1.114	1.114	2.94	0.76	0.96	40.7	2.51	2.83	115.3	17	23	40	32		
6.40	21.0	35.56	1.74	Sandy Silt to Clayey Silt	ML	medium dense	120	2.5	14	1.143	1.143	1.79	0.75	0.94	31.7	2.46	2.57	81.5	13	18	29	31		
6.55	21.5	25.77	5.15	Clay	CL/CH	very stiff	120	1.0	26	1.173	1.173	5.40	0.86	0.91	22.3	2.88			26				1.45	8.3
6.71	22.0	52.95	5.94	Clay	CL/CH	hard	120	1.0	53	1.203	1.203	6.07	0.81	0.90	45.1	2.68			52				3.05	12.9
6.86	22.5	64.74	4.75	Silty Clay to Clay	CL	dense	120	1.5	43	1.233	1.233	4.84	0.78	0.89	54.3	2.58	3.19	173.3	38	35	51	38		
7.01	23.0	131.36	3.62	Sand to Clayey Sand	SP/SC	medium dense	120	6.0	22	1.263	1.263	3.66	0.70	0.88	109.7	2.39	1.96	215.1	19	43	61	33		
7.16	23.5	173.60	2.37	Silty Sand to Sandy Silt	SM/ML	very dense	120	3.0	58	1.293	1.293	2.39	0.63	0.86	144.6	2.07	1.40	201.3	51	40	97	41		
7.32	24.0	61.25	4.74	Silty Clay to Clay	CL	hard	120	1.5	41	1.323	1.323	4.85	0.79	0.84	48.5	2.61			41				3.55	13.8
7.47	24.5	51.76	5.29	Clay	CL/CH	hard	120	1.0	52	1.353	1.337	5.43	0.82	0.83	40.4	2.70			52				2.97	11.3
7.62	25.0	50.18	3.65	Clayey Silt to Silty Clay	ML/CL	medium dense	120	2.0	25	1.383	1.351	3.74	0.77	0.83	46.3	2.54	3.00	138.9	25	26	45	35		
7.77	25.5	15.22	3.85	Silty Clay to Clay	CL	stiff	120	1.5	10	1.413	1.366	4.24	0.92	0.79	11.3	3.04			10				0.81	3.0
7.92	26.0	59.50	4.38	Clayey Silt to Silty Clay	ML/CL	hard	120	2.0	30	1.443	1.380	4.49	0.79	0.81	45.6	2.61			30				3.42	12.6
8.08	26.5	45.93	5.29	Clay	CL/CH	hard	120	1.0	46	1.473	1.395	5.46	0.84	0.79	34.5	2.75			46				2.62	9.8
8.23	27.0	32.09	5.98	Clay	CL/CH	very stiff	120	1.0	32	1.503	1.409	6.28	0.90	0.78	23.5	2.91			32				1.80	6.5
8.38	27.5	14.33	5.01	Clay	CL/CH	stiff	120	1.0	14	1.533	1.423	5.62	0.96	0.76	10.2	3.15			14				0.76	2.7
8.53	28.0	29.33	5.26	Clay	CL/CH	very stiff	120	1.0	29	1.563	1.438	5.56	0.90	0.76	21.1	2.91			29				1.64	5.8
8.69	28.5	40.21	3.97	Clayey Silt to Silty Clay	ML/CL	hard	120	2.0	20	1.593	1.452	4.13	0.83	0.77	29.2	2.72			20				2.28	8.0
8.84	29.0	93.80	1.91	Silty Sand to Sandy Silt	SM/ML	medium dense	120	3.0	31	1.623	1.467	1.94	0.67	0.80	71.2	2.21	1.70	120.7	26	24	63	35		
8.99	29.5	76.73	2.79	Sandy Silt to Clayey Silt	ML	medium dense	120	2.5	31	1.653	1.481	2.85	0.73	0.76	56.6	2.40	2.30	130.7	25	26	53	35		
9.14	30.0	111.79	2.13	Silty Sand to Sandy Silt	SM/ML	dense	120	3.0	37	1.683	1.495	2.16	0.67	0.79	83.9	2.19	1.65	138.2	30	28	70	36		
9.30	30.5	56.99	3.33	Sandy Silt to Clayey Silt	ML	medium dense	120	2.5	23	1.713	1.510	3.43	0.76	0.76	40.6	2.56	3.07	125.5	18	25	40	33		
9.45	31.0	46.93	3.22	Clayey Silt to Silty Clay	ML/CL	hard	120	2.0	23	1.743	1.524	3.34	0.80	0.75	33.2	2.62			23				2.67	8.0
9.60	31.5	24.03	4.26	Silty Clay to Clay	CL	very stiff	120	1.5	16	1.773	1.539	4.59	0.90	0.71	16.2	2.94			16				1.32	4.3
9.75	32.0	15.44	3.60	Silty Clay to Clay	CL	stiff	120	1.5	10	1.803	1.553	4.00	0.94	0.70	10.2	3.07			10				0.82	2.6
9.91	32.5	15.20	3.23	Silty Clay to Clay	CL	stiff	120	1.5	10	1.833	1.567	3.74	0.94	0.69	10.0	3.05			10				0.80	2.6
10.06	33.0	21.62	2.81	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.0	11	1.863	1.582	3.07	0.88	0.70	14.5	2.87			11				1.19	3.8
10.21	33.5	24.99	3.60	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.0	12	1.893	1.596	3.93	0.88	0.70	16.4	2.89			12				1.38	4.3
10.36	34.0	84.03	2.87	Sandy Silt to Clayey Silt	ML	medium dense	120	2.5	34	1.923	1.611	2.94	0.73	0.74	58.5	2.40	2.30	134.7	27	27	55	35		
10.52	34.5	76.66	5.16	Overconsolidated Soil	??	hard	120	6.0	13	1.953	1.625	5.20	0.80	0.71	51.5	2.62			13				4.41	13.8
10.67	35.0	59.88	6.13	Overconsolidated Soil	??	hard	120	6.0	10	1.983	1.639	6.33	0.84	0.69	39.2	2.76			10				3.43	10.8
10.82	35.5	81.87	4.32	Clayey Silt to Silty Clay	ML/CL	dense	120	2.0	41	2.013	1.654	4.43	0.77	0.71	54.8	2.55	3.01	164.9	32	33	52	37		
10.97	36.0	136.44	3.29	Sandy Silt to Clayey Silt	ML	dense	120	2.5	55	2.043	1.668	3.34	0.70	0.73	93.8	2.30	1.94	182.3	42	36	74	39		
11.13	36.5	169.78	3.07	Sand to Clayey Sand	SP/SC	medium dense	120	6.0	32	2.073	1.683	3.71	0.68	0.73	130.7	2.24	1.78	232.8	24	47	88	39		
11.28	37.0	273.47	2.18	Sand to Silty Sand	SP/SM	very dense	120	4.0	68	2.103	1.697	2.20	0.60	0.75	195.0	1.95	1.25	243.5	52	49	100	41		
11.43	37.5	136.51	3.14	Sandy Silt to Clayey Silt	ML	dense	120	2.5	55	2.133	1.711	3.10	0.69	0.72	93.7	2.36	1.90	177.7	42	36	74	39		
11.58	38.0	76.20	4.24	Clayey Silt to Silty Clay	ML/CL	medium dense	120	2.0	38	2.163	1.726	4.37	0.78	0.68	48.4	2.58	3.19	154.7	26	31	47	38		
11.73	38.5	257.86	1.27	Sand	SP	dense	120	5.0	52	2.193	1.740	1.28	0.55	0.76	185.7	1.79	1.10	204.2	35	41	100	38		
11.89	39.0	352.71	0.97	Sand	SP	very dense	120	5.0	71	2.223	1.755	0.99	0.50	0.74	250.0	1.61	1.00	249.9	55	52	100	41		
12.04	39.5	319.67	0.96	Sand	SP	dense	120	5.0	64	2.253	1.769	0.97	0.50	0.77	233.7	1.60	1.00	233.7	48	47	100	40		
12.19	40.0	293.84	0.81	Sand	SP	dense	120	5.0	59	2.283	1.783	0.81	0.50	0.77	213.9	1.60	1.00	213.9	44	43	100	39		
12.34	40.5	220.53	0.84	Sand	SP	dense	120	5.0	44	2.313	1.798	0.85	0.52	0.76	157.0	1.71	1.05	165.3	33	33	96	37		
12.50	41.0	162.26	0.71	Sand	SP	medium dense	120	5.0	32	2.343	1.812	0.72	0.54	0.75	114.5	1.78	1.09	124.8	24	25	82	34		
12.65	41.5	82.27	1.34	Sand to Silty Sand	SP/SM	medium dense	120	4.0	21	2.373	1.827	1.39	0.67	0.69	53.0	2.21	1.68	90.6	16	18	51	32		
12.80	42.0	128.95	1.38	Sand to Silty Sand	SP/SM	medium dense	120	4.0	32	2.403	1.841	1.41	0.63	0.71	84.7	2.06	1.39	117.7	23	24	73	34		
12.95	42.5	393.91	0.88	Sand	SP	very dense	120	5.0	79	2.433	1.855	0.93	0.50	0.76	290.8	1.59	1.00	290.8	66	58	100	42		
13.11	43.0	382.52	0.88	Sand	SP	very dense	120	5.0	77	2.463	1.870	1.00	0.50	0.75	272.0	1.60	1.00	272.0	56	54	100	42		
13.26	43.5	400.47	0.92	Gravelly Sand to Sand	SW	dense	120	6.0	67	2.493	1.884	0.92	0.50	0.75	283.6	1.38	1.00	283.6	48	57	100	40		
13.41	44.0	420.31	0.78	Gravelly Sand to Sand	SW	very dense	120	6.0	70	2.523	1.899	0.70	0.50	0.75	299.6	1.48	1.00	299.6	51	59	100	41		
13.56	44.5	446.15	0.34	Gravelly Sand to Sand	SW	very dense	120	6.0	74	2.553	1.913	0.34	0.50	0.74	313.8	1.23	1.00	313.8	54	63	100	41		

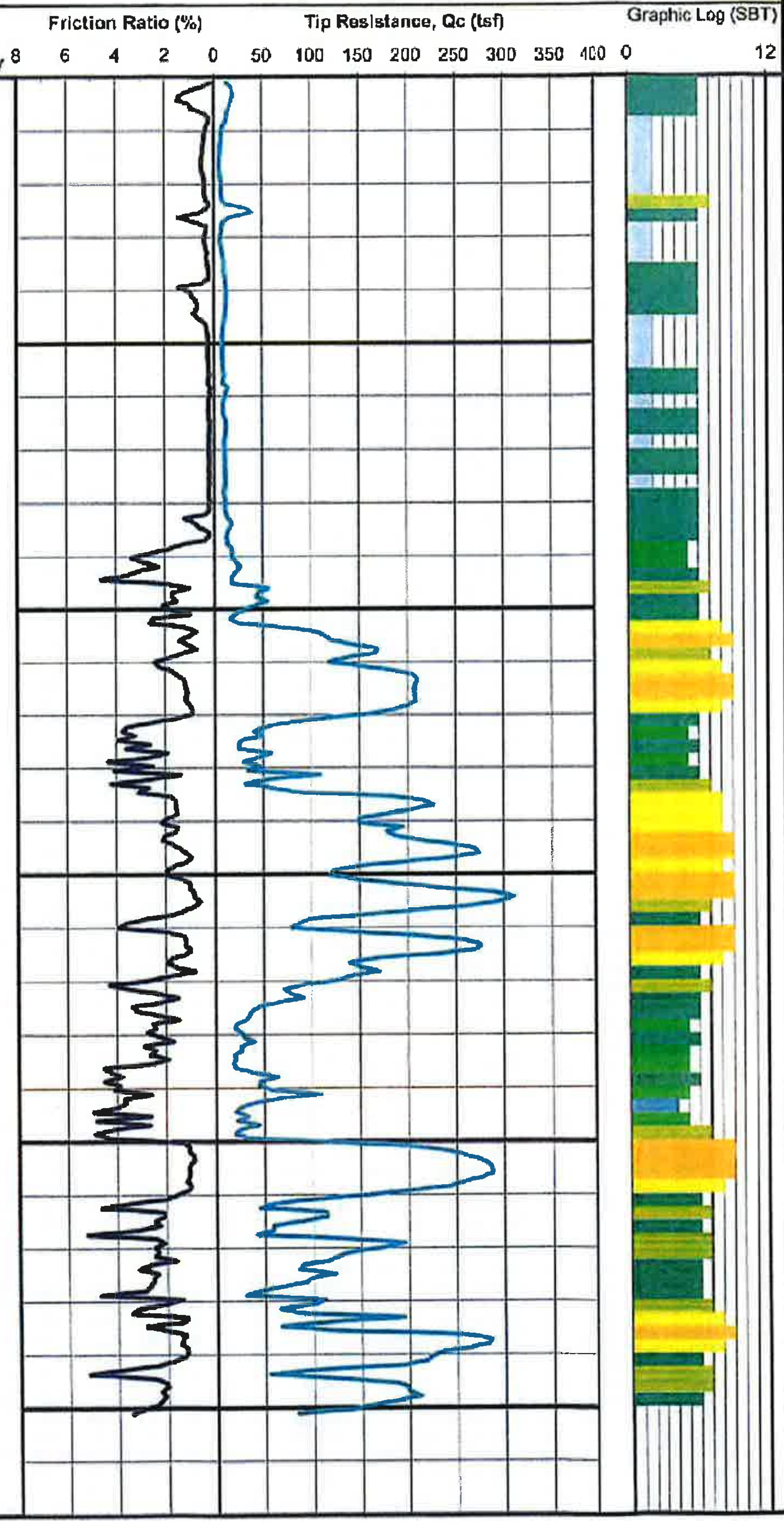
Earth Systems
Southern California

CPT No: CPT-2
Project Name: Commercial Organics Processing Facility
Project No.: VT-24872-02
Location: See Site Exploration Plan

CPT Vendor: Middle Earth
Truck Mounted Electric
Cone with 23-ton reaction
Date: 1/30/2017

DEPTH (FEET)	Interpreted Soil Stratigraphy Robertson & Campanella ('89)	Density/Consistency
	Sandy Silt to Clayey Silt	medium dense
	Sensitive fine grained	loose
	Sensitive fine grained	firm
	Sensitive fine grained	firm
	Silty Sand to Sandy Silt	medium dense
5	Sensitive fine grained	loose
	Sensitive fine grained	loose
	Sandy Silt to Clayey Silt	loose
	Sandy Silt to Clayey Silt	loose
	Sensitive fine grained	loose
10	Sensitive fine grained	loose
	Sandy Silt to Clayey Silt	loose
	Sensitive fine grained	loose
	Sandy Silt to Clayey Silt	loose
15	Sandy Silt to Clayey Silt	loose
	Sandy Silt to Clayey Silt	loose
	Sandy Silt to Clayey Silt	loose
	Clayey Silt to Silty Clay	stiff
	Clayey Silt to Silty Clay	very stiff
	Silty Sand to Sandy Silt	medium dense
20	Silty Sand to Sandy Silt	medium dense
	Sand to Silty Sand	dense
	Sand to Silty Sand	dense
	Sand	dense
	Clayey Silt to Silty Clay	hard
25	Clayey Silt to Silty Clay	hard
	Silty Sand to Sandy Silt	medium dense
	Sand to Silty Sand	dense
	Sand to Silty Sand	dense
	Sand to Silty Sand	dense
30	Sand	dense
	Silty Sand to Sandy Silt	dense
	Sand	dense
	Silty Sand to Sandy Silt	dense
	Sandy Silt to Clayey Silt	medium dense
35	Sandy Silt to Clayey Silt	very stiff
	Clayey Silt to Silty Clay	very stiff
	Clayey Silt to Silty Clay	hard
	Clayey Silt to Silty Clay	very stiff
	Sandy Silt to Clayey Silt	medium dense
40	Sand	dense
	Sand to Silty Sand	dense
	Sandy Silt to Clayey Silt	medium dense
	Sandy Silt to Clayey Silt	dense
	Silty Sand to Sandy Silt	medium dense
45	Sandy Silt to Clayey Silt	medium dense
	Silty Sand to Sandy Silt	dense
	Sand to Silty Sand	dense
	Sandy Silt to Clayey Silt	dense
	Silty Sand to Sandy Silt	dense
50		

End of Sounding @ 50.4 feet



Earth Systems Southern California

CONE PENETROMETER INTERPRETATION

(based on Robertson & Campanella, 1989)

Project: Commercial Organics Processing Facility

Project No: VT-24872-02

Date: 01/30/17

CPT SOUNDING: CPT-2 Plot 2 Density 1 SPT N

Est. GWT (feet): 24.0 Dr correlation: 0 Baldi Qc/N 1 Robertson

Program developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Phi Correlation 4 SPT N

Base Depth meters	Base Depth feet	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	Qc to N	SPT N(60)	Total po tsf	p'o tsf	F	n	Cq	Norm. Qc1n	2.6 Ic	Kc	Clean Sand Qc1n	$N_{1(60)}$	Clean Sand $N_{1(60)}$	Rel. Dens. Dr (%)	Phi (deg.)	Nk 17 Su (tsf)	OCR
0.15	0.5	18.43	1.01	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	7	0.014	0.014	1.02	0.71	1.70	29.6	2.34	2.10	62.2	13	12	26	31		
0.30	1.0	16.41	1.18	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	7	0.041	0.041	1.17	0.73	1.70	26.4	2.42	2.39	63.1	11	13	22	30		
0.46	1.5	12.50	0.28	Sandy Silt to Clayey Silt	ML	loose	110	2.5	5	0.069	0.069	0.30	0.69	1.70	20.1	2.27	1.00	20.1	9	4	10	29		
0.61	2.0	7.30	0.30	Sensitive fine grained	ML	loose	110	2.0	4	0.096	0.096	0.37	0.76	1.70	12.1	2.51	1.00	12.1	6	2	-11	29		
0.76	2.5	6.03	0.45	Sensitive fine grained	ML	firm	110	2.0	3	0.124	0.124	0.45	0.80	1.70	9.7	2.83			3				0.35	14.4
0.91	3.0	5.44	0.50	Sensitive fine grained	ML	firm	110	2.0	3	0.151	0.151	0.51	0.82	1.70	8.7	2.93			3				0.31	10.5
1.07	3.5	5.27	0.50	Sensitive fine grained	ML	firm	110	2.0	3	0.179	0.179	0.51	0.82	1.70	8.6	2.91			3				0.30	9.6
1.22	4.0	5.40	0.41	Sensitive fine grained	ML	loose	110	2.0	3	0.206	0.206	0.42	0.79	1.70	10.3	2.60	1.00	10.3	5	2	-10	28		
1.37	4.5	6.90	0.37	Sensitive fine grained	ML	loose	110	2.0	3	0.234	0.234	0.38	0.78	1.70	11.2	2.55	1.00	11.2	6	2	-14	28		
1.52	5.0	26.47	0.38	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	9	0.261	0.261	0.30	0.60	1.70	45.7	1.98	1.00	45.7	16	9	44	32		
1.68	5.5	9.97	0.74	Sandy Silt to Clayey Silt	ML	loose	110	2.5	4	0.289	0.289	0.77	0.77	1.70	16.0	2.62	2.87	45.9	7	9	1	29		
1.83	6.0	5.80	0.38	Sensitive fine grained	ML	firm	110	2.0	3	0.316	0.316	0.41	0.80	1.70	9.5	2.83			3				0.33	5.3
1.98	6.5	7.95	0.31	Sensitive fine grained	ML	loose	110	2.0	4	0.344	0.344	0.35	0.76	1.70	12.8	2.47	1.00	12.8	7	3	-6	28		
2.13	7.0	9.82	0.27	Sensitive fine grained	ML	loose	110	2.0	5	0.371	0.371	0.28	0.72	1.70	15.8	2.37	1.00	15.8	8	3	0	28		
2.29	7.5	10.68	0.32	Sandy Silt to Clayey Silt	ML	loose	110	2.5	4	0.399	0.399	0.33	0.72	1.70	17.2	2.36	1.00	17.2	7	3	4	28		
2.44	8.0	11.83	1.13	Sandy Silt to Clayey Silt	ML	loose	110	2.5	5	0.426	0.426	1.17	0.77	1.70	19.0	2.64	2.89	56.3	7	11	8	29		
2.59	8.5	11.52	0.71	Sandy Silt to Clayey Silt	ML	loose	110	2.5	5	0.454	0.454	0.74	0.75	1.70	18.5	2.48	2.57	47.5	7	9	7	29		
2.74	9.0	10.25	0.65	Sandy Silt to Clayey Silt	ML	loose	110	2.5	4	0.481	0.481	0.68	0.76	1.70	16.5	2.49	2.71	44.8	6	8	2	28		
2.90	9.5	8.44	0.30	Sensitive fine grained	ML	loose	110	2.0	4	0.509	0.509	0.31	0.75	1.70	13.6	2.45	1.00	13.6	6	3	-5	28		
3.05	10.0	8.01	0.27	Sensitive fine grained	ML	loose	110	2.0	4	0.536	0.536	0.29	0.76	1.67	12.7	2.47	1.00	12.7	5	3	-5	28		
3.20	10.5	8.28	0.27	Sensitive fine grained	ML	loose	110	2.0	4	0.564	0.564	0.29	0.76	1.61	12.6	2.48	1.00	12.6	6	3	-6	28		
3.35	11.0	8.32	0.23	Sensitive fine grained	ML	loose	110	2.0	5	0.591	0.591	0.26	0.74	1.54	13.0	2.42	1.00	13.0	6	3	-6	28		
3.51	11.5	10.70	0.23	Sandy Silt to Clayey Silt	ML	loose	110	2.5	4	0.619	0.619	0.24	0.73	1.48	14.9	2.37	1.00	14.9	5	3	-2	28		
3.66	12.0	10.54	0.22	Sandy Silt to Clayey Silt	ML	loose	110	2.5	4	0.646	0.646	0.23	0.73	1.44	14.3	2.39	1.00	14.3	5	3	-4	28		
3.81	12.5	9.10	0.25	Sensitive fine grained	ML	loose	110	2.0	5	0.674	0.674	0.27	0.76	1.41	12.1	2.47	1.00	12.1	6	2	-11	28		
3.96	13.0	11.09	0.21	Sandy Silt to Clayey Silt	ML	loose	110	2.5	4	0.701	0.701	0.22	0.73	1.36	14.2	2.39	1.00	14.2	5	3	-4	28		
4.11	13.5	10.62	0.21	Sandy Silt to Clayey Silt	ML	loose	110	2.5	4	0.729	0.729	0.23	0.74	1.32	13.3	2.42	1.00	13.3	5	3	-7	28		
4.27	14.0	10.10	0.22	Sensitive fine grained	ML	loose	110	2.0	5	0.756	0.756	0.24	0.75	1.29	12.3	2.45	1.00	12.3	6	2	-10	28		
4.42	14.5	10.44	0.21	Sandy Silt to Clayey Silt	ML	loose	110	2.5	4	0.784	0.784	0.23	0.75	1.25	12.4	2.45	1.00	12.4	5	2	-10	28		
4.57	15.0	10.78	0.21	Sandy Silt to Clayey Silt	ML	loose	110	2.5	4	0.811	0.811	0.23	0.75	1.22	12.4	2.45	1.00	12.4	5	2	-10	28		
4.72	15.5	10.19	0.22	Sensitive fine grained	ML	loose	110	2.0	5	0.839	0.839	0.24	0.76	1.19	11.5	2.48	1.00	11.5	6	2	-13	28		
4.88	16.0	10.41	0.22	Sandy Silt to Clayey Silt	ML	loose	110	2.5	4	0.866	0.866	0.24	0.76	1.17	11.5	2.48	1.00	11.5	4	2	-13	28		
5.03	16.5	14.41	0.78	Sandy Silt to Clayey Silt	ML	loose	110	2.5	6	0.894	0.894	0.84	0.78	1.14	15.5	2.55	3.03	47.1	6	8	0	28		
5.18	17.0	13.83	0.37	Sandy Silt to Clayey Silt	ML	loose	110	2.5	6	0.921	0.921	0.40	0.75	1.11	14.5	2.45	1.00	14.5	6	3	-3	28		
5.33	17.5	15.09	1.24	Sandy Silt to Clayey Silt	ML	stiff	110	2.5	6	0.949	0.949	1.32	0.81	1.09	15.6	2.64			6				0.83	4.5
5.49	18.0	19.54	2.98	Clayey Silt to Silty Clay	ML/CL	very stiff	110	2.0	10	0.976	0.976	3.15	0.84	1.07	19.8	2.77			10				1.09	5.7
5.64	18.5	22.87	3.01	Clayey Silt to Silty Clay	ML/CL	very stiff	110	2.0	11	1.004	1.004	3.15	0.83	1.04	22.6	2.73			11				1.29	6.6
5.79	19.0	30.47	2.55	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	12	1.031	1.031	2.64	0.79	1.02	29.4	2.59	3.26	95.7	12	19	20	31		
5.94	19.5	47.54	1.88	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	16	1.058	1.059	1.72	0.71	1.00	44.9	2.33	2.05	91.9	16	18	44	32		
6.10	20.0	31.22	1.64	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	12	1.086	1.086	1.70	0.75	0.98	28.9	2.48	2.66	76.9	12	15	25	31		
6.25	20.5	35.20	2.14	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	14	1.114	1.114	2.21	0.76	0.96	32.0	2.51	2.83	90.5	13	18	30	31		
6.40	21.0	112.86	1.10	Sand to Silty Sand	SP/SM	medium dense	120	4.0	28	1.143	1.143	1.11	0.59	0.96	102.9	1.83	1.22	124.8	28	25	73	35		
6.55	21.5	158.16	1.08	Sand	SP	medium dense	120	5.0	32	1.173	1.173	1.09	0.56	0.94	142.1	1.62	1.12	159.5	26	32	81	35		
6.71	22.0	138.01	2.24	Silty Sand to Sandy Silt	SM/ML	dense	120	3.0	46	1.203	1.203	2.20	0.64	0.92	118.4	2.10	1.46	173.2	41	35	84	36		
6.86	22.5	199.90	1.55	Sand to Silty Sand	SP/SM	dense	120	4.0	50	1.233	1.233	1.56	0.57	0.92	173.2	1.87	1.17	201.9	45	40	100	40		
7.01	23.0	207.02	1.18	Sand	SP	dense	120	5.0	41	1.263	1.263	1.19	0.54	0.91	177.8	1.78	1.09	194.1	37	39	100	38		
7.16	23.5	205.82	1.13	Sand	SP	dense	120	5.0	41	1.293	1.293	1.13	0.54	0.90	174.8	1.77	1.09	189.4	36	38	100	38		
7.32	24.0	153.87	1.16	Sand to Silty Sand	SP/SM	dense	120	4.0	38	1.323	1.323	1.17	0.57	0.88	128.0	1.88	1.17	149.3	33	30	87	37		
7.47	24.5	56.16	3.34	Sandy Silt to Clayey Silt	ML	medium dense	120	2.5	22	1.353	1.337	3.42	0.77	0.84	44.3	2.53	2.92	129.5	16	20	43	33		
7.62	25.0	33.73	3.31	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.0	17	1.383	1.351	3.45	0.82	0.82	28.1	2.70			17				1.80	7.2
7.77	25.5	42.81	2.77	Sandy Silt to Clayey Silt	ML	medium dense	120	2.5	17	1.413	1.366	2.87	0.78	0.82	32.0	2.57	3.17	104.4	15	21	31	32		
7.92	26.0	36.57	3.69	Clayey Silt to Silty Clay	ML/CL	hard	120	2.0	18	1.443	1.380	3.84	0.83	0.80	27.7	2.71			18				2.07	7.6
8.08	26.5	64.26	2.75	Sandy Silt to Clayey Silt	ML	medium dense	120	2.5	26	1.473	1.395	2.81	0.74	0.81	49.5	2.44	2.47	122.2	22	24	43	34		
8.23	27.0	161.56	2.20	Silty Sand to Sandy Silt	SM/ML	dense	120	3.0	54	1.503	1.409	2.22	0.63	0.83	127.4	2.08	1.42	180.4	45	36	87	40		
8.38	27.5	202.71	1.60	Sand to Silty Sand	SP/SM	dense	120	4.0	51	1.533	1.423	1.61	0.58	0.84	161.3	1.81	1.19	192.0	42	39	97	39		
8.53	28.0	164.39	1.92	Sand to Silty Sand	SP/SM	dense	120	4.0	41	1.563	1.438	1.93	0.62	0.83	128.6	2.05	1.34	172.4	34	34	87	37		
8.69	28.5	191.46	1.85	Sand to Silty Sand	SP/SM	dense	120	4.0	48	1.593	1.452	1.92	0.61	0.83	149.3	1.90	1.29	192.7	40	38	93	38		
8.84	29.0	252.72	1.45	Sand	SP	dense	120	5.0	51	1.623	1.467	1.46	0.55	0.84	207.8	1.60	1.11	229.9	43	46	100	38		
8.99	29.5	199.12	1.29	Sand	SP	dense	120	5.0	40	1.653	1.481	1.32	0.58	0.83	154.8	1.65	1.14	177.3	33	35	85	37		
9.14	30.0	128.28	1.77	Sand to Silty Sand	SP/SM	medium dense	120	4.0	32	1.683	1.495	1.78	0.64	0.80	93.1	2.00	1.43	140.5	26	28	78	35		
9.30	30.5	236.83	0.98	Sand	SP	dense	120	5.0	47	1.713	1.510	1.00	0.52	0.83	189.0	1.71	1.04	194.3	39	39	100	38		
9.45	31.0	250.81	0.76	Sand	SP	dense	120	5.0	50	1.743	1.524	0.77	0.50	0.83	229.0	1.57	1.00	229.0	47	40	100	40		
9.60	31.5	156.36	1.03	Silty Sand to Sandy Silt	SM/ML	dense	120	3.0	52	1.773	1.538	1.05	0.63	0.79	116.8	2.08	1.30	162.5	42	32	83	39		
9.75	32.0	103.10	3.19	Sandy Silt to Clayey Silt	ML	dense	120	2.5	41	1.803	1.553	3.25	0.72	0.78	74.0	2.36	2.15	159.1	33	32	64	37		
9.91	32.5	260.27	1.26	Sand	SP	dense	120	5.0	52	1.833	1.567	1.27	0.54	0.81	181.1	1.70	1.16	208.6	40	42	100	38		
10.06	33.0	224.60	1.33	Sand	SP	dense	120	5.0	45	1.863	1.582	1.34	0.56	0.80	183.6	1.63	1.13	191.8	36	38	99	37		
10.21	33.5	162.66	1.47	Sand to Silty Sand	SP/SM	dense	120	4.0	41	1.893	1.596	1.49	0.61	0.79	112.6	1.89	1.28	144.7	30	29	82	36		
10.36	34.0	110.73	2.66	Sandy Silt to Clayey Silt	ML	dense	120	2.5	44	1.923	1.611	3.00	0.70	0.76	84.4	2.29	1.83	163.0	38	33	70	36		
10.52	34.5	80.21	2.47	Silty Sand to Sandy Silt	SM/ML	medium dense	120	3.0	27	1.953	1.625	2.52	0.72	0.73	55.6	2.37	2.10	121.8	21	24	52	34		
10.67	35.0	48.84	2.66	Sandy Silt to Clayey Silt	ML	medium dense	120	2.5	20	1.983	1.639	3.06	0.79	0.71	32.7	2.60	3.31	108.2	15	22	30	32		
10.82	35.5	29.29	2.15	Sandy Silt to Clayey Silt	ML	very stiff	120	2.5	12	2.013	1.654	2.30	0.82	0.69	19.2	2.70			12				1.63	4.9
10.97	36.0	24.65	2.54	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.0	12	2.043	1.668	2.76	0.86	0.68	15.0	2.81			12				1.37	4.1
11.13	36.5	20.17	2.46	Sandy Silt to Clayey Silt	ML	very stiff	120	2.5	11	2.073	1.683	2.86	0.84	0.68	18.0	2.78			11				1.56	4.7
11.28	37.0	19.62	3.05	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.0	10	2.103	1.697	3.41	0.91	0.65	12.0	2.96			10				1.05	3.1
11.43	37.5	50.00	4.22	Clayey Silt to Silty Clay	ML/CL	hard	120	2.0	25	2.133	1.711	4.41	0.82	0.67	31.8	2.71			25				2.85	8.4
11.58	38.0	70.31	3.57	Sandy Silt to Clayey Silt	ML	medium dense	120	2.5	28	2.163	1.726	3.66	0.77	0.68	48.5	2.54	3.00	136.6	21	27	44	34		
11.73	38.5	41.66	3.81	Clayey Silt to Silty Clay	ML/CL	hard	120	2.0	21	2.193	1.740	4.02	0.84	0.66	28.0	2.75			21				2.35	6.8
11.89	39.0	25.35	4.16	Silty Clay to Clay	CL	very stiff	120	1.5	17	2.223	1.755	4.58	0.92	0.63	15.2	2.96			17				1.39	4.0
12.04	39.5	29.30	3.96	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.0	15	2.253	1.769	4.28	0.88	0.64	17.6	2.89			15				1.62	4.8
12.19	40.0	126.02	2.26	Silty Sand to Sandy Silt	SM/ML	dense	120	3.0	42	2.283	1.783	2.30	0.67	0.70	83.7	2.21	1.70	142.2	31	28	66	36		
12.34	40.5	259.51	0.98	Sand	SP	dense	120	5.0	52	2.313	1.798	0.99	0.52	0.76	185.9	1.71	1.04	194.1	38	38	100	38		
12.50	41.0	285.04	1.09	Sand	SP	dense	120	5.0	57	2.343	1.812	1.10	0.52	0.75	203.2	1.72	1.05	213.0	42	43	100	39		
12.65	41.5	259.08	1.12	Sand	SP	dense	120	5.0	52	2.373	1.827	1.13	0.54	0.75	182.7	1.76	1.08	196.8	38	39	100	38		
12.80	42.0	156.69	1.62	Sand to Silty Sand	SP/SM	medium dense	120	4.0	39	2.403	1.841	1.64	0.62	0.71	104.9	2.04	1.36	142.3	29	29	79	36		
12.95	42.5	72.90	3.48	Sandy Silt to Clayey Silt	ML	medium dense	120	2.5	29	2.433	1.855	3.60	0.77	0.65	44.8	2.54	3.00	133.6	21	27	43	34		
13.11	43.0	87.70	2.33	Silty Sand to Sandy Silt	SM/ML	medium dense	120	3.0	29	2.463	1.870	2.40	0.72	0.66	55.1	2.36	2.14	117.9	21	24	52	34		
13.26	43.5	77.89	3.64	Sandy Silt to Clayey Silt	ML	medium dense	120	2.5	31	2.493	1.884	3.76	0.77	0.64	47.1	2.54	2.98	140.3	23	28	46	34		
13.41	44.0	169.73	2.39	Silty Sand to Sandy Silt	SM/ML	dense	120	3.0	57	2.523	1.898	2.39	0.65	0.66	109.5	2.14	1.54	168.6	41	34	81	39		
13.56	44.5	110.69	2.32	Silty Sand to Sandy Silt	SM/ML	medium dense	120	3.0	37	2.553	1.913	2.37	0.69	0.65	69.4	2.28	1.89	130.9	27	26	62	35		

Earth Systems
Southern California

CONE PENETROMETER INTERPRETATION

(based on Robertson & Campanella, 1989)

Project: Commercial Organics Processing Facility — Project No: VT-24872-02 — Date: 01/30/17

CPT SOUNDING: CPT-2 — Plot: 2 — Density: 1 SPT N — Program developed 2003 by Shelton L. Stringer, GE Earth Systems Southwest

Est. GWT (feet): 24.0 — Dr correlation: 0 Baldi — Qc/N: 1 Robertson — Phi Correlation: 0 SPT N — Nk: 17

Base Depth meters	Base Depth feet	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est Density (pcf)	Qc to N	SPT N(60)	Total po tsf	p'o tsf	F	n	Cq	Norm. Qc1n	Ic	Kc	Clean Sand Qc1n	N1(60)	Clean Sand N1(60)	Rel. Dens. Dr (%)	Phi (deg.)	Su (tsf)	OCR
13.72	45.0	102.32	2.74	Sandy Silt to Clayey Silt	ML	medium dense	120	2.5	41	2.583	1.927	2.81	0.72	0.65	62.8	2.36	2.16	136.0	26	27	58	36		
13.87	45.5	68.32	2.77	Sandy Silt to Clayey Silt	ML	medium dense	120	2.5	27	2.613	1.942	2.88	0.78	0.63	40.6	2.51	2.80	113.0	26	23	39	33		
14.02	46.0	81.32	2.74	Sandy Silt to Clayey Silt	ML	medium dense	120	2.5	33	2.643	1.956	2.83	0.74	0.63	49.5	2.44	2.42	121.7	22	24	47	34		
14.17	46.5	114.82	2.03	Silty Sand to Sandy Silt	SM/ML	medium dense	120	3.0	38	2.673	1.971	2.09	0.71	0.64	70.0	2.32	2.00	140.1	27	28	62	35		
14.33	47.0	142.01	1.83	Sand to Silty Sand	SP/SM	medium dense	120	4.0	36	2.703	1.985	1.91	0.65	0.66	89.1	2.14	1.53	135.9	26	27	72	35		
14.48	47.5	276.00	1.39	Sand	SP	dense	120	5.0	55	2.733	1.999	1.38	0.56	0.70	183.1	1.82	1.12	205.5	36	41	106	38		
14.63	48.0	224.46	1.45	Sand to Silty Sand	SP/SM	dense	120	4.0	56	2.763	2.014	1.47	0.58	0.69	145.0	1.80	1.19	174.1	40	35	93	38		
14.78	48.5	117.37	3.83	Sandy Silt to Clayey Silt	ML	dense	120	2.5	47	2.793	2.028	3.93	0.74	0.62	68.4	2.44	2.48	170.5	35	34	51	37		
14.94	49.0	168.17	2.25	Silty Sand to Sandy Silt	SM/ML	dense	120	3.0	56	2.823	2.043	2.26	0.65	0.65	103.3	2.16	1.59	160.1	35	32	78	38		
15.09	49.5	198.76	2.24	Silty Sand to Sandy Silt	SM/ML	dense	120	3.0	66	2.853	2.057	2.27	0.64	0.65	122.9	2.08	1.49	177.6	40	36	85	40		
15.24	50.0	129.66	2.99	Sandy Silt to Clayey Silt	ML	dense	120	2.5	52	2.882	2.071	3.06	0.71	0.62	76.1	2.33	2.05	156.2	36	31	65	38		

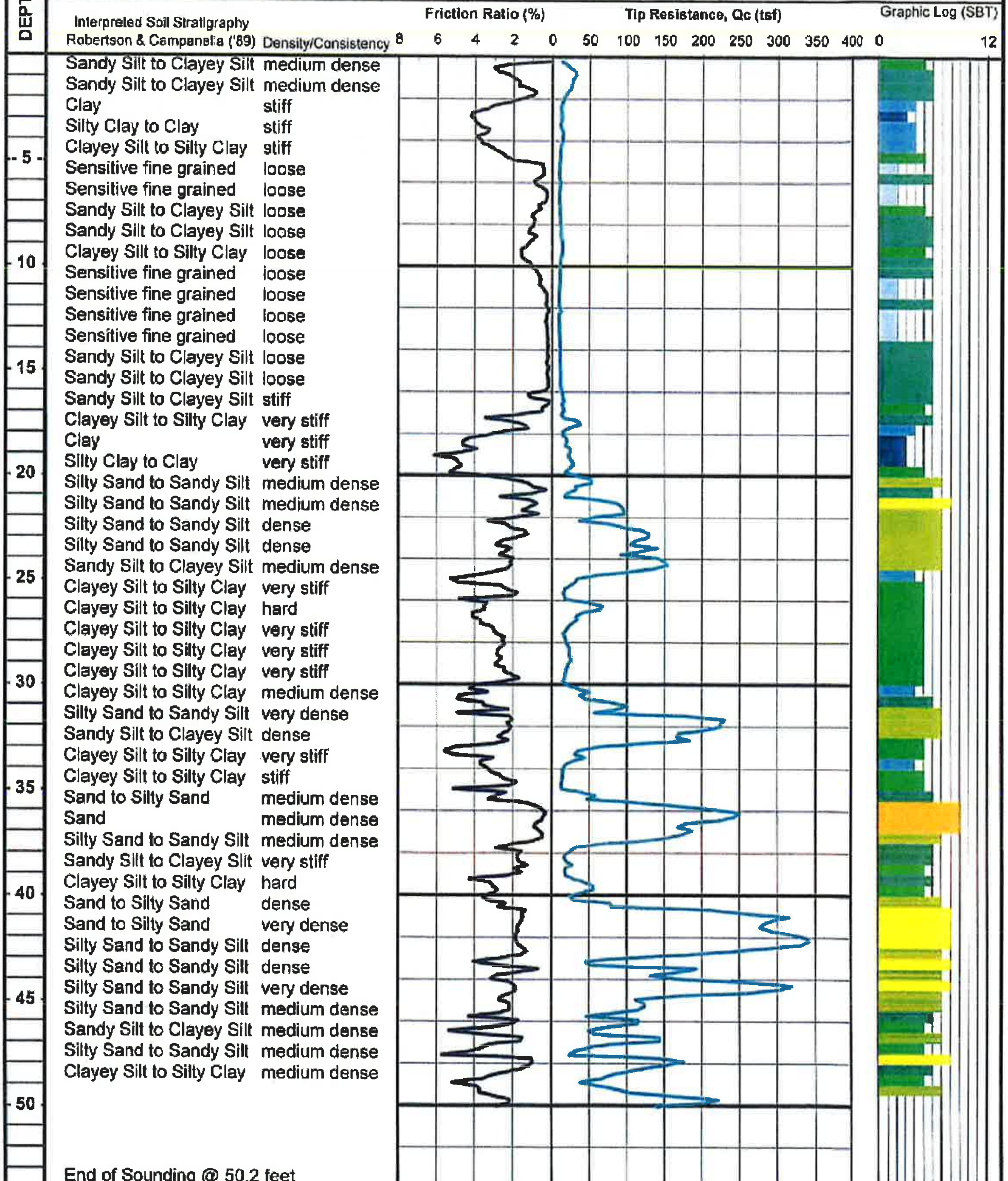
Earth Systems
Southern California

CPT No: CPT-3

Project Name: Commercial Organics Processing Facility
Project No.: VT-24872-02
Location: See Site Exploration Plan

CPT Vendor: Middle Earth
Truck Mounted Electric
Cone with 23-ton reaction
Date: 1/30/2017

Interpreted Soil Stratigraphy Robertson & Campanella ('89)	Density/Consistency
Sandy Silt to Clayey Silt	medium dense
Sandy Silt to Clayey Silt	medium dense
Clay	stiff
Silty Clay to Clay	stiff
Clayey Silt to Silty Clay	stiff
Sensitive fine grained	loose
Sensitive fine grained	loose
Sandy Silt to Clayey Silt	loose
Sandy Silt to Clayey Silt	loose
Clayey Silt to Silty Clay	loose
Sensitive fine grained	loose
Sensitive fine grained	loose
Sensitive fine grained	loose
Sensitive fine grained	loose
Sandy Silt to Clayey Silt	loose
Sandy Silt to Clayey Silt	loose
Sandy Silt to Clayey Silt	stiff
Clayey Silt to Silty Clay	very stiff
Clay	very stiff
Silty Clay to Clay	very stiff
Silty Sand to Sandy Silt	medium dense
Silty Sand to Sandy Silt	medium dense
Silty Sand to Sandy Silt	dense
Silty Sand to Sandy Silt	dense
Sandy Silt to Clayey Silt	medium dense
Clayey Silt to Silty Clay	very stiff
Clayey Silt to Silty Clay	hard
Clayey Silt to Silty Clay	very stiff
Clayey Silt to Silty Clay	very stiff
Clayey Silt to Silty Clay	very stiff
Clayey Silt to Silty Clay	medium dense
Silty Sand to Sandy Silt	very dense
Sandy Silt to Clayey Silt	dense
Clayey Silt to Silty Clay	very stiff
Clayey Silt to Silty Clay	stiff
Sand to Silty Sand	medium dense
Sand	medium dense
Silty Sand to Sandy Silt	medium dense
Sandy Silt to Clayey Silt	very stiff
Clayey Silt to Silty Clay	hard
Sand to Silty Sand	dense
Sand to Silty Sand	very dense
Silty Sand to Sandy Silt	dense
Silty Sand to Sandy Silt	dense
Silty Sand to Sandy Silt	very dense
Silty Sand to Sandy Silt	medium dense
Sandy Silt to Clayey Silt	medium dense
Silty Sand to Sandy Silt	medium dense
Clayey Silt to Silty Clay	medium dense



End of Sounding @ 50.2 feet

Earth Systems
Southern California

CONE PENETROMETER INTERPRETATION

(based on Robertson & Campanella, 1989)

Project: Commercial Organics Processing Facility — Project No: VT-24872-02 — Date 01/30/17

CPT SOUNDING: CPT-3 — Plot: 3 — Density: 1 SPT N — Est. GWT (feet): 24.0 — Dr correlation: 0 Baldi — Qc/N: 1 Robertson

Program developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest — Phi Correlation: 4 SPT N — Nc 17

Base Depth meters	Base Depth feet	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	Qc to N Ic	SPT N(60)	Total σo tsf	σ'o tsf	F	n	Cq	Norm Qc1n	Ic (2.6)	Kc	Clean Sand Qc1n	N1(60)	Clean Sand N1(60)cs	Rel. Dens. Dr(%)	Phi (deg.)	Su (tsf)	OCR
0.15	0.5	24.25	2.74	Clayey Silt to Silty Clay	ML/CL	medium dense	110	2.0	12	0.014	0.014	2.74	0.76	1.70	33.0	2.51	2.80	100.1	21	22	38	33		
0.30	1.0	28.51	1.97	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	11	0.041	0.041	1.97	0.72	1.70	45.8	2.36	2.15	98.6	19	20	44	33		
0.46	1.5	23.47	1.24	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	9	0.069	0.069	1.25	0.70	1.70	37.7	2.31	1.97	74.2	16	15	35	32		
0.61	2.0	15.15	1.61	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	6	0.096	0.096	1.62	0.77	1.70	24.3	2.53	2.00	70.7	10	14	18	30		
0.76	2.5	11.71	3.51	Silty Clay to Clay	CL	stiff	110	1.5	6	0.124	0.124	3.54	0.86	1.70	18.8	2.82			8				0.88	28.1
0.91	3.0	11.82	4.09	Clay	CL/CH	stiff	110	1.0	12	0.151	0.151	4.15	0.87	1.70	19.0	2.80			12				0.89	23.1
1.07	3.5	12.09	3.50	Silty Clay to Clay	CL	stiff	110	1.5	8	0.179	0.179	3.56	0.85	1.70	19.4	2.81			5				0.70	20.0
1.22	4.0	12.52	3.77	Silty Clay to Clay	CL	stiff	110	1.5	8	0.206	0.206	3.84	0.86	1.70	22.1	2.82			8				0.72	17.9
1.37	4.5	10.87	2.94	Silty Clay to Clay	CL	stiff	110	1.5	7	0.234	0.234	3.00	0.89	1.70	17.5	2.80			7				0.63	13.8
1.52	5.0	9.66	1.62	Clayey Silt to Silty Clay	ML/CL	stiff	110	2.0	5	0.261	0.261	1.68	0.82	1.70	15.6	2.70			5				0.55	10.8
1.68	5.5	8.97	0.50	Sensitive fine grained	ML	loose	110	2.0	4	0.289	0.289	0.52	0.70	1.70	14.4	2.49	2.73	38.4	0	0	-4	29		
1.83	6.0	9.69	0.75	Sandy Silt to Clayey Silt	ML	loose	110	2.5	4	0.316	0.316	0.78	0.77	1.70	15.6	2.53	2.85	45.9	7	9	0	29		
1.98	6.5	8.71	0.20	Sensitive fine grained	ML	loose	110	2.0	4	0.344	0.344	0.30	0.74	1.70	14.0	2.43	1.00	14.0	7	3	-5	29		
2.13	7.0	9.20	0.56	Sensitive fine grained	ML	loose	110	2.0	5	0.371	0.371	0.80	0.76	1.70	14.6	2.50	2.78	41.2	8	8	-2	29		
2.29	7.5	9.60	0.95	Clayey Silt to Silty Clay	ML/CL	loose	110	2.0	5	0.399	0.399	0.99	0.79	1.70	15.7	2.58	3.18	60.3	8	10	0	29		
2.44	8.0	11.10	1.02	Sandy Silt to Clayey Silt	ML	loose	110	2.5	4	0.426	0.426	1.00	0.78	1.70	17.8	2.54	3.01	53.8	7	11	5	29		
2.59	8.5	11.70	1.01	Sandy Silt to Clayey Silt	ML	loose	110	2.5	5	0.454	0.454	1.05	0.77	1.70	18.5	2.52	2.80	54.2	7	11	7	29		
2.74	9.0	12.75	1.38	Sandy Silt to Clayey Silt	ML	loose	110	2.5	5	0.481	0.481	1.44	0.78	1.70	20.5	2.56	3.10	83.4	7	13	11	29		
2.90	9.5	11.62	1.54	Clayey Silt to Silty Clay	ML/CL	stiff	110	2.0	6	0.509	0.509	1.61	0.80	1.70	19.0	2.61			6				0.67	6.7
3.05	10.0	10.51	1.00	Sandy Silt to Clayey Silt	ML	loose	110	2.5	4	0.536	0.536	1.05	0.78	1.70	16.9	2.56	3.11	62.5	6	10	3	28		
3.20	10.5	10.08	0.65	Sandy Silt to Clayey Silt	ML	loose	110	2.5	4	0.564	0.564	0.69	0.77	1.62	15.5	2.51	2.64	44.0	5	9	-1	28		
3.35	11.0	9.49	0.52	Sensitive fine grained	ML	loose	110	2.0	5	0.591	0.591	0.56	0.77	1.57	14.0	2.52	2.86	40.0	9	6	-5	29		
3.51	11.5	8.46	0.27	Sensitive fine grained	ML	loose	110	2.0	4	0.619	0.619	0.29	0.76	1.51	12.0	2.49	1.00	12.0	5	2	-11	26		
3.66	12.0	10.25	0.25	Sandy Silt to Clayey Silt	ML	loose	110	2.5	4	0.646	0.646	0.27	0.74	1.44	14.0	2.41	1.00	14.0	5	3	-5	28		
3.81	12.5	8.45	0.30	Sensitive fine grained	ML	loose	110	2.0	4	0.674	0.674	0.32	0.76	1.42	11.3	2.52	1.00	11.3	5	2	-14	26		
3.96	13.0	8.13	0.20	Sensitive fine grained	ML	loose	110	2.0	5	0.701	0.701	0.20	0.76	1.37	11.8	2.49	1.00	11.8	5	2	-12	26		
4.11	13.5	9.97	0.23	Sensitive fine grained	ML	loose	110	2.0	5	0.729	0.729	0.25	0.75	1.32	12.5	2.45	1.00	12.5	6	2	-10	26		
4.27	14.0	10.37	0.23	Sandy Silt to Clayey Silt	ML	loose	110	2.5	4	0.756	0.756	0.25	0.75	1.29	12.8	2.45	1.00	12.6	5	3	-9	28		
4.42	14.5	10.52	0.24	Sandy Silt to Clayey Silt	ML	loose	110	2.5	4	0.784	0.784	0.26	0.76	1.25	12.5	2.46	1.00	12.5	5	2	-10	26		
4.57	15.0	11.09	0.23	Sandy Silt to Clayey Silt	ML	loose	110	2.5	4	0.811	0.811	0.25	0.75	1.22	12.8	2.44	1.00	12.8	5	3	-8	26		
4.72	15.5	11.32	0.22	Sandy Silt to Clayey Silt	ML	loose	110	2.5	6	0.839	0.839	0.24	0.75	1.15	12.7	2.44	1.00	12.7	5	3	-8	28		
4.88	16.0	12.58	0.72	Sandy Silt to Clayey Silt	ML	loose	110	2.5	5	0.866	0.866	0.78	0.79	1.17	13.9	2.58	3.19	44.5	5	9	-5	28		
5.03	16.5	14.42	0.28	Sandy Silt to Clayey Silt	ML	loose	110	2.5	6	0.894	0.894	0.30	0.73	1.13	16.4	2.39	1.00	15.4	6	3	-1	28		
5.18	17.0	14.28	1.09	Clayey Silt to Silty Clay	ML/CL	stiff	110	2.0	7	0.921	0.921	2.02	0.84	1.12	15.1	2.79			7				0.70	4.3
5.33	17.5	31.37	1.89	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	13	0.949	0.949	1.64	0.74	1.08	32.1	2.43	2.44	78.5	13	16	30	31		
5.49	18.0	15.83	3.42	Silty Clay to Clay	CL	stiff	110	1.5	11	0.976	0.976	3.65	0.86	1.07	16.1	2.88			11				0.87	4.8
5.64	18.5	20.27	4.41	Clay	CL/CH	very stiff	110	1.0	20	1.004	1.004	4.84	0.86	1.05	20.1	2.87			20				1.15	5.8
5.79	19.0	23.22	6.22	Clay	CL/CH	very stiff	110	1.0	23	1.031	1.031	6.54	0.88	1.02	22.4	2.89			23				1.31	6.5
5.94	19.5	25.26	4.83	Clay	CL/CH	very stiff	110	1.0	25	1.059	1.059	5.11	0.87	1.00	23.8	2.85			25				1.42	6.9
6.10	20.0	34.41	3.51	Clayey Silt to Silty Clay	ML/CL	very stiff	110	2.0	17	1.086	1.086	3.65	0.81	0.98	31.8	2.65			17				1.96	9.2
6.25	20.5	38.11	0.85	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	13	1.114	1.114	0.87	0.60	0.97	34.8	2.25	1.80	62.0	12	13	33	31		
6.40	21.0	32.03	1.59	Sandy Silt to Clayey Silt	ML	medium dense	120	2.5	13	1.143	1.143	1.64	0.75	0.94	29.4	2.48	2.59	76.1	12	15	28	31		
6.55	21.5	91.24	1.14	Sand to Silty Sand	SP/SM	medium dense	120	4.0	23	1.173	1.173	1.16	0.62	0.94	90.0	2.02	1.33	107.8	21	22	68	34		
6.71	22.0	82.34	1.98	Silty Sand to Sandy Silt	SM/ML	medium dense	120	3.0	21	1.203	1.203	2.00	0.70	0.91	83.8	2.31	1.88	106.7	19	21	61	33		
6.86	22.5	98.14	1.85	Silty Sand to Sandy Silt	SM/ML	medium dense	120	3.0	33	1.233	1.233	2.01	0.66	0.90	83.8	2.17	1.60	133.9	29	27	70	36		
7.01	23.0	121.05	1.83	Silty Sand to Sandy Silt	SM/ML	dense	120	3.0	40	1.263	1.263	1.95	0.64	0.90	102.2	2.10	1.46	140.9	36	30	76	36		
7.16	23.5	118.63	2.48	Silty Sand to Sandy Silt	SM/ML	dense	120	3.0	40	1.293	1.293	2.52	0.67	0.86	89.9	2.18	1.65	152.8	35	33	78	37		
7.32	24.0	127.02	2.33	Silty Sand to Sandy Silt	SM/ML	dense	120	3.0	42	1.323	1.323	2.32	0.66	0.86	103.7	2.16	1.56	161.5	37	32	78	38		
7.47	24.5	128.89	2.53	Silty Sand to Sandy Silt	SM/ML	dense	120	3.0	43	1.353	1.337	2.52	0.66	0.86	105.2	2.17	1.61	169.0	37	34	79	38		
7.62	25.0	40.83	4.74	Silty Clay to Clay	CL	hard	120	1.5	27	1.383	1.351	4.92	0.84	0.82	31.4	2.75			27				2.32	8.8
7.77	25.5	16.82	2.27	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.0	8	1.413	1.366	2.45	0.86	0.80	14.3	2.82			8				1.05	3.6
7.92	26.0	27.19	3.42	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.0	14	1.443	1.383	3.61	0.85	0.80	20.5	2.80			14				1.52	5.8
8.08	26.5	50.41	3.61	Clayey Silt to Silty Clay	ML/CL	hard	120	2.0	25	1.473	1.395	3.01	0.80	0.80	39.2	2.62			25				2.89	10.6
8.23	27.0	27.07	3.81	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.0	14	1.503	1.409	3.71	0.86	0.76	20.0	2.81			14				1.51	5.4
8.38	27.5	17.09	2.78	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.0	9	1.533	1.423	3.09	0.89	0.77	12.4	2.93			9				0.92	3.3
8.53	28.0	20.33	2.68	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.0	10	1.563	1.438	2.78	0.87	0.77	14.8	2.84			10				1.12	3.9
8.69	28.5	23.38	2.77	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.0	12	1.593	1.452	2.97	0.86	0.76	16.8	2.81			12				1.29	4.5
8.84	29.0	22.12	2.74	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.0	11	1.623	1.467	2.96	0.87	0.76	15.6	2.83			11				1.21	4.2
8.99	29.5	17.43	2.07	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.0	9	1.653	1.481	2.29	0.87	0.75	12.3	2.86			9				0.94	3.2
9.14	30.0	23.65	3.63	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.0	12	1.683	1.495	3.87	0.89	0.74	16.4	2.89			12				1.30	4.4
9.30	30.5	44.04	4.35	Silty Clay to Clay	CL	hard	120	1.5	29	1.713	1.510	4.62	0.83	0.74	31.0	2.73			29				2.50	8.4
9.45	31.0	80.09	3.12	Sandy Silt to Clayey Silt	ML	medium dense	120	2.5	35	1.743	1.524	3.18	0.73	0.77	63.8	2.40	2.30	146.5	29	29	58	36		
9.60	31.5	155.65	3.04	Silty Sand to Sandy Silt	SM/ML	dense	120	3.0	52	1.773	1.538	3.07	0.67	0.76	114.5	2.22	1.71	195.2	42	39	82	39		
9.75	32.0	216.59	2.21	Silty Sand to Sandy Silt	SM/ML	very dense	120	3.0	72	1.803	1.553	2.23	0.61	0.79	161.6	2.01	1.32	212.5	55	43	97	42		
9.91	32.5	171.88	2.53	Silty Sand to Sandy Silt	SM/ML	dense	120	3.0	57	1.833	1.567	2.55	0.65	0.79	125.0	2.13	1.51	189.7	46	38	88	40		
10.06	33.0	69.35	4.58	Clayey Silt to Silty Clay	ML/CL	hard	120	2.0	35	1.863	1.582	4.69	0.79	0.73	47.7	2.61			35				3.86	12.8
10.21	33.5	33.78	3.98	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.0	17	1.893	1.596	4.21	0.86	0.70	22.5	2.81			17				1.86	6.0
10.36	34.0	16.28	3.30	Silty Clay to Clay	CL	stiff	120	1.5	11	1.923	1.611	3.64	0.93	0.68	10.4	3.05			11				0.86	2.7
10.52	34.5	14.05	2.33	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.0	7	1.953	1.625	2.71	0.93	0.67	8.8	3.01			7				0.73	2.2
10.67	35.0	21.42	3.21	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.0	11	1.983	1.639	3.54	0.89	0.69	13.7	2.93			11				1.16	3.8
10.82	35.5	72.40	2.49	Sandy Silt to Clayey Silt	ML	medium dense	120	2.5	29	2.013	1.654	2.56	0.73	0.72	49.3	2.41	2.36	116.2	23	23	47	34		
10.97	36.0	211.14	0.51	Sand	SP	dense	120	5.0	42	2.043	1.668	0.51	0.50	0.80	158.9	1.57	1.00	158.9	33	32	95	37		
11.13	36.5	203.15	0.65	Sand	SP	dense	120	5.0	41	2.073	1.683	0.66	0.51	0.78	151.0	1.69	1.01	152.8	31	31	94	36		
11.28	37.0	172.58	0.53	Sand	SP	medium dense	120	5.0	35	2.103	1.697	0.53	0.51	0.78	128.3	1.69	1.01	129.5	25	26	87	35		
11.43	37.5	71.74	1.95	Silty Sand to Sandy Silt	SM/ML	medium dense	120	3.0	24	2.133	1.711	2.01	0.72	0.71	48.1	2.35	2.12	101.7	19	20	48	33		
11.58	38.0	19.87	1.71	Sandy Silt to Clayey Silt	ML	very stiff	120	2.5	8	2.163	1.726	1.92	0.86	0.69	12.2	2.82			8				1.06	3.0
11.73	38.5	21.54	1.62	Sandy Silt to Clayey Silt	ML	very stiff	120	2.5	9	2.193	1.740	1.81	0.85	0.66	13.3	2.77			9				1.16	3.3
11.89	39.0	21.17	2.60	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.0	11	2.223	1.755	3.01	0.89	0.64	12.8	2.91			11				1.14	3.2
12.04	39.5	50.84	3.03	Sandy Silt to Clayey Silt	ML	hard	120	2.5	20	2.253	1.769	3.17	0.80	0.66	31.9	2.61			20				2.89	8.2
12.19	40.0	31.12	3.31	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.0	16	2.283	1.783	3.58	0.86	0.64	16.8	2.82			16				1.73	4.9
12.34	40.5	122.64	2.10	Silty Sand to Sandy Silt	SM/ML	dense	120	3.0	41	2.313	1.798	2.22	0.67	0.70	81.1	2.21	1.69	137.5	30	27	69	36		
12.50	41.0	288.68	1.50	Sand to Silty Sand	SP/SM	very dense	120	4.0	72	2.343	1.812	1.54	0.56	0.74	202.2	1.83	1.13	227.7	54	46	100	41		
12.65	41.5	282.57	1.73	Sand to Silty Sand	SP/SM	very dense	120	4.0	71	2.373	1.827	1.74	0.57	0.73	195.4	1.88	1.17	228.3	52	46	100	41		
12.80	42.0	330.67	1.86	Sand to Silty Sand	SP/SM	very dense	120	4.0	83	2.403	1.841	1.87	0.57	0.73	228.2	1.86	1.15	263.4	61	53	100	43		
12.95	42.5	286.88	1.51	Sand to Silty Sand	SP/SM	very dense	120	4.0	72	2.433	1.856	1.52	0.56	0.73	199.8	1.83	1.13	224.8	53	45	100	41		
13.11	43.0	107.96	2.76	Silty Sand to Sandy Silt	SM/ML	medium dense	120	3.0	36	2.463	1.870	2.85	0.71	0.67	69.0	2.34	2.09	142.2	26	28	61	35		
13.26	43.5	137.60	1.75	Sand to Silty Sand	SP/SM	medium dense	120	4.0	34	2.493	1.884	1.78	0.64	0.69	89.6	2.11	1.48	132.6	26	27	72	35		
13.41	44.0	185.89	2.74	Silty Sand to Sandy Silt	SM/ML	dense	120	3.0	63	2.523	1.899	2.78	0.66	0.66	121.4	2.17	1.59	192.6	40	39	85	40		
13.56	44.5	295.13	1.94	Sand to Silty Sand	SP/SM	very dense	120	4.0	74	2.553	1.913	1.95	0.59	0.71	197.4	1.91	1.20	237.5	53	47	100	41		

Earth Systems
Southern California

CONE PENETROMETER INTERPRETATION

(based on Robertson & Campanella, 1989)

Project: Commercial Organics Processing Facility — Project No. VT-24872-02 — Date: 01/30/17

CPT SOUNDING: CPT-3 — Plot: 3 — Density: 1 SPT N — Program developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Est. GWT (feet): 24.0 — Dr correlation: 0 Baldi — Qc/N: 1 Robertson — Phi Correlation: 1 SPT N

Base Depth meters	Base Depth feet	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	Qc to N	SPT N(60)	Total po tsf	p'o tsf	F	n	Cq	Norm. Qc1n	2.5 Ic	Kc	Clean Sand Qc1n	N1(60)	Clean Sand N1(60)cs	Rel. Dens Dr (%)	Phi (deg.)	Nc: 17 Su (tsf)	OCR
13.72	45.0	132.14	2.50	Silty Sand to Sandy Silt	SM/ML	dense	120	3.0	44	2.583	1.927	2.55	0.69	0.80	82.0	2.25	1.78	148.5	32	36	60	38		
13.87	45.5	107.22	2.35	Silty Sand to Sandy Silt	SM/ML	medium dense	120	3.0	36	2.613	1.942	2.41	0.70	0.85	68.2	2.30	1.89	128.8	28	28	60	35		
14.02	46.0	91.72	2.66	Sandy Silt to Clayey Silt	ML	medium dense	120	2.5	37	2.643	1.958	2.78	0.73	0.84	55.4	2.43	2.30	127.2	25	25	52	35		
14.17	46.5	58.83	4.11	Clayey Silt to Silty Clay	ML/CL	hard	120	2.0	29	2.673	1.971	4.30	0.82	0.60	33.5	2.69			29				3.35	8.6
14.33	47.0	102.16	2.65	Silty Sand to Sandy Silt	SM/ML	medium dense	120	3.0	34	2.703	1.985	2.80	0.71	0.84	61.6	2.34	2.10	129.4	24	26	57	34		
14.48	47.5	64.80	3.85	Clayey Silt to Silty Clay	ML/CL	hard	120	2.0	32	2.733	1.998	3.81	0.80	0.60	36.7	2.62			32				3.66	8.3
14.63	48.0	149.07	1.24	Sand to Silty Sand	SP/SM	medium dense	120	4.0	37	2.763	2.014	1.27	0.61	0.66	95.2	1.99	1.29	122.8	26	25	75	35		
14.78	48.5	80.50	3.01	Sandy Silt to Clayey Silt	ML	medium dense	120	2.5	32	2.793	2.028	3.11	0.76	0.81	46.5	2.49	2.70	125.5	23	25	49	34		
14.94	49.0	60.06	4.30	Clayey Silt to Silty Clay	ML/CL	hard	120	2.0	30	2.823	2.043	4.51	0.82	0.56	33.4	2.70			30				3.49	8.5
15.09	49.5	161.69	2.97	Silty Sand to Sandy Silt	SM/ML	dense	120	3.0	54	2.853	2.057	3.02	0.69	0.83	96.0	2.29	1.82	170.1	30	35	78	36		

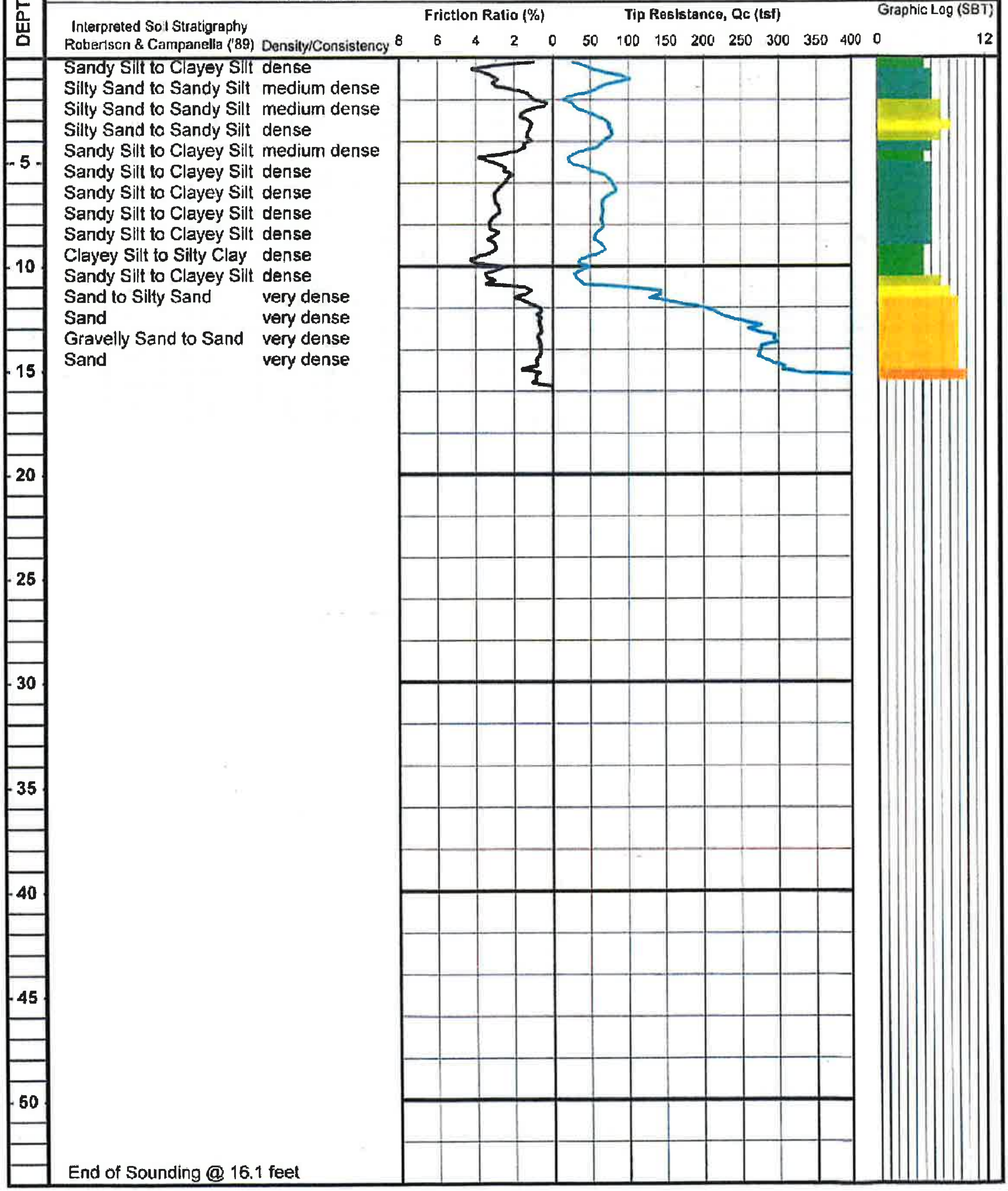
Earth Systems
Southern California

CPT No: CPT-4
Project Name: Commercial Organics Processing Facility
Project No.: VT-24872-02
Location: See Site Exploration Plan

CPT Vendor: Middle Earth
Truck Mounted Electric
Cone with 23-ton reaction
Date: 1/30/2017

DEPTH (FEET)

Interpreted Soil Stratigraphy Robertson & Campanella ('89)	Density/Consistency
Sandy Silt to Clayey Silt	dense
Silty Sand to Sandy Silt	medium dense
Silty Sand to Sandy Silt	medium dense
Silty Sand to Sandy Silt	dense
Sandy Silt to Clayey Silt	medium dense
Sandy Silt to Clayey Silt	dense
Sandy Silt to Clayey Silt	dense
Sandy Silt to Clayey Silt	dense
Sandy Silt to Clayey Silt	dense
Clayey Silt to Silty Clay	dense
Sandy Silt to Clayey Silt	dense
Sand to Silty Sand	very dense
Sand	very dense
Gravelly Sand to Sand	very dense
Sand	very dense



End of Sounding @ 16.1 feet

Earth Systems
Southern California

CONE PENETROMETER INTERPRETATION

(based on Robertson & Campanella, 1989)

Project: Commercial Organics Processing Facility Project No: VT-24872-02 Date: 01/30/17

CPT SOUNDING: CPT-4 Plot: 4 Density: 1 SPT N Program developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Est. GWT (feet): 24.0 Dr correlation: 0 Baldi Cq/N: 1 Robertson Phi Correlation: 1 SPT N

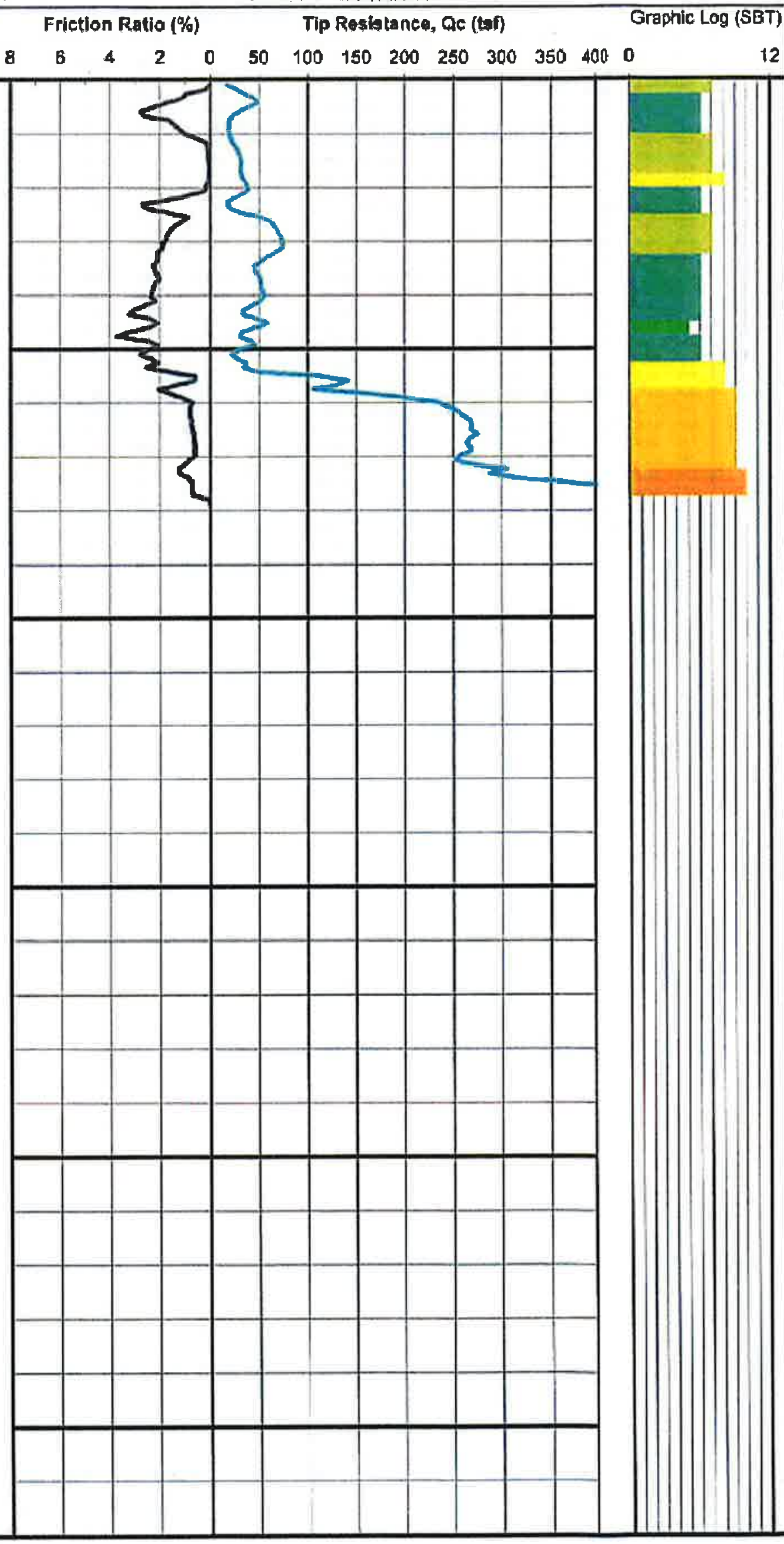
Nk: 17

Base Depth meters	Base Depth feet	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	Qc to N	SPT N(60)	Total po tsf	p'o tsf	F	n	Cq	Norm. Qc1n	Ic (2.6)	Kc	Clean Sand Qc1n	N1(60)	Clean Sand N1(60)	Rel. Dens. Dr (%)	Phi (deg.)	Su (tsf)	OCR
0.15	0.5	53.97	3.67	Clayey Silt to Silty Clay	ML/CL	dense	110	2.0	27	0.014	0.014	3.67	0.71	1.70	85.7	2.36	2.13	184.4	48	37	71	40		
0.30	1.0	89.87	3.09	Sandy Silt to Clayey Silt	ML	very dense	110	2.5	36	0.041	0.041	3.08	0.65	1.70	144.4	2.15	1.56	225.3	61	45	92	43		
0.46	1.5	54.70	2.17	Sandy Silt to Clayey Silt	ML	dense	110	2.5	22	0.069	0.069	2.17	0.66	1.70	87.9	2.10	1.62	142.2	37	28	71	38		
0.61	2.0	19.93	0.84	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	8	0.096	0.096	0.85	0.69	1.70	32.0	2.27	1.87	59.9	14	12	30	31		
0.76	2.5	37.10	1.10	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	12	0.124	0.124	1.11	0.64	1.70	59.7	2.11	1.48	88.4	21	18	55	34		
0.91	3.0	67.20	1.37	Silty Sand to Sandy Silt	SM/ML	dense	110	3.0	22	0.151	0.151	1.37	0.60	1.70	108.1	1.96	1.27	137.2	36	27	80	36		
1.07	3.5	75.65	1.24	Sand to Silty Sand	SP/SM	dense	100	4.0	19	0.178	0.178	1.24	0.56	1.70	121.0	1.91	1.20	146.0	32	29	85	37		
1.22	4.0	67.98	1.34	Silty Sand to Sandy Silt	SM/ML	dense	110	3.0	23	0.204	0.204	1.34	0.60	1.70	109.2	1.97	1.26	137.5	30	27	80	38		
1.37	4.5	41.86	1.96	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	17	0.231	0.231	1.97	0.66	1.70	67.3	2.23	1.75	117.9	26	24	60	36		
1.52	5.0	22.19	3.37	Clayey Silt to Silty Clay	ML/CL	medium dense	110	2.0	11	0.259	0.259	3.41	0.79	1.70	35.7	2.60	3.31	118.1	18	24	34	33		
1.68	5.5	58.97	2.30	Sandy Silt to Clayey Silt	ML	dense	110	2.5	24	0.286	0.286	2.30	0.66	1.70	94.7	2.19	1.64	155.1	40	31	75	38		
1.83	6.0	79.51	2.65	Sandy Silt to Clayey Silt	ML	very dense	110	2.5	32	0.314	0.314	2.66	0.65	1.70	127.8	2.14	1.52	194.6	54	39	87	41		
1.98	6.5	74.09	3.03	Sandy Silt to Clayey Silt	ML	very dense	110	2.5	30	0.341	0.341	3.04	0.67	1.70	119.0	2.20	1.67	198.7	50	40	84	41		
2.13	7.0	65.04	2.90	Sandy Silt to Clayey Silt	ML	dense	110	2.5	26	0.369	0.369	2.91	0.68	1.70	104.5	2.22	1.72	180.3	43	36	79	39		
2.29	7.5	64.71	3.00	Sandy Silt to Clayey Silt	ML	dense	110	2.5	26	0.396	0.396	3.02	0.68	1.70	104.0	2.24	1.76	183.0	41	37	78	39		
2.44	8.0	64.97	3.28	Sandy Silt to Clayey Silt	ML	dense	110	2.5	26	0.424	0.424	3.30	0.69	1.70	104.4	2.26	1.84	192.1	40	38	79	39		
2.59	8.5	55.09	3.10	Sandy Silt to Clayey Silt	ML	dense	110	2.5	22	0.451	0.451	3.13	0.70	1.70	89.0	2.29	1.91	172.1	33	34	72	37		
2.74	9.0	66.04	3.01	Sandy Silt to Clayey Silt	ML	dense	110	2.5	26	0.479	0.479	3.03	0.68	1.70	106.1	2.23	1.75	185.6	38	37	79	38		
2.90	9.5	47.72	3.83	Clayey Silt to Silty Clay	ML/CL	dense	110	2.0	24	0.506	0.506	3.87	0.73	1.70	76.7	2.40	2.33	178.6	34	36	69	37		
3.05	10.0	40.00	3.17	Clayey Silt to Silty Clay	ML/CL	medium dense	110	2.0	20	0.534	0.534	3.21	0.73	1.65	62.3	2.41	2.34	145.6	27	29	57	36		
3.20	10.5	31.51	3.32	Clayey Silt to Silty Clay	ML/CL	medium dense	110	2.0	16	0.561	0.561	3.38	0.76	1.62	48.2	2.50	2.77	133.7	21	27	47	34		
3.35	11.0	94.74	2.02	Silty Sand to Sandy Silt	SM/ML	dense	110	3.0	32	0.589	0.589	2.03	0.62	1.44	129.0	2.05	1.36	175.9	41	35	87	39		
3.51	11.5	141.97	1.62	Sand to Silty Sand	SP/SM	dense	100	4.0	35	0.615	0.615	1.62	0.57	1.36	182.4	1.67	1.16	212.4	45	42	100	40		
3.66	12.0	198.35	0.81	Sand	SP	dense	100	5.0	40	0.640	0.640	0.82	0.50	1.29	241.0	1.57	1.00	241.0	50	48	100	40		
3.81	12.5	238.33	0.73	Sand	SP	very dense	100	5.0	48	0.665	0.665	0.73	0.50	1.26	284.1	1.48	1.00	284.1	59	57	100	42		
3.96	13.0	260.86	0.63	Sand	SP	very dense	100	5.0	54	0.690	0.690	0.63	0.50	1.24	316.8	1.41	1.00	316.9	65	63	100	43		
4.11	13.5	286.66	0.73	Sand	SP	very dense	100	5.0	58	0.715	0.715	0.73	0.50	1.22	339.8	1.43	1.00	339.8	70	68	100	44		
4.27	14.0	276.69	0.63	Sand	SP	very dense	100	5.0	55	0.740	0.740	0.63	0.50	1.20	311.6	1.41	1.00	311.6	64	62	100	43		
4.42	14.5	282.23	0.78	Sand	SP	very dense	100	5.0	56	0.765	0.765	0.78	0.50	1.18	313.7	1.48	1.00	313.7	65	63	100	43		
4.57	15.0	314.64	1.03	Sand	SP	very dense	100	5.0	63	0.790	0.790	1.03	0.50	1.16	344.4	1.55	1.00	344.4	71	69	100	44		
4.72	15.5	482.25	0.91	Gravelly Sand to Sand	SW	very dense	110	6.0	77	0.616	0.616	0.91	0.50	1.14	497.4	1.41	1.00	497.4	85	99	100	46		

Earth Systems
Southern California

CPT No: CPT-4A **CPT Vendor: Middle Earth**
Project Name: Commercial Organics Processing Facility — Truck Mounted Electric
Project No.: VT-24872-02 — Cone with 23-ton reaction
Location: See Site Exploration Plan **Date:** 1/30/2017

DEPTH (FEET)	Interpreted Soil Stratigraphy Robertson & Campanella ('89)	Density/Consistency
	Silty Sand to Sandy Silt	medium dense
	Sandy Silt to Clayey Silt	medium dense
	Silty Sand to Sandy Silt	medium dense
	Sand to Silty Sand	medium dense
	Sandy Silt to Clayey Silt	medium dense
5	Silty Sand to Sandy Silt	dense
	Sandy Silt to Clayey Silt	dense
	Sandy Silt to Clayey Silt	dense
	Sandy Silt to Clayey Silt	medium dense
	Sandy Silt to Clayey Silt	medium dense
10	Silty Sand to Sandy Silt	medium dense
	Sand	dense
	Sand	very dense
	Sand	very dense
	Sand	very dense
15		
20		
25		
30		
35		
40		
45		
50		



End of Sounding @ 15.9 feet

Earth Systems Southern California

CONE PENETROMETER INTERPRETATION

(based on Robertson & Campanella, 1989)

Project: Commercial Organics Processing Facility — Project No: VT-24872-02 — Date: 01/30/17

CPT SOUNDING: CPT-4A — Plot: 5 — Density: 1 SPT N — Est. GWT (feet): 24.0 — Dr correlation: 0 Baldi — Qc/N: 1 Robertson

Program developed 2003 by Shelton L. Stringer, GE. Earth Systems Southwest — Phi Correlation: 1 SPT N

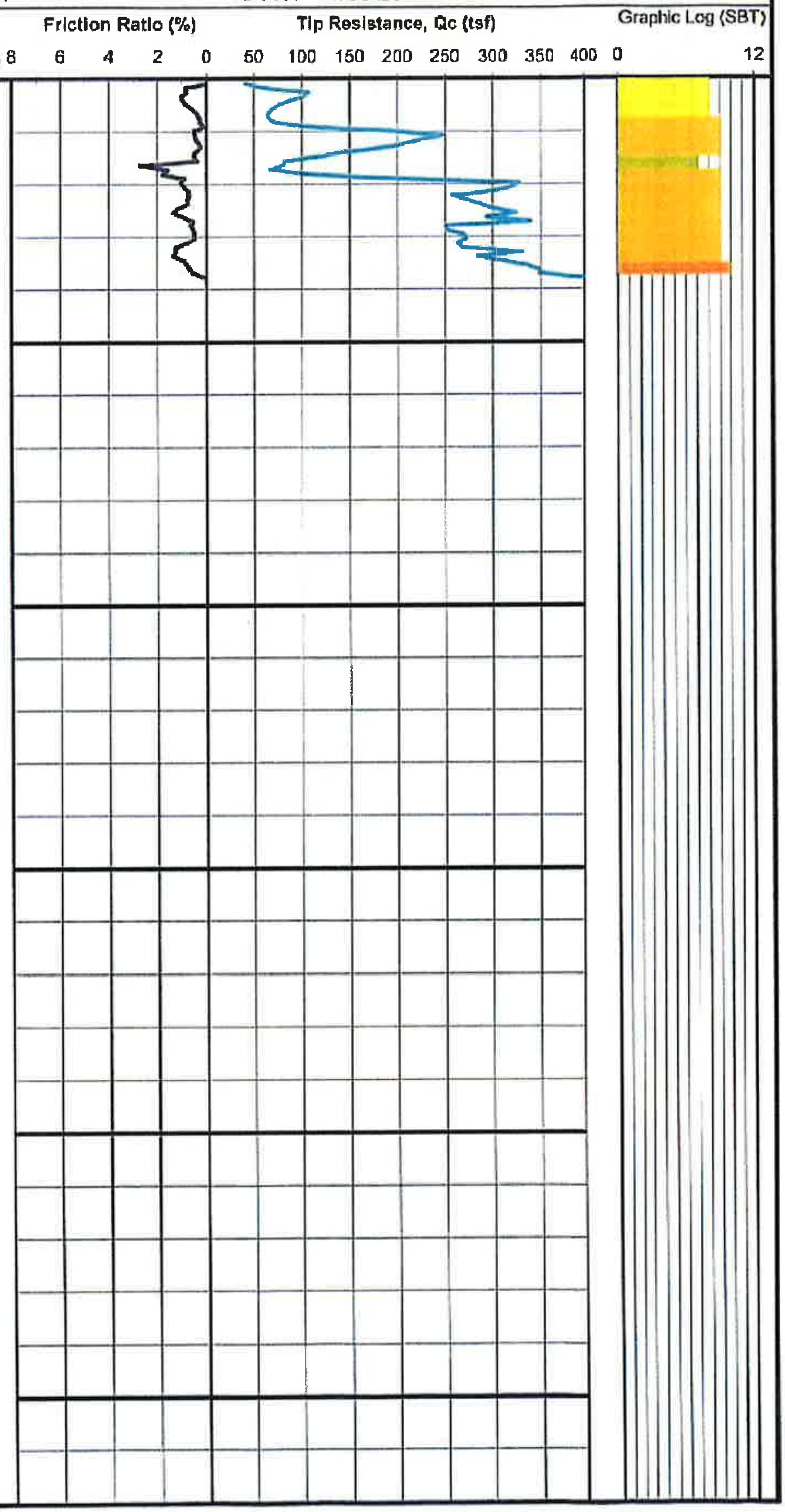
Base Depth meters	Base Depth feet	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	Qc to N	SPT N(60)	Total po tsf	p'o tsf	F	n	Cq	Norm. Qc1n	2.6 Ic	Kc	Clean Sand Qc1n	N1(60)	Clean Sand N1(60)cs	Rel. Dens. Dr (%)	Phi (deg.)	Nk 17 Su (tsf)	OCR
0.15	0.5	34.59	0.77	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	12	0.014	0.014	0.77	0.62	1.70	55.8	2.05	1.37	76.1	20	15	52	33		
0.30	1.0	38.74	2.33	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	15	0.041	0.041	2.30	0.76	1.70	61.3	2.30	1.98	122.2	26	24	57	35		
0.46	1.5	20.41	1.82	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	8	0.069	0.069	1.82	0.75	1.70	32.8	2.47	2.80	89.4	14	17	31	31		
0.61	2.0	18.03	0.95	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	8	0.096	0.096	0.66	0.70	1.70	33.6	2.32	2.02	61.8	13	12	25	31		
0.76	2.5	24.92	0.12	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	8	0.124	0.124	0.12	0.59	1.70	43.0	1.60	1.00	40.0	14	8	39	31		
0.91	3.0	30.54	0.06	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	10	0.151	0.151	0.06	0.54	1.70	49.1	1.70	1.00	49.1	17	10	47	32		
1.07	3.5	31.24	0.05	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	10	0.179	0.179	0.06	0.54	1.70	53.2	1.77	1.00	50.2	18	10	48	33		
1.22	4.0	37.13	0.14	Sand to Silty Sand	SP/SM	medium dense	100	4.0	9	0.205	0.205	0.16	0.53	1.70	63.7	1.74	1.00	59.7	18	12	55	32		
1.37	4.5	22.34	1.70	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	9	0.231	0.231	1.78	0.73	1.70	35.8	2.41	2.37	85.1	15	17	34	32		
1.52	5.0	33.48	1.70	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	13	0.260	0.250	1.72	0.59	1.70	53.8	2.27	1.85	99.4	23	20	65	34		
1.68	5.5	65.48	1.43	Silty Sand to Sandy Silt	SM/ML	dense	110	3.0	22	0.286	0.286	1.48	0.61	1.70	105.8	2.00	1.35	139.3	36	28	80	38		
1.83	6.0	73.52	1.87	Silty Sand to Sandy Silt	SM/ML	dense	110	3.0	25	0.314	0.314	1.88	0.92	1.70	118.1	2.05	1.37	161.3	42	32	84	38		
1.98	6.5	55.78	2.11	Silty Sand to Sandy Silt	SM/ML	dense	110	3.0	20	0.341	0.341	2.12	0.95	1.70	84.4	2.15	1.56	146.8	32	29	74	37		
2.13	7.0	46.35	2.21	Sandy Silt to Clayey Silt	ML	dense	110	2.5	19	0.369	0.369	2.22	0.68	1.70	74.5	2.24	1.77	131.5	31	28	65	38		
2.29	7.5	51.66	2.18	Sandy Silt to Clayey Silt	ML	dense	110	2.5	21	0.396	0.396	2.15	0.67	1.70	83.0	2.20	1.67	138.5	33	28	69	37		
2.44	8.0	52.72	2.32	Sandy Silt to Clayey Silt	ML	dense	110	2.5	21	0.424	0.424	2.33	0.67	1.70	84.7	2.21	1.70	144.1	32	29	70	37		
2.59	8.5	36.80	2.09	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	15	0.451	0.451	3.03	0.73	1.70	59.1	2.40	2.33	137.7	22	28	55	34		
2.74	9.0	50.53	2.34	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	20	0.479	0.479	2.37	0.80	1.70	81.2	2.23	1.75	141.7	26	28	60	36		
2.90	9.5	34.35	3.17	Clayey Silt to Silty Clay	ML/CL	medium dense	110	2.0	17	0.506	0.506	3.22	0.74	1.70	55.2	2.44	2.50	138.3	24	28	32	34		
3.05	10.0	32.37	2.45	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	13	0.534	0.534	2.49	0.73	1.68	50.4	2.40	2.30	115.9	18	23	40	33		
3.20	10.5	32.64	2.34	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	13	0.561	0.561	2.38	0.72	1.69	48.9	2.39	2.28	111.4	17	22	47	32		
3.35	11.0	100.68	0.96	Sand to Silty Sand	SP/SM	dense	100	4.0	25	0.588	0.588	0.96	0.56	1.38	131.7	1.81	1.11	146.3	33	29	88	37		
3.51	11.5	132.95	1.06	Sand to Silty Sand	SP/SM	dense	100	4.0	33	0.613	0.613	1.07	0.56	1.37	171.9	1.90	1.19	204.0	43	41	99	39		
3.66	12.0	228.06	0.66	Sand	SP	very dense	100	5.0	46	0.638	0.638	0.68	0.50	1.29	277.7	1.55	1.00	277.7	57	50	100	42		
3.81	12.5	260.16	0.76	Sand	SP	very dense	100	5.0	52	0.663	0.663	0.78	0.50	1.26	310.7	1.48	1.00	310.7	64	62	100	43		
3.96	13.0	260.82	0.71	Sand	SP	very dense	100	5.0	54	0.688	0.688	0.72	0.50	1.24	318.1	1.45	1.00	318.1	65	63	100	43		
4.11	13.5	264.06	0.82	Sand	SP	very dense	100	5.0	53	0.713	0.713	0.82	0.50	1.22	305.2	1.49	1.00	305.2	63	61	100	43		
4.27	14.0	258.32	0.70	Sand	SP	very dense	100	5.0	52	0.738	0.738	0.70	0.50	1.20	292.4	1.46	1.00	292.4	60	58	100	42		
4.42	14.5	288.82	1.16	Sand	SP	very dense	100	5.0	57	0.763	0.763	1.17	0.50	1.18	319.5	1.61	1.00	319.5	66	64	100	43		
4.57	15.0	302.53	0.77	Gravelly Sand to Sand	SW	very dense	110	6.0	60	0.789	0.789	0.78	0.50	1.16	396.0	1.41	1.00	399.9	69	70	100	44		
4.72	15.5	502.15	0.48	Gravelly Sand to Sand	SW	very dense	110	6.0	84	0.815	0.816	0.46	0.50	1.14	540.4	1.15	1.00	540.4	93	108	100	47		

Earth Systems
Southern California

CPT No: CPT-5
Project Name: Commercial Organics Processing Facility
Project No.: VT-24872-02
Location: See Site Exploration Plan

CPT Vendor: Middle Earth
Truck Mounted Electric
Cone with 23-ton reaction
Date: 1/30/2017

DEPTH (FEET)	Interpreted Soil Stratigraphy Robertson & Campanella ('89)	Density/Consistency
	Sand to Silty Sand	dense
	Sand	dense
	Sand	very dense
	Sand to Silty Sand	very dense
	Sand	very dense
5	Sand	very dense
	Sand	very dense
10		
15		
20		
25		
30		
35		
40		
45		
50		



End of Sounding @ 7.9 feet

CONE PENETROMETER INTERPRETATION

(based on Robertson & Campanella, 1989)

Project: Commercial Organics Processing Facility Project No: VT-24072-02 Date: 01/30/17

CPT SOUNDING: CPT-5 Plot: 6 Density: 1 SPT N Program developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Est. GWT (feet): 24.0 Dr correlation: 0 Baldi Qc/N: 1 Robertson Phi Correlation: 4 SPT N

Base Depth meters	Base Depth feet	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	Qc to N	SPT N(60)	Total po tsf	p'o tsf	F	n	Cq	Norm. Qc1n	2.6 Ic	Kc	Clean Sand Qc1n	$N_{1(60)}$	Clean Sand $N_{1(60)}$	Rel. Dens. Dr (%)	Phi (deg.)	Nk: 17 Su (tsf)	OCR
0.15	0.5	83.12	0.84	Sand to Silty Sand	SP/SM	dense	100	4.0	22	0.013	0.013	0.84	0.54	1.70	141.8	1.78	1.09	154.5	37	31	81	38		
0.30	1.0	76.46	0.83	Sand to Silty Sand	SP/SM	dense	100	4.0	17	0.038	0.038	0.82	0.54	1.70	122.8	1.79	1.10	134.9	33	27	85	37		
0.46	1.5	65.73	0.35	Sand to Silty Sand	SP/SM	medium dense	100	4.0	16	0.063	0.063	0.35	0.50	1.70	105.9	1.63	1.00	106.6	28	21	78	38		
0.61	2.0	181.21	0.38	Sand	SP	very dense	100	5.0	36	0.088	0.088	0.38	0.50	1.70	301.2	1.30	1.00	301.2	62	50	100	43		
0.76	2.5	204.73	0.36	Sand	SP	very dense	100	5.0	41	0.113	0.113	0.36	0.53	1.70	328.0	1.21	1.00	328.0	70	68	100	44		
0.91	3.0	111.65	0.49	Sand	SP	dense	100	5.0	22	0.138	0.138	0.48	0.50	1.70	176.4	1.52	1.00	176.4	38	30	100	38		
1.07	3.5	84.60	2.08	Silty Sand to Sandy Silt	SM/ML	dense	110	3.0	28	0.164	0.164	2.08	0.62	1.70	136.4	2.04	1.36	184.4	46	37	93	40		
1.22	4.0	270.43	0.60	Sand	SP	very dense	100	5.0	56	0.190	0.190	0.60	0.50	1.70	440.0	1.47	1.00	440.0	95	80	100	47		
1.37	4.5	275.81	0.70	Sand	SP	very dense	100	5.0	55	0.215	0.215	0.79	0.50	1.70	443.3	1.39	1.00	443.3	94	88	100	47		
1.52	5.0	303.76	1.14	Sand	SP	very dense	100	5.0	61	0.240	0.240	1.15	0.50	1.70	488.1	1.50	1.00	488.1	103	88	100	48		
1.68	5.5	283.51	0.71	Sand	SP	very dense	100	5.0	57	0.265	0.265	0.71	0.50	1.70	455.5	1.34	1.00	455.5	98	91	100	47		
1.83	6.0	267.28	0.84	Sand	SP	very dense	100	5.0	53	0.290	0.290	0.84	0.50	1.70	428.5	1.33	1.00	428.5	91	86	100	47		
1.98	6.5	295.70	1.34	Sand	SP	very dense	100	5.0	59	0.315	0.315	1.34	0.60	1.70	471.0	1.57	1.00	471.9	100	94	100	47		
2.13	7.0	330.61	0.84	Sand	SP	very dense	100	5.0	65	0.340	0.340	0.84	0.50	1.70	531.1	1.37	1.00	531.1	112	106	100	48		
2.29	7.5	453.00	0.30	Gravelly Sand to Sand	SW	very dense	110	6.0	76	0.365	0.365	0.30	0.50	1.70	727.7	0.80	1.00	727.7	125	146	100	49		

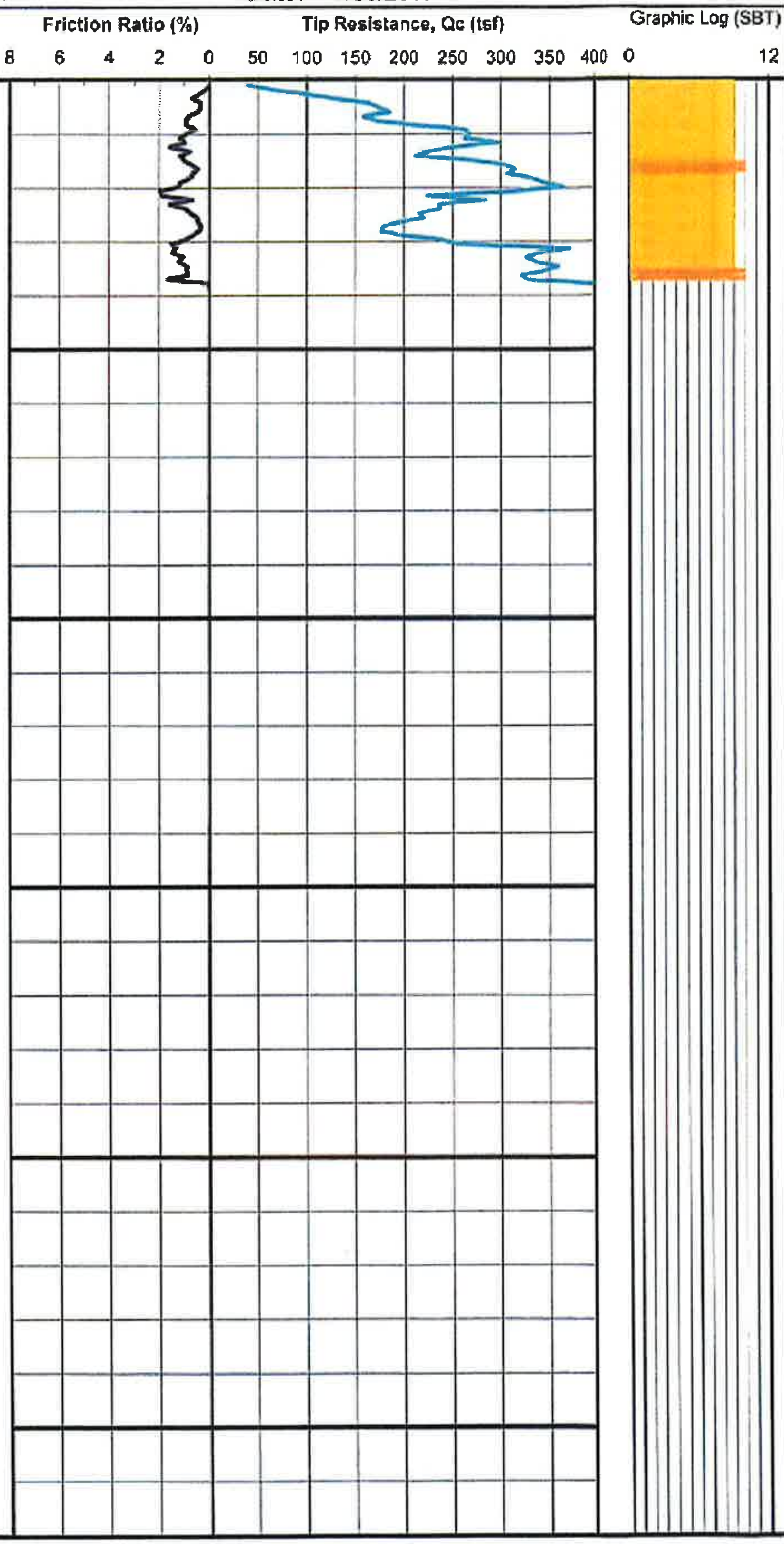
Earth Systems
Southern California

CPT No: CPT-5A
Project Name: Commercial Organics Processing Facility
Project No.: VT-24872-02
Location: See Site Exploration Plan

CPT Vendor: Middle Earth
Truck Mounted Electric
Cone with 23-ton reaction
Date: 1/30/2017

DEPTH (FEET)

Interpreted Soil Stratigraphy Robertson & Campanella ('89)	Density/Consistency
Sand	dense
Sand	very dense
Sand	very dense
Sand	very dense
Sand	very dense
Sand	very dense
Sand	very dense



Depth scale: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50

End of Sounding @ 7.9 feet

Earth Systems
Southern California

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989)

Project: **Commercial Organics Processing Facility** Project No: VT-24672-02 Date: 01/30/17

CPT SOUNDING: CPT-5A Plot 7 Density: 1 SPT N Program developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

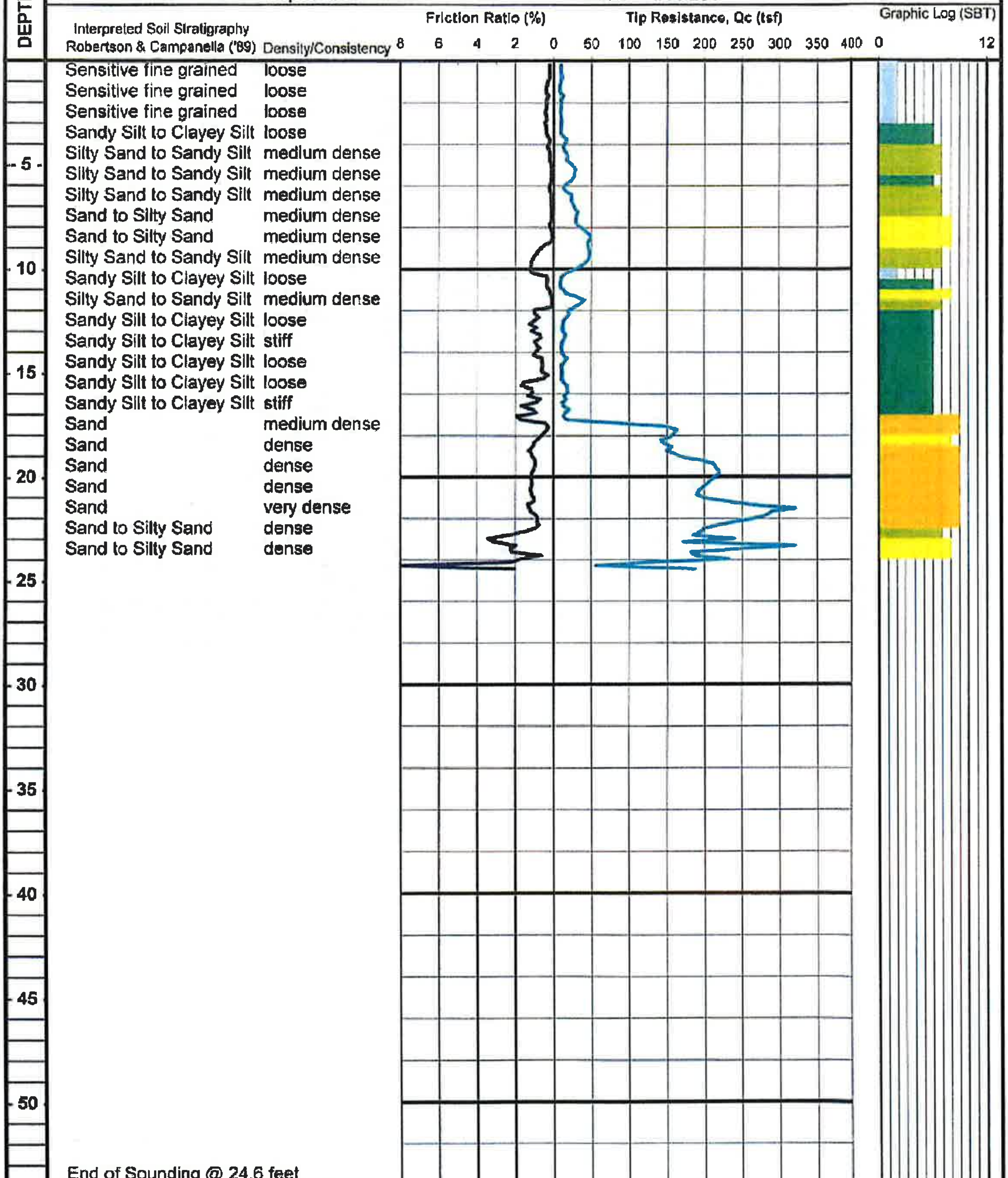
Est. GWT (feet): 24.0 Dr correlation: 0 Baldi Qc/N: 1 Robertson Phi Correlation: 4 SPT N

Base Depth meters	Base Depth feet	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	Qc to N	SPT N(60)	Total po tsf	p'o tsf	F	n	Cq	Norm. Qc1n	Ic	Kc	Clean Sand Qc1n	N1(60)	Clean Sand N1(60)cs	Rel. Dens. Dr (%)	Phi (deg.)	Nk 17 Su (tsf)	OCR
0.15	0.5	97.81	0.42	Sand	SP	dense	100	5.0	20	0.013	0.013	0.42	0.50	1.70	167.2	1.53	1.00	157.2	32	31	86	37		
0.30	1.0	173.38	0.38	Sand	SP	very dense	100	5.0	35	0.038	0.038	0.39	0.50	1.70	278.6	1.31	1.00	278.6	50	56	100	42		
0.46	1.5	178.19	0.90	Sand	SP	very dense	100	5.0	36	0.063	0.063	0.90	0.50	1.70	287.9	1.56	1.00	287.8	61	58	100	43		
0.61	2.0	263.29	0.80	Sand	SP	very dense	100	5.0	53	0.088	0.088	0.80	0.50	1.70	423.0	1.44	1.00	423.0	80	85	100	46		
0.76	2.5	257.38	1.11	Sand	SP	very dense	100	5.0	51	0.113	0.113	1.11	0.50	1.70	413.5	1.53	1.00	413.5	80	83	100	46		
0.91	3.0	201.13	0.98	Sand	SP	very dense	100	5.0	52	0.138	0.138	0.99	0.50	1.70	419.8	1.47	1.00	419.8	80	84	100	46		
1.07	3.5	317.07	0.84	Gravelly Sand to Sand	SW	very dense	110	6.0	53	0.164	0.164	0.84	0.50	1.70	509.6	1.20	1.00	509.6	90	102	100	46		
1.22	4.0	340.08	1.48	Sand	SP	very dense	100	5.0	68	0.189	0.189	1.48	0.50	1.70	546.4	1.57	1.00	546.4	116	109	100	49		
1.37	4.5	247.23	1.38	Sand	SP	very dense	100	5.0	49	0.215	0.215	1.30	0.50	1.70	397.2	1.62	1.00	397.2	84	79	100	46		
1.52	5.0	223.68	0.73	Sand	SP	very dense	100	5.0	45	0.240	0.240	0.73	0.50	1.70	359.4	1.42	1.00	359.4	76	72	100	45		
1.68	5.5	165.98	0.48	Sand	SP	very dense	100	5.0	37	0.265	0.265	0.48	0.50	1.70	288.9	1.39	1.00	288.9	62	60	100	43		
1.83	6.0	267.64	1.28	Sand	SP	very dense	100	5.0	58	0.290	0.290	1.28	0.50	1.70	482.2	1.56	1.00	482.2	90	92	100	47		
1.98	6.5	332.81	1.25	Sand	SP	very dense	100	5.0	67	0.315	0.315	1.25	0.50	1.70	534.8	1.51	1.00	534.8	113	107	100	48		
2.13	7.0	340.70	0.88	Sand	SP	very dense	100	5.0	68	0.340	0.340	0.89	0.50	1.70	547.5	1.38	1.00	547.5	116	110	100	49		
2.29	7.5	426.15	0.58	Gravelly Sand to Sand	SW	very dense	110	6.0	71	0.366	0.366	0.58	0.50	1.70	684.8	1.18	1.00	684.8	117	137	100	49		

Earth Systems
Southern California

CPT No: CPT-6 | **CPT Vendor:** **Middle Earth**
Project Name: Commercial Organics Processing Facility | Truck Mounted Electric
Project No.: VT-24872-02 | Cone with 23-ton reaction
Location: See Site Exploration Plan | **Date:** 1/30/2017

Interpreted Soil Stratigraphy Robertson & Campanella ('89)	Density/Consistency
Sensitive fine grained	loose
Sensitive fine grained	loose
Sensitive fine grained	loose
Sandy Silt to Clayey Silt	loose
Silty Sand to Sandy Silt	medium dense
Silty Sand to Sandy Silt	medium dense
Silty Sand to Sandy Silt	medium dense
Sand to Silty Sand	medium dense
Sand to Silty Sand	medium dense
Silty Sand to Sandy Silt	medium dense
Sandy Silt to Clayey Silt	loose
Silty Sand to Sandy Silt	medium dense
Sandy Silt to Clayey Silt	loose
Sandy Silt to Clayey Silt	stiff
Sandy Silt to Clayey Silt	loose
Sandy Silt to Clayey Silt	loose
Sandy Silt to Clayey Silt	stiff
Sand	medium dense
Sand	dense
Sand	dense
Sand	dense
Sand	very dense
Sand to Silty Sand	dense
Sand to Silty Sand	dense



End of Sounding @ 24.6 feet

Earth Systems
Southern California

CONE PENETROMETER INTERPRETATION

(based on Robertson & Campanella, 1989)

Project: Commercial Organics Processing Facility | Project No: VT-24872-02 | Date: 01/30/17

CPT SOUNDING: CPT-6 | Plot: 8 | Density: 1 | SPT N
Est. GWT (feet): 24.0 | Dr correlation: 0 | Baldi | Qc/N: 1 | Robertson

Program developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest
Phi Correlation: 1 SPT N
Nk: 17

Base Depth meters	Base Depth feet	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	Qc to N	SPT N(60)	Total po tsf	p'o tsf	F	n	Cq	Norm. Qc1n	2.6 Ic	Kc	Clean Sand Qc1n	$N_{1(60)}$	Clean Sand $N_{1(60)}$	Rel. Dens. Dr (%)	Phi (deg.)	Su (tsf)	OCR
0.15	0.5	9.61	0.33	Sensitive fine grained	ML	loose	110	2.0	5	0.014	0.014	0.33	0.71	1.70	15.4	2.35	1.00	15.4	8	3	-1	28		
0.30	1.0	8.88	0.36	Sensitive fine grained	ML	loose	110	2.0	4	0.041	0.041	0.30	0.75	1.70	14.3	2.42	1.00	14.3	6	3	-4	28		
0.46	1.5	8.14	0.37	Sensitive fine grained	ML	loose	110	2.0	5	0.069	0.069	0.37	0.74	1.70	14.7	2.43	1.00	14.7	8	3	-3	28		
0.61	2.0	8.51	0.37	Sensitive fine grained	ML	loose	110	2.0	5	0.096	0.096	0.37	0.73	1.70	15.3	2.42	1.00	15.3	8	3	-1	28		
0.76	2.5	8.70	0.41	Sensitive fine grained	ML	loose	110	2.0	4	0.124	0.124	0.41	0.75	1.70	14.0	2.47	1.00	14.0	7	3	-6	28		
0.91	3.0	8.74	0.41	Sensitive fine grained	ML	loose	110	2.0	5	0.151	0.151	0.41	0.74	1.70	15.6	2.42	1.00	15.6	8	3	0	28		
1.07	3.5	10.47	0.38	Sandy Silt to Clayey Silt	ML	loose	110	2.5	4	0.179	0.179	0.37	0.72	1.70	18.6	2.39	1.00	18.6	7	3	3	28		
1.22	4.0	14.88	0.25	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	6	0.206	0.206	0.25	0.66	1.70	25.9	2.10	1.00	25.9	10	5	17	30		
1.37	4.5	15.36	0.22	Silty Sand to Sandy Silt	SM/ML	loose	110	3.0	5	0.234	0.234	0.22	0.65	1.70	26.3	2.13	1.00	26.3	9	5	21	30		
1.52	5.0	22.29	0.16	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	7	0.261	0.261	0.16	0.60	1.70	35.6	1.98	1.00	35.6	12	7	34	31		
1.68	5.5	26.62	0.12	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	9	0.289	0.289	0.12	0.57	1.70	42.8	1.86	1.00	42.8	15	8	42	32		
1.83	6.0	14.57	0.21	Sandy Silt to Clayey Silt	ML	loose	110	2.5	6	0.316	0.316	0.22	0.66	1.70	23.4	2.17	1.00	23.4	10	5	17	30		
1.98	6.5	23.28	0.13	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	8	0.344	0.344	0.13	0.59	1.70	37.4	1.93	1.00	37.4	13	7	36	31		
2.13	7.0	28.54	0.11	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	10	0.371	0.371	0.11	0.56	1.70	45.9	1.83	1.00	45.9	16	8	44	32		
2.29	7.5	29.68	0.12	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	10	0.399	0.399	0.12	0.55	1.70	47.7	1.82	1.00	47.7	16	10	46	32		
2.44	8.0	37.63	0.16	Sand to Silty Sand	SP/SM	medium dense	100	4.0	9	0.425	0.425	0.16	0.54	1.63	58.0	1.76	1.00	58.0	14	12	54	31		
2.59	8.5	47.31	0.10	Sand to Silty Sand	SP/SM	medium dense	100	4.0	12	0.453	0.450	0.10	0.50	1.54	68.8	1.66	1.00	68.8	16	14	61	33		
2.74	9.0	46.04	0.69	Sand to Silty Sand	SP/SM	medium dense	100	4.0	12	0.475	0.475	0.69	0.58	1.61	69.8	1.94	1.23	86.0	17	17	62	32		
2.90	9.5	44.85	1.08	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	15	0.501	0.501	1.10	0.63	1.60	67.9	2.07	1.40	95.0	21	19	61	34		
3.05	10.0	28.91	1.19	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	9	0.529	0.529	1.21	0.69	1.61	41.1	2.27	1.85	76.0	12	15	40	31		
3.20	10.5	9.46	0.35	Sensitive fine grained	ML	loose	110	2.0	5	0.556	0.556	0.37	0.75	1.62	14.5	2.44	1.00	14.5	6	3	-3	28		
3.35	11.0	12.61	0.26	Sandy Silt to Clayey Silt	ML	loose	110	2.5	5	0.584	0.584	0.27	0.71	1.52	18.1	2.30	1.00	18.1	7	4	6	29		
3.51	11.5	33.80	0.08	Sand to Silty Sand	SP/SM	medium dense	100	4.0	8	0.610	0.610	0.09	0.58	1.39	46.0	1.81	1.00	46.0	11	9	45	30		
3.66	12.0	22.37	0.70	Silty Sand to Sandy Silt	SM/ML	loose	110	3.0	7	0.636	0.636	0.72	0.69	1.42	30.1	2.28	1.84	55.3	9	11	27	30		
3.81	12.5	13.82	1.01	Sandy Silt to Clayey Silt	ML	loose	110	2.5	6	0.664	0.664	1.06	0.77	1.43	18.7	2.63	2.91	54.4	7	11	7	29		
3.96	13.0	12.64	0.93	Sandy Silt to Clayey Silt	ML	loose	110	2.5	5	0.691	0.691	0.99	0.78	1.38	17.0	2.66	3.02	51.4	6	10	3	29		
4.11	13.5	11.66	0.85	Sandy Silt to Clayey Silt	ML	loose	110	2.5	5	0.719	0.719	0.90	0.79	1.35	15.2	2.57	3.17	48.1	6	10	-1	28		
4.27	14.0	10.84	0.90	Sandy Silt to Clayey Silt	ML	stiff	110	2.5	4	0.746	0.746	0.96	0.81	1.32	13.6	2.63			4				0.59	4.1
4.42	14.5	13.93	0.60	Sandy Silt to Clayey Silt	ML	loose	110	2.5	6	0.774	0.774	0.63	0.75	1.27	16.7	2.47	2.61	43.6	6	9	1	28		
4.57	15.0	10.95	0.50	Sandy Silt to Clayey Silt	ML	loose	110	2.5	4	0.801	0.801	0.54	0.76	1.24	12.9	2.55	3.01	38.7	5	8	-3	28		
4.72	15.5	13.58	1.28	Sandy Silt to Clayey Silt	ML	stiff	110	2.5	6	0.829	0.829	1.35	0.81	1.22	15.8	2.66			5				0.75	4.6
4.88	16.0	16.50	1.06	Sandy Silt to Clayey Silt	ML	loose	110	2.5	7	0.856	0.856	1.12	0.78	1.18	18.4	2.54	3.01	55.2	7	11	7	29		
5.03	16.5	14.77	1.24	Sandy Silt to Clayey Silt	ML	stiff	110	2.5	6	0.884	0.884	1.32	0.80	1.16	16.1	2.65			6				0.82	4.7
5.18	17.0	15.04	1.53	Sandy Silt to Clayey Silt	ML	stiff	110	2.5	6	0.911	0.911	1.62	0.82	1.13	16.1	2.88			6				0.83	4.7
5.33	17.5	133.03	0.35	Sand	SP	medium dense	100	5.0	27	0.938	0.938	0.36	0.50	1.08	133.6	1.55	1.00	133.6	27	27	83	35		
5.49	18.0	152.05	0.70	Sand	SP	dense	100	5.0	30	0.963	0.963	0.71	0.51	1.06	150.8	1.66	1.02	154.2	31	31	84	36		
5.64	18.5	151.05	1.15	Sand to Silty Sand	SP/SM	dense	100	4.0	38	0.988	0.988	1.15	0.58	1.04	148.3	1.83	1.13	168.8	38	33	90	36		
5.79	19.0	179.23	1.08	Sand	SP	dense	100	5.0	35	1.013	1.013	1.09	0.54	1.02	168.6	1.77	1.08	183.5	35	37	88	37		
5.94	19.5	215.10	1.00	Sand	SP	dense	100	5.0	43	1.038	1.038	1.01	0.51	1.01	205.4	1.66	1.03	211.1	42	42	100	38		
6.10	20.0	212.57	1.17	Sand	SP	dense	100	5.0	43	1.063	1.063	1.18	0.53	1.00	200.5	1.74	1.07	213.7	41	43	100	38		
6.25	20.5	198.81	1.19	Sand	SP	dense	100	5.0	39	1.088	1.088	1.19	0.54	0.99	193.1	1.77	1.08	198.9	38	40	100	38		
6.40	21.0	205.85	1.09	Sand	SP	dense	120	5.0	41	1.115	1.115	1.09	0.53	0.97	189.2	1.73	1.06	200.6	38	40	100	38		
6.55	21.5	289.86	1.26	Sand	SP	very dense	120	5.0	58	1.145	1.145	1.29	0.52	0.96	262.8	1.70	1.03	271.9	54	54	100	41		
6.71	22.0	263.33	0.90	Sand	SP	dense	120	5.0	53	1.176	1.176	0.91	0.50	0.95	238.2	1.61	1.00	238.2	49	47	100	40		
6.86	22.5	203.46	1.11	Sand	SP	dense	120	5.0	41	1.205	1.205	1.12	0.54	0.93	179.4	1.78	1.08	193.2	37	39	100	38		
7.01	23.0	198.34	2.96	Silty Sand to Sandy Silt	SM/ML	very dense	120	3.0	66	1.235	1.235	3.00	0.84	0.91	169.8	2.10	1.46	247.6	59	50	90	42		
7.16	23.5	240.73	2.14	Sand to Silty Sand	SP/SM	very dense	120	4.0	62	1.265	1.265	2.15	0.50	0.90	211.7	1.90	1.22	257.5	55	52	100	42		
7.32	24.0	180.82	1.54	Sand to Silty Sand	SP/SM	dense	120	4.0	45	1.295	1.295	1.55	0.58	0.89	151.9	1.91	1.20	182.2	40	36	84	38		

Earth Systems
Southern California

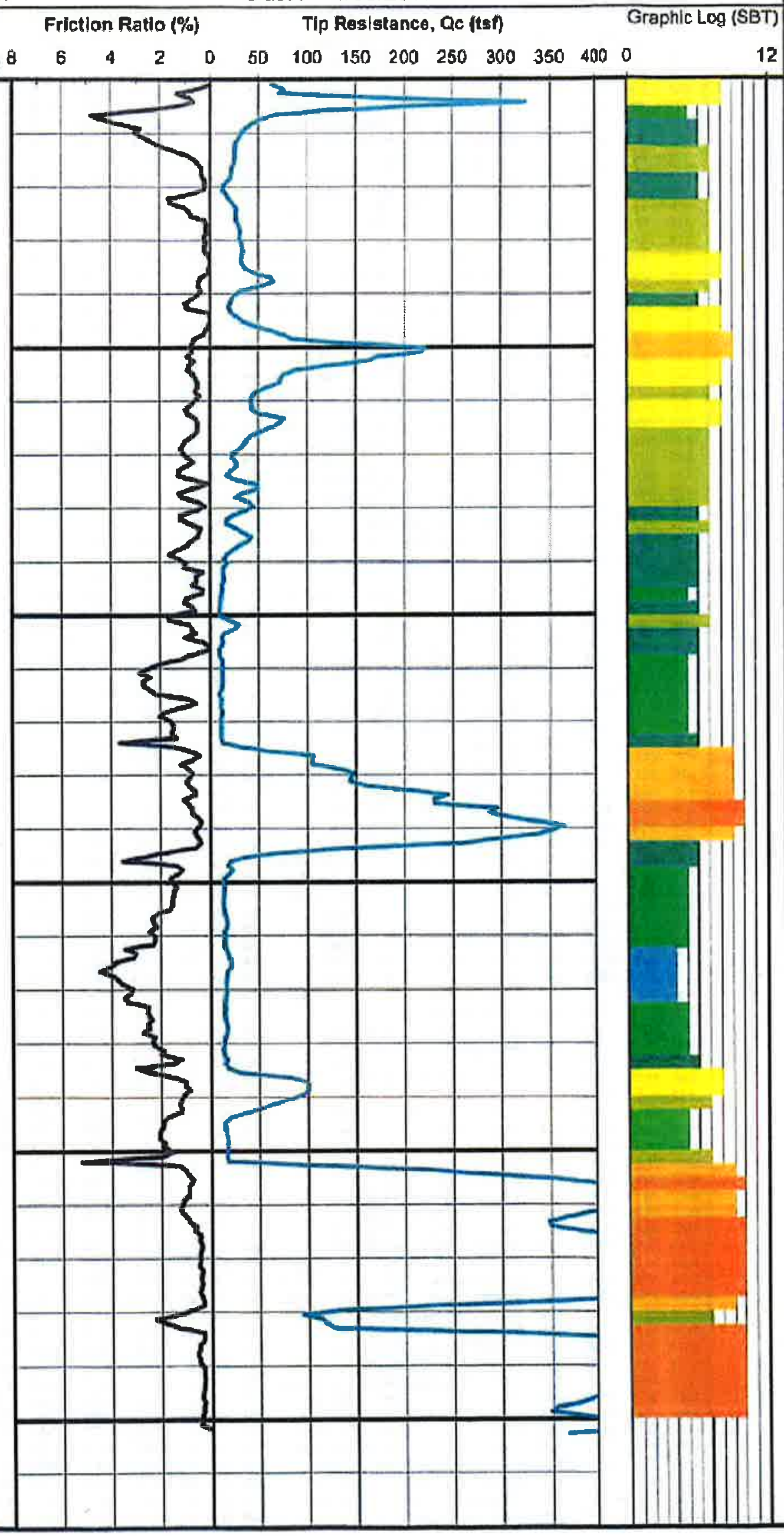
CPT No: CPT-7
Project Name: Commercial Organics Processing Facility
Project No.: VT-24872-02
Location: See Site Exploration Plan

CPT Vendor: **Middle Earth**
Truck Mounted Electric
Cone with 23-ton reaction
Date: 1/30/2017

DEPTH (FEET)

Interpreted Soil Stratigraphy Robertson & Campanella ('89)	Density/Consistency
Sand to Silty Sand	very dense
Clayey Silt to Silty Clay	dense
Sandy Silt to Clayey Silt	medium dense
Silty Sand to Sandy Silt	medium dense
Sandy Silt to Clayey Silt	medium dense
Silty Sand to Sandy Silt	medium dense
Sand to Silty Sand	medium dense
Sand to Silty Sand	medium dense
Silty Sand to Sandy Silt	medium dense
Sand	dense
Sand	dense
Sand to Silty Sand	medium dense
Sand to Silty Sand	medium dense
Silty Sand to Sandy Silt	medium dense
Silty Sand to Sandy Silt	medium dense
Silty Sand to Sandy Silt	medium dense
Silty Sand to Sandy Silt	medium dense
Sandy Silt to Clayey Silt	loose
Sandy Silt to Clayey Silt	loose
Sandy Silt to Clayey Silt	stiff
Sandy Silt to Clayey Silt	loose
Clayey Silt to Silty Clay	stiff
Clayey Silt to Silty Clay	stiff
Clayey Silt to Silty Clay	stiff
Sandy Silt to Clayey Silt	very stiff
Sand	medium dense
Sand	dense
Gravelly Sand to Sand	dense
Sand to Silty Sand	medium dense
Sandy Silt to Clayey Silt	stiff
Clayey Silt to Silty Clay	stiff
Clayey Silt to Silty Clay	stiff
Clayey Silt to Silty Clay	stiff
Silty Clay to Clay	stiff
Clayey Silt to Silty Clay	stiff
Clayey Silt to Silty Clay	stiff
Sandy Silt to Clayey Silt	very stiff
Sand to Silty Sand	medium dense
Sandy Silt to Clayey Silt	very stiff
Clayey Silt to Silty Clay	stiff
Sand to Silty Sand	dense
Sand	very dense
Gravelly Sand to Sand	dense
Gravelly Sand to Sand	very dense
Gravelly Sand to Sand	very dense
Gravelly Sand to Sand	dense
Sand	dense
Gravelly Sand to Sand	very dense
Gravelly Sand to Sand	dense
Gravelly Sand to Sand	dense

End of Sounding @ 50.7 feet



Earth Systems
Southern California

CONE PENETROMETER INTERPRETATION

(based on Robertson & Campanella, 1989)

Project: Commercial Organics Processing Facility — Project No: VT-24872-02 — Date: 01/30/17

CPT SOUNDING: CPT-7 — Plot: 9 — Density: 1 — SPT N — Program developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Est. GWT (feet): 24.0 — Dr correlation: 0 — Baldi — Qc/N: 1 — Robertson — Phi Correlation: 1 — SPT N

Base Depth meters	Base Depth feet	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	Qc to N	SPT N	SPT N1(60)	Total po tsf	p'o tsf	F	n	Cq	Norm. Qc1n	Ic	Kc	Clean Sand Qc1n	N1(60)	Clean Sand N1(60)cs	Rel Dens Dr (%)	Phi (deg.)	Nk: 17 Su (tsf)	OCR
0.15	0.5	158.15	0.92	Sand to Silty Sand	SP/SM	dense	100	4.0	27	0.013	0.013		0.92	0.52	1.70	170.0	1.71	1.05	178.4	45	36	83	40		
0.30	1.0	212.18	1.75	Sand to Silty Sand	SP/SM	very dense	100	4.0	53	0.038	0.038		1.75	0.53	1.70	340.9	1.74	1.06	362.3	90	72	100	45		
0.46	1.5	52.03	4.25	Clayey Silt to Silty Clay	ML/CL	dense	110	2.0	26	0.064	0.064		4.27	0.73	1.70	84.6	2.41	2.35	199.0	45	40	70	40		
0.61	2.0	32.05	2.89	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	13	0.091	0.091		2.90	0.74	1.70	52.5	2.43	2.43	127.4	22	25	53	34		
0.76	2.5	25.83	1.99	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	10	0.119	0.119		1.99	0.75	1.70	41.2	2.40	2.30	94.9	17	19	45	32		
0.91	3.0	24.15	0.73	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	8	0.146	0.146		0.73	0.66	1.70	38.8	2.17	1.60	62.1	14	12	35	31		
1.07	3.5	21.69	0.34	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	7	0.174	0.174		0.35	0.63	1.70	34.6	2.07	1.00	34.6	12	7	33	31		
1.22	4.0	14.22	0.25	Sandy Silt to Clayey Silt	ML	loose	110	2.5	6	0.201	0.201		0.25	0.67	1.70	22.9	2.20	1.00	22.9	10	5	16	30		
1.37	4.5	19.14	1.39	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	8	0.229	0.229		1.40	0.75	1.70	30.8	2.41	2.34	72.1	13	14	28	31		
1.52	5.0	26.32	0.91	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	9	0.256	0.256		0.92	0.67	1.70	42.3	2.19	1.65	69.8	15	14	41	32		
1.68	5.5	26.02	0.18	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	10	0.284	0.284		0.18	0.57	1.70	40.8	1.87	1.00	40.8	14	9	45	32		
1.83	6.0	31.59	0.24	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	11	0.311	0.311		0.24	0.57	1.70	50.7	1.88	1.00	50.7	16	10	49	33		
1.98	6.5	32.05	0.11	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	11	0.339	0.339		0.11	0.54	1.70	52.0	1.77	1.00	52.0	16	11	50	33		
2.13	7.0	38.07	0.09	Sand to Silty Sand	SP/SM	medium dense	100	4.0	10	0.365	0.365		0.09	0.51	1.70	62.1	1.68	1.00	62.1	15	12	57	32		
2.29	7.5	59.13	0.49	Sand to Silty Sand	SP/SM	medium dense	100	4.0	15	0.390	0.390		0.49	0.53	1.70	94.7	1.73	1.00	94.7	24	19	75	34		
2.44	8.0	26.02	0.57	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	9	0.416	0.416		0.58	0.64	1.70	41.7	2.10	1.45	60.4	13	12	40	31		
2.59	8.5	19.89	0.71	Sandy Silt to Clayey Silt	ML	medium dense	110	2.5	8	0.444	0.444		0.72	0.66	1.70	31.8	2.25	1.79	56.5	12	11	29	31		
2.74	9.0	35.89	0.03	Sand to Silty Sand	SP/SM	medium dense	100	4.0	9	0.470	0.470		0.03	0.54	1.65	52.4	1.77	1.00	52.4	13	10	53	31		
2.90	9.5	73.04	0.38	Sand to Silty Sand	SP/SM	medium dense	100	4.0	18	0.498	0.498		0.38	0.51	1.47	102.4	1.60	1.00	102.4	26	20	78	35		
3.05	10.0	162.02	0.78	Sand	SP	very dense	100	5.0	36	0.520	0.520		0.78	0.50	1.43	250.0	1.53	1.00	250.0	51	52	100	41		
3.20	10.5	151.13	0.82	Sand	SP	dense	100	5.0	30	0.545	0.545		0.82	0.50	1.39	199.0	1.63	1.00	199.0	41	40	100	39		
3.35	11.0	76.42	0.75	Sand to Silty Sand	SP/SM	medium dense	100	4.0	20	0.570	0.570		0.75	0.50	1.41	104.5	1.62	1.12	117.1	28	23	78	35		
3.51	11.5	58.12	0.57	Sand to Silty Sand	SP/SM	medium dense	100	4.0	16	0.595	0.595		0.58	0.57	1.30	78.3	1.67	1.16	88.4	19	18	68	33		
3.66	12.0	42.78	0.62	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	14	0.621	0.621		0.63	0.61	1.38	60.0	2.00	1.30	72.9	18	15	53	33		
3.81	12.5	58.43	0.65	Sand to Silty Sand	SP/SM	medium dense	100	4.0	14	0.646	0.648		0.56	0.61	1.36	71.9	1.86	1.28	91.9	18	18	63	32		
3.96	13.0	62.41	0.64	Sand to Silty Sand	SP/SM	medium dense	100	4.0	16	0.673	0.673		0.64	0.57	1.29	78.2	1.85	1.15	87.6	19	17	69	33		
4.11	13.5	38.03	0.93	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	15	0.699	0.699		0.95	0.66	1.31	47.2	2.16	1.57	74.3	15	15	45	32		
4.27	14.0	24.95	1.07	Silty Sand to Sandy Silt	SM/ML	loose	110	3.0	8	0.726	0.726		1.10	0.72	1.31	30.9	2.36	2.11	65.2	10	13	28	30		
4.42	14.5	24.63	1.02	Silty Sand to Sandy Silt	SM/ML	loose	110	3.0	8	0.754	0.754		1.05	0.72	1.27	29.9	2.36	2.12	63.3	10	13	27	30		
4.57	15.0	28.48	0.73	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	10	0.781	0.781		0.72	0.66	1.23	34.2	2.22	1.71	58.4	11	12	32	30		
4.72	15.5	30.33	1.04	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	12	0.809	0.809		1.07	0.68	1.20	41.2	2.24	1.76	72.6	13	15	40	31		
4.88	16.0	36.77	0.64	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	12	0.836	0.836		0.65	0.65	1.17	39.4	2.14	1.54	60.5	13	12	38	31		
5.03	16.5	18.43	0.83	Sandy Silt to Clayey Silt	ML	loose	110	2.5	8	0.864	0.864		0.86	0.74	1.16	21.3	2.43	2.46	52.3	8	10	13	29		
5.18	17.0	37.65	0.63	Silty Sand to Sandy Silt	SM/ML	medium dense	110	3.0	13	0.891	0.891		0.62	0.65	1.12	40.0	2.12	1.50	59.9	13	12	39	31		
5.33	17.5	22.71	1.33	Sandy Silt to Clayey Silt	ML	loose	110	2.5	9	0.919	0.919		1.39	0.76	1.11	23.9	2.50	2.75	65.7	9	13	17	30		
5.49	18.0	14.36	1.13	Sandy Silt to Clayey Silt	ML	stiff	110	2.5	6	0.946	0.946		1.20	0.81	1.09	14.9	2.64			6				0.79	4.3
5.64	18.5	13.01	0.49	Sandy Silt to Clayey Silt	ML	loose	110	2.5	5	0.974	0.974		0.53	0.78	1.07	13.1	2.54	2.95	38.7	5	8	-1	28		
5.79	19.0	10.65	0.49	Sandy Silt to Clayey Silt	ML	stiff	110	2.6	4	1.001	1.001		0.50	0.80	1.05	10.6	2.80			4				0.59	3.0
5.94	19.5	9.84	0.93	Clayey Silt to Silty Clay	ML/CL	stiff	110	2.0	5	1.029	1.029		1.04	0.86	1.02	9.8	2.78			5				0.62	2.6
6.10	20.0	12.66	1.35	Sandy Silt to Clayey Silt	ML	stiff	110	2.5	5	1.058	1.056		1.47	0.84	1.00	12.3	2.76			5				0.70	3.4
6.25	20.5	23.17	0.75	Silty Sand to Sandy Silt	SM/ML	loose	110	3.0	8	1.084	1.084		0.78	0.74	0.96	21.5	2.41	2.35	50.6	7	10	13	29		
6.40	21.0	11.39	0.49	Sandy Silt to Clayey Silt	ML	stiff	120	2.5	5	1.113	1.113		0.51	0.81	0.96	10.3	2.83			5				0.60	2.6
6.55	21.5	9.93	0.72	Sandy Silt to Clayey Silt	ML	stiff	120	2.5	4	1.143	1.143		0.81	0.85	0.94	8.6	2.77			4				0.51	2.3
6.71	22.0	11.65	2.49	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.0	6	1.173	1.173		2.77	0.91	0.91	10.0	2.99			6				0.62	2.7
6.86	22.5	11.81	2.64	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.0	6	1.200	1.203		2.94	0.92	0.89	9.9	2.99			6				0.63	2.6
7.01	23.0	10.14	1.65	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.0	5	1.233	1.233		2.11	0.92	0.87	8.3	2.98			5				0.52	2.2
7.16	23.5	10.67	1.10	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.0	5	1.263	1.263		1.35	0.88	0.86	8.6	2.87			5				0.55	2.2
7.32	24.0	10.30	1.74	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.0	5	1.293	1.293		1.99	0.92	0.83	8.1	2.98			5				0.53	2.1
7.47	24.5	10.45	1.50	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.0	5	1.323	1.307		1.72	0.91	0.83	8.2	2.94			6				0.54	2.1
7.62	25.0	34.89	1.86	Sandy Silt to Clayey Silt	ML	medium dense	120	2.5	14	1.353	1.321		2.06	0.78	0.84	27.6	2.54	3.00	82.8	12	17	33	31		
7.77	25.5	104.78	0.78	Sand	SP	medium dense	120	5.0	21	1.383	1.335		0.80	0.58	0.87	88.5	1.90	1.18	102.8	18	21	71	33		
7.92	26.0	140.99	0.85	Sand	SP	medium dense	120	5.0	28	1.413	1.350		0.85	0.55	0.87	116.4	1.82	1.12	130.2	24	26	83	34		
8.08	26.5	189.39	0.78	Sand	SP	dense	120	5.0	38	1.443	1.365		0.79	0.52	0.88	155.9	1.69	1.03	162.3	32	32	98	37		
8.23	27.0	252.23	0.92	Sand	SP	dense	120	5.0	50	1.473	1.379		0.93	0.50	0.87	208.6	1.65	1.01	209.7	43	42	100	39		
8.38	27.5	306.52	0.58	Gravelly Sand to Sand	SW	dense	120	6.0	51	1.503	1.393		0.59	0.50	0.87	254.1	1.46	1.00	254.1	44	51	100	39		
8.53	28.0	351.12	0.58	Gravelly Sand to Sand	SW	dense	120	6.0	59	1.533	1.400		0.57	0.50	0.87	287.7	1.40	1.00	287.7	49	59	100	40		
8.69	28.5	235.44	0.49	Sand	SP	dense	120	5.0	47	1.563	1.422		0.49	0.50	0.86	191.9	1.50	1.00	191.9	39	38	100	38		
8.84	29.0	47.32	2.63	Sandy Silt to Clayey Silt	ML	medium dense	120	2.5	19	1.593	1.437		2.72	0.77	0.79	35.5	2.54	2.88	104.6	16	21	34	32		
8.99	29.5	19.43	1.31	Sandy Silt to Clayey Silt	ML	very stiff	120	2.5	8	1.623	1.451		1.41	0.83	0.77	14.2	2.70			8				1.08	3.7
9.14	30.0	13.62	1.64	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.0	7	1.653	1.465		1.75	0.89	0.75	9.8	2.89			7				0.71	2.4
9.30	30.5	12.67	1.53	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.0	6	1.683	1.480		1.78	0.90	0.74	9.0	2.91			6				0.67	2.3
9.45	31.0	13.53	1.79	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.0	7	1.713	1.494		2.05	0.90	0.73	9.4	2.93			7				0.71	2.4
9.60	31.5	15.69	2.26	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.0	8	1.743	1.500		2.54	0.90	0.73	11.0	2.92			8				0.85	2.8
9.75	32.0	14.23	2.35	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.0	7	1.773	1.523		2.09	0.92	0.72	9.6	2.90			7				0.75	2.5
9.91	32.5	15.28	2.06	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.0	8	1.803	1.537		3.35	0.92	0.71	10.3	3.01			8				0.81	2.6
10.06	33.0	19.09	3.60	Silty Clay to Clay	CL	very stiff	120	1.5	13	1.833	1.552		4.09	0.91	0.71	13.3	2.97			13				1.00	3.5
10.21	33.5	16.19	4.07	Silty Clay to Clay	CL	stiff	120	1.5	11	1.863	1.566		4.80	0.94	0.69	10.6	3.09			11				0.88	2.7
10.36	34.0	15.45	3.35	Silty Clay to Clay	CL	stiff	120	1.5	10	1.893	1.581		3.82	0.94	0.69	10.0	3.06			10				0.82	2.6
10.52	34.5	14.58	3.15	Silty Clay to Clay	CL	stiff	120	1.5	10	1.923	1.585		3.63	0.94	0.80	9.4	3.07			10				0.78	2.4
10.67	35.0	14.62	2.61	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.0	7	1.953	1.609		2.90	0.92	0.68	9.4	3.01			7				0.77	2.4
10.82	35.5	16.17	2.61	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.0	8	1.983	1.624		2.98	0.91	0.68	10.3	2.98			8				0.86	2.8
10.97	36.0	13.67	2.31	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.0	7	2.013	1.638		2.71	0.93	0.67	8.6	3.03			7				0.71	2.1
11.13	36.5	14.05	1.67	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.0	7	2.043	1.653		1.95	0.90	0.67	8.9	2.94			7				0.73	2.3
11.28	37.0	41.44	2.35	Sandy Silt to Clayey Silt	ML	medium dense	120	2.5	17	2.073	1.667		2.47	0.78	0.70	27.3	2.60	3.30	90.2	13	18	23	31		
11.43	37.5	99.81	0.98	Sand to Silty Sand	SP/SM	medium dense	120	4.0	25	2.103	1.681		1.00	0.62	0.75	70.8	2.03	1.34	94.7	19	19	60	33		
11.58	38.0	80.28	1.19	Sand to Silty Sand	SP/SM	medium dense	120	4.0	20	2.133	1.696		1.22	0.68	0.73	55.6	2.18	1.58	88.0	15	18	52	32		
11.73	38.5	37.07	1.40	Silty Sand to Sandy Silt	SM/ML	loose	120	3.0	12	2.163	1.710		1.49	0.77	0.69	24.3	2.51	2.81	68.1	9	14	16	30		
11.89	39.0	14.78	1.99	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.0	7	2.193	1.725		2.33	0.92	0.64	8.9	2.98			7				0.77	2.2
12.04	39.5	16.20	2.02	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.0	8	2.223	1.739		2.33	0.90	0.64	9.8	2.94			8				0.86	2.4
12.19	40.0	15.98	1.81	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.0	8	2.253	1.753		2.11	0.90	0.63	9.6	2.93			8				0.84	2.4
12.34	40.5	115.61	2.54	Silty Sand to Sandy Silt	SM/ML	medium dense	120	3.3	35	2.283	1.766		2.59	0.66	0.70	78.8	2.20	1.87	145.5	25	28	66	36		
12.50	41.0	342.10	0.85	Sand	SP	very dense	120	5.3	68	2.313	1.782		0.85	0.50	0.77	249.2	1.57	1.00	249.2	51	50	100	41		
12.65	41.5	455.14	0.91	Gravelly Sand to Sand	SW	very dense	120	6.3	76	2.343	1.797		0.92	0.50	0.77	330.1	1.52	1.00	330.1	57	66	100	42		
12.80	42.0	456.54	1.20	Sand	SP	very dense	120	5.3	91	2.373	1.811		1.20	0.50	0.76	329.8	1.61	1.00	329.8	68	66	100	44		
12.95	42.5	356.30	1.01	Sand	SP	very dense	120	5.3	71	2.403	1.825		1.02	0.50	0.78	263.7	1.61	1.00	263.7	54	53	100	41		
13.11	43.0	398.39	0.58	Gravelly Sand to Sand	SW	dense	120	6.3	67	2.433	1.840		0.59	0.50	0.76	286.3	1.41	1.00	286.3	49	57	100	40		
13.26	43.5	473.54	0.45	Gravelly Sand to Sand	SW	very dense	120	6.5	79	2.463	1.854		0.45	0.50	0.78	338.1	1.28	1.00	338.1	59	68	100	42		
13.41	44.0	496.25	0.47	Gravelly Sand to Sand	SW	very dense	120	6.0	83	2.493	1.869		0.43	0.50	0.76	353.0	1.28	1.00	353.0	61	71	100	42		
13.56	44.5	495.91	0.44	Gravelly Sand to Sand	SW	very dense	120	6.0	83	2.523	1.883		0.44	0.50	0.76	351.4	1.27	1.00	351.4	60	70	100	42		

Earth Systems
Southern California

CONE PENETROMETER INTERPRETATION

(based on Robertson & Campanella, 1989)

Project: Commercial Organics Processing Facility | Project No: VT-24872-02 | Date: 01/30/17

CPT SOUNDING: CPT-7 | Plot: 9 | Density: 1 | SPT N | Program developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Est. GWT (feet): 24.0 | Dr correlation: 0 | Baldi | Qc/N: 1 | Robertson | Phi Correlation: 1 | SPT N

Base Depth meters	Base Depth feet	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	Qc to N	SPT N(60)	Total σo tsf	σ'o tsf	F	n	Cq	Norm. Qc1n	2.6 Ic	Kc	Clean Sand Qc1n	$N_{1(60)}$	Clean Sand $N_{1(60)}$	Rel. Dens. Dr (%)	Phi (deg.)	Nk: 17 Su (tsf)	OCR
13.72	45.0	491.66	0.43	Gravelly Sand to Sand	SW	very dense	120	6.0	82	2.553	1.897	0.44	0.50	0.75	347.0	1.27	1.00	347.0	55	60	100	42		
13.87	45.5	424.20	0.41	Gravelly Sand to Sand	SW	very dense	120	6.0	71	2.583	1.912	0.41	0.50	0.74	298.3	1.30	1.00	298.3	51	60	100	41		
14.02	46.0	153.05	0.82	Sand	SP	medium dense	120	5.0	31	2.613	1.926	0.83	0.57	0.71	103.7	1.85	1.16	110.5	22	24	78	34		
14.17	46.5	119.69	1.80	Silty Sand to Sandy Silt	SM/ML	medium dense	120	3.0	40	2.643	1.941	1.84	0.66	0.67	76.0	2.18	1.61	121.8	26	24	85	30		
14.33	47.0	397.56	0.39	Gravelly Sand to Sand	SW	dense	120	6.0	66	2.673	1.955	0.39	0.50	0.74	270.5	1.31	1.00	270.5	47	56	100	40		
14.48	47.5	427.61	0.55	Gravelly Sand to Sand	SW	very dense	120	6.0	71	2.703	1.969	0.55	0.50	0.73	296.2	1.38	1.00	296.2	51	59	100	41		
14.63	48.0	420.67	0.38	Gravelly Sand to Sand	SW	dense	120	6.0	70	2.733	1.984	0.38	0.50	0.73	290.4	1.28	1.00	290.4	50	58	100	41		
14.78	48.5	413.05	0.31	Gravelly Sand to Sand	SW	dense	120	6.0	69	2.763	1.998	0.31	0.50	0.73	284.1	1.24	1.00	284.1	46	57	100	40		
14.94	49.0	406.72	0.38	Gravelly Sand to Sand	SW	dense	120	6.0	68	2.793	2.013	0.38	0.50	0.73	276.7	1.30	1.00	276.7	48	56	100	40		
15.09	49.5	362.49	0.34	Gravelly Sand to Sand	SW	dense	120	6.0	60	2.823	2.027	0.34	0.50	0.72	247.5	1.31	1.00	247.5	43	50	100	39		
15.24	50.0	431.60	0.44	Gravelly Sand to Sand	SW	very dense	120	6.0	72	2.853	2.041	0.44	0.50	0.72	293.6	1.33	1.00	293.6	50	59	100	41		

ATTACHMENT C

Individual Laboratory Test Results

Table 1809.7(1) with Footnotes

File Number: VT-24872-02 Lab Number: 097323

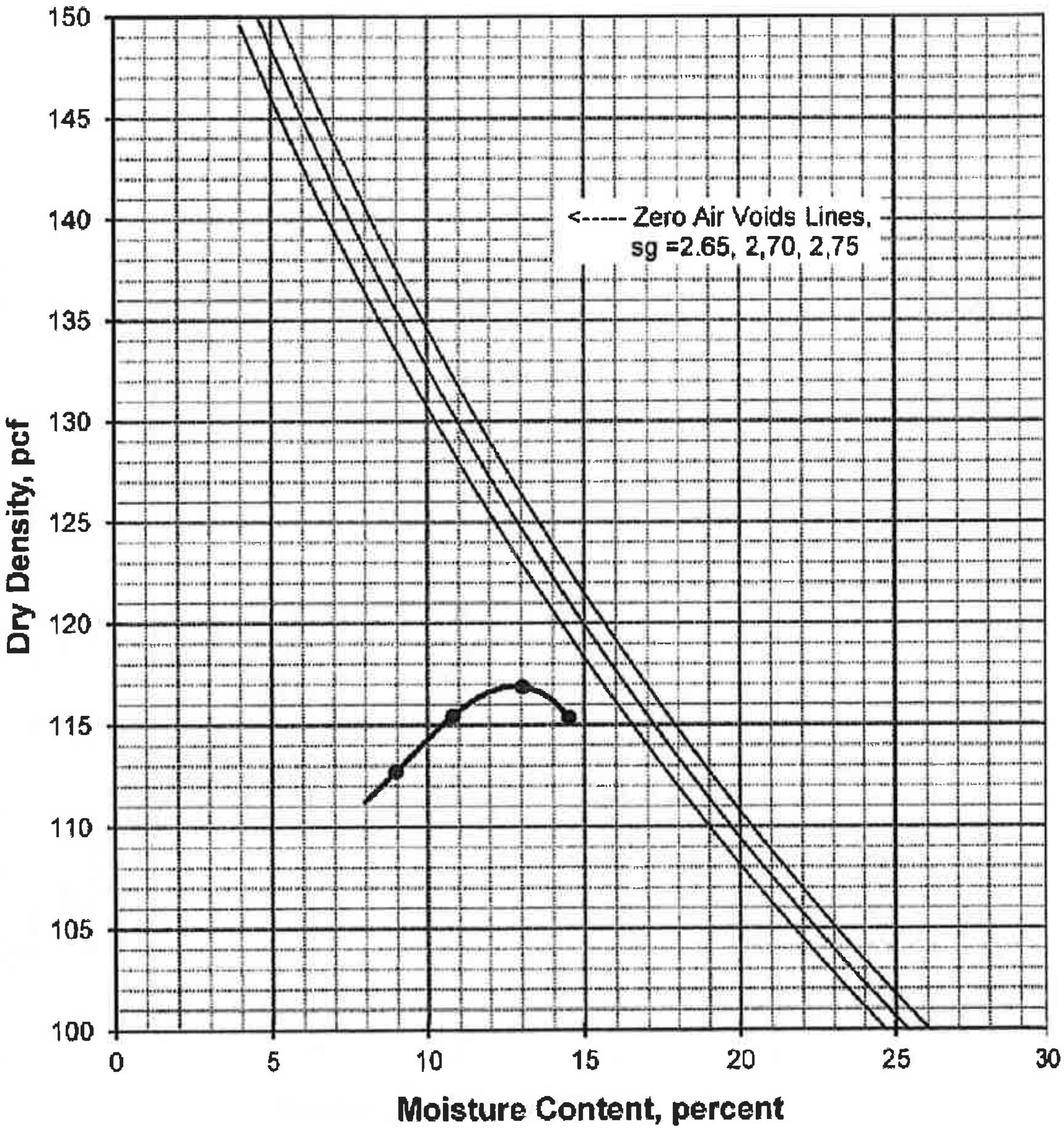
MAXIMUM DENSITY / OPTIMUM MOISTURE ASTM D 1557-07 (Modified)

Job Name: Commercial Organics Processing Facility
Sample ID: B-2 @ 0-5'
Location:
Description: Olive Brown Clayey Silt

Procedure Used: A
Prep. Method: Moist
Rammer Type: Automatic

Maximum Density: **117 pcf**
Optimum Moisture: **13%**

Sieve Size	% Retained
3/4"	0.0
3/8"	0.0
#4	0.0



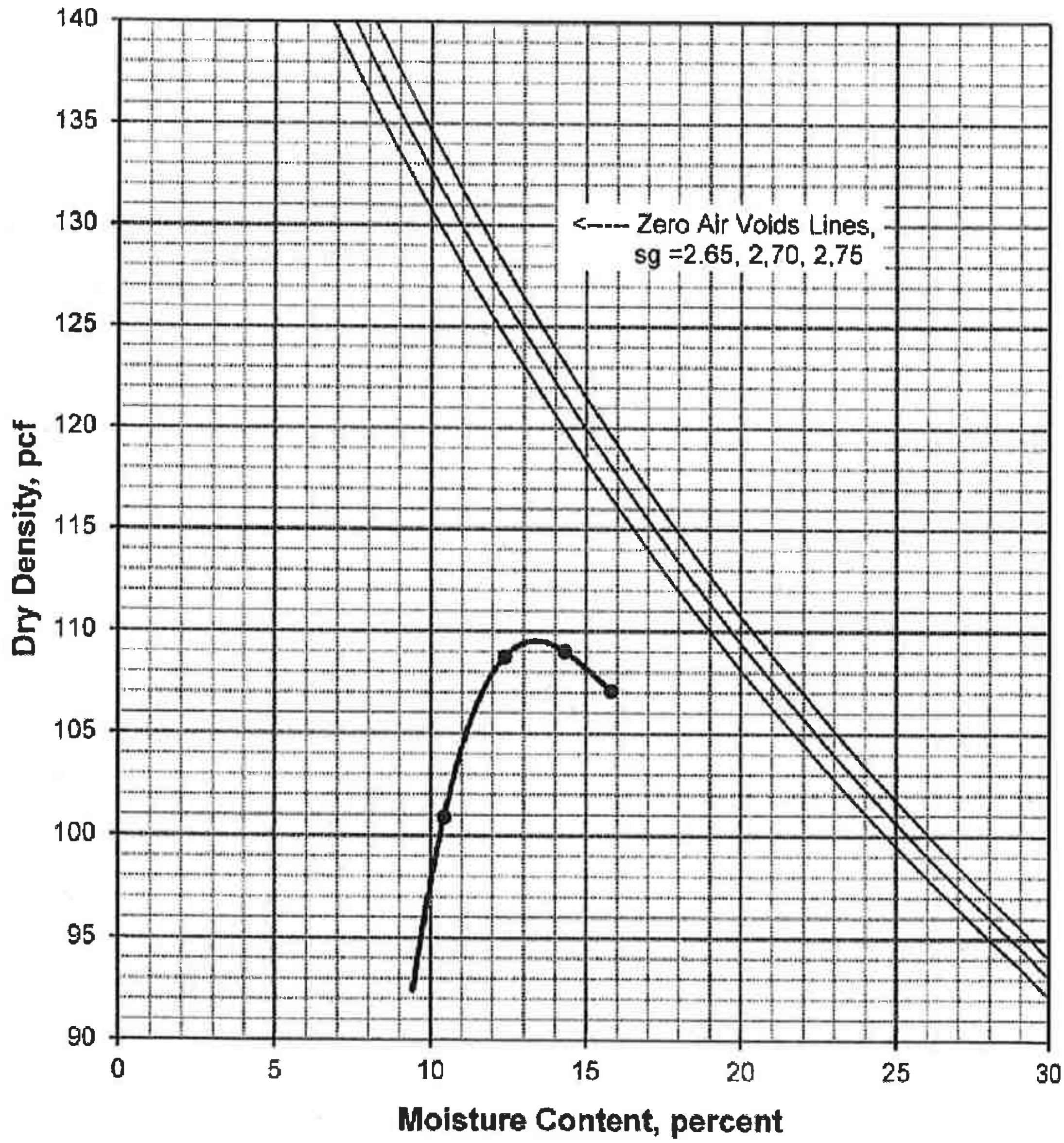
File Number: VT-24872-02 Lab Number: 097323

MAXIMUM DENSITY / OPTIMUM MOISTURE ASTM D 1557-07 (Modified)

Job Name:	Commercial Organics Processing Facility	Procedure Used: A
Sample ID:	TP-3 @ 0-5'	Prep. Method: Moist
Location:		Rammer Type: Automatic
Description:	Light Olive Brown Clayey Silt with 6% Cement	

Maximum Density:	**109.5 pcf**
Optimum Moisture:	**13.5%**

Sieve Size	% Retained
3/4"	0.0
3/8"	0.0
#4	0.0



File Number: VT-24872-02 Lab Number: 097323

MAXIMUM DENSITY / OPTIMUM MOISTURE

ASTM D 1557-07 (Modified)

Job Name: Commercial Organics Processing Facility

Sample ID: TP-5 @ 0-5'

Location:

Description: Light Olive Brown Clayey Silt with 6% Cement

Procedure Used: A

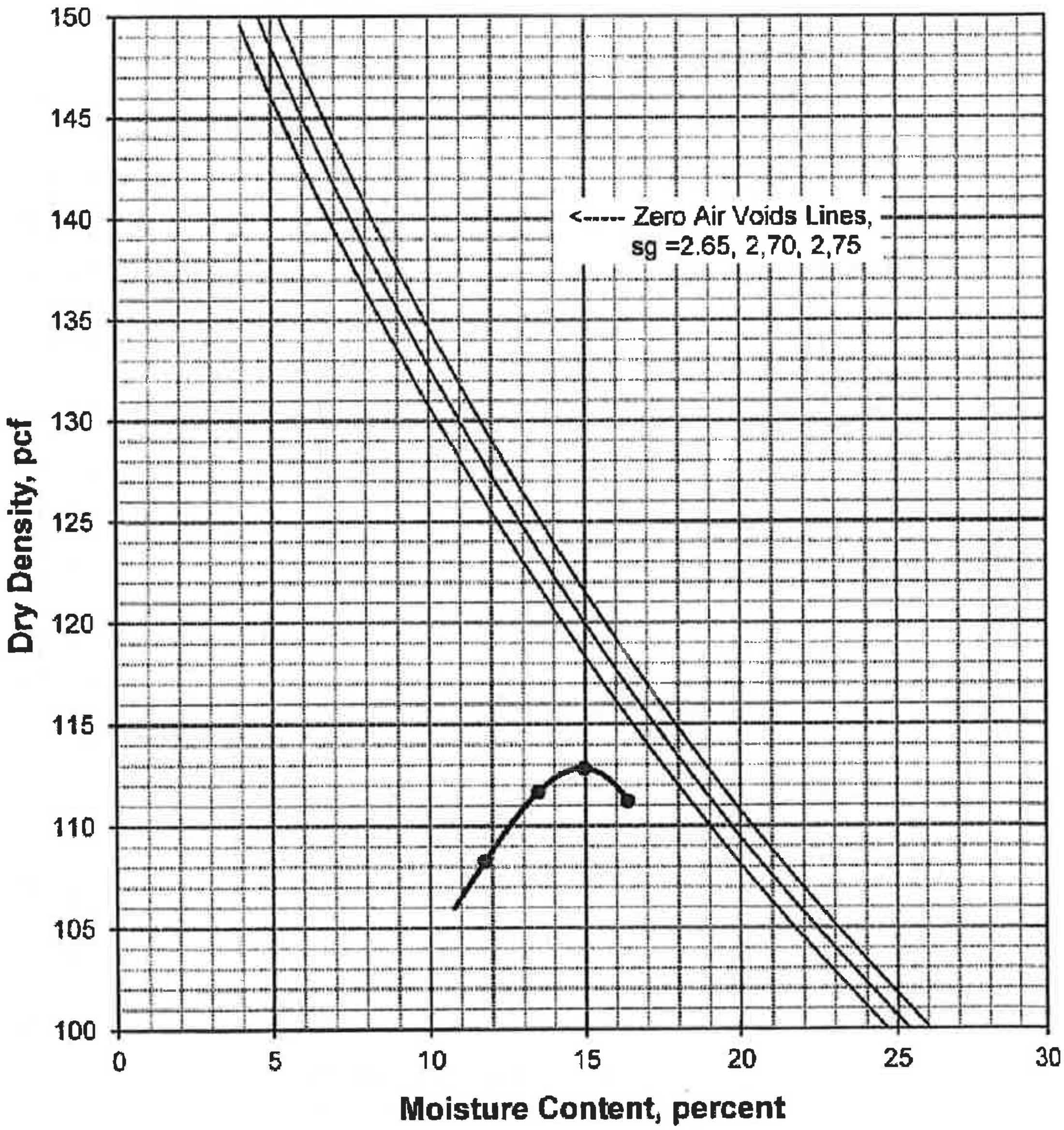
Prep. Method: Moist

Rammer Type: Automatic

Maximum Density: **113 pcf**

Optimum Moisture: **15%**

Sieve Size	% Retained
3/4"	0.0
3/8"	0.0
#4	0.0



VT-24872-02

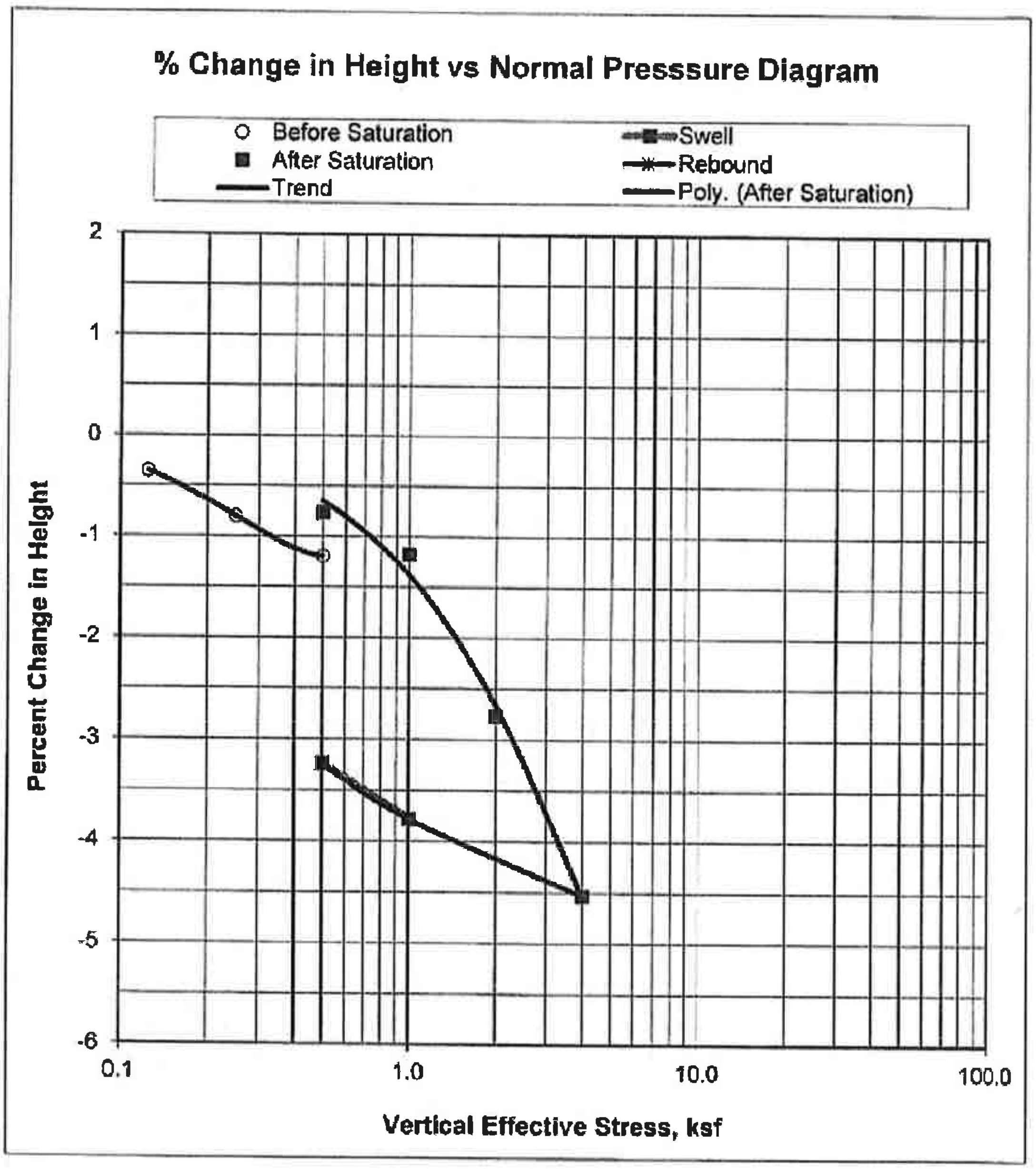
Mar 2, 2017

CONSOLIDATION TEST

ASTM D 2435-90

Commercial Organics Processing Facility
B-2 @ 10'
ML
Ring Sample

Initial Dry Density: 93.7 pcf
Initial Moisture, %: 28.8%
Specific Gravity: 2.67 (assumed
Initial Void Ratio: 0.779



EARTH SYSTEMS
SOUTHERN CALIFORNIA

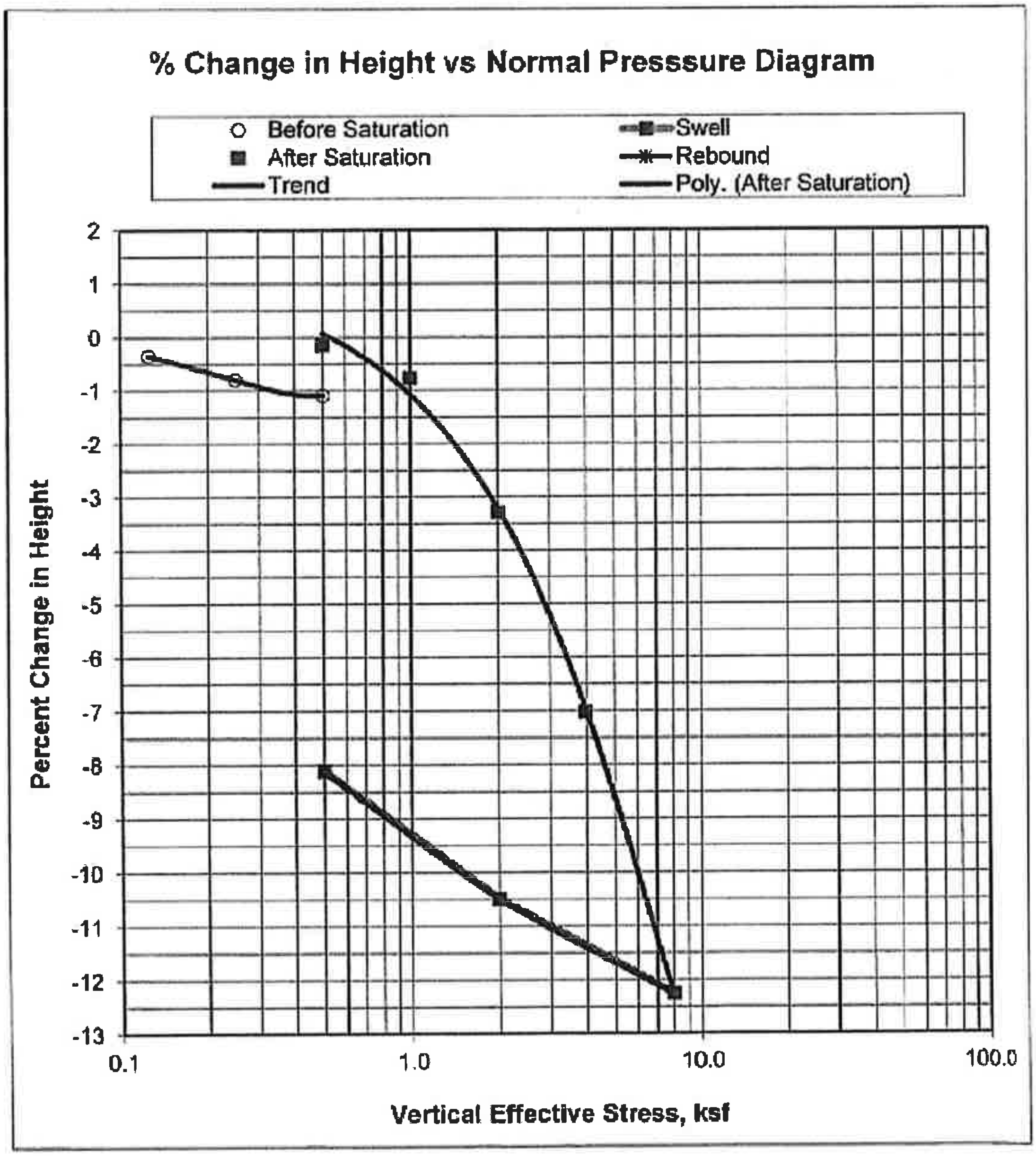
VT-24872-02 Mar 2, 2017

CONSOLIDATION TEST

ASTM D 2435-90

Commercial Organics Processing Facility
TP-3 @ 5'
ML
Ring Sample

Initial Dry Density: 79.0 pcf
Initial Moisture, %: 32.9%
Specific Gravity: 2.67 (assumed
Initial Void Ratio: 1.110



File No.: VT-24872-02 March 2, 2017

EXPANSION INDEX

ASTM D-4829, UBC 18-2

Job Name: Commercial Organics Processing Facility
Sample ID: B-2 @ 0-5'
Soil Description: ML

Initial Moisture, %:	11.0
Initial Compacted Dry Density, pcf:	105.4
Initial Saturation, %:	50
Final Moisture, %:	25.6
Volumetric Swell, %:	7.6

Expansion Index: 76 Medium

EI	UBC Classification
0-20	Very Low
21-50	Low
51-90	Medium
91-130	High
130+	Very High

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Environmental and Analytical Services-Since 1994
California State Accredited Laboratory in Accordance with ELAP Certificate # 2332

CERTIFICATE OF ANALYSIS

Client: Earth Systems Southern California
CAS LAB NO: 170377-01
Sample ID: B1@0-5'
Analyst: GP

Date Sampled: 02/15/17
Date Received: 02/16/17
Sample Matrix: Soil

WET CHEMISTRY ANALYSIS SUMMARY

COMPOUND	RESULTS	UNITS	DF	PQL	METHOD	ANALYZED
pH (Corrosivity)	7.7	S.U.	1	---	9045	02/20/17
Resistivity*	880	Ohms-cm	1	---	SM 120.1M	02/20/17
Chloride	270	mg/Kg	1	0.6	300.0M	02/21/17
Sulfate	890	mg/Kg	1	0.6	300.0M	02/21/17

*Sample was extracted using a 1:3 ratio of soil and DI water.
DF: Dilution Factor

DF: Dilution Factor
PQL: Practical Quantitation Limit
BQL: Below Quantitation Limit
mg/Kg: Milligrams/Kilograms (ppm)

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Environmental and Analytical Services-Since 1994
California State Accredited Laboratory in Accordance with ELAP Certificate # 2332

CERTIFICATE OF ANALYSIS

Client: Earth Systems Southern California
CAS LAB NO: 170377-02
Sample ID: B2@0-5'
Analyst: GP

Date Sampled: 02/15/17
Date Received: 02/16/17
Sample Matrix: Soil

WET CHEMISTRY ANALYSIS SUMMARY

COMPOUND	RESULTS	UNITS	DF	PQL	METHOD	ANALYZED
pH (Corrosivity)	8.1	S.U.	1	---	9045	02/20/17
Resistivity*	2400	Ohms-cm	1	---	SM 120.1M	02/20/17
Chloride	17	mg/Kg	1	0.6	300.0M	02/21/17
Sulfate	330	mg/Kg	1	0.6	300.0M	02/21/17

*Sample was extracted using a 1:3 ratio of soil and DI water.
DF: Dilution Factor

DF: Dilution Factor
PQL: Practical Quantitation Limit
BQL: Below Quantitation Limit
mg/Kg: Milligrams/Kilograms (ppm)

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Hydraulic Conductivity
ASTM D 5084
Method C: Falling Head Rising Tailwater

Job No:	780-008	**Boring:**	TP-5	**Date:**	04/06/17
Client:	Earth Systems	**Sample:**	12% Cement	**By:**	MD/PJ
Project:	VT-24872-02	**Depth, ft.:**		**Remolded:**	95% of 113 pcf @ 15%(OPT)+12% Cement

Visual Classification: Brown Clayey SAND (+12% Cement)

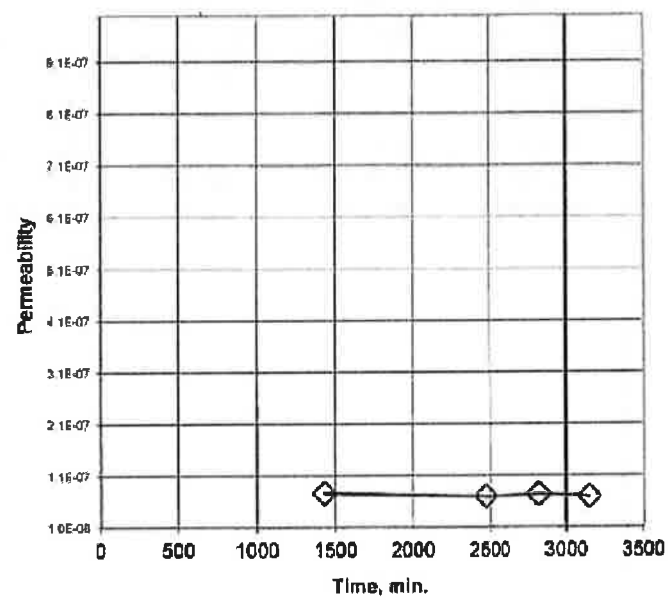
Max Sample Pressures, psi:

Cell:	Bottom	Top	Avg. Sigma3
84	79.5	78.5	5

B: = >0.95 ("B" is an indication of saturation)

Max Hydraulic Gradient: = 14

Date	Minutes	Head, (in)	K,cm/sec
4/1/2017	0.00	42.69	Start of Test
4/2/2017	1429.00	39.74	7.6E-08
4/3/2017	2468.00	38.04	6.9E-08
4/3/2017	2828.00	37.34	7.3E-08
4/3/2017	3147.00	36.94	6.9E-08



Average Hydraulic Conductivity: 7.E-08 cm/sec

Sample Data:	Initial (As-Received)		Final (At-Test)
Height, in	3.00		3.09
Diameter, in	2.38		2.39
Area, in2	4.43		4.47
Volume in3	13.29		13.78
Total Volume, cc	217.8		225.9
Volume Solids, cc	141.8		141.8
Volume Voids, cc	76.0		84.1
Void Ratio	0.5		0.6
Total Porosity, %	34.9		37.2
Air-Filled Porosity (θa),%	13.8		1.2
Water-Filled Porosity (θw),%	21.1		36.0
Saturation, %	60.4		96.7
Specific Gravity	2.70	Assumed	2.70
Wet Weight, gm	428.7		464.1
Dry Weight, gm	382.8		382.8
Tare, gm	0.00		0.00
Moisture, %	12.0		21.2
Wet Bulk Density, pcf	122.8		128.2
Dry Bulk Density, pcf	109.7		105.8
Wet Bulk Dens.pb, (g/cm^3)	1.97		2.05
Dry Bulk Dens.pb, (g/cm^3)	1.76		1.69

Remarks:

COOPER

Hydraulic Conductivity
ASTM D 5084
Method C: Falling Head Rising Tailwater

Job No:	780-008	**Boring:**	TP-5	**Date:**	04/06/17
Client:	Earth Systems	**Sample:**	+6% Cement	**By:**	MD/PJ
Project:	VT-24872-02	**Depth, ft.:**		**Remolded:**	95% of 113 pcf @ 15%(OPT)+6% Cement

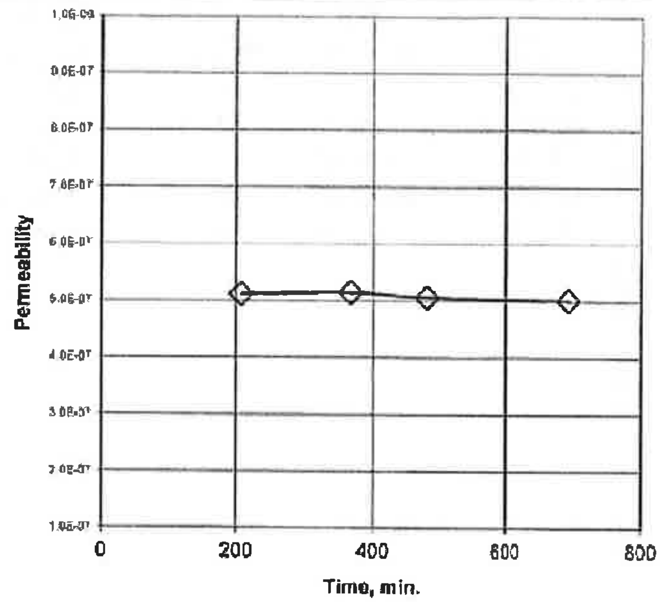
Visual Classification: Brown Clayey SAND (+6% Cement)

Max Sample Pressures, psi:			
Cell:	Bottom	Top	Avg. Sigma3
84	79.5	78.5	5

B: = >0.95 ("B" is an indication of saturation)

Max Hydraulic Gradient: = 9

Date	Minutes	Head, (in)	K,cm/sec
4/3/2017	0.00	28.69	Start of Test
4/3/2017	207.00	26.79	5.1E-07
4/3/2017	368.00	25.39	5.1E-07
4/3/2017	479.00	24.49	5.1E-07
4/3/2017	692.00	22.79	5.0E-07



Average Hydraulic Conductivity: 5.E-07 cm/sec

Sample Data:	Initial (As-Received)		Final (At-Test)
Height, in	3.00		3.09
Diameter, in	2.38		2.38
Area, in2	4.43		4.45
Volume in3	13.29		13.74
Total Volume, cc	217.8		225.1
Volume Solids, cc	140.1		140.1
Volume Voids, cc	77.6		85.0
Void Ratio	0.6		0.6
Total Porosity, %	35.7		37.7
Air-Filled Porosity (θa),%	12.7		1.1
Water-Filled Porosity (θw),%	23.0		36.6
Saturation, %	64.4		97.1
Specific Gravity	2.70	Assumed	2.70
Wet Weight, gm	428.4		460.9
Dry Weight, gm	378.4		378.4
Tare, gm	0.00		0.00
Moisture, %	13.2		21.8
Wet Bulk Density, pcf	122.7		127.8
Dry Bulk Density, pcf	108.4		104.9
Wet Bulk Dens.ρb, (g/cm^3)	1.97		2.05
Dry Bulk Dens.ρb, (g/cm^3)	1.74		1.68

Remarks:

COOPER

Hydraulic Conductivity

ASTM D 5084

Method C: Falling Head Rising Tailwater

Job No:	780-008	**Boring:**	TP-5	**Date:**	04/06/17
Client:	Earth Systems	**Sample:**	+9% Cement	**By:**	MD/PJ
Project:	VT-24872-02	**Depth, ft.:**		**Remolded:**	95% of 113 pcf @ 15%(OPT)+9% Cement

Visual Classification: Brown Clayey SAND (+9% Cement)

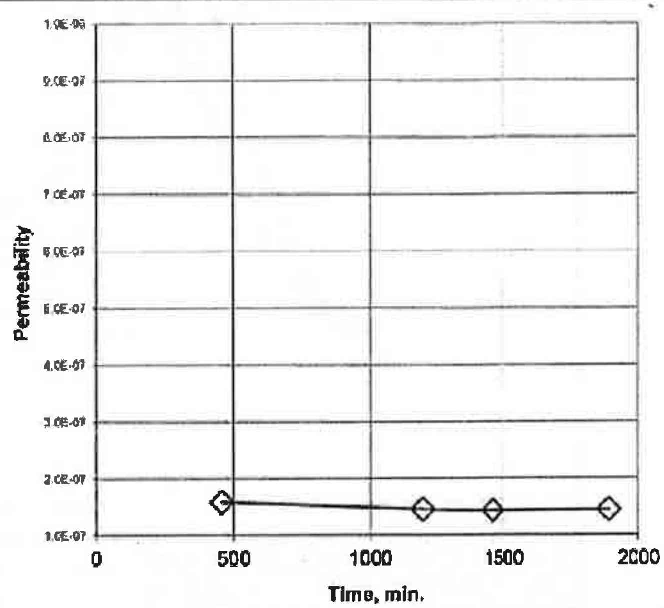
Max Sample Pressures, psi:

Cell:	Bottom	Top	Avg. Sigma3
84	79.5	78.5	5

B: = >0.95 ("B" is an indication of saturation)

Max Hydraulic Gradient: = 11

Date	Minutes	Head, (in)	K,cm/sec
3/29/2017	0.00	34.29	Start of Test
3/29/2017	458.00	32.69	1.6E-07
3/30/2017	1193.00	30.59	1.5E-07
3/30/2017	1458.00	29.89	1.4E-07
3/30/2017	1888.00	28.69	1.4E-07

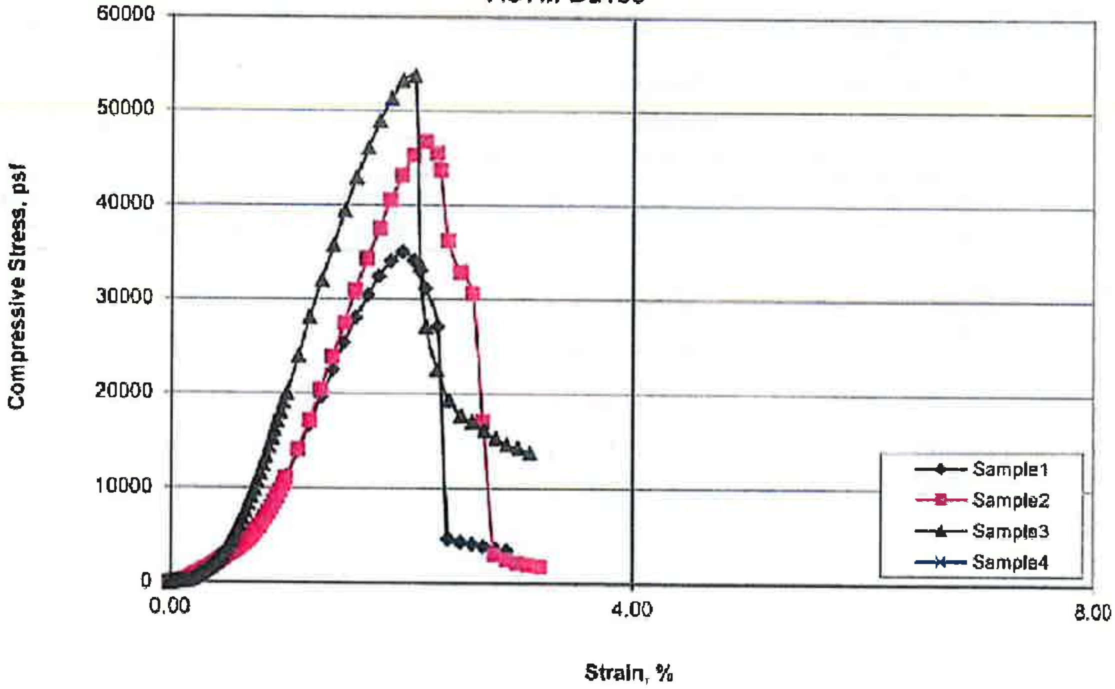


Average Hydraulic Conductivity: 1.E-07 cm/sec

Sample Data:	Initial (As-Received)		Final (At-Test)
Height, in	3.00		3.10
Diameter, in	2.37		2.38
Area, in2	4.41		4.43
Volume in3	13.23		13.71
Total Volume, cc	216.9		224.7
Volume Solids, cc	141.0		141.0
Volume Voids, cc	75.9		83.7
Void Ratio	0.5		0.6
Total Porosity, %	35.0		37.2
Air-Filled Porosity (θa),%	13.0		1.4
Water-Filled Porosity (θw),%	22.0		35.8
Saturation, %	62.8		96.2
Specific Gravity	2.70	Assumed	2.70
Wet Weight, gm	428.4		461.2
Dry Weight, gm	380.7		380.7
Tare, gm	0.00		0.00
Moisture, %	12.5		21.1
Wet Bulk Density, pcf	123.3		128.1
Dry Bulk Density, pcf	109.5		105.7
Wet Bulk Dens.ρb, (g/cm^3)	1.97		2.05
Dry Bulk Dens.ρb, (g/cm^3)	1.75		1.69

Remarks:

Unconfined Compressive Strength
ASTM D2166



Sample No.:	1	2	3	4	
Unconfined Compressive Strength, psf	35100	46804	53739		
Unconfined Compressive Strength, psi	243.8	325.0	373.2		
Undrained Shear Strength, psf	17550	23402	26870		
Failure Strain, %	2.0	2.2	2.1		
Strain Rate, % per minute	1.0	1.0	1.0		
Strain Rate, inches/minute	0.05	0.05	0.05		
Moisture Content, %	14.0	13.7	13.2		
Dry Density, pcf	107.6	108.0	108.8		
Saturation, %	66.7	66.2	65.1		
Void Ratio	0.567	0.560	0.549		
Specimen Diameter, inches	2.370	2.360	2.360		
Specimen Height, inches	5.04	5.08	5.06		
Height to Diameter Ratio	2.1	2.2	2.1		
Assumed Specific Gravity	2.70	2.70	2.70		

Sample Location				
	Boring	Sample	Depth, ft.	Soil Description
1	TP-5	+6% Cement		Brown Clayey SAND
2	TP-5	+9% Cement		Brown Clayey SAND
3	TP-5	+12% Cement		Brown Clayey SAND
4				

Job No.:	780-008	Type of Sample	Remolded
Client:	Earth Systems		
Project:	VT-24872-02		
Date:	3/20/2017 By: MD/RU		

Remarks:
Sample 1- Remolded to 95% of 113 pcf @ 15%(OPT)+6% Cement.
Sample 2- Remolded to 95% of 113 pcf @ 15%(OPT)+9% Cement.
Sample 3- Remolded to 95% of 113 pcf @ 15%(OPT)+12% Cement.

COOPER

ATTACHMENT D

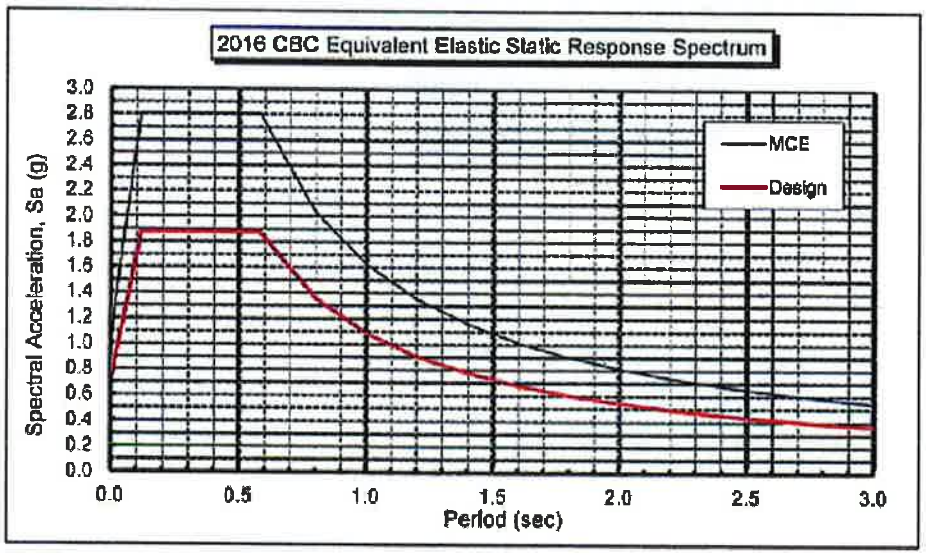
2013 CBC & ASCE 7-10 Seismic Parameters

USGS Design Maps Report

Fault Parameters Table

2016 California Building Code (CBC) (ASCE 7-10) Seismic Design Parameters

			CBC Reference	ASCE 7-10 Reference
Seismic Design Category		E	Table 1613.5.6	Table 11.6-2
Site Class		D	Table 1613.5.2	Table 20.3-1
Latitude:		34.302 N		
Longitude:		-119.123 W		
Maximum Considered Earthquake (MCE) Ground Motion				
Short Period Spectral Reponse	S_S	**2.811 g**	Figure 1613.5	Figure 22-3
1 second Spectral Response	S_1	**1.084 g**	Figure 1613.5	Figure 22.4
Site Coefficient	F_a	1.00	Table 1613.5.3(1)	Table 11.4-1
Site Coefficient	F_v	1.50	Table 1613.5.3(2)	Table 11-4.2
	S_{MS}	2.811 g	$= F_a * S_S$	
	S_{M1}	1.626 g	$= F_v * S_1$	
Design Earthquake Ground Motion				
Short Period Spectral Reponse	S_{DS}	**1.874 g**	$= 2/3 * S_{MS}$	
1 second Spectral Response	S_{D1}	**1.084 g**	$= 2/3 * S_{M1}$	
	To	0.12 sec	$= 0.2 * S_{D1}/S_{DS}$	
	Ts	0.58 sec	$= S_{D1}/S_{DS}$	
Seismic Importance Factor	I	1.00	Table 1604.5	Table 11.5-1
	F_{PGA}	1.00		



Period T (sec)	Design Sa (g)
0.00	0.750
0.05	1.236
0.12	1.874
0.58	1.874
0.80	1.355
1.00	1.084
1.20	0.903
1.40	0.774
1.60	0.678
1.80	0.602
2.00	0.542
2.20	0.493
2.40	0.452
2.60	0.417
2.80	0.387
3.00	0.361

USGS Design Maps Summary Report

User–Specified Input

Report Title Commercial Organics Processing Facility
Wed May 17, 2017 19:18:21 UTC

Building Code Reference Document ASCE 7-10 Standard
(which utilizes USGS hazard data available in 2008)

Site Coordinates 34.30214°N, 119.12341°W

Site Soil Classification Site Class D – "Stiff Soil"

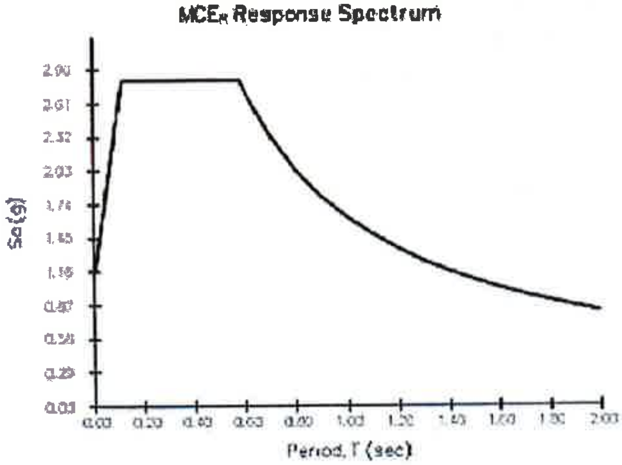
Risk Category I/II/III

USGS–Provided Output

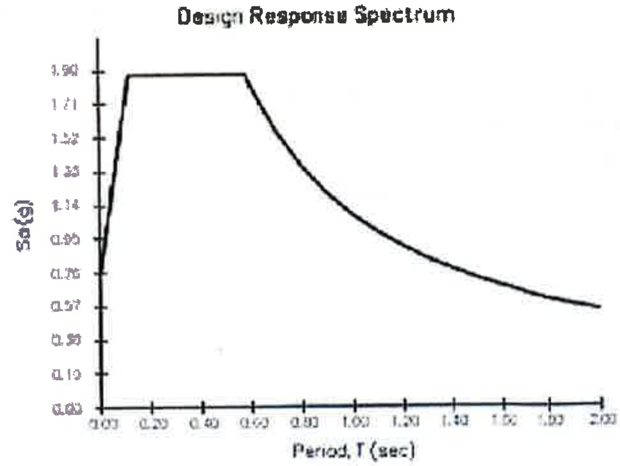
$S_S =$	2.811 g	$S_{MS} =$	2.811 g	$S_{DS} =$	1.874 g
$S_1 =$	1.084 g	$S_{M1} =$	1.627 g	$S_{D1} =$	1.084 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.

MCE$_R$ Response Spectrum



Design Response Spectrum



For PGA_M, T_L, C_{RS}, and C_{R1} values, please view the detailed report.

USGS Design Maps Detailed Report

ASCE 7-10 Standard (34.30214°N, 119.12341°W)

Site Class D – "Stiff Soil", Risk Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_S) and 1.3 (to obtain S_1). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From Figure 22-1 [1] S_S = 2.811 g

From Figure 22-2 [2] S_1 = 1.084 g

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class D, based on the site soil properties in accordance with Chapter 20.

Table 20.3–1 Site Classification

Site Class	$\bar{v}_s$	$\bar{N}$ or $\bar{N}_{ch}$	$\bar{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index PI > 20, • Moisture content $w \geq 40\%$, and • Undrained shear strength $\bar{s}_u$ < 500 psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Section 11.4.3 — Site Coefficients and Risk–Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Table 11.4–1: Site Coefficient F_a

Site Class	Mapped MCE $_R$ Spectral Response Acceleration Parameter at Short Period				
	$S_S \le 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S \ge 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	$\boxed{1.0}$
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_S

For Site Class = D and S_S = 2.811 g, F_a = 1.000

Table 11.4–2: Site Coefficient F_v

Site Class	Mapped MCE $_R$ Spectral Response Acceleration Parameter at 1–s Period				
	$S_1 \le 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \ge 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	$\boxed{1.5}$
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_1

For Site Class = D and S_1 = 1.084 g, F_v = 1.500

Equation (11.4-1): $S_{MS} = F_aS_S = 1.000 \times 2.811 = 2.811$ g

Equation (11.4-2): $S_{M1} = F_vS_1 = 1.500 \times 1.084 = 1.627$ g

Section 11.4.4 — Design Spectral Acceleration Parameters

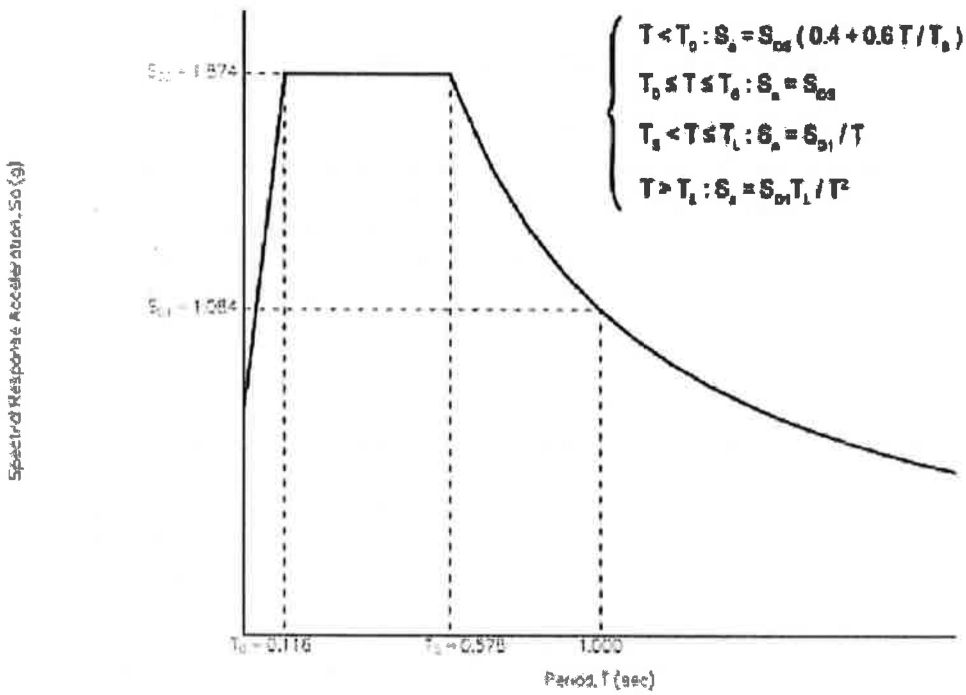
Equation (11.4-3): $S_{DS} = ⅔\ S_{MS} = ⅔ \times 2.811 = 1.874$ g

Equation (11.4-4): $S_{D1} = ⅔\ S_{M1} = ⅔ \times 1.627 = 1.084$ g

Section 11.4.5 — Design Response Spectrum

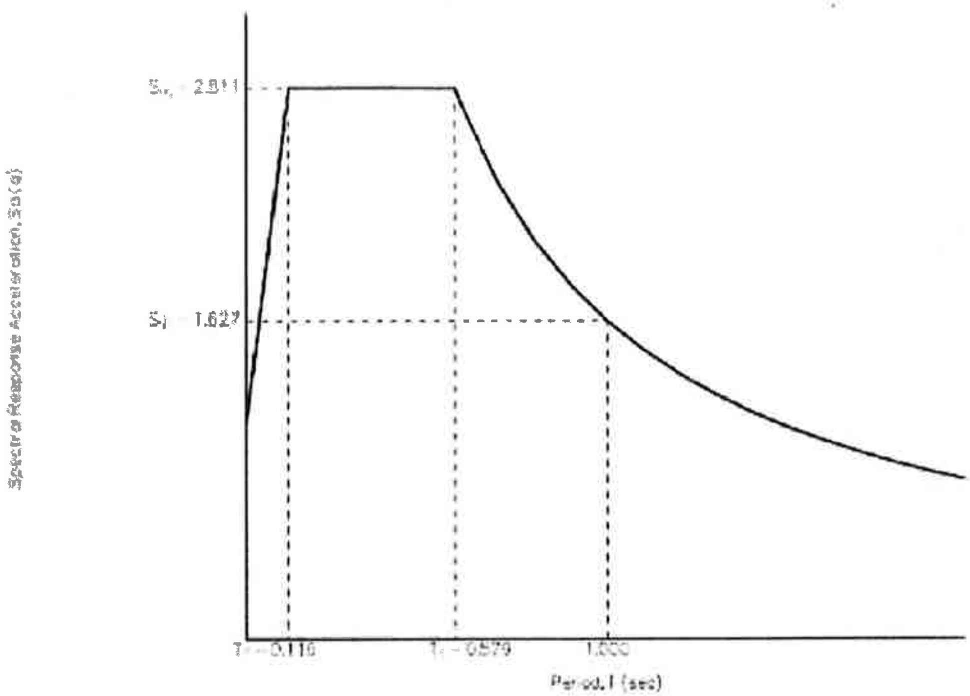
From Figure 22-12[3] $T_L = 8$ seconds

Figure 11.4-1: Design Response Spectrum



Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE_R) Response Spectrum

The MCE_R Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From Figure 22-7 [4] PGA = 1.099

Equation (11.8-1): $PGA_M = F_{PGA}PGA = 1.000 \times 1.099 = 1.099$ g

Table 11.8-1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of PGA

For Site Class = D and PGA = 1.099 g, F_{PGA} = 1.000

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From Figure 22-17 [5] C_{RS} = 0.919

From Figure 22-18 [6] C_{R1} = 0.904

Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \le S_{DS} < 0.33g$	B	B	C
$0.33g \le S_{DS} < 0.50g$	C	C	D
$0.50g \le S_{DS}$	D	D	D

For Risk Category = I and S_{DS} = 1.874 g, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \le S_{D1} < 0.133g$	B	B	C
$0.133g \le S_{D1} < 0.20g$	C	C	D
$0.20g \le S_{D1}$	D	D	D

For Risk Category = I and S_{D1} = 1.084 g, Seismic Design Category = D

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category ≡ "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = E

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 22-1*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. *Figure 22-2*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. *Figure 22-12*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. *Figure 22-7*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. *Figure 22-17*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. *Figure 22-18*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf

Table 1
Fault Parameters

Fault Section Name	Distance (miles)	Distance (km)	Avg Dip Angle (deg.)	Avg Dip Direction (deg.)	Avg Rake (deg.)	Trace Length (km)	Fault Type	Mean Mag	Mean Return Interval (years)	Slip Rate (mm/yr)
Oak Ridge (Onshore)	0.4	0.7	65	159	90	49	B	7.2		4
Ventura-Pitas Point	2.9	4.7	64	353	60	44	B	6.9		1
Simi-Santa Rosa	5.9	9.5	60	346	30	39	B	6.8		1
Sisar	8.5	13.7	29	168	na	20	B'	7.0		
San Cayetano	9.1	14.6	42	3	90	42	B	7.2		6
Oak Ridge (Offshore)	9.2	14.8	32	180	90	38	B	6.9		3
Red Mountain	10.6	17.1	56	2	90	101	B	7.4		2
Mission Ridge-Arroyo Parida-Santa Ana	11.2	17.9	70	176	90	69	B	6.8		0.4
Santa Ynez (East)	16.0	25.8	70	172	0	68	B	7.2		2
Malibu Coast (Extension), alt 1	16.5	26.6	74	4	30	35	B'	6.5		
Malibu Coast (Extension), alt 2	16.5	26.6	74	4	30	35	B'	6.9		
North Channel	17.2	27.8	26	10	90	51	B	6.7		1
Pine Mtn	19.0	30.5	45	5	na	62	B'	7.3		
Santa Susana, alt 2	20.6	33.2	53	10	90	43	B'	6.8		
Channel Islands Thrust	20.7	33.3	20	354	90	59	B	7.3		1.5
Santa Susana, alt 1	20.7	33.3	55	9	90	27	B	6.8		5
Malibu Coast, alt 1	20.7	33.4	75	3	30	38	B	6.6		0.3
Malibu Coast, alt 2	20.7	33.4	74	3	30	38	B	6.9		0.3
Pitas Point (Lower)-Montalvo	22.1	35.6	16	359	90	30	B	7.3		2.5
Anacapa-Dume, alt 1	22.6	36.4	45	354	60	51	B	7.2		3
Anacapa-Dume, alt 2	22.6	36.4	41	352	60	65	B	7.2		3
Channel Islands Western Deep Ramp	22.8	36.7	21	204	90	62	B'	7.3		
Del Valle	22.8	36.8	73	195	90	9	B'	6.3		
Holser, alt 1	23.1	37.2	58	187	90	20	B	6.7		0.4
Holser, alt 2	23.1	37.2	58	182	90	17	B'	6.7		
Santa Cruz Island	23.4	37.6	90	188	30	69	B	7.1		1
Northridge Hills	23.8	38.3	31	19	90	25	B'	7.0		
Northridge	24.8	39.8	35	201	90	33	B	6.8		1.5
Pitas Point (Upper)	26.6	42.8	42	15	90	35	B	6.8		1
Shelf (Projection)	27.2	43.8	17	21	na	70	B'	7.8		
Big Pine (Central)	28.2	45.3	76	167	na	23	B'	6.3		
San Gabriel	29.7	47.8	61	39	180	71	B	7.3		1
Big Pine (East)	30.0	48.4	73	338	na	23	B'	6.6		
Big Pine (West)	30.4	49.0	50	2	na	18	B'	6.5		
Santa Cruz Catalina Ridge	30.7	49.4	90	38	na	137	B'	7.3		
San Pedro Basin	31.1	50.1	88	51	na	69	B'	7.0		
Oak Ridge (Offshore), west extension	31.8	51.1	67	195	na	28	B'	6.1		
Santa Monica Bay	31.9	51.3	20	44	na	17	B'	7.0		
Santa Ynez (West)	32.2	51.8	70	182	0	63	B	6.9		2
Compton	35.3	56.7	20	34	90	65	B'	7.5		

Reference: USGS OFR 2007-1437 (CGS SP 203) Based on Site Coordinates of 34.30214 Latitude, -119.12341 Longitude

Mean Magnitude for Type A Faults based on 0.1 weight for unsegmented section, 0.9 weight for segmented model (weighted by probability of each scenario with section listed as given on Table 3 of Appendix G in OFR 2007-1437). Mean magntude is average of Ellworths-B and Hanks & Bakun moment area relationship.

ATTACHMENT E

Results of Seismically-Induced Settlement Analyses

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Commercial Organics Processing Facility
Job No: VT-24872-02
Date: 5/17/2017
Sounding: CPT-1

Liquefaction Analysis using 1998 NCEER (Robertson & Wride) method
Settlement Analysis using Tokimatsu & Seed (1987), clean sand Qc1n/N1(60) ratio =5

EARTHQUAKE INFORMATION:
Magnitude: 7 7.5
PGA, g: 1.10 0.92
MSF: 1.19
GWT, feet: 24.0
Calc GWT, feet: 15.0

Plot: 1
Method Used: 1 1998 NCEER (Robertson & Wride)
Averaging increment: 3 0.15 m
Induced CSR (M=7.5) = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_u*K_c*K_α*Qc
SF = $CRR_{7.5}$*Kσ/CSR

Ignore 1st/last increment into sand/silt soils: 1 yes
Ignore/remediate upper: 0.00 m
Unit Weight of unsaturated soils: 115 pcf
Unit Weight of saturated soils: 130 pcf
Limiting Ic for liquefiable soils: 2.50 Limiting Ic for K_c: 2.5

Use Moss @ F_c: 15%
Use Tokimatsu & Seed (0) or Ishihara &Yoshimine (1): 0
Required SF: 1.50 Max $\Delta N_{1(60)}$ - sand liquefied 5.5
Min SF of Liquefiable Layers: 0.17 Max $\Delta N_{1(60)}$ - non liquefied 10.0
Avg SF of Liquefiable Layers: 0.37

Total Liquefied Thickness (feet): 3.0
Total Induced Subsidence (Inches): 0.5

SETTLEMENT OF DRY SANDS
Qc1n / N1(60) Ratio for clean sand
p = 0.67*po
τ_{av} = 0.65*PGA*po*rd
G_{max} = 447*$N_{1(60)cs}^{1/3}$*$p^{0.5}$
a = 0.0389*(p/1)+0.124
b = 6400*(p/1)$^{-0.6}$
γ = [1+a*EXP(b*τ_{av}/G_{max})]/(1+a)*τ_{av}/G_{max}
E_{15} = γ*($N_{1(60)cs}$/20)$^{-1.2}$
Nc = (MAG-4)$^{2.17}$
E_{nc} = (Nc/15)$^{0.45}$*E15
S = 2*H*E_{nc} Nc = 10.8

Depth (feet)	(m)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio Rf %	qc MPa	Total Unit Wt. (pcf)	Total Stress po (tsf)	Eff. Stress p'o (tsf)	rd	F %	n	Max 1.70 Cq	Q	Moss qc1 MPa	Moss Δqc MPa	Moss qc_{1mod} MPa	Moss eff K_c	Qc1n	Ic	Override	Liquef. Suscept. (0 or 1)	Rel Dens Dr(%)	K_c	K_α	Clean Sand Qc1n	Kσ	CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Qc1n $N_{1(60)}$ Ratio	Equiv. $N_{1(60)}$	FC Adj $\Delta N_{1(60)}$	Equiv. $N_{1(60)cs}$	Volumetric Strain (%)	p (tsf)	G_{max} (tsf)	τ_{av} (tsf)	Shear Strain γ	Strain E_{15}	Strain Enc	Dry Sand Subsidence (in.)
0.49	0.15	35.07	2.14	6.09	3.36	115	0.028	0.028	1.000	6.09	0.80	1.70	56.31	5.71	5.00	10.71		56.35	2.54		0			1.00		1.00		0.399	Non-Liq.	3.8	14.7			0.00	0.019						
0.98	0.30	26.39	1.17	4.43	2.52	115	0.057	0.057	1.000	4.44	0.80	1.70	42.27	4.29	4.36	8.66		42.38	2.62		0			1.00		1.00		0.399	Non-Liq.	3.9	11.0			0.00	0.038						
1.48	0.45	18.14	1.47	8.08	1.74	115	0.085	0.085	0.999	8.12	0.89	1.70	29.01	2.95	5.00	7.95		29.14	2.93		0			1.00		1.00		0.399	Non-Liq.	3.3	8.9			0.00	0.057						
1.97	0.60	13.79	0.98	7.12	1.32	115	0.113	0.113	0.997	7.18	0.90	1.70	21.97	2.24	6.00	7.24		22.15	2.97		0			1.00		1.00		0.398	Non-Liq.	3.2	7.0			0.00	0.076						
2.46	0.75	12.30	0.65	5.26	1.18	115	0.141	0.141	0.996	5.32	0.89	1.70	19.68	2.02	4.99	7.01		19.91	2.92		0			1.00		1.00		0.398	Non-Liq.	3.3	6.1			0.00	0.095						
2.95	0.90	10.22	0.44	4.35	0.98	115	0.170	0.170	0.995	4.42	0.89	1.70	16.14	1.66	4.27	5.93		16.42	2.93		0			1.00		1.00		0.397	Non-Liq.	3.3	5.0			0.00	0.114						
3.44	1.05	11.84	0.57	4.80	1.13	115	0.198	0.198	0.994	4.88	0.88	1.70	18.76	1.93	4.77	6.69		19.02	2.91		0			1.00		1.00		0.397	Non-Liq.	3.3	5.8			0.00	0.133						
3.94	1.20	13.67	0.90	6.62	1.31	115	0.226	0.226	0.993	6.73	0.93	1.70	21.61	2.23	4.99	7.21		21.97	2.98		0			1.00		1.00		0.396	Non-Liq.	3.2	6.8			0.00	0.152						
4.43	1.35	11.91	0.94	7.67	1.14	115	0.255	0.255	0.992	6.84	0.93	1.70	18.72	1.94	4.99	6.92		19.13	3.06		0			1.00		1.00		0.396	Non-Liq.	3.0	6.3			0.00	0.171						
4.92	1.50	11.12	0.80	7.19	1.06	115	0.283	0.283	0.990	7.38	0.92	1.70	17.41	1.81	4.98	6.79		17.87	3.05		0			1.00		1.00		0.395	Non-Liq.	3.0	5.9			0.00	0.190						
5.41	1.65	11.07	0.76	6.86	1.06	115	0.311	0.311	0.989	7.06	0.92	1.70	17.29	1.80	4.98	6.78		17.79	3.04		0			1.00		1.00		0.395	Non-Liq.	3.0	5.8			0.00	0.209						
5.91	1.80	10.39	0.73	7.02	1.00	115	0.340	0.340	0.988	7.28	0.93	1.70	16.15	1.69	4.98	6.67		16.70	3.07		0			1.00		1.00		0.395	Non-Liq.	3.0	5.6			0.00	0.228						
6.40	1.95	10.84	0.70	6.59	1.04	115	0.368	0.368	0.987	6.83	0.92	1.70	16.50	1.73	4.98	6.71		17.09	3.05		0			1.00		1.00		0.394	Non-Liq.	3.0	5.6			0.00	0.246						
6.89	2.10	10.43	0.69	6.62	1.00	115	0.396	0.396	0.986	6.88	0.93	1.70	16.13	1.70	4.98	6.67		16.76	3.06		0			1.00		1.00		0.394	Non-Liq.	3.0	5.6			0.00	0.265						
7.38	2.25	10.42	0.62	5.95	1.00	115	0.424	0.424	0.985	6.21	0.92	1.70	16.07	1.70	4.97	6.67		16.75	3.03		0			1.00		1.00		0.393	Non-Liq.	3.1	5.5			0.00	0.284						
7.87	2.40	12.86	0.50	3.89	1.23	115	0.453	0.453	0.984	4.00	0.87	1.70	19.94	1.99	3.71	5.71		20.66	2.83		0			1.00		1.00		0.393	Non-Liq.	3.5	6.0			0.00	0.303						
8.37	2.55	10.20	0.44	4.28	0.98	115	0.481	0.481	0.983	4.49	0.91	1.70	15.81	1.59	4.18	5.77		16.38	2.95		0			1.00		1.00		0.392	Non-Liq.	3.2	5.1			0.00	0.322						
8.86	2.70	8.23	0.44	5.30	0.79	115	0.509	0.509	0.982	5.65	0.95	1.70	12.41	1.29	4.97	6.25		13.22	3.09		0			1.00		1.00		0.392	Non-Liq.	3.0	4.5			0.00	0.341						
9.35	2.85	7.41	0.47	6.33	0.71	115	0.538	0.538	0.981	6.83	0.98	1.70	11.05	1.13	4.97	6.10		11.91	3.18		0			1.00		1.00		0.392	Non-Liq.	2.8	4.3			0.00	0.360						
9.84	3.00	5.27	0.32	5.98	0.50	115	0.566	0.566	0.979	6.70	1.00	1.70	7.56	0.86	4.96	5.82		8.47	3.30		0			1.00		1.00		0.391	Non-Liq.	2.5	3.3			0.00	0.379						
10.33	3.15	5.39	0.14	2.57	0.52	115	0.594	0.594	0.978	2.89	0.98	1.70	7.70	0.87	2.28	3.15		8.68	3.08		0			1.00		1.00		0.391	Non-Liq.	3.0	2.9			0.00	0.398						
10.83	3.30	6.35	0.21	3.37	0.61	115	0.623	0.623	0.977	3.73	0.96	1.68	9.01	0.93	3.16	4.09		9.98	3.09		0			1.00		1.00		0.390	Non-Liq.	3.0	3.4			0.00	0.417						
11.32	3.45	35.54	0.38	1.06	3.40	115	0.651	0.651	0.976	1.08	0.68	1.39	45.63	6.20	0.62	6.82		65.69	2.20		0			1.41		1.00		0.390	Non-Liq.	4.7	14.0			0.00	0.436						
11.81	3.60	38.89	0.42	1.09	3.72	115	0.679	0.679	0.975	1.11	0.67	1.35	48.54	6.57	0.65	7.22		69.51	2.19		0			1.41		1.00		0.389	Non-Liq.	4.7	14.7			0.00	0.455						
12.30	3.75	14.26	0.35	2.48	1.37	130	0.711	0.711	0.974	2.61	0.85	1.40	17.95	1.73	2.18	3.91		18.89	2.76		0			1.00		1.00		0.389	Non-Liq.	3.6	5.2			0.00	0.476						
12.80	3.90	5.50	0.27	4.97	0.53	130	0.743	0.743	0.973	5.74	1.00	1.42	6.40	0.71	4.92	5.62		7.40	3.32		0			1.00		1.00		0.389	Non-Liq.	2.9	3.0			0.00	0.498						
13.29	4.05	4.60	0.17	3.66	0.44	130	0.775	0.775	0.972	4.40	1.00	1.35	4.93	0.59	3.48	4.07		5.93	3.34		0			1.00		1.00		0.388	Non-Liq.	2.5	2.4			0.00	0.519						
13.78	4.20	4.49	0.13	2.71	0.43	130	0.807	0.807	0.971	3.28	1.00	1.31	4.81	0.59	2.43	3.02		5.81	3.28		0			1.00		1.00		0.388	Non-Liq.	2.6	2.3			0.00	0.541						
14.27	4.35	4.72	0.13	2.65	0.45	130	0.839	0.839	0.970	5.22	1.00	1.28	4.83	0.58	2.36	2.93		5.83	3.29		0			1.00		1.00		0.387	Non-Liq.	2.6	2.2			0.00	0.562						
14.76	4.50	4.63	0.12	2.52	0.44	130	0.871	0.871	0.969	3.11	1.00	1.21	4.31	0.53	2.22	2.76		5.31	3.31		0			1.00		1.00		0.387	Non-Liq.	2.5	2.1			0.00	0.584						
15.26	4.65	5.51	0.13	2.35	0.53	130	0.903	0.903	0.968	2.81	0.98	1.17	5.09	0.61	2.31	2.92		6.09	3.23		0			1.00		1.00		0.580	Non-Liq.	2.7	2.3			0.00	0.605						
15.75	4.80	5.99	0.15	2.56	0.57	130	0.935	0.935	0.967	3.03	0.98	1.13	5.40	0.64	2.59	3.23		6.40	3.22		0			1.00		1.00		0.589	Non-Liq.	2.7	2.4			0.00	0.626						
16.24	4.95	6.95	0.19	2.72	0.67	130	0.967	0.967	0.966	3.16	0.97	1.09	6.20	0.72	2.81	3.53		7.20	3.18		0			1.00		1.00		0.598	Non-Liq.	2.8	2.6			0.00	0.648						
16.73	5.10	7.82	0.24	3.04	0.75	130	0.999	0.999	0.965	3.49	0.96	1.06	6.81	0.78	3.23	4.01		7.81	3.17		0			1.00		1.00		0.606	Non-Liq.	2.8	2.8			0.00	0.669						
17.22	5.25	9.74	0.34	3.50	0.93	130	1.031	1.031	0.964	3.91	0.95	1.02	8.44	0.95	3.82	4.77		9.44	3.12		0			1.00		1.00		0.614	Non-Liq.	2.9	3.3			0.00	0.691						
17.72	5.40	15.23	0.63	4.15	1.46	130	1.063	1.063	0.962	4.40	0.91	1.00	13.33	1.45	4.67	6.12		14.33	3.00		0			1.00		1.00		0.622	Non-Liq.	3.1	4.6			0.00	0.712						
18.21	5.55	45.51	1.29	2.82	4.36	130	1.095	1.095	0.961	2.89	0.76	0.97	40.90	4.30	2.98	7.29		41.91	2.61		0			1.00		1.00		0.629	Non-Liq.	4.1	10.2			0.00	0.734						
18.70	5.70	55.55	1.84	3.32	5.32	130	1.127	1.127	0.960	3.39	0.76	0.95	49.04	7.33	3.63	10.58		70.43	2.50		0			1.41		1.00		0.636	Non-Liq.	4.1	17.1			0.00	0.755						
19.19	5.85	37.85	1.93	5.19	3.62	130	1.159	1.159	0.959	5.26	0.83	0.93	32.14	3.52	5.81	9.33		33.16	2.76		0			1.00		1.00		0.643	Non-Liq.	3.0	6.2			0.00	0.777						
19.69	6.00	65.43	1.55	2.35	6.28	130	1.191	1.191	0.958	2.40	0.71	0.92	55.99	8.48	2.41	10.89		80.22	2.35		0			1.41		1.00		0.649	Non-Liq.	4.4	18.2			0.00	0.798						
20.18	6.15	54.83	1.23	2.25	5.25	130	1.223	1.223	0.956	2.30	0.73	0.90	45.61	7.06	2.27	9.27		65.83	2.40		0			1.41		1.00		0.655	Non-Liq.	4.3	15.3			0.00	0.819						
20.67	6.30	33.07	1.22	3.70	3.17	130	1.255	1.255	0.955	3.84	0.82	0.87	26.13	2.96	4.16	7.13		27.16	2.73		0			1.00		0.99		0.661	Non-Liq.	3.8	7.4			0.00	0.841						
21.18	6.45	49.64	0.93	1.87	4.75	130	1.287	1.287	0.954	1.92	0.72	0.87	39.66	5.55	1.78	7.34		51.49	2.40		0			1.26		0.99		0.667	Non-Liq.	4.3	12.0			0.00	0.862						
21.65	6.60	16.63	0.70	4.17	1.61	130	1.319	1.319	0.952	4.53	0.91	0.82	12.00	1.44	4.81	6.25		13.02	3.04		0			1.00		0.99		0.672	Non-Liq.	3.1	4.3			0.00	0.884						
22.15	6.75	50.43	1.75	3.46	4.83	130	1.351	1.351	0.951	3.56	0.78	0.83	38.36	4.45	3.89	8.33		39.41	2.59		0			1.00		0.98		0.678	Non-Liq.	3.9	10.0			0.00	0.905						
22.64	6.90	51.94	2.75	5.30	4.97	130	1.383	1.383	0.950	5.45	0.82	0.80	38.41	4.60	5.92	10.52		39.48	2.72		0			1.00		0.98		0.683	Non-Liq.	3.7	10.7			0.00	0.927						
23.13	7.05	111.81	3.84	3.17	10.71	130	1.415	1.415	0.948	3.21	0.70	0.82	85.21	12.53	3.52	16.04		109.12	2.31		0			1.26		0.98		0.687	Non-Liq.	4.5	24.4			0.00	0.948						
23.62	7.20	165.82	4.55	2.76	15.80	130	1.447	1.447	0.946	2.79	0.65	0.82	128.12	18.47	2.99	21.45	1.16	160.88	2.16		1	97	1.56	1.26	251.5	0.96	Infin.	0.692	Non-Liq.	4.8	33.7	10.0	43.7	0.00	0.969	1,550	0.652	1.3E-03			
24.11	7.35	109.29	3.77	3.45	10.46	130	1.479	1.479	0.945	3.50	0.71	0.72	80.33	12.12	3.90	16.02		102.97	2.36		0			1.26		0.97		0.696	Non-Liq.	4.4	23.5			0.00	0.991						
24.61	7.50	47.37	2.60	5.48	4.54	130	1.511	1.500	0.943	5.66	0.83	0.75	32.44	4.09	5.95	10.05		33.50	2.78		0			1.00		0.97		0.700	Non-Liq.	3.8	9.4			0.00	1.012						
25.10	7.65	67.16	2.39	3.52	6.43	130	1.543	1.518	0.941	3.60	0.76	0.75	47.25	5.77	4.01	9.77		48.34	2.53		0			1.00		0.97		0.704	Non-Liq.	4.1	11.9			0.00	1.034						
25.59	7.80	16.89	1.50	8.90	1.62	130	1.575	1.533	0.940	9.79	0.98	0.69	10.08	1.38	5.98	7.36		11.08	3.31		0			1.00		0.97		0.708	Non-Liq.	2.5	4.4			0.00	1.055						
26.08	7.95	32.15	1.11	3.44	3.08	130	1.607	1.549	0.938	3.62	0.83	0.73	21.09	2.85	3.92	6.57		22.55	2.79		0			1.00		0.96		0.711	Non-Liq.	3.5	6.3			0.00	1.077						
26.57	8.10	74.44	2.11	2.83	7.13	130	1.639	1.566	0.936	2.89	0.73	0.75	51.75	5.95	3.11	13.06		53.52	2.43		0			1.56		0.96		0.715	Non-Liq.	4.2	12.7			0.00	1.098						
27.07	8.25	34.55	2.27	6.57	3.31	130	1.671	1.583	0.934	6.88	0.88	0.70	21.84	2.90	6.60	8.91		22.99	2.96		0			1.00		0.96		0.718	Non-Liq.	3.2	7.1			0.00	1.119						
27.56	8.40	22.01	1.65	7.52	2.11	130	1.703	1.599	0.932	8.11	0.94	0.68	13.07	1.80	6.01	7.81		14.09	3.17		0			1.00		0.95		0.721	Non-Liq.	2.8	5.1			0.00	1.141						
28.05	8.55	13.80	1.07	7.80	1.33	130	1.735	1.616	0.930	8.70	1.00	0.65	7.60	1.09	6.02	7.10		8.68	3.37		0			1.00		0.95		0.723	Non-Liq.	2.4	3.6			0.00	1.162						
28.54	8.70	38.52	1.15	2.98	3.69	130	1.767	1.633	0.928	3.11	0.80	0.71	24.61	3.12	3.31	6.43		25.70	2.69		0			1.00		0.95		0.726	Non-Liq.	3.7	6.9			0.00	1.184						
29.04	8.85	45.42	1.53	3.15	4.64	130	1.799	1.649	0.925	3.27	0.78	0.71	31.21	3.57	3.58	7.52		32.31	2.63		0			1.00		0.95		0.728	Non-Liq.	3.9	8.4			0.00	1.205						
29.53	9.00	107.34	1.61	1.50	10.28	130	1.831	1.666	0.923	1.52	0.64	0.75	74.72	11.08	1.34	12.42		95.87	2.13		0			1.26		0.95		0.731	Non-Liq.	4.8	19.8			0.00	1.227						
30.02	9.15	88.20	1.98	2.26	8.45	130	1.863	1.683	0.920	2.30	0.70	0.72	59.23	9.20	2.36	11.55	1.26	76.34	2.32		1	66	2.02	1.26	153.9	0.94	0.419	0.733	0.53	4.5	17.1	5.5	22.6	1.34	1.248	1,412	0.817	2.7E-03			
30.51	9.30	77.98	2.13	2.73	7.47	130	1.895	1.699	0.918	2.79	0.73	0.71	51.12	8.13	2.99	11.13		60.08	2.42		0			1.26		0.94		0.734	Non-Liq.	4.3	15.5			0.00	1.269						
31.00	9.45	59.40	1.78	3.00	5.69	130	1.927	1.716	0.915	3.09	0.76	0.69	37.73	4.84	3.36	8.21		38.86	2.55		0			1.00		0.94		0.736	Non-Liq.	4.0	9.7			0.00	1.291						
31.50	9.60	25.73	1.36	5.28	2.47	130	1.959	1.732	0.913	5.66	0.90	0.64	14.59	2.04	6.05	8.09		15.64	3.03		0			1.00		0.94		0.737	Non-Liq.	3.1	5.1			0.00	1.312						
31.99	9.75	19.55	0.93	4.75	1.87	130	1.991	1.749	0.910	5.21	0.92	0.63	10.58	1.49	5.71	7.21		11.62	3.12		0			1.00		0.94		0.739	Non-Liq.	2.9	4.0			0.00	1.334						

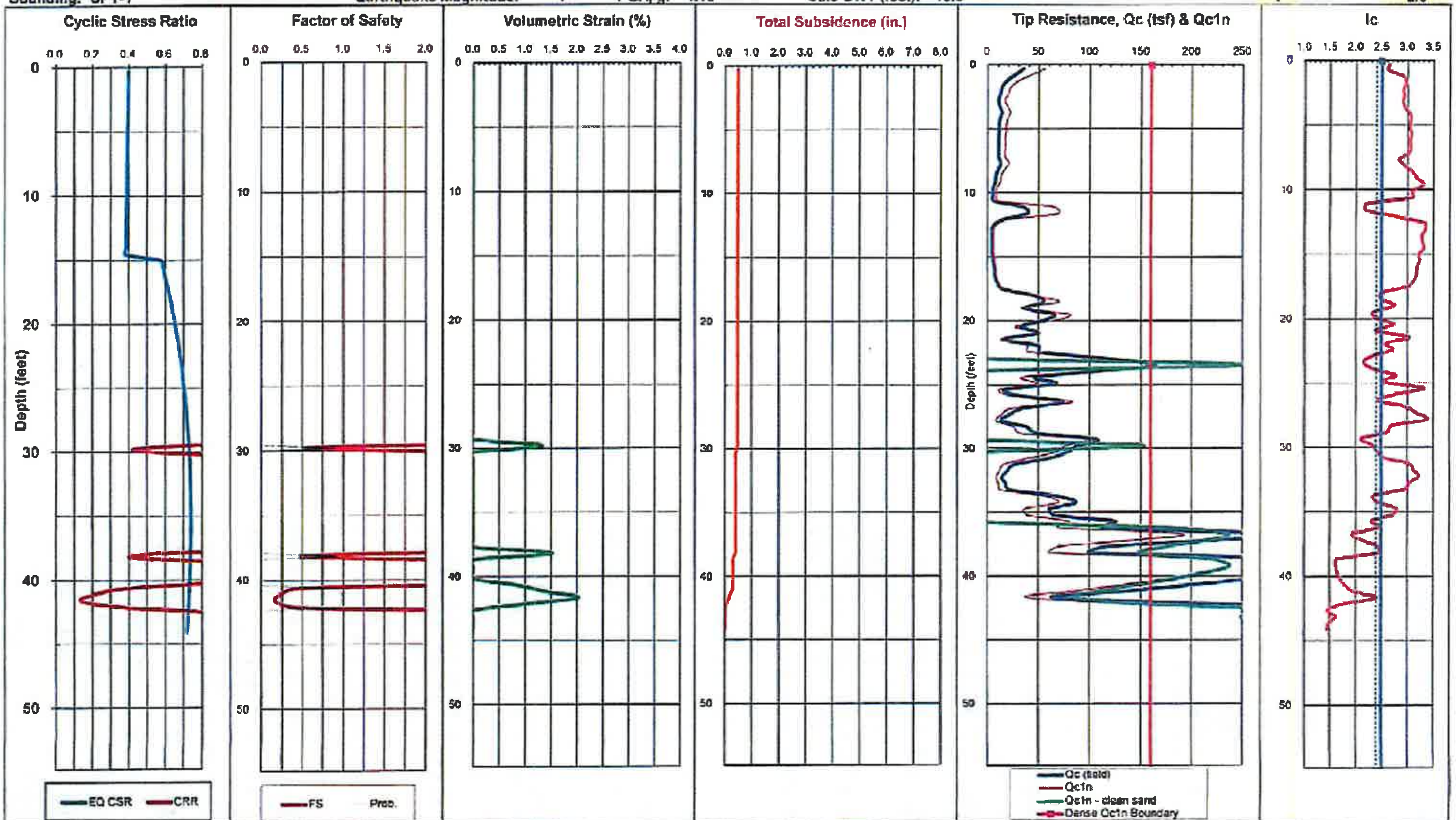
Depth (feet)	(m)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio Rf %	qc MPa	Total Unit Wt. (pcf)	Total Stress po (tsf)	Eff. Stress p'o (tsf)	rd	F %	n	Max 1.70 Cq	Q	Mosc qc1 MPa	Mosc Δqc MPa	Mosc q_{c1ncs} MPa	Mosc eff K_c	Qc1n	Ic	Override	Liquef. Suscept. (0 or 1)	Rel. Dens. Dr (%)	K_c	K_α	Clean Sand Qc1n	K_σ	CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Qc1n $N_{1(60)}$ Ratio	Equiv. $N_{1(60)}$	FC Adj $\Delta N_{1(60)}$	Equiv. $N_{1(60)cs}$	Volumetric Strain (%)	p (tsf)	G_{max} (tsf)	τ_{av} (tsf)	Shear Strain γ	Strain E_{15}	Strain Enc	Dry Sand Subsidence (in.)
32.48	9.90	14.44	0.59	4.07	1.38	130	2.023	1.768	0.907	4.64	0.95	0.62	7.37	1.05	4.80	5.85		8.40	3.21		0			1.00		0.93		0.740	Non-Liq.	2.7	3.1			0.00	1.355						
32.97	10.05	17.59	0.54	2.98	1.72	130	2.055	1.782	0.904	3.30	0.90	0.63	9.59	1.31	3.33	4.65		10.65	3.04		0			1.00		0.93		0.741	Non-Liq.	3.1	3.5			0.00	1.377						
33.46	10.20	21.53	0.60	2.78	2.06	130	2.087	1.798	0.901	3.03	0.87	0.63	11.75	1.58	3.07	4.66		12.82	2.94		0			1.00		0.93		0.742	Non-Liq.	3.2	4.0			0.00	1.398						
33.96	10.35	69.08	1.21	1.76	6.61	130	2.119	1.816	0.898	1.80	0.70	0.68	43.50	6.83	1.69	8.52		55.49	2.35		0			1.20		0.93		0.742	Non-Liq.	4.4	12.9			0.00	1.419						
34.45	10.50	86.70	2.54	2.93	8.30	130	2.151	1.832	0.894	2.99	0.73	0.67	53.87	8.92	3.27	12.19		69.58	2.43		0			1.25		0.93		0.743	Non-Liq.	4.2	16.4			0.00	1.441						
34.94	10.65	61.05	3.39	5.88	5.85	130	2.183	1.849	0.891	6.08	0.82	0.63	35.31	5.04	6.06	11.10		35.41	2.78		0			1.00		0.92		0.743	Non-Liq.	3.8	10.2			0.00	1.462						
35.43	10.80	66.11	3.47	5.24	6.33	130	2.215	1.866	0.888	5.39	0.81	0.63	38.43	5.44	6.06	11.50		39.35	2.71		0			1.00		0.92		0.743	Non-Liq.	3.7	10.7			0.00	1.484						
35.93	10.95	126.34	3.67	2.90	12.10	130	2.247	1.882	0.884	2.95	0.68	0.67	79.03	10.42	3.24	13.65		80.52	2.31		0			1.00		0.92		0.743	Non-Liq.	4.5	18.0			0.00	1.505						
36.42	11.10	113.01	4.55	4.03	10.82	130	2.279	1.898	0.880	4.10	0.73	0.65	68.40	9.38	4.75	14.13	1.61	69.57	2.46		1	82	2.55	1.00	177.7	0.88	Infin.	0.743	Non-Liq.	4.2	16.6	10.0	26.6	0.00	1.527	1.649	0.955	2.1E-03			
36.91	11.25	287.77	5.92	2.08	27.56	130	2.311	1.915	0.877	2.07	0.59	0.71	190.71	23.84	2.10	29.94	1.09	191.99	1.94		1	100	1.23	1.00	236.6	0.84	Infin.	0.742	Non-Liq.	5.2	37.0	10.0	47.0	0.00	1.548	2.007	0.965	1.2E-03			
37.40	11.40	219.80	6.14	2.80	21.03	130	2.343	1.932	0.873	2.82	0.64	0.68	139.88	16.29	3.09	21.38	1.17	141.12	2.13		1	91	1.51	1.00	213.6	0.84	Infin.	0.742	Non-Liq.	4.8	29.2	10.0	39.2	0.00	1.569	1.903	0.974	1.4E-03			
37.89	11.55	115.56	4.53	3.92	11.07	130	2.375	1.949	0.869	3.98	0.73	0.64	68.78	9.52	4.60	14.12	1.48	69.96	2.45		1	82	2.51	1.00	175.3	0.87	Infin.	0.741	Non-Liq.	4.2	16.6	10.0	26.6	0.00	1.591	1.683	0.983	2.0E-03			
38.39	11.70	101.25	3.39	3.35	9.70	130	2.406	1.965	0.863	3.42	0.73	0.64	59.83	8.20	3.84	12.04	1.47	61.02	2.44		1	58	2.47	1.00	150.9	0.87	0.400	0.740	0.47	4.2	14.4	5.5	19.9	1.53	1.612	1.539	0.991	2.8E-03			
38.88	11.85	320.48	3.05	0.95	30.69	130	2.438	1.982	0.861	0.96	0.50	0.73	218.62	25.07	0.61	25.68	1.02	220.89	1.65		1	100	1.00	1.00	221.5	0.83	Infin.	0.739	Non-Liq.	5.8	38.3	6.0	44.3	0.00	1.634	2.022	1.000	1.2E-03			
39.37	12.00	348.24	3.20	0.92	33.16	130	2.470	1.999	0.857	0.93	0.50	0.73	236.73	27.04	0.57	27.61	1.02	238.11	1.62		1	100	1.00	1.00	238.1	0.82	Infin.	0.736	Non-Liq.	5.8	40.8	6.8	47.6	0.00	1.655	2.085	1.008	1.2E-03			
39.86	12.15	317.30	2.94	0.93	30.39	130	2.502	2.015	0.852	0.93	0.50	0.72	215.72	24.62	0.57	25.20	1.02	217.18	1.65		1	100	1.00	1.00	217.1	0.82	Infin.	0.736	Non-Liq.	5.8	37.6	5.8	43.4	0.00	1.677	2.034	1.016	1.2E-03			
40.35	12.30	263.65	2.41	0.92	25.25	130	2.534	2.032	0.846	0.92	0.52	0.71	176.36	20.21	0.56	20.77	1.00	177.73	1.70		1	100	1.04	1.00	184.9	0.82	Infin.	0.735	Non-Liq.	5.7	31.4	5.8	37.6	0.00	1.698	1.940	1.023	1.4E-03			
40.85	12.45	203.07	1.89	0.93	19.45	130	2.566	2.049	0.843	0.94	0.55	0.70	132.54	15.34	0.58	15.92	1.04	133.90	1.80		1	89	1.11	1.00	148.2	0.81	0.382	0.733	0.42	5.5	24.5	5.2	29.6	0.86	1.720	1.814	1.031	1.7E-03			
41.34	12.60	138.00	1.34	0.97	13.21	130	2.598	2.065	0.839	0.98	0.59	0.67	86.70	10.21	0.63	10.84	1.06	88.02	1.95		1	72	1.24	1.00	109.5	0.81	0.202	0.732	0.22	5.2	17.0	4.9	21.9	1.39	1.741	1.650	1.038	2.3E-03			
41.83	12.75	63.85	1.05	1.65	6.11	130	2.630	2.082	0.834	1.70	0.71	0.62	36.02	4.68	1.54	6.22	1.33	37.23	2.40		1	38	2.32	1.00	86.3	0.98	0.140	0.730	0.17	4.3	8.7	5.5	14.2	2.04	1.762	1.438	1.045	3.9E-03			
42.32	12.90	201.98	1.68	0.83	19.34	130	2.662	2.098	0.830	0.84	0.54	0.69	130.77	14.97	0.44	15.41	1.03	132.15	1.77		1	88	1.09	1.00	143.7	0.81	0.358	0.728	0.39	5.5	23.9	4.8	28.7	1.00	1.784	1.829	1.052	1.7E-03			
42.81	13.05	443.19	3.15	0.71	42.44	130	2.694	2.115	0.825	0.71	0.50	0.71	294.85	33.56	0.28	33.84	1.01	296.27	1.47		1	100	1.00	1.00	296.3	0.80	Infin.	0.726	Non-Liq.	6.1	48.4	10.0	58.4	0.00	1.805	2.330	1.059	8.5E-04			
43.31	13.20	376.25	3.66	0.97	36.03	130	2.726	2.132	0.820	0.99	0.50	0.70	249.12	29.02	0.63	29.66	1.02	250.54	1.62		1	100	1.00	1.00	250.5	0.80	Infin.	0.724	Non-Liq.	5.8	43.0	7.1	50.1	0.00	1.827	2.227	1.065	1.1E-03			
43.80	13.35	396.03	2.68	0.68	37.92	130	2.758	2.148	0.816	0.68	0.50	0.70	261.25	29.52	0.23	29.76	1.01	262.69	1.49		1	100	1.00	1.00	262.7	0.80	Infin.	0.721	Non-Liq.	6.1	43.2	9.4	52.5	0.00	1.848	2.276	1.071	1.0E-03			
44.29	13.50	428.61	2.81	0.66	41.04	130	2.790	2.165	0.811	0.66	0.50	0.70	281.77	31.89	0.21	32.10	1.01	283.20	1.46		1	100	1.00	1.00	283.2	0.79	Infin.	0.719	Non-Liq.	6.1	45.1	10.0	56.1	0.00	1.870	2.339	1.077	9.6E-04			

EARTH SYSTEMS - EVALUATION OF LIQUEFACTION POTENTIAL AND INDUCED GROUND SUBSIDENCE

Commercial Organics Processing Facility — Project No: VT-24872-02 — Method Used: 1 — 1998 NCEER (Robertson & Wride)

Settlement Analysis using Tokimatsu & Seed (1987), clean sand Qc1n/N1(60) ratio =5 — Plot: 1 — Limiting Ic: 2.6

Sounding: CPT-1 — Earthquake Magnitude: 7 — PGA, g: 1.10 — Calc GWT (feet): 15.0



Total Thickness of Liquefiable Layers: 3.0 feet

Estimated Total Ground Subsidence (Settlement): 0.5 inches

EARTH SYSTEMS - EVALUATION OF LIQUEFACTION POTENTIAL AND INDUCED GROUND SUBSIDENCE

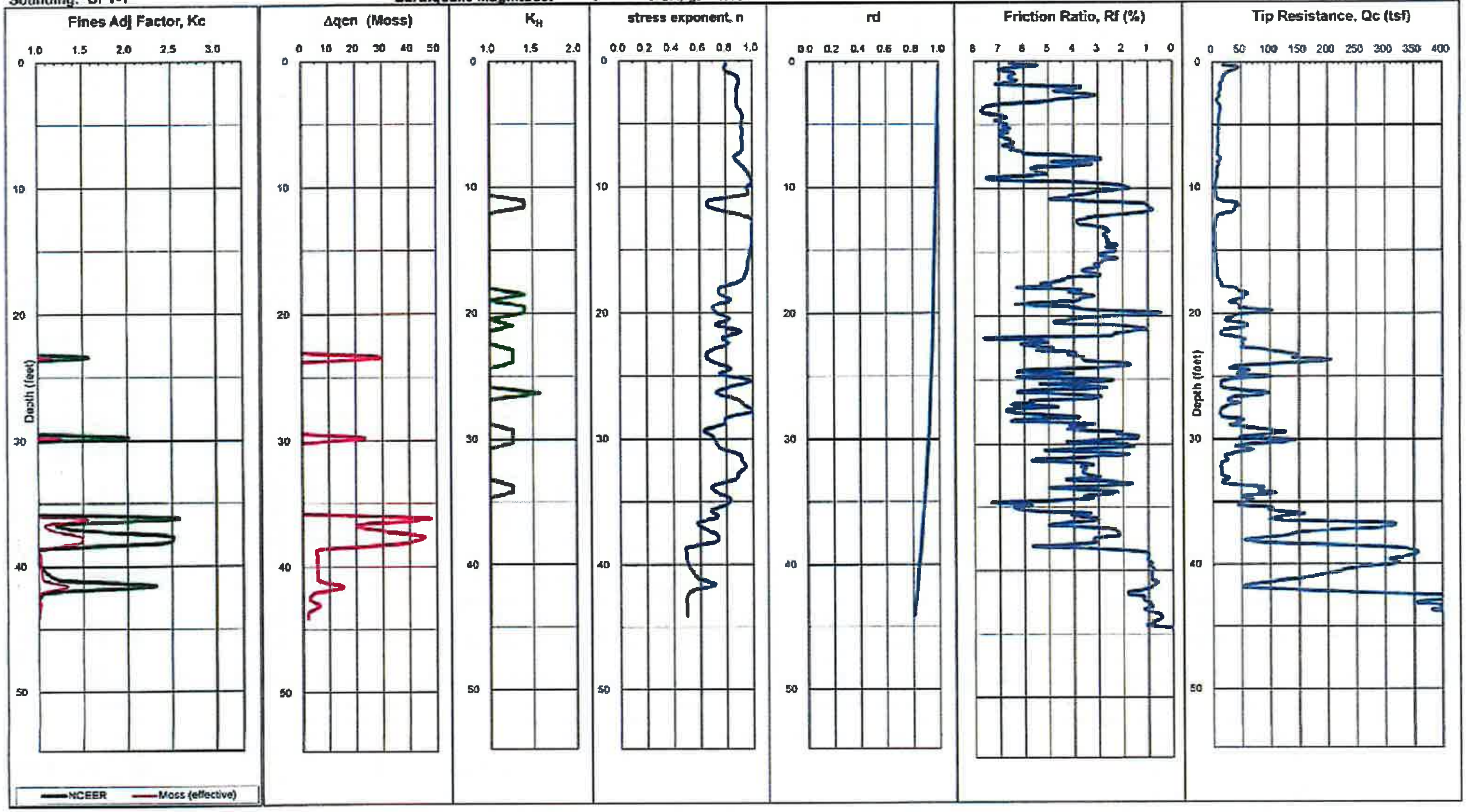
3 avg increment =0.15m Qc1n/N1(60): 5

Ignore 1st/last increment into sand/silt soils: 0

Sounding: CPT-1

Method Used: 1998 NCEER (Robertson & Wride)

Earthquake Magnitude: 7 PGA, g: 1.10



CPT-1 LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Commercial Organics Processing Facility
Job No: VT-24472-02
Date: 5/17/2017
Sounding: CPT-2

Plot: 2
Method Used: 1 1998 NCEER (Robertson & Wride)

Liquefaction Analysis using 1998 NCEER (Robertson & Wride) method
Settlement Analysis using Tokimatsu & Seed (1987), clean sand Qc1n/N1(60) ratio =5

EARTHQUAKE INFORMATION:

Magnitude:	7	7.5
PGA, g:	1.10	0.92
MSF:	1.19	
GWT, feet:	24.0	
Calc GWT, feet:	15.0	

Averaging Increment: 3 0.15 m
Induced CSR (M=7.5) = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = Kc*Kσ*Kα*Qc
SF = CRR$_{7.5}$*Kα/CSR

Ignore 1st/last increment into sand/silt soils: 1 yes
Ignore/remediate upper: 0.00 m
Unit Weight of unsaturated soils: 115 pcf
Unit Weight of saturated soils: 130 pcf
Limiting Ic for liquefiable soils: 2.50 Limiting Ic for Kc: 2.5

Use Moss @ PL: 15%
Use Tokimatsu & Seed (0) or Ishihara & Yoshimine (1): 0
Required SF: 1.50 Max ΔN1(60) - sand: 5.5
Min SF of Liquefiable Layers: 0.28 Max ΔN1(60) - non-sand: 10.0
Avg SF of Liquefiable Layers: 0.43

Total Liquefied Thickness (feet)	6.5
Total Induced Subsidence (inches)	5.2

SETTLEMENT OF DRY SANDS
Qc1n / N1(60) Ratio for clean sand:
p = 0.67*po
τ_{av} = 0.65*PGA*po*rd
G_{max} = 447*$N_{1(60)cs}^{1/3}$*$p^{0.5}$
a = 0.0389*(p/1)+0.124
b = 6400*$(p/1)^{-0.6}$
γ = [1+a*EXP(b*τ_{av}/G_{max})]/[(1+a)*τ_{av}/G_{max}]
E_{15} = γ*$(N_{1(60)cs}/20)^{-1.2}$
Nc = $(M-4)^{2.17}$
E_{nc} = $(Nc/15)^{0.45}$*E15
S = 2*H*E_{nc}
Nc = 10.8

Depth (feet)	(m)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio Rf %	qc MPa	Total Unit Wt (pcf)	Total Stress po (tsf)	Eff. Stress p'o (tsf)	rd	F %	n	Max 1.70 Cq	Q	Moss qc1 MPa	Moss Δqc MPa	Moss qc thresh MPa	Moss eff Kc	Qc1n	Ic	Override	Liquef. Suscept. (0 or 1)	Rel Dens Dr(%)	Kc	Kσ	Clean Sand Qc1n	Kα	CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Qc1n N1(60) Ratio	Equiv N1(60)	FC Adj ΔN1(60)	Equiv N1(60)cs	Volumetric Strain (%)	p (tsf)	Gmax (tsf)	τav (tsf)	Shear Strain γ	Strain E15	Strain Enc	Dry Sand Subsidence (in.)
0.49	0.15	16.39	0.10	0.64	1.57	115	0.028	0.028	1.000	0.64	0.70	1.70	26.29	2.67	0.15	2.82	1.06	26.34	2.29		1	21	1.93	1.00	50.7	1.00	0.092	0.399	Non-Liq.	4.5	5.8	4.3	10.1	4.79	0.019	193	0.013	1.2E-02	2.8E-02	2.4E-02	0.283
0.98	0.30	17.95	0.10	0.57	1.72	115	0.057	0.057	1.000	0.57	0.63	1.70	20.70	2.92	0.00	3.00	1.03	28.85	2.24		1	25	1.78	1.00	50.8	1.00	0.092	0.399	Non-Liq.	4.6	6.2	3.0	10.2	4.28	0.038	169	0.027	1.1E-02	2.4E-02	2.1E-02	0.250
1.48	0.45	14.15	0.18	1.24	1.36	115	0.085	0.085	0.999	1.24	0.76	1.70	22.60	2.30	0.82	3.12	1.30	22.74	2.49		1	15	2.72	1.00	61.9	1.00	0.102	0.399	Non-Liq.	4.1	5.5	6.9	12.4	2.00	0.057	247	0.040	9.5E-03	1.2E-02	1.0E-02	0.118
1.97	0.60	10.50	0.07	0.66	1.01	115	0.113	0.113	0.997	0.67	0.75	1.70	16.70	1.72	0.18	1.89		16.87	2.48		0			1.00		1.00		0.398	Non-Liq.	4.2	4.1			0.00	0.076						
2.46	0.75	6.20	0.03	0.43	0.60	115	0.141	0.141	0.996	0.44	0.79	1.70	9.57	1.02	0.00	1.02		10.19	2.52		0			1.00		1.00		0.398	Non-Liq.	3.9	2.6			0.00	0.095						
2.95	0.90	5.75	0.03	0.47	0.55	115	0.170	0.170	0.995	0.49	0.81	1.70	8.88	0.93	0.00	0.93		9.15	2.68		0			1.00		1.00		0.397	Non-Liq.	3.8	2.4			0.00	0.114						
3.44	1.05	5.01	0.03	0.53	0.48	115	0.198	0.198	0.994	0.55	0.83	1.70	7.72	0.82	0.04	0.85		8.05	2.70		0			1.00		1.00		0.397	Non-Liq.	3.9	2.2			0.00	0.133						
3.94	1.20	6.17	0.03	0.42	0.59	115	0.226	0.226	0.993	0.44	0.80	1.70	9.58	1.00	0.00	1.00		9.92	2.64		0			1.00		1.00		0.396	Non-Liq.	3.8	2.6			0.00	0.152						
4.43	1.35	6.58	0.03	0.40	0.63	115	0.255	0.255	0.992	0.41	0.79	1.70	10.18	1.07	0.00	1.07		10.57	2.60		0			1.00		1.00		0.396	Non-Liq.	3.9	2.7			0.00	0.171						
4.92	1.50	18.05	0.04	0.22	1.73	115	0.283	0.283	0.990	0.22	0.64	1.70	28.59	3.72	0.00	3.72		28.73	2.09		0			1.26		1.00		0.395	Non-Liq.	4.9	7.5			0.00	0.190						
5.41	1.65	21.52	0.12	0.56	2.06	115	0.311	0.311	0.989	0.57	0.65	1.70	34.08	4.43	0.07	4.50		43.73	2.17		0			1.26		1.00		0.395	Non-Liq.	4.8	9.2			0.00	0.209						
5.91	1.80	6.77	0.11	1.58	0.65	115	0.340	0.340	0.988	1.64	0.56	1.70	10.33	1.10	1.17	2.26		10.88	2.84		0			1.00		1.00		0.395	Non-Liq.	3.4	3.2			0.00	0.228						
6.40	1.95	6.14	0.02	0.37	0.59	115	0.368	0.368	0.987	0.40	0.80	1.70	9.27	1.00	0.00	1.00		9.87	2.83		0			1.00		1.00		0.394	Non-Liq.	3.8	2.6			0.00	0.246						
6.89	2.10	9.04	0.02	0.27	0.87	115	0.396	0.396	0.986	0.29	0.74	1.70	13.89	1.70	0.00	1.70		16.75	2.42		0			1.15		1.00		0.394	Non-Liq.	4.3	3.9			0.00	0.265						
7.38	2.25	9.85	0.03	0.26	0.94	115	0.424	0.424	0.985	0.27	0.73	1.70	15.15	1.85	0.00	1.85	1.00	19.25	2.38		1	6	1.00	1.15	18.2	1.00	0.065	0.393	Non-Liq.	4.3	4.2	0.0	4.2	20.00	0.284	385	0.199	7.1E-02	4.6E-01	1.0E-01	1.181
7.87	2.40	10.90	0.03	0.28	1.04	115	0.453	0.453	0.984	0.29	0.72	1.70	16.75	2.05	0.00	2.05	1.00	20.19	2.35		1	10	1.00	1.15	20.2	1.00	0.067	0.393	Non-Liq.	4.4	4.6	0.0	4.6	20.00	0.303	409	0.212	5.9E-02	3.3E-01	1.0E-01	1.181
8.37	2.55	11.83	0.08	0.71	1.13	115	0.481	0.481	0.983	0.74	0.78	1.70	18.24	2.22	0.23	2.46		21.92	2.46		0			1.15		1.00		0.392	Non-Liq.	4.2	5.2			0.00	0.322						
8.86	2.70	11.52	0.11	0.93	1.10	115	0.509	0.509	0.982	0.96	0.79	1.70	17.69	1.87	0.48	2.35		18.51	2.53		0			1.00		1.00		0.392	Non-Liq.	4.0	4.6			0.00	0.341						
9.35	2.85	10.25	0.08	0.73	0.98	115	0.538	0.538	0.981	0.77	0.79	1.70	15.60	1.67	0.26	1.92		16.46	2.51		0			1.00		1.00		0.392	Non-Liq.	4.0	4.1			0.00	0.360						
9.84	3.00	8.44	0.05	0.55	0.81	115	0.566	0.566	0.979	0.59	0.80	1.65	12.30	1.37	0.05	1.43		13.19	2.56		0			1.00		1.00		0.391	Non-Liq.	4.0	3.3			0.00	0.379						
10.33	3.15	8.01	0.02	0.29	0.77	115	0.594	0.594	0.978	0.32	0.79	1.58	11.04	1.30	0.00	1.30		11.93	2.53		0			1.00		1.00		0.391	Non-Liq.	4.0	3.0			0.00	0.398						
10.83	3.30	8.20	0.02	0.27	0.79	115	0.623	0.623	0.977	0.39	0.78	1.52	10.98	1.35	0.00	1.35		11.87	2.52		0			1.00		1.00		0.390	Non-Liq.	4.1	2.9			0.00	0.417						
11.32	3.45	9.32	0.02	0.23	0.89	115	0.651	0.651	0.976	0.25	0.77	1.45	11.89	1.86	0.00	1.86		16.10	2.47		0			1.26		1.00		0.390	Non-Liq.	4.2	3.8			0.00	0.436						
11.81	3.60	10.70	0.02	0.21	1.02	115	0.679	0.679	0.975	0.22	0.75	1.39	13.19	2.04	0.00	2.04	1.00	17.80	2.42		1	5	1.00	1.26	17.8	1.00	0.065	0.389	Non-Liq.	4.3	4.2	0.0	4.2	20.00	0.455	485	0.315	6.4E-02	4.2E-01	1.0E-01	1.181
12.30	3.75	10.54	0.02	0.22	1.01	130	0.711	0.711	0.974	0.23	0.75	1.35	12.53	1.81	0.00	1.81		16.95	2.44		0			1.26		1.00		0.389	Non-Liq.	4.2	4.0			0.00	0.476						
12.80	3.90	9.10	0.02	0.25	0.87	130	0.743	0.743	0.973	0.27	0.78	1.32	10.42	1.25	0.00	1.25		11.34	2.54		0			1.00		1.00		0.389	Non-Liq.	4.0	2.8			0.00	0.498						
13.29	4.05	11.09	0.02	0.21	1.06	130	0.775	0.775	0.972	0.22	0.75	1.26	12.37	2.05	0.00	2.05		16.64	2.45		0			1.41		1.00		0.388	Non-Liq.	4.2	4.4			0.00	0.519						
13.78	4.20	10.63	0.02	0.21	1.02	130	0.807	0.807	0.971	0.23	0.76	1.23	11.41	1.89	0.00	1.89		17.37	2.48		0			1.41		1.00		0.388	Non-Liq.	4.1	4.2			0.00	0.541						
14.27	4.35	10.10	0.02	0.22	0.97	130	0.839	0.839	0.970	0.24	0.77	1.20	10.47	1.23	0.00	1.23		11.42	2.52		0			1.00		1.00		0.387	Non-Liq.	4.1	2.8			0.00	0.562						
14.76	4.50	10.44	0.02	0.21	1.00	130	0.871	0.871	0.969	0.23	0.77	1.16	10.50	1.22	0.00	1.22		11.46	2.52		0			1.00		1.00		0.387	Non-Liq.	4.1	2.8			0.00	0.584						
15.26	4.65	10.78	0.02	0.21	1.03	130	0.903	0.903	0.968	0.23	0.77	1.13	10.55	1.21	0.00	1.21		11.51	2.51		0			1.00		1.00		0.580	Non-Liq.	4.1	2.6			0.00	0.605						
15.75	4.80	10.19	0.02	0.22	0.98	130	0.935	0.935	0.967	0.25	0.76	1.10	9.63	1.11	0.00	1.11		10.60	2.56		0			1.00		1.00		0.589	Non-Liq.	4.0	2.7			0.00	0.626						
16.24	4.95	10.43	0.02	0.22	1.00	130	0.967	0.967	0.966	0.24	0.78	1.07	9.59	1.09	0.00	1.09		10.57	2.56		0			1.00		1.00		0.598	Non-Liq.	4.0	2.6			0.00	0.645						
16.73	5.10	12.02	0.05	0.41	1.15	130	0.999	0.999	0.965	0.45	0.79	1.05	10.88	1.21	0.00	1.21		11.86	2.59		0			1.00		1.00		0.606	Non-Liq.	3.9	3.0			0.00	0.665						
17.22	5.25	15.66	0.09	0.54	1.50	130	1.031	1.031	0.964	0.58	0.77	1.02	14.10	1.53	0.06	1.59		15.10	2.52		0			1.00		1.00		0.614	Non-Liq.	4.1	3.7			0.00	0.691						
17.72	5.40	12.92	0.09	0.72	1.24	130	1.063	1.063	0.962	0.78	0.81	1.00	11.17	1.23	0.28	1.51		12.17	2.67		0			1.00		1.00		0.622	Non-Liq.	3.8	3.2			0.00	0.712						
18.21	5.55	18.26	0.29	1.58	1.75	130	1.095	1.095	0.961	1.68	0.81	0.97	15.78	1.71	1.39	3.10		16.79	2.69		0			1.00		1.00		0.629	Non-Liq.	3.7	4.5			0.00	0.734						
18.70	5.70	23.98	0.57	2.38	2.30	130	1.127	1.127	0.960	2.50	0.82	0.95	20.51	2.23	2.43	4.65		21.53	2.70		0			1.00		1.00		0.636	Non-Liq.	3.7	5.8			0.00	0.755						
19.19	5.85	18.29	0.64	3.50	1.75	130	1.159	1.159	0.959	3.74	0.88	0.92	14.94	1.67	3.88	5.55		15.85	2.81		0			1.00		1.00		0.643	Non-Liq.	3.3	4.8			0.00	0.777						
19.69	6.00	48.03	0.66	1.38	4.60	130	1.191	1.191	0.958	1.41	0.70	0.92	40.76	5.03	1.14	6.16		48.17	2.31		0			1.15		1.00		0.649	Non-Liq.	4.5	10.8			0.00	0.798						
20.18	6.15	42.28	0.73	1.74	4.05	130	1.223	1.223	0.956	1.79	0.73	0.90	34.90	4.38	1.61	5.99		41.43	2.43		0			1.15		1.00		0.655	Non-Liq.	4.3	6.7			0.00	0.810						
20.67	6.30	19.04	0.59	2.96	1.81	130	1.255	1.255	0.955	3.14	0.86	0.88	15.25	1.75	3.19	4.94		16.27	2.80		0			1.00		0.99		0.661	Non-Liq.	3.4	4.6			0.00	0.841						
21.16	6.45	94.86	0.60	0.71	9.09	130	1.287	1.287	0.954	0.72	0.58	0.89	76.99	8.32	0.28	8.60		80.37	1.91		0			1.00		0.99		0.667	Non-Liq.	5.3	15.3			0.00	0.862						
21.65	6.60	143.85	1.25	0.87	13.77	130	1.319	1.319	0.952	0.87	0.55	0.89	115.31	12.62	0.48	13.10	1.04	120.41	1.81		1	85	1.12	1.00	134.5	0.98	0.306	0.672	0.45	5.4	22.1	4.8	26.9	1.08	0.884	1,259	0.598	2.1E-03			
22.15	6.75	140.49	2.07	1.48	13.45	130	1.351	1.351	0.951	1.49	0.60	0.86	113.53	12.41	1.28	13.69	1.10	114.63	1.99		1	82	1.23	1.00	147.0	0.97	0.375	0.678	0.54	5.1	22.4	5.5	27.9	1.07	0.905	1,200	0.612	2.0E-03			
22.64	6.90	180.96	2.98	1.64	17.33	130	1.383	1.383	0.950	1.66	0.59	0.85	144.85	18.00	1.50	17.51	1.09	146.06	1.85		1	93	1.23	1.00	180.4	0.97	Infin.	0.683	Non-Liq.	5.2	28.1	7.9	36.1	0.00	0.927	1,422	0.625	1.3E-03			
23.13	7.05	208.29	2.96	1.42	19.95	130	1.415	1.415	0.948	1.43	0.56	0.85	185.97	18.26	1.22	19.48	1.07	187.10	1.86		1	96	1.15	1.00	192.6	0.95	Infin.	0.687	Non-Liq.	5.4	31.2	7.3	38.5	0.00	0.946	1,470	0.639	1.4E-03			
23.62	7.20	207.60	2.50	1.20	19.88	130	1.447	1.447	0.946	1.21	0.55	0.84	164.06	17.90	0.93	18.89	1.05	165.22	1.81		1	98	1.11	1.00	184.0	0.96	Infin.	0.692	Non-Liq.	5.5	34.3	6.5	36.8	0.00	0.959	1,434	0.652	1.5E-03			
24.11	7.35	182.44	2.10	1.15	17.47	130	1.479	1.479	0.945	1.16	0.56	0.83	141.88	15.59	0.86	16.45	1.06	143.04	1.84		1	92	1.14	1.00	182.6	0.95	Infin.	0.696	Non-Liq.	5.4	26.5	6.0	32.5	0.00	0.981	1,420	0.665	1.7E-03			
24.61	7.50	81.01	1.84	2.27	7.76	130	1.511	1.500	0.943	2.31	0.70	0.78	56.90	6.91	2.34	9.25		60.02	2.32		0			1.00		0.97		0.700	Non-Liq.	4.5	13.5			0.00	1.012						
25.10	7.65	39.23	1.66	4.23	3.76	130	1.543	1.516	0.941	4.40	0.83	0.74	26.47	3.31	4.95	8.27		27.53	2.77		0			1.00		0.97		0.704	Non-Liq.	3.6	7.7			0.00	1.034						
25.59	7.80	35.57	1.16	3.25	3.41	130	1.575	1.533	0.940	3.40	0.82	0.74	23.78	2.95	3.65	6.60		24.85	2.73		0			1.00		0.97		0.708	Non-Liq.	3.7	6.8			0.00	1.055						
26.08	7.95	40.26	1.08	2.64	3.85	130	1.607	1.549	0.938	2.74	0.79	0.74	27.12	3.32	2.84	6.16		28.20	2.63		0			1.00		0.96		0.711	Non-Liq.	3.9	7.3			0.00	1.077						
26.57	8.10	66.42	1.36	2.04	6.36	130	1.639	1.566	0.936	2.09	0.74	0.78	46.37	5.91	2.06	7.96		50.88	2.37		0			1.07		0.96		0.715	Non-Liq.	4.4	11.7			0.00	1.098						
27.07	8.25	59.34	1.67	2.87	5.59	130	1.671	1.583	0.934	2.95	0.75	0.74	39.59	4.87	3.16	8.03		40.65	2.52		0			1.00		0.96		0.719	Non-Liq.	4.1	10.0			0.00	1.119						
27.56	8.40	209.31	2.69	1.28	20.04	130	1.703	1.599	0.932	1.29	0.58	0.79	155.80	17.66	1.05	18.71		157.59	1.85		0			1.00		0.96		0.721	Non-Liq.	5.4	29.3			0.00	1.141						
28.05	8.55	176.93	3.26	1.85	16.94	130	1.735	1.616	0.930	1.86	0.61	0.77	127.89	15.00	1.80	16.80	1.12	129.16	2.02		1	87	1.33	1.00	171.3	0.91	Infin.	0.723	Non-Liq.	5.0	25.5	8.7	34.3	0.00	1.162	1,585	0.788	1.7E-03			
28.54	8.70	173.02	3.04	1.75	16.65	130	1.767	1.633	0.928	1.77	0.61	0.77	125.18	14.66	1.67	16.33	1.11	126.35	2.01		1	87	1.31	1.00	165.7	0.91	Infin.	0.726	Non-Liq.	5.1	24.9	8.2	33.1	0.00	1.184	1,582	0.750	1.7E-03			
29.04	8.85	214.14	3.64	1.70	20.51	130	1.799	1.649	0.925	1.71	0.59	0.77	154.85	18.09	1.61	19.70	1.09	156.05	1.94		1	95	1.23	1.00	191.3	0.90	Infin.	0.728	Non-Liq.	5.2	39.0	8.3	38.3	0.00	1.205	1,651	0.793	1.5E-03			
29.53	9.00	263.47	3.69	1.40	25.23	130	1.831	1.666	0.923	1.41	0.55	0.76	192.83	22.12	1.21	23.33	1.06	194.08	1.81		1	100	1.11	1.00	216.3	0.90	Infin.	0.731	Non-Liq.	5.5	35.0	7.7	43.3	0.00	1.227	1,738	0.805	1.3E-03			
30.02	9.15	156.31	2.81	1.80	14.97	130	1.863	1.683	0.920	1.82	0.62	0.75	109.80	13.03	1.74	14.77	1.13	110.80	2.06		1	81	1.36	1.00	153.2	0.89	0.414	0.733	0.61	5.0	22.3	5.5	27.8	1.04	1.248	1,513	0.817	2.1E-03			
30.51	9.30	151.25	2.26	1.49	14.48	130	1.895	1.699	0.918	1.51	0.61	0.75	106.04	12.43	1.34	13.77	1.11	107.25	2.01		1	80	1.31	1.00	141.0	0.89	0.341	0.734	0.41	5.1	21.2	5.5	26.7	1.10	1.269	1,505	0.828	2.2E-03			
31.00	9.45	272.79	2.18	0.80	26.12	130	1.927	1.716	0.915	0.81	0.50	0.79	201.19	21.98	0.40	22.38	1.02	202.47	1.62		1	100	1.00	1.00	202.5	0.89	Infin.	0.736	Non-Liq.	5.8	34.8	5.7	40.5	0.00	1.291	1,744	0.840	1.4E-03			
31.50	9.60	212.93	2.40	1.13	20.39	130	1.959	1.732	0.913	1.13	0.55	0.76	152.25	17.32	0.84	18.16	1.05	153.50	1.81		1	95	1.12	1.00	171.2	0.88	Infin.	0.737	Non-Liq.	5.5	28.2	6.1	34.2	0.00	1.312	1,603	0.851	1.7E-03			
31.99	9.75	87.62	2.78	3.15	8.39	130	1.991	1.749	0.910	3.22	0.73	0.69	56.29	7.26	3.57	10.83	1.49	57.42	2.44		1	54	2.47	1.00	142.0	0.91	0.346	0.739	0.47	4.2	13.6	5.5	19.1	1.59	1.334	1,379	0.863	3.2E-03			

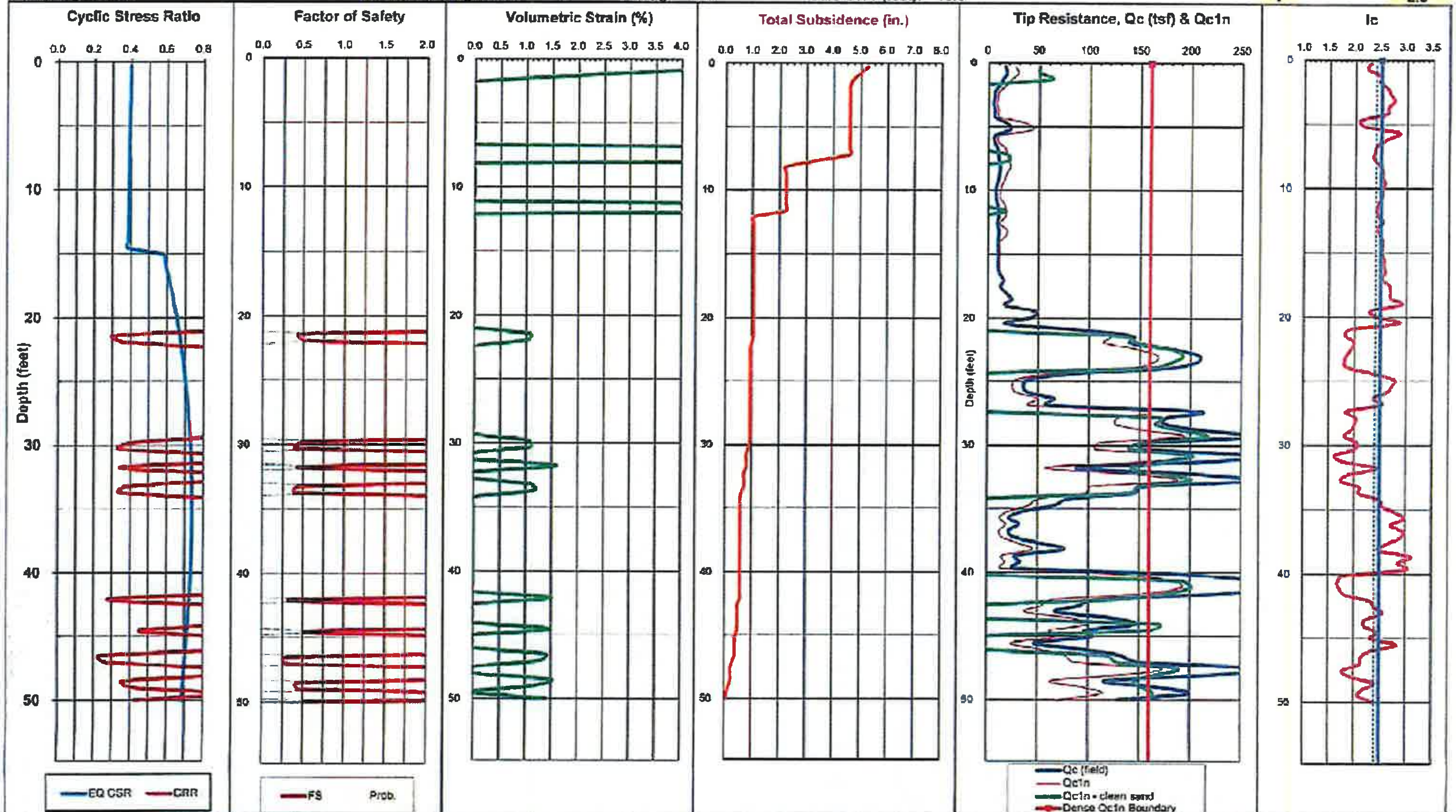
Depth (feet)	(m)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio Rf %	qc MPa	Total Unit Wt. (pcf)	Total Stress po (tsf)	Eff. Stress p'o (tsf)	rd	F %	n	Max 1.70 Cq	Q	Mod. qc1 MPa	Mod. Δqc MPa	Mod. qc_{1mod} MPa	Mod. eff Kc	Qc1n	Ic	Override	Liquef. Suscept. (0 or 1)	Re. Dens. Dr (%)	$K_σ$	$K_α$	Clean Sand Qc1s	$K_σ$	CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Qc1n $N_{1(60)}$ Ratio	Equiv. $N_{1(60)}$	FC Adj $ΔN_{1(60)}$	Equiv. $N_{1(60)cs}$	Volumetric Strain (%)	σ (tsf)	G_{max} (tsf)	$τ_{av}$ (tsf)	Shear Strain γ	Strain E_{15}	Strain Enc	Dry Sand Subsidence (in.)
32.48	9.90	206.90	2.99	1.45	19.77	130	2.023	1.706	0.907	1.46	0.58	0.74	144.04	16.93	1.27	18.21	1.05	145.28	1.91		1	92	1.20	1.00	173.6	0.87	Infin.	0.740	Non-Liq.	5.3	27.6	7.1	34.7	0.00	1.355	1.698	0.874	1.6E-03			
32.97	10.05	261.03	2.97	1.14	25.00	130	2.055	1.782	0.904	1.15	0.53	0.76	185.58	21.22	0.86	22.08	1.04	186.85	1.75		1	100	1.07	1.00	200.8	0.87	Infin.	0.741	Non-Liq.	5.6	33.6	6.6	40.2	0.00	1.377	1.796	0.884	1.4E-03			
33.46	10.20	151.33	2.85	1.89	14.49	130	2.087	1.799	0.901	1.91	0.63	0.72	101.11	12.38	1.87	14.25	1.15	102.23	2.10		1	75	1.45	1.00	148.4	0.87	0.384	0.742	0.45	4.9	20.9	5.5	26.4	1.11	1.398	1.574	0.895	2.2E-03			
33.96	10.35	146.11	2.60	1.78	13.99	130	2.119	1.816	0.898	1.80	0.63	0.71	97.10	11.86	1.72	13.58	1.14	98.33	2.09		1	76	1.44	1.00	141.5	0.86	0.344	0.742	0.40	4.9	20.0	5.5	25.5	1.16	1.419	1.560	0.906	2.2E-03			
34.45	10.50	70.93	2.63	3.28	7.65	130	2.151	1.832	0.894	3.35	0.74	0.68	49.08	6.52	3.74	10.25		50.23	2.49		0			1.00		0.93		0.743	Non-Liq.	4.1	12.2			0.00	1.441						
34.94	10.65	67.01	2.11	3.15	6.42	130	2.183	1.849	0.891	3.24	0.78	0.65	40.35	5.38	3.57	8.95		41.50	2.54		0			1.00		0.92		0.742	Non-Liq.	4.0	10.3			0.00	1.462						
35.43	10.80	34.62	1.15	3.32	3.31	130	2.215	1.866	0.888	3.50	0.83	0.62	19.32	2.66	3.79	6.45		20.42	2.81		0			1.00		0.92		0.743	Non-Liq.	3.5	5.8			0.00	1.484						
35.93	10.95	22.45	0.71	3.18	2.15	130	2.247	1.882	0.884	3.47	0.88	0.60	11.72	1.64	3.61	5.28		12.79	2.98		0			1.00		0.92		0.743	Non-Liq.	3.2	4.0			0.00	1.505						
36.42	11.10	31.74	0.65	2.06	3.04	130	2.278	1.899	0.880	2.19	0.80	0.62	17.63	2.32	2.10	4.42		18.75	2.72		0			1.00		0.92		0.743	Non-Liq.	3.7	5.1			0.00	1.527						
36.91	11.25	22.08	0.62	2.81	2.11	130	2.311	1.915	0.877	3.07	0.87	0.60	11.35	1.58	3.11	4.65		12.43	2.96		0			1.00		0.92		0.742	Non-Liq.	3.2	3.9			0.00	1.548						
37.40	11.40	26.01	0.78	2.99	2.49	130	2.343	1.932	0.873	3.23	0.86	0.60	13.58	1.90	3.35	5.25		14.67	2.91		0			1.00		0.91		0.742	Non-Liq.	3.3	4.4			0.00	1.569						
37.89	11.55	51.85	1.57	3.03	4.96	130	2.375	1.949	0.869	3.15	0.78	0.62	28.24	4.02	3.41	7.42		30.38	2.64		0			1.00		0.91		0.741	Non-Liq.	3.8	7.9			0.00	1.591						
38.38	11.70	75.73	2.31	3.05	7.25	130	2.406	1.965	0.865	3.13	0.75	0.63	43.94	6.00	3.43	9.43		45.11	2.51		0			1.00		0.91		0.740	Non-Liq.	4.1	11.0			0.00	1.612						
38.88	11.85	28.24	1.83	6.49	2.70	130	2.438	1.982	0.861	6.98	0.92	0.56	13.97	2.17	6.05	8.22		15.02	3.11		0			1.00		0.91		0.739	Non-Liq.	2.9	5.2			0.00	1.634						
39.37	12.00	33.02	1.11	3.36	3.16	130	2.470	1.999	0.857	3.57	0.84	0.59	17.18	2.46	3.84	6.30		18.27	2.85		0			1.00		0.91		0.738	Non-Liq.	3.4	5.4			0.00	1.655						
39.86	12.15	26.02	1.11	4.25	2.49	130	2.502	2.015	0.852	4.52	0.89	0.58	12.79	1.91	5.05	6.96		13.87	3.02		0			1.00		0.91		0.736	Non-Liq.	3.1	4.5			0.00	1.677						
40.35	12.30	196.05	1.72	0.88	18.77	130	2.534	2.032	0.849	0.89	0.54	0.79	128.67	15.05	0.50	15.56		132.89	1.79		0			1.02		0.90		0.735	Non-Liq.	5.5	24.2			0.00	1.698						
40.85	12.45	272.43	2.45	0.90	26.09	130	2.566	2.049	0.843	0.91	0.51	0.71	182.01	21.26	0.54	21.79	1.03	187.17	1.69		1	100	1.03	1.02	192.8	0.81	Infin.	0.733	Non-Liq.	5.7	32.9	5.7	38.6	0.00	1.720	1.980	1.031	1.4E-03			
41.34	12.60	282.63	2.89	1.02	27.06	130	2.598	2.065	0.839	1.03	0.52	0.71	186.97	22.27	0.76	22.98	1.03	192.22	1.72		1	100	1.05	1.02	202.1	0.81	Infin.	0.732	Non-Liq.	5.6	34.1	6.3	40.4	0.00	1.741	2.024	1.038	1.3E-03			
41.83	12.75	235.52	2.91	1.24	22.55	130	2.630	2.082	0.834	1.25	0.58	0.68	151.31	18.64	0.99	18.63	1.05	155.80	1.84		1	85	1.14	1.02	177.5	0.81	Infin.	0.730	Non-Liq.	5.4	28.9	6.6	35.5	0.00	1.762	1.950	1.045	1.4E-03			
42.32	12.90	108.28	2.48	2.29	10.37	130	2.662	2.098	0.830	2.34	0.69	0.62	62.65	8.60	2.40	11.00	1.28	65.21	2.31		1	59	1.97	1.02	126.8	0.85	0.278	0.728	0.32	4.5	14.5	5.5	20.0	1.52	1.784	1.622	1.052	2.5E-03			
42.81	13.05	91.41	2.33	2.55	8.75	130	2.694	2.115	0.825	2.61	0.71	0.61	51.45	7.23	2.74	9.97		53.75	2.40		0			1.02		0.90		0.726	Non-Liq.	4.3	12.5			0.00	1.805						
43.31	13.20	68.75	2.09	3.04	6.58	130	2.726	2.132	0.820	3.14	0.76	0.59	36.99	5.28	3.40	8.69		38.18	2.58		0			1.00		0.89		0.724	Non-Liq.	4.0	9.6			0.00	1.827						
43.80	13.35	123.44	2.52	2.04	11.82	130	2.758	2.145	0.816	2.08	0.67	0.62	71.55	10.99	2.06	13.05		83.93	2.23		0			1.15		0.89		0.721	Non-Liq.	4.8	18.1			0.00	1.848						
44.29	13.50	146.81	3.44	2.34	14.06	130	2.790	2.165	0.811	2.37	0.68	0.62	85.05	13.30	2.46	15.75	1.16	99.50	2.22		1	77	1.71	1.15	170.3	0.79	Infin.	0.719	Non-Liq.	4.7	21.4	10.0	31.4	0.00	1.870	1.927	1.077	1.5E-03			
44.78	13.65	97.30	3.01	3.10	9.32	130	2.822	2.182	0.806	3.17	0.73	0.59	53.08	8.76	3.46	12.23	1.40	62.58	2.45		1	57	2.53	1.15	158.5	0.84	0.450	0.717	0.53	4.2	14.9	5.5	20.4	1.49	1.891	1.679	1.083	2.3E-03			
45.28	13.80	104.78	2.52	2.41	10.03	130	2.854	2.198	0.801	2.46	0.70	0.60	58.20	9.29	2.54	11.83		68.52	2.35		0			1.15		0.89		0.714	Non-Liq.	4.4	15.5			0.00	1.912						
45.77	13.95	47.11	2.09	4.44	4.51	130	2.886	2.215	0.796	4.66	0.83	0.54	22.82	3.56	5.25	8.81		24.86	2.83		0			1.00		0.89		0.711	Non-Liq.	3.5	7.0			0.00	1.934						
46.26	14.10	93.18	1.72	1.84	8.92	130	2.918	2.231	0.791	1.89	0.69	0.60	51.49	6.95	1.78	8.73		52.85	2.31		0			1.00		0.89		0.709	Non-Liq.	4.5	11.8			0.00	1.955						
46.75	14.25	133.71	2.13	1.59	12.80	130	2.950	2.248	0.786	1.62	0.64	0.62	76.81	10.02	1.45	11.47	1.14	78.12	2.13		1	67	1.52	1.00	118.7	0.83	0.236	0.706	0.28	4.8	16.2	5.5	21.7	1.40	1.977	1.753	1.104	2.1E-03			
47.24	14.40	148.72	2.44	1.64	14.24	130	2.982	2.265	0.781	1.67	0.63	0.62	85.64	11.23	1.52	12.74	1.14	86.98	2.11		1	71	1.47	1.00	127.8	0.78	0.274	0.703	0.30	4.9	17.8	5.5	23.3	1.29	1.998	1.806	1.109	1.9E-03			
47.74	14.55	276.00	3.17	1.15	26.43	130	3.014	2.281	0.776	1.16	0.54	0.66	170.82	20.84	0.86	21.70	1.04	172.24	1.79		1	99	1.09	1.00	188.6	0.78	Infin.	0.700	Non-Liq.	5.5	31.3	6.4	37.7	0.00	2.020	2.130	1.114	1.2E-03			
48.23	14.70	224.48	3.52	1.57	21.49	130	3.046	2.298	0.771	1.58	0.59	0.63	132.99	17.20	1.41	18.61	1.08	134.37	1.90		1	89	1.25	1.00	167.8	0.77	Infin.	0.697	Non-Liq.	5.2	26.0	7.5	33.5	0.00	2.041	2.059	1.118	1.3E-03			
48.72	14.85	117.37	3.54	3.01	11.24	130	3.078	2.315	0.766	3.07	0.71	0.57	62.34	9.11	3.32	12.43	1.36	83.56	2.36		1	58	2.28	1.00	145.0	0.82	0.354	0.694	0.43	4.3	14.7	5.5	20.2	1.50	2.062	1.749	1.123	2.1E-03			
49.21	15.00	168.17	3.77	2.24	16.10	130	3.110	2.331	0.761	2.27	0.65	0.60	93.81	13.01	2.30	15.30	1.16	95.13	2.17		1	73	1.61	1.00	152.8	0.77	0.412	0.691	0.44	4.7	20.1	5.5	25.6	1.16	2.084	1.991	1.127	1.7E-03			
49.70	15.15	195.78	4.07	2.05	18.03	130	3.142	2.348	0.756	2.07	0.63	0.61	112.67	15.37	2.04	17.41	1.13	114.02	2.09		1	82	1.44	1.00	164.0	0.76	Infin.	0.688	Non-Liq.	4.9	23.2	9.6	32.8	0.00	2.105	2.076	1.131	1.3E-03			
50.20	15.30	129.86	4.09	3.15	12.42	130	3.174	2.365	0.751	3.22	0.71	0.57	68.13	10.10	3.50	13.60	1.35	69.40	2.38		1	62	2.23	1.00	154.8	0.82	0.425	0.685	0.51	4.3	16.0	5.5	21.5	1.41	2.127	1.912	1.135	1.6E-03			

EARTH SYSTEMS - EVALUATION OF LIQUEFACTION POTENTIAL AND INDUCED GROUND SUBSIDENCE

Commercial Organics Processing Facility   Project No: VT-24872-02   Method Used: 1   1998 NCEER (Robertson & Wride)

Settlement Analysis using Tokimatsu & Seed (1987), clean sand Qc1n/N1(60) ratio =5

Sounding: CPT-2   Earthquake Magnitude: 7   PGA, g: 1.10   Calc GWT (feet): 15.0   Plot 1   Limiting Ic: 2.6



Total Thickness of Liquefiable Layers: 6.9 feet   Estimated Total Ground Subsidence (Settlement): 5.2 inches

EARTH SYSTEMS - EVALUATION OF LIQUEFACTION POTENTIAL AND INDUCED GROUND SUBSIDENCE

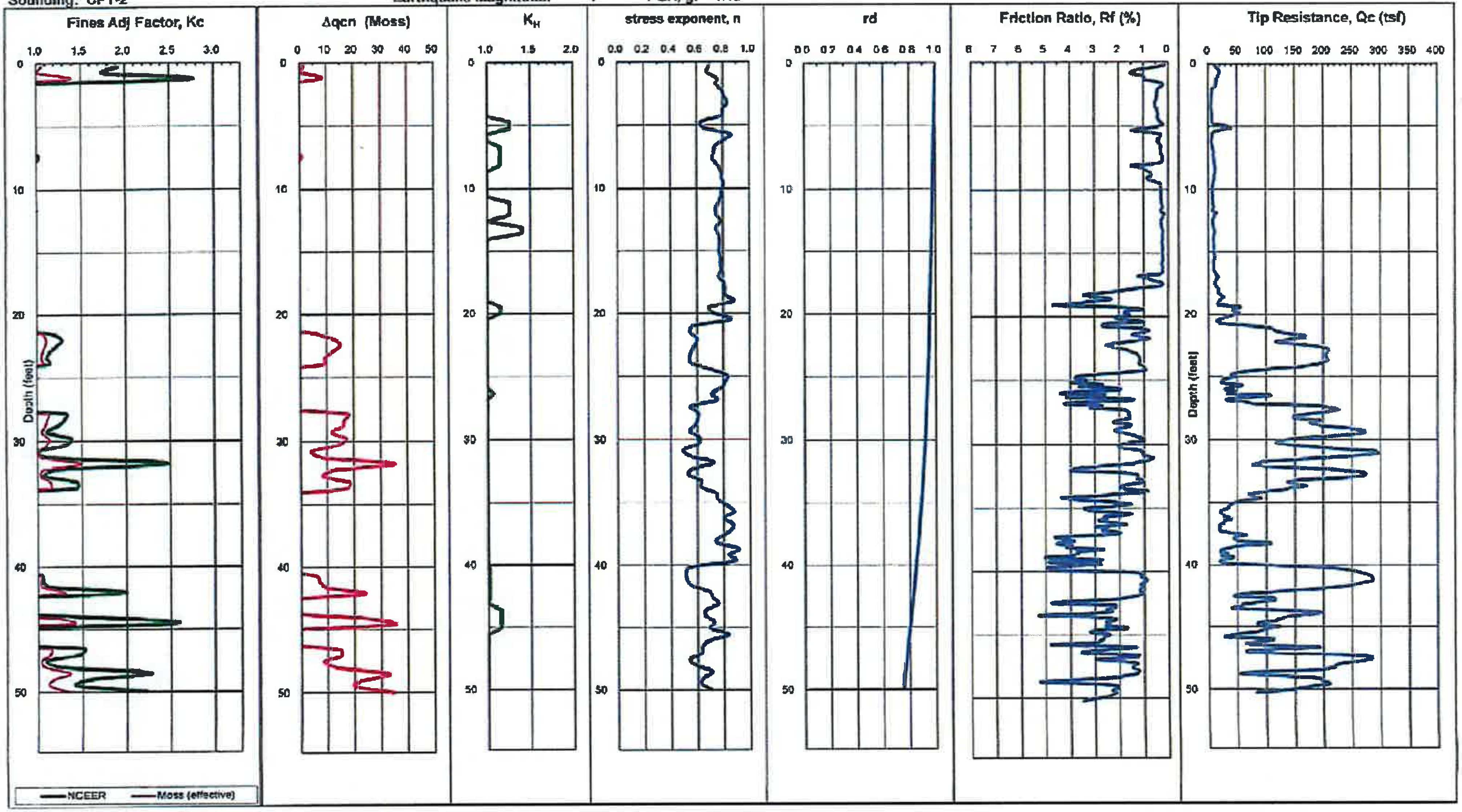
3 avg increment =0.15m Qc1n/N1(60): 5

Ignore 1st/last increment into sand/silt soils: 0

Method Used: 1998 NCEER (Robertson & Wride)

Sounding: CPT-2

Earthquake Magnitude: 7 PGA, g: 1.10



CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Commercial Organics Processing Facility
Job No: VT-24872-02
Date: 5/17/2017
Sounding: CPT-3

Liquefaction Analysis using 1998 NCEER (Robertson & Wride) method
Settlement Analysis using Tokimatsu & Seed (1987), clean sand Qc1n/N1(60) ratio =5

Plot: 3
Method Used: 1 1998 NCEER (Robertson & Wride)

EARTHQUAKE INFORMATION:
Magnitude: 7 7.5
PGA, g: 1.10 0.92
MSF: 1.19
GWT, feet: 24.8
Calc GWT, feet: 15.0

Averaging Increment: 3 0.15 m
Induced CSR (M=7.5) = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_q*K_c*K_α*Qc
SF = CRR*K_σ*K_α/CSR

Ignore 1st/last increment into sand/silt soils: 1 yes
Ignore/intermediate soils: 0.00 m
Unit Weight of unsaturated soils: 115 pcf
Unit Weight of saturated soils: 130 pcf
Limiting Ic for liquefiable soils: 2.50 Limiting Ic for K_c: 2.5

Use Moss @ P_L: 15%
Use Tokimatsu & Seed (0) or Ishihara & Yoshimine (1): 0
Required SF: 1.50 Max $\Delta N_{1(60)}$ - fines correction: 5.5
Min SF of Liquefiable Layers: 0.23 Max $\Delta N_{1(60)}$: 10.0
Avg SF of Liquefiable Layers: 0.41

Total Liquefied Thickness (feet): 3.4
Total Induced Subsidence (inches): 0.6

SETTLEMENT OF DRY SANDS
Qc1n / N1(60) Ratio for clean sand: 5
$p = 0.67*p_o$
$\tau_{av} = 0.65*PGA*p_o*r_d$
$G_{max} = 447*N_{1(60)cs}^{(1/3)}*p^{0.5}$
$a = 0.0389*(p/1)-0.124$
$b = 6400*(p/1)^{-0.6}$
$\gamma = [1+a*EXP(b*\tau_{av}/G_{max})]/[(1+a)*\tau_{av}/G_{max}]$
$E_{15} = \gamma*(N_{1(60)cs}/20)^{-1.2}$
$N_c = (MAG-4)^{2.17}$
$E_c = (N_c/15)^{0.45}*E_{15}$
$S = 2*H*E_c$
Nc = 10.6

Depth (feet)	Depth (m)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio Rf %	qc MPa	Total Unit Wt. (pcf)	Total Stress po (tsf)	Eff. Stress p'o (tsf)	rd	F %	n	Max 1.70 Cq	Q	Moss qc1 MPa	Moss Δqc MPa	Moss qc1,mod MPa	Moss eff Kc	Qc1n	Ic	Override	Liquef. Suscept. (0 or 1)	Rel. Dens. Dr (%)	K_c	K_α	Clean Sand Qc1n	K_σ	CRR	Induced CSR M=7.5	Liquefac. Safety Factor	Qc1n N1(60) Ratio	Equiv. N1(60)	Fc Adj ΔN1(60)	Equiv. N1(60)cs	Volumetric Strain (%)	p (tsf)	Gmax (tsf)	τav (tsf)	Shear Strain γ	Strain E15	Strain Enc	Dry Sand Subsidence (in.)
0.40	0.15	18.58	0.40	2.16	1.78	115	0.028	0.028	1.000	2.16	0.77	1.70	29.80	3.02	1.84	4.87		29.85	2.53		0			1.00		1.00		0.399	Non-Liq.	4.0	7.4			0.00	0.019						
0.88	0.30	29.83	0.33	1.10	2.85	115	0.057	0.057	1.000	1.11	0.67	1.70	47.85	6.14	0.67	6.81		60.61	2.19		0			1.28		1.00		0.399	Non-Liq.	4.7	12.9			0.00	0.038						
1.48	0.45	25.49	0.57	2.23	2.44	115	0.085	0.085	0.999	2.24	0.74	1.70	40.83	5.25	1.92	7.17	1.37	51.60	2.43		1	50	2.45	1.28	127.0	1.00	0.271	0.398	Non-Liq.	4.2	12.2	10.0	22.2	0.30	0.057	390	0.040	2.8E-03	1.7E-03	1.5E-03	0.018
1.97	0.60	20.13	0.34	1.68	1.93	115	0.113	0.113	0.997	1.69	0.74	1.70	32.18	4.14	1.31	5.45		40.89	2.44		0			1.28		1.00		0.398	Non-Liq.	4.2	9.7			0.00	0.076						
2.46	0.75	12.04	0.29	2.40	1.15	115	0.141	0.141	0.996	2.43	0.82	1.70	19.11	1.95	2.11	4.07		19.34	2.71		0			1.00		1.00		0.398	Non-Liq.	3.7	5.2			0.00	0.095						
2.95	0.90	12.03	0.42	3.49	1.15	115	0.170	0.170	0.995	3.54	0.85	1.70	19.05	1.96	3.32	5.28		19.33	2.82		0			1.00		1.00		0.397	Non-Liq.	3.5	5.5			0.00	0.114						
3.44	1.05	11.41	0.46	4.01	1.09	115	0.198	0.198	0.994	4.09	0.87	1.70	18.01	1.85	3.89	5.75		18.32	2.87		0			1.00		1.00		0.397	Non-Liq.	3.4	5.4			0.00	0.133						
3.94	1.20	13.03	0.45	3.45	1.25	115	0.226	0.226	0.993	3.51	0.84	1.70	20.58	2.12	3.27	5.39		20.94	2.79		0			1.00		1.00		0.396	Non-Liq.	3.5	5.9			0.00	0.152						
4.43	1.35	11.33	0.43	3.78	1.08	115	0.255	0.255	0.992	3.87	0.87	1.70	17.90	1.84	3.63	5.48		18.21	2.85		0			1.00		1.00		0.396	Non-Liq.	3.4	5.4			0.00	0.171						
4.92	1.50	10.13	0.30	3.00	0.97	115	0.283	0.283	0.990	3.09	0.85	1.70	15.82	1.65	2.77	4.42		16.28	2.84		0			1.00		1.00		0.395	Non-Liq.	3.4	4.7			0.00	0.190						
5.41	1.65	9.10	0.14	1.53	0.87	115	0.311	0.311	0.989	1.58	0.82	1.70	14.13	1.48	1.14	2.62		14.63	2.72		0			1.00		1.00		0.395	Non-Liq.	3.7	4.0			0.00	0.209						
5.91	1.80	9.03	0.05	0.58	0.86	115	0.340	0.340	0.988	0.60	0.77	1.70	13.98	1.47	0.09	1.56		14.60	2.53		0			1.00		1.00		0.395	Non-Liq.	4.0	3.6			0.00	0.228						
6.40	1.95	9.53	0.06	0.59	0.91	115	0.368	0.368	0.987	0.62	0.76	1.70	14.73	1.55	0.10	1.65		15.32	2.51		0			1.00		1.00		0.394	Non-Liq.	4.1	3.8			0.00	0.246						
6.89	2.10	8.69	0.04	0.48	0.83	115	0.396	0.396	0.986	0.49	0.77	1.70	13.32	1.41	0.00	1.41		13.96	2.51		0			1.00		1.00		0.394	Non-Liq.	4.1	3.4			0.00	0.265						
7.38	2.25	9.45	0.05	0.51	0.90	115	0.424	0.424	0.985	0.53	0.77	1.70	14.50	2.43	0.01	2.44		23.89	2.49		0			1.58		1.00		0.393	Non-Liq.	4.1	5.8			0.00	0.284						
7.87	2.40	9.70	0.08	0.86	0.93	115	0.453	0.453	0.984	0.90	0.79	1.70	14.86	1.58	0.40	1.98		15.59	2.56		0			1.00		1.00		0.393	Non-Liq.	3.9	4.0			0.00	0.303						
8.37	2.55	11.10	0.11	0.99	1.06	115	0.481	0.481	0.983	1.00	0.79	1.70	17.07	1.81	0.51	2.31		17.84	2.55		0			1.00		1.00		0.392	Non-Liq.	4.0	4.5			0.00	0.322						
8.86	2.70	11.70	0.12	0.99	1.12	115	0.509	0.509	0.982	1.04	0.79	1.70	17.58	1.90	0.54	2.45		18.78	2.54		0			1.00		1.00		0.392	Non-Liq.	4.0	4.7			0.00	0.341						
9.35	2.85	12.75	0.15	1.15	1.22	115	0.538	0.538	0.981	1.21	0.79	1.70	19.62	1.96	0.72	2.71		20.48	2.54		0			1.00		1.00		0.392	Non-Liq.	4.0	5.1			0.00	0.360						
9.84	3.00	11.82	0.18	1.52	1.13	115	0.566	0.566	0.979	1.59	0.82	1.67	17.78	1.75	1.12	2.88		18.67	2.64		0			1.00		1.00		0.391	Non-Liq.	3.8	4.9			0.00	0.379						
10.33	3.15	10.51	0.14	1.36	1.01	115	0.594	0.594	0.978	1.45	0.83	1.62	15.15	1.55	0.95	2.50		16.05	2.67		0			1.00		1.00		0.391	Non-Liq.	3.8	4.3			0.00	0.398						
10.83	3.30	10.08	0.09	0.85	0.96	115	0.623	0.623	0.977	0.90	0.81	1.54	13.74	1.48	0.38	1.87		14.64	2.61		0			1.00		1.00		0.390	Non-Liq.	3.9	3.8			0.00	0.417						
11.32	3.45	9.45	0.06	0.61	0.90	115	0.651	0.651	0.976	0.66	0.80	1.48	12.28	1.39	0.12	1.51		13.20	2.60		0			1.00		1.00		0.390	Non-Liq.	3.9	3.4			0.00	0.436						
11.81	3.60	8.45	0.04	0.43	0.81	115	0.679	0.679	0.975	0.47	0.81	1.43	10.50	1.23	0.00	1.23		11.41	2.81		0			1.00		1.00		0.389	Non-Liq.	3.9	2.9			0.00	0.455						
12.30	3.75	10.25	0.02	0.23	0.98	130	0.711	0.711	0.974	0.25	0.76	1.35	12.19	2.32	0.00	2.32		20.70	2.45		0			1.58		1.00		0.389	Non-Liq.	4.2	5.0			0.00	0.476						
12.80	3.90	8.45	0.03	0.30	0.81	130	0.743	0.743	0.973	0.32	0.80	1.33	9.66	1.15	0.00	1.15		10.59	2.59		0			1.00		1.00		0.389	Non-Liq.	3.9	2.7			0.00	0.498						
13.29	4.05	9.13	0.02	0.27	0.87	130	0.775	0.775	0.972	0.29	0.79	1.28	10.09	1.20	0.00	1.20		11.03	2.56		0			1.00		1.00		0.388	Non-Liq.	4.0	2.8			0.00	0.519						
13.78	4.20	9.97	0.02	0.23	0.95	130	0.807	0.807	0.971	0.25	0.77	1.23	10.67	1.26	0.00	1.26		11.61	2.52		0			1.00		1.00		0.388	Non-Liq.	4.1	2.9			0.00	0.541						
14.27	4.35	10.37	0.02	0.23	0.99	130	0.839	0.839	0.970	0.25	0.77	1.20	10.77	1.26	0.00	1.26		11.72	2.51		0			1.00		1.00		0.387	Non-Liq.	4.1	2.9			0.00	0.562						
14.78	4.50	10.62	0.02	0.23	1.01	130	0.871	0.871	0.969	0.26	0.77	1.18	10.59	1.22	0.00	1.22		11.55	2.52		0			1.00		1.00		0.387	Non-Liq.	4.1	2.8			0.00	0.584						
15.26	4.65	11.09	0.03	0.23	1.06	130	0.903	0.903	0.968	0.25	0.77	1.13	10.87	1.24	0.00	1.24		11.83	2.51		0			1.00		1.00		0.588	Non-Liq.	4.1	2.9			0.00	0.605						
15.75	4.80	11.32	0.03	0.22	1.08	130	0.935	0.935	0.967	0.24	0.77	1.10	10.79	1.23	0.00	1.23		11.76	2.51		0			1.00		1.00		0.589	Non-Liq.	4.1	2.9			0.00	0.626						
16.24	4.95	12.09	0.05	0.41	1.16	130	0.967	0.967	0.966	0.44	0.79	1.07	11.28	1.25	0.00	1.25		12.25	2.57		0			1.00		1.00		0.568	Non-Liq.	4.0	3.1			0.00	0.648						
16.73	5.10	14.24	0.07	0.50	1.36	130	0.999	0.999	0.965	0.54	0.77	1.05	13.08	1.43	0.01	1.44		14.07	2.54		0			1.00		1.00		0.608	Non-Liq.	4.0	3.5			0.00	0.669						
17.22	5.25	13.91	0.09	0.66	1.33	130	1.031	1.031	0.964	0.72	0.79	1.02	12.42	1.36	0.21	1.57		13.42	2.61		0			1.00		1.00		0.614	Non-Liq.	3.9	3.4			0.00	0.691						
17.72	5.40	29.50	0.36	1.22	2.83	130	1.063	1.063	0.962	1.27	0.74	1.00	26.87	4.40	0.92	5.39		44.03	2.43		0			1.58		1.00		0.622	Non-Liq.	4.2	10.4			0.00	0.712						
18.21	5.55	16.50	0.40	2.85	1.59	130	1.095	1.095	0.961	3.16	0.87	0.97	14.13	1.55	3.15	4.70		15.13	2.89		0			1.00		1.00		0.629	Non-Liq.	3.3	4.5			0.00	0.734						
18.70	5.70	18.53	0.61	3.27	1.77	130	1.127	1.127	0.960	3.48	0.87	0.95	15.57	1.72	3.56	5.28		16.58	2.88		0			1.00		1.00		0.636	Non-Liq.	3.4	4.9			0.00	0.755						
19.19	5.85	23.13	0.99	4.26	2.22	130	1.159	1.159	0.959	4.49	0.87	0.92	19.19	2.15	4.86	6.99		20.20	2.88		0			1.00		1.00		0.643	Non-Liq.	3.4	6.0			0.00	0.777						
19.69	6.00	26.06	1.20	4.60	2.50	130	1.191	1.191	0.958	4.82	0.89	0.90	21.22	2.38	5.32	7.70		22.24	2.87		0			1.00		1.00		0.649	Non-Liq.	3.4	6.6			0.00	0.798						
20.18	6.15	24.51	1.16	4.73	2.35	130	1.223	1.223	0.956	4.96	0.87	0.89	19.39	2.21	5.49	7.70		20.41	2.90		0			1.00		1.00		0.655	Non-Liq.	3.3	6.2			0.00	0.819						
20.67	6.30	44.99	0.86	1.91	4.31	130	1.255	1.255	0.955	1.96	0.73	0.88	38.46	4.30	1.84	6.13		40.18	2.44		0			1.07		0.99		0.661	Non-Liq.	4.2	9.5			0.00	0.841						
21.16	6.45	22.56	0.46	2.02	2.16	130	1.287	1.287	0.954	2.15	0.82	0.85	17.13	1.95	1.99	3.94		18.17	2.72		0			1.00		0.99		0.667	Non-Liq.	3.7	4.9			0.00	0.862						
21.65	6.60	80.48	0.52	0.65	7.71	130	1.319	1.319	0.952	0.66	0.59	0.88	65.67	6.93	0.20	7.13		67.02	1.95		0			1.00		0.99		0.672	Non-Liq.	5.2	13.0			0.00	0.884						
22.15	6.75	81.77	0.93	1.13	7.83	130	1.351	1.351	0.951	1.15	0.63	0.86	65.12	7.07	0.83	7.91	1.12	66.21	2.09		1	50	1.44	1.00	95.7	0.98	0.181	0.678	0.23	4.9	13.5	5.5	19.0	1.59	0.905	1,835	0.612	3.3E-03			
22.64	6.90	69.71	1.37	1.97	6.68	130	1.383	1.383	0.950	2.01	0.70	0.83	53.59	6.06	1.93	7.99	1.32	54.67	2.31		1	62	1.99	1.00	108.9	0.97	0.200	0.683	0.29	4.5	12.2	5.5	17.7	1.49	0.927	1,122	0.625	3.7E-03			
23.13	7.05	125.40	1.81	1.44	12.01	130	1.415	1.415	0.948	1.46	0.61	0.84	95.08	10.87	1.24	12.11	1.11	99.20	2.02		1	76	1.33	1.00	132.3	0.98	0.296	0.687	0.41	5.0	19.7	5.5	25.2	1.18	0.948	1,276	0.639	2.3E-03			
23.62	7.20	117.22	2.43	2.08	11.23	130	1.447	1.447	0.946	2.10	0.65	0.82	89.19	10.20	2.08	12.28	1.20	90.30	2.17		1	73	1.59	1.00	143.3	0.96	0.353	0.692	0.49	4.8	19.0	5.5	24.5	1.22	0.969	1,278	0.652	2.4E-03			
24.11	7.35	115.90	2.83	2.44	11.10	130	1.479	1.479	0.945	2.47	0.67	0.80	88.39	10.07	2.57	12.64	1.26	87.51	2.23		1	71	1.73	1.00	151.6	0.95	0.404	0.696	0.55	4.6	16.6	5.5	24.4	1.23	0.991	1,290	0.665	2.4E-03			
24.61	7.50	146.24	2.86	2.02	14.60	130	1.511	1.500	0.943	2.04	0.63	0.80	109.74	12.65	2.01	14.67		110.87	2.09		0			1.00		0.97		0.700	Non-Liq.	4.9	22.8			0.00	1.012						
25.10	7.65	64.02	2.80	4.38	6.13	130	1.543	1.516	0.941	4.48	0.78	0.75	44.58	5.53	5.14	10.67		45.67	2.61		0			1.00		0.97		0.704	Non-Liq.	3.5	11.7			0.00	1.034						
25.59	7.80	23.68	1.62	6.84	2.27	130	1.575	1.533	0.940	7.31	0.92	0.71	14.87	1.87	5.95	7.95		15.89	3.10		0			1.00		0.97		0.708	Non-Liq.	2.9	5.4			0.00	1.055						
26.08	7.95	16.47	0.67	4.04	1.58	130	1.607	1.549	0.938	4.46	0.92	0.70	9.92	1.30	4.71	6.01		10.95	3.10		0			1.00		0.96		0.711	Non-Liq.	2.9	3.7			0.00	1.077						
26.57	8.10	56.41	1.27	2.14	5.69	130	1.639	1.565	0.935	2.20	0.73	0.75	41.91	7.72	2.19	9.91		68.70	2.43		0			1.58		0.96		0.715	Non-Liq.	4.2	15.7			0.00	1.098						
27.07	8.25	34.73	1.73	4.97	3.33	130	1.671	1.583	0.934	5.21	0.88	0.71	22.19	2.80	6.59	9.39		22.26	2.87		0			1.00		0.96		0.718	Non-Liq.	3.4	6.9			0.00	1.119						
27.56	8.40	22.36	1.07	4.77	2.14	130	1.703	1.599	0.932	5.14	0.90	0.69	13.52	1.80	5.70	7.50		14.56	3.03		0			1.00		0.96		0.721	Non-Liq.	3.1	4.8			0.00	1.141						
28.05	8.55	16.84	0.59	3.51	1.61	130	1.735	1.616	0.930	3.88	0.91	0.68	9.79	1.30	4.02	5.32		10.83	3.07		0			1.00		0.95		0.723	Non-Liq.	3.0	3.6			0.00	1.162						
28.54	8.70	21.94	0.51	2.34	2.10	130	1.767	1.633	0.928	2.53	0.85	0.69	13.29	1.68	2.47	4.15		14.35	2.85		0			1.00		0.95		0.726	Non-Liq.	3.4	4.2			0.00	1.184						
29.04	8.85	24.12	0.62	2.59	2.31	130	1.799	1.649	0.925	2.78	0.84	0.69	14.59	1.87	2.80	4.67		15.66	2.84		0			1.00		0.95		0.728	Non-Liq.	3.4	4.6			0.00	1.205						
29.53	9.00	19.93	0.59	2.98	1.91	130	1.831	1.666	0.923	3.26	0.88	0.67	11.58	1.52	3.33	4.85		12.64	2.97		0			1.00		0.95		0.731	Non-Liq.	3.2	4.0			0.00	1.227						
30.02	9.15	16.42	0.43	2.65	1.57	130	1.863	1.683	0.920	2.95	0.90	0.66	9.19	1.22	2.88	4.10		10.24	3.02		0			1.00		0.95		0.733	Non-Liq.	2.1	3.3			0.00	1.248						
30.51	9.30	35.02	0.83	2.37	3.35	130	1.895	1.699	0.918	2.49	0.80	0.68	21.59	2.74	2.51	5.25		22.08	2.68		0			1.00		0.94		0.734	Non-Liq.	3.8	8.0			0.00	1.269						
31.00	9.45	60.70	1.91	3.14	5.81	130	1.927	1.716	0.915	3.23	0.76	0.69	38.53	4.97	3.55	8.51		39.67	2.55		0			1.00		0.94		0.736	Non-Liq.	4.0	9.3			0.00	1.291						
31.50	9.60	107.86	2.69	2.50	10.33	130	1.959	1.732	0.913	2.54	0.69	0.71	71.48	10.30	2.69	12.98		83.74	2.29		0			1.15		0.94		0.737	Non-Liq.	4.5	16.6			0.00	1.312						
31.99	9.75	225.77	3.80	1.72	21.62	130	1.991	1.749	0.910	1.73	0.59	0.75	157.79	21.68	1.84	23.52	1.08	183.28	1.94		1	100	1.22	1.15	224.4	0.88	Infin.	0.739	Non-Liq.	6.2	35.7	9.7	44.9	0.00	1.334	1,835	0.863	1.3E-03			

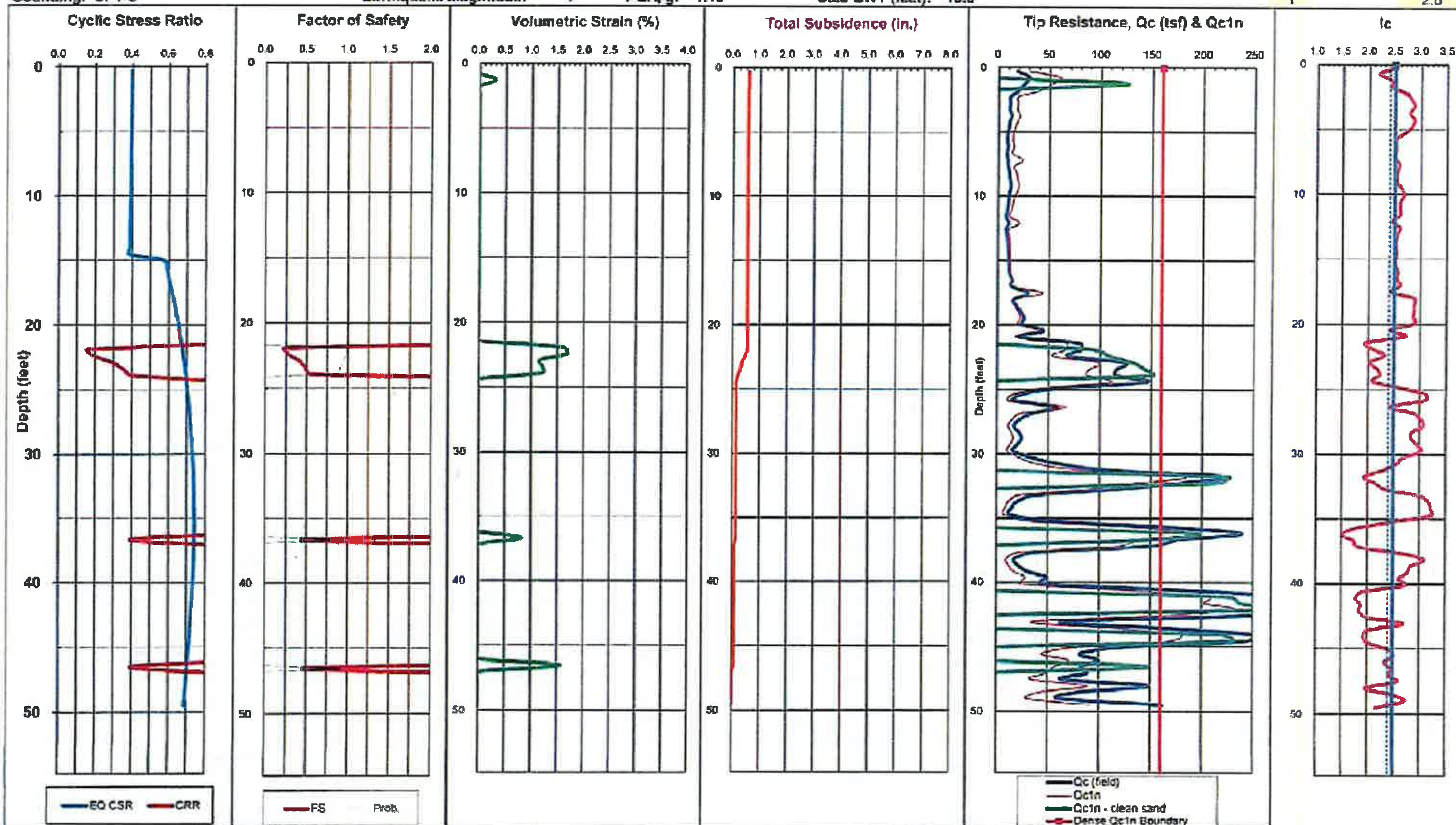
Depth (feet)	(m)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio Rf %	qc MPa	Total Unit Wt. (pcf)	Total Stress po (tsf)	Eff. Stress p'o (tsf)	rd	F %	n	Max 1.70 Cq	Q	Mass qc1 MPa	Mass Δqc MPa	Mass qc_{1ncs} MPa	Mass eff K_c	Qc1n	Ic	Liquef. Suscept. (0 or 1)	Rel Dens. Dr (%)	K_c	K_σ	Clean Sand Qc1n	K_α	CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Qc1n $N_{1(60)}$ Ratio	Equiv. $N_{1(60)}$	FC Adj. $\Delta N_{1(60)}$	Equiv. $N_{1(60)cs}$	Volumetric Strain (%)	p (tsf)	G_{max} (tsf)	τ_{av} (tsf)	Shear Strain γ	ε_{15}	Strain Enc	Dry Sand Subsidence (in.)
32.46	9.90	173.66	4.05	2.60	17.11	130	2.023	1.766	0.907	2.63	0.65	0.72	120.65	17.33	2.83	20.16	1.16	139.70	2.15	1	91	1.55	1.15	217.0	0.87	Infin.	0.740	Non-Liq.	4.8	29.2	10.0	39.2	0.00	1.355	1.767	0.874	1.5E-03			
32.97	10.05	118.42	3.97	3.35	11.34	130	2.055	1.782	0.904	3.40	0.71	0.69	78.21	11.43	3.84	15.27		89.16	2.36	0			1.15		0.93		0.741	Non-Liq.	4.4	20.4			0.00	1.377						
33.46	10.20	36.37	2.57	7.07	3.48	130	2.087	1.799	0.901	7.44	0.89	0.62	20.38	2.96	6.05	9.01		21.42	3.01	0			1.00		0.93		0.742	Non-Liq.	3.1	6.9			0.00	1.398						
33.96	10.35	20.29	1.18	5.80	1.94	130	2.119	1.816	0.898	6.36	0.94	0.60	10.52	1.55	6.06	7.61		11.56	3.18	0			1.00		0.93		0.742	Non-Liq.	2.5	4.2			0.00	1.419						
34.45	10.50	14.79	0.57	3.86	1.42	130	2.151	1.832	0.894	4.40	0.94	0.60	7.29	1.06	4.52	5.58		8.33	3.20	0			1.00		0.93		0.743	Non-Liq.	2.7	3.1			0.00	1.441						
34.94	10.65	12.65	0.40	3.15	1.21	130	2.183	1.849	0.891	3.69	0.95	0.59	6.01	0.87	3.57	4.44		7.04	3.23	0			1.00		0.92		0.743	Non-Liq.	2.7	2.6			0.00	1.462						
35.43	10.80	48.02	0.69	1.85	4.60	130	2.215	1.866	0.888	1.92	0.75	0.65	28.55	3.64	1.81	5.45		29.70	2.31	0			1.00		0.92		0.743	Non-Liq.	4.1	7.3			0.00	1.484						
35.93	10.95	165.42	1.32	0.80	15.84	130	2.247	1.882	0.884	0.80	0.55	0.73	112.71	14.52	0.40	14.92		131.41	1.61	0			1.15		0.92		0.743	Non-Liq.	5.5	24.1			0.00	1.505						
36.42	11.10	239.20	1.10	0.46	22.91	130	2.279	1.899	0.880	0.46	0.50	0.75	167.47	29.28	0.00	29.28	1.00	194.57	1.53	1	100	1.00	1.15	194.6	0.84	Infin.	0.743	Non-Liq.	6.0	32.4	6.5	38.9	0.00	1.527	1.872	0.955	1.4E-03			
36.91	11.25	170.61	1.17	0.66	16.91	130	2.311	1.915	0.877	0.67	0.53	0.73	120.72	15.19	0.22	15.41	1.01	140.58	1.74	1	91	1.06	1.15	149.6	0.84	0.381	0.742	0.44	5.6	25.1	4.8	29.9	0.82	1.548	1.728	0.965	1.5E-03			
37.40	11.40	152.13	1.13	0.74	14.57	130	2.343	1.932	0.873	0.75	0.55	0.72	101.75	13.08	0.33	13.40		118.79	1.63	0			1.15		0.91		0.742	Non-Liq.	5.4	21.9			0.00	1.569						
37.89	11.55	36.92	0.86	2.24	3.69	130	2.375	1.949	0.869	2.38	0.79	0.62	21.33	2.85	2.34	5.19		22.47	2.67	0			1.00		0.91		0.741	Non-Liq.	3.8	5.9			0.00	1.591						
38.39	11.70	17.97	0.57	3.19	1.72	130	2.408	1.965	0.865	3.58	0.91	0.57	8.61	1.25	3.62	4.88		9.57	3.09	0			1.00		0.91		0.740	Non-Liq.	2.9	3.3			0.00	1.612						
38.88	11.85	20.69	0.32	1.52	2.00	130	2.438	1.982	0.861	1.68	0.84	0.59	10.55	1.39	1.37	2.77		11.68	2.84	0			1.00		0.91		0.739	Non-Liq.	3.4	3.4			0.00	1.634						
39.37	12.00	29.94	0.66	2.20	2.87	130	2.470	1.998	0.857	2.36	0.82	0.58	15.58	2.14	2.29	4.43		16.80	2.78	0			1.00		0.91		0.738	Non-Liq.	3.8	4.7			0.00	1.655						
39.86	12.15	49.75	1.23	2.48	4.76	130	2.502	2.015	0.852	2.58	0.77	0.61	27.43	3.74	2.66	6.40		28.59	2.61	0			1.00		0.91		0.736	Non-Liq.	3.9	7.3			0.00	1.677						
40.35	12.30	43.34	1.35	3.11	4.15	130	2.534	2.032	0.848	3.27	0.81	0.59	23.06	3.27	3.51	6.78		24.20	2.73	0			1.00		0.90		0.735	Non-Liq.	3.7	6.6			0.00	1.698						
40.85	12.45	183.50	2.12	1.16	17.57	130	2.566	2.048	0.843	1.17	0.57	0.68	117.36	15.65	0.28	15.93		127.16	1.90	0			1.07		0.90		0.733	Non-Liq.	5.3	24.1			0.00	1.720						
41.34	12.60	295.87	3.83	1.29	28.33	130	2.598	2.065	0.839	1.30	0.54	0.70	193.42	24.99	1.06	26.05	1.04	208.87	1.78	1	100	1.18	1.07	228.5	0.81	Infin.	0.732	Non-Liq.	5.5	37.9	7.8	45.7	0.00	1.741	2.109	1.038	1.2E-03			
41.83	12.75	293.88	4.96	1.69	28.14	130	2.630	2.082	0.834	1.70	0.57	0.68	187.76	25.24	1.59	26.83	1.06	202.59	1.88	1	100	1.17	1.07	237.1	0.81	Infin.	0.730	Non-Liq.	5.3	38.1	9.3	47.4	0.00	1.762	2.148	1.045	1.1E-03			
42.32	12.90	336.24	5.70	1.69	32.20	130	2.662	2.098	0.830	1.70	0.56	0.68	215.54	28.69	1.80	30.59	1.06	232.07	1.84	1	100	1.14	1.07	264.9	0.81	Infin.	0.728	Non-Liq.	5.4	43.1	9.9	53.0	0.00	1.784	2.242	1.052	1.0E-03			
42.81	13.05	239.78	4.78	2.00	22.96	130	2.694	2.115	0.825	2.02	0.60	0.66	147.91	20.57	2.01	22.58		159.88	2.00	0			1.07		0.90		0.726	Non-Liq.	5.1	31.5			0.00	1.805						
43.31	13.20	63.74	2.71	4.25	6.10	130	2.726	2.132	0.820	4.40	0.89	0.57	33.32	4.98	5.01	9.99		34.47	2.70	0			1.00		0.90		0.724	Non-Liq.	3.7	9.3			0.00	1.827						
43.80	13.35	163.79	2.31	1.41	15.68	130	2.758	2.148	0.816	1.43	0.61	0.65	99.50	14.38	1.22	15.60		110.22	2.01	0			1.15		0.89		0.721	Non-Liq.	5.1	23.6			0.00	1.848						
44.29	13.50	251.38	4.20	1.67	24.07	130	2.790	2.165	0.811	1.68	0.58	0.66	155.25	22.81	1.56	24.38	1.07	180.50	1.93	1	100	1.22	1.15	220.1	0.79	Infin.	0.719	Non-Liq.	5.2	34.6	9.4	44.0	0.00	1.870	2.158	1.077	1.2E-03			
44.78	13.65	243.56	5.40	2.22	23.32	130	2.822	2.182	0.806	2.24	0.61	0.64	146.35	22.48	2.29	24.77	1.10	170.22	2.04	1	99	1.36	1.15	231.0	0.79	Infin.	0.717	Non-Liq.	5.0	34.0	10.0	44.0	0.00	1.891	2.170	1.083	1.1E-03			
45.28	13.80	118.75	3.93	3.31	11.37	130	2.854	2.198	0.801	3.37	0.72	0.59	65.24	10.85	3.75	14.59		76.62	2.41	0			1.15		0.89		0.714	Non-Liq.	4.3	17.9			0.00	1.912						
45.77	13.95	81.89	2.53	3.09	7.62	130	2.886	2.215	0.796	3.18	0.75	0.58	43.30	6.28	3.45	9.73		44.51	2.52	0			1.00		0.89		0.711	Non-Liq.	4.1	10.9			0.00	1.934						
46.26	14.10	99.97	2.22	2.22	9.57	130	2.918	2.231	0.791	2.27	0.70	0.59	54.94	9.55	2.29	11.67		71.96	2.34	0			1.26		0.84		0.709	Non-Liq.	4.4	16.1			0.00	1.955						
46.75	14.25	82.75	2.25	2.72	7.92	130	2.950	2.248	0.786	2.79	0.73	0.58	43.78	7.94	2.94	10.88	1.37	58.90	2.47	1	53	2.64	1.26	150.2	0.83	0.305	0.706	0.46	4.2	13.7	5.5	19.2	1.58	1.977	1.593	1.104	2.3E-03			
47.24	14.40	88.61	2.25	2.54	8.49	130	2.982	2.265	0.781	2.60	0.72	0.58	47.15	6.70	2.70	9.40		48.39	2.43	0			1.00		0.88		0.703	Non-Liq.	4.2	11.4			0.00	1.998						
47.74	14.55	64.69	1.77	2.74	6.19	130	3.014	2.281	0.776	2.84	0.76	0.58	32.85	4.75	2.99	7.75		34.05	2.57	0			1.00		0.88		0.700	Non-Liq.	4.0	8.6			0.00	2.020						
48.23	14.70	149.07	1.57	1.06	14.27	130	3.046	2.298	0.771	1.07	0.58	0.63	87.58	10.78	0.73	11.51		89.28	1.97	0			1.00		0.88		0.697	Non-Liq.	5.1	17.4			0.00	2.041						
48.72	14.85	80.50	2.07	2.57	7.71	130	3.078	2.315	0.766	2.65	0.73	0.58	41.64	6.01	2.74	8.75		42.87	2.47	0			1.00		0.88		0.694	Non-Liq.	4.2	10.3			0.00	2.062						
49.21	15.00	60.63	2.42	3.99	5.81	130	3.110	2.331	0.761	4.15	0.80	0.53	28.29	4.58	4.61	9.19		30.46	2.72	0			1.00		0.88		0.691	Non-Liq.	3.7	8.3			0.00	2.084						
49.70	15.15	161.83	3.50	2.16	15.50	130	3.142	2.348	0.756	2.19	0.65	0.60	89.81	12.48	2.19	14.67		91.47	2.18	0			1.00		0.87		0.688	Non-Liq.	4.7	19.3			0.00	2.105						

EARTH SYSTEMS - EVALUATION OF LIQUEFACTION POTENTIAL AND INDUCED GROUND SUBSIDENCE

Commercial Organics Processing Facility   Project No: VT-24872-02   Method Used: 1   1996 NCEER (Robertson & Wride)

Settlement Analysis using Tokimatsu & Seed (1987), clean sand Qc1n/N1(60) ratio =5

Sounding: CPT-3   Earthquake Magnitude: 7   PGA, g: 1.10   Calc GWT (feet): 15.0   Plot 1   Limiting Ic: 2.6



Total Thickness of Liquefiable Layers: 3.4 feet   Estimated Total Ground Subsidence (Settlement): 0.6 inches

EARTH SYSTEMS - EVALUATION OF LIQUEFACTION POTENTIAL AND INDUCED GROUND SUBSIDENCE

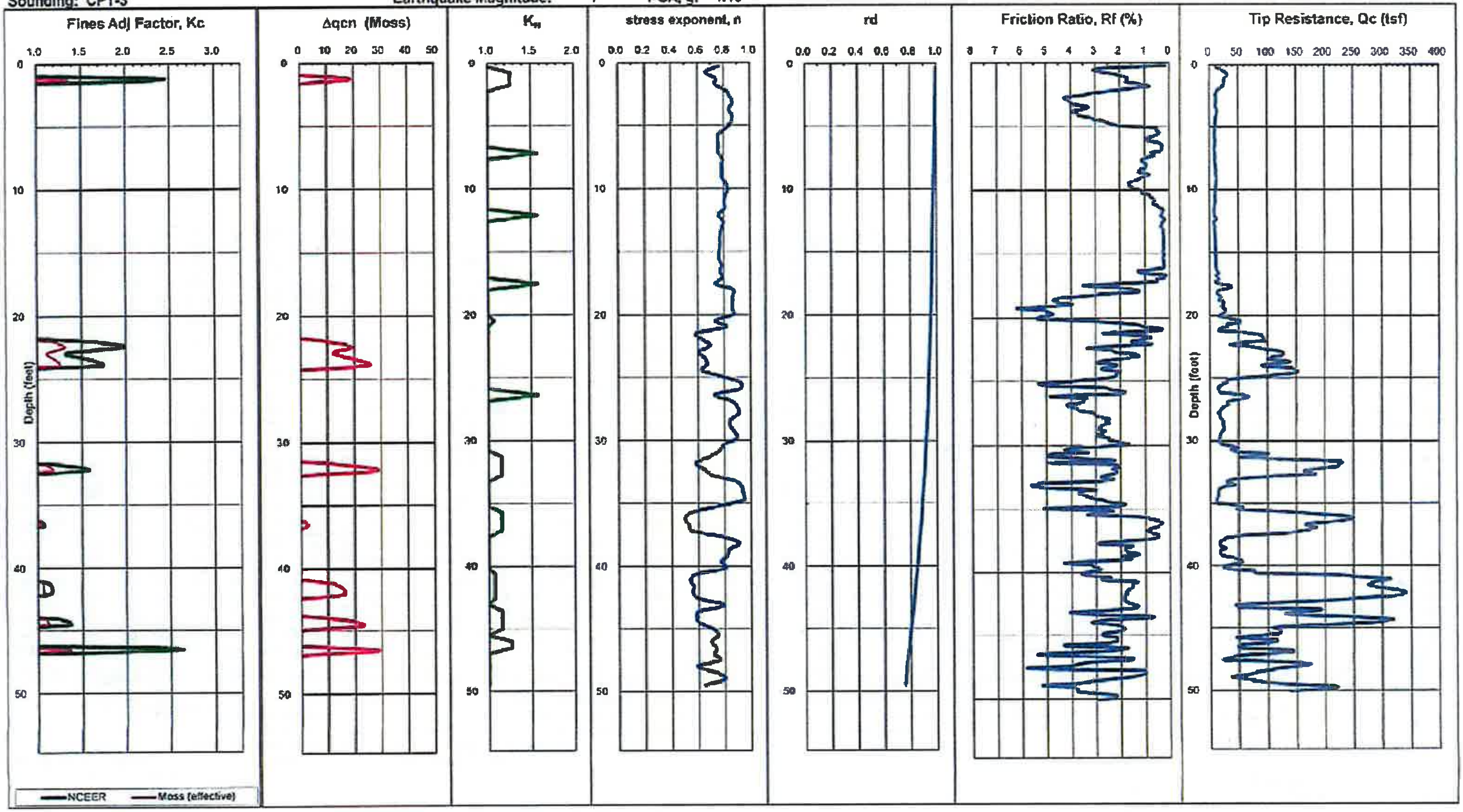
3 avg increment =0.15m Qc1n/N1(60): 5

Ignore 1st/last increment into sand/silt soils: 0

Method Used: 1998 NCEER (Robertson & Wride)

Sounding: CPT-3

Earthquake Magnitude: 7 PGA, g: 1.10



CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Commercial Organics Processing Facility
Job No: VT-24872-02
Date: 5/17/2017
Sounding: CPT-1

Liquefaction Analysis using 1998 NCEER (Robertson & Wride) method
Settlement Analysis using Tokimatsu & Seed (1987), clean sand Qc1n/N1(60) ratio = 5

EARTHQUAKE INFORMATION:		
Magnitude:	7	7.5
PGA, g:	1.10	0.92
MSF:	1.19	
GWT, feet:	24.0	
Calc GWT, feet:	15.0	

Pick: 4
Method Used: 1 — 1998 NCEER (Robertson & Wride)
Averaging Increment: 3 — 0.15 m
Induced CSR (M=7.5) = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_c*K_s*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Ignore 1st/last increment into sand/silt soils: 1 yes
Ignore/remediate upper: 0.00 m
Unit Weight of unsaturated soils: 115 pcf
Unit Weight of saturated soils: 130 pcf
Limiting Ic for liquefiable soils: 2.60 — Limiting Ic for Kc: 2.5
Use Moss @ P_L: 15%
Use Tokimatsu & Seed (0) or Ishihara & Yoshimine (1): 0
Required SF: 1.50 — Max $\Delta N_{1(60)}$ - plasticity: 5.5
Min SF of Liquefiable Layers: 0.00 — Max $\Delta N_{1(60)}$ - compressive: 10.0
Avg SF of Liquefiable Layers: #DIV/0!

Total Liquefied Thickness (feet)	0.0
Total Induced Subsidence (inches)	0.2

SETTLEMENT OF DRY SANDS
Qc1n / N1(60) Ratio for clean sand
ρ = 0.67*po
τ_{av} = 0.65*PGA*po*rd
G_{max} = 447*$N_{1(60)cs}$$^{1/3}$*p$^{0.5}$
n = 0.0389*(p/1)+0.124
b = 8400*(p/1)$^{0.6}$
γ = [1+a*EXP(b*τ_{av}/G_{max})]/[(1+a)*τ_{av}/G_{max}]
E_{15} = γ*($N_{1(60)cs}$/20)$^{-1.2}$
Nc = (MAG-4)$^{2.17}$
E_{nc} = (Nc/15)$^{0.45}$*E15
S = 2*H*E_{nc}
Nc = 10.8

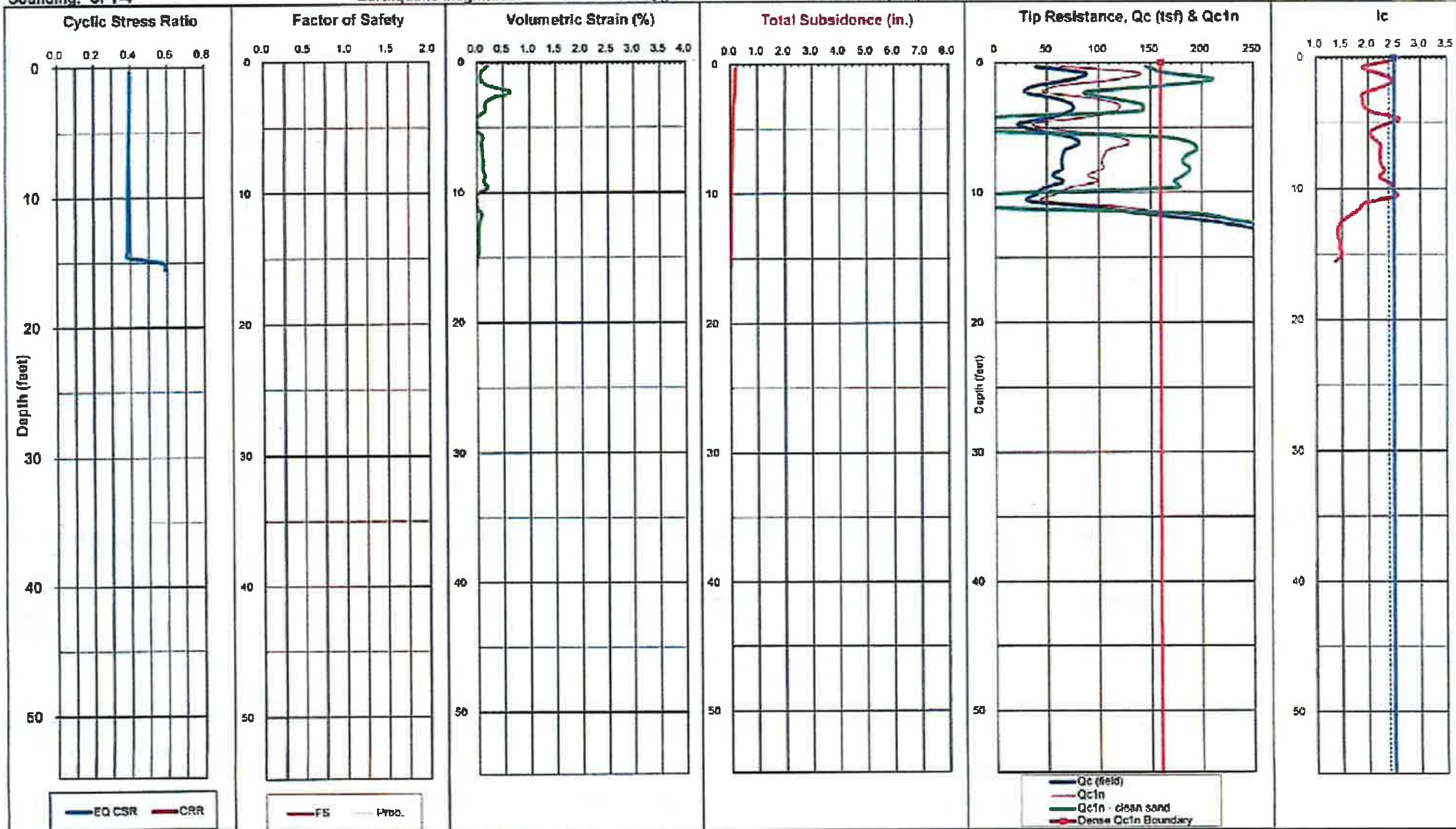
Depth (feet)	(m)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio Rf %	qc MPa	Total Unit Wt. (pcf)	Total Stress po (tsf)	Eff. Stress p'o (tsf)	rd	F %	n	Max 1.70 Cq	Q	Moss qc1 MPa	Moss Δqc MPa	Moss qc1,mod MPa	Moss Kc	Qc1n	Ic	Override Liquef. Assume (0 or 1)	Rel. Dens. Dr (%)	Kc	Kσ	Clean Sand Qc1n	Kα	CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Qc1n $N_{1(60)}$ Ratio	Equiv. $N_{1(60)}$	FC Adj. $\Delta N_{1(60)}$	Equiv. $N_{1(60)cs}$	Volumetric Strain (%)	p (tsf)	G_{max} (tsf)	τ_{av} (tsf)	Shear Strain γ	Strain E_{15}	Strain Enc	Dry Sand Subsidence (in.)
0.49	0.15	39.34	1.25	3.18	3.77	115	0.028	0.028	1.000	3.19	0.73	1.70	63.17	6.40	2.97	9.38	1.48	93.22	2.40	1	56	2.31	1.00	145.8	1.00	0.366	0.399	Non-Liq.	4.3	14.7	10.0	24.7	0.21	0.019	179	0.033	1.6E-03	1.2E-03	1.1E-03	0.012
0.98	0.30	88.79	1.20	1.39	8.31	115	0.057	0.057	1.000	1.39	0.58	1.70	139.36	14.13	0.99	15.12	1.07	139.45	1.90	1	91	1.19	1.00	150.0	1.00	Infin.	0.399	Non-Liq.	5.3	26.4	6.8	33.2	0.09	0.038	280	0.027	8.9E-04	5.2E-04	4.5E-04	0.005
1.48	0.45	73.60	2.53	3.43	7.05	115	0.085	0.085	0.999	3.44	0.66	1.70	118.12	11.98	3.26	15.24	1.27	118.25	2.24	1	84	1.78	1.00	210.6	1.00	Infin.	0.399	Non-Liq.	4.6	25.7	10.0	35.7	0.08	0.057	351	0.040	6.9E-04	4.4E-04	3.8E-04	0.005
1.97	0.60	37.86	1.46	3.88	3.84	115	0.113	0.113	0.997	3.87	0.75	1.70	60.82	6.18	3.73	9.91	1.60	61.00	2.47	1	56	2.63	1.00	158.5	1.00	Infin.	0.398	Non-Liq.	4.2	14.7	10.0	24.7	0.23	0.076	356	0.054	1.7E-03	1.3E-03	1.1E-03	0.013
2.46	0.75	29.00	0.43	1.47	2.78	115	0.141	0.141	0.996	1.48	0.69	1.70	46.47	4.73	1.08	5.81	1.23	46.70	2.28	1	45	1.87	1.00	87.5	1.00	0.142	0.398	Non-Liq.	4.5	10.3	7.2	17.5	0.44	0.095	357	0.067	3.1E-03	3.7E-03	3.2E-03	0.038
2.95	0.90	58.83	0.55	0.94	5.64	115	0.170	0.170	0.995	0.94	0.56	1.70	94.34	9.59	0.49	10.07	1.05	94.61	1.91	1	75	1.20	1.00	113.7	1.00	0.217	0.397	Non-Liq.	5.3	18.0	4.7	22.7	0.23	0.114	427	0.080	2.0E-03	1.7E-03	1.5E-03	0.017
3.44	1.05	74.60	0.89	1.19	7.14	115	0.198	0.198	0.994	1.19	0.58	1.70	119.54	12.14	0.78	12.91	1.06	119.65	1.90	1	84	1.19	1.00	142.7	1.00	0.350	0.397	Non-Liq.	5.3	22.7	5.8	28.5	0.16	0.133	498	0.094	1.4E-03	9.2E-04	7.9E-04	0.009
3.94	1.20	72.83	0.90	1.24	6.98	115	0.226	0.226	0.993	1.24	0.58	1.70	116.89	11.86	0.82	12.66	1.07	117.06	1.92	1	83	1.21	1.00	141.7	1.00	0.345	0.396	Non-Liq.	5.2	22.4	6.0	28.3	0.16	0.152	531	0.107	1.4E-03	9.5E-04	8.2E-04	0.010
4.43	1.35	53.72	0.89	1.65	5.14	115	0.255	0.255	0.992	1.66	0.64	1.70	85.50	8.74	1.27	10.02		86.31	2.19	0			1.00		1.00		0.396	Non-Liq.	4.9	17.7			0.00	0.171						
4.92	1.50	22.58	0.78	3.47	2.16	115	0.283	0.283	0.990	3.52	0.79	1.70	35.60	3.67	3.29	6.87		36.25	2.61	0			1.00		1.00		0.395	Non-Liq.	3.9	5.3			0.00	0.190						
5.41	1.65	40.92	0.89	2.19	3.88	115	0.311	0.311	0.989	2.21	0.69	1.70	64.61	6.48	1.88	8.35		65.35	2.28	0			1.00		1.00		0.395	Non-Liq.	4.5	14.4			0.00	0.209						
5.81	1.80	72.40	1.37	1.89	6.93	115	0.340	0.340	0.988	1.90	0.62	1.70	115.79	10.47	1.54	12.01	1.15	116.34	2.05	1	83	1.38	1.00	160.4	1.00	Infin.	0.395	Non-Liq.	5.0	23.4	8.7	32.1	0.13	0.228	677	0.160	1.3E-03	7.3E-04	6.3E-04	0.007
6.40	1.95	81.12	1.86	2.44	7.77	113	0.368	0.368	0.987	2.45	0.64	1.70	129.78	10.92	2.15	13.06	1.20	130.35	2.11	1	88	1.46	1.00	190.0	1.00	Infin.	0.394	Non-Liq.	4.9	26.7	10.0	36.7	0.09	0.246	738	0.173	1.1E-03	5.3E-04	4.6E-04	0.005
6.89	2.10	68.54	2.18	3.19	6.56	115	0.398	0.398	0.986	3.20	0.68	1.70	109.49	8.91	2.97	11.88	1.33	110.13	2.24	1	81	1.78	1.00	195.5	1.00	Infin.	0.394	Non-Liq.	4.8	23.0	10.0	33.9	0.11	0.265	745	0.186	1.2E-03	6.6E-04	5.7E-04	0.007
7.38	2.25	65.49	1.97	3.00	9.27	115	0.424	0.424	0.985	3.02	0.68	1.70	104.54	8.41	2.77	11.18	1.35	105.22	2.24	1	79	1.78	1.00	184.9	1.00	Infin.	0.393	Non-Liq.	4.8	22.8	10.0	32.8	0.13	0.284	783	0.199	1.3E-03	7.3E-04	6.3E-04	0.007
7.87	2.40	64.12	1.81	2.87	6.14	115	0.453	0.453	0.984	3.00	0.69	1.70	102.31	8.09	2.73	10.83	1.34	103.03	2.24	1	78	1.77	1.00	181.9	1.00	Infin.	0.393	Non-Liq.	4.6	22.3	10.0	32.3	0.13	0.303	784	0.212	1.4E-03	7.6E-04	6.6E-04	0.008
8.37	2.55	64.97	2.05	3.16	6.22	115	0.481	0.481	0.983	3.18	0.70	1.70	103.62	7.99	2.43	10.82	1.37	104.39	2.25	1	78	1.81	1.00	189.0	1.00	Infin.	0.392	Non-Liq.	4.6	22.8	10.0	32.8	0.13	0.322	812	0.225	1.3E-03	7.4E-04	6.4E-04	0.008
8.86	2.70	55.69	1.83	3.45	5.36	115	0.509	0.509	0.982	3.48	0.72	1.69	88.79	6.89	3.26	10.06	1.46	89.60	2.33	1	72	2.04	1.00	182.9	1.00	Infin.	0.392	Non-Liq.	4.4	20.2	10.0	30.2	0.16	0.341	815	0.238	1.5E-03	9.3E-04	8.0E-04	0.009
9.35	2.85	68.64	1.86	2.82	6.32	115	0.538	0.538	0.981	2.84	0.69	1.59	99.67	7.89	2.56	10.45	1.32	99.48	2.23	1	77	1.75	1.00	173.8	1.00	Infin.	0.392	Non-Liq.	4.6	21.5	10.0	31.5	0.15	0.360	847	0.231	1.3E-03	8.4E-04	7.3E-04	0.009
9.84	3.00	47.72	1.88	3.95	4.57	115	0.566	0.566	0.979	4.00	0.75	1.60	71.37	5.62	3.81	9.42	1.68	72.23	2.44	1	65	2.46	1.00	177.9	1.00	Infin.	0.391	Non-Liq.	4.2	17.1	10.0	27.1	0.22	0.379	825	0.254	1.8E-03	1.2E-03	1.1E-03	0.013
10.33	3.15	40.60	1.51	3.77	3.83	115	0.594	0.594	0.976	3.83	0.77	1.38	57.99	4.71	3.61	8.31		58.84	2.49	0			1.00		1.00		0.391	Non-Liq.	4.1	14.2			0.00	0.398						
10.83	3.30	31.51	1.14	3.81	3.02	115	0.623	0.623	0.977	3.89	0.79	1.52	44.35	3.72	3.43	7.15		45.24	2.55	0			1.00		1.00		0.390	Non-Liq.	4.0	11.3			0.00	0.417						
11.32	3.45	94.74	1.27	1.34	9.07	115	0.651	0.651	0.976	1.35	0.59	1.34	118.73	10.94	0.93	11.87		120.00	1.94	0			1.00		1.00		0.390	Non-Liq.	5.2	23.1			0.00	0.436						
11.81	3.60	141.57	1.88	1.33	13.56	115	0.679	0.679	0.975	1.34	0.56	1.28	170.67	15.78	0.91	16.69	1.06	171.44	1.83	1	99	1.13	1.00	193.4	1.00	Infin.	0.389	Non-Liq.	5.4	31.6	7.0	38.7	0.09	0.455	1,020	0.315	1.2E-03	5.4E-04	4.7E-04	0.006
12.30	3.75	198.35	1.92	0.97	18.99	130	0.711	0.711	0.974	0.97	0.50	1.22	227.91	21.87	0.52	22.39	1.02	228.73	1.64	1	100	1.00	1.00	228.2	1.00	Infin.	0.389	Non-Liq.	5.8	39.6	6.1	45.6	0.08	0.476	1,103	0.330	1.0E-03	3.7E-04	3.2E-04	0.004
12.80	3.90	238.33	1.65	0.69	22.82	130	0.743	0.743	0.973	0.69	0.50	1.19	207.85	20.17	0.21	20.38	1.01	258.79	1.48	1	100	1.00	1.00	258.8	1.00	Infin.	0.389	Non-Liq.	6.1	44.2	9.6	53.8	0.05	0.498	1,190	0.344	8.6E-04	2.6E-04	2.3E-04	0.003
13.29	4.05	269.88	1.71	0.64	25.84	130	0.775	0.775	0.972	0.64	0.50	1.17	297.14	29.19	0.15	29.33	1.01	298.00	1.43	1	100	1.00	1.00	298.0	1.00	Infin.	0.388	Non-Liq.	6.2	46.1	10.0	56.1	0.04	0.519	1,247	0.359	8.1E-04	2.2E-04	1.9E-04	0.002
13.78	4.20	295.66	1.93	0.65	28.31	130	0.807	0.807	0.971	0.66	0.50	1.14	319.08	31.38	0.17	31.55	1.01	319.95	1.42	1	100	1.00	1.00	320.0	1.00	Infin.	0.388	Non-Liq.	6.2	51.4	10.0	61.4	0.03	0.541	1,297	0.373	7.7E-04	2.0E-04	1.7E-04	0.002
14.27	4.35	275.69	1.95	0.71	26.40	130	0.839	0.839	0.970	0.71	0.50	1.12	291.71	28.70	0.23	29.02	1.01	292.60	1.47	1	100	1.00	1.00	292.6	1.00	Infin.	0.387	Non-Liq.	6.1	47.8	10.0	57.8	0.04	0.562	1,236	0.388	8.3E-04	2.3E-04	2.0E-04	0.002
14.76	4.50	282.23	1.97	0.70	27.03	130	0.871	0.871	0.969	0.70	0.50	1.10	293.08	29.08	0.22	29.28	1.01	293.90	1.46	1	100	1.00	1.00	294.0	1.00	Infin.	0.387	Non-Liq.	6.1	47.0	10.0	57.0	0.04	0.584	1,323	0.402	8.4E-04	2.3E-04	2.0E-04	0.002
15.26	4.65	314.84	2.70	0.86	30.15	130	0.903	0.903	0.968	0.86	0.50	1.08	321.18	31.80	0.45	32.25	1.01	322.10	1.50	1	100	1.00	1.00	322.1	1.00	Infin.	0.386	Non-Liq.	6.1	53.2	10.0	63.2	0.00	0.605	1,395	0.416	7.8E-04			
15.75	4.80	462.25	3.71	0.80	44.27	130	0.935	0.935	0.967	0.80	0.50	1.05	463.81	46.05	0.38	46.43	1.01	464.75	1.38	1	100	1.00	1.00	464.7	1.00	Infin.	0.385	Non-Liq.	6.3	73.9	10.0	83.9	0.00	0.626	1,549	0.431	6.2E-04			

EARTH SYSTEMS - EVALUATION OF LIQUEFACTION POTENTIAL AND INDUCED GROUND SUBSIDENCE

Commercial Organics Processing Facility | Project No: VT-24872-02 | Method Used: 1 | 1998 NCEER (Robertson & Wride)

Settlement Analysis using Tokimatsu & Seed (1987), clean sand Qc1n/N1(60) ratio =5 | Plot 1 | Limiting Ic: 2.6

Sounding: CPT-4 | Earthquake Magnitude: 7 | PGA, g: 1.10 | Calc GWT (feet): 15.0



Total Thickness of Liquefiable Layers: 0.0 feet

Estimated Total Ground Subsidence (Settlement): 0.2 inches

EARTH SYSTEMS - EVALUATION OF LIQUEFACTION POTENTIAL AND INDUCED GROUND SUBSIDENCE

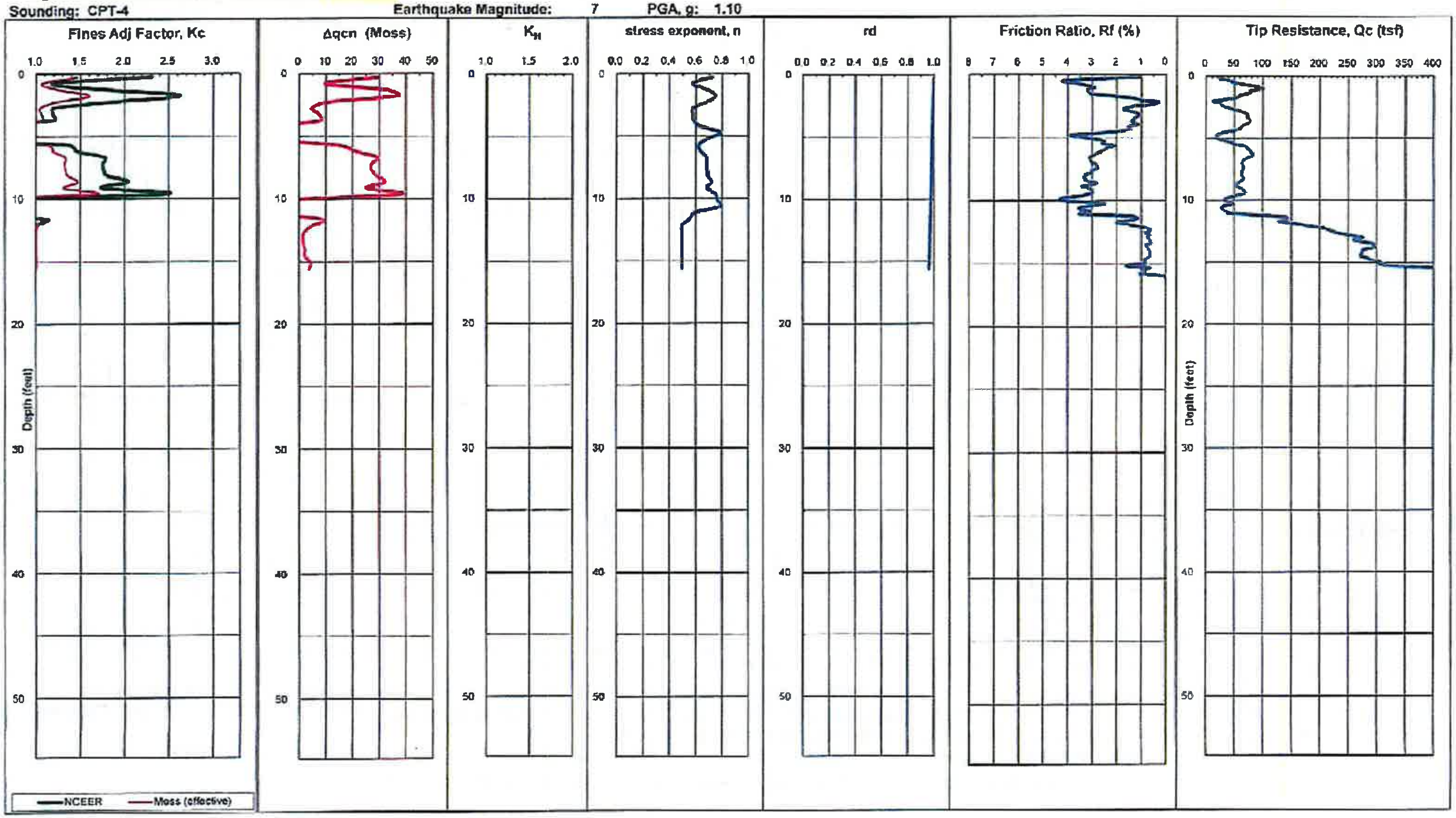
3 avg increment =0.15m Qc1n/N1(60): 5

Ignore 1st/last increment into sand/silt soils: 0

Method Used: 1998 NCEER (Robertson & Wride)

Sounding: CPT-4

Earthquake Magnitude: 7 PGA, g: 1.10



CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Commercial Organics Processing Facility
Job No: VT-24872-02
Date: 5/17/2017
Sounding: CPT-4A

Liquefaction Analysis using 1998 NCEER (Robertson & Wride) method
Settlement Analysis using Tokimatsu & Seed (1987), clean sand Qc1n/N1(60) ratio =5

EARTHQUAKE INFORMATION:
Magnitude: 7 7.5
PGA, g: 1.10 0.82
MSF: 1.19
GWT, feet: 24.0
Calc GWT, feet: 15.0

Plot: 5
Method Used: 1 1998 NCEER (Robertson & Wride)
Averaging Increment: 3 0.15 m
Induced CSR (M=7.5) = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_q*K_c*K_α*Qc
SF = $CRR_{7.5}$*$K\sigma$/CSR

Ignore 1st/last increment into sand/silt soils: 1 yes
Ignore/remediate upper: 0.00 m
Unit Weight of unsaturated soils: 115 pcf
Unit Weight of saturated soils: 130 pcf
Limiting Ic for liquefiable soils: 2.50 Limiting Ic for K_c: 2.5

Use Moss @ P_L: 15%
Use Tokimatsu & Seed (0) or Ishihara & Yasumoto (1): 0
Required SF: 1.50 Max $\Delta N_{1(60)}$ - post liquefaction 5.5
Min SF of Liquefiable Layers: 0.00 Max $\Delta N_{1(60)}$ - non liquefaction 10.0
Avg SF of Liquefiable Layers: #DIV/0!

Total Liquefied Thickness (feet)
0.0
Total Induced Subsidence (inches)
1.4

SETTLEMENT OF DRY SANDS
Qc1n / N1(60) Ratio for clean sand: 5

$p = 0.67*p_o$
$\tau_{av} = 0.65*PGA*p_o*r_d$
$G_{max} = 447*N_{1(60)cs}^{(1/3)}*p^{0.5}$
$a = 0.0389*(p/1)+0.124$
$b = 6400*(p/1)^{-0.6}$
$\gamma = [(1+a*EXP(b*\tau_{av}/G_{max}))/((1+a)*\tau_{av}/G_{max})]$
$E_{15} = \gamma*(N_{1(60)cs}/20)^{-1.2}$
$Nc = (MAG-4)^{2.17}$
$E_{Nc} = (Nc/15)^{0.45}*E15$
$S = 2*H*E_{Nc}$
Nc = 10.8

Depth (feet)	(m)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio Rf %	qs MPa	Total Unit Wt. (pcf)	Total Stress po (tsf)	Eff. Stress p'o (tsf)	rd	F %	n	Max 1.70 Cq	Q	Moss qc1 MPa	Moss Δqc MPa	Moss qc1ncs MPa	Moss eff K_c	Qc1n	Ic
0.49	0.15	25.15	0.12	0.42	2.41	115	0.029	0.028	1.000	0.49	0.63	1.70	40.37	4.09	0.00	4.89	1.00	40.41	2.88
0.98	0.30	43.74	0.70	0.60	4.19	115	0.057	0.057	1.000	0.80	0.58	1.70	70.20	7.12	0.12	7.24	1.02	70.29	1.91
1.48	0.45	27.25	0.75	2.77	2.61	115	0.085	0.085	0.999	2.78	0.75	1.70	43.65	4.44	2.52	6.96		43.79	2.47
1.97	0.60	19.02	0.51	2.67	1.82	115	0.113	0.113	0.997	2.59	0.78	1.70	30.39	3.10	2.41	5.50		30.56	2.56
2.46	0.75	22.32	0.16	0.72	2.14	115	0.141	0.141	0.998	0.73	0.67	1.70	35.64	3.65	0.25	3.90		35.90	2.20
2.95	0.90	29.44	0.04	0.13	2.82	115	0.170	0.170	0.995	0.13	0.56	1.70	47.04	4.79	0.00	4.79	1.00	47.31	1.63
3.44	1.05	30.99	0.02	0.06	2.97	115	0.198	0.198	0.994	0.06	0.54	1.70	49.48	5.04	0.00	5.04	1.00	49.79	1.78
3.94	1.20	35.09	0.03	0.07	3.36	115	0.226	0.226	0.993	0.07	0.52	1.70	56.02	5.71	0.00	5.71	1.00	56.39	1.72
4.43	1.35	29.54	0.13	0.45	2.83	115	0.255	0.255	0.992	0.45	0.61	1.70	47.05	4.81	0.00	4.81	1.00	47.46	2.00
4.92	1.50	22.04	0.36	1.63	2.11	115	0.283	0.283	0.990	1.65	0.73	1.70	34.95	3.59	1.25	4.83	1.35	35.41	2.40
5.41	1.65	59.19	0.59	1.00	5.67	115	0.311	0.311	0.989	1.00	0.59	1.70	94.61	9.64	0.55	10.19	1.08	95.11	1.93
5.91	1.80	70.66	0.95	1.35	6.77	115	0.340	0.340	0.988	1.35	0.60	1.70	112.99	10.78	0.94	11.89	1.09	113.54	1.96
6.40	1.95	71.33	1.31	1.83	6.83	115	0.368	0.368	0.987	1.84	0.62	1.70	114.02	10.07	1.48	11.55	1.15	114.51	2.05
6.89	2.10	51.59	1.26	2.45	4.94	115	0.396	0.396	0.986	2.47	0.66	1.70	82.26	7.11	2.15	9.27	1.30	82.90	2.24
7.38	2.25	48.45	1.07	2.21	4.64	115	0.424	0.424	0.985	2.23	0.68	1.70	77.16	8.63	1.89	8.52	1.29	77.84	2.23
7.87	2.40	51.81	1.09	2.11	4.96	115	0.453	0.453	0.984	2.12	0.66	1.70	82.53	8.90	1.77	8.67	1.26	83.25	2.19
8.37	2.55	52.72	1.19	2.26	5.05	115	0.481	0.481	0.983	2.28	0.66	1.70	83.94	6.80	1.94	8.74	1.29	84.72	2.21
8.86	2.70	38.80	1.16	3.14	3.52	115	0.509	0.509	0.982	3.19	0.75	1.70	58.31	4.68	2.92	7.60	1.62	59.13	2.42
9.35	2.85	50.51	1.13	2.24	4.84	115	0.536	0.536	0.981	2.27	0.69	1.66	75.49	6.28	1.82	8.20	1.31	78.30	2.24
9.84	3.00	34.35	1.12	3.28	3.29	115	0.566	0.566	0.979	3.32	0.77	1.61	51.56	4.21	3.05	7.26	1.72	52.42	2.47
10.33	3.15	32.37	0.92	2.83	3.10	115	0.594	0.594	0.978	2.88	0.76	1.55	48.60	3.95	2.57	6.52	1.65	47.47	2.46
10.83	3.30	32.64	0.76	2.34	3.13	115	0.623	0.623	0.977	2.38	0.75	1.49	44.98	3.95	2.03	5.97	1.51	45.63	2.42
11.32	3.45	100.88	0.77	0.78	9.64	115	0.651	0.651	0.976	0.77	0.54	1.30	122.94	12.01	0.29	12.30	1.02	123.74	1.77
11.81	3.60	132.55	1.47	1.11	12.68	115	0.679	0.679	0.975	1.11	0.55	1.27	158.90	14.96	0.67	15.63	1.04	159.72	1.79
12.30	3.75	228.06	2.06	0.90	21.84	130	0.711	0.711	0.974	0.91	0.50	1.22	262.11	25.13	0.45	25.58	1.02	262.93	1.56
12.80	3.90	260.16	2.00	0.77	24.91	130	0.743	0.743	0.973	0.77	0.50	1.19	292.57	28.35	0.36	28.65	1.01	293.41	1.49
13.29	4.05	268.82	1.98	0.73	25.82	130	0.775	0.775	0.972	0.74	0.50	1.17	296.60	28.97	0.26	29.23	1.01	297.74	1.47
13.78	4.20	264.98	1.78	0.67	25.37	130	0.807	0.807	0.971	0.67	0.50	1.14	285.66	28.15	0.19	28.34	1.01	286.74	1.45
14.27	4.35	258.32	1.71	0.66	24.74	130	0.839	0.839	0.970	0.66	0.50	1.12	273.27	27.07	0.16	27.24	1.01	274.16	1.47
14.76	4.50	288.92	2.97	0.80	27.48	130	0.871	0.871	0.969	0.80	0.50	1.10	297.97	29.34	0.44	29.78	1.01	298.86	1.54
15.26	4.65	362.53	3.07	0.85	34.72	130	0.903	0.903	0.968	0.85	0.50	1.08	369.97	36.57	0.44	37.01	1.01	370.89	1.48
15.75	4.80	502.15	2.48	0.49	48.09	130	0.935	0.935	0.967	0.49	0.50	1.06	503.92	50.43	0.00	50.43	1.00	504.86	1.19

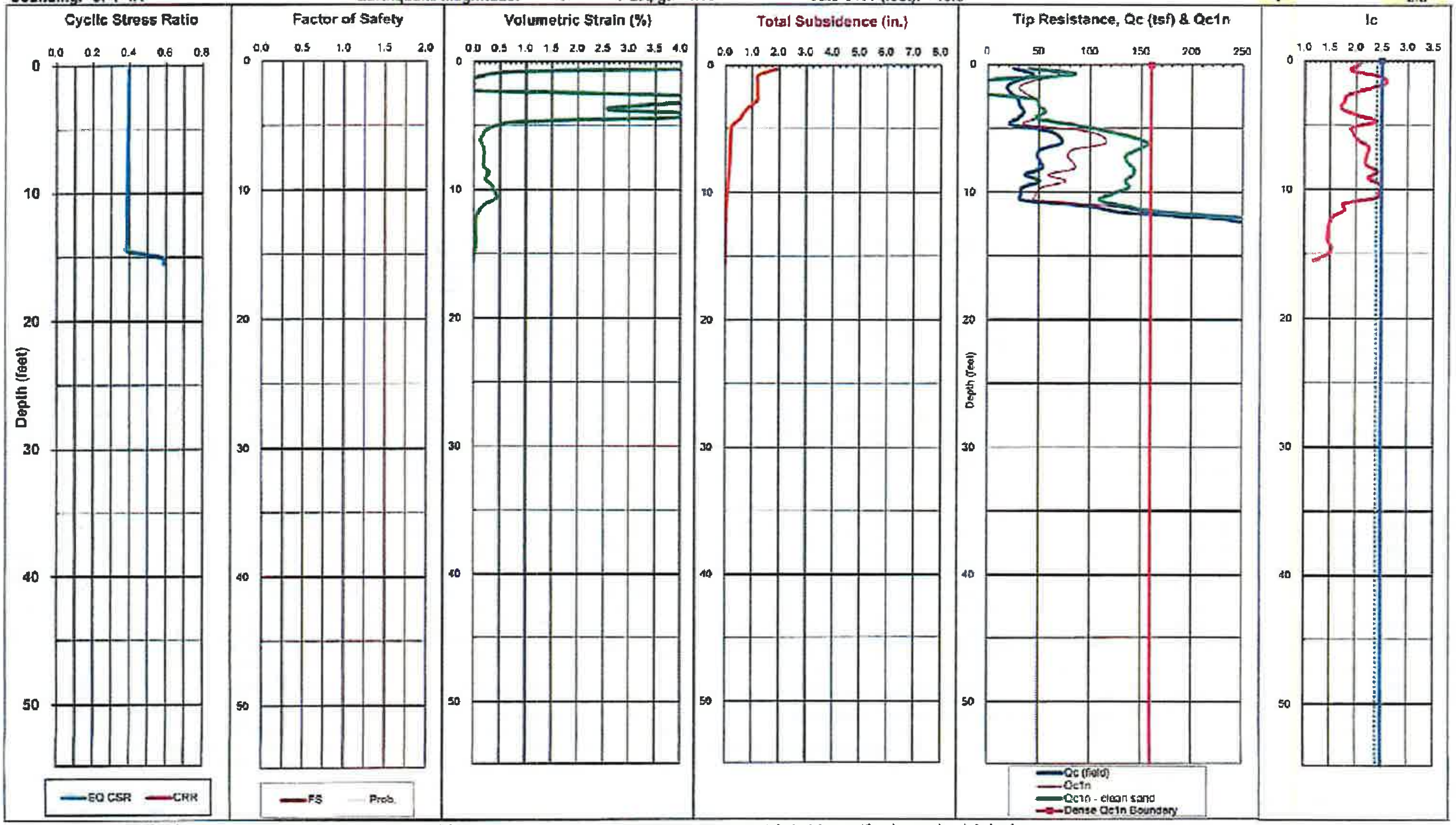
Depth (feet)	Override	Liquef. Suscept. (0 or 1)	Rel. Dens. Dr (%)	K_c	K_σ	Clean Sand Qc1n	K_α	CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Qc1n / $N_{1(60)}$ Ratio	Equiv. $N_{1(60)}$	FC Adj. $\Delta N_{1(60)}$	Equiv. $N_{1(60)cs}$	Volumetric Strain (%)	p (tsf)	G_{max} (tsf)	τ_{av} (tsf)	Shear Strain γ	Strain E_{15}	Strain E_{Nc}	Dry Sand Subsidence (in.)
0.49		1	39	1.00	1.00	40.4	1.00	0.084	0.399	Non-Liq.	4.9	8.2	0.0	8.2	11.31	0.019	124	0.013	2.2E-02	6.4E-02	5.6E-02	0.656
0.98		1	62	1.20	1.00	84.1	1.00	0.135	0.399	Non-Liq.	5.3	13.4	3.5	16.8	0.13	0.038	223	0.027	3.4E-03	4.2E-03	3.6E-03	0.043
1.48		0			1.00		1.00		0.399	Non-Liq.	4.2	10.5			0.00	0.057						
1.97		0			1.00		1.00		0.398	Non-Liq.	3.9	7.7			0.00	0.076						
2.46		0			1.00		1.00		0.398	Non-Liq.	4.7	7.7			0.00	0.095						
2.95		1	46	1.00	1.00	47.5	1.00	0.089	0.397	Non-Liq.	5.4	8.7	0.7	9.5	4.77	0.114	319	0.080	1.1E-02	2.8E-02	2.4E-02	0.282
3.44		1	48	1.00	1.00	49.8	1.00	0.091	0.397	Non-Liq.	5.5	9.0	0.9	10.0	3.95	0.133	350	0.094	9.9E-03	2.3E-02	2.0E-02	0.233
3.94		1	53	1.00	1.00	56.4	1.00	0.097	0.396	Non-Liq.	5.6	10.0	1.3	11.3	2.58	0.152	390	0.107	7.5E-03	1.5E-02	1.3E-02	0.152
4.43		1	46	1.00	1.00	47.5	1.00	0.090	0.396	Non-Liq.	5.1	9.3	0.2	9.5	4.55	0.171	391	0.120	1.1E-02	2.6E-02	2.3E-02	0.269
4.92		1	34	2.33	1.00	82.5	1.00	0.132	0.395	Non-Liq.	4.3	8.2	8.2	16.5	0.79	0.190	455	0.133	3.6E-03	4.6E-03	3.9E-03	0.046
5.41		1	75	1.22	1.00	115.9	1.00	0.225	0.395	Non-Liq.	5.2	18.2	5.0	23.2	0.30	0.209	582	0.147	2.1E-03	1.7E-03	1.5E-03	0.018
5.91		1	82	1.29	1.00	141.6	1.00	0.345	0.395	Non-Liq.	5.2	22.0	6.4	28.4	0.17	0.228	650	0.160	1.5E-03	1.0E-03	8.7E-04	0.010
6.40		1	82	1.37	1.00	157.2	1.00	0.441	0.394	Non-Liq.	5.0	23.0	8.4	31.4	0.14	0.246	700	0.173	1.3E-03	7.8E-04	6.8E-04	0.008
6.89		1	69	1.77	1.00	146.7	1.00	0.374	0.394	Non-Liq.	4.6	18.0	10.0	28.0	0.19	0.265	699	0.186	1.6E-03	1.1E-03	9.3E-04	0.011
7.38		1	68	1.74	1.00	135.3	1.00	0.311	0.393	Non-Liq.	4.6	16.8	10.0	26.8	0.21	0.284	713	0.199	1.7E-03	1.2E-03	1.1E-03	0.012
7.87		1	69	1.65	1.00	137.2	1.00	0.320	0.393	Non-Liq.	4.7	17.7	9.8	27.4	0.20	0.303	743	0.212	1.7E-03	1.2E-03	1.0E-03	0.012
8.37		1	70	1.69	1.00	143.0	1.00	0.352	0.392	Non-Liq.	4.7	18.1	10.0	28.1	0.19	0.322	772	0.225	1.7E-03	1.1E-03	9.5E-04	0.011
8.86		1	55	2.41	1.00	142.6	1.00	0.350	0.392	Non-Liq.	4.3	13.9	10.0	23.9	0.29	0.341	752	0.238	2.1E-03	1.7E-03	1.5E-03	0.017
9.35		1	68	1.77	1.00	136.0	1.00	0.309	0.392	Non-Liq.	4.6	16.5	10.0	26.5	0.32	0.360	800	0.251	1.8E-03	1.3E-03	1.1E-03	0.013
9.84		1	50	2.64	1.00	138.4	1.00	0.326	0.391	Non-Liq.	4.2	12.6	10.0	22.6	0.34	0.379	779	0.264	2.3E-03	2.0E-03	1.7E-03	0.020
10.33		1	48	2.59	1.00	122.9	1.00	0.253	0.391	Non-Liq.	4.7	11.4	10.0	21.4	0.40	0.398	783	0.277	2.5E-03	2.3E-03	2.0E-03	0.024
10.83		1	44	2.39	1.00	106.7	1.00	0.203	0.390	Non-Liq.	4.3	10.8	10.0	20.8	0.44	0.417	793	0.290	2.7E-03	2.5E-03	2.2E-03	0.026
11.32		1	86	1.08	1.00	134.1	1.00	0.304	0.390	Non-Liq.	5.5	22.4	4.5	26.8	0.23	0.436	884	0.303	1.8E-03	1.3E-03	1.1E-03	0.013
11.81		1	96	1.10	1.00	175.9	1.00	Infin.	0.389	Non-Liq.	5.5	29.1	6.1	35.2	0.12	0.455	988	0.315	1.3E-03	6.8E-04	5.8E-04	0.007
12.30		1	100	1.00	1.00	262.9	1.00	Infin.	0.389	Non-Liq.	5.9	44.5	8.1	52.6	0.05	0.476	1,159	0.330	8.7E-04	2.7E-04	2.3E-04	0.003
12.80		1	100	1.00	1.00	293.4	1.00	Infin.	0.389	Non-Liq.	6.1	48.3	10.0	58.3	0.04	0.498	1,220	0.344	7.9E-04	2.2E-04	1.9E-04	0.002
13.29		1	100	1.00	1.00	297.7	1.00	Infin.	0.388	Non-Liq.	6.1	48.7	10.0	58.7	0.04	0.519	1,252	0.359	8.0E-04	2.2E-04	1.9E-04	0.002
13.78		1	100	1.00	1.00	286.7	1.00	Infin.	0.388	Non-Liq.	6.1	46.7	10.0	56.7	0.04	0.541	1,263	0.373	8.4E-04	2.4E-04	2.1E-04	0.002
14.27		1	100	1.00	1.00	274.2	1.00	Infin.	0.387	Non-Liq.	6.1	44.8	10.0	54.8	0.05	0.562	1,273	0.388	8.7E-04	2.6E-04	2.3E-04	0.003
14.76		1	100	1.00	1.00	298.9	1.00	Infin.	0.387	Non-Liq.	6.0	50.0	0.8	50.8	0.04	0.584	1,335	0.402	8.1E-04	2.2E-04	1.9E-04	0.002
15.26		1	100	1.00	1.00	370.9	1.00	Infin.	0.386	Non-Liq.	6.1	60.4	10.0	70.4	0.00	0.605	1,438	0.416	7.1E-04			
15.75		1	100	1.00	1.00	504.9	1.00	Infin.	0.385	Non-Liq.	5.5	91.3	9.7	101.0	0.00	0.626	1,948	0.431	5.4E-04			

EARTH SYSTEMS - EVALUATION OF LIQUEFACTION POTENTIAL AND INDUCED GROUND SUBSIDENCE

Commercial Organics Processing Facility | Project No: VT-24872-02 | Method Used: 1 | 1998 NCEER (Robertson & Wride)

Settlement Analysis using Tokimatsu & Seed (1987), clean sand Qc1n/N1(60) ratio =5 | Plot 1 | Limiting Ic: 2.6

Sounding: CPT-4A | Earthquake Magnitude: 7 | PGA, g: 1.10 | Calc GWT (feet): 15.0



Total Thickness of Liquefiable Layers: 0.0 feet

Estimated Total Ground Subsidence (Settlement): 1.9 inches

EARTH SYSTEMS - EVALUATION OF LIQUEFACTION POTENTIAL AND INDUCED GROUND SUBSIDENCE

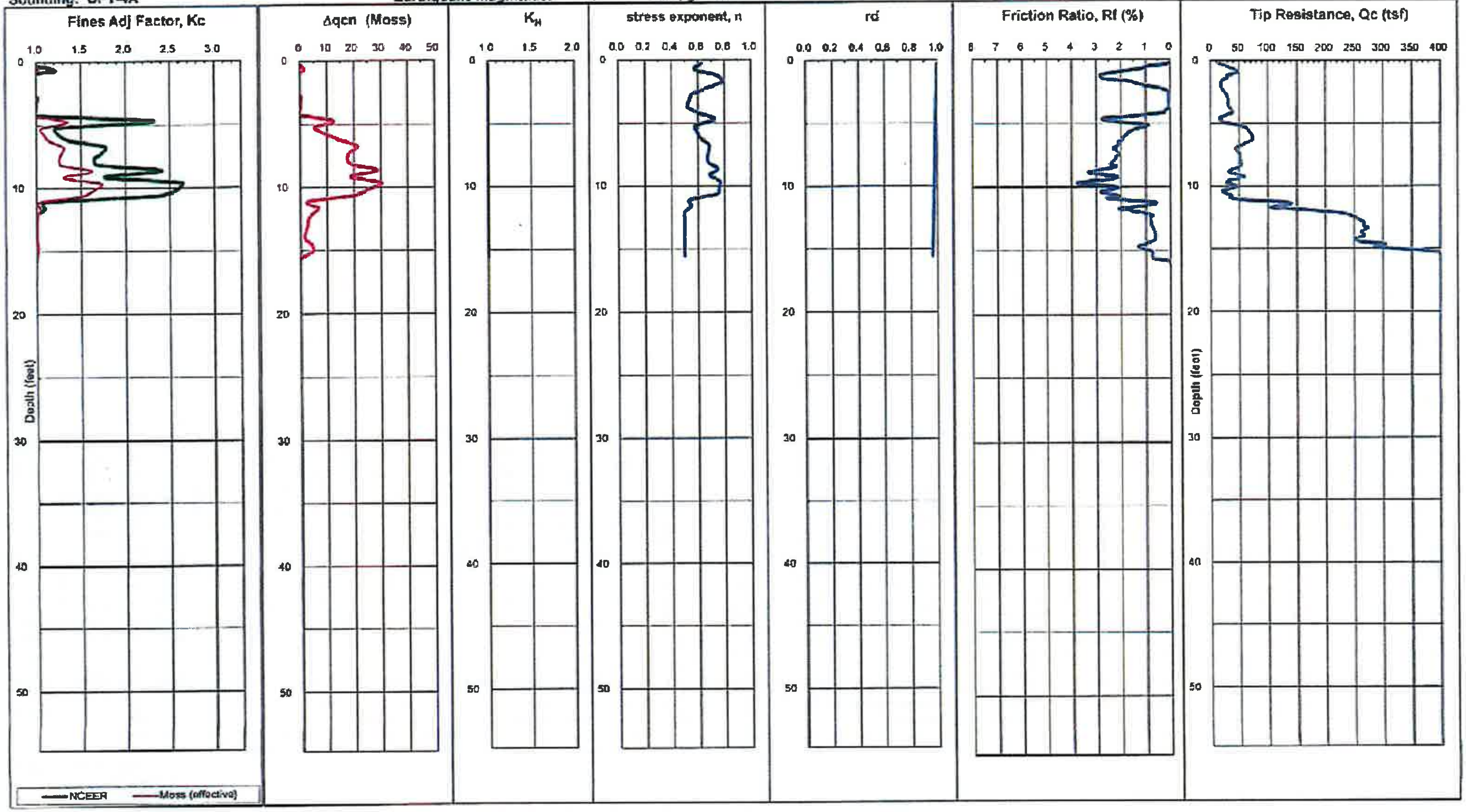
Method Used: 1998 NCEER (Robertson & Wride)

3 avg increment =0.15m Qc1n/N1(60): 5

Ignore 1st/last increment into sand/silt soils: 0

Sounding: CPT-4A

Earthquake Magnitude: 7 PGA, g: 1.10



CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA

Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Commercial Organics Processing Facility
Job No: VT-24572-02
Date: 5/17/2017
Sounding: CPT-5

Liquefaction Analysis using 1998 NCEER (Robertson & Wride) method
Settlement Analysis using Tokimatsu & Seed (1987), clean sand Qc1n/N1(60) ratio =5

EARTHQUAKE INFORMATION:
Magnitude: 7 7.5
PGA, g: 1.10 0.52
MSF: 1.19
GWT, feet: 24.0
Calc GWT, feet: 16.8

Plot: 6
Method Used: 1 1998 NCEER (Robertson & Wride)
Averaging Increment: 3 0.15 m
Induced CSR (M=7.5) = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_σ*Qc
SF = $CRR_{7.5}$*Kσ/CSR

Ignore 1st/last increment into sand/silt soils: 1 yes
Ignore/remediate upper: 0.00 m
Unit Weight of unsaturated soils: 115 pcf
Unit Weight of saturated soils: 130 pcf
Limiting Ic for liquefiable soils: 2.60 Limiting Ic for K_c: 2.5

Use Moss @ P_L: 15%
Use Tokimatsu & Seed (0) or Ishihara &Yoshimine (1): 0
Required SF: 1.50 Max $\Delta N_{1(60)}$ 9.5
Min SF of Liquefiable Layers: 0.00 Max $\Delta N_{1(60)}$ 10.0
Avg SF of Liquefiable Layers: #DIV/0!

Total Liquefied Thickness (feet): 0.0
Total Induced Subsidence (inches): 0.1

SETTLEMENT OF DRY SANDS
Qc1n / N1(60) Ratio for clean sand
p = 0.67*po
τ_{av} = 0.65*PGA*po*rd
G_{max} = 447*$N_{1(60)cs}$...
a = 0.0389*(p/1)+0.124
b = 6400*(p/1)...
γ = [1+a*EXP(b*τ_{av}/G_{max})]/[(1+a)*τ_{av}/G_{max}]
E_{15} = γ*($N_{1(60)cs}$/20)...
Nc = (MAG-4)...
E_{nc} = (Nc/15)...*E15
S = 2*H*E_{nc}
Nc = 10.6

Depth (feet)	(m)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio Rf %	qc MPa	Total Unit Wt. (pcf)	Total Stress po (tsf)	Eff. Stress p'o (tsf)	rd	F %	n	Max 1.70 Cq	Q	Moss qc1 MPa	Moss Δqc MPa	Moss qc,mod MPa	Moss eff K_c	Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel Dens Dr (%)	K_c	K_σ	Clean Sand Qc1n	Kα	CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Qc1n $N_{1(60)}$ Ratio	Equiv. $N_{1(60)}$	FC Adj $\Delta N_{1(60)}$	Equiv. $N_{1(60)cs}$	Volumetric Strain (%)	p (tsf)	G_{max} (tsf)	τ_{av} (tsf)	Shear Strain γ	Strain E_{15}	Strain Enc	Dry Sand Subsidence (in.)
0.49	0.15	88.29	0.47	0.53	8.54	115	0.028	0.028	1.000	0.53	0.54	1.70	109.69	11.12	0.21	11.33	1.02	109.73	1.76		1	81	1.09	1.00	119.8	1.00	0.240	0.399	Non-Liq.	5.5	19.9	4.1	24.0	0.23	0.019	177	0.013	1.7E-03	1.3E-03	1.2E-03	0.014
0.98	0.30	87.08	0.40	0.46	8.34	115	0.057	0.057	1.000	0.46	0.50	1.70	139.83	14.18	0.00	14.18	1.00	139.82	1.58		1	91	1.00	1.00	139.8	1.00	0.335	0.399	Non-Liq.	5.9	23.8	4.2	28.0	0.15	0.035	284	0.027	1.3E-03	8.5E-04	7.4E-04	0.009
1.48	0.45	66.69	0.62	0.92	6.39	115	0.085	0.085	0.999	0.92	0.57	1.70	107.02	10.86	0.47	11.33	1.04	107.16	1.87		1	80	1.16	1.00	124.1	1.00	0.258	0.399	Non-Liq.	5.3	20.0	4.8	24.8	0.22	0.057	311	0.040	1.6E-03	1.3E-03	1.1E-03	0.013
1.97	0.60	108.52	0.43	0.40	10.38	115	0.113	0.113	0.997	0.40	0.50	1.70	174.18	17.67	0.00	17.67	1.00	174.27	1.48		1	100	1.00	1.00	174.4	1.00	Infin.	0.398	Non-Liq.	6.1	28.6	6.3	34.9	0.05	0.076	402	0.054	9.6E-04	4.9E-04	4.2E-04	0.005
2.46	0.75	226.75	0.75	0.33	21.71	115	0.141	0.141	0.996	0.33	0.50	1.70	384.11	36.91	0.00	36.91	1.00	384.34	1.17		1	100	1.00	1.00	384.3	1.00	Infin.	0.398	Non-Liq.	5.5	65.9	7.0	72.9	0.01	0.095	575	0.067	3.9E-04	8.2E-05	7.1E-05	0.001
2.95	0.90	145.27	0.81	0.56	13.91	115	0.170	0.170	0.995	0.56	0.50	1.70	233.15	23.65	0.06	23.71	1.00	233.43	1.47		1	100	1.00	1.00	233.4	1.00	Infin.	0.397	Non-Liq.	6.1	38.1	8.6	46.7	0.04	0.114	543	0.080	6.9E-04	2.5E-04	2.1E-04	0.003
3.44	1.05	75.48	0.92	1.22	7.23	115	0.198	0.198	0.994	1.22	0.58	1.70	120.87	12.29	0.80	13.08	1.08	121.29	1.91		1	85	1.19	1.00	144.8	1.00	0.383	0.397	Non-Liq.	5.3	23.0	5.9	29.0	0.15	0.133	590	0.094	1.4E-03	8.0E-04	7.0E-04	0.009
3.94	1.20	209.80	1.83	0.87	20.09	115	0.226	0.226	0.993	0.88	0.50	1.70	336.75	34.15	0.42	34.57	1.01	337.11	1.50		1	100	1.00	1.00	337.1	1.00	Infin.	0.396	Non-Liq.	6.1	55.6	10.0	65.6	0.02	0.152	702	0.107	5.0E-04	1.2E-04	1.0E-04	0.001
4.43	1.35	291.07	2.44	0.84	27.87	115	0.255	0.255	0.992	0.84	0.50	1.70	467.29	45.62	0.37	45.99	1.01	467.70	1.40		1	100	1.00	1.00	467.7	1.00	Infin.	0.396	Non-Liq.	6.1	74.7	10.0	84.7	0.01	0.171	811	0.120	4.0E-04	7.0E-05	6.1E-05	0.001
4.92	1.50	286.75	2.59	0.90	27.46	115	0.283	0.283	0.990	0.90	0.50	1.70	460.29	42.83	0.44	43.27	1.01	460.75	1.43		1	100	1.00	1.00	460.7	1.00	Infin.	0.395	Non-Liq.	6.2	74.2	10.0	84.2	0.01	0.190	853	0.133	4.1E-04	7.3E-05	6.4E-05	0.001
5.41	1.65	318.50	2.95	0.93	30.50	115	0.311	0.311	0.989	0.93	0.50	1.70	511.27	45.45	0.47	45.92	1.01	511.77	1.41		1	100	1.00	1.00	511.8	1.00	Infin.	0.395	Non-Liq.	6.2	82.1	10.0	92.1	0.01	0.209	922	0.147	3.9E-04	6.3E-05	5.4E-05	0.001
5.91	1.80	256.92	2.31	0.91	24.60	115	0.340	0.340	0.988	0.91	0.50	1.70	412.27	38.38	0.45	38.83	1.01	412.82	1.46		1	100	1.00	1.00	412.8	1.00	Infin.	0.395	Non-Liq.	5.1	67.2	10.0	77.2	0.02	0.228	889	0.160	4.7E-04	9.4E-05	8.1E-05	0.001
6.40	1.95	265.99	1.96	0.74	25.58	115	0.368	0.368	0.987	0.74	0.50	1.70	427.32	37.80	0.26	38.06	1.01	427.81	1.37		1	100	1.00	1.00	427.8	1.00	Infin.	0.394	Non-Liq.	6.3	67.8	10.0	77.8	0.02	0.246	948	0.173	4.8E-04	9.5E-05	8.2E-05	0.001
6.89	2.10	307.23	3.09	1.00	29.42	115	0.396	0.396	0.986	1.01	0.50	1.63	473.94	48.22	0.58	48.79	1.01	474.55	1.45		1	100	1.00	1.00	474.6	1.00	Infin.	0.394	Non-Liq.	6.1	77.3	10.0	87.3	0.01	0.265	1,021	0.186	4.5E-04	7.6E-05	6.6E-05	0.001
7.38	2.25	344.31	3.11	0.90	32.97	115	0.424	0.424	0.985	0.90	0.50	1.58	513.17	44.34	0.44	44.78	1.01	513.80	1.40		1	100	1.00	1.00	513.8	1.00	Infin.	0.393	Non-Liq.	6.3	82.1	10.0	92.1	0.01	0.284	1,077	0.199	4.4E-04	7.0E-05	6.0E-05	0.001
7.87	2.40	467.23	1.23	0.26	44.74	115	0.453	0.453	0.984	0.26	0.50	1.53	674.43	68.52	0.00	68.52	1.00	675.08	0.91		1	100	1.00	1.00	675.1	1.00	Infin.	0.393	Non-Liq.	5.5	122.0	10.0	132.0	0.01	0.333	1,254	0.212	3.3E-04	3.5E-05	3.0E-05	0.000

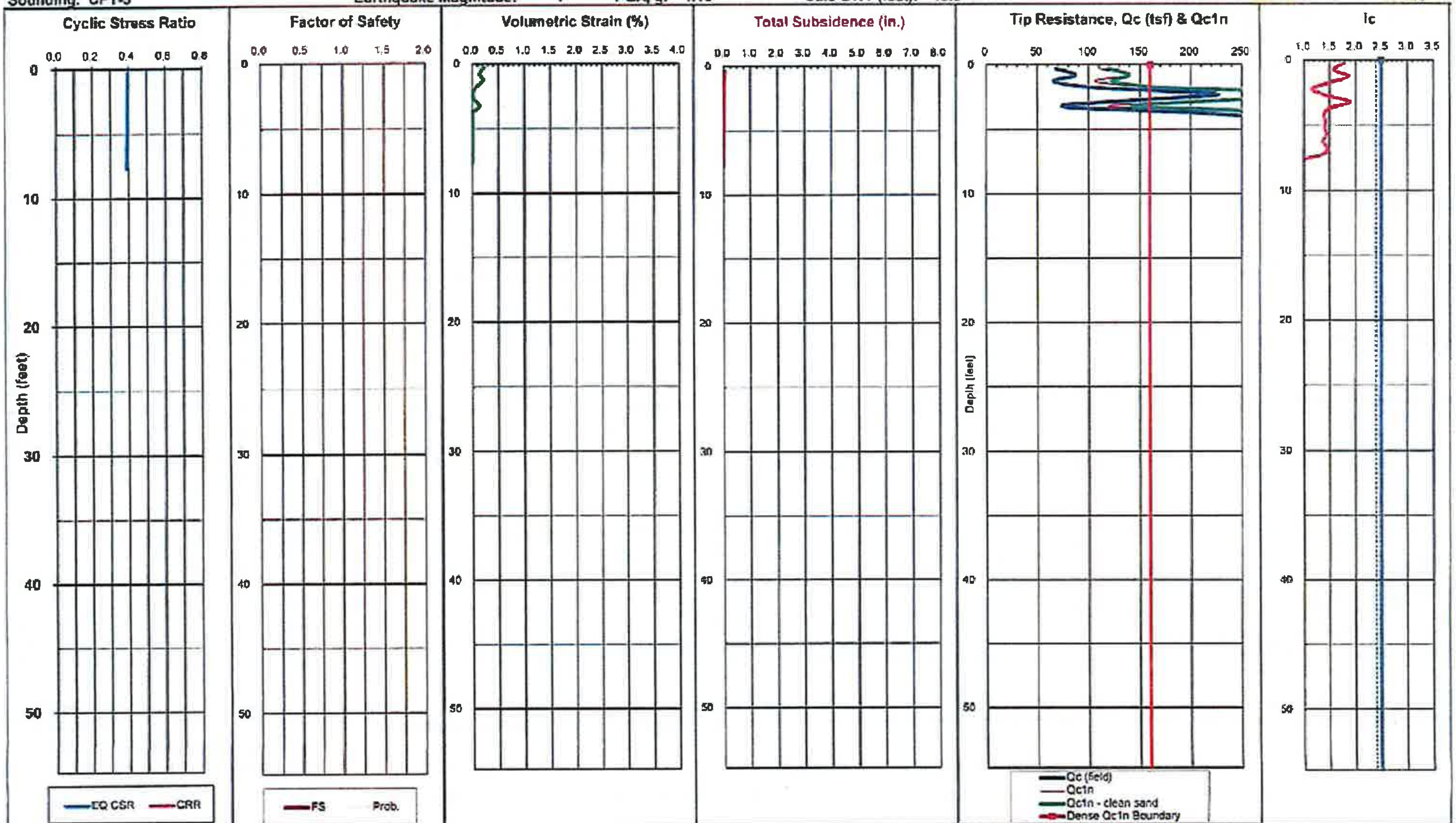
EARTH SYSTEMS - EVALUATION OF LIQUEFACTION POTENTIAL AND INDUCED GROUND SUBSIDENCE

Commercial Organics Processing Facility | Project No: VT-24872-02 | Method Used: 1 | 1998 NCEER (Robertson & Wride)

Settlement Analysis using Tokimatsu & Seed (1987), clean sand Qc1n/N1(60) ratio =5

Plot: 1 | Limiting Ic: 2.6

Sounding: CPT-5 | Earthquake Magnitude: 7 | PGA, g: 1.10 | Calc GWT (feet): 15.0



Total Thickness of Liquefiable Layers: 0.0 feet

Estimated Total Ground Subsidence (Settlement): 0.1 inches

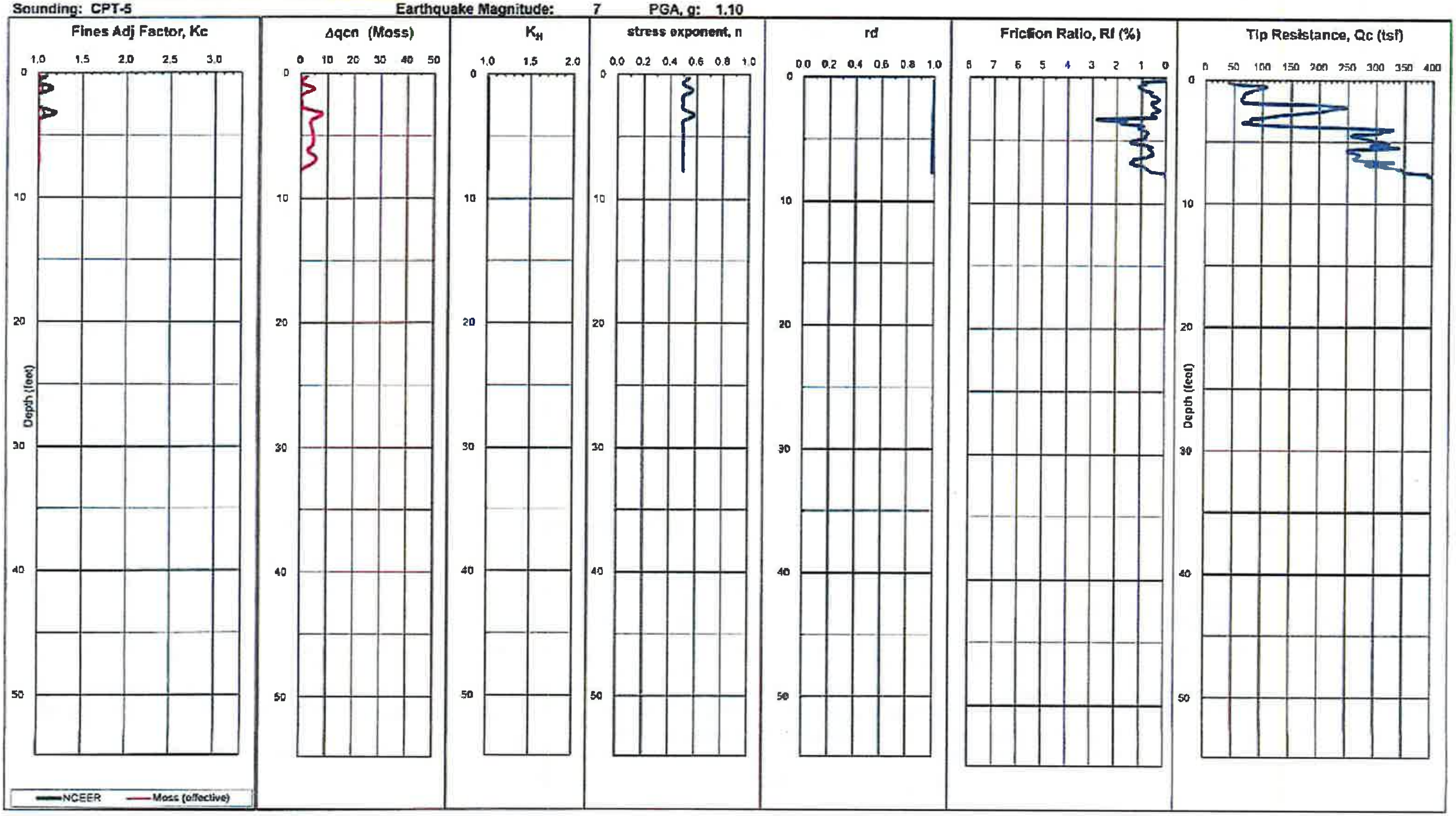
EARTH SYSTEMS - EVALUATION OF LIQUEFACTION POTENTIAL AND INDUCED GROUND SUBSIDENCE

3 avg increment =0.15m Qc1n/N1(60): 5

Method Used: 1998 NCEER (Robertson & Wride)

Ignore 1st/last increment into sand/silt soils: 0

Sounding: CPT-5 Earthquake Magnitude: 7 PGA, g: 1.10



CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Commercial Organics Processing Facility
Job No: VT-24872-02
Date: 8/17/2017
Sounding: CPT-5A

Liquefaction Analysis using 1998 NCEER (Robertson & Wride) method
Settlement Analysis using Tokimatsu & Seed (1987), clean sand Qc1n/N1(60) ratio =5

EARTHQUAKE INFORMATION:

Magnitude:	7	7.5
PGA, g:	1.10	0.92
MSF:	1.19	
GWT, feet:	24.0	
Calc GWT, feet:	15.0	

Plot: 7
Method Used: 1 1998 NCEER (Robertson & Wride)
Averaging Increment: 3 0.15 m
Induced CSR (M=7.5) = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_q*K_c*K_σ*Qc
SF = $CRR_{7.5}$*Kσ/CSR

Ignore 1st/last increment into sand/silt soils: 1 yes
Ignore/remediate upper: 0.00 m
Unit Weight of unsaturated soils: 115 pcf
Unit Weight of saturated soils: 130 pcf
Limiting Ic for liquefiable soils: 2.50
Limiting Ic for K_σ: 2.5

Use Moss @ P_L: 15%
Use Tokimatsu & Seed (0) or Ishihara &Yoshimine (1): 0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.00
Avg SF of Liquefiable Layers: #DIV/0!
Max ΔN for dense liquefied: 5.5
Max ΔN for non-liquefied: 10.6

Total Liquefied Thickness (feet)
0.0

Total Induced Subsidence (inches)
0.0

SETTLEMENT OF DRY SANDS
Qc1n / N1(60) Ratio for clean sand: 5

$p = 0.67*po$
$\tau_{av} = 0.65*PGA*po*rd$
$G_{max} = 447*N_{1(60)CS}^{1/3}*p^{0.5}$
$a = 0.0389*(p/1)+0.124$
$b = 6400*(p/1)^{-0.6}$
$\gamma = [1+a*EXP(b*\tau_{av}/G_{max})]/[(1+a)*\tau_{av}/G_{max}]$
$E_{15} = \gamma*(N_{1(60)CS}/20)^{-1.2}$
$Nc = (MAG-4)^{2.17}$
$E_{Nc} = (Nc/15)^{0.45}*E15$
$S = 2*H*E_{Nc}$
Nc = 10.6

Depth (feet)	(m)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio Rf %	qc MPa	Total Unit Wt. (pcf)	Total Stress po (tsf)	Eff. Stress p'o (tsf)	rd	F %	n	Max 1.70 Cq	Q	Moss qc1 MPa
0.49	0.15	68.04	0.17	0.25	6.52	115	0.028	0.028	1.000	0.25	0.50	1.70	109.25	11.08
0.98	0.30	154.97	0.26	0.17	14.84	115	0.057	0.057	1.000	0.17	0.50	1.70	248.92	25.23
1.48	0.45	175.03	0.84	0.48	16.76	115	0.085	0.085	0.999	0.48	0.50	1.70	281.10	28.49
1.97	0.60	215.31	1.51	0.70	20.62	115	0.113	0.113	0.997	0.70	0.50	1.70	345.77	35.05
2.46	0.75	269.81	2.67	0.99	25.84	115	0.141	0.141	0.995	0.99	0.50	1.70	433.31	43.92
2.95	0.90	235.08	2.81	1.20	22.51	115	0.170	0.170	0.995	1.20	0.50	1.70	377.43	38.27
3.44	1.05	307.33	2.09	0.68	29.43	115	0.198	0.198	0.994	0.68	0.50	1.70	493.51	50.03
3.94	1.20	345.62	2.78	0.81	33.09	115	0.226	0.226	0.993	0.81	0.50	1.70	554.82	55.80
4.43	1.35	274.08	3.92	1.43	26.25	115	0.255	0.255	0.992	1.43	0.50	1.70	439.99	39.36
4.92	1.50	228.58	3.34	1.46	21.89	115	0.283	0.283	0.990	1.46	0.50	1.70	366.79	32.26
5.41	1.65	197.29	1.69	0.86	18.89	115	0.311	0.311	0.989	0.86	0.50	1.70	316.51	29.79
5.91	1.80	203.29	1.12	0.55	19.47	115	0.340	0.340	0.988	0.55	0.50	1.70	326.08	31.98
6.40	1.95	320.80	2.99	0.93	30.72	115	0.368	0.368	0.987	0.93	0.50	1.70	513.62	43.29
6.89	2.10	339.88	4.09	1.20	32.55	115	0.396	0.396	0.986	1.21	0.50	1.03	524.37	43.28
7.38	2.25	330.41	3.69	1.12	31.64	115	0.424	0.424	0.985	1.12	0.50	1.58	492.42	41.64
7.87	2.40	449.38	1.90	0.42	43.03	115	0.453	0.453	0.984	0.42	0.50	1.53	648.64	61.31

Depth (feet)	Moss ΔQc MPa	Moss qc1,clean MPa	Moss eff K_c	Qc1n	Ic	Override	Liquef. Suscept. (0 or 1)	Rel Dens Dr(%)	K_c	K_σ	Clean Sand Qc1n	K_α	CRR	Induced M=7.5 CSR	Liquefac. Safety Factor
0.49	0.00	11.08	1.00	109.33	1.56		1	81	1.00	1.00	109.3	1.00	0.202	0.399	Non-Liq.
0.98	0.00	25.23	1.00	249.01	1.16		1	100	1.00	1.00	249.0	1.00	Infin.	0.399	Non-Liq.
1.48	0.00	28.49	1.00	281.23	1.36		1	100	1.00	1.00	281.2	1.00	Infin.	0.396	Non-Liq.
1.97	0.22	35.27	1.01	345.98	1.41		1	100	1.00	1.00	346.0	1.00	Infin.	0.398	Non-Liq.
2.46	0.55	44.47	1.01	433.54	1.47		1	100	1.00	1.00	433.5	1.00	Infin.	0.398	Non-Liq.
2.95	0.77	39.04	1.02	377.70	1.58		1	100	1.00	1.00	377.7	1.00	Infin.	0.397	Non-Liq.
3.44	0.20	50.23	1.00	493.82	1.31		1	100	1.00	1.00	493.8	1.00	Infin.	0.397	Non-Liq.
3.94	0.34	56.13	1.01	555.18	1.34		1	100	1.00	1.00	555.2	1.00	Infin.	0.396	Non-Liq.
4.43	1.03	40.39	1.03	440.49	1.60		1	100	1.00	1.00	440.4	1.00	Infin.	0.396	Non-Liq.
4.92	1.08	33.33	1.03	367.25	1.68		1	100	1.01	1.00	369.8	1.00	Infin.	0.395	Non-Liq.
5.41	0.40	30.19	1.01	317.01	1.51		1	100	1.00	1.00	317.0	1.00	Infin.	0.395	Non-Liq.
5.91	0.06	32.04	1.00	326.83	1.38		1	100	1.00	1.00	326.8	1.00	Infin.	0.395	Non-Liq.
6.40	0.48	43.77	1.01	514.21	1.41		1	100	1.00	1.00	514.2	1.00	Infin.	0.394	Non-Liq.
6.89	0.78	44.06	1.02	524.98	1.50		1	100	1.00	1.00	525.0	1.00	Infin.	0.394	Non-Liq.
7.38	0.68	42.32	1.02	493.05	1.49		1	100	1.00	1.00	493.1	1.00	Infin.	0.393	Non-Liq.
7.87	0.00	61.31	1.00	649.30	1.07		1	100	1.00	1.00	649.3	1.00	Infin.	0.393	Non-Liq.

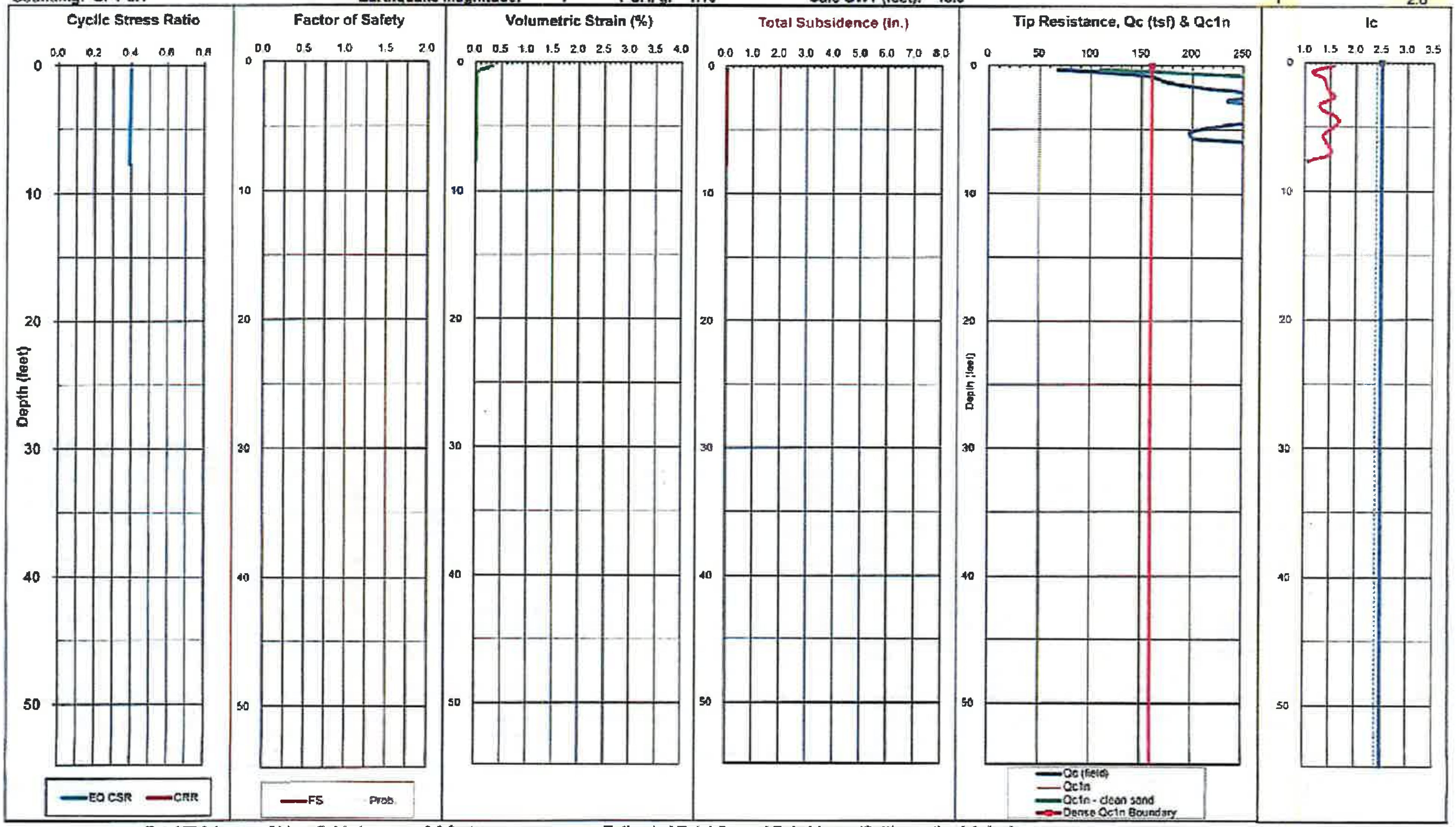
Depth (feet)	Qc1n $N_{1(60)}$ Ratio	Equiv. $N_{1(60)}$	FC Adj. $\Delta N_{1(60)}$	Equiv. $N_{1(60)CS}$	Volumetric Strain (%)	p (tsf)	G_{max} (tsf)	τ_{av} (tsf)	Shear Strain γ	Strain E_{15}	Strain Enc	Dry Sand Subsidence (in.)
0.49	5.9	18.4	3.5	21.9	0.31	0.019	172	0.013	2.0E-03	1.8E-03	1.6E-03	0.018
0.98	5.5	45.0	4.8	49.8	0.03	0.038	320	0.027	5.1E-04	1.7E-04	1.5E-04	0.002
1.48	6.3	44.4	10.0	54.4	0.03	0.057	404	0.040	4.9E-04	1.5E-04	1.3E-04	0.001
1.97	6.2	55.6	10.0	65.6	0.02	0.076	496	0.054	4.1E-04	9.9E-05	8.6E-05	0.001
2.46	6.1	70.9	10.0	80.9	0.01	0.095	595	0.067	3.5E-04	6.5E-05	5.6E-05	0.001
2.95	5.9	63.9	10.0	73.9	0.01	0.114	633	0.080	4.0E-04	8.4E-05	7.3E-05	0.001
3.44	5.5	89.3	9.5	98.8	0.01	0.133	753	0.094	3.2E-04	4.7E-05	4.0E-05	0.000
3.94	6.4	87.1	10.0	97.1	0.01	0.152	800	0.107	3.4E-04	5.1E-05	4.4E-05	0.001
4.43	5.9	75.2	10.0	85.2	0.01	0.171	813	0.120	3.9E-04	6.9E-05	6.0E-05	0.001
4.92	5.8	63.6	10.0	73.6	0.02	0.190	816	0.133	4.7E-04	9.8E-05	8.5E-05	0.001
5.41	6.0	52.4	10.0	62.4	0.03	0.209	810	0.147	5.7E-04	1.5E-04	1.3E-04	0.001
5.91	6.3	51.5	10.0	61.5	0.03	0.228	842	0.160	5.9E-04	1.5E-04	1.3E-04	0.002
6.40	6.2	82.5	10.0	92.5	0.01	0.246	1,004	0.173	4.1E-04	6.6E-05	5.7E-05	0.001
6.89	6.1	88.7	10.0	98.7	0.01	0.265	1,057	0.186	4.1E-04	6.2E-05	5.3E-05	0.001
7.38	6.1	81.0	10.0	91.0	0.01	0.284	1,072	0.199	4.4E-04	7.1E-05	6.2E-05	0.001
7.87	5.5	117.4	10.0	127.4	0.01	0.303	1,239	0.212	3.4E-04	3.7E-05	3.2E-05	0.000

EARTH SYSTEMS - EVALUATION OF LIQUEFACTION POTENTIAL AND INDUCED GROUND SUBSIDENCE

Commercial Organics Processing Facility Project No: VT-24872-02 Method Used: 1 1998 NCEER (Robertson & Wride)

Settlement Analysis using Tokimatsu & Seed (1987), clean sand Qc1n/N1(60) ratio =5 Plot 1 Limiting Ic: 2.6

Sounding: CPT-5A Earthquake Magnitude: 7 PGA, g: 1.10 Calc GWT (feet): 15.0



Total Thickness of Liquefiable Layers: 0.0 feet Estimated Total Ground Subsidence (Settlement): 0.0 inches

EARTH SYSTEMS - EVALUATION OF LIQUEFACTION POTENTIAL AND INDUCED GROUND SUBSIDENCE

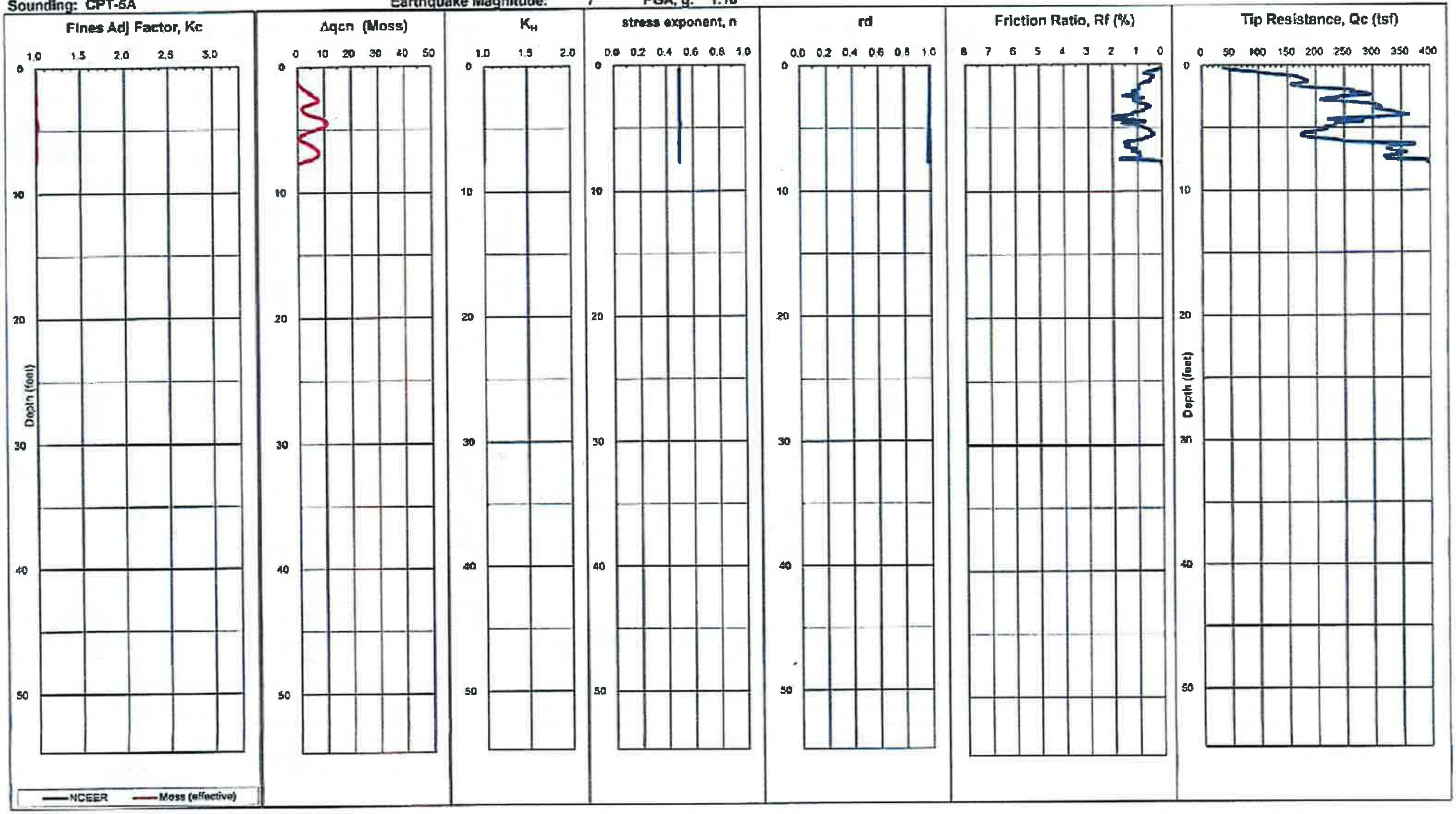
Method Used: 1998 NCEER (Robertson & Wride)

3 avg increment =0.15m Qc1n/N1(60): 5

Ignore 1st/last increment into sand/silt soils: 0

Sounding: CPT-5A

Earthquake Magnitude: 7 PGA, g: 1.10



CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Commercial Organics Processing Facility
Job No: VT-24872-02
Date: 5/17/2017
Sounding: CPT-4

Liquefaction Analysis using 1998 NCEER (Robertson & Wride) method
Settlement Analysis using Tokimatsu & Seed (1987), clean sand Qc1n/N1(60) ratio =5

EARTHQUAKE INFORMATION:

Magnitude:	7	7.5
PGA, g:	1.10	0.92
MSF:	1.19	
GWT, feet:	24.0	
Calc GWT, feet:	15.0	

Plot: 8
Method Used: 1 — 1998 NCEER (Robertson & Wride)
Averaging Increment: 3 — 0.15 m
Induced CSR (M=7.5) = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_c*K_σ*Qc
SF = $CRR_{7.5}$*Kα/CSR

Ignore 1st/last increment into sand/silt soils: 1 yes
Ignore/remediate upper: 0.00 m
Unit Weight of unsaturated soils: 115 pcf
Unit Weight of saturated soils: 130 pcf
Limiting Ic for liquefiable soils: 2.50
Limiting Ic for K_c: 2.5

Use Moss @ P_L: 15%
Use Tokimatsu & Seed (0) or Ishihara &Yoshimine (1): 0
Required SF: 1.50 — Max $\Delta N_{1(60)}$ - sand mixtures: 5.5
Min SF of Liquefiable Layers: 0.57 — Max $\Delta N_{1(60)}$ - non-mixtures: 10.0
Avg SF of Liquefiable Layers: 0.55

Total Liquefied Thickness (feet)
1.0
Total Induced Subsidence (inches)
12.2

SETTLEMENT OF DRY SANDS
Qc1n / N1(60) Ratio for clean sand
p = 0.67*po
τ_{av} = 0.65*PGA*po*rd
G_{max} = 447*$N_{1(60)cs}^{(1/3)}$*$p^{0.5}$
a = 0.0389*(p/1)+0.124
b = 6400*(p/1)$^{-0.6}$
γ = [1+a*EXP(b*τ_{av}/G_{max})]/[(1+a)*τ_{av}/G_{max}]
E_{15} = γ*($N_{1(60)cs}$/20)$^{-1.2}$
Nc = (MAG-4)$^{2.17}$
E_{nc} = (Nc/15)$^{0.45}$*E15
S = 2*H*E_{nc}
Nc = 10.6

Depth (feet)	(m)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio Rf %	qc MPa	Total Unit Wt (pcf)	Total Stress po (tsf)	Eff. Stress p'o (tsf)	rd	F %	n	Max 1.70 Cq	Q	Moss qc1 MPa	Moss Δqc MPa	Moss qc1mod MPa	Moss eff Kc	Qc1n	Ic
0.49	0.15	8.93	0.02	0.24	0.86	115	0.028	0.028	1.000	0.24	0.72	1.70	14.39	1.46	0.00	1.46	1.00	14.43	2.39
0.98	0.30	10.10	0.01	0.14	0.97	115	0.057	0.057	1.000	0.14	0.70	1.70	16.13	1.64	0.00	1.64		16.22	2.29
1.48	0.45	7.20	0.03	0.36	0.69	115	0.085	0.085	0.999	0.37	0.77	1.70	11.43	1.17	0.00	1.17		11.57	2.54
1.97	0.60	9.92	0.03	0.31	0.95	115	0.113	0.113	0.997	0.31	0.72	1.70	15.78	1.62	0.00	1.62		16.00	2.38
2.46	0.75	8.82	0.03	0.39	0.84	115	0.141	0.141	0.996	0.40	0.75	1.70	13.95	1.44	0.00	1.44	1.00	14.18	2.47
2.95	0.90	9.60	0.04	0.39	0.92	115	0.170	0.170	0.995	0.39	0.74	1.70	15.16	1.56	0.00	1.56	1.00	15.43	2.43
3.44	1.05	9.26	0.04	0.41	0.89	115	0.198	0.198	0.994	0.42	0.74	1.70	14.56	1.51	0.00	1.51	1.00	14.87	2.40
3.94	1.20	15.12	0.04	0.24	1.45	115	0.226	0.226	0.993	0.25	0.69	1.70	23.94	2.46	0.00	2.46	1.00	24.30	2.18
4.43	1.35	14.37	0.04	0.28	1.38	115	0.255	0.255	0.992	0.29	0.67	1.70	22.68	2.34	0.00	2.34	1.00	23.08	2.20
4.92	1.50	19.31	0.04	0.18	1.85	115	0.283	0.283	0.990	0.18	0.62	1.70	30.58	3.14	0.00	3.14	1.00	31.00	2.04
5.41	1.65	27.68	0.03	0.12	2.65	115	0.311	0.311	0.989	0.12	0.59	1.70	43.97	4.51	0.00	4.51	1.00	44.47	1.85
5.91	1.80	22.11	0.03	0.14	2.12	115	0.340	0.340	0.988	0.14	0.69	1.70	34.99	3.60	0.00	3.60	1.00	35.53	1.95
6.40	1.95	17.03	0.03	0.18	1.63	115	0.368	0.368	0.987	0.19	0.64	1.70	26.77	2.77	0.00	2.77	1.00	27.36	2.10
6.89	2.10	24.10	0.03	0.13	2.31	115	0.396	0.396	0.986	0.13	0.58	1.70	38.09	3.92	0.00	3.92	1.00	38.72	1.92
7.38	2.25	29.96	0.03	0.10	2.87	115	0.424	0.424	0.985	0.10	0.55	1.67	46.56	4.88	0.00	4.88	1.00	47.23	1.82
7.87	2.40	29.54	0.03	0.11	2.83	115	0.453	0.453	0.984	0.11	0.57	1.62	44.56	4.81	0.00	4.81	1.00	45.19	1.84
8.37	2.55	37.63	0.04	0.12	3.60	115	0.481	0.481	0.983	0.12	0.54	1.53	53.81	6.13	0.00	6.13	1.00	54.61	1.76
8.86	2.70	47.31	0.05	0.11	4.53	115	0.509	0.509	0.982	0.11	0.51	1.46	64.37	7.70	0.00	7.70	1.00	65.07	1.68
9.35	2.85	46.04	0.18	0.39	4.41	115	0.538	0.538	0.981	0.40	0.57	1.47	63.37	6.92	0.00	6.92	1.00	64.07	1.88
9.84	3.00	44.85	0.40	0.90	4.29	115	0.566	0.566	0.979	0.91	0.63	1.48	62.14	5.96	0.44	6.40	1.07	62.94	2.05
10.33	3.15	26.91	0.40	1.50	2.58	115	0.594	0.594	0.978	1.54	0.73	1.52	37.88	3.50	1.11	4.60		38.73	2.26
10.83	3.30	9.48	0.18	1.88	0.91	115	0.623	0.623	0.977	2.01	0.87	1.59	13.24	1.34	1.52	2.85		34.18	2.80
11.32	3.45	12.61	0.03	0.25	1.21	115	0.651	0.651	0.976	0.26	0.73	1.42	15.10	2.44	0.00	2.44		21.48	2.33
11.81	3.60	35.80	0.03	0.08	3.43	115	0.679	0.679	0.975	0.09	0.57	1.29	42.66	7.02	0.00	7.02	1.00	54.99	1.85
12.30	3.75	22.37	0.09	0.37	2.14	130	0.711	0.711	0.974	0.39	0.68	1.31	26.77	3.71	0.00	3.71		34.96	2.29
12.80	3.90	13.82	0.14	0.99	1.32	130	0.743	0.743	0.973	1.04	0.79	1.32	16.35	1.71	0.54	2.24		17.28	2.57
13.29	4.05	12.94	0.13	0.96	1.24	130	0.775	0.775	0.972	1.05	0.80	1.28	14.78	1.56	0.53	2.09		15.70	2.61
13.78	4.20	11.85	0.11	0.92	1.14	130	0.807	0.807	0.971	0.96	0.81	1.25	13.01	1.40	0.46	1.85		13.96	2.65
14.27	4.35	10.84	0.10	0.91	1.04	130	0.839	0.839	0.970	0.98	0.83	1.21	11.45	1.25	0.45	1.70		12.41	2.70
14.76	4.50	13.93	0.09	0.65	1.33	130	0.871	0.871	0.969	0.70	0.78	1.16	14.38	1.55	0.17	1.72		15.32	2.55
15.26	4.65	10.95	0.07	0.63	1.05	130	0.903	0.903	0.968	0.69	0.81	1.14	10.80	1.20	0.16	1.36		11.77	2.68
15.75	4.80	13.58	0.12	0.88	1.30	130	0.935	0.935	0.967	0.94	0.80	1.10	13.19	1.43	0.47	1.90		14.17	2.64
16.24	4.95	16.63	0.19	1.14	1.59	130	0.967	0.967	0.966	1.21	0.80	1.07	15.98	1.69	0.81	2.50		16.88	2.62
16.73	5.10	13.30	0.17	1.27	1.27	130	0.999	0.999	0.965	1.37	0.83	1.05	12.29	1.33	0.97	2.30		13.19	2.74
17.22	5.25	16.08	0.17	1.07	1.54	130	1.031	1.031	0.964	1.14	0.80	1.02	14.50	1.57	0.73	2.29		15.50	2.64
17.72	5.40	84.62	0.28	0.34	8.10	130	1.063	1.063	0.962	0.34	0.53	1.00	78.78	8.11	0.00	8.11		80.68	1.74
18.21	5.55	158.80	0.59	0.37	15.21	130	1.095	1.095	0.961	0.38	0.50	0.99	146.52	14.93	0.00	14.93	1.00	147.54	1.53
18.70	5.70	148.77	1.17	0.78	14.25	130	1.127	1.127	0.960	0.79	0.53	0.97	134.84	13.88	0.37	14.25	1.03	135.97	1.75
19.19	5.85	159.67	1.70	1.07	15.29	130	1.159	1.159	0.959	1.07	0.55	0.95	142.47	14.80	0.73	15.53	1.05	143.51	1.82
19.69	6.00	207.48	1.95	0.94	19.87	130	1.191	1.191	0.958	0.94	0.52	0.94	183.38	19.05	0.57	19.62	1.03	184.44	1.70
20.18	6.15	216.73	2.25	1.04	20.75	130	1.223	1.223	0.956	1.04	0.52	0.93	188.81	19.76	0.70	20.46	1.04	189.89	1.72
20.67	6.30	201.54	2.42	1.20	19.30	130	1.255	1.255	0.955	1.21	0.55	0.91	172.48	18.25	0.91	19.17	1.05	173.58	1.79
21.16	6.45	193.47	2.29	1.18	18.53	130	1.287	1.287	0.954	1.19	0.55	0.90	163.14	17.36	0.89	18.25	1.05	164.23	1.81
21.65	6.60	269.87	2.77	1.03	25.84	130	1.319	1.319	0.952	1.03	0.51	0.89	227.02	24.06	0.69	24.75	1.03	228.13	1.69
22.15	6.75	279.42	3.08	1.10	26.76	130	1.351	1.351	0.951	1.11	0.51	0.88	231.84	24.78	0.79	25.58	1.03	233.07	1.68
22.64	6.90	218.65	2.38	1.09	20.94	130	1.383	1.383	0.950	1.10	0.53	0.87	178.03	19.15	0.77	19.93	1.04	179.17	1.75
23.13	7.05	206.22	3.59	1.74	19.75	130	1.415	1.415	0.948	1.75	0.58	0.84	163.34	18.19	1.63	19.82	1.09	164.47	1.93
23.62	7.20	245.30	5.48	2.23	23.49	130	1.447	1.447	0.946	2.25	0.60	0.83	191.21	21.75	2.29	24.04	1.11	192.34	1.97
24.11	7.35	200.19	4.38	2.18	19.17	130	1.479	1.479	0.945	2.20	0.61	0.81	153.01	17.57	2.23	19.80	1.13	154.15	2.02
24.61	7.50	122.13	3.43	2.80	11.70	130	1.511	1.500	0.943	2.84	0.68	0.79	89.94	10.64	3.05	13.69	1.29	91.06	2.28

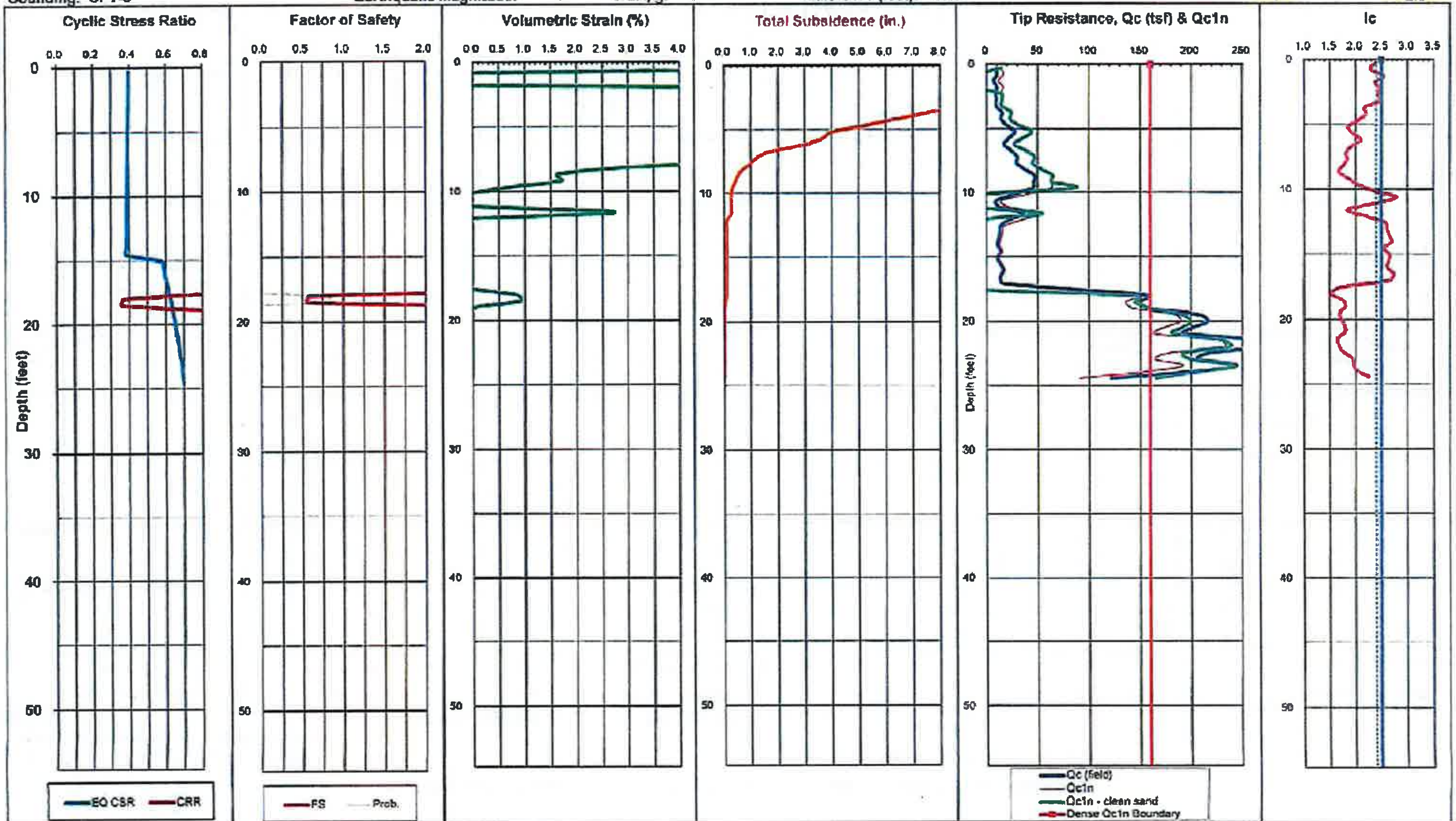
Depth (feet)	Override	Liquef. Suscept. (0 or 1)	Rel. Dens. Dr (%)	K_c	K_σ	Clean Sand Qc1n	Kα	CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Qc1n/$N_{1(60)}$ Ratio	Equiv. $N_{1(60)}$	FC Adj $\Delta N_{1(60)}$	Equiv. $N_{1(60)cs}$	Volumetric Strain (%)	p (tsf)	G_{max} (tsf)	τ_{av} (tsf)	Shear Strain γ	Strain E_{15}	Strain Enc	Dry Sand Subsidence (in.)
0.49		1	0	1.00	1.00	14.4	1.00	0.062	0.399	Non-Liq.	4.3	3.3	0.0	3.3	20.00	0.019	92	0.013	4.1E-01	3.5E+00	1.0E-01	1.181
0.98		0			1.00		1.00		0.399	Non-Liq.	4.5	3.5			0.60	0.038						
1.48		0			1.00		1.00		0.399	Non-Liq.	4.0	2.9			0.80	0.057						
1.97		0			1.00		1.00		0.398	Non-Liq.	4.3	3.7			0.80	0.076						
2.46		1	0	1.00	1.00	14.2	1.00	0.062	0.398	Non-Liq.	4.2	3.4	0.0	3.4	20.00	0.095	297	0.067	1.9E-01	1.6E+00	1.0E-01	1.181
2.95		1	0	1.00	1.00	15.4	1.00	0.063	0.397	Non-Liq.	4.2	3.6	0.0	3.6	20.00	0.114	232	0.080	1.4E-01	1.1E+00	1.0E-01	1.181
3.44		1	0	1.00	1.00	14.9	1.00	0.062	0.397	Non-Liq.	4.2	3.5	0.0	3.5	20.00	0.133	248	0.094	1.4E-01	1.2E+00	1.0E-01	1.181
3.94		1	18	1.00	1.00	24.3	1.00	0.070	0.396	Non-Liq.	4.7	5.1	0.0	5.1	20.00	0.152	380	0.107	4.9E-02	2.5E-01	1.0E-01	1.181
4.43		1	16	1.00	1.00	23.1	1.00	0.069	0.396	Non-Liq.	4.7	4.9	0.0	4.9	20.00	0.171	314	0.120	5.3E-02	2.8E-01	1.0E-01	1.181
4.92		1	28	1.00	1.00	31.0	1.00	0.076	0.395	Non-Liq.	5.0	6.2	0.0	6.2	20.00	0.190	358	0.133	2.8E-02	1.2E-01	1.0E-01	1.181
5.41		1	43	1.00	1.00	44.5	1.00	0.087	0.395	Non-Liq.	5.4	8.3	0.6	8.9	5.58	0.209	423	0.147	1.2E-02	3.2E-02	2.8E-02	0.329
5.91		1	34	1.00	1.00	35.5	1.00	0.080	0.395	Non-Liq.	5.2	6.9	0.2	7.1	11.99	0.228	410	0.160	2.6E-02	5.9E-02	6.0E-02	0.708
6.40		1	23	1.00	1.00	27.4	1.00	0.073	0.394	Non-Liq.	4.9	5.6	0.0	5.6	20.00	0.246	384	0.173	3.5E-02	1.6E-01	1.0E-01	1.181
6.89		1	37	1.00	1.00	38.7	1.00	0.082	0.394	Non-Liq.	5.2	7.4	0.4	7.7	8.73	0.265	456	0.186	1.6E-02	5.1E-02	4.4E-02	0.516
7.38		1	46	1.00	1.00	47.2	1.00	0.089	0.393	Non-Liq.	5.4	8.7	0.7	9.4	4.47	0.284	504	0.199	1.1E-02	2.6E-02	2.2E-02	0.264
7.87		1	44	1.00	1.00	45.2	1.00	0.088	0.393	Non-Liq.	5.4	8.4	0.7	9.0	5.15	0.303	513	0.212	1.1E-02	3.0E-02	2.6E-02	0.304
8.37		1	52	1.00	1.00	54.5	1.00	0.095	0.392	Non-Liq.	5.5	9.8	1.1	10.9	2.81	0.322	563	0.225	7.6E-03	1.6E-02	1.4E-02	0.166
8.86		1	59	1.00	1.00	65.1	1.00	0.106	0.392	Non-Liq.	5.7	11.4	1.6	13.0	1.63	0.341	614	0.238	5.6E-03	8.4E-03	8.2E-03	0.099
9.35		1	58	1.00	1.00	64.1	1.00	0.104	0.392	Non-Liq.	5.4	12.0	0.9	12.8	1.71	0.360	628	0.251	5.8E-03	9.0E-03	8.6E-03	0.101
9.84		1	58	1.37	1.00	86.2	1.00	0.140	0.391	Non-Liq.	5.0	12.6	4.6	17.2	0.72	0.379	711	0.264	3.5E-03	4.2E-03	3.8E-03	0.043
10.33		0			1.00		1.00		0.391	Non-Liq.	4.4	6.8			0.00	0.398						
10.83		0			1.00		1.00		0.390	Non-Liq.	3.5	4.0			0.00	0.417						
11.32		0			1.26		1.00		0.390	Non-Liq.	4.4	4.0			0.00	0.436						
11.81		1	52	1.00	1.26	55.0	1.00	0.095	0.389	Non-Liq.	5.4	10.2	0.8	11.0	2.73	0.455	671	0.315	7.7E-03	1.6E-02	1.4E-02	0.151
12.30		0			1.26		1.00		0.389	Non-Liq.	4.7	7.4			0.00	0.476						
12.80		0			1.00		1.00		0.389	Non-Liq.	4.0	4.4			0.00	0.498						
13.29		0			1.00		1.00		0.388	Non-Liq.	3.9	4.0			0.00	0.519						
13.78		0			1.00		1.00		0.388	Non-Liq.	3.8	3.7			0.00	0.541						
14.27		0			1.00		1.00		0.387	Non-Liq.	3.7	3.3			0.00	0.562						
14.76		0			1.00		1.00		0.387	Non-Liq.	4.0	3.8			0.00	0.584						
15.26		0			1.00		1.00		0.580	Non-Liq.	3.8	3.1			0.00	0.605						
15.75		0			1.00		1.00		0.589	Non-Liq.	3.8	3.7			0.00	0.626						
16.24		0			1.00		1.00		0.598	Non-Liq.	3.9	4.4			0.00	0.648						
16.73		0			1.00		1.00		0.606	Non-Liq.	3.6	3.6			0.00	0.669						
17.22		0			1.00		1.00		0.614	Non-Liq.	3.8	4.0			0.00	0.691						
17.72		0			1.00		1.00		0.622	Non-Liq.	5.6	14.3			0.00	0.712						
18.21		1	93	1.08	1.00	147.5	1.00	0.379	0.629	0.60	6.0	24.6	4.9	29.5	0.85	0.734	1,183	0.501	1.8E-03			
18.70		1	90	1.07	1.00	145.2	1.00	0.365	0.636	0.57	5.6	24.4	4.7	29.0	0.91	0.755	1,194	0.515	1.9E-03			
19.19		1	92	1.12	1.00	160.5	1.00	Infin.	0.643	Non-Liq.	5.4	25.4	5.7	32.1	0.00	0.777	1,252	0.529	1.7E-03			
19.69		1	100	1.04	1.00	191.2	1.00	Infin.	0.649	Non-Liq.	5.7	32.5	5.7	38.2	0.00	0.798	1,345	0.543	1.4E-03			
20.18		1	100	1.05	1.00	199.6	1.00	Infin.	0.655	Non-Liq.	5.8	33.7	6.2	39.9	0.00	0.819	1,383	0.557	1.3E-03			
20.67		1	100	1.10	1.00	191.3	0.99	Infin.	0.661	Non-Liq.	5.5	31.6	6.6	38.3	0.00	0.841	1,381	0.571	1.4E-03			
21.16		1	97	1.11	1.00	182.4	0.98	Infin.	0.667	Non-Liq.	5.5	30.1	6.4	36.5	0.00	0.862	1,377	0.585	1.5E-03			
21.65		1	100	1.01	1.00	230.8	0.98	Infin.	0.672	Non-Liq.	5.7	39.7	6.4	46.2	0.00	0.884	1,507	0.598	1.2E-03			
22.15		1	100	1.02	1.00	238.6	0.97	Infin.	0.678	Non-Liq.	5.7	40.8	6.9	47.7	0.00	0.905	1,542	0.612	1.1E-03			
22.64		1	100	1.07	1.00	192.4	0.97	Infin.	0.683	Non-Liq.	5.6	32.2	6.3	38.5	0.00	0.927	1,453	0.625	1.4E-03			
23.13		1	97	1.22	1.00	200.1	0.96	Infin.	0.687	Non-Liq.	5.2	31.5	6.5	40.0	0.00	0.948	1,489	0.639	1.4E-03			
23.62		1	100	1.26	1.00	243.0	0.96	Infin.	0.692	Non-Liq.	5.1	37.4	10.0	47.4	0.00	0.969	1,593	0.652	1.2E-03			
24.11		1	95	1.33	1.00	205.4	0.95	Infin.	0.696	Non-Liq.	5.0	30.6	10.0	40.6	0.00	0.991	1,529	0.665	1.4E-03			
24.61		1	73	1.82	1.00	165.8	0.94	Infin.	0.700	Non-Liq.	4.6	19.9	10.0	29.9	0.00	1.012	1,396	0.679	1.9E-03			

EARTH SYSTEMS - EVALUATION OF LIQUEFACTION POTENTIAL AND INDUCED GROUND SUBSIDENCE

Commercial Organics Processing Facility — Project No: VT-24872-02 — Method Used: 1 — 1998 NCEER (Robertson & Wride)

Settlement Analysis using Tokimatsu & Seed (1987), clean sand Qc1n/N1(60) ratio =5 — Plot: 1 — Limiting Ic: 2.6

Sounding: CPT-6 — Earthquake Magnitude: 7 — PGA, g: 1.10 — Calc GWT (feet): 15.0



Total Thickness of Liquefiable Layers: 1.0 feet

Estimated Total Ground Subsidence (Settlement): 12.2 inches

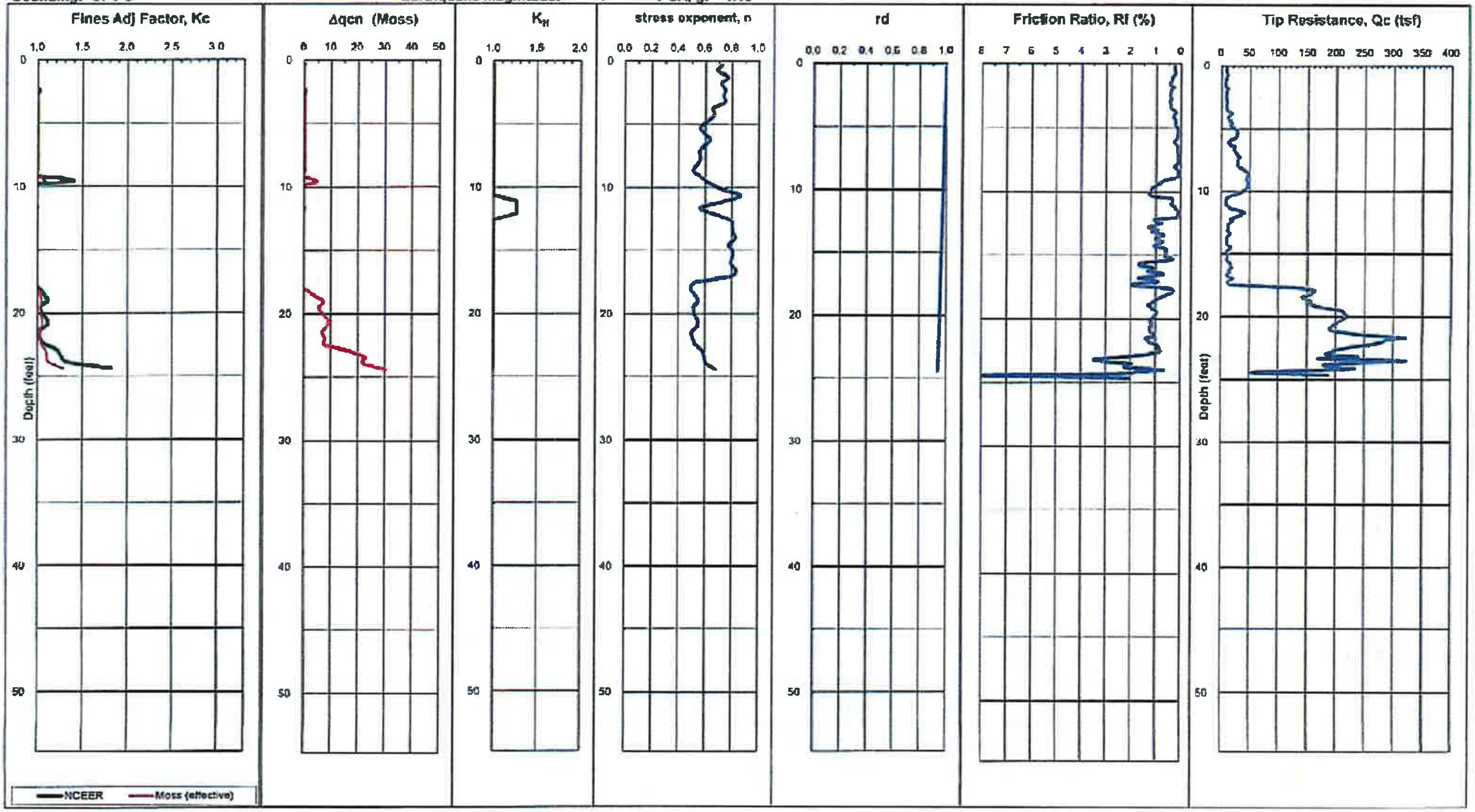
EARTH SYSTEMS - EVALUATION OF LIQUEFACTION POTENTIAL AND INDUCED GROUND SUBSIDENCE

3 avg increment =0.15m Qc1n/N1(60): 5

Ignore 1st/last increment into sand/silt soils: 0

Method Used: 1998 NCEER (Robertson & Wride)

Sounding: CPT-6 Earthquake Magnitude: 7 PGA, g: 1.10



CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Commercial Organics Processing Facility
Job No: VT-24872-02
Date: 5/17/2017
Sounding: CPT-7

Liquefaction Analysis using 1998 NCEER (Robertson & Wride) method
Settlement Analysis using Tokimatsu & Seed (1987), clean sand Qc1n/N1(60) ratio =5

EARTHQUAKE INFORMATION:		
Magnitude:	7	7.5
PGA, g:	1.10	0.92
MSF:	1.19	
GWT, feet:	24.0	
Calc GWT, feet:	15.0	

Plot: 9
Method Used: 1 — 1998 NCEER (Robertson & Wride)
Averaging Increment: 3 — 0.15 m
Induced CSR (M=7.5) = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_s*Qc
SF = CRR_1*Ka/CSR
Ignore 1st/last increment into sand/silt soils: 1 yes
Ignore/remediate upper: 0.00 m
Unit Weight of unsaturated soils: 115 pcf
Unit Weight of saturated soils: 130 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_c: 2.5
Use Moss @ P_L: 15%
Use Tokimatsu & Seed (0) or Ishihara &Yoshimine (1): 0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.17
Avg SF of Liquefiable Layers: 0.26
Max $\Delta N_{1(60)}$ - lateral spreading: 5.5
Max $\Delta N_{1(60)}$ - non-spreading: 18.0

Total Liquefied Thickness (feet)	Total Induced Subsidence (inches)
3.4	4.1

SETTLEMENT OF DRY SANDS
Qc1n / N1(60) Ratio for clean sand: 5
p = 0.67*po
τ_{av} = 0.65*PGA*po*rd
G_{max} = 447*$N_{1(60)cs}^{1/3}$*$p^{0.5}$
a = 0.0389*(p/1)+0.124
b = 6400*(p/1)$^{-0.6}$
γ = [1+a*EXP(b*τ_{av}/G_{max})]/[(1+a)*τ_{av}/G_{max}]
E_{15} = γ*($N_{1(60)cs}$/20)$^{-1.2}$
Nc = (M-4)$^{2.17}$
E_{nc} = (Nc/15)$^{0.45}$*E15
S = 2*H*E_{nc}
Nc = 10.8

Depth (feet)	(m)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio Rf %	qc MPa	Total Unit Wt. (pcf)	Total Stress po (tsf)	Eff Stress p'o (tsf)	rd	F %	n	Max 1.70 Cq	Q	Moss qc1 MPa
0.49	0.15	70.19	0.46	0.66	6.72	115	0.028	0.028	1.000	0.66	0.54	1.70	112.74	11.43
0.98	0.30	231.06	0.80	0.35	22.13	115	0.057	0.057	1.000	0.35	0.50	1.70	371.18	37.62
1.48	0.45	98.77	2.81	2.84	9.46	115	0.085	0.085	0.999	2.84	0.64	1.70	158.57	16.08
1.97	0.60	41.39	2.48	6.00	3.96	115	0.113	0.113	0.997	6.01	0.79	1.70	66.32	6.74
2.46	0.75	27.13	1.11	4.09	2.60	115	0.141	0.141	0.996	4.11	0.79	1.70	43.38	4.42
2.95	0.90	24.73	0.46	1.88	2.37	115	0.170	0.170	0.995	1.87	0.73	1.70	39.48	4.04
3.44	1.05	22.26	0.18	0.80	2.13	115	0.198	0.198	0.994	0.80	0.68	1.70	35.45	3.62
3.94	1.20	17.14	0.07	0.40	1.64	115	0.226	0.226	0.993	0.40	0.67	1.70	27.18	2.79
4.43	1.35	15.79	0.10	0.65	1.51	115	0.255	0.255	0.992	0.67	0.70	1.70	24.96	2.57
4.92	1.50	24.91	0.23	0.91	2.39	115	0.283	0.283	0.990	0.92	0.67	1.70	39.58	4.06
5.41	1.65	27.27	0.20	0.73	2.61	115	0.311	0.311	0.989	0.74	0.65	1.70	43.32	4.44
5.91	1.80	30.24	0.08	0.28	2.90	115	0.340	0.340	0.986	0.28	0.58	1.70	48.05	4.92
6.40	1.95	32.67	0.07	0.20	3.16	115	0.368	0.368	0.987	0.21	0.56	1.70	52.39	5.37
6.89	2.10	32.39	0.04	0.13	3.10	115	0.396	0.396	0.986	0.14	0.55	1.70	51.41	5.27
7.38	2.25	48.45	0.06	0.12	4.64	115	0.424	0.424	0.985	0.12	0.53	1.58	71.78	7.89
7.87	2.40	60.23	0.20	0.33	5.77	115	0.453	0.453	0.984	0.33	0.52	1.55	87.78	9.81
8.37	2.55	25.92	0.22	0.84	2.48	115	0.481	0.481	0.983	0.86	0.58	1.70	40.58	4.06
8.86	2.70	19.69	0.14	0.70	1.89	115	0.509	0.509	0.982	0.72	0.70	1.67	30.32	3.15
9.35	2.85	35.66	0.07	0.21	3.42	115	0.538	0.538	0.981	0.21	0.57	1.47	48.84	6.81
9.84	3.00	73.64	0.16	0.21	7.05	115	0.566	0.566	0.979	0.21	0.50	1.37	84.43	11.22
10.33	3.15	192.09	0.91	0.47	18.39	115	0.594	0.594	0.978	0.47	0.50	1.33	241.51	24.10
10.83	3.30	151.10	1.38	0.91	14.47	115	0.623	0.623	0.977	0.91	0.51	1.31	186.74	17.76
11.32	3.45	78.40	0.91	1.17	7.51	115	0.651	0.651	0.976	1.18	0.60	1.34	98.42	9.19
11.81	3.60	58.12	0.46	0.70	5.57	115	0.679	0.679	0.975	0.80	0.60	1.31	70.97	6.97
12.30	3.75	42.79	0.30	0.69	4.10	130	0.711	0.711	0.974	0.71	0.63	1.20	51.12	5.14
12.80	3.90	56.49	0.36	0.64	5.41	130	0.743	0.743	0.973	0.65	0.60	1.23	65.06	6.57
13.29	4.05	62.41	0.40	0.63	5.98	130	0.775	0.775	0.972	0.64	0.59	1.20	69.86	7.08
13.78	4.20	38.03	0.34	0.90	3.64	130	0.807	0.807	0.971	0.92	0.67	1.20	42.16	4.22
14.27	4.35	24.99	0.31	1.24	2.39	130	0.839	0.839	0.970	1.28	0.74	1.14	27.08	2.73
14.76	4.50	24.63	0.26	1.04	2.36	130	0.871	0.871	0.969	1.08	0.73	1.15	26.12	2.67
15.26	4.65	29.49	0.20	0.68	2.82	130	0.903	0.903	0.968	0.68	0.69	1.12	30.12	3.12
15.75	4.80	36.33	0.25	0.69	3.48	130	0.936	0.935	0.967	0.71	0.67	1.09	38.33	3.75
16.24	4.95	39.85	0.27	0.67	3.82	130	0.967	0.967	0.966	0.69	0.66	1.06	38.98	4.02
16.73	5.10	18.49	0.19	1.03	1.77	130	0.999	0.999	0.965	1.09	0.78	1.05	17.29	1.84
17.22	5.25	33.86	0.18	0.54	3.24	130	1.031	1.031	0.964	0.55	0.67	1.02	31.57	4.64
17.72	5.40	29.98	0.23	0.78	2.87	130	1.063	1.063	0.962	0.79	0.70	1.00	27.24	4.00
18.21	5.55	15.54	0.25	1.63	1.49	130	1.095	1.095	0.961	1.75	0.84	0.97	13.26	1.46
18.70	5.70	12.70	0.15	1.15	1.22	130	1.127	1.127	0.960	1.26	0.84	0.95	10.38	1.16
19.19	5.85	12.07	0.07	0.62	1.16	130	1.159	1.159	0.959	0.68	0.82	0.93	9.57	1.07
19.69	6.00	10.16	0.07	0.71	0.97	130	1.191	1.191	0.958	0.80	0.85	0.90	7.87	0.88
20.18	6.15	9.83	0.09	0.94	0.95	130	1.223	1.223	0.956	1.07	0.87	0.88	7.22	0.84
20.67	6.30	24.59	0.18	0.74	2.36	130	1.255	1.255	0.955	0.78	0.74	0.89	19.45	3.33
21.16	6.45	12.71	0.17	1.32	1.22	130	1.287	1.287	0.954	1.47	0.86	0.84	9.12	1.06
21.65	6.60	9.70	0.06	0.57	0.93	130	1.319	1.319	0.952	0.66	0.85	0.83	6.57	0.76
22.15	6.75	11.56	0.13	1.10	1.11	130	1.351	1.351	0.951	1.25	0.87	0.81	7.92	0.82
22.64	6.90	11.79	0.27	2.30	1.13	130	1.383	1.383	0.950	2.61	0.91	0.78	7.70	0.85
23.13	7.05	10.40	0.29	2.76	1.00	130	1.415	1.415	0.948	3.20	0.95	0.76	6.45	0.82
23.62	7.20	10.48	0.17	1.67	1.00	130	1.447	1.447	0.946	1.94	0.81	0.75	6.40	0.80
24.11	7.35	10.67	0.15	1.39	1.02	130	1.479	1.479	0.945	1.58	0.50	0.74	6.43	0.80
24.61	7.50	10.37	0.18	1.72	0.99	130	1.511	1.500	0.943	2.02	0.92	0.73	6.00	0.77
25.10	7.65	17.68	0.25	1.43	1.69	130	1.543	1.516	0.941	1.56	0.83	0.74	11.32	1.38
25.59	7.80	90.51	0.46	0.51	8.67	130	1.575	1.533	0.940	0.52	0.57	0.81	68.07	7.14
26.08	7.95	127.74	0.88	0.69	12.23	130	1.607	1.549	0.938	0.70	0.55	0.81	96.54	10.33
26.57	8.10	149.83	1.27	0.85	14.35	130	1.639	1.566	0.936	0.86	0.55	0.80	112.84	12.27
27.07	8.25	227.63	1.57	0.69	21.80	130	1.671	1.583	0.934	0.69	0.50	0.82	174.87	16.81
27.56	8.40	271.20	1.99	0.73	25.97	130	1.703	1.599	0.932	0.74	0.50	0.81	207.25	22.29
28.05	8.55	334.28	1.87	0.56	32.01	130	1.735	1.616	0.930	0.56	0.50	0.81	254.38	27.09
28.54	8.70	327.90	1.72	0.52	31.40	130	1.767	1.633	0.928	0.53	0.50	0.80	248.25	26.33
29.04	8.85	164.75	1.51	0.92	15.78	130	1.799	1.649	0.925	0.92	0.55	0.78	120.57	13.34
29.53	9.00	25.74	0.90	3.49	2.46	130	1.831	1.666	0.923	3.73	0.86	0.68	15.39	2.03
30.02	9.15	18.08	0.46	2.53	1.73	130	1.863	1.683	0.920	2.79	0.88	0.65	10.29	1.35
30.51	9.30	13.34	0.22	1.65	1.28	130	1.895	1.699	0.918	1.89	0.89	0.66	7.22	0.93
31.00	9.45	12.85	0.20	1.55	1.24	130	1.927	1.716	0.915	1.79	0.89	0.65	6.90	0.89
31.50	9.60	15.57	0.28	1.80	1.49	130	1.959	1.732	0.913	2.02	0.88	0.65	8.43	1.10
31.99	9.75	14.89	0.35	2.35	1.43	130	1.991	1.749	0.910	2.86	0.90	0.64	7.88	1.06

Depth (feet)	Moss Δqc MPa	Moss qc1mod MPa	Moss K_c	Qc1n	Ic	Liquef. Susc. (0 or 1)	Rel Dens Dr (%)	K_c	K_s	Clean Sand Qc1n	K_α	CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Qc1n $N_{1(60)}$ Ratio	Equiv. $N_{1(60)}$	FC Adj $\Delta N_{1(60)}$	Equiv. $N_{1(60)cs}$	Volumetric Strain (%)
0.49	0.18	11.60	1.02	112.79	1.76	1	82	1.08	1.00	121.4	1.00	0.247	0.399	Non-Liq.	5.6	20.3	4.9	24.3	0.22
0.98	0.00	37.62	1.00	371.27	1.18	1	100	1.00	1.00	371.3	1.00	Infin.	0.399	Non-Liq.	5.5	67.1	7.1	74.5	0.01
1.48	2.80	18.88		158.70	2.10	0			1.00		1.00		0.399	Non-Liq.	4.9	32.5			0.00
1.97	5.00	11.73		68.61	2.59	0			1.00		1.00		0.398	Non-Liq.	3.9	16.0			0.00
2.46	3.98	8.40		43.59	2.59	0			1.00		1.00		0.398	Non-Liq.	3.9	11.1			0.00
2.95	1.51	5.55		39.68	2.40	0			1.00		1.00		0.397	Non-Liq.	4.3	9.3			0.00
3.44	0.33	3.95	1.09	35.77	2.23	1	34	1.73	1.00	62.0	1.00	0.102	0.397	Non-Liq.	4.6	7.7	4.7	12.4	1.90
3.94	0.00	2.79	1.00	27.54	2.20	1	23	1.00	1.00	27.5	1.00	0.073	0.396	Non-Liq.	4.7	5.9	0.0	5.9	20.00
4.43	0.18	2.75	1.07	25.37	2.32	1	20	2.02	1.00	51.4	1.00	0.093	0.396	Non-Liq.	4.5	5.7	4.6	10.3	3.48
4.92	0.45	4.51	1.11	40.03	2.22	1	39	1.70	1.00	68.3	1.00	0.110	0.395	Non-Liq.	4.7	8.6	5.1	13.7	1.40
5.41	0.25	4.69	1.06	43.82	2.13	1	43	1.52	1.00	66.4	1.00	0.107	0.395	Non-Liq.	4.8	9.1	4.2	13.3	1.52
5.91	0.00	4.92	1.00	48.60	1.91	1	47	1.00	1.00	48.6	1.00	0.090	0.395	Non-Liq.	5.3	9.2	0.5	9.7	4.12
6.40	0.00	5.37	1.00	52.98	1.83	1	50	1.00	1.00	53.0	1.00	0.094	0.394	Non-Liq.	5.4	9.8	0.8	10.6	3.10
6.89	0.00	5.27	1.00	52.04	1.79	1	50	1.00	1.00	52.0	1.00	0.093	0.394	Non-Liq.	5.5	9.5	0.9	10.4	3.27
7.38	0.00	7.89	1.00	72.40	1.64	1	63	1.00	1.00	72.4	1.00	0.115	0.393	Non-Liq.	5.8	12.5	2.0	14.5	1.18
7.87	0.00	9.81	1.00	88.44	1.70	1	72	1.00	1.00	88.4	1.00	0.144	0.393	Non-Liq.	5.7	15.6	2.1	17.7	0.66
8.37	0.38	4.43	1.09	41.65	2.19	1	40	1.53	1.00	68.1	1.00	0.109	0.392	Non-Liq.	4.7	8.8	4.8	13.6	1.42
8.86	0.22	3.37	1.07	31.13	2.26	1	28	1.83	1.00	57.0	1.00	0.097	0.392	Non-Liq.	4.6	6.8	4.6	11.4	2.44
9.35	0.00	5.81	1.00	49.66	1.86	1	48	1.00	1.00	49.7	1.00	0.091	0.392	Non-Liq.	6.4	9.3	0.7	9.9	3.76
9.84	0.00	11.22	1.00	95.16	1.59	1	75	1.00	1.00	95.2	1.00	0.160	0.391	Non-Liq.	5.9	16.2	2.9	19.0	0.55
10.33	0.00	24.10	1.00	242.26	1.41	1	100	1.00	1.00	242.3	1.00	Infin.	0.391	Non-Liq.	6.2	38.6	9.6	48.5	0.95
10.83	0.45	18.21	1.03	187.52	1.66	1	100	1.03	1.00	192.4	1.00	Infin.	0.390	Non-Liq.	5.7	32.9	5.6	38.5	0.09
11.32	0.73	9.92	1.08	99.24	1.96	1	77	1.25	1.00	124.3	1.00	0.259	0.390	Non-Liq.	5.2	19.2	5.6	24.9	0.27
11.81	0.32	7.30	1.05	71.81	1.97	1	63	1.26	1.00	90.8	1.00	0.150	0.389	Non-Liq.	5.1	14.0	4.2	18.2	0.64
12.30	0.21	5.36	1.04	51.86	2.06	1	50	1.39	1.00	72.1	1.00	0.115	0.389	Non-Liq.	5.8	10.5	4.0	14.4	1.22
12.80	0.15	6.72	1.02	65.93	1.95	1	60	1.24	1.00	81.8	1.00	0.131	0.389	Non-Liq.	5.2	12.7	3.6	16.4	0.86
13.29	0.16	7.21	1.02	70.83	1.92	1	63	1.21	1.00	85.7	1.00	0.139	0.388	Non-Liq.	5.2	13.5	3.6	17.1	0.78
13.78	0.44	4.67	1.10	43.10	2.19	1	42	1.65	1.00	71.0	1.00	0.113	0.388	Non-Liq.	4.7	9.2	5.0	14.2	1.29
14.27	0.82	3.54	1.30	28.03	2.43	1	24	2.45	1.00	68.6	1.00	0.110	0.387	Non-Liq.	4.2	6.6	7.1	12.7	1.43
14.76	0.59	3.26	1.22	27.07	2.40	1	23	2.33	1.00	63.1	1.00	0.100	0.387	Non-Liq.	4.3	6.3	6.3	12.6	1.83
15.26	0.20	3.33	1.07	31.08	2.25	1	28	1.81	1.00	56.2	1.00	0.096	0.569	0.17	4.6	6.6	4.5	11.2	2.36
15.75	0.25	3.99	1.07	37.29	2.18	1	38	1.64	1.00	61.3	1.00	0.101	0.568	0.17	4.7	7.9	4.3	12.3	2.23
16.24	0.22	4.24		39.95	2.16	0			1.00		1.00		0.598	Non-Liq.	4.8	8.4			0.00
16.73	0.67	2.51		18.26	2.56	0			1.00		1.00		0.606	Non-Liq.	4.0	4.0			0.00
17.22	0.05	4.69		45.81	2.19	0			1.41		1.00		0.614	Non-Liq.	4.7	9.7			0.00
17.72	0.34	4.38		39.74	2.32	0			1.41		1.00		0.622	Non-Liq.	4.5	8.9			0.00
18.21	1.45	2.90		14.27	2.77	0			1.00		1.00		0.629	Non-Liq.	3.6	4.0			0.00
18.70	0.83	2.00		11.39	2.79	0			1.00		1.00		0.636	Non-Liq.	3.5	3.2			0.00
19.19	0.15	1.22		10.59	2.70	0			1.00		1.00		0.643	Non-Liq.	3.7	2.9			0.00
19.69	0.27	1.15		8.69	2.82	0			1.00		1.00		0.649	Non-Liq.	3.5	2.5			0.00
20.18	0.57	1.41		8.24	2.89	0			1.00		1.00		0.655	Non-Liq.	3.3	2.5			0.00
20.67	0.31	3.64		32.38	2.45	0			1.58		0.99		0.661	Non-Liq.	4.2	7.7			0.00
21.16	1.08	2.14		10.15	2.87	0			1.00		0.99		0.667	Non-Liq.	3.4	3.0			0.00
21.65	0.09	0.85		7.50	2.85	0			1.00		0.99		0.672	Non-Liq.	3.4	2.2			0.00
22.15	0.79	1.72		8.56	2.89	0			1.00		0.99		0.678	Non-Liq.	3.3	2.7			0.00
22.64	2.37	3.12		8.73	3.06	0			1.00		0.98		0.683	Non-Liq.	3.0	2.9			0.00
23.13	2.28	3.10		7.47	3.17	0			1.00		0.98		0.687	Non-Liq.	2.8	2.7			0.00
23.62	1.55	2.35		7.43	3.06	0			1.00		0.98		0.692	Non-Liq.	3.0	2.5			0.00
24.11	1.14	1.94		7.47	3.02	0			1.00		0.97		0.696	Non-Liq.	3.1	2.4			0.00
24.61	1.62	2.39		7.12	3.09	0			1.00		0.97		0.700	Non-Liq.	3.0	2.4			0.00
25.10	1.23	2.59		12.38	2.80	0			1.00		0.97		0.704	Non-Liq.	3.5	3.5			0.00
25.59	0.01	7.15		69.50	1.88	0			1.00		0.97		0.708	Non-Liq.	5.3	13.1			0.00
26.08	0.25	10.58	1.02	97.73	1.83	1	78	1.13	1.00	110.2	0.93	0.204	0.711	0.27	5.4	18.0	4.0	22.0	1.38
26.57	0.47	12.74	1.04	119.83	1.83	1	82	1.13	1.00	128.4	0.93	0.277	0.715	0.36	5.4	21.0	4.7	25.7	1.16
27.07	0.25	16.87	1.01	175.60	1.63	1	100	1.00	1.00	175.9	0.92	Infin.	0.718	Non-Liq.	5.6	30.2	5.0	35.2	0.00
27.56	0.31	22.61	1.01	208.45	1.59	1	100	1.00	1.00	208.5	0.92	Infin.	0.721	Non-Liq.	5.9	35.4	6.3	41.7	0.00
28.05	0.08	27.17	1.00	255.63	1.44	1	100	1.00	1.00	255.6	0.91	Infin.	0.723	Non-Liq.	6.2	41.4	9.7	51.1	0.00
28.54	0.03	26.36	1.00	249.49	1.43	1	100	1.00	1.00	249.5	0.91	Infin.	0.726	Non-Liq.	6.2	40.2	9.7	49.9	0.00
29.04	0.56	13.89		121.79	1.83	0			1.00		0.95		0.728	Non-Liq.	5.4	22.5			0.00
29.53	4.61	6.64		18.45	2.79	0			1.00		0.95		0.731	Non-Liq.	3.3	5.0			0.00
30.02	2.72	4.07		11.35	2.97	0			1.00		0.95		0.733	Non-Liq.	3.2	3.8			0.00
30.51	1.54	2.48		8.27	3.01	0			1.00		0.94		0.734	Non-Liq.	3.1	2.7			0.00
31.00	1.42	2.31		7.86	3.02	0			1.00		0.94		0.736	Non-Liq.	3.1	2.6			0.00
31.50	1.74	2.85		8.55	2.96	0			1.00		0.94		0.737	Non-Liq.	3.2	3.0			0.00
31.99	2.49	3.54		8.04	3.05	0			1.00		0.94		0.739	Non-Liq.	3.0	3.0			0.00

Depth (feet)	p (tsf)	G_{max} (tsf)	τ_{av} (tsf)	Shear Strain γ	Strain E_{15}	Strain Enc	Dry Sand Subsidence (in.)
0.49	0.019	178	0.013	1.6E-03	1.3E-03	1.1E-03	0.013
0.98	0.038	388	0.027	3.0E-04	8.2E-05	5.4E-05	0.001
1.48	0.057						
1.97	0.076						
2.46	0.095						
2.95	0.114						
3.44	0.133	377	0.094	8.2E-03	1.1E-02	9.5E-03	0.112
3.94	0.152	314	0.107	3.4E-02	1.5E-01	1.0E-01	1.181
4.43	0.171	401	0.120	9.1E-03	2.0E-02	1.7E-02	0.206
4.92	0.190	465	0.133	5.1E-03	8.1E-03	7.0E-03	0.092
5.41	0.209	483	0.147	5.4E-03	8.8E-03	7.6E-03	0.090
5.91	0.228	459	0.160	1.0E-02	2.4E-02	2.1E-02	0.244
6.40	0.246	487	0.173	8.4E-03	1.8E-02	1.5E-02	0.180
6.89	0.265	503	0.186	8.7E-03	1.9E-02	1.6E-02	0.193
7.38	0.284	591	0.199	4.4E-03	6.8E-03	5.9E-03	0.070
7.87	0.303	641	0.212	3.3E-03	3.8E-03	3.3E-03	0.039
8.37	0.322	606	0.225	5.2E-03	8.2E-03	7.1E-03	0.084
8.86	0.341	588	0.238	7.2E-03	1.4E-02	1.2E-02	0.144
9.35	0.360	577	0.251	9.4E-03	2.2E-02	1.9E-02	0.222
9.84	0.379	735	0.264	3.0E-03	3.2E-03	2.7E-03	0.032
10.33	0.398	1,028	0.277	9.0E-04	3.1E-04	2.7E-04	0.003
10.83	0.417	975	0.290	1.2E-03	5.3E-04	4.6E-04	0.005
11.32	0.436	863	0.303	2.1E-03	1.6E-03	1.4E-03	0.016
11.81	0.455	792	0.315	3.3E-03	3.7E-03	3.2E-03	0.039
12.30	0.476	751	0.330	4.8E-03	7.1E-03	6.1E-03	0.072
12.80	0.498	801	0.344	3.9E-03	5.0E-03	4.3E-03	0.051
13.29	0.519	834	0.359	3.7E-03	4.4E-03	3.8E-03	0.045
13.78	0.541	796	0.373	5.6E-03	7.5E-03	6.5E-03	0.078
14.27	0.562	803	0.388	5.3E-03	8.3E-03	7.2E-03	0.085
14.76	0.584	795	0.402	6.1E-03	1.1E-02	9.1E-03	0.108
15.26	0.605	779	0.416	7.5E-03			
15.75	0.626	816	0.431	6.4E-03			
16.24	0.648						
16.73	0.669						
17.22	0.691						
17.72	0.712						
18.21	0.734						
18.70	0.755						
19.19	0.777						
19.69	0.798						
20.18	0.819						
20.67	0.841						
21.16	0.862						
21.65	0.884						
22.15	0.905						
22.64	0.927						
23.13	0.948						
23.62	0.969						
24.11	0.991						
24.61	1.012						
25.10	1.034						
25.59	1.055						
26.08	1.077	1,300	0.718	2.8E-03			
26.57	1.098	1,332	0.730	2.3E-03			
27.07	1.119	1,550	0.743	1.6E-03			
27.56	1.141	1,658	0.756	1.4E-03			
28.05	1.162	1,789	0.768	1.1E-03			
28.54	1.184	1,780	0.780	1.2E-03			
29.04	1.205						
29.53	1.227						
30.02	1.248						
30.51	1.269						
31.00	1.291						
31.50	1.312						
31.99	1.334						

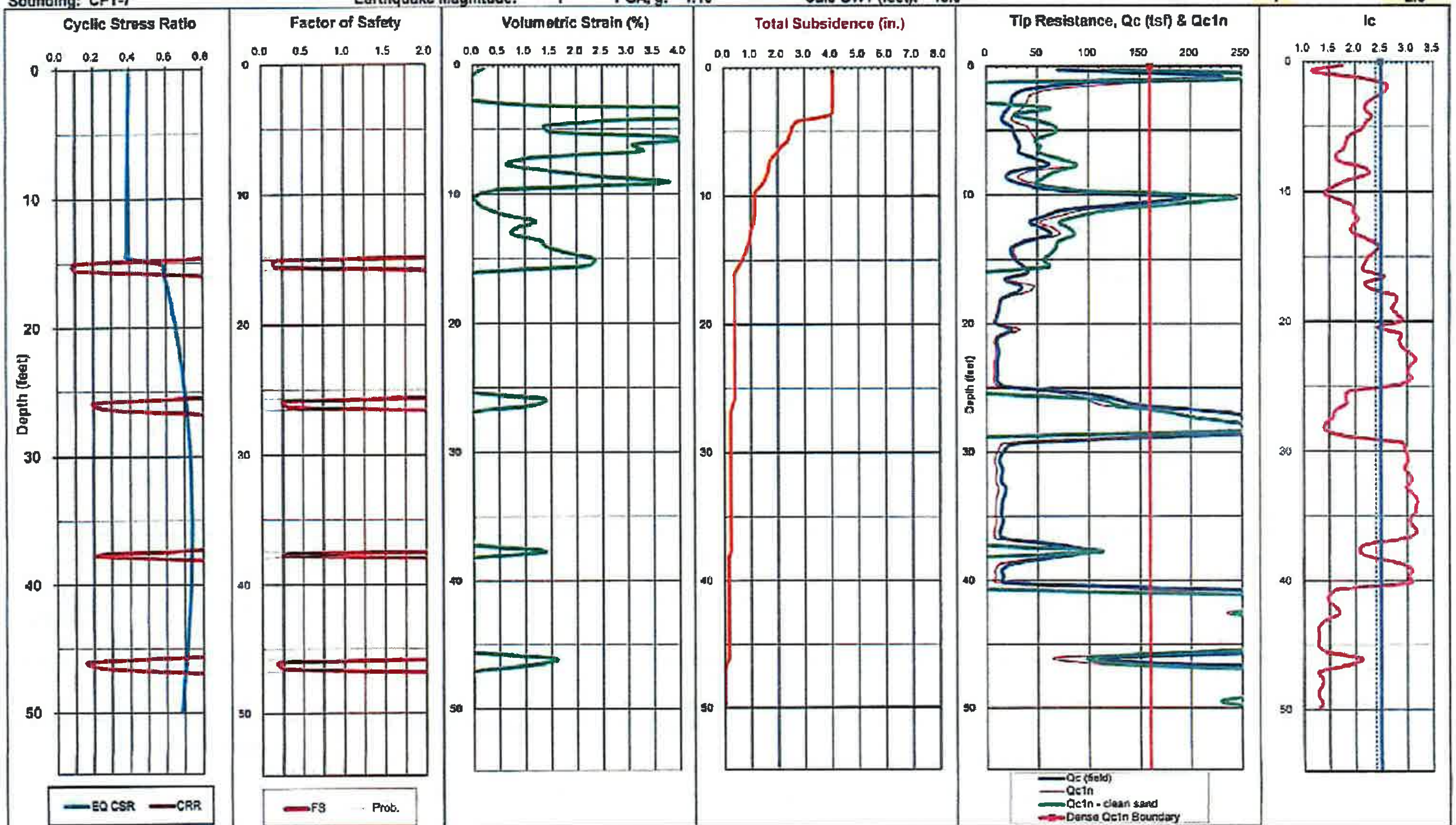
Depth (feet)	(m)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio Rf %	qc MPa	Total Unit Wt. (pcf)	Total Stress po (tsf)	Eff. Stress p'o (tsf)	rd	F %	n	Max 1.70 Cq	Q	Moss qc1 MPa	Moss Δqc MPa	Moss qc_{1mod} MPa	Moss eff Kc	Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens Dr (%)	Kc	Kσ	Clean Sand Qc1n	Kα	CRR	Induced M-7.5 CSR	Liquefac. Safety Factor	Qc1n Nratio Ratio	Equiv. $N_{1(60)}$	FC Adj $\Delta N_{1(60)}$	Equiv. $N_{1(60)cs}$	Volumetric Strain (%)	p (tsf)	G_{max} (tsf)	τ_{av} (tsf)	Shear Strain γ	Strain E_{15}	Strain Enc	Dry Sand Subsidence (in.)
32.48	9.90	14.40	0.37	2.55	1.38	130	2.023	1.765	0.907	2.81	0.91	0.63	7.46	1.09	2.78	3.78		8.53	3.09		0			1.00		0.93		0.740	Non-Liq.	2.9	2.9			0.00	1.355						
32.97	10.05	18.74	0.51	2.74	1.79	130	2.055	1.782	0.904	3.03	0.89	0.63	10.10	1.37	3.01	4.38		11.18	3.00		0			1.00		0.93		0.741	Non-Liq.	3.1	3.6			0.00	1.377						
33.46	10.20	17.78	0.69	3.87	1.70	130	2.087	1.799	0.901	4.30	0.92	0.61	9.27	1.31	4.53	5.84		10.51	3.11		0			1.00		0.93		0.742	Non-Liq.	2.9	3.0			0.00	1.398						
33.96	10.35	15.45	0.64	4.15	1.48	130	2.119	1.816	0.898	4.70	0.94	0.60	7.76	1.12	4.92	6.04		8.78	3.20		0			1.00		0.93		0.742	Non-Liq.	2.7	3.2			0.00	1.419						
34.45	10.50	14.98	0.52	3.50	1.43	130	2.151	1.832	0.894	3.99	0.93	0.60	7.43	1.09	4.05	5.11		8.46	3.17		0			1.00		0.93		0.743	Non-Liq.	2.8	3.0			0.00	1.441						
34.94	10.65	14.41	0.44	3.04	1.38	130	2.183	1.849	0.891	3.49	0.93	0.60	7.06	1.01	3.42	4.42		8.10	3.16		0			1.00		0.92		0.743	Non-Liq.	2.8	2.9			0.00	1.462						
35.43	10.80	15.88	0.38	2.41	1.52	130	2.215	1.866	0.888	2.73	0.90	0.60	7.95	1.10	2.58	3.68		9.00	3.06		0			1.00		0.92		0.743	Non-Liq.	3.0	3.0			0.00	1.484						
35.93	10.95	14.82	0.38	2.58	1.42	130	2.247	1.882	0.884	2.95	0.92	0.59	7.22	1.02	2.80	3.81		8.27	3.11		0			1.00		0.92		0.743	Non-Liq.	2.9	2.8			0.00	1.505						
36.42	11.10	12.58	0.31	2.50	1.20	130	2.279	1.899	0.880	2.85	0.94	0.56	5.84	0.84	2.70	3.53		6.67	3.19		0			1.00		0.92		0.743	Non-Liq.	2.8	2.5			0.00	1.527						
36.91	11.25	15.95	0.29	1.79	1.53	130	2.311	1.915	0.877	2.04	0.88	0.59	7.87	1.06	1.74	2.81		8.94	2.99		0			1.00		0.92		0.742	Non-Liq.	3.1	2.8			0.00	1.548						
37.40	11.40	68.97	0.65	0.94	6.60	130	2.343	1.932	0.873	0.97	0.66	0.67	42.64	6.33	0.60	6.92		55.47	2.20		0			1.26		0.91		0.742	Non-Liq.	4.7	11.8			0.00	1.569						
37.89	11.55	98.09	0.98	1.00	9.39	130	2.375	1.949	0.869	1.02	0.62	0.68	67.07	9.23	0.68	9.90	1.07	80.03	2.08		1	66	1.42	1.26	113.6	0.87	0.216	0.741	0.25	4.9	16.3	5.5	21.8	1.40	1.591	1.574	0.882	2.5E-03			
38.39	11.70	86.34	0.90	1.05	8.35	130	2.408	1.965	0.865	1.40	0.69	0.65	39.68	4.21	1.15	7.39		51.70	2.32		0			1.26		0.91		0.740	Non-Liq.	4.5	11.6			0.00	1.612						
38.88	11.85	24.63	0.60	2.43	2.36	130	2.438	1.982	0.861	2.84	0.85	0.59	12.55	1.74	2.60	4.34		13.65	2.68		0			1.00		0.91		0.739	Non-Liq.	3.4	4.1			0.00	1.634						
39.37	12.00	15.02	0.34	2.26	1.44	130	2.470	1.999	0.857	2.51	0.91	0.56	6.59	0.90	2.37	3.36		7.96	3.10		0			1.00		0.91		0.738	Non-Liq.	2.9	2.7			0.00	1.655						
39.86	12.15	16.29	0.31	1.91	1.56	130	2.502	2.015	0.852	2.18	0.89	0.56	7.62	1.08	1.90	2.98		8.70	3.02		0			1.00		0.91		0.736	Non-Liq.	3.1	2.8			0.00	1.677						
40.35	12.30	16.51	0.41	2.49	1.58	130	2.534	2.032	0.848	2.80	0.90	0.55	7.59	1.10	2.63	3.73		8.69	3.08		0			1.00		0.90		0.735	Non-Liq.	3.0	2.9			0.00	1.699						
40.85	12.45	203.03	1.33	0.65	19.53	130	2.566	2.049	0.843	0.66	0.51	0.71	135.80	14.95	0.20	15.15		137.69	1.69		0			1.00		0.90		0.733	Non-Liq.	5.7	24.2			0.00	1.720						
41.34	12.60	388.70	2.70	0.70	37.22	130	2.598	2.065	0.839	0.70	0.50	0.72	261.57	29.44	0.26	29.70	1.01	262.86	1.50		1	100	1.00	1.00	263.0	0.81	Infin.	0.732	Non-Liq.	8.1	43.3	9.2	52.6	0.00	1.741	2.210	1.038	1.0E-03			
41.83	12.75	476.86	3.95	0.83	45.68	130	2.630	2.082	0.834	0.84	0.50	0.71	318.91	36.95	0.45	37.40	1.01	321.31	1.50		1	100	1.00	1.00	321.3	0.81	Infin.	0.730	Non-Liq.	8.7	52.9	10.0	62.9	0.00	1.762	2.361	1.045	9.7E-04			
42.32	12.90	422.74	4.90	1.16	40.48	130	2.662	2.098	0.830	1.17	0.50	0.71	282.23	33.49	0.80	34.28	1.03	283.64	1.64		1	100	1.00	1.00	282.8	0.81	Infin.	0.728	Non-Liq.	5.8	43.0	7.6	50.6	0.00	1.784	2.292	1.052	9.6E-04			
42.81	13.05	354.72	4.00	1.13	33.97	130	2.694	2.115	0.825	1.14	0.51	0.70	233.55	27.71	0.85	28.56	1.03	234.85	1.59		1	100	1.03	1.00	241.8	0.80	Infin.	0.726	Non-Liq.	5.7	41.3	7.1	48.4	0.00	1.805	2.168	1.059	1.1E-03			
43.31	13.20	436.48	2.63	0.60	41.80	130	2.726	2.132	0.820	0.61	0.50	0.70	289.23	32.41	0.14	32.54	1.00	290.65	1.42		1	100	1.00	1.00	290.6	0.80	Infin.	0.724	Non-Liq.	6.2	45.8	10.0	55.8	0.00	1.827	2.322	1.065	9.0E-04			
43.80	13.35	486.13	2.22	0.46	46.55	130	2.758	2.148	0.816	0.46	0.50	0.70	321.02	35.12	0.00	35.12	1.00	322.45	1.31		1	100	1.00	1.00	322.4	0.80	Infin.	0.721	Non-Liq.	5.5	58.3	6.2	64.5	0.00	1.848	2.437	1.071	8.7E-04			
44.29	13.50	493.67	2.27	0.46	47.27	130	2.790	2.165	0.811	0.46	0.50	0.70	324.76	35.81	0.00	35.81	1.00	326.19	1.30		1	100	1.00	1.00	325.2	0.79	Infin.	0.719	Non-Liq.	5.5	59.0	6.3	65.2	0.00	1.870	2.460	1.077	8.6E-04			
44.78	13.65	493.38	2.23	0.45	47.25	130	2.822	2.182	0.806	0.45	0.50	0.70	323.32	35.41	0.00	35.41	1.00	324.79	1.30		1	100	1.00	1.00	324.8	0.79	Infin.	0.717	Non-Liq.	8.5	58.7	6.3	65.0	0.00	1.891	2.471	1.083	8.6E-04			
45.28	13.80	490.87	2.13	0.43	47.01	130	2.854	2.198	0.801	0.44	0.50	0.69	320.43	34.95	0.00	34.95	1.00	321.88	1.29		1	100	1.00	1.00	321.9	0.79	Infin.	0.714	Non-Liq.	5.5	58.2	6.2	64.4	0.00	1.912	2.477	1.089	8.8E-04			
45.77	13.95	342.08	1.72	0.50	32.76	130	2.886	2.215	0.796	0.51	0.50	0.69	222.02	24.22	0.00	24.22	1.00	223.47	1.46		1	100	1.00	1.00	223.5	0.79	Infin.	0.711	Non-Liq.	6.1	38.3	6.3	44.7	0.00	1.934	2.206	1.094	1.1E-03			
46.26	14.10	113.27	1.43	1.28	10.85	130	2.918	2.231	0.791	1.29	0.63	0.82	65.35	8.24	1.02	9.26	1.12	66.66	2.12		1	60	1.50	1.00	99.9	0.83	0.173	0.709	0.20	4.8	13.8	5.5	19.3	1.58	1.955	1.676	1.099	2.4E-03			
46.75	14.25	180.46	1.61	0.89	17.28	130	2.950	2.248	0.786	0.91	0.58	0.66	110.58	13.04	0.52	13.56	1.04	111.87	1.85		1	82	1.14	1.00	128.2	0.78	0.276	0.706	0.30	5.4	20.8	4.8	25.6	1.35	1.977	1.853	1.104	1.8E-03			
47.24	14.40	431.48	1.69	0.39	41.32	130	2.982	2.265	0.781	0.39	0.50	0.68	277.28	29.71	0.00	29.71	1.00	278.75	1.31		1	100	1.00	1.00	278.7	0.78	Infin.	0.703	Non-Liq.	6.4	43.4	10.0	53.4	0.00	1.998	2.379	1.109	9.5E-04			
47.74	14.55	427.51	2.05	0.48	40.94	130	3.014	2.281	0.776	0.48	0.50	0.68	273.71	30.11	0.00	30.11	1.00	275.17	1.37		1	100	1.00	1.00	275.2	0.78	Infin.	0.700	Non-Liq.	6.3	43.0	10.0	53.0	0.00	2.020	2.395	1.114	9.4E-04			
48.23	14.70	420.67	1.99	0.47	40.28	130	3.046	2.298	0.771	0.47	0.50	0.68	268.31	29.48	0.00	29.48	1.00	269.79	1.37		1	100	1.00	1.00	269.8	0.77	Infin.	0.697	Non-Liq.	6.3	42.8	10.0	52.8	0.00	2.041	2.395	1.118	9.4E-04			
48.72	14.85	413.05	1.46	0.35	39.55	130	3.078	2.315	0.766	0.36	0.50	0.68	262.47	27.71	0.00	27.71	1.00	263.95	1.30		1	100	1.00	1.00	263.9	0.77	Infin.	0.694	Non-Liq.	5.5	47.7	5.1	52.8	0.00	2.062	2.406	1.123	9.3E-04			
49.21	15.00	406.72	1.41	0.35	38.95	130	3.110	2.331	0.761	0.35	0.50	0.67	257.49	27.08	0.00	27.08	1.00	258.98	1.30		1	100	1.00	1.00	259.0	0.77	Infin.	0.691	Non-Liq.	5.5	46.8	5.0	51.8	0.00	2.084	2.405	1.127	9.4E-04			
49.70	15.15	362.49	1.38	0.38	34.71	130	3.142	2.348	0.756	0.38	0.50	0.67	228.50	24.20	0.00	24.20	1.00	229.99	1.37		1	100	1.00	1.00	230.0	0.76	Infin.	0.688	Non-Liq.	6.3	38.4	3.6	40.0	0.00	2.105	2.324	1.131	1.0E-03			
50.20	15.30	431.50	1.58	0.36	41.32	130	3.174	2.365	0.751	0.36	0.50	0.67	271.32	28.85	0.00	28.85	1.00	272.81	1.30		1	100	1.00	1.00	272.8	0.76	Infin.	0.685	Non-Liq.	5.5	49.3	5.3	54.6	0.00	2.127	2.472	1.135	8.9E-04			

EARTH SYSTEMS - EVALUATION OF LIQUEFACTION POTENTIAL AND INDUCED GROUND SUBSIDENCE

Commercial Organics Processing Facility   Project No: VT-24872-02   Method Used: 1   1998 NCEER (Robertson & Wride)

Settlement Analysis using Tokimatsu & Seed (1987), clean sand Qc1n/N1(60) ratio =5   Plot 1   Limiting Ic: 2.6

Sounding: CPT-7   Earthquake Magnitude: 7   PGA, g: 1.10   Calc GWT (feet): 15.0



Total Thickness of Liquefiable Layers: 3.4 feet   Estimated Total Ground Subsidence (Settlement): 4.1 inches

EARTH SYSTEMS - EVALUATION OF LIQUEFACTION POTENTIAL AND INDUCED GROUND SUBSIDENCE

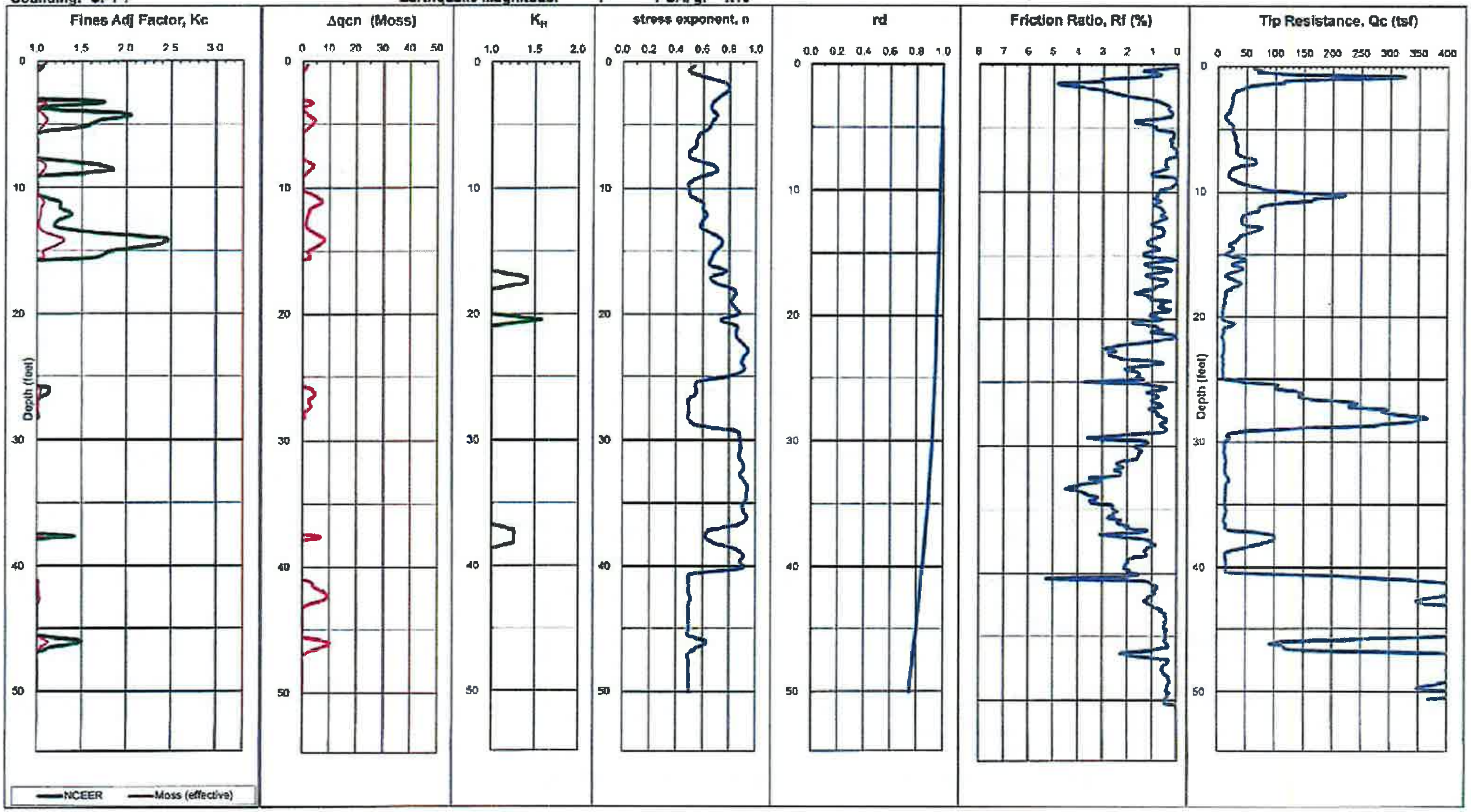
3 avg increment =0.15m Qc1n/N1(60): 5

Ignore 1st/last increment into sand/silt soils: 0

Method Used: 1998 NCEER (Robertson & Wride)

Sounding: CPT-7

Earthquake Magnitude: 7 PGA, g: 1.10



ATTACHMENT F

Log of Borings IT-1 through IT-4

Infiltration Test Data and Calculations

Earth Systems Southern California

1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-1	DRILLING DATE: February 1, 2017
PROJECT NAME: Commercial Organics Processing Facility	DRILLING METHOD: 6.0" Hollow Stem Auger
PROJECT NUMBER: VT-24872-02	DRILL: Mobile B-61
BORING LOCATION: Per Plan	LOGGED BY: SC

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						ML			ALLUVIUM: Medium to yellowish brown clayey silt to sandy silt; medium dense; moist.
									Total Depth: 2.0 feet. No Groundwater Encountered. Installed 2.0 feet of 2.0 inch slotted PVC pipe and gravel pack.
5									
10									
15									
20									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Infiltration Testing

Test Through Zone at Bottom of Infiltration Device

Infiltration Testing Field Data

Date: 3/3/2017

Project Location:	Commercial Organics Processing Facility	Job Number:	VT-24872-02
Earth Description:	See Log	Tested By:	SC
Field Test in Boring	IT-1	Start Time:	8:03 AM
Boring Diameter (inches):	4	Total Pipe Length (feet):	3
Boring Depth (feet):	2	Pipe Stick-Up (inches):	1

Time of Day, : (hh:mm)	Delta Time, Δt (min.)	Delta Time, Δt (hr.)	Top of Pipe to Water, (ft.)	Water Depth, d (in.)	Water Depth, d (ft.)	Drop in Water Height, Δc (in.)	Drop in Water Height, Δd (ft.)	Perc Rate, (in/hr)	Corr. Factor, RF	Infilt. Rate (in/hr)
8:03		-	1.50	18.0	1.50					
8:04	1.0	0.02	2.44	6.7	0.56	11.28	0.94	676.80	7.18	94.26
8:04			2.44	6.7	0.56					
8:05	1.0	0.02	2.79	2.5	0.21	4.20	0.35	252.00	3.31	76.13
8:05			2.79	2.5	0.21					
8:06	1.0	0.02	2.95	0.6	0.05	1.92	0.16	115.20	1.78	64.72
8:08			1.50	18.0	1.50					
8:09	1.0	0.02	2.28	8.6	0.72	9.36	0.78	561.60	7.66	73.32
8:09			2.28	8.6	0.72					
8:10	1.0	0.02	2.67	4.0	0.33	4.68	0.39	280.80	4.15	67.66
8:10			2.67	4.0	0.33					
8:11	1.0	0.02	2.85	1.8	0.15	2.16	0.18	129.60	2.44	53.11
8:11			2.85	1.8	0.15					
8:12	1.0	0.02	2.97	0.4	0.03	1.44	0.12	86.40	1.54	56.10
8:13			1.50	18.0	1.50					
8:14	1.0	0.02	2.13	10.4	0.87	7.56	0.63	453.60	8.11	55.93
8:14			2.13	10.4	0.87					
8:15	1.0	0.02	2.52	5.8	0.48	4.68	0.39	280.80	5.05	55.60
8:15			2.52	5.8	0.48					
8:16	1.0	0.02	2.68	3.8	0.32	1.92	0.16	115.20	3.40	33.88
8:16			2.68	3.8	0.32					
8:17	1.0	0.02	2.82	2.2	0.18	1.68	0.14	100.80	2.50	40.32
8:17			2.82	2.2	0.18					
8:18	1.0	0.02	2.91	1.1	0.09	1.08	0.09	64.80	1.81	35.80
8:19			1.50	18.0	1.50					
8:20	1.0	0.02	2.05	11.4	0.95	6.60	0.55	396.00	8.35	47.43
8:20			2.05	11.4	0.95					
8:21	1.0	0.02	2.35	7.8	0.65	3.60	0.30	216.00	5.80	37.24
8:21			2.35	7.8	0.65					
8:22	1.0	0.02	2.60	4.8	0.40	3.00	0.25	180.00	4.15	43.37
8:22			2.60	4.8	0.40					
8:23	1.0	0.02	2.79	2.5	0.21	2.28	0.19	136.80	2.83	48.34
8:23			2.79	2.5	0.21					
8:24	1.0	0.02	2.91	1.1	0.09	1.44	0.12	86.40	1.90	45.47
8:33			1.50	18.0	1.50					
8:34	1.0	0.02	2.09	10.9	0.91	7.08	0.59	424.80	8.23	51.62
8:34			2.09	10.9	0.91					
8:35	1.0	0.02	2.37	7.6	0.63	3.36	0.28	201.60	5.62	35.87
8:35			2.37	7.6	0.63					
8:36	1.0	0.02	2.60	4.8	0.40	2.76	0.23	165.60	4.09	40.49
8:36			2.60	4.8	0.40					

Infiltration Testing

Test Through Zone at Bottom of Infiltration Device

Infiltration Testing Field Data

Date: 3/3/2017

Project Location:	Commercial Organics Processing Facility	Job Number:	VT-24872-02
Earth Description:	See Log	Tested By:	SC
Field Test in Boring	IT-1	Start Time:	8:03 AM
Boring Diameter (inches):	4	Total Pipe Length (feet):	3
Boring Depth (feet):	2	Pipe Stick-Up (inches):	1

Time of Day, t (hh:mm)	Delta Time, Δt (min.)	Delta Time, Δt (hr.)	Top of Pipe to Water, (ft.)	Water Depth, d (in.)	Water Depth, d (ft.)	Drop in Water Height, Δd (in.)	Drop in Water Height, Δd (ft.)	Perc Rate, (in/hr)	Corr. Factor, RF	Infilt. Rate (in/hr)
8:37	1.0	0.02	2.76	2.9	0.24	1.92	0.16	115.20	2.92	39.45
8:37			2.76	2.9	0.24					
8:38	1.0	0.02	2.86	1.7	0.14	1.20	0.10	72.00	2.14	33.64
8:38			2.86	1.7	0.14					
8:39	1.0	0.02	2.94	0.7	0.06	0.96	0.08	57.60	1.60	36.00

Earth Systems Southern California
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-2	DRILLING DATE: February 1, 2017
PROJECT NAME: Commercial Organics Processing Facility	DRILLING METHOD: 6.0" Hollow Stem Auger
PROJECT NUMBER: VT-24872-02	DRILL: Mobile B-61
BORING LOCATION: Per Plan	LOGGED BY: SC

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						ML			**ALLUVIUM:** Medium to yellowish brown clayey silt to sandy silt; medium dense; moist.
5				3/5/5		ML			**ALLUVIUM:** Medium to yellowish brown clayey silt to sandy silt; medium dense; moist.
10				3/5/4		SM			**ALLUVIUM:** Pale brown silty fine sand with thin silt lenses; loose; moist.
15									Total Depth: 13.0 feet. No Groundwater Encountered. Installed 13.0 feet of 2.0 inch slotted PVC pipe and gravel pack.
20									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Infiltration Testing

Test Through Zone Eleven Feet Below Bottom of Infiltration Device

Infiltration Testing Field Data — **Date:** 3/3/2017

Project Location:	Commercial Organics Processing Facility	Job Number:	VT-24872-02
Earth Description:	See Log	Tested By:	SC
Field Test in Boring	IT-2	Start Time:	9:01 AM
Boring Diameter (inches):	7	Total Pipe Length (feet):	13
Boring Depth (feet):	13	Pipe Stick-Up (Inches):	0

Time of Day, t (hh:mm)	Delta Time, Δt (min.)	Delta Time, Δt (hr.)	Top of Pipe to Water, (ft.)	Water Depth, d (in.)	Water Depth, d (ft.)	Drop in Water Height, Δd (in.)	Drop in Water Height, Δd (ft.)	Perc Rate, (in/hr)	Corr. Factor, RF	Infilt. Rate (in/hr)
9:01		-	11.00	24.0	2.00					
9:02	1.0	0.02	11.74	15.1	1.26	8.88	0.74	532.80	6.59	80.87
9:02			11.74	15.1	1.26					
9:03	1.0	0.02	12.25	9.0	0.75	6.12	0.51	367.20	4.45	82.60
9:03			12.25	9.0	0.75					
9:04	1.0	0.02	12.50	6.0	0.50	3.00	0.25	180.00	3.14	57.27
9:04			12.50	6.0	0.50					
9:05	1.0	0.02	12.63	4.4	0.37	1.56	0.13	93.60	2.49	37.57
9:05			12.63	4.4	0.37					
9:06	1.0	0.02	12.73	3.2	0.27	1.20	0.10	72.00	2.10	34.33
9:06			12.73	3.2	0.27					
9:07	1.0	0.02	12.80	2.4	0.20	0.84	0.07	50.40	1.81	27.91
9:07			12.80	2.4	0.20					
9:08	1.0	0.02	12.85	1.8	0.15	0.60	0.05	36.00	1.60	22.50
9:08			12.85	1.8	0.15					
9:09	1.0	0.02	12.90	1.2	0.10	0.60	0.05	36.00	1.43	25.20
9:23			11.00	24.0	2.00					
9:24	1.0	0.02	11.72	15.4	1.28	8.64	0.72	518.40	6.62	78.27
9:24			11.72	15.4	1.28					
9:25	1.0	0.02	12.15	10.2	0.85	5.16	0.43	309.60	4.65	66.56
9:25			12.15	10.2	0.85					
9:26	1.0	0.02	12.40	7.2	0.60	3.00	0.25	180.00	3.49	51.64
9:26			12.40	7.2	0.60					
9:27	1.0	0.02	12.52	5.8	0.48	1.44	0.12	86.40	2.85	30.30
9:27			12.52	5.8	0.48					
9:28	1.0	0.02	12.60	4.8	0.40	0.96	0.08	57.60	2.51	22.96
9:28			12.60	4.8	0.40					
9:29	1.0	0.02	12.69	3.7	0.31	1.08	0.09	64.80	2.22	29.23
9:29			12.69	3.7	0.31					
9:30	1.0	0.02	12.75	3.0	0.25	0.72	0.06	43.20	1.96	22.04
9:30			12.75	3.0	0.25					
9:31	1.0	0.02	12.79	2.5	0.21	0.48	0.04	28.80	1.79	16.10
9:31			12.79	2.5	0.21					
9:32	1.0	0.02	12.85	1.8	0.15	0.72	0.06	43.20	1.62	26.71
9:34			11.00	24.0	2.00					
9:35	1.0	0.02	11.50	18.0	1.50	6.00	0.50	360.00	7.00	51.43
9:35			11.50	18.0	1.50					
9:36	1.0	0.02	11.85	13.8	1.15	4.20	0.35	252.00	5.54	45.46
9:36			11.85	13.8	1.15					
9:37	1.0	0.02	12.13	10.4	0.87	3.36	0.28	201.60	4.46	45.17
9:37			12.13	10.4	0.87					

Infiltration Testing

Test Through Zone Eleven Feet Below Bottom of Infiltration Device

Infiltration Testing Field Data

Date: 3/3/2017

Project Location:	Commercial Organics Processing Facility	Job Number:	VT-24872-02
Earth Description:	See Log	Tested By:	SC
Field Test in Boring	IT-2	Start Time:	9:01 AM
Boring Diameter (inches):	7	Total Pipe Length (feet):	13
Boring Depth (feet):	13	Pipe Stick-Up (inches):	0

Time of Day, t (hh:mm)	Delta Time, Δt (min.)	Delta Time, Δt (hr.)	Top of Pipe to Water, (ft.)	Water Depth, d (in.)	Water Depth, d (ft.)	Drop in Water Height, Δd (in.)	Drop in Water Height, Δd (ft.)	Perc Rate, (in/hr)	Corr. Factor, RF	Infilt. Rate (in/hr)
9:38	1.0	0.02	12.33	8.0	0.67	2.40	0.20	144.00	3.64	39.56
9:38			12.33	8.0	0.67					
9:39	1.0	0.02	12.45	6.6	0.55	1.44	0.12	86.40	3.09	27.95
9:39			12.45	6.6	0.55					
9:40	1.0	0.02	12.57	5.2	0.43	1.44	0.12	86.40	2.68	32.24
9:40			12.57	5.2	0.43					
9:41	1.0	0.02	12.65	4.2	0.35	0.96	0.08	57.60	2.34	24.65
9:41			12.65	4.2	0.35					
9:42	1.0	0.02	12.70	3.6	0.30	0.60	0.05	36.00	2.11	17.03
9:42			12.70	3.6	0.30					
9:43	1.0	0.02	12.75	3.0	0.25	0.60	0.05	36.00	1.94	18.53
9:43			12.75	3.0	0.25					
9:44	1.0	0.02	12.80	2.4	0.20	0.60	0.05	36.00	1.77	20.32
9:44			12.80	2.4	0.20					
9:45	1.0	0.02	12.85	1.8	0.15	0.60	0.05	36.00	1.60	22.50
9:50			11.00	24.0	2.00					
9:51	1.0	0.02	11.53	17.6	1.47	6.36	0.53	381.60	6.95	54.92
9:51			11.53	17.6	1.47					
9:52	1.0	0.02	11.85	13.8	1.15	3.84	0.32	230.40	5.49	41.96
9:52			11.85	13.8	1.15					
9:53	1.0	0.02	12.12	10.6	0.88	3.24	0.27	194.40	4.48	43.39
9:53			12.12	10.6	0.88					
9:54	1.0	0.02	12.30	8.4	0.70	2.16	0.18	129.60	3.71	34.95
9:54			12.30	8.4	0.70					
9:55	1.0	0.02	12.45	6.6	0.55	1.80	0.15	108.00	3.14	34.36
9:55			12.45	6.6	0.55					
9:56	1.0	0.02	12.53	5.6	0.47	0.96	0.08	57.60	2.75	20.96
9:56			12.53	5.6	0.47					
9:57	1.0	0.02	12.60	4.8	0.40	0.84	0.07	50.40	2.49	20.23
9:57			12.60	4.8	0.40					
9:58	1.0	0.02	12.66	4.1	0.34	0.72	0.06	43.20	2.27	19.04
9:58			12.66	4.1	0.34					
9:59	1.0	0.02	12.72	3.4	0.28	0.72	0.06	43.20	2.06	20.94
9:59			12.72	3.4	0.28					
10:00	1.0	0.02	12.75	3.0	0.25	0.36	0.03	21.60	1.91	11.32
10:00			12.75	3.0	0.25					
10:01	1.0	0.02	12.80	2.4	0.20	0.60	0.05	36.00	1.77	20.32
10:01			12.80	2.4	0.20					
10:02	1.0	0.02	12.84	1.9	0.16	0.48	0.04	28.80	1.62	17.81

Earth Systems Southern California
1731-A Walter Street, Ventura, California 93003
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BORING NO: IT-3
PROJECT NAME: Commercial Organics Processing Facility
PROJECT NUMBER: VT-24872-02
BORING LOCATION: Per Plan

DRILLING DATE: February 1, 2017
DRILLING METHOD: 6.0" Hollow Stem Auger
DRILL: Mobile B-61
LOGGED BY: SC

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						ML			ALLUVIUM: Medium to yellowish brown clayey silt to sandy silt; firm; moist.
						SM			ALLUVIUM: Brown silty sand with gravels; loose; moist.
									Total Depth: 2.0 feet. No Groundwater Encountered. Installed 2.0 feet of 2.0 inch slotted PVC pipe and gravel pack.
5									
10									
15									
20									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Infiltration Testing

Test Through Zone at Bottom of Infiltration Device

Infiltration Testing Field Data

Date: 3/3/2017

Project Location:	Commercial Organics Processing Facility	Job Number:	VT-24872-02
Earth Description:	See Log	Tested By:	SC
Field Test in Boring	IT-3	Start Time:	11:00 AM
Boring Diameter (inches):	4	Total Pipe Length (feet):	2
Boring Depth (feet):	2	Pipe Stick-Up (inches):	0

Time of Day, t (hh:mm)	Delta Time, Δt (min.)	Delta Time, Δt (hr.)	Top of Pipe to Water, (ft.)	Water Depth, d (in.)	Water Depth, c (ft.)	Drop in Water Height, Δd (in.)	Drop in Water Height, Δd (ft.)	Perc Rate, (in/hr)	Corr. Factor, RF	Infilt. Rate (in/hr)
11:00		-	0.60	16.8	1.40					
11:05	5.0	0.08	1.20	9.6	0.80	7.20	0.60	86.40	7.60	11.37
11:05			1.20	9.6	0.80					
11:10	5.0	0.08	1.31	8.3	0.69	1.32	0.11	15.84	5.47	2.90
11:10			1.31	8.3	0.69					
11:15	5.0	0.08	1.38	7.4	0.62	0.84	0.07	10.08	4.93	2.04
11:15			1.38	7.4	0.62					
11:20	5.0	0.08	1.45	6.6	0.55	0.84	0.07	10.08	4.51	2.24
11:20			1.45	6.6	0.55					
11:25	5.0	0.08	1.51	5.9	0.49	0.72	0.06	8.64	4.12	2.10
11:25			1.51	5.9	0.49					
11:30	5.0	0.08	1.55	5.4	0.45	0.48	0.04	5.76	3.82	1.51
11:30			1.55	5.4	0.45					
11:35	5.0	0.08	1.60	4.8	0.40	0.60	0.05	7.20	3.55	2.03
11:35			1.60	4.8	0.40					
11:40	5.0	0.08	1.64	4.3	0.36	0.48	0.04	5.76	3.28	1.76
11:40			1.64	4.3	0.36					
11:45	5.0	0.08	1.67	4.0	0.33	0.36	0.03	4.32	3.07	1.41
11:45			1.67	4.0	0.33					
11:50	5.0	0.08	1.70	3.6	0.30	0.36	0.03	4.32	2.89	1.49
11:50			1.70	3.6	0.30					
11:55	5.0	0.08	1.73	3.2	0.27	0.36	0.03	4.32	2.71	1.59
11:55			1.73	3.2	0.27					
12:00	5.0	0.08	1.75	3.0	0.25	0.24	0.02	2.88	2.56	1.13
12:03			0.60	16.8	1.40					
12:08	5.0	0.08	0.89	13.3	1.11	3.48	0.29	41.76	8.53	4.90
12:08			0.89	13.3	1.11					
12:13	5.0	0.08	1.07	11.2	0.93	2.16	0.18	25.92	7.12	3.64
12:13			1.07	11.2	0.93					
12:18	5.0	0.08	1.17	10.0	0.83	1.20	0.10	14.40	6.28	2.29
12:18			1.17	10.0	0.83					
12:23	5.0	0.08	1.26	8.9	0.74	1.08	0.09	12.96	5.71	2.27
12:23			1.26	8.9	0.74					
12:28	5.0	0.08	1.32	8.2	0.68	0.72	0.06	8.64	5.26	1.64
12:28			1.32	8.2	0.68					
12:33	5.0	0.08	1.38	7.4	0.62	0.72	0.06	8.64	4.90	1.76
12:33			1.38	7.4	0.62					
12:38	5.0	0.08	1.43	6.8	0.57	0.60	0.05	7.20	4.57	1.58
12:38			1.43	6.8	0.57					
12:43	5.0	0.08	1.47	6.4	0.53	0.48	0.04	5.76	4.30	1.34
12:43			1.47	6.4	0.53					

Infiltration Testing

Test Through Zone at Bottom of Infiltration Device

Infiltration Testing Field Data

Date: 3/3/2017

Project Location:	Commercial Organics Processing Facility	Job Number:	VT-24872-02
Earth Description:	See Log	Tested By:	SC
Field Test In Boring	IT-3	Start Time:	11:00 AM
Boring Diameter (inches):	4	Total Pipe Length (feet):	2
Boring Depth (feet):	2	Pipe Stick-Up (inches):	0

Time of Day, t (hh:mm)	Delta Time, Δt (min.)	Delta Time, Δt (hr.)	Top of Pipe to Water, (ft.)	Water Depth, d (in.)	Water Depth, c (ft.)	Drop in Water Height, Δd (in.)	Drop in Water Height, Δd (ft.)	Perc Rate, (in/hr)	Corr. Factor, RF	Infilt. Rate (in/hr)
12:48	5.0	0.08	1.51	5.9	0.49	0.48	0.04	5.76	4.06	1.42
12:48			1.51	5.9	0.49					
12:53	5.0	0.08	1.55	5.4	0.45	0.48	0.04	5.76	3.82	1.51
12:53			1.55	5.4	0.45					
12:58	5.0	0.08	1.58	5.0	0.42	0.36	0.03	4.32	3.61	1.20
12:58			1.58	5.0	0.42					
13:03	5.0	0.08	1.61	4.7	0.39	0.36	0.03	4.32	3.43	1.26
13:03			1.61	4.7	0.39					
13:08	5.0	0.08	1.65	4.2	0.35	0.48	0.04	5.76	3.22	1.79
13:08			1.65	4.2	0.35					
13:13	5.0	0.08	1.68	3.8	0.32	0.36	0.03	4.32	3.01	1.44
13:13			1.68	3.8	0.32					
13:18	5.0	0.08	1.71	3.5	0.29	0.36	0.03	4.32	2.83	1.53
13:18			1.71	3.5	0.29					
13:23	5.0	0.08	1.75	3.0	0.25	0.52	0.04	6.19	2.63	2.36
13:23			1.75	3.0	0.25					
13:28	5.0	0.08	1.78	2.6	0.22	0.36	0.03	4.32	2.41	1.79
13:30			0.60	16.8	1.40					
13:35	5.0	0.08	0.83	14.0	1.17	2.76	0.23	33.12	8.71	3.80
13:35			0.83	14.0	1.17					
13:40	5.0	0.08	1.07	11.2	0.93	2.88	0.24	34.56	7.30	4.73
13:40			1.07	11.2	0.93					
13:45	5.0	0.08	1.20	9.6	0.80	1.56	0.13	18.72	6.19	3.02

Earth Systems Southern California

1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-4
PROJECT NAME: Commercial Organics Processing Facility
PROJECT NUMBER: VT-24872-02
BORING LOCATION: Per Plan

DRILLING DATE: February 1, 2017
DRILLING METHOD: 6.0" Hollow Stem Auger
DRILL: Mobile B-61
LOGGED BY: SC

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						ML			**ALLUVIUM:** Medium to yellowish brown clayey silt to sandy silt; medium dense; moist.
									As above with lenses of silty sand; minor gravels.
5		■		P/2/3		ML/ SM			**ALLUVIUM:** Brown and dark brown interbedded clayey silts and silty sands; soft; moist.
10		■		5/10/12		SM			**ALLUVIUM:** Pale yellowish brown silty sand to sand with gravels; medium dense; damp.
									Total Depth: 13.0 feet. No Groundwater Encountered. Installed 13.0 feet of 2.0 inch slotted PVC pipe and gravel pack.
15									
20									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Infiltration Testing

Test Through Zone Eleven Feet Below Bottom of Infiltration Device

Infiltration Testing Field Data

Date: 3/3/2017

Project Location:	Commercial Organics Processing Facility	Job Number:	VT-24872-02
Earth Description:	See Log	Tested By:	SC
Field Test in Boring	IT-4	Start Time:	11:12 AM
Boring Diameter (inches):	7	Total Pipe Length (feet):	12.4
Boring Depth (feet):	12.4	Pipe Stick-Up (inches):	0

Time of Day, t (hh:mm)	Delta Time, Δt (min.)	Delta Time, Δt (hr.)	Top of Pipe to Water, (ft.)	Water Depth, d (in.)	Water Depth, d (ft.)	Drop in Water Height, Δd (in.)	Drop in Water Height, Δd (ft.)	Perc Rate, (in/hr)	Corr. Factor, RF	Infilt. Rate (in/hr)
11:12		-	10.45	23.4	1.95					
11:13	1.0	0.02	11.44	11.5	0.96	11.88	0.99	712.80	5.99	119.03
11:13			11.44	11.5	0.96					
11:14	1.0	0.02	11.80	7.2	0.60	4.32	0.36	259.20	3.67	70.54
11:14			11.80	7.2	0.60					
11:15	1.0	0.02	12.00	4.8	0.40	2.40	0.20	144.00	2.71	53.05
11:15			12.00	4.8	0.40					
11:16	1.0	0.02	12.22	2.2	0.18	2.64	0.22	158.40	1.99	79.43
11:16			12.22	2.2	0.18					
11:17	1.0	0.02	12.35	0.6	0.05	1.56	0.13	93.60	1.39	67.13
11:22			10.40	24.0	2.00					
11:23	1.0	0.02	11.15	15.0	1.25	9.00	0.75	540.00	6.57	82.17
11:23			11.15	15.0	1.25					
11:24	1.0	0.02	11.55	10.2	0.85	4.80	0.40	288.00	4.60	62.61
11:24			11.55	10.2	0.85					
11:25	1.0	0.02	11.74	7.9	0.66	2.28	0.19	136.80	3.59	38.12
11:25			11.74	7.9	0.66					
11:26	1.0	0.02	11.90	6.0	0.50	1.92	0.16	115.20	2.99	38.55
11:26			11.90	6.0	0.50					
11:27	1.0	0.02	12.02	4.6	0.38	1.44	0.12	86.40	2.51	34.44
11:27			12.02	4.6	0.38					
11:28	1.0	0.02	12.18	2.6	0.22	1.92	0.16	115.20	2.03	56.79
11:28			12.18	2.6	0.22					
11:29	1.0	0.02	12.29	1.3	0.11	1.32	0.11	79.20	1.57	50.58
11:37			10.40	24.0	2.00					
11:38	1.0	0.02	11.02	16.6	1.38	7.44	0.62	446.40	6.79	65.70
11:38			11.02	16.6	1.38					
11:39	1.0	0.02	11.32	13.0	1.08	3.60	0.30	216.00	5.22	41.40
11:39			11.32	13.0	1.08					
11:40	1.0	0.02	11.57	10.0	0.83	3.00	0.25	180.00	4.27	42.11
11:40			11.57	10.0	0.83					
11:41	1.0	0.02	11.73	8.0	0.67	1.92	0.16	115.20	3.57	32.26
11:41			11.73	8.0	0.67					
11:42	1.0	0.02	11.84	6.7	0.56	1.32	0.11	79.20	3.11	25.48
11:42			11.84	6.7	0.56					
11:43	1.0	0.02	11.91	5.9	0.49	0.84	0.07	50.40	2.80	18.00
11:43			11.91	5.9	0.49					
11:44	1.0	0.02	11.98	5.0	0.42	0.84	0.07	50.40	2.56	19.69
11:44			11.98	5.0	0.42					
11:45	1.0	0.02	12.07	4.0	0.33	1.08	0.09	64.80	2.29	28.35
11:45			12.07	4.0	0.33					

Infiltration Testing

Test Through Zone Eleven Feet Below Bottom of Infiltration Device

Infiltration Testing Field Data — **Date:** 3/3/2017

Project Location:	Commercial Organics Processing Facility	**Job Number:**	VT-24872-02
Earth Description:	See Log	**Tested By:**	SC
Field Test in Boring	IT-4	**Start Time:**	11:12 AM
Boring Diameter (inches):	7	**Total Pipe Length (feet):**	12.4
Boring Depth (feet):	12.4	**Pipe Stick-Up (inches):**	0

Time of Day, t (hh:mm)	Delta Time, Δt (min.)	Delta Time, Δt (hr.)	Top of Pipe to Water, (ft.)	Water Depth, d (in.)	Water Depth, d (ft.)	Drop in Water Height, Δd (in.)	Drop in Water Height, Δd (ft.)	Perc Rate, (in/hr)	Corr. Factor, RF	Infilt. Rate (in/hr)
11:46	1.0	0.02	12.15	3.0	0.25	0.96	0.08	57.60	1.99	28.88
11:46			12.15	3.0	0.25					
11:47	1.0	0.02	12.25	1.8	0.15	1.20	0.10	72.00	1.69	42.71
11:47			12.25	1.8	0.15					
11:48	1.0	0.02	12.31	1.1	0.09	0.72	0.06	43.20	1.41	30.61
11:48			12.31	1.1	0.09					
11:49	1.0	0.02	12.37	0.4	0.03	0.72	0.06	43.20	1.21	35.83
11:52			10.40	24.0	2.00					
11:53	1.0	0.02	10.95	17.4	1.45	6.60	0.55	396.00	6.91	57.27
11:53			10.95	17.4	1.45					
11:54	1.0	0.02	11.22	14.2	1.18	3.24	0.27	194.40	5.51	35.29
11:54			11.22	14.2	1.18					
11:55	1.0	0.02	11.43	11.6	0.97	2.52	0.21	151.20	4.69	32.27
11:55			11.43	11.6	0.97					
11:56	1.0	0.02	11.60	9.6	0.80	2.04	0.17	122.40	4.03	30.34
11:56			11.60	9.6	0.80					
11:57	1.0	0.02	11.75	7.8	0.65	1.80	0.15	108.00	3.49	30.98
11:57			11.75	7.8	0.65					
11:58	1.0	0.02	11.83	6.8	0.57	0.96	0.08	57.60	3.09	18.63
11:58			11.83	6.8	0.57					
11:59	1.0	0.02	11.90	6.0	0.50	0.84	0.07	50.40	2.83	17.78
11:59			11.90	6.0	0.50					
12:00	1.0	0.02	11.98	5.0	0.42	0.96	0.08	57.60	2.58	22.35
12:00			11.98	5.0	0.42					
12:01	1.0	0.02	12.08	3.8	0.32	1.20	0.10	72.00	2.27	31.74
12:01			12.08	3.8	0.32					
12:02	1.0	0.02	12.13	3.2	0.27	0.60	0.05	36.00	2.01	17.90
12:02			12.13	3.2	0.27					
12:03	1.0	0.02	12.20	2.4	0.20	0.84	0.07	50.40	1.81	27.91
12:03			12.20	2.4	0.20					
12:04	1.0	0.02	12.26	1.7	0.14	0.72	0.06	43.20	1.58	27.29
12:04			12.26	1.7	0.14					
12:05	1.0	0.02	12.32	1.0	0.08	0.72	0.06	43.20	1.38	31.37
12:17			10.40	24.0	2.00					
12:18	1.0	0.02	11.00	16.8	1.40	7.20	0.60	432.00	6.83	63.26
12:18			11.00	16.8	1.40					
12:19	1.0	0.02	11.30	13.2	1.10	3.60	0.30	216.00	5.29	40.86
12:19			11.30	13.2	1.10					
12:20	1.0	0.02	11.53	10.4	0.87	2.76	0.23	165.60	4.38	37.83
12:20			11.53	10.4	0.87					
12:21	1.0	0.02	11.73	8.0	0.67	2.40	0.20	144.00	3.64	39.56

Infiltration Testing

Test Through Zone Eleven Feet Below Bottom of Infiltration Device

Infiltration Testing Field Data

Date: 3/3/2017

Project Location:	Commercial Organics Processing Facility	Job Number:	VT-24872-02
Earth Description:	See Log	Tested By:	SC
Field Test In Boring	IT-4	Start Time:	11:12 AM
Boring Diameter (inches):	7	Total Pipe Length (feet):	12.4
Boring Depth (feet):	12.4	Pipe Stick-Up (inches):	0

Time of Day, t (hh:mm)	Delta Time, Δt (min.)	Delta Time, Δt (hr.)	Top of Pipe to Water, (ft.)	Water Depth, d (in.)	Water Depth, d (ft.)	Drop in Water Height, Δd (in.)	Drop in Water Height, Δd (ft.)	Perc Rate, (in/hr)	Corr. Factor, RF	Infilt. Rate (in/hr)
12:21			11.73	8.0	0.67					
12:22	1.0	0.02	11.82	7.0	0.58	1.08	0.09	64.80	3.14	20.62
12:22			11.82	7.0	0.58					
12:23	1.0	0.02	11.90	6.0	0.50	0.96	0.08	57.60	2.85	20.20
12:23			11.90	6.0	0.50					
12:24	1.0	0.02	11.99	4.9	0.41	1.08	0.09	64.80	2.56	25.31
12:24			11.99	4.9	0.41					
12:25	1.0	0.02	12.10	3.6	0.30	1.32	0.11	79.20	2.22	35.72
12:25			12.10	3.6	0.30					
12:26	1.0	0.02	12.18	2.6	0.22	0.96	0.08	57.60	1.89	30.45
12:26			12.18	2.6	0.22					
12:27	1.0	0.02	12.25	1.8	0.15	0.84	0.07	50.40	1.63	30.84
12:27			12.25	1.8	0.15					
12:28	1.0	0.02	12.31	1.1	0.09	0.72	0.06	43.20	1.41	30.61
12:28			12.31	1.1	0.09					
12:29	1.0	0.02	12.36	0.5	0.04	0.60	0.05	36.00	1.22	29.44

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CONTAINMENT AREA FOR COMPOST PROCESSING OPERATIONS PLAN

Agromin- Commercial Organics Processing Operation
South end of Edwards Ranch Road
Santa Paula, CA 93060

February 2017

Prepared for: Agromin
201 Kinetic Drive
Oxnard, California 93030

Prepared by: Sespe Consulting, Inc.
374 Poli Street, Suite 200
Ventura, California 93001

County of Ventura
Notice of Preparation of an EIR
PL17-0154
Attachment 10 - Containment Area for Compost Processing Operations Plan

CONTAINMENT AREA FOR COMPOST PROCESSING OPERATIONS PLAN

Agromin
Commercial Organics Processing Operation
Santa Paula, CA

February 2017

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CONTAINMENT AREA FOR COMPOST PROCESSING OPERATIONS PLAN

Commercial Organics Processing Operation
Santa Paula, CA

A. GENERAL INFORMATION

This Containment Area for Compost Processing Operations Plan (Plan) was prepared in accordance with the Ventura County Watershed Protection District's (VCWPD) standard permit condition of approval for composting facilities. The plan addresses two primary issues:

- Preventing site inundation during a 100-year storm event.
- Providing impermeable surfaces for working areas to protect groundwater.

Agromin is requesting the issuance of a Conditional Use Permit (CUP) for a new 70 acre Commercial Organics Processing Operation (Project) in an unincorporated area of Ventura County, near the City of Santa Paula. The Project would include composting of green material in open windrows and composting of green and food materials in covered aerated static piles (CASP) and in enclosed anaerobic digestion (AD) systems.

The total expected Project life is a minimum of 50 years.

Business Name: Agromin Inc.

Site Address: Agromin Inc.
South end of Edwards Ranch Road
Santa Paula, CA 93060
(see attached Site Location map)

Business Contact: Bill Camarillo
Agromin Inc.
201 Kinetic Drive
Oxnard, CA 93030
Telephone: (805) 485-9200
bcamarillo@agromin.com

Property Owners / Parcel Numbers: The project is located on one large parcel:

Parcel Number (acres)	Property Owner / Mailing Address
090-0-180-085 (452.741 ac.)	Limoneira Company / 1141 Cummings Road, Santa Paula, CA 93060

B. OPERATIONS INFORMATION

1. Operating Hours:

Proposed hours of operation will vary depending on the Project operation:

Operation	Employee Shift	Shifts per Day	Days per Week
Waste Receiving	7:00 AM to 5:00 PM	1	Mon.-Sat.
Material Processing Buildings	6:00 AM to 3:00 PM 3:00 PM to 10:00 PM	2	7
Packaging Building	6:00 AM to 3:00 PM 3:00 PM to 10:00 PM	2	Mon.-Sat.
Maintenance	7:00 AM to 5:00 PM	1	Mon.-Sat.
Outdoor Processing	sunrise to sunset	1 or 2	7
Office	7:00 AM to 5:00 PM	1	5

2. Types, Sources and Quantity of Feedstock

INCOMING FEEDSTOCK	EXPECTED ANNUAL QUANTITY[1] (tons/year)	SOURCE EXAMPLES
Food material including vegetative food material	65,500	Primarily pre-consumer food material from grocery stores, food processing facilities, restaurants, etc.
Green Material (including agricultural by-product material, agricultural material, paper products, wood waste, yard trimmings)	229,500	Clean lawn & landscape cuttings (grass, leaves, branches, plants, etc.) picked up from residential customers (yard waste can). Green material separated from other municipal solid waste at an MRF. Clean green and wood material generated by farmers, commercial landscaping companies and other contractors.
Total:	295,000	

1 – Actual incoming feedstock quantity mix depends on market conditions.

3. Site Operations:

Operations proposed to be conducted at the facility are (see the attached Site Plan):

- ***Feedstock Receiving:*** Green and food material will be delivered to the site in commercial collection vehicles, trucks and roll-off bins. An attendant will be on site during operating hours to visually check loads for prohibited materials. Loads with excessive contaminants will be rejected before being allowed past the scale house. The incoming material will be weighed at the scale house and then unloaded, processed, screened, and sorted inside two (2), 80,925 square foot buildings. One building will process green material while the other will exclusively process food material. Both buildings will have similar designs, with:
  - Tipping areas where delivery trucks will deposit the organic materials
  - Trommel screens (pre-screens) that will remove oversized material.
  - Picking conveyors where unwanted trash such as glass, film plastics and metals will be removed. These conveyors will also use magnets to remove metals.

Contaminants removed from the feedstock will be placed in a roll off trash bin and ultimately taken to Simi Valley landfill for disposal.

- o A grinder to reduce the incoming material to the appropriate size for composting.
- o A blending pad will be utilized in the food material building to blend the food material with green material at the appropriate ratio for use in either the Covered Aerated Static Piles (CASP) or Anaerobic Digesters (AD).

These buildings will protect the feedstock materials from rain contact. Please refer to the attached Process Flow Diagram and Site Plan for more detail.

- ***Windrow Composting Process***: After grinding, the green material will be placed into windrows for composting. Green material will be composted in the designated paved areas or areas treated with soil cement to achieve the appropriate soil hydraulic conductivity for working areas in compost operations of 1.0×10^{-5} cm/s or less (see Section D below). The composting process goes through two stages before a finished compost is produced:

  - o Active composting - An aerobic process where the compost feedstock is in the process of being rapidly decomposed and is unstable. Active compost generates temperatures of at least 122 degrees Fahrenheit during decomposition. This process requires that the material be maintained at a proper moisture level and be frequently turned in order to introduce oxygen to the material.

  - o Curing - Following the active composting period, the material is moved into curing piles for additional aging and drying. This curing process allows partly decomposed compost particles to finish the composting process at a lower temperature.

  NOTE: Open windrow composting of food material is not conducted.

  After curing, the stabilized compost will be processed with a trommel screen, which separates the larger pieces and fines from the finished product to achieve the desired final compost product. Once the stabilized compost is screened it is either transferred offsite in bulk for sale, or is bagged on-site and then transferred offsite for sale. It may also be blended with amendments prior to sale. Bagging occurs indoors in the 23,107 square foot production/packaging building which houses a Hamer FFS Bagging System. This is an electric powered bagging system consisting of a feed hopper, a conveyor system and a bagging line.

  Runoff from the composting and curing areas will be diverted to two (2) water drainage retention ponds located on the south, down gradient, edge of the Project site. See Site Planfor more detail.

- ***CASP System:*** A portion of the food material received by the facility will be processed in covered aerated static piles (see Site Plan). The CASP method of composting will utilize food material which is blended with green materials to no more than 40% food material. The CASP system will be constructed atop concrete pavement which will be sloped to collect any runoff. This runoff will be reintroduced it to the piles to maintain moisture.

- ***Dry Anaerobic Digestion Systems:*** The proposed Project involves the installation of dry anaerobic digesters. The AD's are enclosed composting systems that transform a mixture of 60% food material and 40% green material into biogas during a 21-day batch process. The biogas will be collected in an external biogas storage bladder and sent to combined heat and power systems (IC engines) that will burn the biogas to generate electricity. The AD's will be situated atop concrete pavement.

- ***Products and Product Sales:*** The facility will produce three primary products, all of which will be transferred to the west side of the Project site for sale or for bagging in the packaging building. These products include:

  - Stabilized cured compost - As needed amendments may be added to the compost on a mixing pad.

  - Mulch - There is currently no statutory or regulatory definition for mulch. It is commonly defined as a soil covering used to control weeds or erosion; retain moisture in soil; and insulate soil from cold weather. The mulch produced at the facility will generally be comprised of wood chips, ground up landscape trimmings, shredded bark and coarse compost material.

  - Chipped wood sold as biomass fuels.

  Amendment materials that may be added to "stabilized or cured" compost to provide attributes for certain finished compost products or may be sold along with compost based products produced at the facility. Amendments currently utilized by Agromin include but are not limited to:

  - Apex T & S 24·4·12
  - Landscape Color 14·14·14
  - Bloom 14-14-14
  - Triple Super Phosphate 0·4S·O
  - Blood Meal 13-0-0
  - Potassium Nitrate 13-0-46
  - Urea (46·0·0)
  - Ammonium Phosphate 16-20·0
  - Gypsum (80 & SO lbs)
  - Dolomite Lime
  - Triple Pro Best lS ·lS·lS
  - Cool Weather 21·7·6
  - Hydroprills 21-7-14
  - Rootshield Granular
  - Sulfur Coated Urea 2S·8·8
  - 6·24·24 XB
  - Sulfur Soil Prills
  - Palm Plus 13-S-8
  - Calcium Nitrate lS·O·O
  - Hydroform Blue Chip 38·0·0
  - EZ Green Chicken Fertilizer
  - Bone Meal 2.S-12·0
  - Gro Power S-3·1
  - Gro Power Plus S-3·1
  - Turf Supreme 16·6·8
  - Ferrous Sulfate 21%
  - Organic Crumbles 7-8·4
  - Zinc Sulfate 36% Granular
  - Ammonia Sulfate 21·0·0
  - Sulfur of Potash 0-0-5O

These amendments will be stored inside the packaging building (see Site Plan).

Bulk materials will also be delivered by vendor trucks and directly unloaded into the appropriate outdoor storage bins located on the west side of the Project site.

- Peat Moss
- Perlite (volcanic glass)
- Gypsum
- Washed Sand

- Vermiculite
- Pumice
- Scoria (basaltic lava rock)
- Ground Bark
- Decomposed Granite
- Pea gravel
- Rock

C. SITE CONDITION INFORMATION

1. Average Rainfall:

Average Annual Precipitation[1] (inches/year)	25-Year, 24-Hour Storm Event (inches)[2]	100-Year, 24-Hour Storm Event (inches)[2]
16.48	6.08	7.52
Sources: 1. NOAA, 2016b. National Centers for Environmental Information, Data Tools: 1981-2010 Normals, Annual/Seasonal Normals, Ventura, CA US. 2. NOAA, 2016c. Atlas 14 Point Precipitation Frequency Estimates, Santa Paula, CA.		

Nearby Climate Station Name: Station name: SANTA PAULA-LIMONEIRA RAN (approx. 2 miles north of the facility).

2. Geology:

(Source: "Geotechnical Engineering Report, for Proposed Biogenic Energy Park, Edwards Ranch Road, Santa Paula Area Of Ventura County, California", Earth Systems, April 2014)

Soil Types: *"Based on the test borings drilled at the subject site, alluvial deposits were typically encountered to the maximum depths explored, with the exception of Borings B-3 and B-7. Artificial (undocumented) fill was encountered to depths ranging from approximately 18 feet below existing site grade in Borings B-3 and 5 feet in Boring B-7."*

"The undocumented fill encountered in the test borings consisted of soft to stiff, sandy to clayey silts and soft to medium stiff, sandy to silty clays."

"The alluvial soils encountered in our test borings were indicative of typical overbank stream deposits characterized by interbedded, discontinuous strata of silts, clays, sands, and gravels generally stratified planar to the ground surface. A zone of cobbles within a sand matrix was encountered in Boring B-2 between the depths of 37 and 39 feet below the existing ground surface. Thin lenses of fine grained soil were observed scattered throughout the coarser grained strata, and vice-versa, as a result of varying energies at the time of deposition."

Groundwater Depth: Groundwater in this subbasin is largely unconfined with groundwater flow generally to the southwest (CDWR, 2006). Groundwater was reported to be encountered between 20.5 and 25 feet below ground surface in 2014 during geotechnical borings conducted at the Site (Earth Systems, 2014). This corresponds to groundwater elevations of approximately 158 to 165 feet above mean sea level.

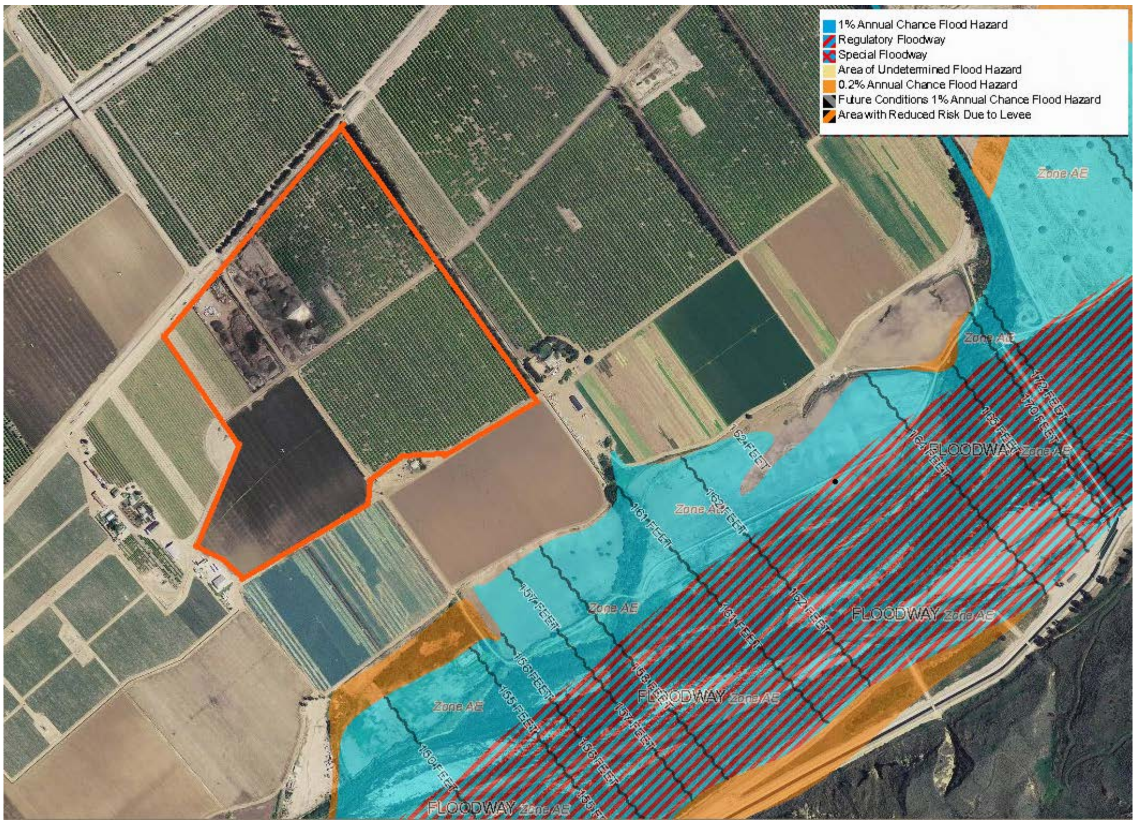
Nearest Surface Water: The Santa Clara River is located roughly 0.25 miles south of the southern boundary of the proposed Project site..

3. Nearest Water Supply Well:

The nearest the nearest active water supply well is Limoneira owned water well 03N21W30H05S located roughly 4,000 feet northeast of the Project site.

4. Federal Emergency Management Agency (FEMA) 100-Year Floodplain:

The facility is not located within a 100-year flood plain according to the FEMA Flood Map.



Screenshot from Ventura County Watershed Protection District, FEMA Flood Hazard Map
http://www.vcwatershed.net/publicMaps/crs/

D. DESIGN INFORMATION

1. Potential Impacts to Groundwater Quality:

According to the State Water Resources Control Board Order WQ 2015-0121-DWQ General Waste Discharge Requirements for Composting Operations:

- Compostable materials may contain nutrients, metals, salts, pathogens, and oxygen-reducing compounds that can degrade water quality if allowed to migrate into groundwater or surface water. The process of composting can allow contaminants to migrate with leachate or wastewater from these materials. Additionally, composting nutrient-rich feedstocks on more permeable soil has the potential to create elevated nitrate concentrations in groundwater.

- Composting operations have the potential to degrade water quality with nutrients (e.g., nitrate), salinity (e.g., sodium chloride), pathogens, oxygen-reducing materials, sediment, and other waste constituents.

- Composting operation setbacks from water supply wells and surface water bodies are provided in this General Order. Setbacks are included as a means of reducing pathogenic risks by coupling pathogen inactivation rates with groundwater travel time to a well or other potential exposure route (e.g. water contact activities). Composting operations shall be setback at least 100 feet from the nearest surface water body and/or the nearest water supply well.

2. Facility Designs to Protect Groundwater and Surface Waters

The primary strategies to control infiltration of wastewater into groundwater or runoff to surface waters include:

- Reducing the permeability of areas where compostable materials are stored or composted.
- Designing the facility to convey drainage to a detention pond system located at the southern, downslope side of the facility. Reducing the permeability of detention ponds.
- Maintaining WDR required setbacks.

Impermeable Surfaces: The State Water Resources Control Board Waste Discharge Requirement (WDR) for Composting Operations, Order WQ 2015-0121-DWQ, adopted on August 4, 2015, requires the soil hydraulic conductivity for working areas in compost operations of this type (Tier II facility) to meet 1.0×10^{-5} cm/s or less. The facility will be constructed such that all process area working surfaces will be paved or underlain with engineered low permeability soils meeting the WDR requirements of a hydraulic conductivity of 1×10^{-5} cm/sec or less. Soil stabilization using a mixture of native soils and Portland Cement Concrete may be used to achieve the 1.0×10^{-5} cm/s requirement. See the Site Plan for the proposed working surface areas.

Detention Ponds: Through a combination of site grading and a subsurface drain system, storm water runoff from working surfaces will be directed to water retention ponds proposed to be installed at the south boundary of the Project at the downslope side of the facility (see Site Plan). The water retention ponds will be designed with liners meeting the WDR requirements of a hydraulic conductivity of 1×10^{-6} cm/s. As required by the WDR, the ponds will be designed to manage a 25-year 24-hour storm event.

Setbacks: As required under the WDR, the facility will be designed to maintain composting operations at least 100 feet from the nearest surface water body and/or the nearest water supply well.

3. Facility Designs to Prevent Wastewater Runoff and Site Inundation:

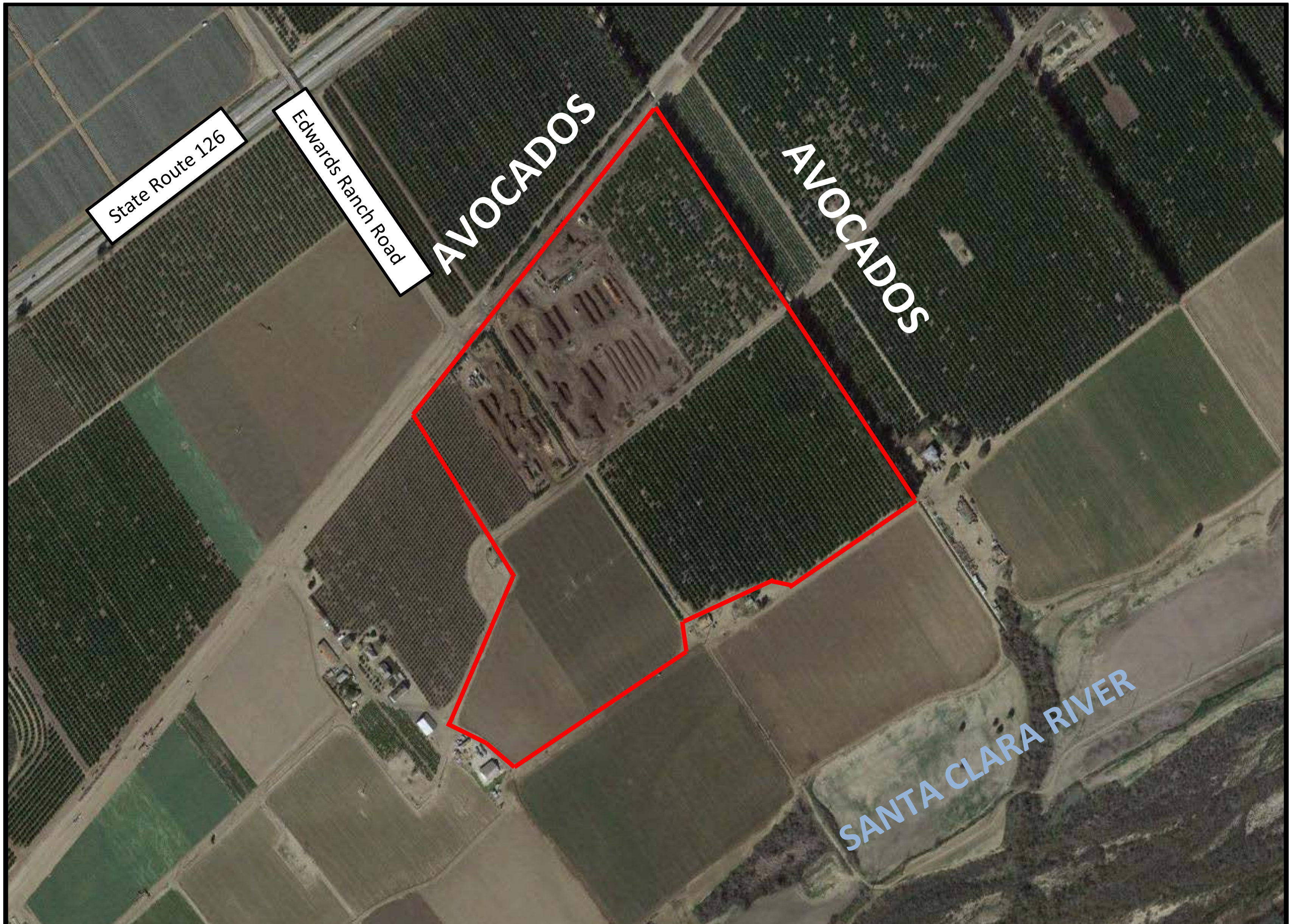
During construction the site will be graded to direct process water and storm water runoff to collection points throughout the site that will drain via a subsurface drain system to detention ponds located at the south side of the facility. Water collected will be used to supplement water used in the composting process.

The site has also been designed to allow offsite flows to bypass around the site which will prevent site inundation during a 100 year storm event (VCWPD requirement). Based on local topography, run on could occur from properties located to the north. On its northern boundary, the site is protected from run on by elevated railroad tracks. Local culverts under the tracks allow the water to migrate to the south via storm drain channels. These channels pass through the site directing water south towards the Santa Clara River:

- *Easterly Concrete Channel:* The existing improved concrete drainage channel along the easterly border conveys off-site drainage water through the site. On-site drainage water will not drain into this channel, and no changes to the channel or flow in the channel is proposed.

- *Westerly Channel:* The current drainage channel through the westerly portions of the site conveys off-site drainage water though the site and will need to be improved. On-site drainage water will not drain into this channel. Double barrel arch-pipe pass-thru drainage culverts will be placed in the channel to convey off-site drainage water through the site (see attached Utility Plan).

The Ventura County Watershed Protection requires compost processing operations be protected against inundation from a 100-year storm event. Attachment 2 contains a Drainage Area Map that evaluates regional storm water flows.



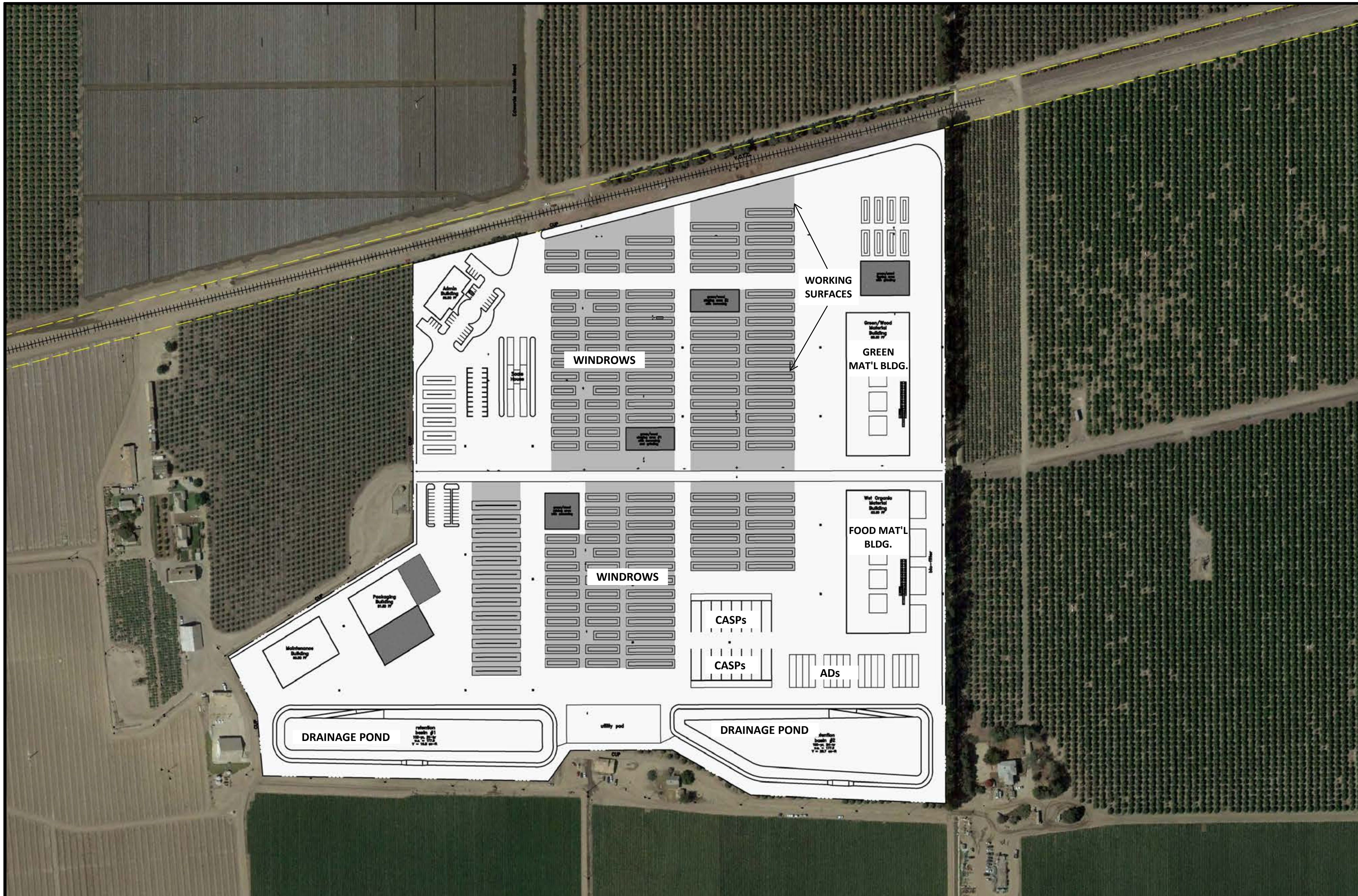
Google Maps 2015

Approximate Site Boundaries

N

SESPE CONSULTING, INC.

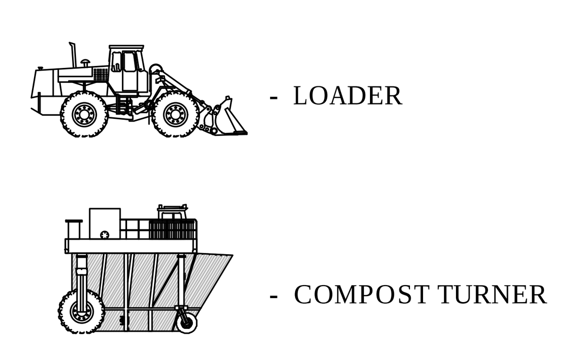
FIGURE	SITE LOCATION MAP Agromin - Biogenic Energy Park Santa Paula, California		
1			
PROJECT #:	AG01.11.02	DATE:	4/25/16
SCALE:	as shown	DRAWN BY:	GPS



N

SESPE CONSULTING, INC.

FIGURE	FACILITY SITE PLAN Agromin - Biogenic Energy Park Santa Paula, California 93060		
2			
PROJECT #:	AG01.11.02	DATE:	2/28/17
SCALE:	as shown	DRAWN BY:	RDF



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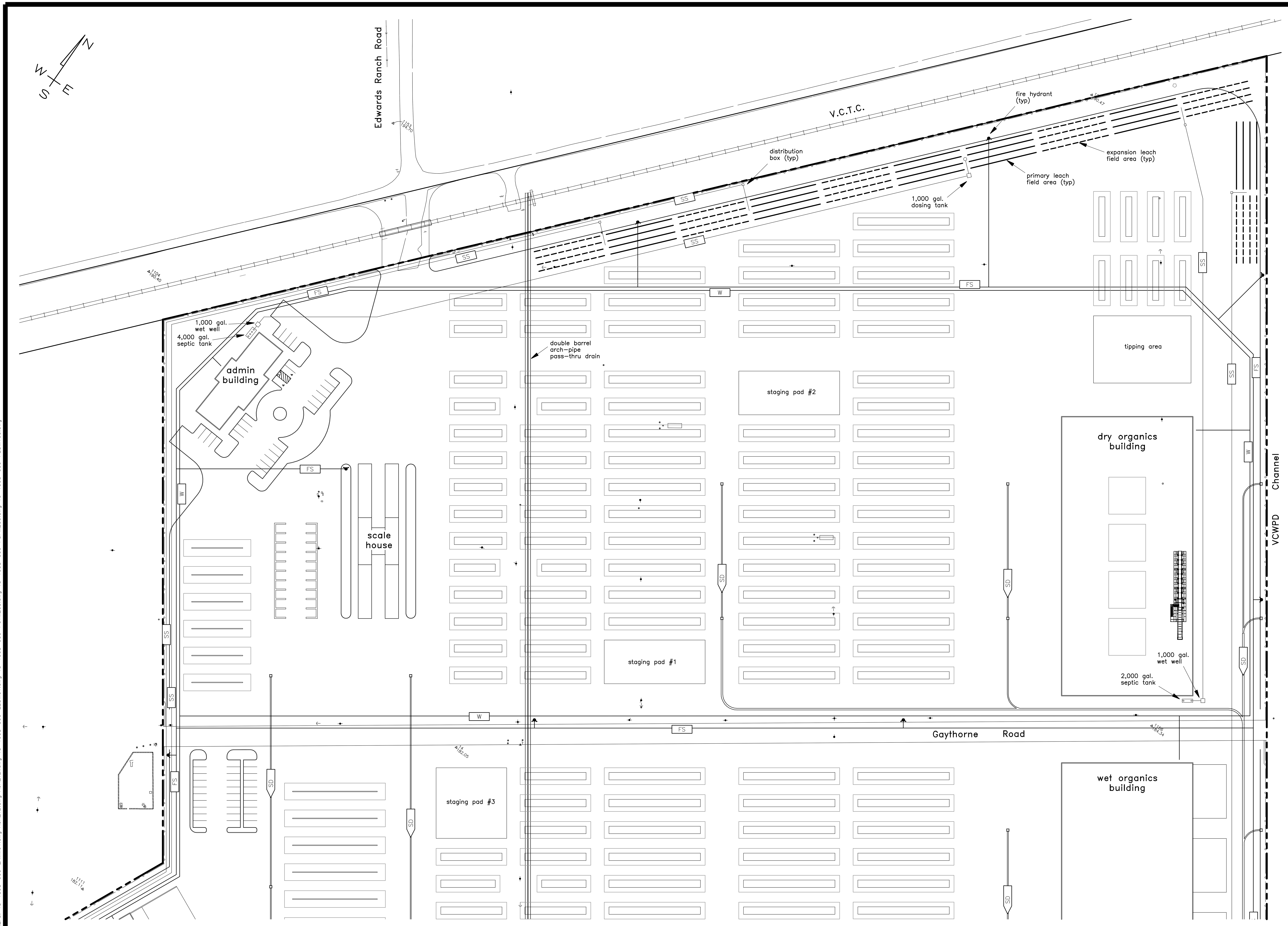
AGROMIN BIOGENIC FACILITY
PROCESS FLOW

SCALE: HORIZ. AS SHOWN / VERT. AS SHOWN	FIGURE NUMBER 1 OF 1
DRAWN BY: GC	
CHECKED BY: RDF	DATE DRAWN: FEBRUARY 22, 2016



Prepared By:

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Ventura, California 93007
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www.ejharrison.com

Prepared under the direction of:
Mike Harrison RCE 57,320

Biogenic Energy Park
Entitlement Planning
Proposed Utility Plan
County of Ventura

AGROMIN
Soil for a Greener World

scale: 1" = 60'
date: January 2017
sheet 20 of 24

1st entitlement check submittal — not for construction

13-1008.230

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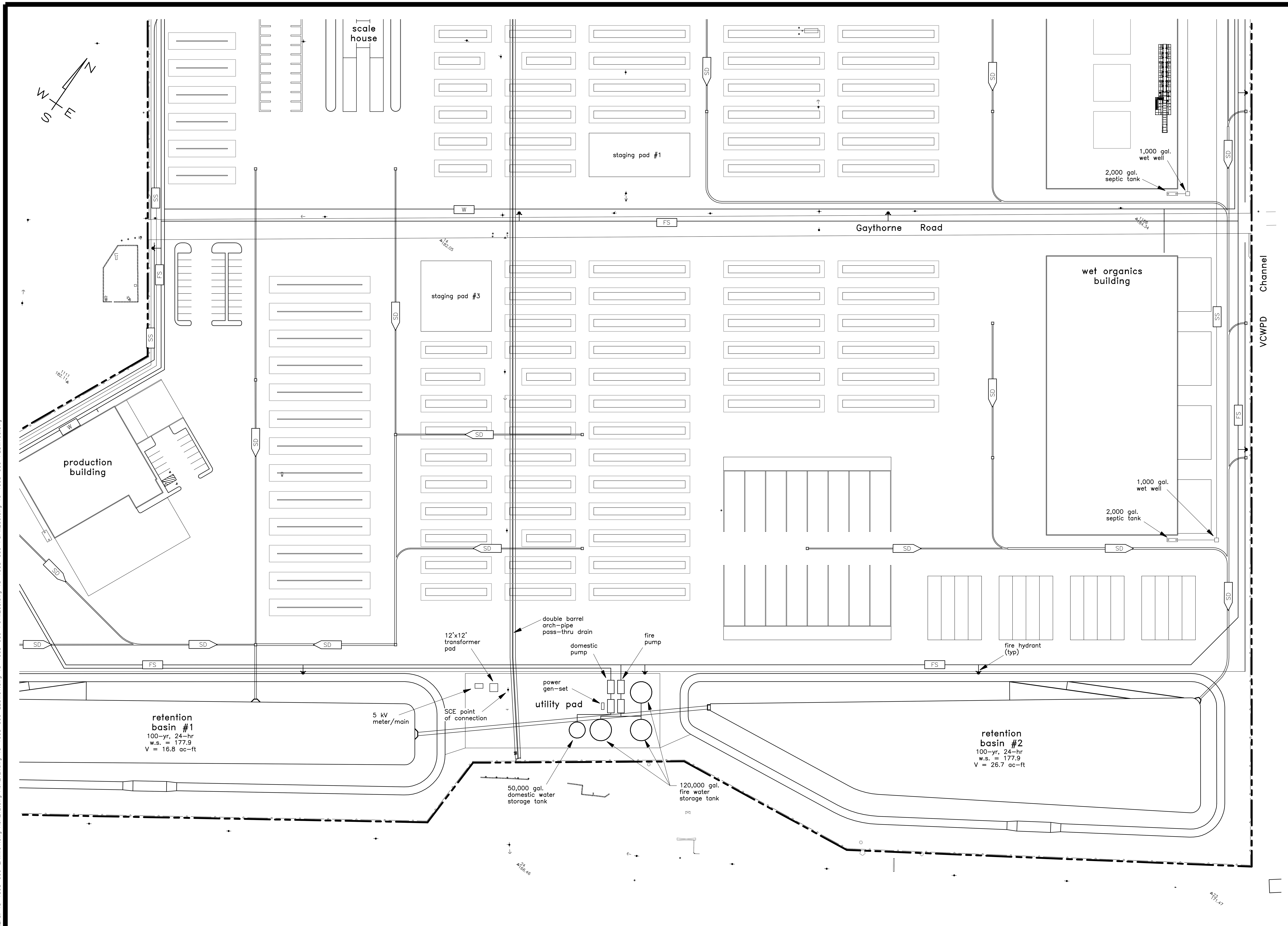

Prepared By:

Harrison Industries

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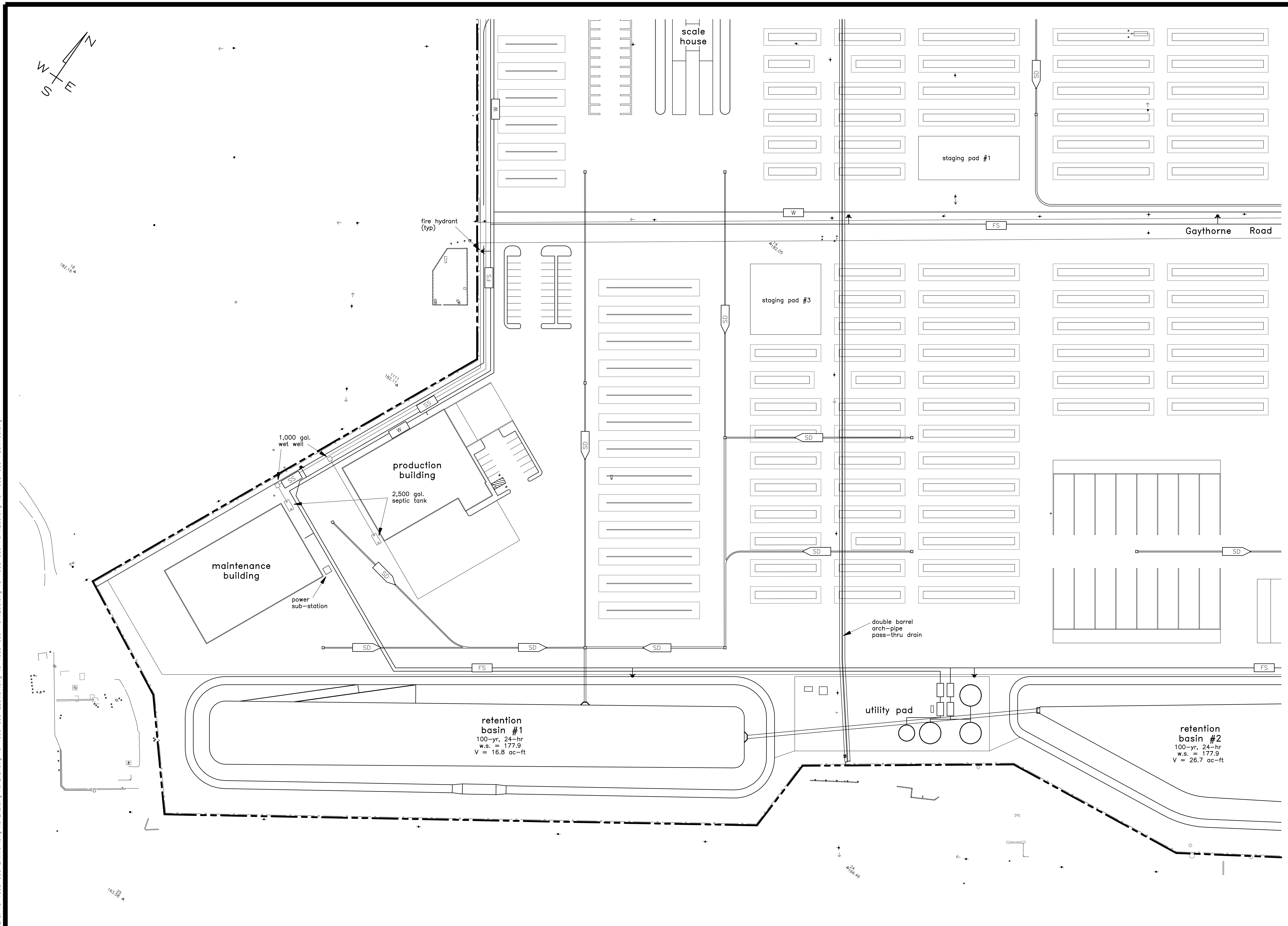

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AGROMIN Soil for a Greener World

scale: 1" = 60'
date: January 2017
sheet 22 of 24

13-1008.230

1st entitlement check submittal – not for construction

Attachment 1

Recommendations for Cement Treatment in Composting Areas
Earth Systems, February 19, 2016

Earth Systems
Southern California

1731-A Walter Street
Ventura, CA 93003
(805) 642-6727
Fax (805) 642-1325

February 19, 2016

Project No.: VT-25164-01
Report No.: 16-2-1

Harrison Industries
Attention: Mike Harrison
P.O. Box 4009
Ventura, CA 93007

Project: Agromin Oxnard Facility
6859 Arnold Road
Oxnard Area of Ventura County, California
Subject: Recommendations for Cement Treatment in Composting Areas

Earth Systems Southern California (Earth Systems) is pleased to provide this report that presents results of a study performed for two new composting areas at the existing Agromin facility located at 6859 Arnold Road in the Oxnard area of Ventura County, California (see attached Vicinity Map). Earth Systems performed this study to evaluate cement treating the subgrade soils beneath new composting areas to mitigate the infiltration of leachate from the compost into the underlying native soils. We understand that the proposed cement treated subgrade beneath the composting areas should have a maximum hydraulic conductivity (permeability) of 1×10^{-5} centimeters per second (cm/sec) to meet the regulatory requirements. In addition to meeting the minimum permeability requirement, the cement treated subgrade should also be durable enough to withstand the equipment traffic and loads from the composting operations that will take place on them.

On December 22, 2015, Earth Systems collected one bulk sample of the subgrade soils from the two new composting areas. The samples of the subgrade soils were collected from the upper 18 inches at each sample location. The approximate sample locations are shown on the attached Site Plan.

The subgrade soils encountered at the sample location in Area 1 consisted of approximately 4 inches of crushed rock/aggregate base material. Between the depths of 4 and 10 inches, the soil consisted of a mixture of native soil and gravels with some chucks of broken asphaltic concrete. The native soils encountered below a depth of 10 inches consisted of sandy clay to the maximum depth explored.

The subgrade soils encountered at the sample location in Area 2 consisted of sandy clay to the maximum depth explored.

RESULTS OF LABORATORY TESTS

Permeability tests and unconfined compression tests were performed on remolded test specimens of the subgrade soils. The test specimens were compacted to 95 percent of the maximum dry density at various cement contents. For this study, the cement contents used to prepare the test specimens were 4, 8, and 12 percent (by dry weight).

Due to the granular nature of the subgrade soils in Area 1, permeability tests were performed on the subgrade soils from this area. Likewise, the unconfined compression tests were performed on the clayey subgrade soils from Area 2. The reason being that determining the percent cement required to obtain the desired permeability would be more critical with granular soils, whereas determining the percent cement required to obtain sufficient strength would be more critical with the fine-grained soils.

The various layers observed at the sample location in Area 1 were proportioned to represent the material that would cement treated in the upper 18 inches. The composited sample resulted in a soil classified as clayey sand with gravels.

The following table summarizes the results of the permeability tests performed on the sample collected from Area 1.

Percent Cement Added (%)	Hydraulic Conductivity (cm/sec)
4	4.2×10^{-6}
8	2.1×10^{-6}
12	1.4×10^{-6}

The following table summarizes the results of the unconfined compressive strength tests performed on the sample collected from Area 2.

Percent Cement Added (%)	Compressive Strength (psi)
4	150
8	230
12	280

CONCLUSIONS

Based on the laboratory test results, the minimum permeability of 1×10^{-5} cm/sec may be achieved with 4 percent or more cement (by dry weight) for the subgrade soils within the upper 18 inches at the sample location in Area 1. Because the upper 18 inches subgrade soils may vary throughout Area 1, we believe that the use of 6 percent cement may be prudent to account for the variability.

Because the fine-grained soils are in the bottom half of the upper 18 inches of subgrade, mixing and cement treating less than 18 inches in Area 1 would reduce the fines content of the treated material. This reduction in the fines content may increase the permeability.

Because the subgrade in Area 2 consists predominantly of fine-grained soils, the use of 12 percent cement may be needed to provide a workable surface that is durable enough to withstand the equipment traffic and loads from the composting operations. To increase the durability of the cement treated subgrade, while possibly reducing the percent cement needed, a layer of aggregate base material could be placed on the subgrade surface prior to cement treatment. This increase in the sand and gravel content of the treated material should result in an increase in the unconfined compressive strength, and therefore an increase in durability. Although testing was not performed on a composited sample of native soil and aggregate base material to determine the percentage of aggregate base material needed to increase the durability of the cement treated subgrade, Earth Systems anticipates that a 4-inch thick layer of aggregate base material would increase the durability considerably. If desired, additional testing can be performed on a composited sample of native soil and aggregate base material to determine the percentage of aggregate base material needed or if a reduction in the percentage of cement is possible.

RECOMMENDATIONS

Using the results of the laboratory and our understanding of the project, Earth Systems has prepared the following construction recommendations that should be adhered to as a minimum by the contractor. The recommendations are based on a cement treatment depth of 18 inches.

- All trench backfill for culverts, utilities and pipes planned for beneath the composting areas should be properly placed and compacted to at least 90 percent relative compaction (ASTM D1557) up to 18 inches below finished subgrade. Since the upper 18 inches will be cement treated, compaction of this material will be required.

- Based on 12% Portland cement (by dry weight) and an assumed dry unit weight of 110 pcf, a minimum spread rate of 19.8 $\pm$ 0.2 pounds per square foot (psf) will be required for a treatment depth of 18 inches in Area 2. Based on 6% Portland cement (by dry weight) and an assumed dry unit weight of 110 pcf, a minimum spread rate of 10.4 $\pm$ 0.2 pounds per square foot (psf) will be required for a treatment depth of 18 inches in Area 1. The amount of cement being placed should be monitored throughout cement treatment operations, with modifications made as necessary for existing field conditions.

- Portland cement should comply with the latest Specifications for Portland cement (ASTM 150, CSA A-5, or AASHTO M85) Type II.

- The cement should be spread with a mechanical spreader and mixed with a high-speed rotary mixer. The equipment should be capable of pulverizing and thoroughly mixing in the cement to the depth necessary to produce a compacted cement treated thickness of 18 inches.

- At the start of compaction, the mixture should be in a uniform, loose condition throughout its full depth. The moisture content of the mix should be wet of optimum to achieve proper hydration of the cement, and adjusted as needed to achieve the compaction requirements. Water should be clear and free from injurious amounts of oil, acid, alkali, organic matter or other deleterious substance.

- Cement treatment operations should not take place when the air temperature is below 45°F, unless the air temperature is 40°F and rising.

- No area of cement treated subgrade should be left undisturbed for longer than 30 minutes during compaction operations.

- The cement treated soils should be compacted to achieve a minimum relative compaction of 95 percent of the ASTM D1557 maximum dry density. The compaction equipment used should be capable of achieving the required compaction to a depth of 18 inches. Wheel rolling with hauling equipment only is not an acceptable method of compaction. **Compaction of the cement treated subgrade should be verified by testing.**

- Permanently exposed surfaces should be kept in a moist condition for 7 days for curing of the cement treated subgrade.

- Experience has shown that 24-hour compressive strength results for moist cured samples are approximately 50 to 60% of the 7 day strength (moist cured for 6 days and soaked in water for 24 hours). A 24-hour test should be run on the cement treated subgrade soils in each area to obtain a 24-hour compressive strength which will be used to monitor the daily production. Seven day samples should also be taken for final acceptance.

ADDITIONAL SERVICES

This report is based on the assumption that an adequate program of monitoring and testing will be performed by Earth Systems Southern California during construction to check compliance with the recommendations given in this report. The recommended tests and observations include, but are not necessarily limited to the following:

1. Review of the grading plans during the design phase of the project.
2. Observation and testing during cement treatment of the composting areas.
3. Consultation as required during construction.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

The recommendations submitted in this report are based in part upon the subgrade soils encountered at the sample locations. The nature and extent of variations between and beyond the sample locations may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report.

The scope of services did not include any environmental assessment or investigation for the presence or absence of wetlands, hazardous or toxic materials in the soil, surface water, groundwater or air, on, below, or around this site. Any statements in this report or on the soil boring logs regarding odors noted, unusual or suspicious items or conditions observed, are strictly for the information of the client.

Findings of this report are valid as of this date; however, changes in conditions of a property can occur with passage of time whether they are due to natural processes or works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur whether they result from legislation or broadening of knowledge. Accordingly, findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of one year.

In the event that any changes in the nature, design, or location of the proposed cement treated areas, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing.

This report is issued with the understanding that it is the responsibility of the Owner, or of his representative to insure that the information and recommendations contained herein are called to the attention of the Architect and Engineers for the project and incorporated into the plan and that the necessary steps are taken to see that the Contractor and Subcontractors carry out such recommendations in the field.

As the Geotechnical Engineers for this project, Earth Systems Southern California has striven to provide services in accordance with generally accepted geotechnical engineering practices in this community at this time. No warranty or guarantee is expressed or implied. This report was prepared for the exclusive use of the Client and their authorized agents.

It is recommended that Earth Systems Southern California be provided the opportunity for a general review of final design and specifications in order that cement treatment recommendations may be properly interpreted and implemented in the design and specifications. If Earth Systems Southern California is not accorded the privilege of making this recommended review, it can assume no responsibility for misinterpretation of the recommendations contained herein.

We have appreciated the opportunity to be of service to you on this project. Please call if you have any questions, or if we can be of further service.

Respectfully submitted,

EARTH SYSTEMS SOUTHERN CALIFORNIA

Anthony P. Mazzei
Geotechnical Engineer

REGISTERED PROFESSIONAL ENGINEER
ANTHONY P. MAZZEI
GE 2823
Exp. 6-30-17
GEOTECHNICAL
STATE OF CALIFORNIA

2/19/16

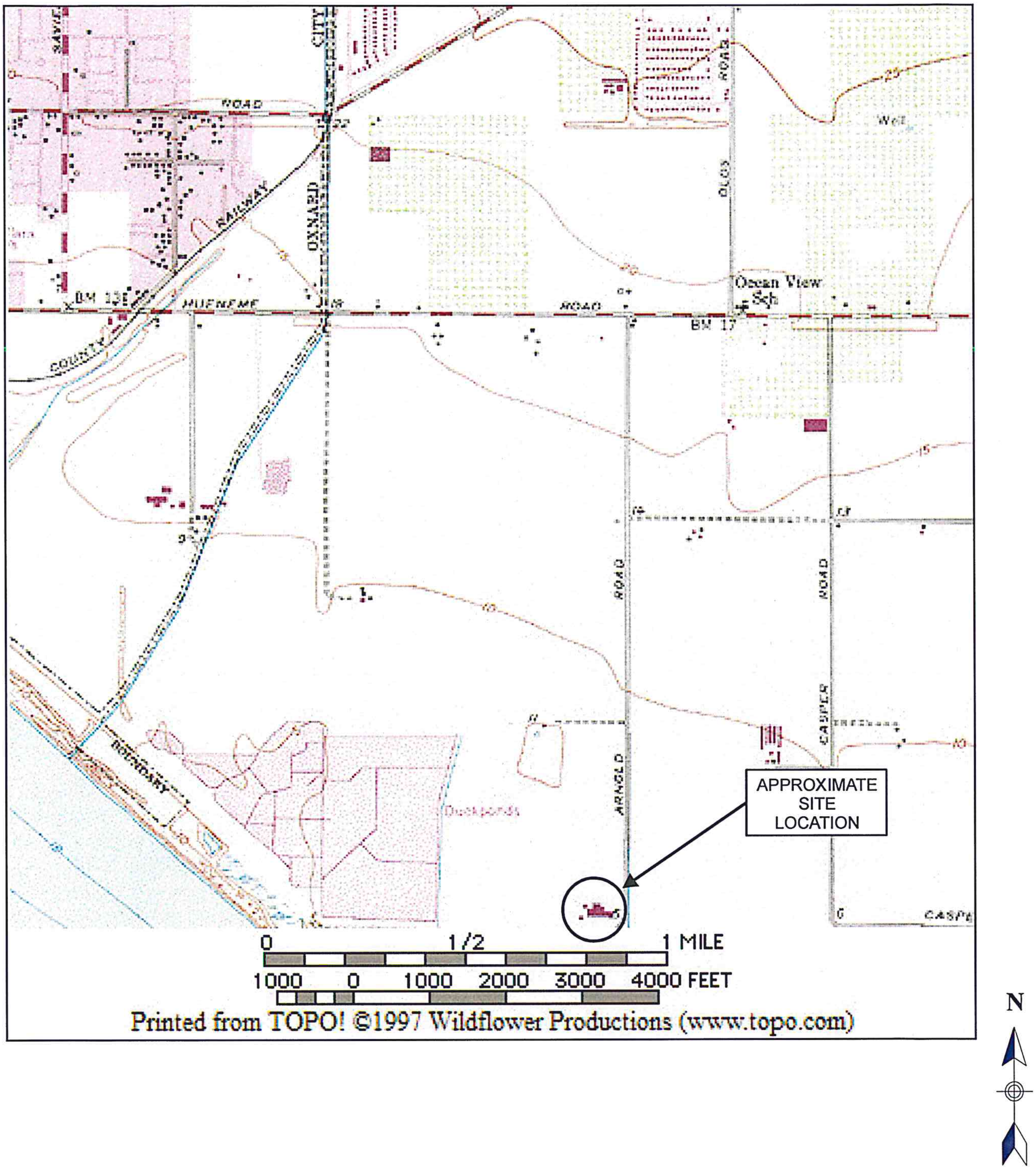
Richard M. Beard
Geotechnical Engineer

2/19/16

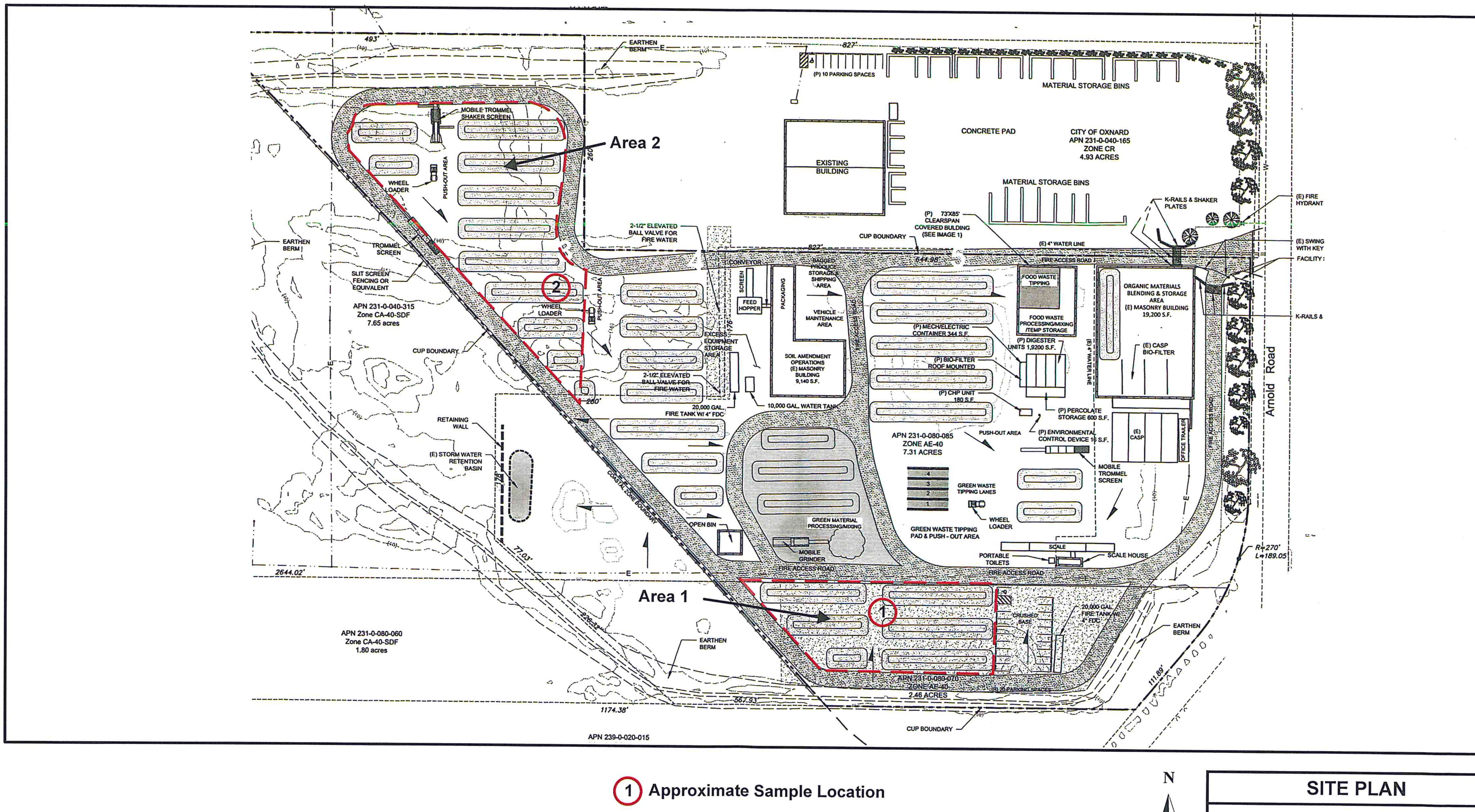
REGISTERED PROFESSIONAL ENGINEER
RICHARD MICHAEL BEARD
GE 128
Exp. 12-31-17
GEOTECHNICAL
STATE OF CALIFORNIA

Attachments: Vicinity Map
Site Plan
Laboratory Test Results

Copies: 3 - M. Harrison (2 via US mail, 1 via email)
1 – Project File



VICINITY MAP	
Agromin Oxnard Facility Oxnard, California	
Earth Systems Southern California	
February 2016	VT-25164-01



SITE PLAN

Agromin Oxnard Facility
Oxnard, California

Earth Systems
Southern California

February, 2016	VT-25164-01

Hydraulic Conductivity
ASTM D 5084
Method C: Falling Head Rising Tailwater

COOPER TESTING LABORATORY

Job No:	780-004	**Boring:**	Composite B-1	**Date:**	01/27/16
Client:	Earth Systems Southern California	**Sample:**	+4% Cement	**By:**	MD/PJ
Project:	Agromin Oxnard Facility - VT-Z5164-04	**Depth, ft.:**		**Remolded:**	Target Density = 95% of 135.0pcf @ 12% (Opt +3%)

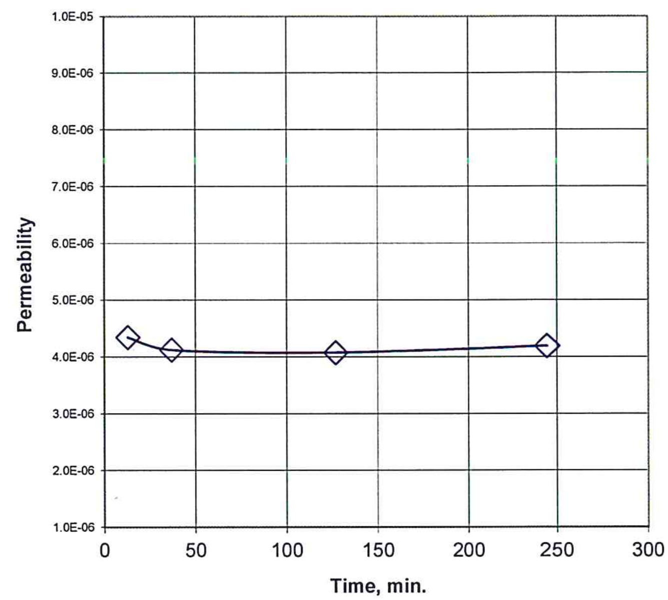
Visual Classification: Grayish Brown Clayey SAND w/ Gravel

Max Sample Pressures, psi:			
Cell:	Bottom	Top	Avg. Sigma3
74	69.5	68.5	5

B: = >0.95 ("B" is an indication of saturation)

Max Hydraulic Gradient: = 11

Date	Minutes	Head, (in)	K,cm/sec
1/21/2016	0.00	36.29	Start of Test
1/21/2016	13.00	35.09	4.3E-06
1/21/2016	37.00	33.14	4.1E-06
1/21/2016	127.00	26.59	4.1E-06
1/21/2016	245.00	19.49	4.2E-06



Average Hydraulic Conductivity: 4.E-06 cm/sec

Sample Data:	Initial (As-Received)		Final (At-Test)
Height, in	3.19		3.21
Diameter, in	2.38		2.37
Area, in2	4.43		4.43
Volume in3	14.13		14.19
Total Volume, cc	231.6		232.5
Volume Solids, cc	164.3		164.3
Volume Voids, cc	67.2		68.1
Void Ratio	0.4		0.4
Total Porosity, %	29.0		29.3
Air-Filled Porosity (θa),%	6.9		3.3
Water-Filled Porosity (θw),%	22.1		26.0
Saturation, %	76.2		88.6
Specific Gravity	2.70	Assumed	2.70
Wet Weight, gm	495.0		504.1
Dry Weight, gm	443.7		443.7
Tare, gm	0.00		0.00
Moisture, %	11.6		13.6
Wet Bulk Density, pcf	133.4		135.3
Dry Bulk Density, pcf	119.6		119.1
Wet Bulk Dens.pb, (g/cm^3)	2.14		2.17
Dry Bulk Dens.pb, (g/cm^3)	1.92		1.91

Remarks: Unable to achieve target density. Stiff samples such as cement treated soils do not respond to the B parameter like soils do. It is common to get a B reading of 0.95 or better only to have the after test degree of saturation low.

Hydraulic Conductivity
ASTM D 5084
Method C: Falling Head Rising Tailwater

COOPER TESTING LABORATORY

Job No:	780-004	**Boring:**	Composite B-1	**Date:**	01/27/16
Client:	Earth Systems Southern California	**Sample:**	+8% Cement	**By:**	MD/PJ
Project:	Agromin Oxnard Facility - VT-Z5164-04	**Depth, ft.:**		**Remolded:**	Target Density = 95% of 135.0pcf @ 12% (Opt +3%)

Visual Classification: Grayish Brown Clayey SAND w/ Gravel

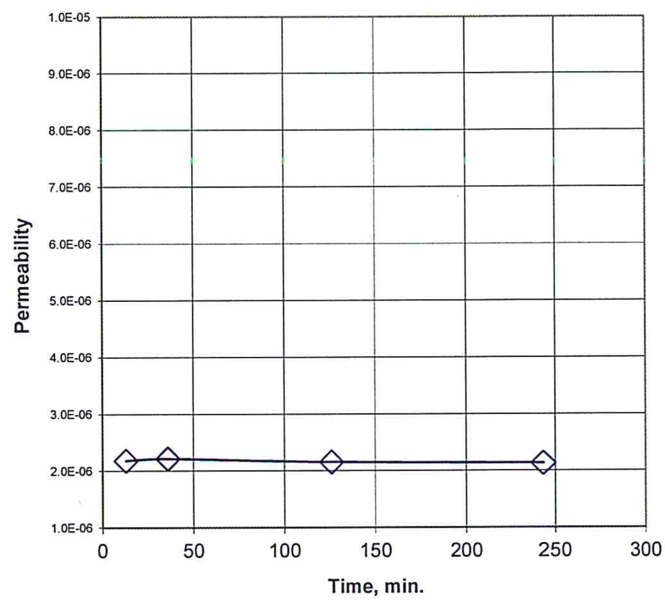
Max Sample Pressures, psi:

Cell:	Bottom	Top	Avg. Sigma3
74	69.5	68.5	5

B: = >0.95 ("B" is an indication of saturation)

Max Hydraulic Gradient: = 12

Date	Minutes	Head, (in)	K,cm/sec
1/21/2016	0.00	38.39	Start of Test
1/21/2016	13.00	37.74	2.2E-06
1/21/2016	36.00	36.59	2.2E-06
1/21/2016	126.00	32.54	2.2E-06
1/21/2016	244.00	27.89	2.1E-06



Average Hydraulic Conductivity: 2.E-06 cm/sec

Sample Data:	Initial (As-Received)		Final (At-Test)
Height, in	3.17		3.17
Diameter, in	2.38		2.37
Area, in2	4.43		4.43
Volume in3	14.04		14.03
Total Volume, cc	230.1		229.9
Volume Solids, cc	166.7		166.7
Volume Voids, cc	63.4		63.1
Void Ratio	0.4		0.4
Total Porosity, %	27.6		27.5
Air-Filled Porosity (θa),%	6.5		2.3
Water-Filled Porosity (θw),%	21.1		25.2
Saturation, %	76.4		91.8
Specific Gravity	2.70	Assumed	2.70
Wet Weight, gm	498.6		508.1
Dry Weight, gm	450.1		450.1
Tare, gm	0.00		0.00
Moisture, %	10.8		12.9
Wet Bulk Density, pcf	135.2		137.9
Dry Bulk Density, pcf	122.1		122.2
Wet Bulk Dens.ρb, (g/cm^3)	2.17		2.21
Dry Bulk Dens.ρb, (g/cm^3)	1.96		1.96

Remarks: Unable to achieve target density. Stiff samples such as cement treated soils do not respond to the B parameter like soils do. It is common to get a B reading of 0.95 or better only to have the after test degree of saturation low.

Hydraulic Conductivity
ASTM D 5084
Method C: Falling Head Rising Tailwater

Job No:	780-004	**Boring:**	Composite B-1	**Date:**	01/27/16
Client:	Earth Systems Southern California	**Sample:**	+12% Cement	**By:**	MD/PJ
Project:	Agromin Oxnard Facility - VT-Z5164-04	**Depth, ft.:**		**Remolded:**	Target Density = 95% of 135.0pcf @ 12% (Opt +3%)

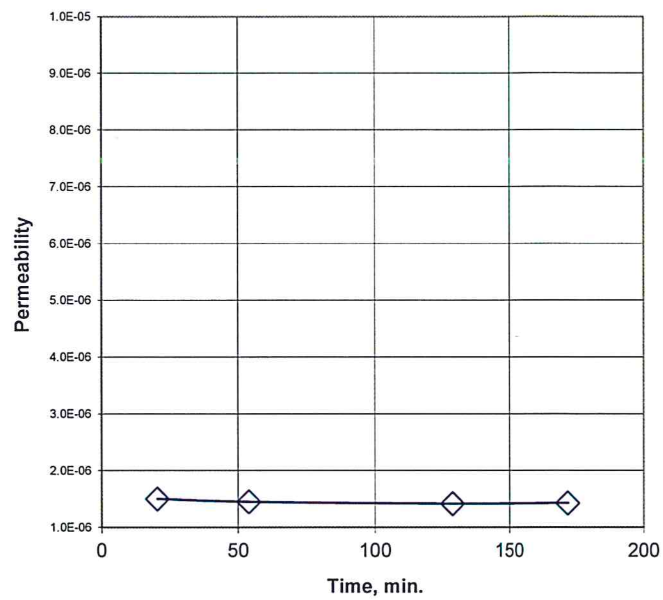
Visual Classification: Grayish Brown Clayey SAND w/ Gravel

B: = >0.95 ("B" is an indication of saturation)

Max Hydraulic Gradient: = 13

Max Sample Pressures, psi:			
Cell:	**Bottom**	**Top**	**Avg. Sigma3**
74	69.5	68.5	5

Date	Minutes	Head, (in)	K,cm/sec
1/22/2016	0.00	42.69	Start of Test
1/22/2016	20.50	41.89	1.5E-06
1/22/2016	54.00	40.69	1.5E-06
1/22/2016	128.50	38.19	1.4E-06
1/22/2016	172.00	36.89	1.4E-06



Average Hydraulic Conductivity: 1.E-06 cm/sec

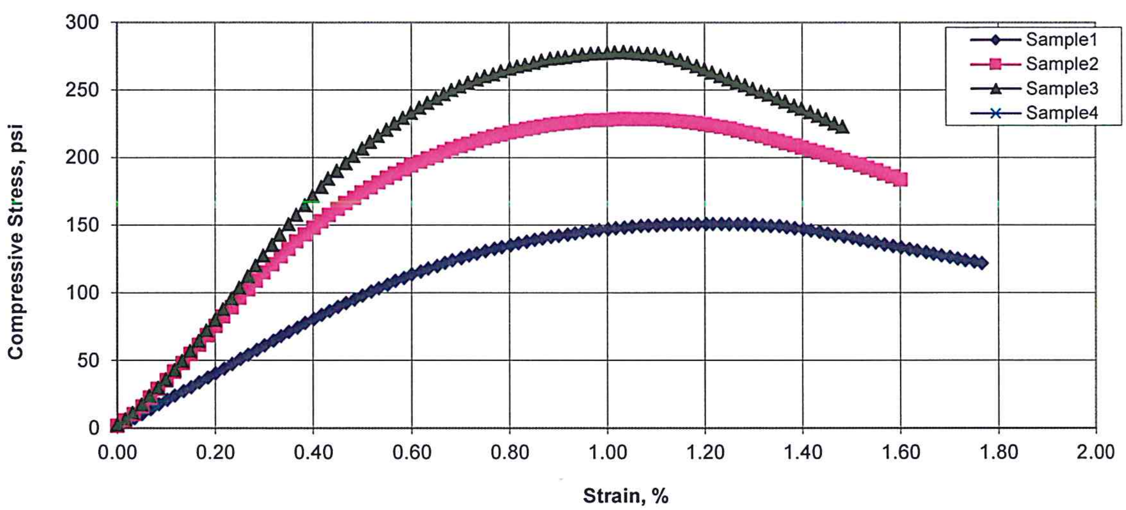
Sample Data:	Initial (As-Received)		Final (At-Test)
Height, in	3.19		3.19
Diameter, in	2.38		2.37
Area, in2	4.43		4.42
Volume in3	14.11		14.13
Total Volume, cc	231.2		231.5
Volume Solids, cc	166.7		166.7
Volume Voids, cc	64.6		64.8
Void Ratio	0.4		0.4
Total Porosity, %	27.9		28.0
Air-Filled Porosity (θa),%	7.9		2.8
Water-Filled Porosity (θw),%	20.0		25.2
Saturation, %	71.8		90.1
Specific Gravity	2.70	Assumed	2.70
Wet Weight, gm	496.3		508.4
Dry Weight, gm	450.0		450.0
Tare, gm	0.00		0.00
Moisture, %	10.3		13.0
Wet Bulk Density, pcf	133.9		137.0
Dry Bulk Density, pcf	121.4		121.3
Wet Bulk Dens.pb, (g/cm^3)	2.15		2.20
Dry Bulk Dens.pb, (g/cm^3)	1.95		1.94

Remarks: Unable to achieve target density. Stiff samples such as cement treated soils do not respond to the B parameter like soils do. It is common to get a B reading of 0.95 or better only to have the after test degree of saturation low.

Unconfined Compressive Strength of Molded Soil-Cement Cylinders (ASTM D1633 method B)

COOPER TESTING LABORATORY

CTL No.:	780-004	**Project Number:**	VT-Z5164-01
Client:	Earth Systems Southern California	**Date:** 1/26/2016	**By:** MD/RU
Project Name:	Agromin Oxnard Facility		

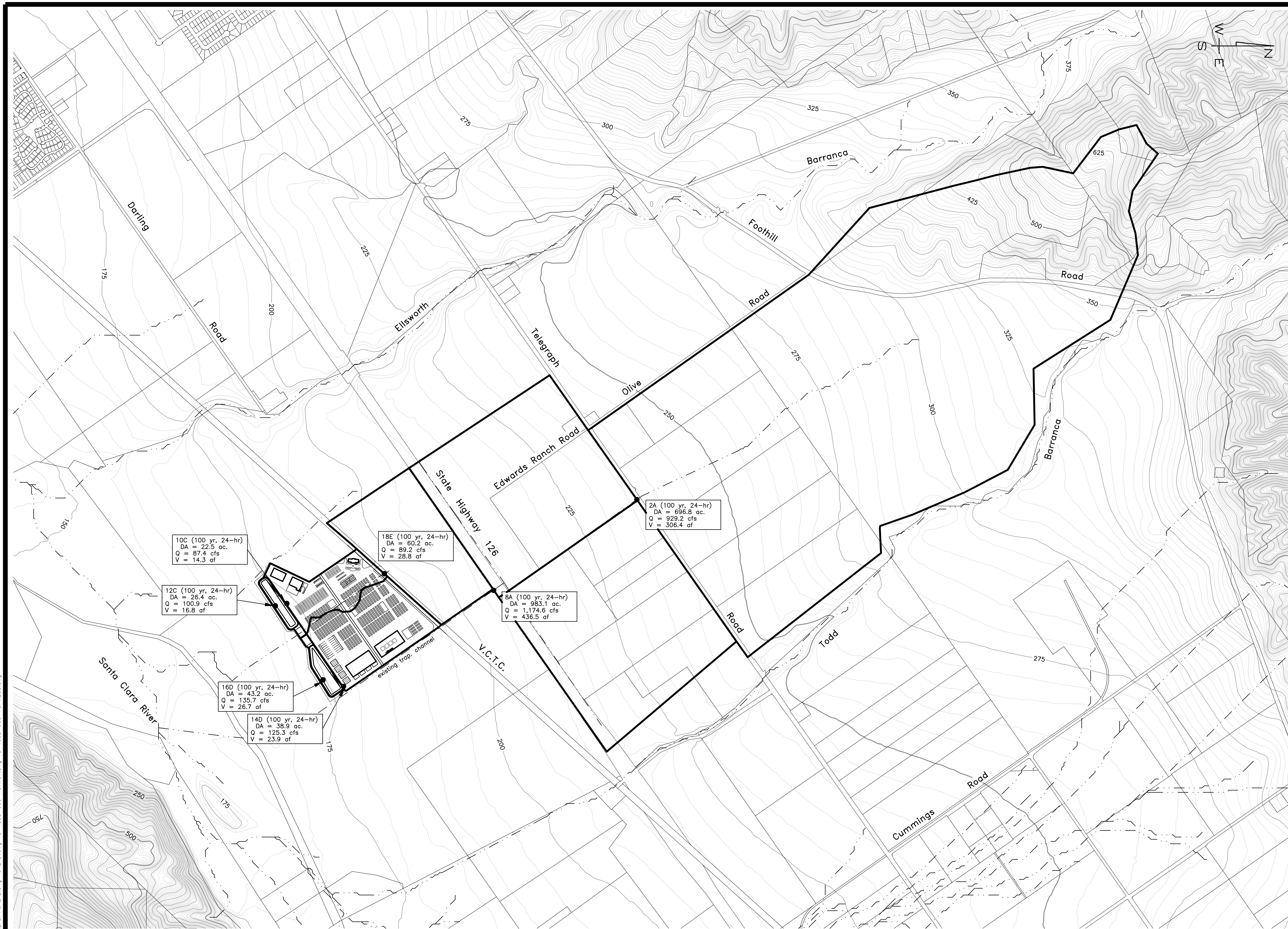


Sample No.:	1	2	3	4
Boring:	Composite B-2	Composite B-2	Composite B-2	
Sample:				
Depth, ft.:				
Visual Description:	Dark Grayish Brown Sandy CLAY	Dark Grayish Brown Sandy CLAY	Dark Grayish Brown Sandy CLAY	
Source of Cement Used:	Client	Client	Client	
Type of Cement Used:	Unknown	Unknown	Unknown	
Designed Moisture Content, %:	16.5	16.5	16.5	
Designed Dry Density, pcf:	109.7	109.7	109.7	
Designed Cement Content, %:	4.0	8.0	12.0	
Diameter, in:	2.41	2.42	2.42	
Height, in:	5.07	5.08	5.06	
Cross Sectional Area, in^2:	4.56	4.60	4.60	
Height to Diameter Ratio:	2.1	2.1	2.1	
As Remolded Moisture Content, %:	16.5	16.5	16.5	
As Remolded Dry Density, pcf:	107.0	105.9	106.3	
At Test Moisture Content, %:	16.0	15.1	14.6	
At Test Dry Density, pcf:	107.4	107.2	108.0	
At Test Degree Of Saturation, %:	76.0%	71.3%	70.4%	
Age of Specimen, Days:	7	7	7	
Curing Temperature, °F:	71.0	71.0	71.0	
Curing Humidity, %:	98	98	98	
Max Load, lb:	690	1050	1280	
Compressive Strength, psi:	150	230	280	
Remarks:				

The samples were not soaked prior to testing.

Attachment 2

Drainage Area Map



Prepared By:

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www.ejharrison.com

Prepared under the direction of:
Mike Harrison RCE 57,320

Harrison Industries

Biogenic Energy Park

Entitlement Planning Drainage Area Map

County of Ventura

AGROMIN
Soil for a Greener World

scale: 1" = 600'
date: January 2017
sheet 24 of 24

13-1008.230

1st entitlement submittal – not for construction

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Initial Study Biological Assessment

Original ISBA report date: January 15, 2016

Revision report dates:

Case number:

Permit type: Conditional Use Permit

Applicant: Agromin

Case Planner:

Total parcel(s) size: 452.741 acres

Assessor Parcel Number(s): 090-0-180-085

Development proposal description: The applicant (Agromin) is applying for a Conditional Use Permit (CUP) for a new Commercial Organics Processing Operation (Project). The applicant is also requesting an amendment to the Non Coastal Zoning Ordinance which is being required by the County to allow development of the Project. The proposed Project will expand the current 15-acre, 60,000 ton per year agricultural compost operation into a 70-acre 295,000 ton per year commercial compost facility with an energy production component.

Prepared for Ventura County Planning Division by:

As a Qualified Biologist, approved by the Ventura County Planning Division, I hereby certify that this Initial Study Biological Assessment was prepared according to the Planning Division's requirements and that the statements furnished in the report and associated maps are true and correct to the best of my knowledge.

Qualified Biologist (signature):		Date: April 19, 2017
Name (printed): Stephen Jones	Title: Senior Botanist	Company: BioResource Consultants, Inc.
Phone: 805-646-9006 x17	email: steve@biorc.com	
Role: Conducted botanical surveys and delineation of wetland and waters		
Other Biologist (signature):		Date: April 19, 2017
Name (printed): Matt Schaap	Title: Biologist	Company: BioResource Consultants, Inc.
Phone: 805-646-9006	email:matt@biorc.com	
Role: Conducted Biological surveys – wildlife surveys		

County of Ventura
Notice of Preparation of an EIR
PL17-0154
Attachment 9 - ISBA

Initial Study Checklist

This Biological Assessment DID provide adequate information to make recommended CEQA findings regarding potentially significant impacts.

		Project Impact Degree of Effect				Cumulative Impact Degree of Effect			
		N	LS	PS-M*	PS	N	LS	PS-M*	PS
A	Species			X				X	
B	Ecological Communities		X				X		
C	Habitat Connectivity	x				x			

N: No impact
LS: Less than significant impact
PS-M: Potentially significant unless mitigation incorporated.
PS: Potentially significant

Contents

Maps

Summary

The applicant (Agromin) is applying for a Conditional Use Permit (CUP) for a new Commercial Organics Processing Operation (Project). The applicant is also requesting an amendment to the Non Coastal Zoning Ordinance, which is being required by Ventura County, to allow development of the Project. The proposed Project will expand the current 15-acre, 60,000 ton per year agricultural compost operation into a 70-acre 295,000 ton per year commercial compost facility with an energy production component. The Project will be limited to 70 acres of the total 452.74 acre parcel (APN 090-0-180-085). The Project is located in unincorporated Ventura County at the south end of Edward's Ranch Road, approximately ¼ mile south of Highway 126 and ½ mile north of the Santa Clara River. The purpose of this Initial Study Biological Assessment is to review the proposed Project in sufficient detail to determine if significant impacts to biological resources could occur from Project implementation.

BioResource Consultants, Inc. (BRC) performed site visits to map the vegetation; inventory the flora; assess the habitat suitability for potential special-status species and wildlife movement; map any special-status biological resources at the site; conduct a special-status plant species survey; conduct a wetland and waters delineation and determination; and record observations of plant and wildlife species.

An unnamed drainage traverses through the Survey Area with approximately 0.90 acres of California Department of Fish and Wildlife (CDFW) jurisdiction on site. The United States Army Corps of Engineers (USACE) has made a jurisdictional determination on the unnamed drainage. The USACE determined the unnamed drainage, a small ephemeral drainage, to be a drainage ditch excavated within uplands draining agricultural fields, and therefore not waters of the United States. Therefore, the unnamed drainage is not jurisdictional and is not regulated under Section 404 of the Clean Water Act. Project implementation will not impact USACE jurisdictional waters as the unnamed drainage is not considered Waters of the U.S. In addition, no wetland areas meeting the three mandatory criteria (hydrology, hydric soils and hyrodphytic vegetation) will be impacted by the Project. The CDFW considers the unnamed drainage State Waters as it has bed and bank and flows into the Santa Clara River. Therefore, the unnamed drainage is considered State Waters and regulated under Section 1602 of the CDFW Code. Approximately 0.90 acres of State Waters within CDFW jurisdiction will be permanently impacted. Impacts to State Waters are considered potentially less than significant.

No special-status species were observed within the Survey Area. Suitable habitat is present within the Survey Area for monarch butterfly (*Danaus plexippus*), silvery legless lizard (*Anniella pulchra pulchra*) and coast horned lizard (*Phrynosoma blainvillii*). Project implementation will not impact potential monarch roosting habitat as the eucalyptus trees will not be removed or trimmed. Project implementation and construction could impact suitable habitat, individuals or populations of silvery legless lizards and coast horned lizards. Impacts to silvery legless lizards, coast horned lizards and protected nesting birds would be considered potentially significant but mitigable.

Section 1: Construction Footprint Description

Construction Footprint Definition (per the Ventura County Planning Division): The construction footprint includes the proposed maximum limits of temporary or permanent direct land or vegetation disturbance for a project including such things as the building pad(s), roads/road improvements, grading, septic systems, wells, drainage improvements, fire hazard brush clearance area(s), tennis courts, pools/spas, landscaping, storage/stockpile areas, construction staging areas, fire department turnarounds, utility trenching and other grading areas. The construction footprint on some types of projects, such as mining, oil and gas exploration or agricultural operations, may be quite different than the above.

Development Proposal Description:

The applicant is applying for a Conditional Use Permit (CUP) for a new Commercial Organics Processing Operation (Project). The applicant is also requesting an amendment to the Non Coastal Zoning Ordinance which is being required by the County to allow development of the Project. The proposed Project will expand the current 15-acre, 60,000 ton per year agricultural compost operation into a 70-acre 295,000 ton per year commercial compost facility with an energy production component. The primary components of the Project include:

- Two 80,925 square foot buildings used for food material and green material receiving and processing.
- A 40,000 ton per year anaerobic digestion (AD) system that would produce methane-rich biogas from organic waste material (anaerobic composting). The biomethane generated will be used to produce compressed natural gas (CNG) or liquefied natural gas (LNG) for use as transportation fuel.
- The addition of a state-of-the-art 75,000 ton per year covered aerated static pile (CASP) system (aerobic composting).
- Continued but expanded open windrow composting of organics consisting only of green material (aerobic composting).
- A 23,107 square foot product blending and packaging plant where additives such as gypsum, peat moss, and perlite are added to the composted material produced at the Project site to produce soil amendment products to customer specifications. Finished products are stockpiled and transported offsite to the end user by company-owned vehicles. The Project also includes onsite sales of product to the public and wholesale customers.
- A 25,000 square foot maintenance building which will be used for maintenance of on-site mobile and processing equipment.
- 5.6 acres of the 70 acres will be utilized for water runoff retention basins (approximately 43.5 acre-ft. storage capacity) located on the southern (down-gradient) edge of the Project site.

The proposed Project is expected to be constructed in phases. The phased development plan will utilize modular technology components that can be deployed in phases and integrated into the Project, allowing phased capital outlay and development flexibility based upon market demand and regulatory changes. Currently, the anticipated phasing would be as follows:

- **Phase 1 – Complete in mid-2018 to mid-2019**
    - Access upgrades, drainage basins, impermeable windrow pads;
    - Build two (2) receiving buildings, the wet organics building for food material and dry organics building for green material;
    - Build packaging/production building, maintenance building, scale house;
    - 100% build out of the open windrow composting operation;
    - One (1), 8-bay covered aerated static pile (CASP) system with 40,000 tons per year capacity; and
    - One (1) Anaerobic Digestion (AD) system with 10,000 tons per year capacity.

- **Phase 2 – Construct as demand requires**
    - Build facilities administration building;
    - Construct one (1) additional 8-bay CASP system to eventually expand the CASP operations to a total capacity of 75,000 tons per year; and
    - Add up to three (3) additional 10,000 tons per year AD systems, to expand the AD operations to a total capacity of 40,000 tons per year.

The total expected Project life is 50 years. The Project includes transferring Agromin's composting operations from their existing Shoreline facility in Oxnard, California to the Project site. The Shoreline facility's composting operation is scheduled to be shut down by March 2019.

Construction Footprint Size

70 acres

Survey Area Size

110 acres

Coastal Zone/Overlay Zones

The Project or parcel is not within any overlay zones.

Zoning

The Survey Area and parcel are within Agricultural (General Plan) and Agricultural Exclusive (AE-40) (Non-Coastal Plan).

Elevation

The Survey Area's elevation ranges from approximately 179 to 190 feet above mean sea level (amsl).

Other

Not applicable.

Section 2: Survey Information

2.1 Survey Purpose

Discretionary actions undertaken by public agencies are required to demonstrate compliance with the California Environmental Quality Act (CEQA). The purpose of this Initial Study Biological Assessment (ISBA) is to gather enough information about the biological resources associated with the proposed Project and their potential to be impacted by the Project, to make a CEQA Initial Study significance finding for biological resources. In general, ISBA's are intended to:

- Provide an inventory of the biological resources on a project site and the values of those resources.
- Determine if a proposed project has the potential to impact any significant biological resources.
- Recommend project redesign to avoid, minimize or reduce impacts to significant biological resources.
- Recommend additional studies necessary to adequately assess potential impacts and/or to develop adequate mitigation measures.
- Develop mitigation measures, when necessary, in cases where adequate information is available.

2.2 Survey Area Description

Survey Area Definition (per the Ventura County Planning Division): The physical area a biologist evaluates as part of a biological assessment.

This includes all areas that could potentially be subject to direct or indirect impacts from the project, including, but not limited to: the construction footprint; areas that would be subject to noise, light, dust or runoff generated by the project; any required buffer areas (e.g., buffers surrounding wetland habitat).

The construction footprint plus a 300-foot buffer—beyond the required fire hazard brush clearance boundary—(or 20-foot from the cut/fill boundary or road fire hazard brush clearance boundary – whichever is greater) is generally the minimum size of a survey area. Required off-site improvements—such as roads or fire hazard brush clearance—are *included in the survey area. Survey areas can extend off the project's parcel(s) because indirect impacts may cross property lines. The extent of the survey area shall be determined by the biologist in consultation with the lead agency.*

Survey Area 1 (SA1)

Location

The Survey Area is located in unincorporated Ventura County, at the south end of Edward's Ranch Road, approximately ¼ mile south of Highway 126 and ½ mile north of the Santa Clara River. The Survey Area includes the proposed 70 acre Project site and the proposed access road (Edward's ranch Road) for an approximate total of 110 acres. The Survey Area is within APN 035-0-010-190, at UTM NAD83 11S 304382.68 - 33797715.36 on the *Saticoy* and *Santa Paula* USGS 7.5-minute quadrangles. The Survey Area was not flagged.

Survey Area Environmental Setting

The Survey Area ranges in elevation from approximately 179 feet to 190 amsl. The lowest elevation of the area is along the southern boundary of the Survey Area just south of East Gaythorne Road and the highest elevation is at the intersection of Edwards Ranch Road and Telegraph Road. In general, the topography is characterized as flat with a gentle slope south toward the Santa Clara River. The main access road—Edwards Ranch Road—traverses the Survey Area northwest to southeast, beginning at Telegraph Road and ending at the Santa Paula Railroad corridor. Generally, the northern boundary of the Survey Area is the Santa Paula Railroad. The southern boundary of the Survey Area is Roger Road and an unnamed dirt road extending to the west from Roger Road. The western boundary is approximately 1,000 feet west of the existing 15-acre, 60,000 ton per year agricultural compost operation. The eastern boundary is the existing Ventura County Watershed Protection District (VCWPD) improved channel which traverses northwest-to-southeast along the eastern boundary from Highway 126 toward the Santa Clara River. The Survey Area consists of the existing 15-acre agricultural compost operations and its associated structures with the remaining Survey Area characterized as active agricultural. An unnamed ephemeral drainage occurs in the central portion of the Study Area and drains south from the Santa Paula Railroad to outside the Survey Area to Roger Road and continues to the Santa Clara River. The Survey Area is dominated by non-native agricultural crops and non-native weedy species with occurrences of some native plant species within the unnamed ephemeral drainage. A windrow of eucalyptus trees lines the western bank of the existing improved VCWPD channel.

Surrounding Area Environmental Setting

The surrounding area is primarily agricultural. The Santa Clara River and its associated riparian habitats lie to the south of the Survey Area. In addition, Ellsworth Barranca is approximately ½ mile to the west of the Survey Area and Todd Barranca is approximately ½ mile to the east. Both barrancas provide connectivity to other habitats and are corridors for migrating wildlife.

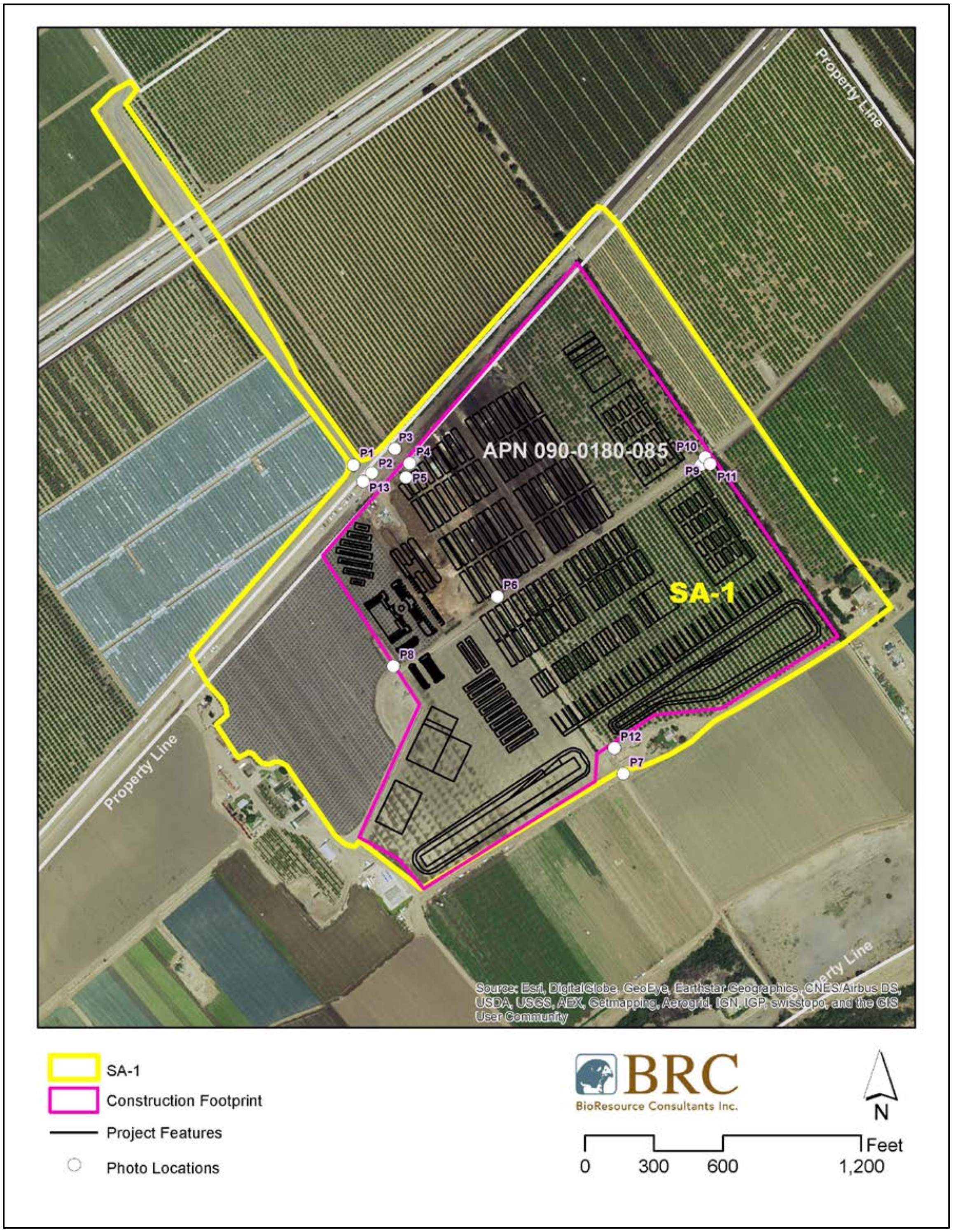
Cover

5%   native vegetation

65% non-native vegetation

25% bare ground/graded roads

Site and Survey Map



2.3 Methodology

References

Prior to the assessment of the Survey Area the following sources were reviewed to determine the potential presence of biological resources including special-status species and sensitive habitats that could be affected by the proposed project.

- Baldwin, B.G. et al. [eds.]. 2012. The Jepson Manual: Vascular Plants of California: Second Edition, University of California Press. Berkeley and Los Angeles, CA.
- California Department of Fish and Wildlife (CDFW). December 2015. California Natural Diversity Database search of RareFind5. The Resource Agency, State of California, Sacramento, California.
- CDFW. January 2016. Special Animals. The Resources Agency, Biogeographic Data Branch. (http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/spanimals.pdf).
- CDFW. August 2014, December 2015. BIOS 5 internet-based biological data map server (http://bios.dfg.ca.gov)
- California Native Plant Society (CNPS). Inventory of Rare and Endangered Plants database. http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi. Accessed August 2014 and December 2015.
- CNPS. 2010. Inventory of Rare and Endangered Plants of California. Eighth edition. Rare Plant Scientific Advisory Committee, David Tibor, Convening Editor, Sacramento, California. Changes to the Inventory as published on CNPS website (http://www.cnps.org/programs/Rare_Plant/inventory/changes/changes_accepted.htm)
- Humble, J., 2014. Personal Communication. CDFW
- *Sawyer, J.O., T. Keeler-Wolf and J.M. Evens 2009. A Manual of California* Vegetation. California Native Plant Society Second Edition, Sacramento.
- Ventura County Planning Division (VCPD). 2014. Ventura County Locally Important Species. Ventura, California.
- Ventura County Planning Division (VCPD. January 2010. Federal and State Listed Species with CNDDB Recorded Occurrences in and Near Ventura County website (http://www.ventura.org/rma/planning/pdf/bio/VC_FE)
- Ventura County Planning Division, GIS Biology Map Packet (August 2014). Mapped resource information, including: wildlife corridors/connectivity areas.
- U.S. Army Corps of Engineers (USACE) Wetland Delineation manual 1987.
- USAC, 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0).ED, JS Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-06016. Vicksburg MS. U.S. Army Engineer Research and Development Center.
- USACE, 2008 Field Guide to the Identification of Ordinary High Water Mark (OHWM) in the Arid West Region of the U.S.: A Delineation Manual.

- USACE, 2007 Jurisdictional Determination Instructional Guidebook. Prepared by U.S. Army Corps of Engineers and the Environmental Protection Agency.
- USACE, 2014. Determination of Need for a Department of the Army Permit (File No. SPL-2014-00503-AJS. August 25, 2014.
- United States Fish and Wildlife Service. National Wetland Inventory WWW. FWS.GOV/Wetland/Data/Mapper.HTML. Accessed July and August 2014.

BRC performed a site visit to map the vegetation, assess the habitat suitability for potential special-status species and wildlife movement, map any special-status biological resources on-site, conduct a "waters or wetlands delineation and determination", and record observations of plant and wildlife species.

Survey Date & Details							
Survey Key	Survey Date	Survey Area Map Key(s)	Survey Type	Time Period	Methods/Constraints	GPS	Surveyors
SD1	7/15/2014	SA1	ISBA	11:00am-2:00pm	Walking the entire Survey Area. The entire site was accessible.	Trimble GEO Explorer XH	- Steve Jones - Brian Holly - Seth Sutherland
SD2	7/23/2014	SA1	OS-HS	9:00am–12:00pm	Walking the entire Survey Area. The entire site was accessible.	Trimble GEO Explorer XH	Matt Schaap
SD3	7/30/2014	SA1	BS - WD	9:00am–2:00pm	Walked Survey Area to document botanical resources. Conducted Wetland Delineation	Trimble GEO Explorer XH	Steve Jones
SD4	12/3/15	SA1	ISBA	8:30am-10:00am	Walking the entire Survey Area. The entire site was accessible.	Trimble GEO Explorer XH	Matt Schaap
SD5	3/2/17	SA!	ISBA	08:00am-9:45am	Walking the entire Survey Area. The entire site was accessible.	Trimble GEO Explorer XH	Matt Schaap
ISBA.............. Initial Study Biological Assessment WD……………Wetland Delineation BS................. Botanical Survey OS .... Ornithological Survey HS .... Herpetological Survey							

Section 3: The Biological Inventory

See Appendix One for an overview of the types of biological resources that are protected in Ventura County.

3.1 Ecological Communities *(Initial Study Checklist A, B, C & E)*

Plant Communities

No locally important or rare plant communities were found within the Survey Area(s).

Major Plant Communities Summary

Agricultural Compost is dominated bare ground/large compost piles and lacks the presence of native plant assemblages. Weedy species occur sporadically through the habitat and include storksbill (*Erodium cicutarium*), pineapple weed (*Chamomilla suaveolens*) and ragweed (*Ambrosia psilostachya*).

Agricultural is dominated by lemon and orange crop trees and strawberries. The habitat lacks a presence of native plant assemblages. Weedy species occur sporadically and include storksbill, ragweed, and horehound (*Marrubium vulgare*).

Cleared Areas are areas cleared for roads, pads and other areas. The cleared areas lack non-native plant assemblages and are dominated by bareground with occurrences of weedy species including storksbill, pineapple weed, horehound and ragweed.

Agricultural Ditch is an ephemeral drainage ditch that drains Survey Area 1. The ditch is dominated by weedy species including ragweed and horehound, with occurrences of mulefat (*Baccharis salicifolia*) and white sweet clover (*Melilotus albus*).

VCWPD Channel is an improved channel lacking plant species. A eucalyptus windrow occurs on the west side of the channel.

Plant Communities

Map Key	SVC Alliance	SVC Association	Misc.	Status	Condition	Acres Total	Acres Impacted	Comments
PC1			Agricultural Compost		Disturbed	12.99	12.99	Agriculatural compost and waste
PC2			Agricultural		Intact	76.33	53.40	Lemon, Orange, Strawberries
PC3			Cleared Land		Disturbed	16.89	2.30	Existing dirt roads.
PC4			VCWPD Channel		Intact	2.88	0.53	Improved - Euclyptus
PC5			Agricultural Ditch		Disturbed	0.90	0.57	Ephemeral drainage
					Totals	109.99	69.79	

Plant Communities
LIC .... Locally Important Plant Community ESHA .... Environmentally Sensitive Habitat Areas (Coastal Zone) CDFW Rare: G1 or S1 ..... Critically Imperiled Globally or Sub-nationally (state) G2 or S2 ..... Imperiled Globally or Sub-nationally (state) G3 or S3 ..... Vulnerable to extirpation or extinction Globally or Sub-nationally (state) Cal OWA .... Protected by the California Oak Woodlands Act

Physical Features		
Map Key	Physical Feature	Comments
N/A	N/A	N/A

Environmentally Sensitive Habitat Areas (ESHA)

> *ESHA is "any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments" (Public Resources Code § 30107.5). ESHA includes coastal dunes, beaches, tidepools, wetlands, creek corridors, and certain upland habitats in the Santa Monica Mountains (Ventura County Coastal Area Plan).*

Habitats that meet the definition of ESHA were not found within the Survey Area.

Waters and Wetlands

> *See Appendix One for an overview of the local, state and federal regulations protecting waters, wetlands and riparian habitats. Wetlands are complex systems; delineating their specific boundaries, functions and values generally takes a level of effort beyond the scope of an Initial Study Biological Assessment (ISBA). The goal of the ISBA with regard to waters and wetlands is simply to identify whether they may exist or not and to determine the potential for impacts to them from the proposed project. This much information can be adequate for designing projects to avoid impacts to waters and wetlands. Additional studies are generally warranted to delineate specific wetland boundaries and to develop recommendations for impact minimization or impact mitigation measures.*

Waters and/or wetlands were found within the Survey Area.

Waters and Wetland Summary

No areas meeting the three mandatory criteria (hydrology, hydric soils and hyrodphytic vegetation) for wetlands occur within the Survey Area or the Construction Footprint.

Along the eastern boundary of Survey Area 1 is an improved/concrete lined Ventura County Watershed Protection District (VCWPD) channel. This channel is within the Survey Area but is outside the Construction Footprint and will not be impacted by Project construction or implementation. The VCWPD channel is considered State Waters and Waters of the U.S. and is therefore regulated under Section 1602 of the California Department of Fish and Wildlife Code administered by the California Department of Fish and Wildlife (CDFW) and under Section 404 of the Clean Water Act administered by the Army Corps of Engineers (USACE).

An unnamed ephemeral drainage/agricultural ditch is present within the Survey Area and Construction Footprint. The unnamed drainage lacks a dominance of native plant assemblages and lacks significant wildlife habitat. The drainage traverses the Survey Area from east to west, parallel to the railroad tracks, then flows through a culvert flowing from north to south. The unnamed drainage drains upland agricultural fields with no upstream hydrological connection but outlets to the Santa Clara River to the south. BRC consulted with the USACE and requested a jurisdictional determination on the unnamed drainage. BRC and the USACE conducted a site visit on August 25, 2014. The USACE determined the unnamed drainage, a small ephemeral drainage, to be a drainage ditch excavated within uplands draining agricultural fields, and therefore not waters of the United States. Therefore, the unnamed drainage is not jurisdictional and is not regulated under Section 404 of the Clean Water Act. BRC consulted with the CDFW in regard to the unnamed drainage (Humble 2014). CDFW considers the unnamed drainage to be State Waters as it has a clearly delineated bed and bank, and flows into the Santa Clara River. Therefore, the unnamed drainage is considered State Waters and regulated under Section 1602 of the CDFW Code.

Waters and Wetlands						
Map Key (1)	Wetland Type	Wetland Name (if any)	Wetland Status (if known)	Wetland Size	Hydrologic Status	Primary Water Source
W1	Stream/ drainage	Unnamed	CDFW	0.90	Dry	Precipitation, natural runoff
W2	Stream/ drainage	VCWPD Channel	ACOE, CDFW, County WPD	2.88	Flowing	Precipitation, natural runoff
USACE ........U.S. Army Corps of Engineers regulated CDFW ....California Department of Fish & Wildlife regulated County ....County General Plan protected wetland WPD ....Co. Watershed Protection District (red-line stream)						

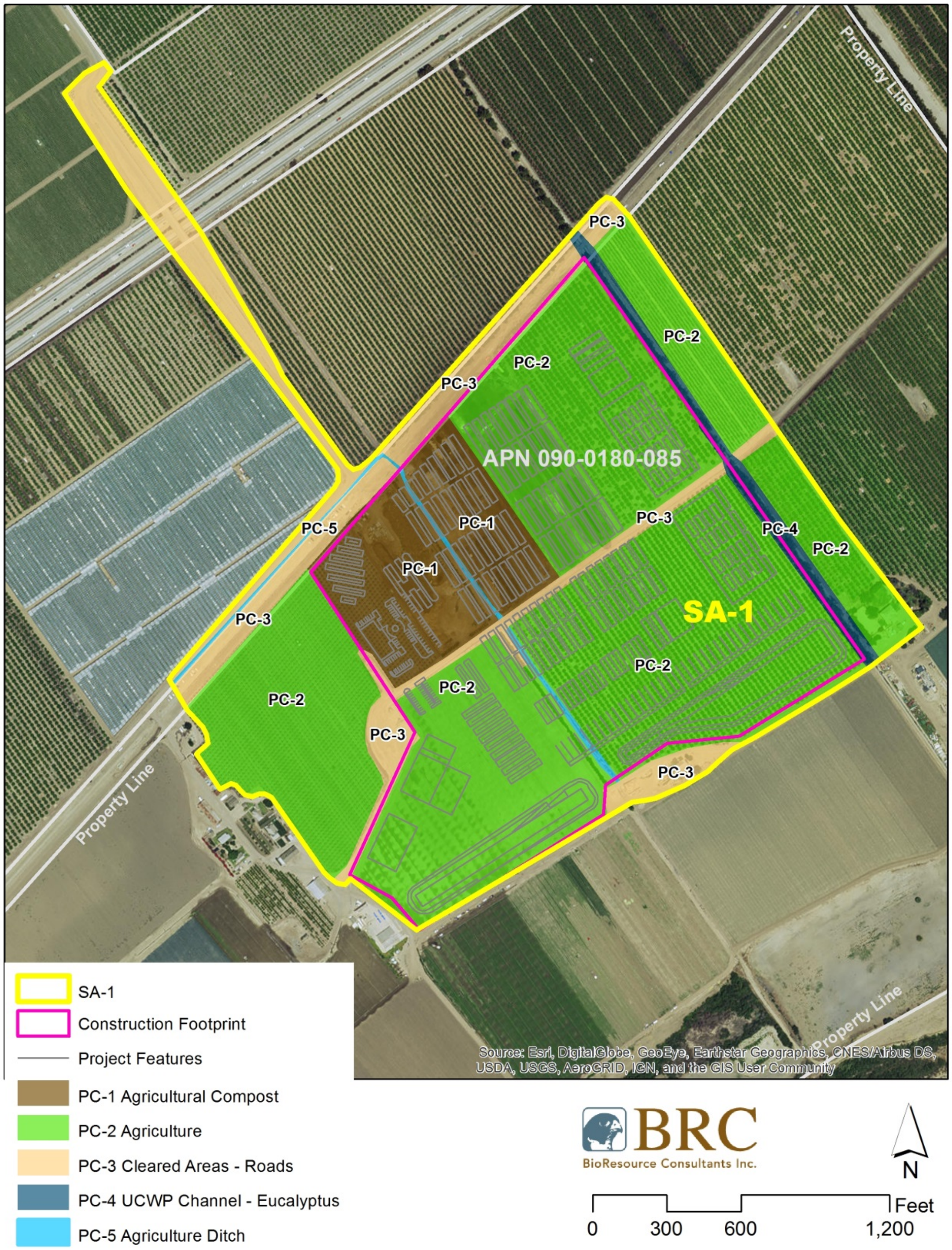
Waters and Wetlands (continued)			
Map Key	County Wetland Significance	Wetland Distance from Project	Comments
W1	Not Significant	Within Construction Footprint	.
W2	Significant	25 feet	

Waters/Wetland Buffers		
Map Key	Recommended Buffer	Comments
W2	100 feet	

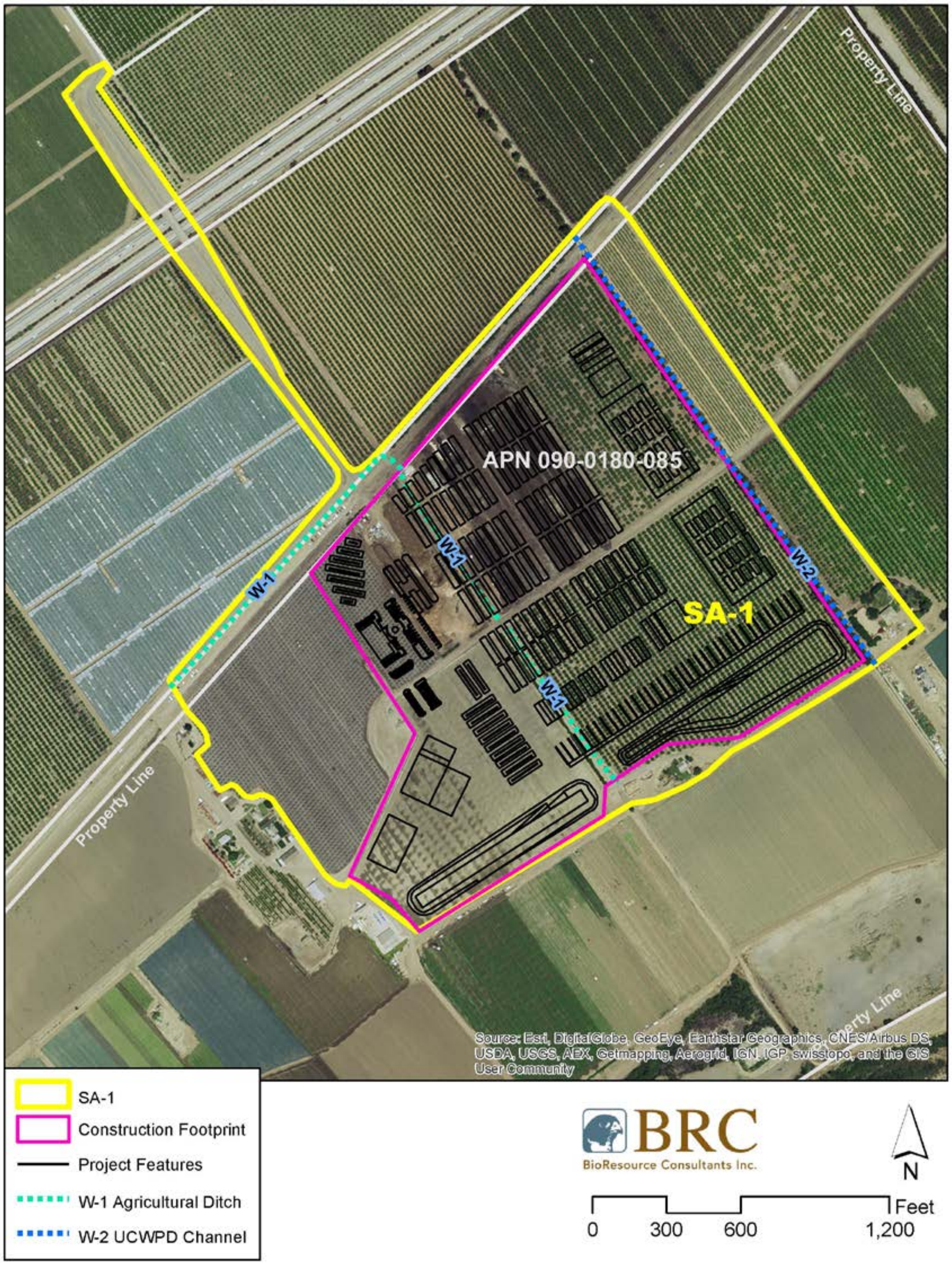
Other Areas/Observations

Other Observations		
Map Key (1)	Describe Features (Violations, other observations, etc.)	Comments
NA	NA	NA

Plant Communities Map



Waters and Wetlands Map



3.2 Species

Observed Species

A total of 27 plant species were observed within the Survey Area, including five native species (19%) and 22 non-native species (81%). The dominant plant community within the Survey Area is characterized as Agricultural/Ruderal, dominated by row crops with occurrences of non-native weedy species.

A total of 28 wildlife species were observed or detected within the Survey Area, including one reptile, 23 birds, and four mammals.

Refer to Appendix 2 for a full list of observed plant and wildlife species.

Protected Trees

No protected trees occur within the Survey Area or Project Construction Footprint.

Special-Status Species and Nests

> *See Appendix One for definitions of the types of special-status species that have federal, state or local protection and for more information on the regulations that protect bird nests.*

Special-status species were observed or have a moderate to high potential to occur within the Survey Area.

Suitable nesting habitat for birds protected under the Migratory Bird Treaty Act (MBTA) does exist within the Survey Area.

Special-Status Species Summary

Information on special-status species and habitats was obtained from the California Natural Diversity Database RareFind Version 8.1.0 (CNDDB; CDFW 2015) for the USGS *Saticoy*, *Santa Paula*, *Ventura* and *Oxnard* 7.5-minute topographic quadrangles and CDFW BIOS5 with a target search within a 5-mile radius of the Survey Area. The special-status species documented to occur within the Survey Area are presented below in the Special-Status Species Table. No special-status species were observed within the Survey Area. Suitable habitat is present within the Survey Area for monarch butterfly (*Danaus plexippus*y), coast horned lizard (*Phrynosoma blainvillii*), and silvery legless lizard (*Anniella pulchra pulchra*).

Observed and Potentially Occurring Special Status Species						
Map Key	**Survey /Source**	**Scientific Name**	**Common Name**	**Species Status**	**Potential to Occur**	**Habitat Requirements**
SSP1	CNDDB	*Agelaius tricolor*	tricolored blackbird	SSC	None	Found locally in Oregon, Washington, Nevada and coastal Baja California, the tricolored blackbirds id native to California. Found in cattail marshes.
SSP2	CNDDB	*Anniella pulchra pulchra*	silvery legless lizard	SSC	Low	The silvery legless lizard is found primarily in areas with sandy, loose, organic soils or where there is a well-developed leaf layer. This species is found within coastal dune, valley-foothill, chaparral, and coastal scrub habitats. Legless lizards typically forage for insects and insect larva at the base of shrubs or other vegetation on the surface and in leaf litter or sandy soil.
SSP3	CNDDB BIOS	*Antrozous pallidus*	pallid bat	SSC	None	The pallid bat is a locally common species of low elevations in California. It occurs throughout California except for the high Sierra Nevada from Shasta to Kern counties. The species is most common in pen, dry habits with rocky areas for roosting.
SSP4	CNDDB	*Aphanisma blitoides*	aphanisma	CRPR 1B.2	None	Occurs in coastal bluff scrub, coastal dunes and coastal scrub. Blooms March through June.
SSP5	CNDDB	*Aspidoscelis tigris stejnegeri*	coastal whiptail		None	Found in coastal Southern California, mostly west of the Peninsular Ranges and south of the Transverse Ranges and north into Ventura County. They are found in a variety of ecosystems, primarily hot and dry open areas with sparse foliage, chaparral, woodland and riparian areas.
SSP6	CNDDB	*Astragalus pycnostachyus var. lanosissimus*	Ventura marsh milk-vetch	CRPR 1B.1FE, SE,	None	Occurs in coastal dunes, coastal scrub and marshes and swamps. Blooms from June through October.

Observed and Potentially Occurring Special Status Species						
SSP7	CNDDB	*Athene cunicularia*	burrowing owl	SSC	None	Historic range found throughout most of California. The borrowing owl is primarily a grassland species but it persists and even thrives in some landscapes highly altered by human activity. The over-riding characteristics for suitable habitat are relatively short vegetation with only sparse shrubs and taller vegetation.
SSP8	CNDDB	*Atriplex coulteri*	Coulter's atriplex	1B.2,LIS	None	Occurs in alkaline or clay soils within coastal bluff scrub, coastal dunes, coastal scrub and valley and foothill grassland. Blooms from march through October.
SSP9	CNDDB	*Atriplex pacifica*	south coast saltscale	1B.2, LIS	None	Occurs in coastal bluff scrub, coastal dunes, coastal scrub and playas. Blooms from March through October.
SSP10	CNDDB	*Atriplex serenana* var. *davidsonii*	Davidson's saltscale	CRPR 1B.2, LIS	None	Coastal bluff scrub, 10-200 meters.
SSP11	CNDDB	*Calochortus fimbriatus*	late-flowered mariposa lily	CRPR 1B,2, LIS	None	Chaparral, cismontane woodland, riparian woodland, 275-1905 meters.
SSP12	CNDDB	*Calochortus plummerae*	Plummer's mariposa lily	CRPR 1B.2, LIS	None	Chaparral, cismontane woodland, coastal scrub, valley foothill grassland, 100-1700 meters.
SSP13	CNDDB BIOS	*Catostomus santaanae*	Santa Ana sucker	ST, SSC	None	The range is extremely restricted; they are native only to the Los Angeles, San Gabriel, Santa Ana, and Santa Clara River systems in Southern California. Populations have been lost from several parts of the rivers, so that they now only live in the upper portion of the Los Angeles and San Gabriel drainages in the San Gabriel Mountains in Los Angeles County, and the lower part of the Santa Ana River in.

Observed and Potentially Occurring Special Status Species						
SSP14	CNDDB	*Chaenactis galbriuscula var. orcuttiana*	Orcutt's pincushion	CRPR 1B.1	None	Occurs in coastal bluff scrub and coastal dunes. Blooms from January through August.
SSP15	CNDDB	*Charadrius alexandrines nivosus*	western snowy plover	St, SSC	None	Western snowy plovers are found throughout the southwestern United States from Texas to California and up to Colorado, as well as Washington and Oregon. Western snowy plovers make nests on sand spits, dune-backed beaches, beaches at creek and river mouths and the banks of lagoons and estuaries.
SSP16	CNDDB	*Chloropyron maritimuum ssp maritimum*	salt marsh bird's-beak	SE, FE, CRPR 1B.2	None	Occurs in coastal dunes, marshes and swamps. Blooms from May through October.
SSP17	CNDDB	*Choeronycteris mexicana*	Mexican long-tongued bat	SSC	None	This bat lives in a variety of habitats, including desert, semi desert grassland, montane, riparian, tropical deciduous forests, and urban environments. The bat is most frequently found roosting in desert canyons, but also in deep caves, mines, rock crevices, and abandoned buildings. This species is common throughout Mexico. Its range extends through Central and northern South America and to the southern parts of Texas, New Mexico, Arizona, and California. However, it is rare in the United States.
SSP18	CNDDB	*Cicindela hirticollis gravida*	sandy beach tiger beetle	S1	None	Found in sandy coastal dunes and beaches.

Observed and Potentially Occurring Special Status Species						
SSP19	CNDDB BIOS	*Coccyzus americanus occidnetalis*	western yellow-billed cuckoo	FE	None	The cuckoo was once a common species from Lake Washington in Seattle to the San Pedro River in southern Arizona and countless places in between. Today, with the loss of gallery riparian forests to dams, livestock grazing, water withdrawal and other factors, the cuckoo is found in a mere handful of locations in Arizona, California, Colorado, New Mexico, Nevada and Utah. Found in wooded habitats with dense cover and water nearby.
SSP20	CNDDB	*Coelus globousu*	globuse dune beetle	S1S2	None	The globose dune beetle is an inhabitant of California's coastal dune system. These beetles are primarily subterranean, tunneling through sand underneath dune vegetation.
SSP21	CNDDB BIOS	*Danaus plexippus*	monarch butterfly	S3	Low (non-breeding)	The onsite eucalyptus trees may provide roosting habitat. Breeding sites are associated with Eucalyptus stands along the coast.
SSP22	CNDDB	*Delphinium parryi ssp. blochmaniae*	dune larkspur	CRPR 1B.1	None	Occurs in maritime chaparral and coastal dunes. Blooms from April through June.
SSP23	CNDDB	*Dudleya blochmaniae ssp. blochmaniae*	Blochman's dudleya	CRPR 1B.1	None	Occurs in rocky often clay or serpentine soils within coastal bluff scrub, chaparral, coastal scrub, valley and foothill grassland. Blooms April through June.
SSP24	CNDDB	*Dudleya verityi*	Verity's dudleya	ST, CRPR 1B.1	None	Occurs in volcanic rocky areas within chaparral, cismontane woodland and coastal scrub. Blooms May through June.
SSP25	CNDDB	*Elanus leucurus*	white-tailed kite	FP	None	Resident in coastal and interior California, Arizona, and southern Texas. Occurs in open grasslands.

Observed and Potentially Occurring Special Status Species						
SSP26	CNDDB BIOS	*Empidonax trillii extimus*	southwestern willow flycatcher	SE, FE	None	The southwestern willow flycatcher is a small geotropically migratory bird that breeds in the arid southwestern United States. Occurs within riparian habitats dominated by willow species.
SSP27	CNDDB BIOS	*Emys marmorata*	southwestern pond turtle	SSC	None	Along streams, rivers and ponded areas. Turtles require partially submerged mats, logs or open banks for basking.
SSP28	CNDDB	*Eriogonum crocatum*	Conejo buckwheat	CRPR 1B.2, LIS	None	Occurs in Conejo volcanic outcrops within chaparral, coastal scrub and valley and foothill grassland. Blooms April through July.
SSP20	CNDDB	*Eucylogobius newberryi*	tidewater goby	SE, SSC	None	Occurs within lagoons of streams along the coast of California.
SSP30	CNDDB BIOS	*Eumops perotis californicus*	western mastiff bat	SSC	None	Rocky areas and cliff faces, roosts in cliff crevices and buildings.
SSP31	CNDDB BIOS	*Gasterosteus aculeatus williamsoni*	unarmored three-spine stickleback	SE, FE, FP	None	Limited mostly to the northwestern area of Los Angeles County, one small area in Santa Barbara County, and a small, isolated, introduced population in San Felipe Creek in San Diego County. Once common throughout the Los Angeles, California basin. Unarmored three spine sticklebacks appear to be limited to fresh water. They require clear, flowing, well-oxygenated water with associated pools and eddies of quiet water and areas of dense vegetation or debris to provide adequate cover and food supply.
SSP32	CNDDB	*Lasthenia glabrata ssp. coulteri*	Coulter's goldfields	CRPR 1B.1, LIS	None	Occurs in coastal marshes and swamps, playas and vernal pools. Blooms February through June.
SSP33	CNDDB	*Malacothrix similis*	Mexican malacothrix	2A	None	Occurs in coastal dunes. Blooms April through May.

Observed and Potentially Occurring Special Status Species						
SSP34	CNDDB	*Monardella hypoleuca ssp hypleuca*	white-veined monardella	CRPR 1B.3, LIS	None	Occurs in chaparral and cismontane woodlands. Blooms April through December.
SSP35	CNDDB	*Monardella sinuate ssp. sinuata*	southern curly-leaved monardella	CRPR 1B.2, LIS	None	Occurs in sandy soils within chaparral, cismontane woodland, coastal dunes, and coastal scrub. Blooms April through September.
SSP36	CNNDB BIOS	*Navarretia ojaiensis*	Ojai navarretia	CRPR 1B.1	None	Chaparral, coastal scrub, valley foothill grassland, 275-620 meters.
SSP37	CNNDB BIOS	*Oncorhynchus mykiss irideus*	southern steelhead – southern California DPS	SSC, FE	None	Spawn in freshwater streams and rivers, adapted to seasonally dry streams in southern CA. San Antonio Creek designated as Steelhead habitat.
SSP38	CNDDB	*Passerculus sandwichensis belding*	Belding's savannah sparrow	SSC	None	Savannah Sparrows live in grasslands with few trees, including meadows, pastures, grassy roadsides, sedge wetlands, and cultivated fields planted with cover crops like alfalfa. Near oceans, they also inhabit tidal saltmarshes and estuaries.
SSP39	CNDDB	*Phrynosoma blainvillii*	coast horned lizard	St, SSC	Low	Historically found in California along the Pacific coast from Baja California border west of the deserts and the Sierra Nevada, north to the Bay Area and inland as far north as Shasta Reservoir and south into Baja California. Inhabits open areas of sandy soil and low vegetation in valleys, foothills and semiarid mountains from sea level to 8,000 feet in elevation.
SSP40	CNNDB BIOS	*Polioptila californica californica*	coastal California gnatcatcher	SSC, FT	None	Obligate resident of arid coastal scrub below 500 meters.
SSP41	CNDDB	*Riparia riparia*	bank swallow	S2S3	None	The Bank Swallow occurs as a breeding species in California in a hundred or so widely distributed nesting colonies in alluvial soils along rivers, streams, lakes, and ocean coasts.

Observed and Potentially Occurring Special Status Species						
SSP42	CNDDB	*Senecio aphanactis*	chaparral ragwort	CRPR 2B.2, LIS	None	Occurs in chaparral, cismontane woodland, coastal scrub. Blooms January through April.
SSP43	CNDDB	*Sternula antillarum browni*	California least Tern	SE, FE, FP	None	Found primarily in shallow estuaries and lagoons and coastal beaches.
SSP44	CNNDB BIOS	*Taxidea taxus*	American badger	SSC	None	Found in drier open stages of most shrub, forest and herbaceous habitats with friable soils.
SSP45	CNDDB	*Texosporium sancti-jacobi*	woven-spored lichen	CRPR 3	None	Occurs on soil, small mammal pellets, and dead twigs and on *Selaginella* spp. Within chaparral openings.
SSP46	CNNDB BIOS	*Thamnophis hammondii*	two-striped garter snake	SSC	None	Permanent to semi-permanent bodies of water in a variety of habitats from sea level to 2,400 meters, forage in and along streams.
SSP47	CNNDB BIOS	*Vireo bellii pusillus*	least Bell's vireo	FE, SE	None	Below 600 meters in willows and other low, dense valley foothill riparian habitat and lower portions of canyons, nests in willow thickets and other low shrubs.

Special Status Species (continued)				
Map Key	Adequate Habitat On-site	Adequate Habitat Size	Acreage Impact	Comments
SSP2	Yes	Yes	53.40	Suitable habitat for legless lizard may be present within the existing citrus orchards located on the eastern and southern portion of the Survey Area within PC-2 Agriculture. These areas have a well-defined leaf layer and loose-textured soils that allow for legless lizard movement and foraging. The existing agriculture composting operation area and the newly planted citrus orchard located on the western portion of the Survey Area has highly compacted soils and lacks a leave layer which makes it unsuitable habitat for legless lizards. It is highly unlikely that legless lizards would be found in either area. However, there still is a low potential for their occurrence.
SSP21	Yes	Yes	NA	The onsite eucalyptus trees may provide roosting habitat for the monarch butterfly.

Special Status Species (continued)				
SSP39	Yes	Yes	53.40	The Survey Area contains potentially suitable coast horned lizard habitat present within the existing citrus orchards located on the eastern and southern portion of the Survey Area within PC-2 Agriculture. These areas have loose-textured soils that are typical of horned lizard habitat. The composting area and the new citrus orchard located on the western portion of the Survey Area have highly compacted soils. It is highly unlikely that coast horned lizards would be found in these areas. However, there still is a low potential for their occurrence.

High potential for occurrence: (1) The habitat on the project site is the species' preferred habitat and is in good condition (has not been degraded by human disturbance); and/or (2) there is record of the species occurring on or adjacent to the project site.

Moderate potential for occurrence: (1) The habitat on the project site is the species' preferred habitat, but it has been disturbed or disturbance encompasses the project site, reducing the quality of the habitat to below a high likelihood that the species would inhabit it; or (2) the habitat on the project site is not the species' preferred habitat, but it contains a similar structure to the preferred habitat and the species has been observed in this habitat type; or (3) the habitat on the project site is not the species' preferred habitat, but there is record of the species occurring in the immediate vicinity of the project site, and there is potential for the species to forage within the habitat on-site.

Low potential for occurrence: The habitat on the project site is not the species' preferred habitat, the habitat is highly disturbed, and/or there are no records of the species occurring on or near the project site.

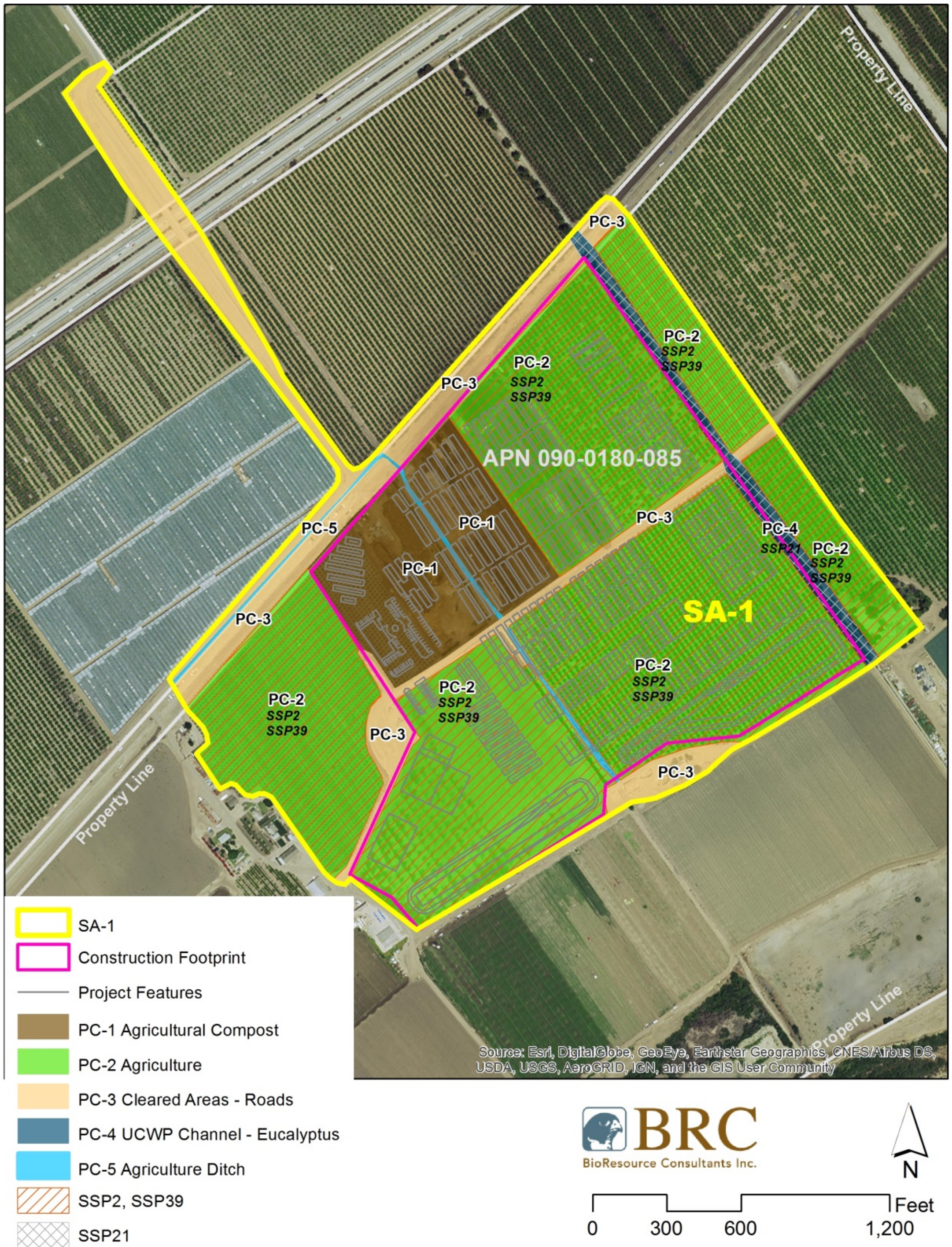
None potential for occurrence: Suitable habitat for the species is not present on the project site and/or there are no records of the species occurring on or near the project site.

FE .... Federal Endangered
FT .... Federal Threatened
FC .... Federal Candidate Species
FSC............... Federal Species of Concern
SFP............... California Fully Protected Species
SE .... California Endangered
ST .... California Threatened
SR................. California Rare
SSC .... California Species of Special Concern
CDFW/NatureServe Rank
    G1 or S1 - Critically Imperiled Globally or Subnationally (state)
    G2 or S2 - Imperiled Globally or Subnationally (state)
    G3 or S3 - Vulnerable to extirpation or extinction Globally or Subnationally (state)
California Rare Plant Rank (CRPR)
    CRPR 1A - California Native Plant Society/CDFW listed as presumed to be extinct
    CRPR 1B - California Native Plant Society/CDFW listed as rare or endangered in California and elsewhere
    CRPR 2 - California Native Plant Society/CDFW listed as rare or endangered in California but more common elsewhere
    CRPR 3 - California Native Plant Society/CDFW listed as in need of more information.
    CRPR 4 - California Native Plant Society/CDFW listed as of limited distribution or infrequent throughout a broader area in California.
LIS Locally Important Species

Nesting Bird Summary

The Eucalyptus windrow associated with the VCWPD channel and the on-site ornamental trees and fruit trees within the Survey Area provide suitable nesting, roosting and perching habitat for migratory birds, including raptors. No nesting birds were observed during Project surveys. It is anticipated that nesting birds protected by the MBTA and CDFW Codes (See Appendix One for Summary of Biological Resource Regulations) could nest within the Survey Area.

Species Map


Property Line
Property Line
Property Line
PC-3
PC-2
SSP2
SSP39
PC-2
SSP2
SSP39
PC-3
APN 090-0180-085
PC-5
PC-1
PC-1
PC-3
PC-4
SSP21
PC-2
SSP2
SSP39
SA-1
PC-3
PC-2
SSP2
SSP39
PC-2
SSP2
SSP39
PC-2
SSP2
SSP39
PC-3
PC-3
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
SA-1
Construction Footprint
Project Features
PC-1 Agricultural Compost
PC-2 Agriculture
PC-3 Cleared Areas - Roads
PC-4 UCWP Channel - Eucalyptus
PC-5 Agriculture Ditch
SSP2, SSP39
SSP21
BRC
BioResource Consultants Inc.
N
0 300 600 1,200
Feet

3.3 Wildlife Movement and Connectivity
(Initial Study Checklist D)

Wildlife movement or connectivity features, or evidence thereof, were not found within the Survey Area.

Section 4: Recommended Impact Assessment & Mitigation

4.1 Sufficiency of Biological Data

Additional information to make CEQA findings and develop mitigation measures:

Additional information is not needed to make CEQA findings.

Additional biology-related surveys or permits needed to issuance of land use permit:

A Lake and Streambed Alteration Agreement application will be submitted to the CDFW for issuance. The Project will not impact Waters of the U.S. and therefore permit requirements under Section 404 of the Clean Water Act and water certification under Section 401 are not required.

4.2 Impacts and Mitigation

A. Species (Project: PS-M; Cumulative PS-M)

No federally or state listed endangered, threatened, or rare animal or plant species were observed within the Survey Area. However, the Survey Area supports suitable habitat for the State Threatened and Species of Special Concern coast horned lizard, the Species of Special Concern California legless lizard, and the monarch butterfly. (Refer to Species Map, page 26.)

The Survey Area also supports suitable habitat that provides potential roosting and nesting sites for birds protected by the CDFW and the MBTA.

Significance Finding – Project Impacts: Construction and implementation of the Project would impact habitat for silvery legless lizard and coast horned lizard due to vegetation removal and compaction from grading. Approximately 56.94 acres of suitable habitat for these species within the Survey Area will be impacted. Impacts to silvery legless lizards and coast horned lizards and their habitats are considered a potentially significant but mitigable impact.

Monarch butterflies may utilize the eucalyptus trees along the VCWPD channel for roosting. The eucalyptus trees are not planned for removal or expected to be trimmed and therefore the monarch butterfly will not be impacted.

Project implementation may have impacts to nesting birds due to removal of vegetation and tree-trimming, which could resulting in the mortality of nesting birds or their eggs. In addition, indirect impacts to nesting birds could occur due to elevated noise levels and vibrations associated with construction equipment, resulting in abandonment of nests, eggs or young. Potential impacts to protected nesting birds would be considered potentially significant but mitigable.

Significance Finding – Cumulative Impact: Potential impacts to silvery legless lizards, coast horned lizards, and protected nesting birds would be considered a potential cumulatively significant but mitigable impact.

Avoidance and Minimization Measures

The following avoidance and minimization measures will be implemented both prior to and during construction:

- A qualified Biological Monitor approved by the CDFW and the County will be present during construction activities. This biologist must be on-site during work or otherwise be within the Survey Area and must coordinate with the work crew immediately prior to any work.
- Crews will be provided training/identification information on special-status animals and provided information for what to do if species are encountered.
- Best management practices will be used, such as the placement of sand bags, silt fence or straw wattles around construction and storage areas to eliminate erosion and sedimentation into VCWPD Channel and the unnamed drainage extending outside of the Survey Area.
- No fueling of construction vehicles will occur within 200 feet from the VCWPD channel.
- Heavy equipment will utilize drip pans while not in use, and be parked away from the VCWPD channel.

MM1: Silvery Legless Lizard and Coast Horned Lizard Surveys, Monitoring and Relocation.

Purpose: In order to prevent impacts to the silvery legless lizard and the coast horned lizard during construction activities.

Requirement: A qualified permitted biologist will conduct a pre-construction survey within 72 hours of any ground disturbance. A qualified Biological Monitor approved by CDFW will be present during clearing initial grading activities to determine the presence of silvery legless lizards or coast horned lizards. If silvery legless lizards or coast horned lizards are found within the work area during clearing and initial grading, work will stop until the individuals have left the area or else they shall be relocated by the qualified permitted biologist.

Documentation: The Permittee will provide the Planning Division a Survey Report documenting the results of the initial pre-construction surveys for the silvery legless lizard and coast horned lizard at the end of Project completion.

Timing: A pre-construction survey will be conducted within 72 hours of any ground disturbance, and a qualified Biological Monitor will be present during clearing and initial grading to determine the presence of silvery legless lizards and coast horned lizards.

MM2: Nesting Bird Surveys

Purpose: To prevent Impacts to nesting birds and nests during construction activities.

Requirement: During bird nesting season (February 1 through August 31), a qualified biologist will conduct pre-construction nesting bird surveys within 72 hours prior to any construction activity, including tree trimming or removal. In addition, the on-site qualified Biological Monitor will conduct periodic nesting surveys within the Construction Footprint prior to tree trimming or vegetation clearing. If nesting birds are observed in trees within the Construction Footprint, a 200-foot buffer will be established around the tree and no activity will occur within the buffer until the young have fledged.

Documentation: The Permittee will provide to the Panning Division a Survey Report documenting the results of the initial nesting bird survey.

Timing: Nesting bird surveys will be conducted from February 1 through August 31. An initial pre-construction survey will be conducted within 72 hours prior to construction activities and periodic bird nesting surveys will be conducted prior to tree trimming or clearance of vegetation.

Monitoring and Reporting: No additional monitoring or reporting is necessary.

B. Ecological Communities (Project: PS-M; Cumulative: PS-M)

Sensitive Plant Communities

No special-status plant communities occur within the Survey Area.

No impact and mitigation measures are necessary.

Waters and Wetlands

An unnamed drainage traverses the Survey Area with approximately 0.90 acres of CDFW jurisdiction on site. The USACE has made a jurisdictional determination on the unnamed drainage. The USACE has determined that the unnamed drainage, a small ephemeral drainage to be an upland-excavated drainage ditch, drains only uplands and is therefore not considered Waters of the U.S. Therefore, the unnamed drainage is not jurisdictional and is not regulated under Section 404 of the Clean Water Act by the USACE.

Significance Finding – Project Impacts: Project implementation will not impact USACE jurisdictional waters as the unnamed drainage is not considered Waters of the U.S. In addition, no wetland areas meeting the three mandatory criteria (hydrology, hydric soils and hyrodphytic vegetation) will be impacted by the Project. The Project will impact State Waters under the jurisdiction of the CDFW due to filling of the unnamed drainage for the installation of a double barrel arch pipe pass-through. The pipe pass-through will flow to the proposed Project detention basins. Due to the lack of native plant assemblages and wildlife habitat within the unnamed drainage, mitigation for habitat loss will not be required. The implementation of Project BMP avoidance and minimization measures will reduce potential water quality and sedimentation issues. Approximately 0.90 acres of permanent impacts will occur within CDFW jurisdiction. Notification of a Lake or Streambed Alteration Agreement is required as the Project will divert or obstruct the natural flow or change or use material from the bed or deposit debris, waste or other material where it may pass into any river, stream or lake. Impacts to Wetland and Waters (CDFW jurisdiction) are considered a potentially less than significant.

Significance Finding – Cumulative Impacts: Potential impacts to CDFW jurisdictional areas would be considered potentially less than significant.

MM3: Wetlands and Waters

Purpose: To comply with Section 1602 of the CDFW Code.

Requirement: Prior to construction and implementation of the Project the applicant will apply for a 1602 Lake and Streambed Alteration Agreement.

Documentation: The Permittee will provide Ventura County a copy of the approved agreement prior to construction and implementation of the Project.

Timing: Prior to construction and implementation of the Project, the applicant will apply for a 1602 Lake and Streambed Alteration Agreement.

Monitoring and Reporting: Due to the lack of native plant assemblages and wildlife habitat within the unnamed drainage mitigation for habitat loss is not expected. Therefore, no additional monitoring or reporting is necessary.

C. Environmentally Sensitive Habitat Areas

No ESHAs occur within the Survey Area.

No impact and mitigation measures are necessary.

D. Habitat Connectivity (Project: No Impact; Cumulative: No Impact).

The Survey Area is not located within or adjacent to migration corridors.

No impact mitigation measures are necessary.

Section 5: Photos

Photos	
Location	
Access Road	
Map Key	
P1	
View Direction	
North	
Description	
Access Road looking north from RxR.	
Location	
W1 North end	
Map Key	
P2	
View Direction	
North	
Description	
W1 and culvert looking north.	

Photos

Location	
RxR northern boundary of SA1	
Map Key	
P3	
View Direction	
East	
Description	
View of RXR at northern boundary of SA1 looking east.	
Location	
Existing Operation	
Map Key	
P4	
View Direction	
North	
Description	
Existing operations looking north.	

Photos	
Location	
W1	
Map Key	
P5	
View Direction	
South	
Description	
W1 looking south from north end.	
Location	
W1	
Map Key	
P6	
View Direction	
South	
Description	
W1 and culvert looking south from Gaythorne Road.	

<table>
<tr><th colspan="2">Photos</th></tr>
<tr><td>Location
W1
Map Key
P7
View Direction
South
Description
W1 looking south-offsite from Rogers Road with Santa Clara River in background.</td><td></td></tr>
<tr><td>Location
SW Corner of SA1
Map Key
P8
View Direction
Existing agricultural
Description
Existing agricultural in SA1 looking northeast.</td><td></td></tr>
</table>

Photos	
Location SE corner of SA1 **Map Key** P9 **View Direction** Southwest **Description** Existing offsite agricultural looking southwest from VCWPD channel.	
Location SE Corner SA1 **Map Key** P10 **View Direction** **North** **Description** View of VCWPD channel looking north.	

<table>
<tr><th colspan="2">Photos</th></tr>
<tr><td>Location</td><td rowspan="8"></td></tr>
<tr><td>SE Corner of SA1</td></tr>
<tr><td>Map Key</td></tr>
<tr><td>P11</td></tr>
<tr><td>View Direction</td></tr>
<tr><td>South</td></tr>
<tr><td>Description</td></tr>
<tr><td>VCWPD channel looking south.</td></tr>
<tr><td>Location</td><td rowspan="8"></td></tr>
<tr><td>W1</td></tr>
<tr><td>Map Key</td></tr>
<tr><td>P12</td></tr>
<tr><td>View Direction</td></tr>
<tr><td>North</td></tr>
<tr><td>Description</td></tr>
<tr><td>W1 looking north from Roger Road.</td></tr>
</table>

<table>
<tr><th colspan="2">Photos</th></tr>
<tr><td>Location</td><td rowspan="8"></td></tr>
<tr><td>North boundary of SA1</td></tr>
<tr><td>Map Key</td></tr>
<tr><td>P13</td></tr>
<tr><td>View Direction</td></tr>
<tr><td>West</td></tr>
<tr><td>Description</td></tr>
<tr><td>Ditch along RxR looking west at Ellsworth Barranca.</td></tr>
</table>

Appendix One
Summary of Biological Resource Regulations

The Ventura County Planning Division, as "lead agency" under CEQA for issuing discretionary land use permits, uses the relationship of potential environmental effects from a proposed project to an established regulatory standard to determine the significance of the potential environmental effects. This Appendix summarizes important biological resource regulations which are used by the Division's biologists (consultants and staff) in making CEQA findings of significance:

Sensitive Status Species Regulations
Nesting Bird Regulations
Plant Community Regulations
Waters and Wetlands Regulations
Coastal Habitat Regulations
Wildlife Migration Regulations
Locally Important Species/Communities Regulations

Sensitive Status Species Regulations

Federally Protected Species

Ventura County is home to 29 federally listed endangered and threatened plant and wildlife species. The U.S. Fish and Wildlife Service (USFWS) regulate the protection of federally listed endangered and threatened plant and wildlife species.

FE (Federally Endangered): A species that is in danger of extinction throughout all or a significant portion of its range.

FT (Federally Threatened): A species that is likely to become endangered in the foreseeable future.

FC (Federal Candidate): A species for which USFWS has sufficient information on its biological status and threats to propose it as endangered or threatened under the Endangered Species Act (ESA), but for which development of a proposed listing regulation is precluded by other higher priority listing activities.

FSC (Federal Species of Concern): A species under consideration for listing, for which there is insufficient information to support listing at this time. These species may or may not be listed in the future, and many of these species were formerly recognized as "Category-2 Candidate" species.

The USFWS requires permits for the 'taking' of any federally listed endangered or threatened species. Take is defined by the USFWS as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct; may include significant habitat modification or degradation if it kills or injures wildlife by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering."

The Endangered Species Act (ESA) does not provide statutory protection for candidate species or species of concern, but USFWS encourages conservation efforts to protect these species. USFWS can set up voluntary Candidate Conservation Agreements and Assurances, which provide non-Federal landowners (public and private) with the assurance that if they implement various conservation activities to protect a given candidate species, they will not be subject to additional restrictions if the species becomes listed under the ESA.

State Protected Species

The California Department of Fish and Wildlife (CDFW) regulate the protection of endangered, threatened, and fully protected species listed under the California Endangered Species Act. Some species may be jointly listed under the State and Federal Endangered Species Acts.

SE (California Endangered): A native species or subspecies which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease.

ST (California Threatened): A native species or subspecies that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter. Any animal determined by the commission as "rare" on or before January 1, 1985, is a "threatened species."

SFP (California Fully Protected Species): This designation originated from the State's initial effort in the 1960's to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, mammals, amphibians, reptiles, and birds. Most fully protected species have also been listed as threatened or endangered species under the more recent endangered species laws and regulations.

SR (California Rare): A species, subspecies, or variety of plant is rare under the Native Plant Protection Act when, although not presently threatened with extinction, it is in such small numbers throughout its range that it may become endangered if its present environment worsens. Animals are no longer listed as rare; all animals listed as rare before 1985 have been listed as threatened.

SSC (California Species of Special Concern): Animals that are not listed under the California Endangered Species Act, but which nonetheless 1) are declining at a rate that could result in listing, or 2) historically occurred in low numbers and known threats to their persistence currently exist.

The CDFW requires permits for the taking of any State-listed endangered, threatened, or fully protected species. Section 2080 of the Fish and Game Code prohibits "take" of any species that the California Fish and Wildlife Commission determines to be endangered or threatened. Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

The California Native Plant Protection Act protects endangered and rare plants of California. Section 1908, which regulates plants listed under this act, states: "no person shall import into this state, or take, possess, or sell within this state, except as incident to the possession or sale of the real property on which the plant is growing, any native plant, or any part or product thereof, that the commission determines to be an endangered native plant or rare native plant, except as otherwise provided in this chapter."

The California Endangered Species Act does not provide statutory protection for California species of special concern, but they should be considered during the environmental review process.

California Rare Plant Rated Native Plant Species

Plants with CRPR listings 1A, 1B and 2 should always be addressed in CEQA documents. Plants with CRPR listings 3 and 4 do not explicitly qualify for legal protection, but can be addressed in CEQA documents depending on the circumstances and opinion of the biologist conducting the assessment.

CRPR 1A: Plants presumed to be extinct because they have not been seen or collected in the wild in California for many years. This list includes plants that are both presumed extinct in California, as well as those plants which are presumed extirpated in California. A plant is extinct in California if it no longer occurs in or outside of California. A plant that is extirpated from California has been eliminated from California, but may still occur elsewhere in its range.

CRPR 1B: Plants that are rare throughout their range with the majority of them endemic to California. Most of the plants of List 1B have declined significantly over the last century.

CRPR 2: Plants that are rare throughout their range in California, but are common beyond the boundaries of California. List 2 recognizes the importance of protecting the geographic range of widespread species.

Plants identified on CRPR Lists 1A, 1B, and 2 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the CDFW Code, and are eligible for state listing. They should be fully considered during preparation of environmental documents relating to CEQA.

CRPR 3: A review list for plants for which there is inadequate information to assign them to one of the other lists or to reject them.

CRPR 4: A watch list for plants that are of limited distribution or infrequent throughout a broader area in California and their vulnerability or susceptibility to threat appears relatively low at this time.

Global and Subnational Rankings

Though not associated directly with legal protections, species have been given a conservation status rank by NatureServe, an international non-profit conservation organization that is the leading source for information about rare and endangered species and threatened ecosystems. The Ventura County Planning Division considers the following ranks as sensitive for the purposes of CEQA impact assessment (G = Global, S = Subnational or State):

G1 or S1 - Critically Imperiled
G2 or S2 – Imperiled
G3 or S3 - Vulnerable to extirpation or extinction

Locally Important Species

Locally important species' protections are addressed below under "Locally Important Species/Communities Regulations."

For lists of some of the species in Ventura County that are protected by the above regulations, go to http://www.ventura.org/rma/planning/ceqa/bio_resource_review.html.

Nesting Bird Regulations

The Federal Migratory Bird Treaty Act (MBTA) and the CDFW Code (3503, 3503.5, 3511, 3513 and 3800) protect most native birds. In addition, the federal and state endangered species acts protect some bird species listed as threatened or endangered. Project-related impacts to birds protected by these regulations would occur during the breeding season, because unlike adult birds, eggs and chicks are unable to escape impacts.

The MBTA implements various treaties and conventions between the U.S. and Canada, Japan, Mexico, and Russia for the protection of migratory birds, which occur in two of these countries over the course of one year. The Act maintains that it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not. Bird species protected under the provisions of the MBTA are identified by the List of Migratory Birds (Title 50 of the Code of Federal Regulations, Section 10.13 as updated by the 1983 American Ornithologists' Union (AOU) Checklist and published supplements through 1995 by the USFWS).

CDFW Code 3513 upholds the MBTA by prohibiting any take or possession of birds that are designated by the MBTA as migratory nongame birds except as allowed by federal rules and regulations promulgated pursuant to the MBTA. In addition, there are CDFW Codes (3503, 3503.5, 3511, and 3800) which further protect nesting birds and their parts, including passerine birds, raptors, and state “fully protected” birds.

NOTE: These regulations protect almost all *native nesting birds*, not just sensitive status birds.

Plant Community Regulations

Plant communities are provided legal protection when they provide habitat for protected species, when the community is in the coastal zone and qualifies as environmentally sensitive habitat area (ESHA), or when the community qualifies as locally important.

Global and Subnational Rankings

Though not associated directly with legal protections, plant communities have been given a conservation status rank by NatureServe, an international non-profit conservation organization that is the leading source for information about rare and endangered species and threatened ecosystems. The Ventura County Planning Division considers the following ranks as sensitive for the purposes of CEQA impact assessment (G = Global, S = Subnational or State):

G1 or S1 - Critically Imperiled
G2 or S2 - Imperiled
G3 or S3 - Vulnerable to extirpation or extinction

CDFW Rare

Rare natural communities are those communities that are of highly limited distribution. These communities may or may not contain rare, threatened, or endangered species. Though the Native Plant Protection Act and the California Endangered Species Act provide no legal protection to plant communities, CDFW considers plant communities that are ranked G1-G3 or S1-S3 (as defined above) to be rare or sensitive, and therefore these plant communities should be addressed during CEQA review.

Environmentally Sensitive Habitat Areas

The Coastal Act specifically calls for protection of “environmentally sensitive habitat areas” or ESHA, which it defines as: “Any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments” (Section 30107.5).

ESHA has been specifically defined in the Santa Monica Mountains. For ESHA identification in this location, the Coastal Commission, the agency charged with administering the Coastal Act, has described the habitats that are considered ESHA. A memo from a Coastal Commission biologist that describes ESHA in the Santa Monica Mountains can be found at: http://www.ventura.org/rma/planning/ceqa/bio_resource_review.html.

Locally Important Communities

The Ventura County Initial Study Assessment Guidelines defines a locally important community as one that is considered by qualified biologists to be a quality example characteristic of or unique to the County or region, with this determination being made on a case-by-case basis. The County has not developed a list of locally important communities, but has deemed oak woodlands to be a locally important community.

Waters and Wetlands Regulations

Numerous agencies control what can and cannot be done in or around streams and wetlands. If a project affects an area where water flows, ponds or is present even part of the year, it is likely to be regulated by one or more agencies. Many wetland or stream projects will require three main permits or approvals (in addition to CEQA compliance). These are:

- 404 Permit (U.S. Army Corps of Engineers)
- 401 Certification (Regional Water Quality Control Board)
- Streambed Alteration Agreement (CDFW)

In addition, the Ventura County General Plan calls for protection of wetlands and there are several other federal, state and local permits that could be required when a project involves disturbance to wetlands or waters. For a more thorough explanation of wetland permitting, see the Ventura County's "Wetland Project Permitting Guide" at http://www.ventura.org/rma/planning/ceqa/bio_resource_review.html.

404 Permit (U.S. Army Corps of Engineers)

Most projects that involve streams or wetlands will require a 404 Permit from the U.S. Army Corps of Engineers (USACE). Section 404 of the federal Clean Water Act is the primary federal program regulating activities in wetlands. The Act regulates areas defined as "waters of the United States." This includes streams, wetlands in or next to streams, areas influenced by tides, navigable waters, lakes, reservoirs and other impoundments. For nontidal waters, USACE jurisdiction extends up to what is referred to as the "ordinary high water mark" as well as to the landward limits of adjacent Corps-defined wetlands, if present. The ordinary high water mark is an identifiable natural line visible on the bank of a stream or water body that shows the upper limit of typical stream flow or water level. The mark is made from the action of water on the streambank over the course of years.

Permit Triggers: A USACE 404 Permit is triggered by moving (discharging) or placing materials—such as dirt, rock, geotextiles, concrete or culverts—into or within USACE jurisdictional areas. This type of activity is also referred to as a "discharge of dredged or fill material."

401 Certification (Regional Water Quality Control Board)

If your project requires a USACE 404 Permit, then you will also need a Regional Water Quality Control Board (RWQCB) 401 Certification. The federal Clean Water Act, in Section 401, specifies that states must certify that any activity subject to a permit issued by a federal agency, such as the USACE, meets all state water quality standards. In California, the state and regional water boards are responsible for certification of activities subject to USACE Section 404 Permits.

Permit Trigger: A RWQCB 401 Certification is triggered whenever a USACE 404 Permit is required, or whenever an activity could cause a discharge of dredged or fill material into waters of the U.S. or wetlands.

Streambed Alteration Agreement (California Department of Fish and Wildlife)

If your project includes alteration of the bed, banks or channel of a stream, or the adjacent riparian vegetation, then you may need a Streambed Alteration Agreement from the CDFW. The California Fish and Game Code, Sections 1600-1616, regulates activities that would alter the flow, bed, banks, channel or associated riparian areas of a river, stream or lake—all considered "waters of the state." The law requires any person, state or local governmental agency or public utility to notify CDFW before beginning an activity that will substantially modify a river, stream or lake.

Permit Triggers: A Streambed Alteration Agreement (SAA) is triggered when a project involves altering a stream or disturbing riparian vegetation, including any of the following activities:

- Substantially obstructing or diverting the natural flow of a river, stream or lake
- Using any material from these areas
- Disposing of waste where it can move into these areas

Some projects that involve routine maintenance may qualify for long-term maintenance agreements from CDFW. Discuss this option with CDFW staff.

Ventura County General Plan

The Ventura County General Plan contains policies which also strongly protect wetland habitats.

Biological Resources Policy 1.5.2-3 states**:**

> Discretionary development that is proposed to be located within 300 feet of a marsh, small wash, intermittent lake, intermittent stream, spring, or perennial stream (as identified on the latest USGS 7½ minute quad map), shall be evaluated by a County approved biologist for potential impacts on wetland habitats. Discretionary development that would have a significant impact on significant wetland habitats shall be prohibited, unless mitigation measures are adopted that would reduce the impact to a less than significant level; or for lands designated "Urban" or "Existing Community", a statement of overriding considerations is adopted by the decision-making body.

Biological Resources Policy 1.5.2-4 states:

> Discretionary development shall be sited a minimum of 100 feet from significant wetland habitats to mitigate the potential impacts on said habitats. Buffer areas may be increased or decreased upon evaluation and recommendation by a qualified biologist and approval by the decision-making body. Factors to be used in determining adjustment of the 100 foot buffer include soil type, slope stability, drainage patterns, presence or absence of endangered, threatened or rare plants or animals, and compatibility of the proposed development with the wildlife use of the wetland habitat area. The requirement of a buffer (setback) shall not preclude the use of replacement as mitigation when there is no other feasible alternative to allowing a permitted use, and if the replacement results in no net loss of wetland habitat. Such replacement shall be "in kind" (i.e. same type and acreage), and provide wetland habitat of comparable biological value. On-site replacement shall be preferred wherever possible. The replacement plan shall be developed in consultation with CDFW.

Coastal Habitat Regulations

Ventura County's Coastal Area Plan and the Coastal Zoning Ordinance, which constitute the "Local Coastal Program" (LCP) for the unincorporated portions of Ventura County's coastal zone, ensure that the County's land use plans, zoning ordinances, zoning maps, and implemented actions meet the requirements of, and implement the provisions and polices of California's 1976 Coastal Act at the local level.

Environmentally Sensitive Habitats

The Coastal Act specifically calls for protection of "environmentally sensitive habitat areas" or ESHA, which it defines as: "Any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments" (Section 30107.5).

Section 30240 of the Coastal Act states:

(a) **"Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas."**

(b) **"Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas, and shall be compatible with the continuance of such habitat areas."**

There are three important elements to the definition of ESHA. First, a geographic area can be designated ESHA either because of the presence of individual species of plants or animals or because of the presence of a particular habitat. Second, in order for an area to be designated as ESHA, the species or habitat must be either rare or it must be especially valuable. Finally, the area must be easily disturbed or degraded by human activities.

Protection of ESHA is of particular concern in the southeastern part of Ventura County, where the coastal zone extends inland (~5 miles) to include an extensive area of the Santa Monica Mountains. For ESHA identification in this location, the Coastal Commission, the agency charged with administering the Coastal Act, has described the habitats that are considered ESHA. A memo from a Coastal Commission biologist that describes ESHA in the Santa Monica Mountains can be found at: http://www.ventura.org/rma/planning/ceqa/bio_resource_review.html.

The County's Local Coastal Program outlines other specific protections to environmentally sensitive habitats in the Coastal Zone, such as to wetlands, riparian habitats, dunes, and upland habitats within the Santa Monica Mountains (M Overlay Zone). Protections in some cases are different for different segments of the coastal zone.

Copies of the Coastal Area Plan and the Coastal Zoning Ordinance can be found at: http://www.ventura.org/rma/planning/Programs/local.html.

Wildlife Migration Regulations

The Ventura County General Plan specifically includes wildlife migration corridors as an element of the region's significant biological resources. In addition, protecting habitat connectivity is critical to the success of special status species and other biological resource protections. Potential project impacts to wildlife migration are analyzed by biologists on a case-by-case basis. The issue involves both a macro-scale analysis—where routes used by large carnivores connecting very large core habitat areas may be impacted—as well as a micro-scale analysis—where a road or stream crossing may impact localized movement by many different animals.

Locally Important Species/Communities Regulations

Locally important species/communities are considered to be significant biological resources in the Ventura County General Plan, thus one of the County's threshold criteria for the evaluation of impacts to biological resources is whether the project impacts locally important species/communities.

Locally Important Species

The following criteria were developed with the assistance of local biologists:

Locally Important Animal Species Criteria

1. Taxa for whom habitat in Ventura County is crucial for their existence either globally or in Ventura County. This includes taxa for whom:

- Populations in Ventura County represents 10% or more of the known extant global distribution; or
- In Ventura County, there are less than 6 element occurrences, or less than 1,000 individuals, or less than 2,000 acres.

2. Native taxa that are generally declining throughout their range and/or are in danger of extirpation in Ventura County.

Locally Important Plant Species Criteria

A locally important plant is a taxon that is declining throughout the extent of its range AND has a maximum of five (5) element occurrences in Ventura County.

Locally Important Animal and Plant Species Criteria

In some cases, to be determined on an individual basis, there are taxa whose population(s) does not qualify as locally important species; however, certain locations where a taxon occurs will be defined as locally important. This includes:

- If known, the published type locality for a holotype specimen.
- The edge of a taxon's range. This criterion does not apply to non-native taxa or those taxa whose range and population(s) size is expanding.

The County maintains a list of locally important species, which can be found on the Planning Division website at: http://www.ventura.org/rma/planning/ceqa/bio_resource_review.html. *This list should not be considered comprehensive.* Any species that meets the criteria qualifies as locally important, whether or not it is included on this list.

Locally Important Communities

The Ventura County Initial Study Assessment Guidelines defines a locally important community as one that is considered by qualified biologists to be a quality example characteristic of or unique to the County or region, with this determination being made on a case-by-case basis. The County has not developed a list of locally important communities. Oak woodlands have however been deemed by the Ventura County Board of Supervisors to be a locally important community.

The state passed legislation in 2001, the Oak Woodland Conservation Act, to emphasize that oak woodlands are a vital and threatened statewide resource. In response, the County of Ventura prepared and adopted an Oak Woodland Management Plan that recommended, among other things, amending the County's Initial Study Assessment Guidelines to include an explicit reference to oak woodlands as part of its definition of locally important communities. The Board of Supervisors approved this management plan and its recommendations.

Appendix Two

Observed Species Tables

Species Observed Plants			
Scientific name	**Common Name**	**Native**	**Family/Notes**
Ambrosia psilostachya var. *californica*	western ragweed	Yes	Asteraceae
Anagallis arvensis	scarlet pimpernel	No	Primulaceae
Avena barbata	slender wild oat	No	Poaceae
Baccharis salicifolia	mulefat	Yes	Asteraceae
Beta vulgaris	sugar beet	No	Amaranthaceae
Bromus diandrus	ripgut grass	No	Poaceae
Bromus hordeaceus	soft chess	No	Poaceae
Bromus rubens	red brome	No	Poaceae
Carduus pycnocephalus	Italian thistle	No	Asteraceae
Chenopodium californicum	California goosefoot	Yes	Chenopodiaceae
Citrus limon	lemon tree	No	Rutaceae
Citrus sinensis	orange tree	No	Rutaceae
Datura wrightii	jimsonweed	Yes	Solanaceae
Erodium cicutarium	storksbill	No	Geraniaceae
Eucalyptus camaldulensis.	Redgum	No	Myrtaceae
Hirschfeldia incana	summer mustard	No	Brassicaceae
Lactuca serriola	prickly wild lettuce	No	Asteraceae
Lepidium latifolium	broadleaf peppergrass	No	Brassicaceae
Malva parviflora	cheeseweed	No	Malvaceae
Matricaria discoidea	pineapple weed	No	Asteraceae
Marah macrocarpa var. *macrocarpa*	large-fruited man-root	Yes	Cucurbitaceae
Marrubium vulgare	white horehound	No	Lamiaceae
Melilotus albus	white sweet clover	No	Fabaceae
Persea americana	avocado tree	No	Lauraceae
Poa annua	annual bluegrass	No	Poaceae
Sonchus oleraceus	common sow-thistle	No	Asteraceae
Tribulus terrestris	puncture vine	No	Zygophyllaceae

Species Observed Wildlife	
Scientific name	**Common Name**
Reptiles	
Sceloporus occidentalis bocourtii	coast range fence lizard
Birds	
Buteo jamaicensis	Red-tailed Hawk
Larus occidentalis	Western Gull
Zenaida macroura	Mourning Dove
Calypte anna	Anna's Hummingbird
Picoides pubescens	Downy Woodpecker
Falco sparverius	American Kestrel
Sayornis nigricans	Black Phoebe
Tyrannus verticalis	Western Kingbird
Tyrannus vociferans	Cassin's Kingbird
Aphelocoma californica	Western Scrub-jay
Corvus brachyrhynchos	American Crow
Corvus corax	Common Raven
Baeolophus inornatus	Oak Titmouse
Thryomanes bewickii	Bewick's Wren
Turdus migratorius	American Robin
Mimus polyglottos	Northern Mockingbird
Sturnus vulgaris	European Starling
Melozone crissalis	California Towhee
Euphagus cyanocephalus	Brewer’s Blackbird
Haemorhous mexicanus	House Finch
Spinus psaltria	Lesser Goldfinch
Junco hyemalis	Dark-eyed Junco
Setophaga coronata	Yellow-rumped Warbler
Mammals	
Sylvilagus bachmani	brush rabbit
Otospermophilus beecheyi	California ground squirrel
Sciurus niger	Fox squirrel
THomomys bottae	Botta;s pocket gopher

Appendix Three

USACE Determination Letter

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, U.S. ARMY CORPS OF ENGINEERS
VENTURA FIELD OFFICE
2151 ALESSANDRO DRIVE, SUITE 110
VENTURA, CA 93001

August 27, 2014

Steve Jones
BioResource Consultants, Inc.
310 E. Matilija Street
Ojai, California 93023

DETERMINATION OF NEED FOR A DEPARTMENT OF THE ARMY PERMIT

Dear Mr. Jones:

I am responding to your request (File No. SPL-2014-00503-AJS) dated August 25, 2014, for clarification whether a Department of the Army Permit is required for the Agromin Biogenic Energy Park project located near the city of Santa Paula, Ventura County, California (at lat: 34.30318N; long: 119.12627W).

The Corps' evaluation process for determining if you need a permit is based on whether or not the proposed project is located within or contains a water of the United States, and whether or not the proposed project includes an activity potentially regulated under Section 10 of the River and Harbor Act or Section 404 of the Clean Water Act. If both conditions are met, a permit would be required.

Based on the attached approved jurisdictional determination dated August 27, 2014, it appears the Agromin Biogenic Energy Park JD project site does not contain waters of the United States pursuant to 33 CFR Part 325.9. A small, ephemeral drainage feature within the property (labeled "W-1" in your request) was evaluated and determined to be an upland-excavated drainage ditch, draining only uplands, and therefore not a water of the United States.

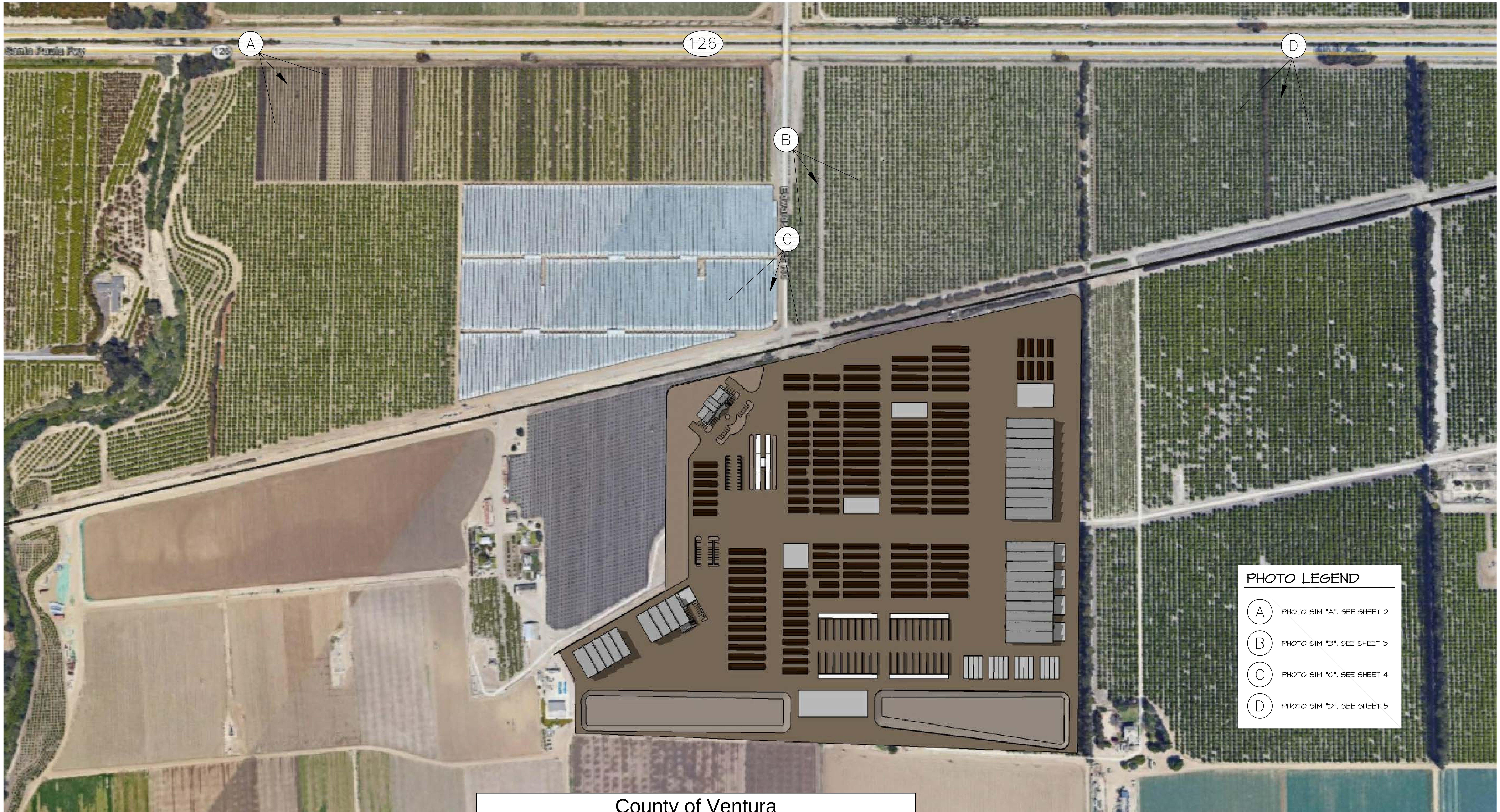
If you have any questions, please contact me at 805-585-2147 or via e-mail at Antal.J.Szijj@usace.army.mil. Thank you for participating in the Regulatory Program. Please also complete the customer survey form at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey, which would help me to evaluate and improve the regulatory experience for others.

Sincerely,

Antal Szijj
Senior Project Manager
North Coast Branch

Enclosure

CF:
EPA
California DFW
RWQCB



County of Ventura
Notice of Preparation of an EIR
PL17-0154
Attachment 12 - Photo Simulations

SITE PHOTO KEY PLAN

SCALE: N.T.S.

AGROMIN-LIMONEIRA

UNINCORPORATED VENTURA COUNTY

JANUARY, 18 2016

RASMUSSEN & ASSOCIATES
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VOICE: (805) 648-1234
CONTACT: JAY LOMAGNO
JLomagno@RA-Arch.com

PHOTO SIM "A"

SCALE: N.T.S.

AGROMIN-LIMONEIRA

UNINCORPORATED VENTURA COUNTY

JANUARY, 18 2016

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DWG: P:\A131102 AGROMIN-LIMONEIRA\DRAWINGS\DESIGN PHASE\SIM SHEETS\AGROMIN - SIM PHOTOS.DWG PLOTTED: 2:27 PM

PHOTO SIM "B"

SCALE: N.T.S.

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AGROMIN-LIMONEIRA

UNINCORPORATED VENTURA COUNTY

JANUARY, 18 2016

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PHOTO SIM "C"

SCALE: N.T.S.

AGROMIN-LIMONEIRA

UNINCORPORATED VENTURA COUNTY

JANUARY, 18 2016

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PHOTO SIM "D"

SCALE: N.T.S.

AGROMIN-LIMONEIRA

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Phase II Historic Resources Report
Agromin Commercial Organics Processing Operation, Edwards Ranch Road, Santa Paula

19 May 2017

Prepared for:

Sespe Consulting, Inc.
374 Poli Street, Suite 200
Ventura, California 93001

Prepared by:

SAN BUENAVENTURA
RESEARCH ASSOCIATES
HISTORIC · RESOURCES · C
1328 WOODLAND DRIVE ■ SANTA PAUL

County of Ventura
Notice of Preparation of an EIR
PL17-0154
Attachment 13 - Phase II Historic Resources Report

Executive Summary

This report was prepared for the purpose of assisting the County of Ventura in their compliance with the California Environmental Quality Act (CEQA) as it relates to historic resources, in connection with the construction of a new Commercial Organics Processing Operation facility in an unincorporated area of Ventura County, near the City of Santa Paula. [Figure 1]

This property was determined to be a contributor to two, NRHP eligible historic districts on the basis of a survey completed by the County of Ventura in 1996. An adjacent property is a designated Ventura County Historic Landmark. This Phase II report assesses whether the proposed project will have a significant adverse impact on these districts and the designated landmark.

This report was prepared by San Buenaventura Research Associates of Santa Paula, California, Judy Triem, Historian; and Mitch Stone, Preservation Planner, for Sespe Consulting, Inc., and is based on a field investigation and research conducted in March 2017. The conclusions contained herein represent the professional opinions of San Buenaventura Research Associates, and are based on the factual data available at the time of its preparation, the application of the appropriate local, state and federal regulations, and best professional practices.

Summary of Findings

The project was found to have the potential to produce significant averse impacts to two NRHP-eligible historic districts and a designed Ventura County Landmark. Measures proposed to mitigate these impacts are recommended.

Report Contents

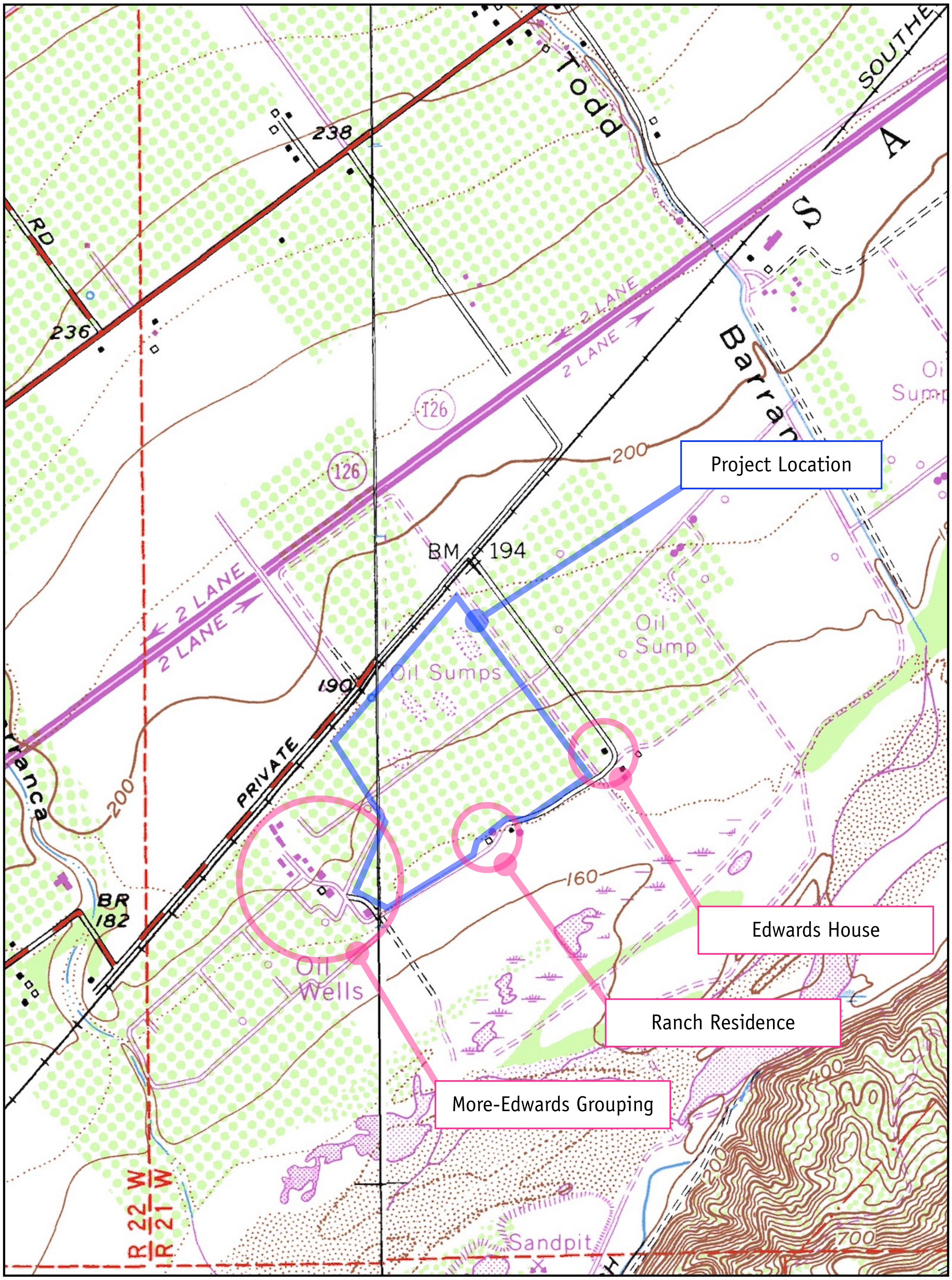


Figure 1. Site Location [USGS 7.5′ Quadrangle, Saticoy CA 1951 rev 1967; Santa Paula 1951 rev 1967]

1. Impact Thresholds and Mitigation

According to the Public Resources Code, "a project that may cause a substantial change in the significance of an historical resource is a project that may have a significant effect on the environment." The Public Resources Code broadly defines a threshold for determining if the impacts of a project on an historic property will be significant and adverse. By definition, a substantial adverse change means, "demolition, destruction, relocation, or alterations," such that the significance of an historical resource would be impaired. For purposes of NRHP eligibility, reductions in a property's integrity (the ability of the property to convey its significance) should be regarded as potentially adverse impacts. (PRC §21084.1, §5020.1(6))

Further, according to the CEQA Guidelines, "an historical resource is materially impaired when a project... [d]emolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources [or] that account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant."

The lead agency is responsible for the identification of "potentially feasible measures to mitigate significant adverse changes in the significance of an historical resource." The specified methodology for determining if impacts are mitigated to less than significant levels are the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings and the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings* (1995), publications of the National Park Service. (CCR §15064.5(b)(3))

2. Historic Resources

The entire unincorporated western Santa Clara Valley between Santa Paula on the east and Saticoy on the west was determined eligible for listing on the NRHP under Criterion A and Criterion C as a rural historic landscape district. This evaluation was made in connection with a comprehensive survey of this portion of the valley conducted in 1996. In this survey, buildings constructed during the period of significance as well as agricultural land with or without buildings was found to contribute to the significance, integrity and eligibility of the district. The significance statement for this survey states,

> The western Santa Clara Valley is significant under NRHP Criterion A (events) for its reflection of the growth and development of agriculture during its period of significance (1860-1946). The district illustrates the historical development of agricultural products and farming techniques, and documents the progression of this land use from the dry farming of grains and row crops, to irrigated tree crops and citrus ranching. The district also illustrates the historic use of the land within the adjacent canyons for stock raising and tree crops.
>
> The district is also significant under Criterion C (design) as one of the best preserved examples of a mature Southern California citriculture landscape. The district possesses a significant concentration of buildings, structures, objects and sites related to this land use. The district is important for its representation of the human designed landscape of agriculture in the specific historical form, pattern and arrangement of buildings, structures and objects. Together, these physical elements contribute to the interpretation of citriculture in California. A wide variety of architectural styles and building types from

> the period of significance also serve to illustrate the development of agriculture as both family farming and agribusiness enterprises. [1]

The project site is also located within a sub-district of this survey documenting Edwards Ranch-Orchard Farm. This area was determined to be separately eligible for the NRHP under Criterion A and Criterion C. The district is bounded on the north by Telegraph Road on the southeast boundary of the ranches facing onto Telegraph Road, on the south by the Santa Clara River, on the east by Todd Barranca and on the west by Ellsworth Barranca. The significance statement states,

> Orchard Farm is significant today as the oldest continuously operating ranch in the western Santa Clara Valley. The 1,043 acre Orchard Farm was originally part of the 17,773 acre Rancho Santa Paula y Saticoy granted to Manuel Jimeno Casarin in 1843. It was purchased during the late 1850s by Thomas Wallace More and his brothers, Andrew and Henry, for sheep and cattle raising. Thomas Wallace More was born in 1826 in Akron, Ohio of Scotch-Irish parents. More and another brother, Alexander, came to California during the Gold Rush of 1849 and worked in the gold fields near Marysville. Unsuccessful at mining, they began purchasing cattle and shipping them from Southern to Northern California realizing large profits.
>
> These profits enabled them to purchase Rancho Santa Paula y Saticoy, Rancho Sespe, Rancho Lompoc and the Island of Santa Rosa, making them among the largest landholders in the state during this period. In 1859 and between 1862 and 1864, California had severe droughts, and the More Brothers suffered serious financial losses when thousands of their sheep and cattle perished. The brothers dissolved their partnership and divided their ranchos. The Rancho Santa Paula y Saticoy was sold to George G. Briggs in 1861.
>
> During the time More was managing the ranchos in the Santa Clara Valley, he had William D. Hobson build some ranch houses for him. Hobson built the two-story adobe for More on Rancho Santa Paula y Saticoy in 1860. Hobson had come to the Ventura area from Sacramento in the late 1850s and spent some time living in the Sespe area while building other residences for More. Among Hobson's most significant buildings are the first County Courthouse and the Hill School in Ventura, both no longer in existence.
>
> When Jefferson Crane, nephew of George Briggs, visited the adobe in 1861, he recalled Thomas More was living in the adobe residence. All three men had known each other in Ohio where they had previously lived. Briggs had been a horticulturist in Marysville and upon visiting the More ranch, he believed he could successfully raise fruit on the land. He purchased approximately 15,000 acres of Rancho Santa Paula y Saticoy from More in 1861 and moved his family to the Santa Paula area where he built a house. His wife died in 1862 and Briggs, heartbroken over her death, moved his family to Oakland. Before he left, he planted a 160 acre orchard near the adobe. In 1867 George Briggs authorized E.B. Higgins to subdivide the Rancho and a map was prepared by surveyor W. H. Norway.
>
> In 1883 Samuel Edwards purchased approximately 1,043 acres, including the Briggs orchard and More adobe, and called the ranch Orchard Farm. It was Edwards who built most all of the buildings except the adobe. Two of the residences and some of the sheds and a barn appear to date from the 1880s. The school, built about 1869-70, may have been moved onto the ranch when the Edwards purchased the old school parcel about 1902. Samuel Edwards, a native of England, came to California with his brother John

[1] San Buenaventura Research Associates. *Ventura County Cultural Heritage Survey Phase V: Western Santa Clara Valley*. Ventura County General Services Agency, 1996.

during the Gold Rush of 1849. The brothers were successful in selling mining equipment, and in 1869 they moved to Santa Barbara and established a hardware business. Samuel Edwards continued to live in Santa Barbara while operating the Orchard Farm. His son Roger Edwards moved to the ranch about 1906 and managed it for many years, building a house east of ranch headquarters about 1910. Another son, Hubert, lived on the ranch, and eventually built a house for himself west of the ranch on Darling Road in 1924. A third son, Carl Francis, lived for awhile in the adobe residence.

The first crops raised on the ranch were lima beans, followed by sugar beets, walnuts, and eventually in the 1930s, lemons were planted. [2]

The buildings contributing to this eligibility determination are located in three clusters near the western, southern, and southeastern perimeter of the project site. These buildings are documented in detail as they existed at the time of the Santa Clara Valley Survey in 1995-96 in the forms attached to this report as Appendix A. Changes to these conditions found today will be described in this narrative. For purposes of discussion in this report, these clusters will be defined as:

1. More-Edwards Adobe. This largest cluster of buildings centered on the More-Edwards Adobe constructed by W.D. Hobson for Thomas Wallace More in 1860 also includes five secondary residences constructed circa 1885 to circa 1920 to serve the use and development of Orchard Farm by the Edwards family. Also included in this grouping are an office building, two barns, equipment sheds, and a row of sheds and buildings that includes the circa 1870 schoolhouse thought to have been moved to this location by Samuel Edwards after 1902. (See pages 4-16, Appendix A; Photos 1-3; 6-13).

   The most notable change to take place in this cluster since the completion of the survey in 1996 is the severe structural damage to the More-Edwards Adobe, a building that has been deteriorating at a previously more gradual rate since the time is was last inhabited in 1956. Over the last few years, a substantial portion of the building's eastern wall and a portion of the southern wall have collapsed. The two-story porch on the southern elevation is now almost entirely missing. Wood lap siding covering the adobe wall on the western elevation is bowed in places, suggesting the presence of structural trauma in the wall underneath. The wood shingle roof appears to not be watertight.

   The other buildings in this grouping are largely unchanged from the date of the survey. A minor exception is the removal of a lean-to wing from the southern elevation of the office building (See page 9, Appendix A, Photo 4). This lean-to wing was likely a later addition to this building. The row of buildings including the schoolhouse are in a somewhat more deteriorated condition than they appeared in the survey, with the loss of some siding and roofing materials. (See pages 7-8, Appendix A, Photo 5).

2. Ranch Residence. This small cluster consists of two buildings, a single-story residence and barn constructed circa 1920 for the Edwards Ranch. These building appear to be unchanged from the date of the survey. (See page 19-20, Appendix A, Photo 14, 15)

3. Edwards House. This cluster is represented by the two-story residence constructed circa 1910 for Roger Edwards, and surrounding grounds, which feature a lawn, specimen trees and a tennis court. Related

[2] San Buenaventura Research Associates, 1996.

Samuel Edwards Associates merged with Limoneira Associates in 1985. At that time the Edwards Ranch-Orchard Farm property was incorporated into the company's new joint holdings and has since been operated as the Orchard Farm unit of Limoneira.

outbuildings existed as recently as the late 1960s, but apparently were no longer remaining by the time of the 1995-96 survey as no outbuildings associated with this residence were recorded in the survey. The only apparent change since the survey evaluation is the removal of an attached pergola at the main entry on the northern elevation. (See pages 21-22, Appendix A, photo x)

Ventura County Landmark Designation

The More-Edwards Adobe is designated as Ventura County Landmark #2. It was one in the first grouping of properties designated as landmarks by the Ventura County Cultural Heritage Board when this program began in 1968. The adobe was later de-designated due to concerns about its condition, but was re-designated in 1990.

3. Project Description

The proposed project will expand the current 15-acre roughly 60,000 ton per year agricultural composting operation to an approximately 70-acre, 295,000 ton per year Commercial Organics Processing Operation with an energy production component. This project will involve the following activities:

- Construction of two, 80,925 square foot buildings for the unloading, processing, screening, and sorting of green and food materials.
- Construction of a 40,000 ton per year anaerobic digestion system to produce compost, methane rich biogas, compressed natural gas, and liquefied natural gas from green and food material.
- Construction of a 75,000 ton per year positive pressure covered aerated static pile system to aerobically decompose green and food organic materials into useable compost.
- Construction of a 23,107 square foot production/packaging building and loading dock for bagging operations.
- Construction of a 25,000 square foot maintenance building for storage and maintenance of on-site mobile equipment, processing equipment and delivery vehicles.
- Construction of a two-story 13,516 square foot administration building and parking lot.
- Construction of a scale house with two scales located just south of the facility administration building.
- Construction of a 50,000 gallon domestic water tank and three 120,000 gallon fire water storage tanks.
- Construction of two water drainage retention ponds on 5.6 acres.
- Improve the intersection of Telegraph Road and Edwards Ranch Road, lengthen or construct turn pockets on Telegraph Road, widen lanes on Edwards Ranch Road, relocate power poles, etc.
- Construction of an 8-foot chain link perimeter fence and a landscape buffer along the project site boundaries.

4. Project Impact Analysis

Impact 1. The proposed project will result in the removal from agricultural use of approximately 55 acres of agricultural land that currently contributes to the significance and eligibility of the NRHP-eligible Western

Santa Clara Valley and the Edwards Ranch-Orchard Farm historic districts and a Ventura County Landmark. This activity will result in a reduction of design and setting integrity to the district and landmark, and should be regarded as having a significant adverse impact on these districts.

<u>Impact 2</u>. The proposed project will result in the introduction of land uses, activities and buildings in close proximity to buildings that contribute to the significance and eligibility of the NRHP-eligible Western Santa Clara Valley and the Edwards Ranch-Orchard Farm historic districts, and a Ventura County Landmark, that are out of character with the district and landmark. This activity will result in a substantial loss of integrity of setting for these features.

<u>Impact 3</u>. The proposed project will result in the introduction of land uses, activities and buildings in close proximity to fragile buildings that contribute to the significance and eligibility of the NRHP-eligible Western Santa Clara Valley and the Edwards Ranch-Orchard Farm historic districts, and a Ventura County Landmark. These resources currently exhibit signs of deterioration that this activity may promote further, leading to a greater degradation of these features.

Cumulative Impacts

A number of projects, both proposed and recent, have contributed to a reduction in integrity for the Western Santa Clara Valley Historic District. The construction of the Santa Paula Wastewater Recycling plant by the City of Santa Paula removed approximately fifty acres from the eastern edge of this district in 2005. The proposed Mission Rock Energy Center on ten acres located at 1025 Mission Rock Road, east of the project site, would introduce an additional use of an industrial character into the district. These changes constitute a significant cumulative impact to the integrity of setting and design for the district.

5. Mitigation Measures and Residual Impacts

A principle of environmental impact mitigation is that some measure or combination of measures may, if incorporated into a project, serve to avoid or reduce significant and adverse impacts to a historic resource.

The demolition of a historic property cannot be seen as conforming with the *Secretary of the Interior's Standards*. Therefore, the absolute loss of a historic property should generally be regarded as an adverse environmental impact which cannot be mitigated to a less than significant and adverse level. Further, the usefulness of documentation of a historic resource, through photographs and measured drawings, as mitigation for its demolition, is limited by the CEQA Guidelines, which state:

> In some circumstances, documentation of an historical resource, by way of historic narrative, photographs or architectural drawings, as mitigation for the effects of demolition of the resource will not mitigate the effects to a point where clearly no significant effect on the environment would occur. (CEQA Guidelines §15126.4 (b)(2))

Implied by this language is the existence of circumstances whereby documentation may mitigate the impact of demolition to a less than significant level. However, the conditions under which this might be said to have occurred are not described in the Guidelines. It is also noteworthy that the existing CEQA case law does not appear to support the concept that the loss of a historic resource can be mitigated to less than adverse impact levels by means of documentation or commemoration. (*League for Protection of Oakland's Architectural and Historic Resources v. City of Oakland* [1997] 52 Cal. App. 4th 896; *Architectural Heritage Association v. County of Monterey* [2004] 19 Cal. Rptr. 3d 469)

Taken in their totality, the CEQA Guidelines require a project which will have potentially adverse impacts on historic resources to conform to the *Secretary of the Interior's Standard*s, in order for the impacts to be mitigated to below significant and adverse levels. However, CEQA also mandates the adoption of feasible mitigation measures which will reduce adverse impacts, even if the residual impacts after mitigation remain significant. Means other than the application of the Standards would necessarily be required to achieve this level of mitigation. In determining what type of additional mitigation measures would reduce impacts to the greatest extent feasible, best professional practice dictates considering the level of eligibility of the property, as well as by what means it derives its significance.

Mitigation programs for impacts on historic resources tend to fall into three broad categories: documentation, design and interpretation. Documentation techniques involve the recordation of the site according to accepted professional standards, such that the data will be available to future researchers, or for future restoration efforts. Design measures could potentially include direct or indirect architectural references to a lost historic property, e.g., the incorporation of historic artifacts, into the new development, or the relocation of the historic property to another suitable site. Interpretative measures could include commemorating a significant historic event or the property's connection to historically significant themes.

Discussion

The significant adverse impacts on the two NRHP-eligible historic districts and the designated Ventura County Landmark are to the integrity of design and setting for these properties, and reasonably foreseeable impacts to the future preservation of these properties. Therefore, a mitigation program should emphasize measures that minimize these adverse impacts though appropriate design and planning measures. The following measures should be incorporated into the CEQA analysis and county decision-making process for this project:

> The project shall be screened from the historic district and landmark in such a manner as to minimize its visual impact upon the district and landmark. Screening methods may include historic landscape materials (e.g, citrus trees) planted along perimeter fences or walls, and/or tall skyline trees planted within the site to simulate wind rows, or other such materials as may be effective and appropriate for the purposes of integrating the new construction into the agricultural landscape to the greatest extent feasible.

<u>Advisory Item</u>: Although not a part of the project site or under the control of Agromin, the stabilization and protection of historic buildings currently exhibiting signs of deterioration and structural trauma should be addressed through the development of a comprehensive historic preservation to provide for the future maintenance and continued historically appropriate use of buildings within the historic district, and arresting the deterioration process in the immediate term. The plan should also address longer-term issues of maintenance and use in a historically-appropriate manner.

Photo 1. More-Edwards Adobe, southern and western elevations. [3-31-17]

Photo 2. More-Edwards Adobe, eastern elevation. [3-31-17]


Photo 3. More-Edwards Adobe, northern elevation [3-31-17].


Photo 4. Office Building, western elevation. [3-31-17]

Photo 5. Barns and schoolhouse, western elevation. [3-31-17]

Photo 6. Residence, northern and eastern elevations. [3-31-17]


Photo 7. Residence, western elevation. [3-31-17]

Photo 8. Residence, Eastern and southern elevations. [3-31-17]

Photo 9. Residence, western and southern elevations. [3-31-17]

Photo 10. Equipment sheds, southern and western elevations. [3-31-17]

Photo 11. Barn, southern and western elevations. [3-31-17]

Photo 12. Barn, northern elevation. [3-31-17]


Photo 13. Equipment Shed, southern and eastern elevations. [3-31-17]


Photo 14. Ranch Residence, northern and western elevations. [3-31-17]


Photo 15. Barn, northern and western elevations. [3-31-17]


Photo 16. Edwards House, eastern and northern elevations. [3-31-17]

Appendix A

Orchard Farm DPR 523 Forms
Santa Clara Valley Survey

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
DISTRICT RECORD

Primary #
HRI #
Trinomial

NRHP Status Code *3D*

Resource Name or #: (Assigned by recorder) *Orchard Farm*

D1. Historic Name: *Edwards Ranch-Orchard Farm* D2. Common Name: *Limoneira Ranch*

D3. Detailed Description (Discuss overall coherence of the district, its setting, visual characteristics, and minor features. List all elements of district.):

The original Edwards Ranch was comprised of 1,023 acres and bounded roughly by Telegraph Road on the north, the Santa Clara River on the south, Ellsworth barranca on the west and Todd Barranca on the east. Edwards gradually acquired a number of other parcels, including the Beckwith Ranch on Telegraph Road, eventually reaching a total area of 1,872 acres. The Edwards Ranch headquarters grouping is located in the southwestern corner of the property, on a bench on the north side of the Santa Clara River. A large number of buildings are clustered together on the east and west sides of Edwards Ranch Road, a private road with access from Telegraph Road. The buildings are bounded by the Southern Pacific Railroad right-of-way on the north and lemon orchards on east, west and south. This grouping of buildings includes the More adobe constructed circa 1860, and a number of secondary residences built between circa 1880 and 1920; barns built between 1883 and 1930, an office and a number of sheds attached to a schoolhouse built probably during the 1860s. The district has a high degree of integrity.

In addition to the ranch headquarters, a few other smaller groupings of buildings are located on the ranch. East of the headquarters, along a private dirt road (Roger Road), is a small employee's residence and barn. To the east of this grouping is the Roger Edwards residence, garage and shed. This house is surrounded by well landscaped grounds with many mature ornamental trees and a tennis court. Northeast of this area is a small employee's house and a walnut dehydrator building along Orchard Ranch road. This district also includes the Beckwith Ranch and residence, located on the south side of Telegraph Road west of Todd Road.

D4. Boundary Description (Describe limits of district and attach map showing boundary and district elements.):

The district is bounded on the north by Telegraph Road or the southeast boundary of the ranches facing onto Telegraph Road, on the south by the Santa Clara River, on the east by Todd Barranca and on the west by Ellsworth Barranca.

D5. Boundary Justification:

These boundaries include the original 1,023 acres of ranch property plus additional parcels added for a total of 1,872 acres.

D6. Significance: Theme *Agriculture* **Area** *West Santa Clara Valley*

Period of Significance *1860 - 1930* **Applicable Criteria** *A & C* Discuss district's importance in terms of its historical context as defined by theme, period of significance, and geographic scope. Also address the integrity of the district as a whole.)

Orchard Farm is significant today as the oldest continuously operating ranch in the western Santa Clara Valley. The 1,043 acre Orchard Farm was originally part of the 17,773 acre Rancho Santa Paula y Saticoy granted to Manuel Jimeno Casarin in 1843. It was purchased during the late 1850s by Thomas Wallace More and his brothers, Andrew and Henry, for sheep and cattle raising. Thomas Wallace More was born in 1826 in Akron, Ohio of Scotch-Irish parents. More and another brother, Alexander, came to California during the Gold Rush of 1849 and worked in the gold fields near Marysville. Unsuccessful at mining, they began purchasing cattle and shipping them from Southern to Northern California realizing large profits. [continued]

D7. References (Give full citations including the names and addresses of any informants, where possible.):

Alexander, W.E. *Historical Atlas of Ventura County,* 1912; Cleland, Robert B. *A Place Called Sespe.* Los Angeles: Cleland, 1953. Gidney, C.M., Brooks, Benjamin, Sheridan, E.M. *History of Santa Barbara, San Luis Obispo and Ventura Counties, CA.* 2 vols., Chicago: Lewis Pub. Co., 1917; Guinn, J.M. *Historical & Biographical Record of Southern California.* Chicago: Chapman Pub. Co., 1902. [continued]

D8. Evaluator: *Judy Triem* **Date:** *11/15/1995*

Affiliation and Address:

Recorded by: *Judy Triem/San Buenaventura Research Assoc.* **Date** *12/5/1995* ☒ Continuation ☐ Update

D6. Significance [continued]

These profits enabled them to purchase Rancho Santa Paula y Saticoy, Rancho Sespe, Rancho Lompoc and the Island of Santa Rosa, making them among the largest landholders in the state during this period (Guinn: 225). In 1859 and between 1862 and 1864, California had severe droughts, and the More Brothers suffered serious financial losses when thousands of their sheep and cattle perished. The brothers dissolved their partnership and divided their ranchos (Cleland: 89). The Rancho Santa Paula y Saticoy was sold to George G. Briggs in 1861.

During the time More was managing the ranchos in the Santa Clara Valley, he had William D. Hobson build some ranch houses for him. Hobson built the two-story adobe for More on Rancho Santa Paula y Saticoy in 1860. Hobson had come to the Ventura area from Sacramento in the late 1850s and spent some time living in the Sespe area while building other residences for More. Among Hobson's most significant buildings are the first County Courthouse and the Hill School in Ventura, both no longer in existence.

When Jefferson Crane, nephew of George Briggs, visited the adobe in 1861, he recalled Thomas More was living in the adobe residence. All three men had known each other in Ohio where they had previously lived. Briggs had been a horticulturist in Marysville and upon visiting the More ranch, he believed he could successfully raise fruit on the land. He purchased approximately 15,000 acres of Rancho Santa Paula y Saticoy from More in 1861 and moved his family to the Santa Paula area where he built a house. His wife died in 1862 and Briggs, heartbroken over her death, moved his family to Oakland. Before he left, he planted a 160 acre orchard near the adobe (Narrative of Jefferson Crane: 4). In 1867 George Briggs authorized E.B. Higgins to subdivide the Rancho and a map was prepared by surveyor W. H. Norway.

In 1883 Samuel Edwards purchased approximately 1,043 acres, including the Briggs orchard and More adobe, and called the ranch Orchard Farm. It was Edwards who built most all of the buildings except the adobe. Two of the residences and some of the sheds and a barn appear to date from the 1880s. The school, built about 1869-70, may have been moved onto the ranch when the Edwards purchased the old school parcel about 1902. Samuel Edwards, a native of England, came to California with his brother John during the Gold Rush of 1849. The brothers were successful in selling mining equipment, and in 1869 they moved to Santa Barbara and established a hardware business. Samuel Edwards continued to live in Santa Barbara while operating the Orchard Farm. His son Roger Edwards moved to the ranch about 1906 and managed it for many years, building a house east of ranch headquarters about 1910. Another son, Hubert, lived on the ranch, and eventually built a house for himself west of the ranch on Darling Road in 1924. A third son, Carl Francis, lived for awhile in the adobe residence.

The first crops raised on the ranch were lima beans, followed by sugar beets, walnuts, and eventually in the 1930s, lemons were planted.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code *3B*
Other Listings
Review Code **Reviewer** **Date**

Page 4 **of** 27 **Resource Name or #:** (Assigned by recorder) *Orchard Farm*

P1. Other Identifier: *Edwards Adobe*

P2. Location: ☐ **Not for Publication** ☒ **Unrestricted** **a. County** *Ventura*

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

b. USGS 7.5' Quad *Saticoy* **Date** *1951* **T** **; R** **;** **1/4 of** **1/4 of Sec** **;** **B.M.**

c. Address: *Edwards Ranch Road* City *Santa Paula* Zip *93060*

d. UTM: (Give more than one for large and/linear resources) *11* ; **mE/** **mN**

e. Other Locational Data (Enter Parcel #, legal description, directions to resource, elevation, etc., as appropriate)

south of 126 Freeway and Southern Pacific Railroad tracks on east side at end of Edwards Ranch Rd.

Parcel No. *90-180-08*

P3. Description (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and b

The two-story Monterey Style adobe features a distinctive balcony across the front (south-facing) elevation. The balcony, with its wood balustrade, is supported by chamfered wood posts that extend from the first floor to the top of the second floor meeting the shed roof. This shed roof extends from the main low sidefacing gable roof and is covered with wood shingles. A one-story portion with a steep shed roof is located across the north side of the house. The windows and doors are symmetrically arranged with the large doublehung windows containing six over six panes with wood mouldings. The front door, both upstairs and down, is paneled with a transom window above. A chimney punctuates the roofline at the rear of the two-story roof. The adobe walls are covered with six inch wide horizontal redwood siding on all sides except the north side. The building has a concrete foundation on the southern and western elevations and a stone-mud foundation on the east elevation. The one story portion at the rear of the building has a concrete floor.

The building has retained its integrity, but is very deteriorated with collapsing walls and hanging boards and broken windows. The louvered shutters have been removed from the windows.

P3b. Resource Attributes: (List attributes and codes) *HP2 - Single Family Property* *HP33 - Farm/ranch*

P4. Resources Present ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☒ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects)

P5b. Description of Photo: (View, date, accessio
Adobe, southwest elevation, 5/03/95, #0608

P6. Date Constructed/Age and Sources:
☐ Prehistoric ☒ Historic ☐ Both

1860-E ; Triem,Preliminary Investigation Edward's Adobe, 1989

P7. Owner and Address
Limoneira Company
1141 Cummings Road
Santa Paula, CA 93060

P8. Recorded by: (Name, affiliation, and addres
Judy Triem/San Buenaventura Research Assoc.
Ventura County Cultural Heritage Board
800 S. Victoria Ave.
Ventura, CA 93009

P9. Date Recorded: *9/8/1995*

P10. Survey Type: (Describe)
Intensive

P11. Report Citation: (Cite survey report and other sources, or enter "none")
San Buenaventura Research Associates, 1996, *West Santa Clara Valley Cultural Heritage Survey, Phase V.* General Services Administration

Attachments
☐ NONE ☐ Continuation Sheet ☒ District Record ☐ Rock Art Record ☐ Other: (List)
☐ Location Map ☒ Building, Structure, and Object Record ☐ Linear Feature Record ☐ Artifact Record
☒ Sketch Map ☐ Archaeological Record ☐ Milling Station Record ☐ Photograph Record

BUILDING, STRUCTURE, AND OBJECT RECORD

Primary #
HRI #

NRHP Status Code *3B*

Resource Name or #: (Assigned by recorder) *Orchard Farm*

B1. Historic Name: *More adobe*
B2. Common Name: *Edwards adobe*
B3. Original Use: *residence* B4. Present Use: *vacant*
B5. Architectural Style: *Monterey Style*
B6. Construction History: (Construction date, alterations, and date of alterations)
1860-E

B7. Moved? ☒ No ☐ Yes ☐ Unknown Date : Original Location:
B8. Related Features: *office, barns, residences*

B9a. Architect: *none* b. Builder: *W.D. Hobson*
B10. Significance: Theme: *Agriculture* Area: *West Santa Clara Valley*
Period of Significance: *1860-1946* **Property Type:** *ranch buildings* **Applicable Criteria:** *A, C*

(Discuss importance in terms of historical or architectural context as defined by theme, period and geographic scope. Also address integrity.)

The More adobe is the oldest building within the west Santa Clara Valley survey area, and the second oldest building in the Santa Clara Valley after Rancho Camulos, built in 1852. It is the only adobe within Ventura County built for a Yankee, Thomas More, who purchased the rancho land from the original grantee, Manuel Jimeno Casarin in the late 1850s. It was also built by an important Ventura County pioneer, W.D. Hobson, known as the "Father of Ventura County" because of his work in splitting Ventura County from Santa Barbara County in 1873. Hobson also built the first main school house and court house in Ventura. George Briggs, who purchased the land from More, is also significant for his role as the first major subdivider of Rancho Santa Paula y Saticoy in 1867, thus paving the way for the agricultural development of the valley. He also planted 160 acres of fruit trees near the adobe, the first effort of its kind in the survey area, and only the second orchard to be set out in the Santa Clara Valley.

The adobe is a rare example of a Monterey style adobe clad in wood siding. It is architecturally significant for its use of indigenous and imported materials and for its two-story Monterey style. The only other example of a Monterey style adobe in Ventura County is the Olivas adobe, built circa 1853 for Raimundo Olivas. This building is built entirely of adobe with adobe plaster siding.

B11. Additional Resource Attributes: (List attributes and codes) *HP2 - Single Family Property* *HP33 - Farm/ranch*

B12. References:

"Narrative of Jefferson Crane. Pt. 1" *Ventura County Historical Society Quarterly*. 1(Nov., 1955) 2-8.

Plat Map of Rancho Santa Paula y Saticoy, 1860.

(Sketch Map with north arrow required.) N

B13. Remarks:

B14. Evaluator: *Judy Triem*
Date of Evaluation: *11/15/1995*

(This space reserved for official comments.)

References [continued]

"Narrative of Jefferson Crane. Pt. 1" *Ventura County Historical Society Quarterly*. 1(Nov., 1955) 2-8.

Triem, Judith. *Preliminary Investigation of Edward's Adobe.* 1989.

Plat Map of Rancho Santa Paula y Saticoy, 1860.

U.S.G.S Maps of Santa Paula and Saticoy, 1951.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code 3D

Other Listings
Review Code **Reviewer** **Date**

 Resource Name or #: (Assigned by recorder) *Orchard Farm*

P1. Other Identifier: *Edwards Ranch- row of connected buildings, school*

P2. Location: ☐ **Not for Publication** ☒ **Unrestricted** **a. County** *Ventura*

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

b. USGS 7.5' Quad *Saticoy* **Date** *1951* **T** **; R** **;** **1/4 of** **1/4 of Sec** **;** **B.M.**

c. Address: *Edwards Ranch Road* City *Santa Paula* Zip *93060*

d. UTM: (Give more than one for large and/linear resources) *11* ; **mE/** **mN**

e. Other Locational Data (Enter Parcel #, legal description, directions to resource, elevation, etc., as appropriate)

south of 126 Freeway and SP Railroad tracks on east side at end of Edwards Ranch Rd.

Parcel No. *90-180-08*

P3. Description (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and b

This cluster of five connected buildings is presently used for equipment and vehicle storage. Some of the buildings may have been moved on the site. From south to north, the first building on the south is a two-story wood frame building that was probably originally used as a residence. It has a medium gable roof covered with corrugated metal siding and a square plan. Windows have been boarded up. The only remaining door is a five paneled door with an outside staircase leading up to it on the southern elevation. The house is covered with wide horizontal wood siding and has no foundation.

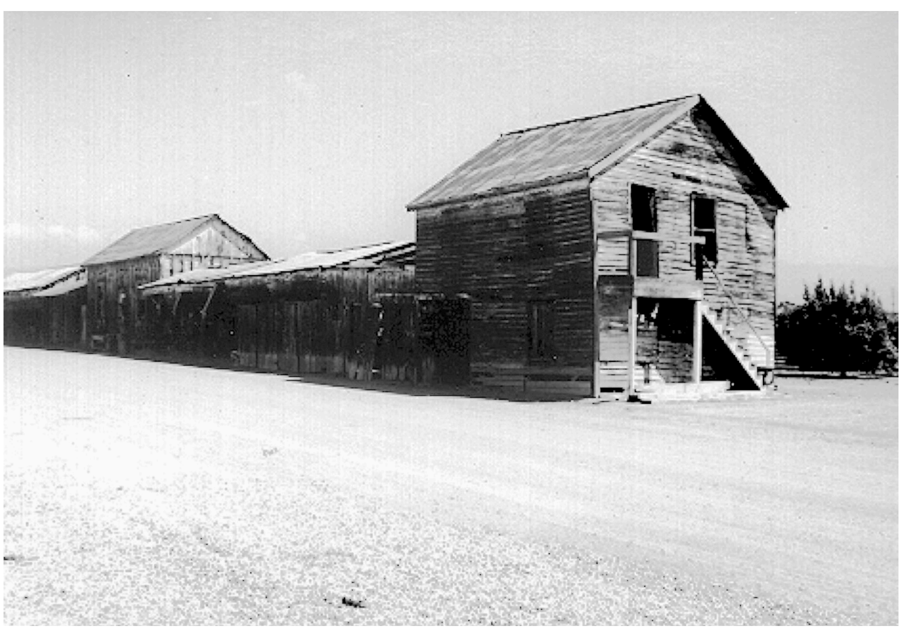
Between the house and the school building is a low gable roofed equipment shed, partially open on both sides and supported by square wood posts. The roof is corrugated metal.

North of the school are gable roofed storage sheds with corrugated metal roofs. Portions of the sheds have wood siding and portions are open for vehicle and equipment storage. All the buildings are in a deteriorated condition.

P3b. Resource Attributes: (List attributes and codes) *HP33 - Farm/ranch*

P4. Resources Present ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☒ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects)



P5b. Description of Photo: (View, date, accessio
Sheds, southeast elevation, 5/03/95, #0613

P6. Date Constructed/Age and Sources:
☐ Prehistoric ☒ Historic ☐ Both

1870 and later

P7. Owner and Address
Limoneira Company
1141 Cummings Road
Santa Paula, CA 93060

P8. Recorded by: (Name, affiliation, and addres
Judy Triem/San Buenaventura Research Assoc.
Ventura County Cultural Heritage Board
800 S. Victoria Ave.
Ventura, CA 93009

P9. Date Recorded: *9/6/1995*

P10. Survey Type: (Describe)
Intensive

P11. Report Citation: (Cite survey report and other sources, or enter "none")
San Buenaventura Research Associates, 1996, *West Santa Clara Valley Cultural Heritage Survey, Phase V.* General Services Administration

Attachments
☐ NONE ☒ Continuation Sheet ☒ District Record ☐ Rock Art Record ☐ Other: (List)
☐ Location Map ☐ Building, Structure, and Object Record ☐ Linear Feature Record ☐ Artifact Record
☒ Sketch Map ☐ Archaeological Record ☐ Milling Station Record ☐ Photograph Record

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary #
HRI #
Trinomial

Page 8 **of** 27 **Resource Name or #:** (Assigned by recorder) *Orchard Farm*

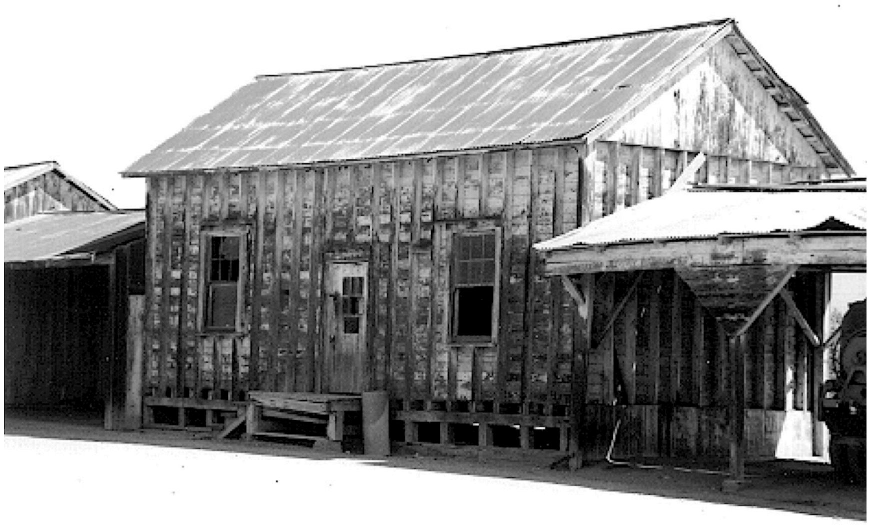
Recorded by: *Judy Triem/San Buenaventura Research Assoc.* **Date** *9/6/1995* ☒ Continuation ☐ Update

P3. Description [continued]

North of the equipment shed is a small rectangular plan building with a medium gable roof. It is believed to be the old Live Oak School, originally located at the corner of Olive and Telegraph roads. It is symmetrical in design with a centered front door flanked by two windows on the western elevation. The windows have six panes in the upper sash and a single pane in the lower sash. This windows treatment is repeated on the eastern elevation. Many of the panes are broken, and this building, like the rest in this grouping, is badly deteriorated. This building is architecturally interesting because it is built with wide horizontal siding single-wall construction, but with the studs on the outside. The building rests on a wood foundation.

The school was established in 1869-70 and was at one time a part of the Briggs School District, located midway between Briggs Road and Saticoy. By 1902 the attendance had fallen to four students, and the district was suspended. The property was sold to H.M. Edwards. The schoolhouse was located at the southwest corner of Olive Road and Telegraph Road. It is believed that Edwards moved the school to the present location at some later date.

Supplemental Photograph or Drawing



Description of Photo: (View, date, accessio
Schoolhouse, east elevation, 5/03/95, #0615

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code *3D*

Other Listings
Review Code **Reviewer** **Date**

 Resource Name or #: (Assigned by recorder) *Orchard Farm*

P1. Other Identifier: *Office building*

P2. Location: ☐ **Not for Publication** ☒ **Unrestricted** **a. County** *Ventura*

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

b. USGS 7.5' Quad *Saticoy* **Date** *1951* **T** **; R** **;** **1/4 of** **1/4 of Sec** **;** **B.M.**

c. Address: *Edwards Ranch Road* City *Santa Paula* Zip *93060*

d. UTM: (Give more than one for large and/linear resources) *11* ; **mE/** **mN**

e. Other Locational Data (Enter Parcel #, legal description, directions to resource, elevation, etc., as appropriate)

south of 126 Freeway and Southern Pacific Railroad tracks on the east side at end of Edwards Ranch Rd.

Parcel No. *90-180-08*

P3. Description (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and b

Adjacent to the two-story adobe residence is a small office building. It is rectangular in plan with a medium front facing gable roof and shed roof extension on the south side, covered with wood shingles. Under the open eaves are short exposed rafter tails. The building has a single front door with four glass panes and a six-paned wood window to the south. The window has wood shutters. A garage is located behind the office. The building is in fair condition.

P3b. Resource Attributes: (List attributes and codes) *HP33 - Farm/ranch*

P4. Resources Present ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☒ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects)

P5b. Description of Photo: (View, date, accessio
Office, west elevation, 5/03/95, #0607

P6. Date Constructed/Age and Sources:
☐ Prehistoric ☒ Historic ☐ Both

1920-E

P7. Owner and Address
Limoneira Company
1141 Cummings Road
Santa Paula, CA 93060

P8. Recorded by: (Name, affiliation, and addres
Judy Triem/San Buenaventura Research Assoc.
Ventura County Cultural Heritage Board
800 S. Victoria Ave.
Ventura, CA 93009

P9. Date Recorded: *9/8/1995*

P10. Survey Type: (Describe)
Intensive

P11. Report Citation: (Cite survey report and other sources, or enter "none")
San Buenaventura Research Associates, 1996, *West Santa Clara Valley Cultural Heritage Survey, Phase V.* General Services Administration

Attachments
☐ NONE ☐ Continuation Sheet ☒ District Record ☐ Rock Art Record ☐ Other: (List)
☐ Location Map ☐ Building, Structure, and Object Record ☐ Linear Feature Record ☐ Artifact Record
☒ Sketch Map ☐ Archaeological Record ☐ Milling Station Record ☐ Photograph Record

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code 3D

Other Listings
Review Code **Reviewer** **Date**

 Resource Name or #: (Assigned by recorder) *Orchard Farm*

P1. Other Identifier: *Edward's Ranch residence #7, shed*

P2. Location: ☐ **Not for Publication** ☒ **Unrestricted** **a. County** *Ventura*

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

b. USGS 7.5' Quad *Saticoy* **Date** *1951* **T** **; R** **;** **1/4 of** **1/4 of Sec** **;** **B.M.**

c. Address: *Edwards Ranch Road* City *Santa Paula* Zip *93060*

d. UTM: (Give more than one for large and/linear resources) *11* ; **mE/** **mN**

e. Other Locational Data (Enter Parcel #, legal description, directions to resource, elevation, etc., as appropriate)

south of 126 Freeway and Southern Pacific Railroad tracks on the west side at end of Edwards Ranch Rd.

Parcel No. *90-180-08*

P3. Description (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and b

This is a one story California Bungalow style residence with a rectangular plan and a front-facing low-pitched, gable roof covered with composition shingles. A projecting porch with a vertical slat baluster is located on the left side of the house, and is supported by tapered columns. The house is covered with narrow, horizontal clapboard siding and rests on a concrete block foundation. The open eaves have exposed rafter tails and knee-brackets. Lattice vents are found under the gable ends. The house has aluminum sliding windows with plain wood casings. At the rear of the house is a small wood shingle clad hip roofed shed with multi-paned windows and wide horizontal drop siding. An open fence extends across the front of the house containing a small yard and large mature tree. The house is in fair condition.

P3b. Resource Attributes: (List attributes and codes) *HP33 - Farm/ranch* *HP2 - Single Family Property*

P4. Resources Present ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☒ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects)

P5b. Description of Photo: (View, date, accessio
Residence #7, northeast elevation, 5/03/95,#0606

P6. Date Constructed/Age and Sources:
☐ Prehistoric ☒ Historic ☐ Both

1915-E

P7. Owner and Address
Limoneira Company
1141 Cummings Road
Santa Paula, CA 93060

P8. Recorded by: (Name, affiliation, and addres
Judy Triem/San Buenaventura Research Assoc.
Ventura County Cultural Heritage Board
800 S. Victoria Ave.
Ventura, CA 93009

P9. Date Recorded: *9/8/1995*

P10. Survey Type: (Describe)
Intensive

P11. Report Citation: (Cite survey report and other sources, or enter "none")
San Buenaventura Research Associates, 1996, *West Santa Clara Valley Cultural Heritage Survey, Phase V.* General Services Administration

Attachments
☐ NONE ☐ Continuation Sheet ☒ District Record ☐ Rock Art Record ☐ Other: (List)
☐ Location Map ☐ Building, Structure, and Object Record ☐ Linear Feature Record ☐ Artifact Record
☒ Sketch Map ☐ Archaeological Record ☐ Milling Station Record ☐ Photograph Record

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code *3D*

Other Listings
Review Code **Reviewer** **Date**

Page 11 **of** 27 **Resource Name or #:** (Assigned by recorder) *Orchard Farm*

P1. Other Identifier: *Edward's Ranch residence #8*

P2. Location: ☐ **Not for Publication** ☒ **Unrestricted** **a. County** *Ventura*

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

b. USGS 7.5' Quad *Saticoy* **Date** *1951* **T** **; R** **;** **1/4 of** **1/4 of Sec** **;** **B.M.**

c. Address: *Edwards Ranch Road* City *Santa Paula* Zip *93060*

d. UTM: (Give more than one for large and/linear resources) *11* ; **mE/** **mN**

e. Other Locational Data (Enter Parcel #, legal description, directions to resource, elevation, etc., as appropriate)

south of 126 Freeway and Southern Pacific Railroad tracks on the west side at end of Edwards Ranch Rd.

Parcel No. *90-180-08*

P3. Description (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and b

This is a one story folk style residence with a rectangular plan and a front-facing high-pitched, gable roof covered with composition shingles. A projecting porch, modestly Greek Revival in style, with a flat roof is located on the right side of the house, and is supported by capped square posts. The house is covered with wide, horizontal shiplap siding and rests on a partial concrete block foundation covered by a wood skirt. The closed eaves have a frieze band under the gable ends. The house has medium, multi-pane, double-hung windows with plain wood casings. The windows have six panes on the upper sash over a single pane on the lower sash. A shed roof addition has been made to the northern elevation of the house with additions to the rear as well. The house is in good condition.

P3b. Resource Attributes: (List attributes and codes) *HP2 - Single Family Property* *HP33 - Farm/ranch*

P4. Resources Present ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☒ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects)

P5b. Description of Photo: (View, date, accessio
Residence #8, southeast elevation, 5/03/95, #0604

P6. Date Constructed/Age and Sources:
☐ Prehistoric ☒ Historic ☐ Both

1885-E

P7. Owner and Address
Limoneira Company
1141 Cummings Road
Santa Paula, CA 93060

P8. Recorded by: (Name, affiliation, and addres
Judy Triem/San Buenaventura Research Assoc.
Ventura County Cultural Heritage Board
800 S. Victoria Ave.
Ventura, CA 93009

P9. Date Recorded: *9/11/1995*

P10. Survey Type: (Describe)
Intensive

P11. Report Citation: (Cite survey report and other sources, or enter "none")
San Buenaventura Research Associates, 1996, *West Santa Clara Valley Cultural Heritage Survey, Phase V.* General Services Administration

Attachments
☐ NONE ☐ Continuation Sheet ☒ District Record ☐ Rock Art Record ☐ Other: (List)
☐ Location Map ☐ Building, Structure, and Object Record ☐ Linear Feature Record ☐ Artifact Record
☒ Sketch Map ☐ Archaeological Record ☐ Milling Station Record ☐ Photograph Record

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code *3D*

Other Listings
Review Code **Reviewer** **Date**

 Resource Name or #: (Assigned by recorder) *Orchard Farm*

P1. Other Identifier: *Edward's Ranch residence #9*

P2. Location: ☐ **Not for Publication** ☒ **Unrestricted** **a. County** *Ventura*

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

b. USGS 7.5' Quad *Saticoy* **Date** *1951* **T** **; R** **;** **1/4 of** **1/4 of Sec** **;** **B.M.**

c. Address: *Edwards Ranch Road* City *Santa Paula* Zip *93060*

d. UTM: (Give more than one for large and/linear resources) *11* ; **mE/** **mN**

e. Other Locational Data (Enter Parcel #, legal description, directions to resource, elevation, etc., as appropriate)

south of 126 Freeway and Southern Pacific Railroad tracks on the east side at end of Edwards Ranch Rd.

Parcel No. *90-180-08*

P3. Description (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and b

Facing the road, just south of the office, is this one story gable-on-hip roof residence covered with composition shingles. Eaves are closed with lattice vents on the south end and a louvered vent on the north end. The porch is recessed on the south side of the building, and is supported by square supports below exposed rafters and beam. The balustrade is enclosed with wood siding to match the house. Windows are found singly, in pairs and in threes. Some windows are double-hung four-over-four panes with wood casings. The house is covered with medium horizontal clapboard siding and rests on a concrete or wood pier foundation covered with a wood skirt. A brick chimney punctuates the roofline. The house has retained its integrity and is in good condition.

P3b. Resource Attributes: (List attributes and codes) *HP2 - Single Family Property* *HP33 - Farm/ranch*

P4. Resources Present ☒ Building ☐ Structure ☐ Object ☐ Site ☒ District ☒ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects)

P5b. Description of Photo: (View, date, accessio
Residence #9, west elevation, 5/08/95,#1200

P6. Date Constructed/Age and Sources:
☐ Prehistoric ☒ Historic ☐ Both

1915-E

P7. Owner and Address
Limoneira Company
1141 Cummings Road
Santa Paula, CA 93060

P8. Recorded by: (Name, affiliation, and addres
Judy Triem/San Buenaventura Research Assoc.
Ventura County Cultural Heritage Board
800 S. Victoria Ave.
Ventura, CA 93009

P9. Date Recorded: *9/8/1995*

P10. Survey Type: (Describe)
Intensive

P11. Report Citation: (Cite survey report and other sources, or enter "none")
San Buenaventura Research Associates, 1996, *West Santa Clara Valley Cultural Heritage Survey, Phase V.* General Services Administration

Attachments ☐ NONE ☐ Continuation Sheet ☒ District Record ☐ Rock Art Record ☐ Other: (List)
☐ Location Map ☐ Building, Structure, and Object Record ☐ Linear Feature Record ☐ Artifact Record
☒ Sketch Map ☐ Archaeological Record ☐ Milling Station Record ☐ Photograph Record

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code 3D

Other Listings
Review Code **Reviewer** **Date**

 Resource Name or #: (Assigned by recorder) *Orchard Farm*

P1. Other Identifier: *Edward's Ranch residence #10*

P2. Location: ☐ **Not for Publication** ☒ **Unrestricted** **a. County** *Ventura*

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

b. USGS 7.5' Quad *Saticoy* **Date** *1951* **T** **; R** **;** **1/4 of** **1/4 of Sec** **;** **B.M.**

c. Address: *Edwards Ranch Road* City *Santa Paula* Zip *93060*

d. UTM: (Give more than one for large and/linear resources) *11* ; **mE/** **mN**

e. Other Locational Data (Enter Parcel #, legal description, directions to resource, elevation, etc., as appropriate)

south of 126 Freeway and Southern Pacific Railroad tracks on the east side at end of Edwards Ranch Rd.

Parcel No. *90-180-08*

P3. Description (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and b

This is a one story residence with an l-shaped plan and a front-facing medium-pitched, gable roof covered with composition shingles. The shallow eaves are open. A projecting porch with a hip roof and exposed rafters and a spindle baluster is located on the right side of the house, and is supported by square posts. The house is covered with board and batten siding and rests on a concrete perimeter foundation covered with a vertical board skirt. A brick chimney is located on the ridge of the house. The house has a large front multi-pane wood window next to the front door and an aluminum slider windows with plain wood casings north of the porch. The single door has vertical panels. Changes to this folk house with its gable front and wing plan are seen in the partial enclosure of the front porch and changes to front windows. Behind the house is a small shed roof tool shed, a wood carport with metal roof and a basketweave wood fence. The house is in fair condition.

P3b. Resource Attributes: (List attributes and codes) *HP33 - Farm/ranch* *HP2 - Single Family Property*

P4. Resources Present ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☒ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects)

P5b. Description of Photo: (View, date, accessio
Residence #10, west elevation, 5/08/95, #1201

P6. Date Constructed/Age and Sources:
☐ Prehistoric ☒ Historic ☐ Both

1910-E

P7. Owner and Address
Limoneira Company
1141 Cummings Road
Santa Paula, CA 93060

P8. Recorded by: (Name, affiliation, and addres
Judy Triem/San Buenaventura Research Assoc.
Ventura County Cultural Heritage Board
800 S. Victoria Ave.
Ventura, CA 93009

P9. Date Recorded: *9/8/1995*

P10. Survey Type: (Describe)
Intensive

P11. Report Citation: (Cite survey report and other sources, or enter "none")
San Buenaventura Research Associates, 1996, *West Santa Clara Valley Cultural Heritage Survey, Phase V.* General Services Administration

Attachments
☐ NONE ☐ Continuation Sheet ☒ District Record ☐ Rock Art Record ☐ Other: (List)
☐ Location Map ☐ Building, Structure, and Object Record ☐ Linear Feature Record ☐ Artifact Record
☒ Sketch Map ☐ Archaeological Record ☐ Milling Station Record ☐ Photograph Record

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code *3D*

Other Listings
Review Code **Reviewer** **Date**

 Resource Name or #: (Assigned by recorder) *Orchard Farm*

P1. Other Identifier: *Edward's Ranch - barn*

P2. Location: ☐ **Not for Publication** ☒ **Unrestricted** **a. County** *Ventura*

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

b. USGS 7.5' Quad *Saticoy* **Date** *1951* **T** **; R** **;** **1/4 of** **1/4 of Sec** **;** **B.M.**

c. Address: *Edwards Ranch Road* City *Santa Paula* Zip *93060*

d. UTM: (Give more than one for large and/linear resources) *11* ; **mE/** **mN**

e. Other Locational Data (Enter Parcel #, legal description, directions to resource, elevation, etc., as appropriate)

south of 126 Freeway and Southern Pacific Railroad tracks at end of Edwards Ranch Rd.

Parcel No. *90-180-08*

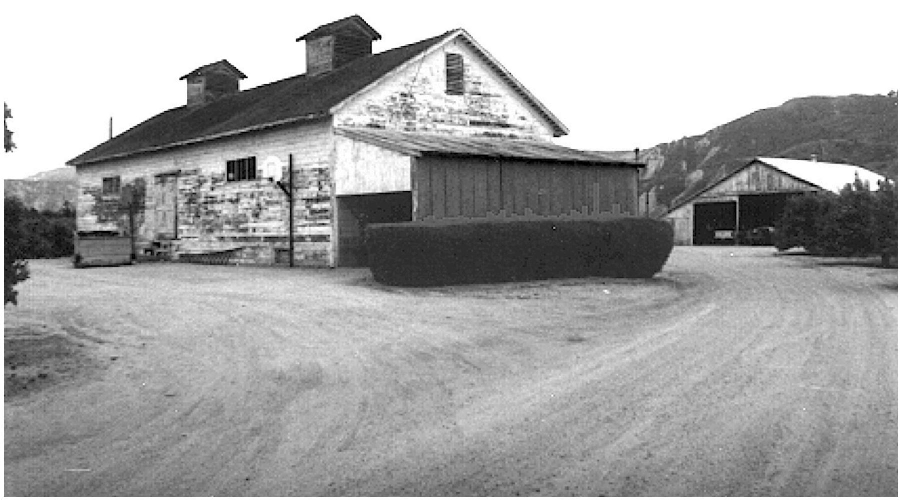
P3. Description (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and b

South of the residential area is a cluster of large barns. One is long, rectangular in plan, one-and-a-half-stories in height with a medium high gable roof topped with two gabled cupolas with louvered vents. The building is covered with wide horizontal drop siding and has several large sliding wood doors on tracks. A single-story shed roof board-and-batten addition is located at the west end. The building rests on concrete piers at the corners. The building is in fair condition.

P3b. Resource Attributes: (List attributes and codes) *HP4 - Ancillary Building* *HP33 - Farm/ranch*

P4. Resources Present ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☒ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects)



P5b. Description of Photo: (View, date, accessio
Barn, northwest elevation, 5/03/95,#0602

P6. Date Constructed/Age and Sources:
☐ Prehistoric ☒ Historic ☐ Both

1883-1930-E

P7. Owner and Address
Limoneira Company
1141 Cummings Road
Santa Paula, CA 93060

P8. Recorded by: (Name, affiliation, and addres
Judy Triem/San Buenaventura Research Assoc.
Ventura County Cultural Heritage Board
800 S. Victoria Ave.
Ventura, CA 93009

P9. Date Recorded:

P10. Survey Type: (Describe)
Intensive

P11. Report Citation: (Cite survey report and other sources, or enter "none")
San Buenaventura Research Associates, 1996, *West Santa Clara Valley Cultural Heritage Survey, Phase V.* General Services Administration

Attachments ☐ NONE ☐ Location Map ☒ Sketch Map ☐ Continuation Sheet ☐ Building, Structure, and Object Record ☐ Archaeological Record ☒ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☐ Other: (List)

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code 3D

Other Listings
Review Code **Reviewer** **Date**

 Resource Name or #: (Assigned by recorder) *Orchard Farm*

P1. Other Identifier: *Edwards Ranch - barns*

P2. Location: ☐ **Not for Publication** ☒ **Unrestricted** **a. County** *Ventura*

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

b. USGS 7.5' Quad *Saticoy* **Date** *1951* **T** **; R** **;** **1/4 of** **1/4 of Sec** **;** **B.M.**

c. Address: *Edwards Ranch Road* City *Santa Paula* Zip *93060*

d. UTM: (Give more than one for large and/linear resources) *11* ; **mE/** **mN**

e. Other Locational Data (Enter Parcel #, legal description, directions to resource, elevation, etc., as appropriate)

south of 126 Freeway and Southern Pacific Railroad tracks at end of Edwards Ranch Rd.

Parcel No. *90-180-08*

P3. Description (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and b

Behind and to the south of the barn is another one-and-a-half-story barn with a medium pitched gabled roof. The roof is covered with corrugated metal and the building with board-and-batten siding. A large openings on the southern and northern elevations are covered by large wood doors rolling on metal tracks. The building is in fair condition.

P3b. Resource Attributes: (List attributes and codes) *HP4 - Ancillary Building* *HP33 - Farm/ranch*

P4. Resources Present ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☒ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects)

P5b. Description of Photo: (View, date, accessio
Barn, northwest elevation, 5/03/95, 0601

P6. Date Constructed/Age and Sources:
☐ Prehistoric ☒ Historic ☐ Both

1900-E

P7. Owner and Address
Limoneira Company
1141 Cummings Road
Santa Paula, CA 93060

P8. Recorded by: (Name, affiliation, and addres
Judy Triem/San Buenaventura Research Assoc.
Ventura County Cultural Heritage Board
800 S. Victoria Ave.
Ventura, CA 93009

P9. Date Recorded: *11/16/1995*

P10. Survey Type: (Describe)
Intensive

P11. Report Citation: (Cite survey report and other sources, or enter "none")
San Buenaventura Research Associates, 1996, *West Santa Clara Valley Cultural Heritage Survey, Phase V.* General Services Administration

Attachments
☐ NONE ☐ Continuation Sheet ☒ District Record ☐ Rock Art Record ☐ Other: (List)
☐ Location Map ☐ Building, Structure, and Object Record ☐ Linear Feature Record ☐ Artifact Record
☒ Sketch Map ☐ Archaeological Record ☐ Milling Station Record ☐ Photograph Record

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code 3D

Other Listings
Review Code **Reviewer** **Date**

 Resource Name or #: (Assigned by recorder) *Orchard Farm*

P1. Other Identifier: *Edward's Ranch - implement shed*

P2. Location: ☐ **Not for Publication** ☒ **Unrestricted** **a. County** *Ventura*

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

b. USGS 7.5' Quad *Saticoy* **Date** *1951* **T** **; R** **;** **1/4 of** **1/4 of Sec** **;** **B.M.**

c. Address: *Edwards Ranch Road* City *Santa Paula* Zip *93060*

d. UTM: (Give more than one for large and/linear resources) *11* ; **mE/** **mN**

e. Other Locational Data (Enter Parcel #, legal description, directions to resource, elevation, etc., as appropriate)

south of 126 Freeway and Southern Pacific Railroad tracks on west side at end of Edwards Ranch Rd.

Parcel No. *90-180-08*

P3. Description (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and b

Located to the west of the cluster of ranch buildings is a long implement shed used for storage of agricultural equipment and automobiles. The shed is covered with a low gable roof of corrugated metal and supported by square wood posts on concrete piers. The building is partially enclosed at the north end with corrugated metal siding. It is in fair condition.

P3b. Resource Attributes: (List attributes and codes) *HP33 - Farm/ranch* *HP4 - Ancillary Building*

P4. Resources Present ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☒ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects)

P5b. Description of Photo: (View, date, accessio
Implement shed, northeast elevation, 5/03/95, 0610

P6. Date Constructed/Age and Sources:
☐ Prehistoric ☒ Historic ☐ Both

1920-E

P7. Owner and Address

Limoneira Company
1141 Cummings Road
Santa Paula, CA 93060

P8. Recorded by: (Name, affiliation, and addres

Judy Triem/San Buenaventura Research Assoc.
Ventura County Cultural Heritage Board
800 S. Victoria Ave.
Ventura, CA 93009

P9. Date Recorded: *11/16/1995*

P10. Survey Type: (Describe)
Intensive

P11. Report Citation: (Cite survey report and other sources, or enter "none")

San Buenaventura Research Associates, 1996, *West Santa Clara Valley Cultural Heritage Survey, Phase V.* General Services Administration

Attachments
☐ NONE ☐ Continuation Sheet ☒ District Record ☐ Rock Art Record ☐ Other: (List)
☐ Location Map ☐ Building, Structure, and Object Record ☐ Linear Feature Record ☐ Artifact Record
☒ Sketch Map ☐ Archaeological Record ☐ Milling Station Record ☐ Photograph Record

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code *3D*

Other Listings
Review Code **Reviewer** **Date**

Resource Name or #: (Assigned by recorder) *Orchard Farm*

P1. Other Identifier: *Edwards Ranch- walnut dehydrator & residence #5*

P2. Location: ☐ **Not for Publication** ☒ **Unrestricted** **a. County** *Ventura*

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

b. USGS 7.5' Quad *Santa Paula* **Date** *1951* **T** **; R** **;** **1/4 of** **1/4 of Sec** **;** **B.M.**

c. Address: *12390 West Telegraph Road* City *Santa Paula* Zip *93060*

d. UTM: (Give more than one for large and/linear resources) *11* ; **mE/** **mN**

e. Other Locational Data (Enter Parcel #, legal description, directions to resource, elevation, etc., as appropriate)

South of Telegraph Road along east side of Orchard Farm Road

Parcel No. *96-010-01*

P3. Description (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and b

This rectangular plan building has a high pitched gable roof covered with metal siding and two small gabled and louvered vents at the ridge line. The gable on the eastern elevation is broken and forms a shed roof that extends low on the corner of the building. The west end is partially open with corrugated metal siding. There are other small openings on the north side of the building. The building is covered with vertical wide board siding.

A small hipped roof residence is located west of the barn directly along the dirt road. It is covered with small concrete block siding with a carport attached to the north side.

P3b. Resource Attributes: (List attributes and codes) *HP4 - Ancillary Building* *HP33 - Farm/ranch*

P4. Resources Present ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☒ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects)

P5b. Description of Photo: (View, date, accessio
Barn, northwest elevation, 8/21/95, #1612

P6. Date Constructed/Age and Sources:
☐ Prehistoric ☒ Historic ☐ Both

1910-E (walnut dehydrator)

P7. Owner and Address
Limoneira Company
1141 Cummings Road
Santa Paula, CA 93060

P8. Recorded by: (Name, affiliation, and addres
Judy Triem/San Buenaventura Research Assoc.
Ventura County Cultural Heritage Board
800 S. Victoria Ave.
Ventura, CA 93009

P9. Date Recorded:

P10. Survey Type: (Describe)
Intensive

P11. Report Citation: (Cite survey report and other sources, or enter "none")
San Buenaventura Research Associates, 1996, *West Santa Clara Valley Cultural Heritage Survey, Phase V.* General Services Administration

Attachments
☐ NONE ☐ Continuation Sheet ☒ District Record ☐ Rock Art Record ☐ Other: (List)
☐ Location Map ☐ Building, Structure, and Object Record ☐ Linear Feature Record ☐ Artifact Record
☒ Sketch Map ☐ Archaeological Record ☐ Milling Station Record ☐ Photograph Record

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code 3D

Other Listings
Review Code **Reviewer** **Date**

 Resource Name or #: (Assigned by recorder) *Orchard Farm*

P1. Other Identifier: *Edwards Ranch - barn*
P2. Location: ☐ **Not for Publication** ☒ **Unrestricted** **a. County** *Ventura*
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
b. USGS 7.5' Quad *Saticoy* **Date** *1951* **T** **; R** **;** **1/4 of** **1/4 of Sec** **;** **B.M.**
c. Address: *Edwards Ranch Road* City *Santa Paula* Zip *93060*
d. UTM: (Give more than one for large and/linear resources) *11* ; **mE/** **mN**
e. Other Locational Data (Enter Parcel #, legal description, directions to resource, elevation, etc., as appropriate)
south of 126 Freeway and Southern Pacific Railroad tracks at end of Edwards Ranch Rd.
Parcel No. *90-180-08*

P3. Description (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and b

A large open sided building stands at the southern edge of the cluster of buildings. It has a medium-pitched gable corrugated metal roof that projects out over the open sides. The building is covered with corrugated metal siding.

P3b. Resource Attributes: (List attributes and codes) *HP4 - Ancillary Building* *HP33 - Farm/ranch*

P4. Resources Present ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☒ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects)

P5b. Description of Photo: (View, date, accessio
Barn, northwest elevation, 5/08/95,#1204

P6. Date Constructed/Age and Sources:
☐ Prehistoric ☒ Historic ☐ Both
1920-E

P7. Owner and Address
Limoneira Company
1141 Cummings Road
Santa Paula, CA 93060

P8. Recorded by: (Name, affiliation, and addres
Judy Triem/San Buenaventura Research Assoc.
Ventura County Cultural Heritage Board
800 S. Victoria Ave.
Ventura, CA 93009

P9. Date Recorded: *11/16/1995*

P10. Survey Type: (Describe)
Intensive

P11. Report Citation: (Cite survey report and other sources, or enter "none")
San Buenaventura Research Associates, 1996, *West Santa Clara Valley Cultural Heritage Survey, Phase V.* General Services Administration

Attachments
☐ NONE ☐ Continuation Sheet ☒ District Record ☐ Rock Art Record ☐ Other: (List)
☐ Location Map ☐ Building, Structure, and Object Record ☐ Linear Feature Record ☐ Artifact Record
☒ Sketch Map ☐ Archaeological Record ☐ Milling Station Record ☐ Photograph Record

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code *3D*

Other Listings
Review Code **Reviewer** **Date**

 Resource Name or #: (Assigned by recorder) *Orchard Farm - Roger Road*

P1. Other Identifier: *Edward's Ranch Employee's residence & barn*

P2. Location: ☐ **Not for Publication** ☒ **Unrestricted** **a. County** *Ventura*

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

b. USGS 7.5' Quad *Saticoy* **Date** *1951* **T** **; R** **;** **1/4 of** **1/4 of Sec** **;** **B.M.**

c. Address: *Roger Road* City *Santa Paula* Zip *93060*

d. UTM: (Give more than one for large and/linear resources) *11* ; **mE/** **mN**

e. Other Locational Data (Enter Parcel #, legal description, directions to resource, elevation, etc., as appropriate)

Located on Roger Road, north of Santa Clara River bed, east of Edwards Ranch Road and south of Santa Paula Freeway (Hwy 126)

Parcel No. *90-180-08*

P3. Description (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and b

This is a one-story California Bungalow style residence with a rectangular plan and a side-facing medium-pitched, gable roof covered with composition shingles. A projecting porch with a vertical slat baluster is centered on the front of the house, and is supported by double square posts with a decorative wood pattern between the posts. The house is covered with alternating narrow and wide horizontal clapboard siding and rests on a wood pier foundation. The open eaves have exposed rafter tails and knee-brackets. It has lattice vents under the gable ends. A brick chimney is located on the east side of the house. The house has narrow, four-over-one, casement windows with plain wood casings. The house is in fair condition.

P3b. Resource Attributes: (List attributes and codes) *HP2 - Single Family Property* *HP33 - Farm/ranch*

P4. Resources Present ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☒ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects)

P5b. Description of Photo: (View, date, accessio
Residence, northwest elevation, 5/08/95, #1212

P6. Date Constructed/Age and Sources:
☐ Prehistoric ☒ Historic ☐ Both

1920-E

P7. Owner and Address
Limoneira Company
1141 Cummings Road
Santa Paula, CA 93060

P8. Recorded by: (Name, affiliation, and addres
Judy Triem/San Buenaventura Research Assoc.
Ventura County Cultural Heritage Board
800 S. Victoria Ave.
Ventura, CA 93009

P9. Date Recorded: *9/12/1995*

P10. Survey Type: (Describe)
Intensive

P11. Report Citation: (Cite survey report and other sources, or enter "none")
San Buenaventura Research Associates, 1996, *West Santa Clara Valley Cultural Heritage Survey, Phase V.* General Services Administration

Attachments
☐ NONE ☐ Continuation Sheet ☒ District Record ☐ Rock Art Record ☐ Other: (List)
☐ Location Map ☐ Building, Structure, and Object Record ☐ Linear Feature Record ☐ Artifact Record
☒ Sketch Map ☐ Archaeological Record ☐ Milling Station Record ☐ Photograph Record

CONTINUATION SHEET

Primary #
HRI #
Trinomial

Page 20 **of** 27 **Resource Name or #:** (Assigned by recorder) *Orchard Farm - Roger Road*

Recorded by: *Judy Triem/San Buenaventura Research Assoc.* **Date** *9/12/1995* ☒ Continuation ☐ Update

P3. Description [continued]

Barn

West of the house is a single car flat roofed garage and a large two-story barn. The barn is built against the hillside and has a long saltbox type roof on the east side with a gable roof on the taller west side. The barn is covered with wide vertical board siding.

Supplemental Photograph or Drawing

Description of Photo: (View, date, accessio

Barn, east elevation, 5/08/95, #1211

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code *3D*

Other Listings
Review Code **Reviewer** **Date**

Page 21 **of** 27 **Resource Name or #:** (Assigned by recorder) *Orchard Farm*

P1. Other Identifier: *Edward's Ranch - Roger G. Edwards residence*

P2. Location: ☐ **Not for Publication** ☒ **Unrestricted** **a. County** *Ventura*
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
b. USGS 7.5' Quad *Saticoy* **Date** *1951* **T** **; R** **;** **1/4 of** **1/4 of Sec** **;** **B.M.**
c. Address: *Roger Road* City *Santa Paula* Zip *93060*
d. UTM: (Give more than one for large and/linear resources) *11* ; **mE/** **mN**
e. Other Locational Data (Enter Parcel #, legal description, directions to resource, elevation, etc., as appropriate)

Located on Roger Road, north of Santa Clara River bed, east of Edwards Ranch Road and south of Santa Paula Freeway (Hwy 126)

Parcel No. *90-180-08*

P3. Description (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and b

A somewhat rare example of Prairie style architecture, this two-story residence has a low pitched hip roof covered with composition shingles and built in a t-shaped plan. Decorative rafter tails are found under the broad open eaves. A band of wood casement windows wraps around three sides of the second story. In addition, multi-paned double hung windows are located on both the first and second floors. The first floor also has a French door located on the west end of the front facade. The front porch, located on the eastern elevation, has a small concrete stoop and brick foundation with a centered door flanked by casement windows. The single wood door has four panes in the upper half. A pergola projects over the porch. A large rectangular bay window, covered with a short shed roof, projects from the center of the house. A very large window, divided into four narrow panes, is located on the eastern elevation, over the stair landing. The first floor windows have shelf mouldings with plain wood casings on the second floor windows. The house features three brick chimneys, one on the east, the west and in the center of the roof. The house is covered with wide horizontal beveled siding and rests on a wood and concrete pier foundation covered with a vertical board skirt. The house is in good condition with only minor alterations. A concrete block porch and metal railing replaced an earlier wood porch at the rear east side of the house.

P3b. Resource Attributes: (List attributes and codes) *HP33 - Farm/ranch* *HP2 - Single Family Property*

P4. Resources Present ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☒ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects)

P5b. Description of Photo: (View, date, accessio
Residence, north elevation, 5/08/95,#1206

P6. Date Constructed/Age and Sources:
☐ Prehistoric ☒ Historic ☐ Both

1910-E

P7. Owner and Address
Limoneira Company
1141 Cummings Road
Santa Paula, CA 93060

P8. Recorded by: (Name, affiliation, and addres
Judy Triem/San Buenaventura Research Assoc.
Ventura County Cultural Heritage Board
800 S. Victoria Ave.
Ventura, CA 93009

P9. Date Recorded: *9/12/1995*

P10. Survey Type: (Describe)
Intensive

P11. Report Citation: (Cite survey report and other sources, or enter "none")
San Buenaventura Research Associates, 1996, *West Santa Clara Valley Cultural Heritage Survey, Phase V.* General Services Administration

Attachments
☐ NONE ☐ Location Map ☒ Sketch Map
☒ Continuation Sheet ☒ Building, Structure, and Object Record ☐ Archaeological Record
☒ District Record ☐ Linear Feature Record ☐ Milling Station Record
☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record
☐ Other: (List)

BUILDING, STRUCTURE, AND OBJECT RECORD

Primary #
HRI #

NRHP Status Code *3D*

Resource Name or #: (Assigned by recorder) *Orchard Farm*

B1. Historic Name: *Roger G. Edwards Residence*
B2. Common Name:
B3. Original Use: *single family residence* B4. Present Use: *same*
B5. Architectural Style: *Prairie*
B6. Construction History: (Construction date, alterations, and date of alterations)
1910-E; Carleton Monroe Winslow, remodel, 1929 (may have been interior, because exterior appears original)

B7. Moved? ☒ No ☐ Yes ☐ Unknown Date : Original Location:
B8. Related Features: *garage, shed*

B9a. Architect: *Albert C. Martin* b. Builder: *unknown*
B10. Significance: Theme: *Agriculture* Area: *West Santa Clara Valley*
Period of Significance: *1860-1946* **Property Type:** *ranch buildings* **Applicable Criteria:** *A, C*
(Discuss importance in terms of historical or architectural context as defined by theme, period and geographic scope. Also address integrity.)

The Roger Edwards residence and grounds are significant architecturally because of their association with prominent architect Albert C. Martin. Martin designed the Ventura County Courthouse in 1912 in addition to several other important buildings in Ventura County, both public buildings and private residences for local ranchers. By the 1920s he had moved his practice to Los Angeles where it continues today under his son and grandsons. The firm attained notoriety in Los Angeles, with their joint design for the Los Angeles City Hall in the 1920s and the Million Dollar Theater in 1918 to name just a few.

Roger G. Edwards, one of the five children of Samuel Edwards, managed the Edwards Ranch from about 1906 until 1946 when Eliot Blanchard became manager. Roger Edwards served on the board of several local banks and was elected to the state assembly from Ventura County in 1916. In 1985 the ranch (Samuel Edwards Associates) joined the Limoneira Company to become the largest agri-business in the Santa Clara Valley today.

B11. Additional Resource Attributes: (List attributes and codes) *HP33 - Farm/ranch* *HP2 - Single Family Property*

B12. References:

Gebhard, David. *A Catalog of the Architectural Drawing Collection*, UCSB, 1983
Interview with Brooke Sawyer, 12/5/95; Interview with Elizabeth Blanchard, 3/14/96

B13. Remarks:

B14. Evaluator: *Judy Triem*
Date of Evaluation: *11/15/1995*

(This space reserved for official comments.)

(Sketch Map with north arrow required.) N

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

CONTINUATION SHEET

Primary # ______
HRI # ______
Trinomial ______

Page 23 **of** 27 **Resource Name or #:** (Assigned by recorder) *Orchard Farm*

Recorded by: *Judy Triem/San Buenaventura Research Assoc.* **Date** *9/12/1995* ☒ Continuation ☐ Update

Roger G. Edwards Residence

A formal garden surrounds the front and sides of the house and contains numerous ornamental trees and shrubs with vast expanses of lawn. On the west side of the house is a tennis court surrounded by a brick wall.

The house is located in the middle of a lemon orchard accessed down a long private drive from the main road, itself a private road called Roger Road. Behind the main house is a two-car garage with a gable roof and wide horizontal siding. To the east is a small gable roofed shed with horizontal siding.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code *3D*

Other Listings
Review Code **Reviewer** **Date**

 Resource Name or #: (Assigned by recorder) *Orchard Farm*

P1. Other Identifier: *Charles F. Beckwith Ranch*

P2. Location: ☐ **Not for Publication** ☒ **Unrestricted** **a. County** *Ventura*

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

b. USGS 7.5' Quad *Saticoy* **Date** *1951* **T** **; R** **;** **1/4 of** **1/4 of Sec** **;** **B.M.**

c. Address: *13244* *West* *Telegraph Road* City *Santa Paula* Zip *93060*

d. UTM: (Give more than one for large and/linear resources) *11* ; **mE/** **mN**

e. Other Locational Data (Enter Parcel #, legal description, directions to resource, elevation, etc., as appropriate)

Parcel No. *96-010-02*

P3. Description (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and b

This one-story Craftsman Bungalow features distinctive stonework in the prominent porch and porte cochere. Rectangular in plan, the medium gable roof projects over the porch and contains knee brackets and a multi-paned window. Under the broad open eaves are exposed knee brackets and beams. The porch is supported by square stone piers topped with tapered wood posts and a concrete capped stone balustrade. A three-part slanted bay window is located at the southeast corner. The medium-wide wood sash windows are double-hung and fixed with diamond shaped panes in the upper portion of the sash and wood mouldings that are angled at the top. The centered front door is flanked by two narrow sidelights. The house is covered with medium horizontal clapboard siding and rests on a concrete perimeter foundation. The house is set back just slightly from the main road and has a small yard surrounded by mature trees and shrubs and a split rail fence. At the rear of the yard is a one-car garage in the same style as the house.

P3b. Resource Attributes: (List attributes and codes) *HP33 - Farm/ranch* *HP2 - Single Family Property*

P4. Resources Present ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☒ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects)

P5b. Description of Photo: (View, date, accessio
Residence, northeast elevation, 6/15/95, #1505

P6. Date Constructed/Age and Sources:
☐ Prehistoric ☒ Historic ☐ Both

1912-E

P7. Owner and Address
Limoneira Company
1140 Cummings Rd.
Santa Paula, CA 93060

P8. Recorded by: (Name, affiliation, and addres
Judy Triem/San Buenaventura Research Assoc.
Ventura County Cultural Heritage Board
800 S. Victoria Ave.
Ventura, CA 93009

P9. Date Recorded: *8/10/1995*

P10. Survey Type: (Describe)
Intensive

P11. Report Citation: (Cite survey report and other sources, or enter "none")
San Buenaventura Research Associates, 1996, *West Santa Clara Valley Cultural Heritage Survey, Phase V.* General Services Administration

Attachments
☐ NONE ☒ Continuation Sheet ☒ District Record ☐ Rock Art Record ☐ Other: (List)
☐ Location Map ☒ Building, Structure, and Object Record ☐ Linear Feature Record ☐ Artifact Record
☐ Sketch Map ☐ Archaeological Record ☐ Milling Station Record ☐ Photograph Record

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
BUILDING, STRUCTURE, AND OBJECT RECORD

Primary # ______________________
HRI # ______________________

NRHP Status Code *3D*

Resource Name or #: (Assigned by recorder) *Orchard Farm*

B1. Historic Name: *Charles F. Beckwith Residence*
B2. Common Name: *None*
B3. Original Use: *ranch*
B4. Present Use: *ranch*
B5. Architectural Style: *Craftsman Bungalow*
B6. Construction History: (Construction date, alterations, and date of alterations)
1912-E

B7. Moved? ☒ No ☐ Yes ☐ Unknown Date : Original Location:
B8. Related Features: *garage, employee residences, sheds, water-related buildings and structures*

B9a. Architect: *unknown* b. Builder: *unknown*
B10. Significance: Theme: *Agriculture* Area: *West Santa Clara Valley*
Period of Significance: *1860-1946* **Property Type:** *ranch buildings* **Applicable Criteria:** *A, C*

(Discuss importance in terms of historical or architectural context as defined by theme, period and geographic scope. Also address integrity.)

This residence is one of the few remaining buildings originally owned by the Beckwith Family, who once owned several hundred acres of adjacent land and several older residences. It reflects the growth of the second generation of Beckwiths, whose ancestors first came to the Santa Paula area in 1872 and eventually acquired 700 acres adjacent to this property. The Appleton and Francis Beckwith families raised cattle and hogs and walnut trees. The house is an excellent example of Craftsman style architecture and has maintained its integrity within its original agricultural setting.

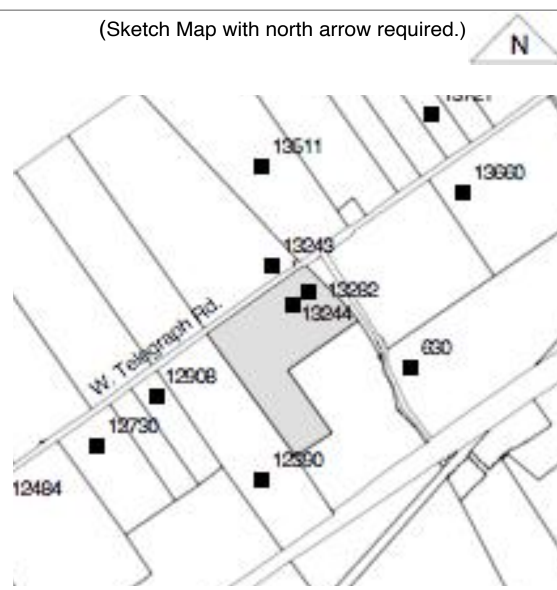
Eventually the Beckwith Ranch was purchased by the Edwards Family and became part of Orchard Farm (Edwards Ranch). The 1,872 acre Edwards Ranch joined the Limoneira Company in 1985.

B11. Additional Resource Attributes: (List attributes and codes) *HP33 - Farm/ranch* *HP2 - Single Family Property*

B12. References:

Alexander, W. *Historical Atlas of Ventura County,* 1912.
Gidney, Brooks & Sheridan. *History of Santa Barbara, San Luis Obispo & Ventura Counties.* Chicago: Lewis Publishing Co., 1917.

(Sketch Map with north arrow required.)



B13. Remarks:

B14. Evaluator: *Judy Triem*
Date of Evaluation: *11/15/1995*

(This space reserved for official comments.)

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary #
HRI #
Trinomial

Page 26 **of** 27 **Resource Name or #:** (Assigned by recorder) *Orchard Farm*

Recorded by: *Judy Triem/San Buenaventura Research Assoc.* **Date** *11/8/1995* ☒ Continuation ☐ Update

P3. Description [continued]

13282 W. Telegraph Road, employee residence

This is a one-story Cottage style residence, built ca 1912, with a rectangular plan and a medium-high pitched, hip roof covered with composition shingles. Exposed rafters are located under the open eaves. Windows are one-over-one wood sash with wood casings found in pairs or singly. A pergola extends from the north elevation. The house is covered with board-and-batten siding and rests on a concrete perimeter foundation.

Supplemental Photograph or Drawing

Description of Photo: (View, date, accessio
Residence, east elevation, 9/07/95, #1807

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary #
HRI #
Trinomial

 Resource Name or #: (Assigned by recorder) *Orchard Farm*

Recorded by: *Judy Triem/San Buenaventura Research Assoc.* **Date** *11/8/1995* ☒ Continuation ☐ Update

P3. Description [continued]

13284 W. Telegraph Road, employee residence

This is a one-story ranch style residence, built ca 1940, with a rectangular plan and a medium-pitched, hip roof covered with composition shingles. The house is covered with stucco siding and rests on a concrete perimeter foundation. The eaves are open. The house has medium steel casement windows with wooden shutters.

A dirt drive comes in along the east side of the residences adjacent to Todd Barranca. The houses have small yards with shrubs and chainlink fencing and are surrounded by lemon orchards. South of the houses is a metal implement shed with enclosed attached garage with wood windows and another shed overhanging the barranca housing water pumps and equipment. It appears to be some sort of diversion equipment through which the water is channeled.

Supplemental Photograph or Drawing

Description of Photo: (View, date, accessio

Residence, east elevation, 9/07/95, #1808

Regional and Local Hydrology Study

12390 W. Telegraph Road, Santa Paula

November 2018

Prepared for

AGROMIN

County of Ventura
Notice of Preparation of an EIR
PL17-0154
Attachment 14 - Regional and Local
Hydrological Study

Agromin

Regional & Local Hydrology Study
12390 W. Telegraph Road

Administrative Draft
November 2018

AGROMIN™
Soil for a Greener World®

AGROMIN

Regional & Local Hydrology Study

Administrative Draft

Prepared for:

Prepared by:

Harrison
Industries

Preface

Prepared by preliminary

Mike Harrison, P.E., CPSWQ, QSD
RCE #57,320, Expires: December 31, 2019

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5. **FEMA FIRM Maps**
6. **Hydraulics**
7. **Hydrologic & Hydraulic Report – Todd Barranca – NextGen Engineering**

Nomenclature

'	feet
"	inch
<	less than
>	greater than
ac	acre
ac-ft	acre - feet
APN	County Assessor's parcel number
ARC	antecedent runoff condition
BMPs	best management practices
C	Rational Method runoff coefficient
Caltrans	California Department of Transportation
CDMG	California Division of Mines & Geology
cfs	cubic feet per second
CGS	California Geologic Survey
City	City of Santa Paula
CMP	corrugated metal pipe
CN	SCS curve number
Cnl	open channel
Consult-ant	Harrison Industries
County	County of Ventura
C_p	pan coefficient
d/s	downstream
DWR	California Department of Water Resources
DSOD	California Department of Water Resources – Safety of Dams
E	evaporation
EGL	energy grade line
FEMA	Federal Emergency Management Agency
FIP	Finance and Implementation Plan
FIRM	FEMA Flood Insurance Rate Map
FIS	FEMA Flood Insurance Study
ft	feet
ft/s	feet per second
g	acceleration due to gravity
gpm	U.S. gallons per minute
gpd	U.S. gallons per day
gpd/ft^2	U.S. gallons per day per square foot
H	total hydraulic head
h	horizontal
HEC	Hydrologic Engineering Center
HEC-HMS	HEC-HMS Computer Program
HEC-RAS	HEC-RAS Computer Program
HGL	hydraulic grade line
hr	hour

i	rainfall intensity
i_a	initial abstraction
i.d.	inside diameter
IGP	RWQCB - Industrial General Permit
imp	impervious
MEP	maximum extent practicable
mi	mile
min	minimum
misc	miscellaneous
msl	mean sea level
MWC	municipal water company
MWD	municipal water district
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resource Conservation Service
o.d.	outside diameter
O&M	Operations and maintenance
ped.	Pedestrian
Q	flow quantity
Qty	quantity
R.C.E.	California, Registered Civil Engineer
RCP	reinforced concrete pipe
req'd	required
RWQCB	California Regional Water Quality Control Board
s	second
SCS	Soil Conservation Service
sf	square feet
SFHA	FEMA, special flood hazard area
SQUIMP	County, Standard Urban Storm Water Mitigation Plan
t_c	storm duration (time of concentration)
t_p	time from start of storm to peak runoff
t_r	rain storm duration
T	transmissivity
TR-20	SCS Technical Release Number 20
TR-55	SCS Technical Release Number 55
u/s	upstream
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
V	volume
v	vertical
VCRAT	WPD Modified Rational Method model
WDR	Waste Discharge Requirements
WPD	County of Ventura Watershed Protection District
w.s.	water surface

Executive Summary

The purpose of this report is to document the regional hydrology surrounding 12390 W. Telegraph Road and to facilitate the planning and implementation of on-site drainage infrastructure which is feasible for the phased development of the project.

This report includes an evaluation of regional rainfall statistics, existing hydrology, alternative storm drainage solutions, and best management practices which the operation can implement during specific rainfall events. Additionally, this report will identify a lead drainage alternative. The results of this report will be the basis for subsequent storm drainage improvements.

Agromin's current Limoneira operation (the "Facility") is located in the unincorporated County of Ventura, between Ventura and Santa Paula, on the southerly side of the V.C.T.C. railroad (see Figure 2). The Facility is situated on APNs 090-0-180-085. According to the Assessor's Office this APN encompasses about 453 acres. However, this APN et al. have been determined to be a single, discrete lot in compliance with the provisions of the Subdivision Map Act and local ordinances pursuant thereto per a Certificate of Compliance recorded in instrument no. 20140507-00057264-0. The gross area of the lot is roughly 1,013 acres.

The Facility has been in operation since 2004 and currently encompasses about fifteen acres. The proposed project will expand the area to seventy acres.

The vicinity of the regional study area is the area bounded by the proposed project boundary and those areas uphill from the Facility that drain southeasterly (see Figure 2 and Appendix 1). The local study area contains the 70-acre project boundary and is located entirely within the County. While the regional study area is about 876.1 acres and is also located entirely within the County. The existing land use in the regional study area primarily contains agricultural lands (see Appendix 1).

The project area zoning is Agricultural Exclusive (AE-40) within the County.

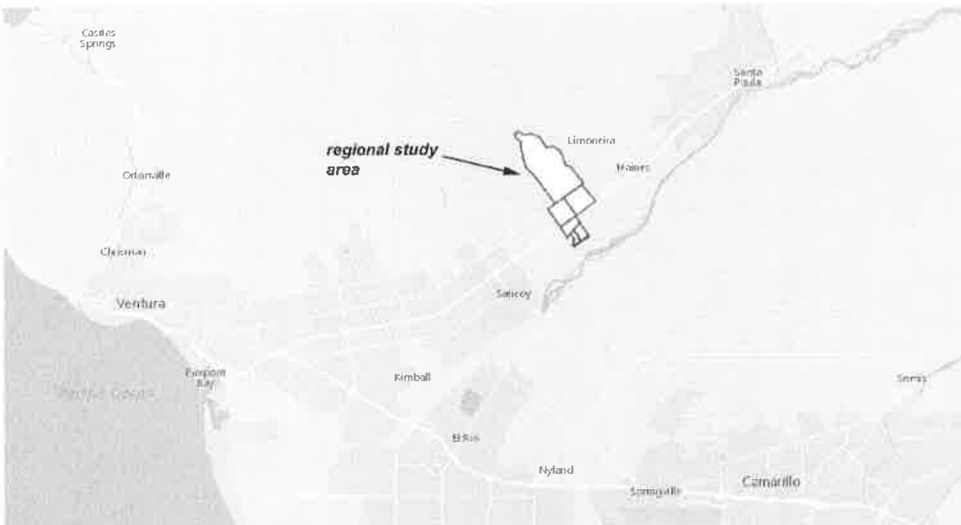
This report addresses the impacts from the 100-year, 24-hour event for both study areas. Its intended use is for the evaluation of drainage infrastructure solely by the buildout Facility.

Authorization

This report has been prepared at the request of County to determine how the Facility would be impacted during the runoff events described above. It is not the intent of this report to suggest remediation for any regional drainage issues outside of the project area.

The conclusions and recommendations made herein are based on the generally accepted principles and practices of civil engineering in the region and at this time. No other warranty is either expressed or implied.

Figure 1. Regional Location Map



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The following information is contained within this report:

1. A description of the existing drainage conditions for the study areas.

2. Statistical analysis of nearby rain gauge data.

3. A recommended drainage infrastructure plan showing the locations and sizes of the primary components of the drainage infrastructure that will be needed to accommodate the design storm water runoff generated by the Facility. Drainage infrastructure elements evaluated include:

   - storm drain pipes, swales, and open channels
   - storm drain culverts
   - storm drain filtration
   - pump systems
   - storm water quality treatment systems
   - storm water impoundments

4. Watershed catchment boundaries and hydrologic information that support the drainage infrastructure plan. The U.S. Army Corps of Engineers Hydrologic Modeling System (HEC-HMS v.4.2.1) computer model, along with the SCS Unit Hydrograph transformation method, has been used as the basis for hydrologic

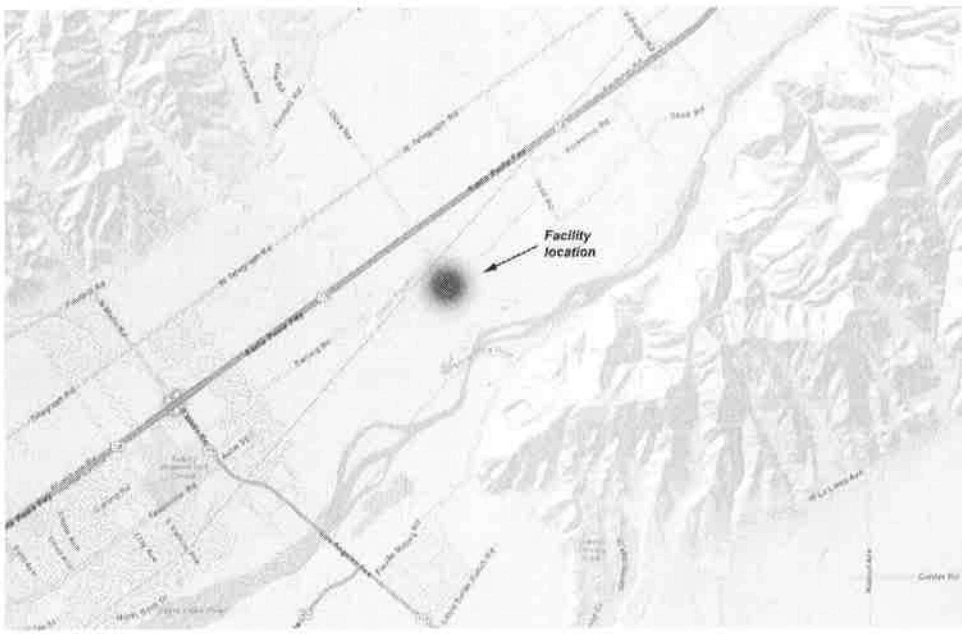
evaluations. Discharges expected at numerous key points of concentration have been estimated using the HEC-HMS computer model for the design storm events.

5. Hydraulic analyses that examine the functional characteristics of the existing and proposed drainage infrastructure. These hydraulic capacities have been evaluated using standard formulas. Volumetric analysis of runoff hydrographs has been evaluated using HEC-HMS.

6. Historic storm water monitoring analysis.

7. Storm water management system alternative analysis.

Figure 2. Vicinity Map



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Facility History and Study Approach

The Facility obtained coverage under the IGP in August 2016. Since then changes is the material recovery law have required operational changes at material recovery facilities which in turn has affected how they maintain compliance with the IGP.

The California Integrated Waste Management Act of 1989 (AB939) mandated local jurisdictions to meet solid waste diversions goals of 25% by 1995 and 50% by 2000. AB737 now requires the solid waste diversion goal to increase to 75% by 2020. Commencing April 1, 2016, AB1826 requires commercial operations which generate more than 8 cubic yards per week of organic material to sign up for commercial organic recycling where programs exist. In 2017, it drops to generators of 4 cy per week of organic material. In 2019, it drops further to generators of 2 cy per week of solid waste. And in 2020, if 50% of organic material is not reduced in the landfill the requirement will drop to generators of 2 cy per week of solid waste. In 2020, green material used for alternative daily cover at the landfill will no longer receive credit for diversion. This is not an exhaustive list of the regulations that influence how Agromin will need to change its operations.

In addition to these laws, the RWQCB adopted the General Waste Discharge Requirements for Composting Operations (order WQ 2015-0121-DWQ) in August 2015. Pursuant to this WDR, compost operations shall be designed to contain wastewater (and stormwater runoff) on-site and not allow it to infiltrate into the ground. Furthermore, process areas are to be protected from inundation from a 25-year, 24-hour rainfall event. The WDR gives existing facilities up to six years to develop and implement a plan to achieve these objectives.

These aggressive goals require new sources of solid waste to be processed. Therefore, jurisdictions have been and will be sending more material to be processed. The increased stream of material coupled with the existing facility infrastructure constraints creates a challenging environment for material recovery facilities to maintain regulatory compliance and to remain competitive in the marketplace.

Another overarching objective for this project is to combine organic recycling facilities in western Ventura County with this Facility. With these materials, the Facility capacity would be over 300,000 tons per year of green, wood, agricultural, and food materials. To date, this would be the first commercial organics processing facility in the County.

The regional hydrology surface drains southeasterly towards the Santa Clara River. The railroad bounds the north side of the project boundary. It directs the uphill runoff towards the middle of the project area. It is then conveyed in an earthen open channel through the Facility. This open channel will be replaced with a double-barrel arch pipe through the Facility so the development can occupy the surface area. This runoff will not commingle with the Facility runoff. The local hydrology for the Facility will be retained on-site for operational reuse. The retention basins are sized to contain the 100-year, 24-hour runoff event.

Design Rainfall Event

This report suggests the Facility develop stormwater runoff management controls to the maximum extent practicable.

The current IGP does not define the design storm event for designing passive treatment controls. It only states that you are to reduce pollutants in industrial runoff to the maximum extent practicable (MEP) using BAT/BCT (or best available technology/best conventional technology).

According to the Ventura County Technical Guidance Manual for Stormwater Quality Control Measures, dated July 13, 2011, volume-based BMPs, for disturbed areas of more than 50 acres, can be sized to treat 80% of the average annual runoff volume. This manual would be used to verify compliance with the current MS4 permit in Ventura County which also covers industrial facilities.

According to the Urban Runoff Quality Management Report (WEF Manual of Practice No. 23, ASCE Manual on Engineering Practice No. 87), there is an optimal capture volume for designing cost-effective passive treatment control(s). It further states that this point, known as the "knee of the curve", would satisfy the MEP rule in the NPDES regulations. Urbonas *et al.* (1993) further refines the definition of this "knee", or point of inflection on the curve, as the "maximized" volume because it is the point at which rapidly diminishing returns in the number of runoff events captured begin to occur. It is understood this report is not specific to the IGP. But in our professional opinion, it presents the topic in an objective manner.

The Ventura County Watershed Protection District maintains rainfall stations throughout the county. The gauge nearest to the Facility is located at Saticoy Fire Station and County Yard which are about 2.2 miles southwesterly from the Facility (see Table 1).

Table 1. Rainfall Station

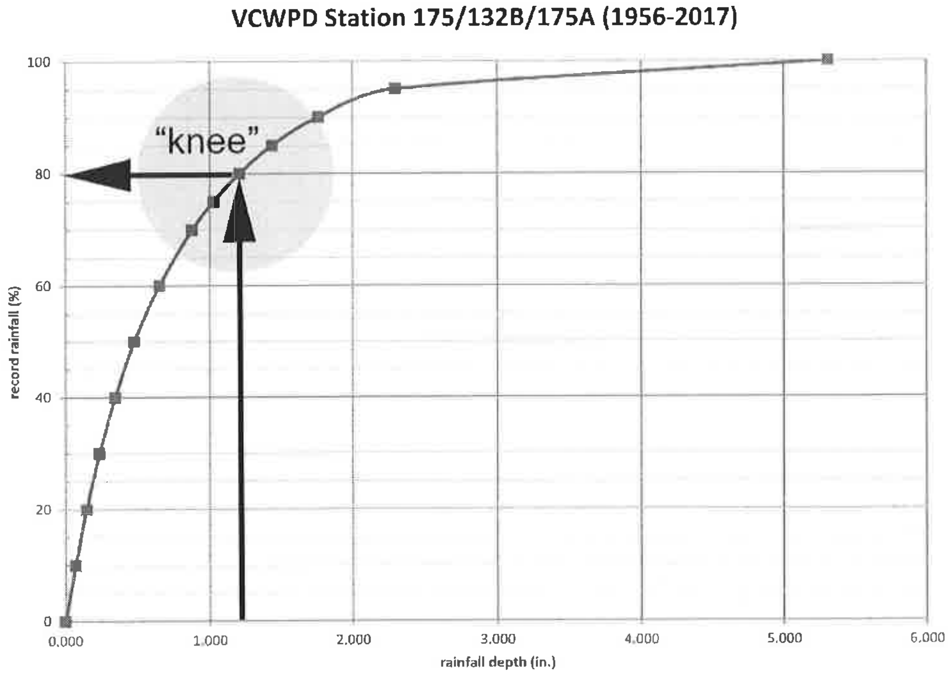
Gauge No.	VC175/132B/175A
Latitude	34°17'06" N
Longitude	-119°09'21" W
Elevation	185
Dataset	daily total
Record Period	1956 - 2017

Using all available records with precipitation values greater than or equal to 0.1 inches, the 80% of the average annual runoff, 24-hour rainfall event is 1.21 inches. This rainfall event would yield roughly the 82nd percentile rainfall event. This value will be compared to the design rainfall event as discussed herein. The largest 24-hour rainfall in 61 years of record was 5.31 inches on January 10, 2005. According to the latest edition of the WPD Hydrology Manual, the 25-year, 24-hour rainfall for the Facility regional drainage area is about 6.4 inches. See Appendix 2 and Figure 3 for more information.

Summary of Objectives and Hydrologic Conditions

Agromin began this operation in 2004 with an Enforcement Agency Notification for up to 200 tons per day or 12,500 cy on-site at any one time of agricultural and green material processing. This project would expand the Facility to a commercial compost center with a solid waste facility permit. The main objectives of the 2015 WDR is that the operation shall manage its wastewater on-site and to achieve a specific hydraulic conductivity on work areas with active composting thus reducing impacts to groundwater resources. The Facility will utilize cement-treated native soil, paving, and liners to achieve the hydraulic conductivity requirements.

Figure 3. Rainfall Gauges 175/132B/175A



According to the WPD Hydrology Manual, the 100-year, 24-hour rainfall for the Facility regional drainage area is about 7.7 inches. According to the NOAA Atlas 14, Volume 6, Version 2 report for the Saticoy Fire Station, the 100-year, 24-hour rainfall is roughly the same.

Given the discussion above regarding the WDR requirements, the statistical analysis of local rain gauges, and the MEP concept, the project proposes to design the infrastructure for the 7.7-inch, 24-hour rainfall event. This design parameter may allow the Facility to submit for a Notice of Non-Applicability, no discharge exemption under the IGP as the Facility will be designed to contain the maximum historic precipitation event. If this approach is approved by the SWRCB the Facility would not be required to obtain coverage under the current IGP.

The detailed study area was subdivided into 4 sub-basins (as shown in Appendix 1). This includes only on-site drainage areas. The main objective of this study is to design drainage infrastructure that will not significantly change the historic runoff patterns as well as identify locations where the on-site design storm can be retained for reuse. The runoff from uphill sub-basin area(s) cascades to lower sub-basin(s) once the local depressions fill up or runoff is conveyed in the storm drainage system.

Table 2. Facility Runoff

basin	area (ac)	comp. CN	I_a (in)	lag time (min)	runoff (in)	runoff (af)
9C	22.53	94	0.1	13.9	7.30	13.7
11C	3.90	98	0.0	8.5	7.57	2.5
13D	38.85	91	0.2	19.1	7.08	22.9
15D	4.29	98	0.0	10.0	7.56	2.7

Regional Study Area

The regional study area is not situated within or adjacent to a FEMA SFHA.

The uphill drainage area between the railroad and State Highway 126 is routed through the project area as described above. There is an unnamed concrete, open channel adjacent to the eastern boundary of the Facility which conveys runoff from the regional drainage area on the uphill side of State Highway 126. This channel can convey the 100-year, 24-hour runoff event from the regional drainage area with a normal depth of 4.75 feet and no flow obstructions.

Table 3. Regional Hydrology

basin	area (ac)	comp. CN	I_a (in)	lag (min)	runoff (in)	runoff (af)
1A	529.7	72	0.8	75.6	4.78	211.1
3B	154.1	77	0.6	99.0	5.47	70.2
7A	132.2	80	0.5	85.2	5.84	64.3
17E	60.2	80	0.5	51.6	5.43	27.2

The peak discharge for the existing earthen ditch that bifurcates the project area is about 66.3 cfs. This ditch will be replaced with a double-barrel, 14-gauge 40x31 pipe arch. The headwall for this new culvert requires roughly 2.75 feet of head to convey the same flow rate.

Burned watersheds were not consider in this report as the entire regional and local catchment areas are developed agricultural lands. According to the Seismic Hazard Zone maps from the California Geologic Survey, the local study area is within a liquefaction zone but the majority of the regional study area is not. And the areal extent of possible landslide areas that could affect the project area are non-existent.

There are two retention basins to contain the local drainage area runoff. The outlet for these basins is a fifty-foot wide spillway that can run six inches deep. Rock rip-rap and an overflow drain will be installed on the downhill side of each basin to help protect the embankment and the adjacent land from erosion on the occasion of a runoff event greater than the 100-year, 24-hour storm. The drain for the westerly basin will be routed to a nearby existing roadside earthen ditch. The drain for the east basin will outlet in the existing concrete trap channel.

Todd Barranca Overflow

Todd Barranca can overflow on the north side of Highway 126 during certain rainfall events. The potential flood conditions are described in the Hydrologic and Hydraulic Report by NextGen Engineering which can be found in the Appendix of this report.

If Todd Barranca were to overflow to the west, the runoff would travel in an existing ditch along the north side of Highway 126 to a double, box culvert at Highway station 462+00. The outfall for this culvert is the existing concrete trap channel that runs adjacent to the eastern boundary of the project area. According to the above-mentioned report, the westerly overflow from the 100-year, 24-hour rainfall event would be 767 cfs. The runoff would be stored behind the freeway until it can pass through the culvert. The peak discharge, from this event, through the culvert would be 770 cfs. The normal depth of the trap channel would be about 5 feet deep at this flow rate.

This culvert was installed in the mid-1960s with the construction of the freeway. It is intended to serve the regional drainage are between the freeway, Foothill Road, Todd Barranca and the Ellsworth Barranca and not any overflow from the Todd Barranca. This project is only evaluating the greater event and not both events simultaneously.

According to the most recently adopted FEMA FIRMs the buildout Facility area is situated entirely in Zone X (unshaded). According to the above-mentioned report, small portions of the buildout Facility area, *without any project development*, would be located Zone B or X (shaded) if FEMA updates the FIRMs with a similar overflow from Todd Barranca. With the project development, the buildout Facility area would remain in Zone X (unshaded) relative to potential flooding from the existing trap channel directly adjacent to the project area.

Zone X (unshaded) is defined as areas of minimal flooding or outside the 500-year floodplain and protected by a levee from the 100-year flood. Zone B and X (shaded) is defined as areas of moderate flood hazard, usually the area between the limits of the 100-year and 500-year floods. B Zones are also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year flood, or shallow flooding areas with average depths of less than one foot or drainage areas less than 1 square mile.

Given the project area is believed to remain in Zone X with future FEMA mapping, no further mitigation measures are proposed beyond the development defined in the entitlement planning documents.

Project Setting

Agromin's current Limoneira operation (the "Facility") is located in the unincorporated County of Ventura, between Ventura and Santa Paula, on the southerly side of the V.C.T.C. railroad (see Figure 2). The Facility is situated on APNs 090-0-180-085. According to the Assessor's Office this APN encompasses about 453 acres. However, this APN et al. have been determined to be a single, discrete lot in compliance with the provisions of the Subdivision Map Act and local ordinances pursuant thereto per a Certificate of Compliance recorded in instrument no. 20140507-00057264-0. The gross area of the lot is roughly 1,013 acres.

The Facility has been in operation since 2004 and currently encompasses about fifteen acres. The proposed project will expand the area to seventy acres for a commercial compost center with a throughput capacity of 300,000 tons per year of green, wood, ag, and food materials.

The existing utilities in the area are domestic and agricultural water systems, electric service systems, telephone systems, and petroleum systems. There are production agricultural and domestic water wells within one mile of the local study area. There is not existing storm drainage infrastructure to convey runoff from the Facility into a public drainage system.

BASIS OF CONTROL

Agromin obtained a new topographic survey of the entire Facility in September 2013. Supplemental surveys were also prepared in January 2014 and November 2015. All surveys were compiled into one file for the topographic mapping shown herein. The horizontal coordinates for the surveys are based on the California Coordinate System of 1983, Zone V in U.S. Survey Feet. The aerial survey was prepared at a scale of one-inch equals forty feet with a contour interval of one foot for National Map Accuracy Standards.

WATERSHED CHARACT-ERISTICS

The detailed study area consists of approximately seventy acres that is divided into 4 sub-basin watersheds (as shown in Appendix 1). These proposed watersheds are defined by the physical constraints and topographic features that will be created and points of interest in the study area. The land use within the local study area will consist of an organics recycling facility. The terrain slope within the sub-basin areas vary roughly from 0.5% to 3%.

Storm water runoff generated from the proposed detailed study area generally drains southeasterly as overland flow and as concentrated flow. Concentrated flow generally occurs within the lower elevations. The overland flow from the sub-basins cascades down the respective low points. At each low point, the storm water is further conveyed through a storm drain network and through downstream sub-basins to the south and east.

Industrial activity will occur everywhere within the local study area.

Flood Insurance Study

The detailed study area is located on the following FEMA FIRMs (see Appendix 5).

Ventura County, California and Incorporated Areas, community panel number 06111C 0770 E, January 20, 2010. According to this map, the detailed study area is located entirely in SFHA Zone X (unshaded).

Ventura County, California and Incorporated Areas, community panel number 06111C 0790 E, January 20, 2010. According to this map, the detailed study area is located entirely in SFHA Zone X (unshaded).

Zone X (unshaded) is defined as areas of minimal flooding or outside the 500-year floodplain and protected by a levee from the 100-year flood.

Native Soil Properties

The soil types within the study area were identified from the current County Hydrology Manual. Individual soil types are given unique values ranging from 1-7. There are two (composite) soil types within the study area; 3 and 4 (NRCS Type C and B respectively according to the County). Soil values can be seen in Appendix 3. According to the NRCS, the Facility is covered by Mocho loam (MoA), Mocho clay loam (MsA) and Mocho clay loam (MsB). All of which are Type B soils.

EXISTING GROUNDWATER CONDITIONS

The project is located entirely within the Santa Paula Basin. The depth to the seasonal high groundwater table is high enough that may be significant. The historic high groundwater level, according to the CGS on the Saticoy and Santa Paula Quadrangle maps and the 2015 Groundwater Section Annual Report from the Ventura County Watershed Protection District, is about twelve to thirteen feet deep near the Facility. Additional design requirements may be required if it is found to encroach on any new drainage infrastructure, appurtenances, or excavations.

The western and eastern retention basins have a maximum cut of five and ten feet respectively. Each basin will be lined to satisfy the WDR hydraulic conductivity requirements. The eastern basin may require a fill cap to offset a potential buoyancy force that may exist.

Proposed System Study Approach

The purpose of this design report is to facilitate the planning and implementation of drainage infrastructure improvements to accommodate storm water runoff within the Facility. Additional study objectives include:

✓ Develop a phased plan that alleviates localized flooding

✓ Provide study services consistent with City, County, and State standards

✓ Develop phased solutions that maximize the cost to benefit ratio

✓ Develop solutions that limit O&M costs

✓ Develop phased solutions that can be adapted

✓ Involve staff in the development and implementation of the phased solutions

✓ Develop phased solutions that will minimize any disturbance to the City, County, and surrounding community

✓ Site and operate storm drainage facilities in such a manner that minimizes adverse environmental impacts

DESIGN ANALYSIS

The approach to design process is to explore a range of solutions. The drainage design presented in this report has been developed based on evaluations of the following constraints:

- Watershed characteristics
- Topography
- Existing land use & its adaptability
- Location of transportation corridors
- Property boundaries & acquisition
- Logical points of drainage outfall
- Agency objectives
- Retrofitting opportunities
- Design level of protection
- Environmental impacts
- Financing (expenses)
- Structure relocation
- Operation and maintenance
- Regulatory compliance
- Agency compliance
- Hydrologic criteria
- Flexibility of service area
- Hydraulic capacities & characteristics

Formulation of the infrastructure design was characterized by an evaluation of all of the above constraints relative to the existing improvements, their level of importance to the successful completion of the project, and their interrelationships with each other.

Retention Basin Approach

Based on the above-mentioned constraints, the proposed design is to utilize storm water impoundments.

This approach will provide additional water quality enhancements allowing any dry weather runoff to be captured.

UTILITY CONFLICT ANALYSIS

The location of the utilities shown herein is for information only. The location, type, size, and/or depths indicated were obtained from sources of varying reliability. The consultant is not responsible or liable for the accuracy or completeness of those records. All utilities should be field verified as to their actual location, type, size, and depth prior to performing any excavation or other work close to any underground pipeline, conduit, duct, wire, structure or other utilities and structures subject to concerns for safety, displacement, and/or damage by reason of such operations.

The existing utilities in the area are domestic and agricultural water systems, electric service systems, telephone systems, and petroleum systems. There are production agricultural and domestic water wells within one mile of the study area. Ground water monitoring should be considered at any domestic well within one mile of a proposed storm water impoundment. There is no existing storm drainage infrastructure to convey runoff from the Facility.

For the most part, the drainage collection system has been placed away or adjacent to existing utilities. Any conflicts will need to be addressed during the preparation of the construction documents for those facilities and prior to construction of new facilities.

RIGHT-OF-WAY ANALYSIS

The property boundaries shown herein are based on a Record Boundary Map prepared by Diamond West, Inc. dated April 1, 2014. Field verification/staking should be performed during the construction process to locate any drainage improvements defined herein.

There are no planned right-of-way acquisitions or easements for drainage purposes. All work will be performed within the Facility boundary. Plan approval and all necessary permits are required prior to construction.

LAND USE ANALYSIS

The County and City General Plans and Zoning Codes regulate land use in the study area. Generally, existing land use in the area is consistent with these policy documents. There are no known pending formal applications in the County or City to change land use within the study area(s). No provisions have been made for changes in future land use within the study area(s).

ENVIRONMENTAL ANALYSIS

Environmental documentation for this project will be prepared by the County for the creation of a Facility CUP.

Proposed Drainage Description

In order to adequately evaluate the impacts and requirements of the proposed project, the existing drainage conditions were analyzed. Research efforts were made to identify any drainage studies that documented the existing drainage conditions for the study area. The results of these efforts did not find any study that adequately documented those conditions on-site. The purpose of this drainage study is to document the impacts of certain rainfall events on the study area(s). This information will be the basis of comparison between pre-development and post-development of storm drainage infrastructure improvements.

This proposed drainage description will analyze the effects of the 100-year, 24-hour event for the regional and local study areas.

RELATED DOCUMENTS

The Consultant pursued the County and City for any drainage reports on the study area.

WPD does have hydrologic studies along the Santa Clara River. According to their June 2011 study, the study areas are a part of sub-area 860. However, the study did not calculate runoff from the sub-areas. It only used these areas to calculate the overall runoff in the Santa Clara River. This was confirmed with WPD staff. The City does not have any hydrologic studies in this region.

According to the USEPA MyWATERS Mapper and the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, the region surrounding the Facility discharges into the Santa Clara River, Reach 2. This reach is not identified on the USEPA 2012 303(d) list of impaired water bodies.

METHODOLOGY

Due to the complex nature of the sub-basins, a hydrograph method was chosen to estimate the design storm runoff. The complex aspects of the sub-basins include consideration of available storage and varying times of travel. The Modified Rational Method, as defined in the current County Hydrology Manual is typically employed to generate the effective runoff within each sub-basin.

The County Hydrology Manual utilizes a Modified Rational Method approach for its hydrologic calculations. In general, the Rational Method is understood to provide peak discharge relative to rainfall intensity. It is not generally preferred in watershed catchments where ponding of storm water occurs. Additionally, it does not typically provide a reasonable relationship between peak storm water discharge and storm water runoff volume. This phenomenon can be seen in Figure 4. As seen on the synthetic rainfall distribution, the County method yields little runoff before or after the peak. This typically produces a sharp, narrow peak, which ultimately requires less storage volume for detention basin analysis. The runoff yield could be as low as 15%. Previous versions of the Manual required a minimum yield of 40%.

The VCRAT method is considered the 'standard of practice' for hydrology calculations in the county. However, the program does not allow for specific rainfall parameters to be entered. Therefore, the Army Corps of Engineers HEC-HMS program was utilized to generate runoff hydrographs for each sub-basin area.

Table 4. SCS CN

Commercial Organics Processing Facility

SCS Curve Number by Land Use

		Effective	SCS Curve Number						
		Impervious	Soil Type						
Land Use	Description	Cover	A		B		C		D
			7	6	5	4	3	2	1
OS	Open Space (fair condition)	0	42	61	65	71	77	81	84
OS	Open Space (good condition)	0	29	52	57	64	71	76	80
OR	Orchard (fair condition)	5	45	63	67	72	78	82	85
CB	Covered Berries	80	87	91	91	93	94	95	95
BP	Berries with Plastic Beds	65	78	85	86	89	91	92	93
WR	Windrows	65	78	85	86	89	91	92	93
PS	Pavement/Equipment/Structures	90	92	94	95	95	96	96	97
1A	100% OR	5	45	63	67	72	78	82	85
3B	75% OR & 25% CB	24	55	70	73	77	82	85	87
7A	55% OR & 45% BP	32	60	73	76	80	84	86	88
9C	75% PS & 25% WR	84	89	89	92	93	94	95	95
11C	90% pond & 10% PS	95	94	96	97	97	98	98	98
13D	40% WR & 60%PS	80	87	87	91	91	93	94	95
15D	90% pond & 10% PS	95	94	96	97	97	98	98	98
17E	55% OR & 45% BP	32	60	73	76	80	84	86	88

1. calculated by using open space (fair condition) for pervious area and a curve number of 98 for impervious area

Equation 1. Rational Method

$$Q = CiA$$

Where C = runoff coefficient
i = rainfall intensity (in/hr)
A = drainage area (ac)

Equation 2. Manning Equation

$$V = \frac{1.486}{n} R^{2/3} S^{1/2}$$

Where	V	= average velocity (ft/s)
	n	= roughness coefficient
	R	= hydraulic radius (ft)
	S	= head loss per unit length of pipe (ft/ft)

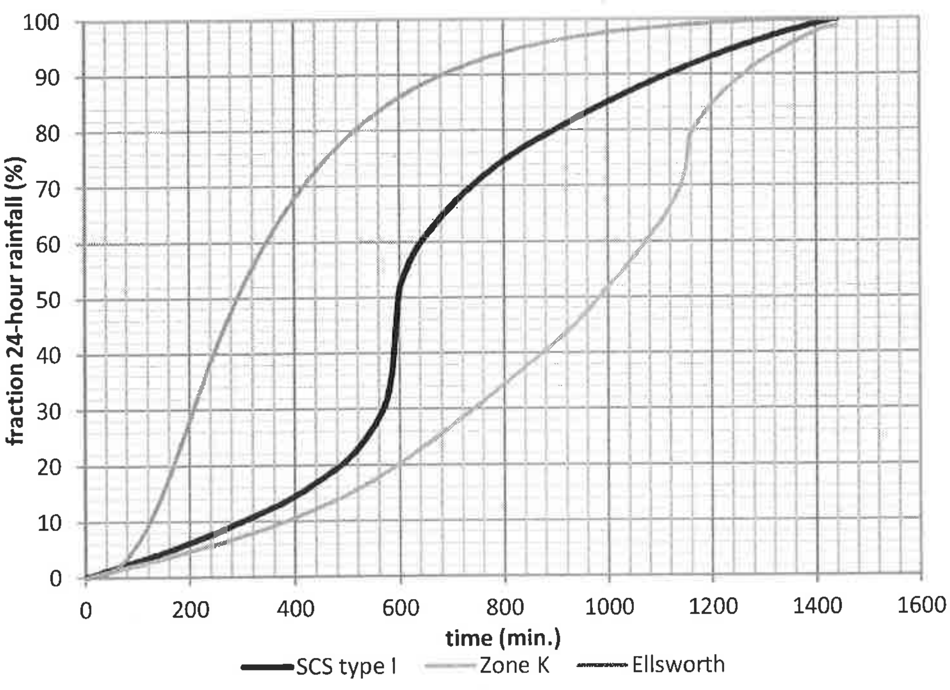
The rainfall intensity can be taken from County Standards. The runoff coefficient in the rational formula is dependent on the soil type, antecedent moisture condition, recurrence interval, land use, slope, amount of urban development, rainfall intensity, surface and channel roughness, and the duration of storm. Equation 3 provides a relationship between all of these factors and was used to calculate the runoff coefficients.

Equation 3. Rational Runoff Coefficient

$$C = 7.2\left(10^{-7}\right)CN^{3}T^{0.05}\left[\left((0.01CN)^{0.6}\right)\right]^{-S^{0.2}}\left(0.001CN^{1.48}\right)^{(0.15-0.11)}\left[(P+1)/2\right]^{0.7}$$

Where	CN	= SCS composite curve number
	T	= recurrence interval (years)
	S	= average sub-basin land slope (%)
	I	= rainfall intensity of recurrence interval (in/hr)
	P	= percent impervious (decimal)

Figure 4. Synthetic Rainfall Distribution Comparison



The rainfall for the 100-year, 24-hour storm event for the study area per the County Hydrology Manual is about 7.7 inches. For the design storm event and normal antecedent moisture conditions, the average runoff yield is roughly 61% for the regional study area and 94% for the local study area.

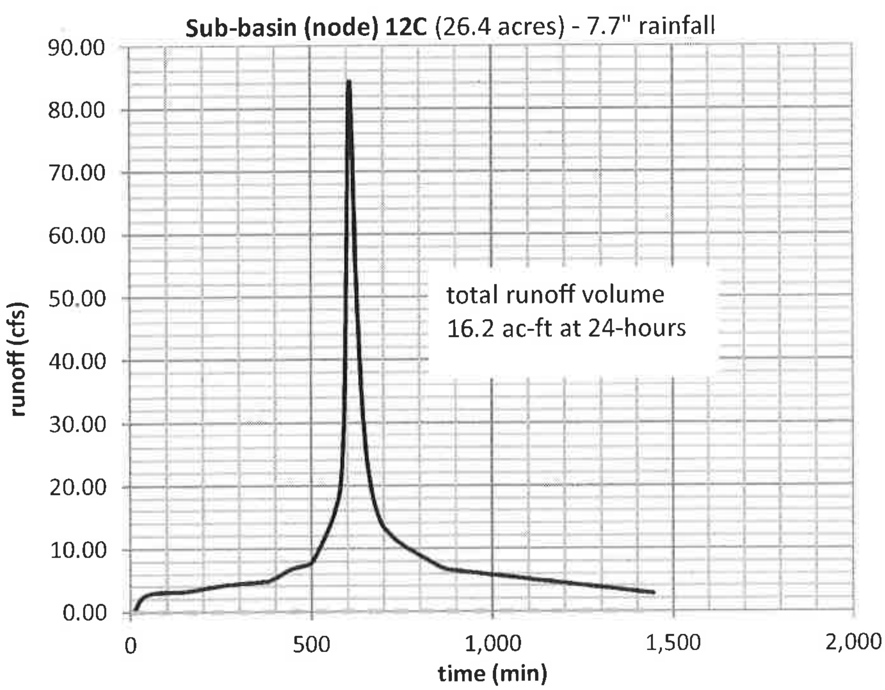
Hydrologic Model

The computer model HEC-HMS was used to simulate, combine, and route outflow hydrographs within each watershed. The simulation of the hydrologic data is generated by the development of the synthetic unit hydrograph, design storm pattern, and the runoff hydrograph.

See Figure 5 for the combined hydrographs at the downstream end of the Facility for the regional study. The total volume of runoff can be increased 1-3% because the runoff is still occurring at the end of the design storm.

The development of the synthetic unit hydrograph involves the identification of several watershed characteristics including composite curve numbers, soil cover, percent impervious, antecedent moisture conditions, land use, basin area, initial abstractions, hydraulic length, basin slope, and lag time. These parameters are calculated in the following steps.

Figure 5. Combined hydrograph – node 12C



- The sub-basin watershed boundaries were delineated by WMS on the recently prepared survey map and known physical constraints.

- The transformation method used was the Ellsworth S-Graph .

- Rainfall excess is that part of the total precipitation depth that appears as surface flow during and after a storm event. Rainfall excess equals to total rainfall depth minus losses due to interception by vegetation, infiltration into the soil, and surface depression storage. The loss method used is the SCS Curve Number. The information is based on:

    1. Soil data
    2. SCS curve number

- The catchment time of concentration is defined as the time from the center of mass of net rainfall and the center of mass of runoff. The lag time for each sub-basin was calculated from the Curve Number Method. This method is shown in equation 4.

Equation 4. Lag Time

$$L = \frac{l^{0.8} * (S+1)^{0.7}}{1{,}900 * Y^{0.5}} = 0.6 * T_C$$

Where	T_c	= time of concentration (min.)
	L	= lag time (hr)
	l	= hydraulic length of watershed (ft)
	S	= potential maximum retention after runoff
	Y	= average land slope (%)

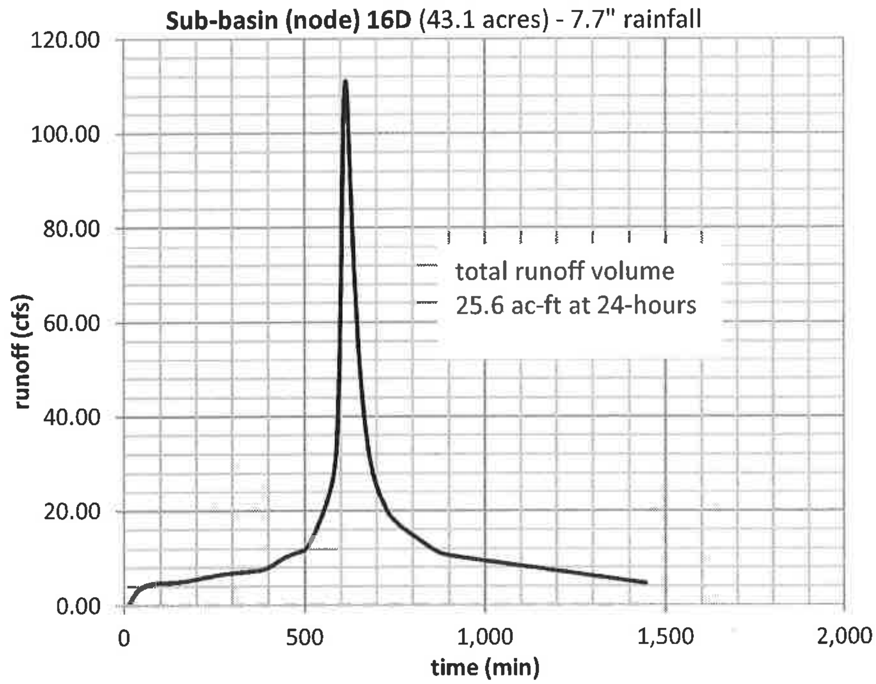
- To adequately define the unit hydrograph, the unit time period of the synthetic critical storm pattern should generally be 30 percent of the basin time of concentration and should use multiples of 1 minute. The unit time period utilized in this report is 1 minute.

- See Appendix for catchment soil characteristics, catchment hydrologic characteristics, and hydrograph plots for various locations.

Flow Routing

Flow routing methods for storage areas, channel, and sheet flow were estimated from existing and proposed dimensions and parameters. The Modified Puls method was used to route flow through storage areas as required. The hydrologic model was used to route flow through existing conveyances and sub-basins. Existing and Proposed dimensions were used for all conveyance routing. The discharge relationship from the storage areas used the Normal Depth method with similar dimensions. See Appendix 1 for a diagram of the entire watershed hydrologic model.

Figure 6. Combined hydrograph – node 16D



Hydraulic Model

Manning's Equation and Caltrans HDS No. 5 was used to simulate the hydraulic analysis of the existing and proposed storm drainage conveyance systems. The simulation of the hydraulic system utilized either the design storm event or the capacity of the existing system whichever was less. This capacity was defined from street grades, drain locations, and assumed maximum energy gradients.

Runoff captured in the retention basins will be used in the operations. The basins are interconnected with a culvert so the entire site can use both basins to balance the runoff volume. A wet well with a submersible pump will be used to remove the water into a water truck. If needed water can be hauled off-site if it cannot be used in operations and the basins are full. The Hazen-Williams formula was used to model the pipe headloss and equation 8 was used to model the total dynamic head (TDH) of the pump system. The following hydraulic formulas were used accordingly.

Equation 5. Orifice Equation

$$Q = C * A * \sqrt{(2 * g * H)}$$

Where
- Q = discharge (cfs)
- C = discharge coefficient (0.60)
- A = orifice area (ft^2)
- g = gravitational acceleration (32.2 ft/s^2)
- H = effective head on the orifice measured from the centroid of the opening (ft)

Equation 6. Broad Crested Weir Equation

$$Q = C * L * H^{1.5}$$

Where Q = discharge (cfs)
C = weir coefficient (3.08)
L = weir length (ft)
H = head above weir crest (ft)

Equation 7. Hazen-Williams Equation

$$h_f = \left(10{,}500 * \left(\frac{Q}{C}\right)^{1.85}\right) * D^{-4.87}$$

Where Q = flow rate (gpm)
C = coefficient of pipe friction
D = pipe diameter (in)
h_f = friction loss (ft/1,000 ft)

Equation 8. TDH Equation

$$TDH = H_{stat} + H_{ent} + h_{fs} + \sum h_{fvs} + h_{fd} + \sum h_{fvd} + \frac{v_d^{\,2}}{2g}$$

Where H_{stat} = total static head (ft)
H_{ent} = entrance headloss (ft)
h_{fs}, h_{fd} = friction headloss (ft)
h_{fvs}, h_{fvd} = fitting and valve losses (ft)

ASSUMPTIONS

The rainfall and runoff parameters are based on County rain gauge data, the County Hydrology Manual, and the County Design Standards.

Rainfall

According to the isohyet rainfall map in the County Hydrology Manual, the study area has an average 100-year, 24-hour rainfall depth of about 7.7 inches within the regional watershed. A statistical analysis was performed on County gauges 175/132B/175A to compare to the design storm rainfall event. The 85^{th} percentile, 24-hour rainfall is 1.35 inches.

The mean annual precipitation (MAP) is identified from DWR, Bulletin No. 195, October 1976 and the current information found on their web site (http://ferix.water.ca.gov/webapp/precipitation/). According to Station No. U03 8008 04 and NOAA Station USC00047957 (Santa Paula), the MAP is about 17.38-inches. Bulletin No. 195, Plate 4 reports the mean 24-hour storm at roughly 3.0-inches.

Magnitude and Frequency of Floods Comparison

Regional regression equations have been developed by USGS using generalized least squares regression. These equations are a function of drainage area and mean annual precipitation. They are also only valid in a rural watershed. However, the results can still be compared to urban watersheds with the understanding that urban watershed runoff should be two to five times that of the rural watershed. For sub-basin 1A:

Equation 9. Runoff Regression Equation

$$Q_{100} = 3.28 * A^{0.891} * P^{1.59} \approx 259.6\,cfs$$

Where	A	= drainage area (sm)	= 529.7 ac
	P	= mean annual rainfall (in)	= 17.38 in

As seen on the existing drainage area map, the discharge at node 2A is 380.6 cfs. This is nearly one and a half times the amount from the regression equation. The results are reasonable.

Proposed System Development

The build-out project area will be protected from off-site run-on by the by-pass culvert through the project area and the existing WPD channel along the east side of the development. All on-site runoff will be conveyed through a storm drainage network to two retention basins sized to contain the 100-year, 24-hour rainfall event.

The working areas and basins will be improved to satisfy the hydraulic conductivity requirements of the WDR for compost operations (WQ 2015-0121-DWQ). Accordingly, the Facility will be processing Tier II feedstocks. This requires working surfaces to have a hydraulic conductivity of 1.0 x 10^{-5} centimeters per second or less and ponds to meet a hydraulic conductivity of 1.0 x 10^{-6} cm/s or less. These criteria will be achieved by using a combination of asphalt pavement, cement treated native soil, and synthetic geomembrane liners. The basins will also be equipped with a pan lysimeter monitoring device or equivalent alternative to measure their containment efficiency.

Table 5. West Basin Rating Table

Stage (msl)	*Volume* (ac-ft)	*Discharge* (cfs)
168	0.0	0.0
170	1.8	0.0
172	5.6	0.0
174	10.0	0.0
176	14.8	0.0
177.9	19.9	0.0
178	20.1	0.0
178.5	21.5	53.2

The basins are interconnected with a pipe culvert. So, they will always equalize to the same level. The spillway elevation for both basins is 178.0 msl. And the 100-year, 24-hour water level is 177.6 msl. The spillway capacity for each is about 53 cfs.

The wet well is offline from the pipe culvert. A submersible pump will drain the ponds through a skid mounted filtration system and then into a water truck for operational use. Straw wattles will be used around all catch basins to keep any large debris from entering the storm drain system.

Table 6. East Basin Rating Table

Stage (msl)	*Volume* (ac-ft)	*Discharge* (cfs)
168	0.0	0.0
170	2.0	0.0
172	6.8	0.0
174	12.0	0.0
176	17.8	0.0
177.9	23.7	0.0
178	24.0	0.0
178.5	25.6	53.2

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13) U.S. Geological Survey (1982). *Guidelines for Determining Flood Flow Frequencies, Bulletin No. 17B*, U.S. Department of the Interior, Reston, VA.

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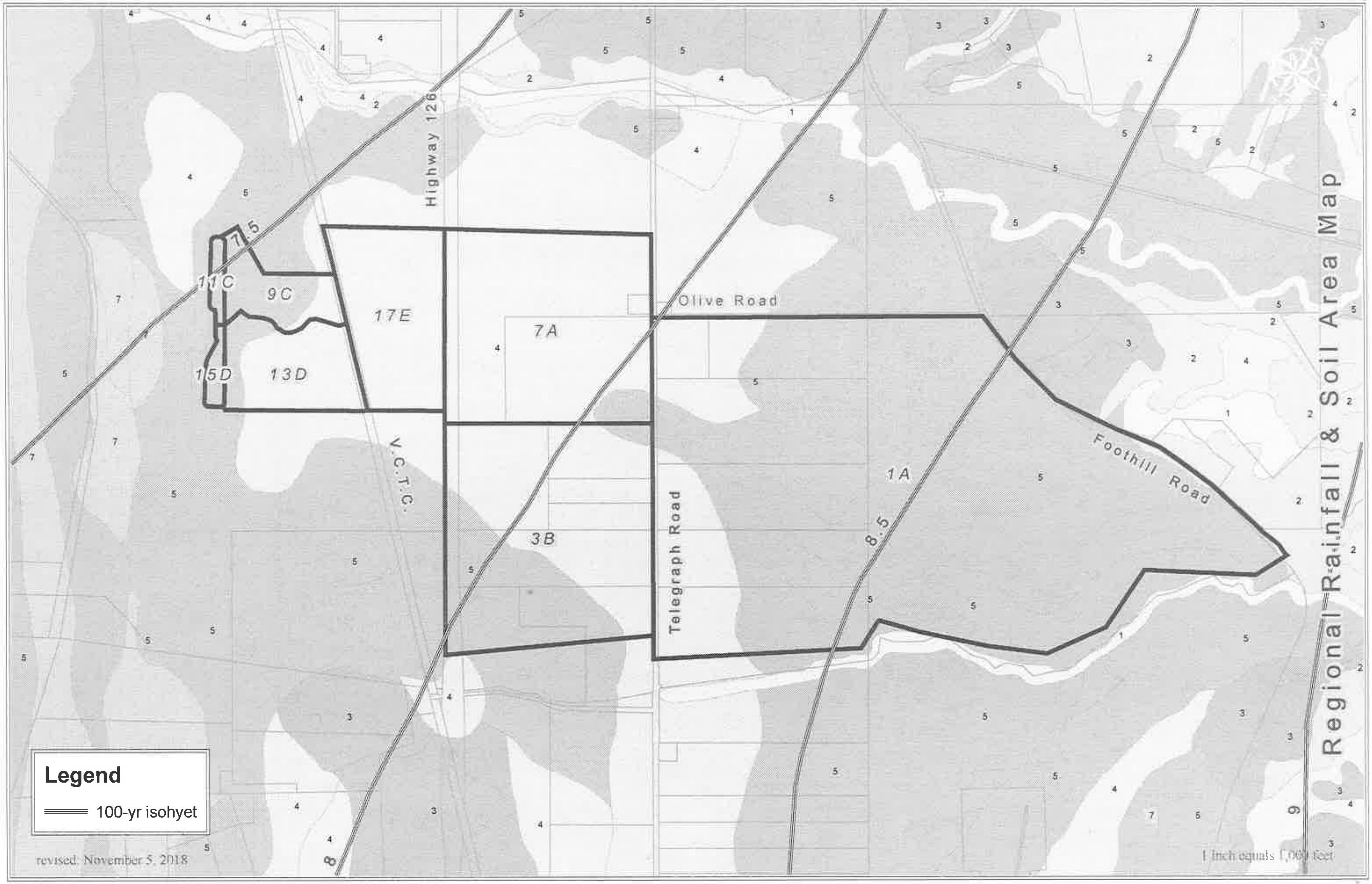
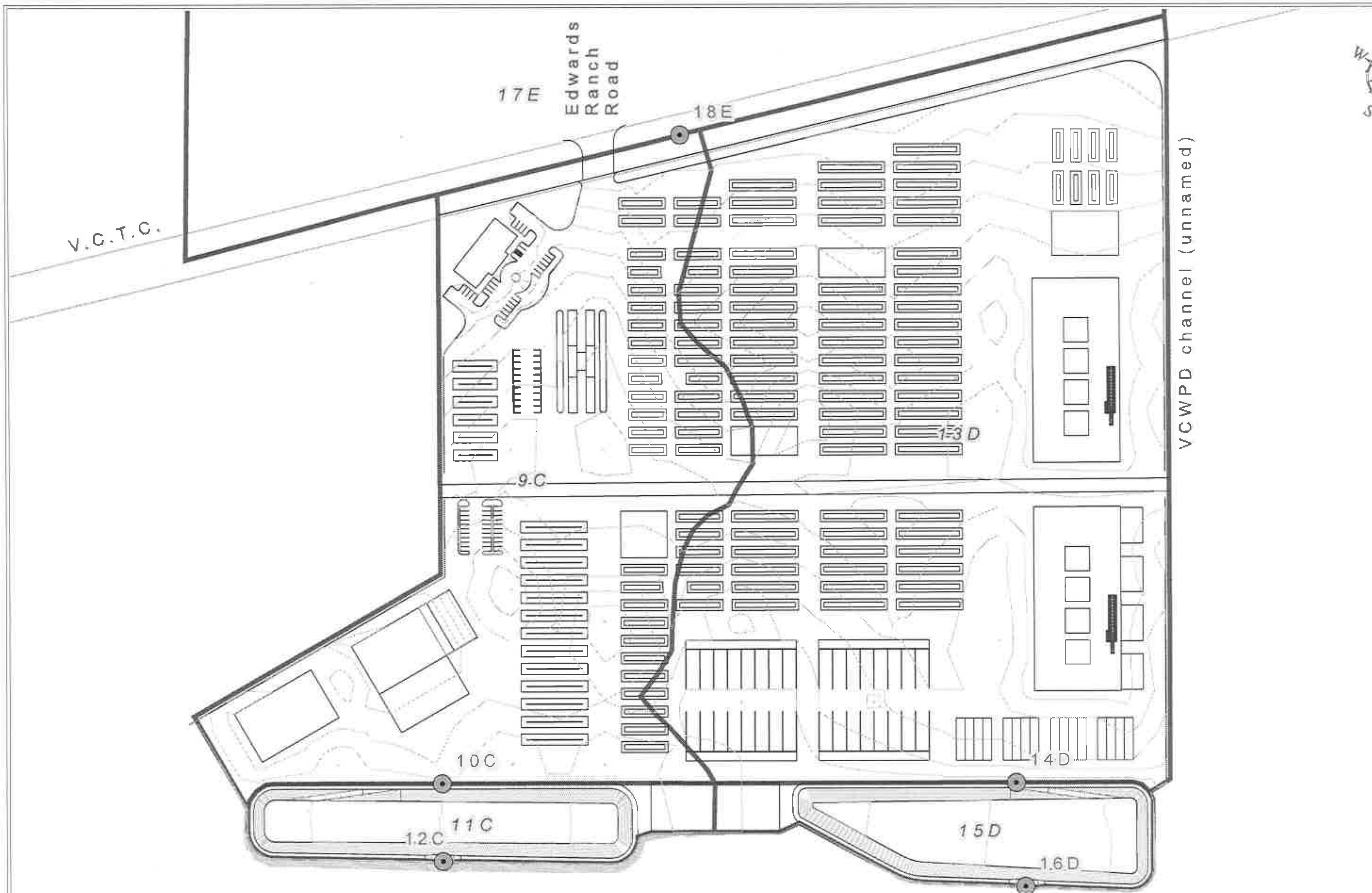
Appendix 1 – Exhibits


Regional Rainfall & Soil Area Map
Highway 126
Olive Road
Foothill Road
Telegraph Road
V.C.T.C.
1A
3B
7A
9C
11C
13D
15D
17E
7.5
8.5
8
9
Legend
100-yr isohyet
revised: November 5, 2018
1 inch equals 1,000 feet


Regional Drainage Area Map
V.C.T.C.
Highway 126
Telegraph Road
Olive Road
S W N E
12C 10C
11C
9C
18E
17E
7A
16D 15D 14D
13D
8A
4B
2A
1A
3B
revised: April 27, 2017
1 inch equals 500 feet

Local Drainage Area Map



revised: April 27, 2017

1 inch equals 200 feet

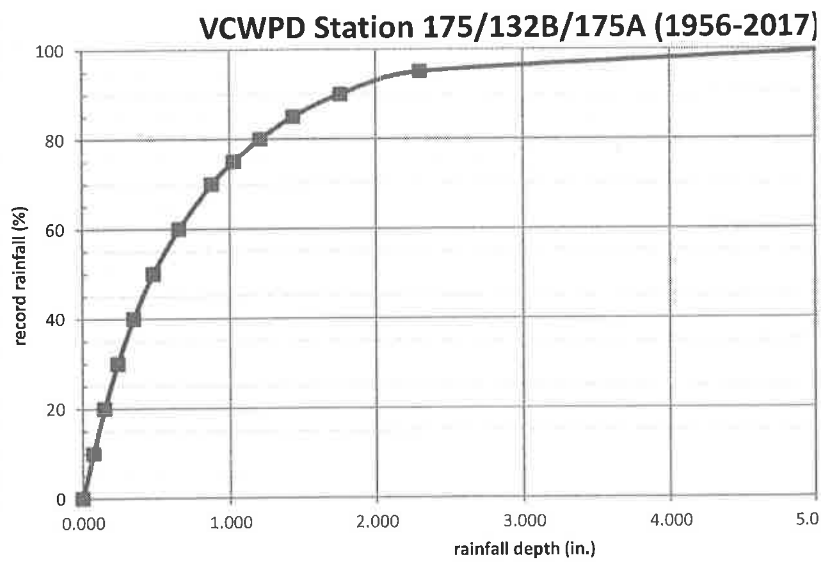
Appendix 2 – Rainfall Information

date	precip (in)	excess (in)
1/10/2005 8:00	5.31	3.01
11/29/1970 8:00	4.79	2.49
12/6/1997 8:00	4.72	2.42
2/11/1962 8:00	4.37	2.07
2/17/1980 8:00	4.32	2.02
2/10/1962 8:00	3.94	1.64
12/4/1974 8:00	3.91	1.61
1/11/2001 8:00	3.89	1.59
1/25/1969 8:00	3.85	1.55
1/10/1995 8:00	3.85	1.55
3/1/1991 8:00	3.64	1.34
2/15/1986 8:00	3.63	1.33
2/18/2017 8:00	3.63	1.33
1/20/1969 8:00	3.50	1.20
12/19/2010 8:00	3.37	1.07
3/11/1995 8:00	3.29	0.99
3/4/1978 8:00	3.21	0.91
3/6/2001 8:00	3.17	0.87
2/26/2004 8:00	3.17	0.87
3/8/1968 8:00	3.10	0.80
3/27/1979 8:00	3.10	0.80
12/20/1964 8:00	3.00	0.70
1/3/1977 8:00	3.00	0.70
1/17/1973 8:00	2.98	0.68
2/11/1992 8:00	2.96	0.66
2/2/1998 8:00	2.94	0.64
3/2/1970 8:00	2.93	0.63
3/5/2001 8:00	2.91	0.61
2/8/1962 8:00	2.90	0.60
2/11/1973 8:00	2.88	0.58
1/7/1974 8:00	2.88	0.58
2/20/1996 8:00	2.87	0.57
11/8/2002 8:00	2.87	0.57
2/8/1993 8:00	2.82	0.52
3/19/1991 8:00	2.81	0.51
1/5/2008 8:00	2.76	0.46
2/10/1963 8:00	2.75	0.45
12/11/1996 8:00	2.75	0.45
3/1/1978 8:00	2.72	0.42
12/28/2004 8:00	2.72	0.42
9/29/1976 8:00	2.71	0.41
1/23/1983 8:00	2.71	0.41
1/11/1980 8:00	2.68	0.38
1/8/1974 8:00	2.66	0.36
1/5/1995 8:00	2.66	0.36
2/19/1958 8:00	2.65	0.35
3/26/1993 8:00	2.63	0.33
2/28/1991 8:00	2.61	0.31
3/23/2005 8:00	2.61	0.31
2/3/1975 8:00	2.55	0.25
2/3/1998 8:00	2.54	0.24
2/8/1998 8:00	2.53	0.23
3/21/2011 8:00	2.50	0.20
12/7/1992 8:00	2.49	0.19
12/19/1970 8:00	2.48	0.18
12/3/1966 8:00	2.46	0.16
1/26/1958 8:00	2.45	0.15
12/27/1971 8:00	2.45	0.15
2/19/1993 8:00	2.45	0.15
1/7/2016 8:00	2.45	0.15
4/18/2000 8:00	2.42	0.12
1/11/1995 8:00	2.41	0.11

records truncated

rainfall event	rainfall depth (in)	treatment (%)
calculator	2.300	95.0
81.5th percentile	1.210	
85th percentile	1.35	
50-yr, 24-hr		
8% of 50-yr, 24-hr	0.00	
94.35th percentile	2.19	

rainfall depth (in)	treatment (%)
0.000	0
0.072	10
0.147	20
0.238	30
0.346	40
0.480	50
0.653	60
0.880	70
1.028	75
1.208	80
1.436	85
1.760	90
2.300	95
5.310	100



NOAA Atlas 14, Volume 6, Version 2 SATICOY FIRE STATION
Station ID: 93-0175
Location name: Ventura, California, USA*
Latitude: 34.2856°, Longitude: -119.155°
Elevation:
Elevation (station metadata): 185 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF tabular | PF graphical | Maps & aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.150 (0.126-0.181)	0.188 (0.157-0.227)	0.233 (0.194-0.283)	0.268 (0.221-0.327)	0.312 (0.248-0.395)	0.343 (0.267-0.444)	0.372 (0.282-0.496)	0.401 (0.295-0.550)	0.437 (0.307-0.627)	0.463 (0.314-0.689)
10-min	0.215 (0.180-0.259)	0.269 (0.225-0.325)	0.334 (0.279-0.405)	0.384 (0.317-0.469)	0.447 (0.356-0.566)	0.491 (0.383-0.637)	0.534 (0.405-0.711)	0.575 (0.423-0.789)	0.626 (0.441-0.899)	0.663 (0.450-0.988)
15-min	0.260 (0.218-0.314)	0.325 (0.272-0.393)	0.404 (0.337-0.490)	0.464 (0.384-0.568)	0.540 (0.430-0.685)	0.594 (0.463-0.770)	0.645 (0.490-0.859)	0.695 (0.512-0.954)	0.757 (0.533-1.09)	0.802 (0.544-1.19)
30-min	0.391 (0.328-0.472)	0.489 (0.409-0.591)	0.608 (0.507-0.736)	0.698 (0.577-0.854)	0.812 (0.647-1.03)	0.893 (0.696-1.16)	0.971 (0.736-1.29)	1.05 (0.769-1.43)	1.14 (0.801-1.63)	1.21 (0.818-1.80)
60-min	0.614 (0.514-0.740)	0.767 (0.642-0.927)	0.954 (0.795-1.16)	1.10 (0.905-1.34)	1.27 (1.01-1.62)	1.40 (1.09-1.82)	1.52 (1.16-2.03)	1.64 (1.21-2.25)	1.79 (1.26-2.56)	1.89 (1.28-2.82)
2-hr	0.892 (0.747-1.08)	1.12 (0.932-1.35)	1.38 (1.15-1.68)	1.58 (1.31-1.94)	1.84 (1.46-2.33)	2.01 (1.57-2.61)	2.18 (1.65-2.90)	2.34 (1.72-3.21)	2.54 (1.79-3.65)	2.68 (1.82-3.99)
3-hr	1.12 (0.934-1.35)	1.40 (1.17-1.69)	1.73 (1.44-2.10)	1.98 (1.64-2.42)	2.30 (1.83-2.91)	2.52 (1.96-3.26)	2.72 (2.07-3.63)	2.92 (2.15-4.01)	3.17 (2.23-4.55)	3.34 (2.27-4.98)
6-hr	1.57 (1.31-1.89)	1.97 (1.65-2.38)	2.46 (2.05-2.98)	2.82 (2.33-3.45)	3.28 (2.61-4.15)	3.59 (2.80-4.66)	3.89 (2.95-5.18)	4.18 (3.07-5.73)	4.53 (3.19-6.50)	4.78 (3.24-7.12)
12-hr	2.02 (1.69-2.43)	2.57 (2.15-3.10)	3.23 (2.69-3.91)	3.73 (3.08-4.56)	4.35 (3.47-5.51)	4.79 (3.73-6.21)	5.20 (3.96-6.93)	5.60 (4.12-7.68)	6.09 (4.29-8.74)	6.44 (4.37-9.59)
24-hr	2.56 (2.27-2.95)	3.31 (2.92-3.81)	4.21 (3.72-4.87)	4.90 (4.29-5.72)	5.77 (4.88-6.96)	6.39 (5.29-7.87)	6.98 (5.64-8.80)	7.54 (5.93-9.79)	8.26 (6.23-11.2)	8.77 (6.39-12.3)
2-day	3.12 (2.77-3.60)	4.12 (3.64-4.75)	5.34 (4.71-6.18)	6.29 (5.50-7.34)	7.51 (6.35-9.05)	8.39 (6.95-10.3)	9.24 (7.47-11.7)	10.1 (7.92-13.1)	11.1 (8.41-15.1)	11.9 (8.70-16.7)
3-day	3.46 (3.07-3.99)	4.62 (4.08-5.33)	6.06 (5.35-7.01)	7.19 (6.29-8.39)	8.66 (7.33-10.4)	9.74 (8.07-12.0)	10.8 (8.73-13.6)	11.8 (9.31-15.4)	13.2 (9.95-17.8)	14.2 (10.3-19.9)
4-day	3.77 (3.34-4.35)	5.06 (4.47-5.84)	6.69 (5.90-7.74)	7.97 (6.97-9.29)	9.65 (8.16-11.6)	10.9 (9.02-13.4)	12.1 (9.79-15.3)	13.3 (10.5-17.3)	14.9 (11.3-20.2)	16.1 (11.7-22.6)
7-day	4.38 (3.88-5.04)	5.89 (5.21-6.79)	7.81 (6.89-9.04)	9.35 (8.18-10.9)	11.4 (9.63-13.7)	12.9 (10.7-15.9)	14.4 (11.6-18.2)	15.9 (12.5-20.7)	17.9 (13.5-24.2)	19.4 (14.2-27.2)
10-day	4.71 (4.17-5.42)	6.34 (5.61-7.32)	8.44 (7.45-9.77)	10.1 (8.86-11.8)	12.4 (10.5-14.9)	14.1 (11.6-17.3)	15.7 (12.7-19.9)	17.5 (13.7-22.6)	19.7 (14.9-26.7)	21.5 (15.6-30.0)
20-day	5.44 (4.82-6.27)	7.41 (6.55-8.55)	9.98 (8.80-11.5)	12.1 (10.6-14.1)	14.9 (12.6-18.0)	17.1 (14.1-21.0)	19.3 (15.6-24.3)	21.5 (16.9-27.9)	24.5 (18.5-33.2)	26.9 (19.6-37.7)
30-day	6.43 (5.70-7.41)	8.80 (7.78-10.2)	11.9 (10.5-13.8)	14.5 (12.7-16.9)	18.0 (15.2-21.7)	20.7 (17.1-25.5)	23.5 (19.0-29.6)	26.3 (20.7-34.2)	30.3 (22.8-40.9)	33.3 (24.3-46.7)
45-day	7.57 (6.70-8.72)	10.3 (9.15-11.9)	14.1 (12.4-16.3)	17.1 (15.0-20.0)	21.4 (18.1-25.8)	24.7 (20.5-30.4)	28.2 (22.8-35.5)	31.8 (25.0-41.2)	36.7 (27.7-49.7)	40.7 (29.6-56.9)
60-day	8.64 (7.65-9.95)	11.8 (10.4-13.6)	16.0 (14.1-18.5)	19.5 (17.0-22.7)	24.3 (20.6-29.4)	28.2 (23.4-34.7)	32.2 (26.1-40.6)	36.4 (28.7-47.3)	42.3 (31.9-57.3)	47.1 (34.3-65.9)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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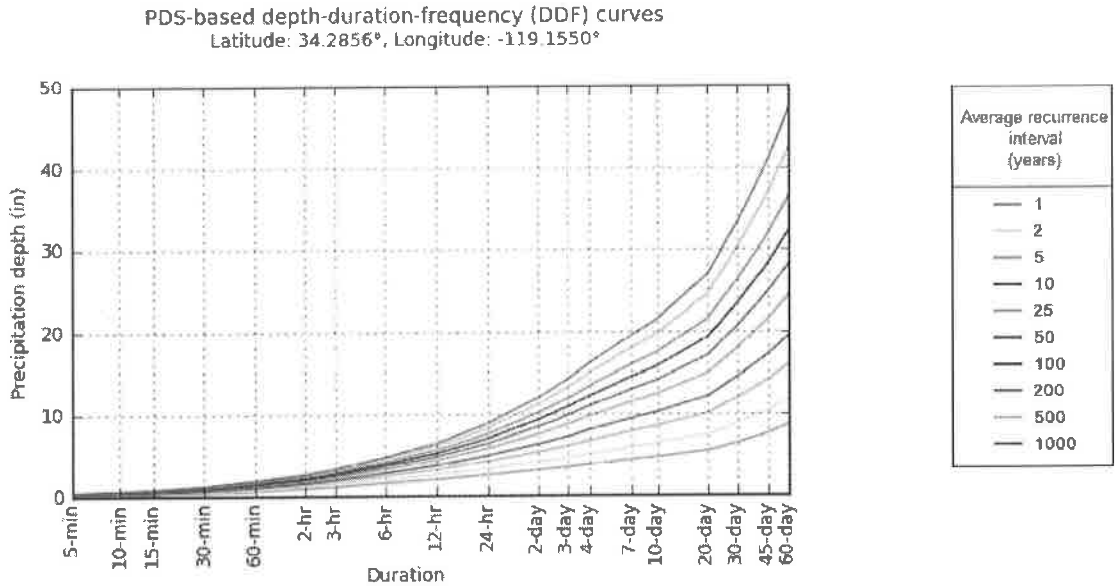
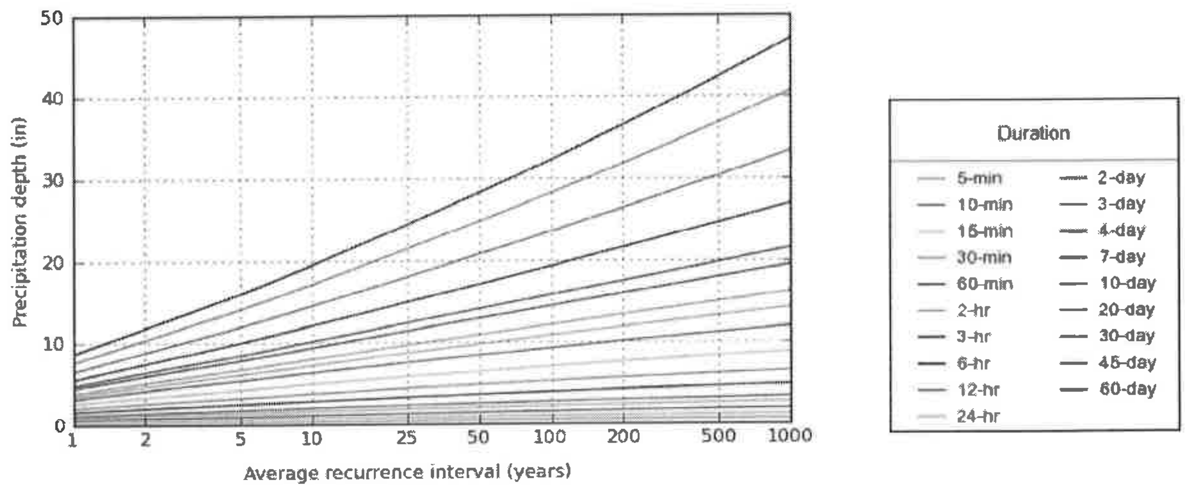
PF graphical





NOAA Atlas 14, Volume 6, Version 2

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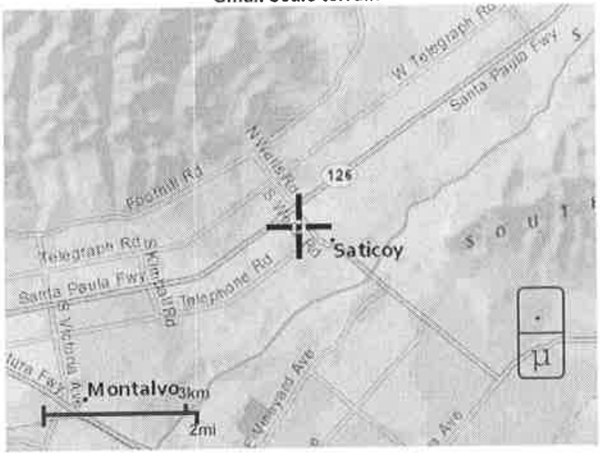
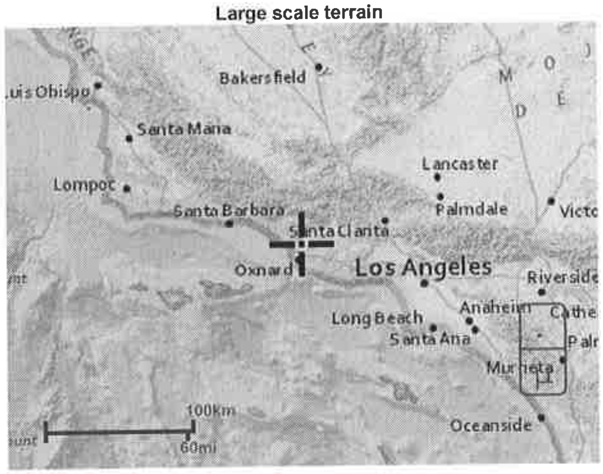
Maps & aerials

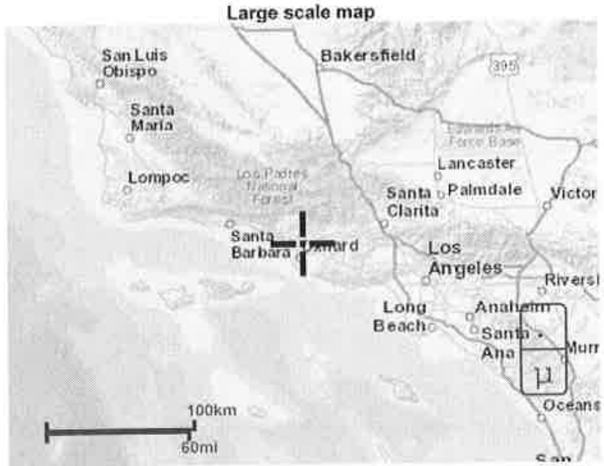
Small scale terrain



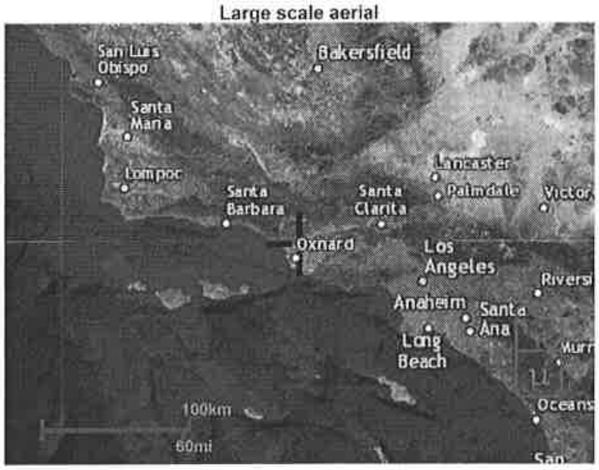
Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Station Number	Station	County	Latitude	Longitude	Elevation	Years Recorded
U03 8008 04	Santicoy FS 175	Ventura	34.285	-119.156	180	42

Rainfall Statistics	5-Min	10-Min	15-Min	30-Min	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	48-Hour	72-Hour	1-Year
PR=0.5	0.2	---	0.35	0.5	0.7	0.99	1.21	1.7	2.41	3.4	---	---	---
PR=0.20	0.27	---	0.47	0.66	0.94	1.33	1.63	2.31	3.27	4.63	---	---	---
PR=0.10	0.31	---	0.53	0.76	1.08	1.53	1.87	2.66	3.78	5.36	---	---	---
PR=0.04	0.34	---	0.6	0.86	1.22	1.74	2.15	3.06	4.36	6.21	---	---	---
PR=0.02	0.37	---	0.65	0.93	1.32	1.89	2.33	3.33	4.75	6.79	---	---	---
PR=0.01	0.39	---	0.69	0.99	1.41	2.02	2.5	3.58	5.12	7.34	---	---	---
PR=0.00	0.41	---	0.73	1.04	1.5	2.15	2.66	3.81	5.47	7.86	---	---	---
PR=0.00	0.43	---	0.77	1.11	1.6	2.3	2.85	4.11	5.91	8.52	---	---	---
PR=0.00	0.45	---	0.8	1.16	1.67	2.41	2.99	4.32	6.23	9	---	---	---
PR=0.0001	0.5	---	0.9	1.3	1.89	2.75	3.42	4.97	7.22	10.5	---	---	---
Annual Maxima	5-Min	10-Min	15-Min	30-Min	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	48-Hour	72-Hour	1-Year
2007	---	---	---	---	---	---	---	---	---	---	---	---	---
2006	---	---	---	---	---	---	---	---	---	---	---	---	---
2005	---	---	---	---	---	---	---	---	---	---	---	---	---
2004	---	---	---	---	---	---	---	---	---	---	---	---	---
2003	---	---	---	---	---	---	---	---	---	---	---	---	---
2002	---	---	---	---	---	---	---	---	---	---	---	---	---
2001	---	---	---	---	---	---	---	---	---	---	---	---	---
2000	---	---	---	---	---	---	---	---	---	---	---	---	---
1999	---	---	---	---	---	---	---	---	---	---	---	---	---
1998	0.34	---	0.65	0.84	1.13	2	2.65	2.65	3.45	3.69	---	---	---
1997	0.07	---	0.15	0.27	0.49	0.87	1.32	1.72	2.31	2.79	---	---	15.82
1996	0.09	---	0.18	0.21	0.33	0.57	1.01	1.37	2.34	3.5	---	---	13.95
1995	0.23	---	0.34	0.6	0.95	1.58	2.54	3.61	4.94	5.78	---	---	33.28
1994	0.17	---	0.24	0.33	0.49	0.85	1.47	1.81	1.89	1.91	---	---	13.31
1993	0.17	---	0.39	0.56	0.95	1.32	1.97	2.25	2.62	3.07	---	---	28.85
1992	0.28	---	0.46	0.62	0.73	0.94	1.44	1.66	2.75	4.1	---	---	16.32
1991	0.34	---	0.68	0.96	1.17	1.55	2.29	2.85	2.98	4.35	---	---	17.02
1990	0.08	---	0.16	0.23	0.4	0.61	1.08	1.34	1.64	1.72	---	---	6.11
1989	0.04	---	0.08	0.14	0.21	0.35	0.57	0.73	1.13	1.31	---	---	8.59
1988	0.1	---	0.31	0.5	0.87	1.25	1.4	1.43	1.69	2.03	---	---	12.1
1987	0	---	0.13	0.25	0.5	0.86	1.13	1.17	1.26	1.4	---	---	7.1
1986	0.13	---	0.4	0.79	1.59	2.98	3.01	3.05	3.11	3.33	---	---	25.48
1985	0.06	---	0.15	0.25	0.41	0.65	1.21	1.3	1.33	1.33	---	---	11.04
1984	0.12	---	0.35	0.48	0.62	0.75	1.22	1.4	2.18	2.21	---	---	10.86
1983	0.2	---	0.38	0.63	0.81	1.12	1.43	1.83	2.63	2.94	---	---	31.51
1982	0.13	---	0.23	0.29	0.46	0.53	0.89	0.93	1.06	1.29	---	---	12.71
1981	0.15	---	0.38	0.5	0.73	0.87	0.94	1.29	1.59	2.88	---	---	11.8
1980	0.17	---	0.5	0.75	0.96	1.42	2.47	3.19	4.5	4.82	---	---	27.12
1979	0.12	---	0.34	0.57	0.93	1.4	2	2.6	3.07	3.07	---	---	19
1978	0.18	---	0.38	0.53	0.77	1.35	2.15	2.65	3.8	4.05	---	---	33.07
1977	0.2	---	0.46	0.68	0.78	1.41	2.31	2.69	2.99	3	---	---	10.48
1976	0.2	---	0.48	0.65	0.76	0.94	1.43	1.7	2.7	2.75	---	---	11.12
1975	0.23	---	0.5	0.61	1.05	1.4	2.34	2.77	3.59	4	---	---	16.28
1974	0.15	---	0.24	0.29	0.44	0.63	1.15	1.63	2.79	4.4	---	---	14.43
1973	0.24	---	0.45	0.64	0.95	1.58	2.35	2.73	3.02	3.05	---	---	21.65
1972	0.2	---	0.45	0.68	1.09	1.45	1.93	2.34	2.45	2.45	---	---	7.47
1971	0.11	---	0.23	0.45	0.95	1.52	2.22	2.81	3.72	5.03	---	---	14.75
1970	0.18	---	0.41	0.6	0.82	1.02	1.63	2.08	2.58	2.99	---	---	14.16
1969	0.19	---	0.52	0.7	0.9	1.29	2.37	2.82	3.62	4.1	---	---	24.76
1968	0.2	---	0.6	0.82	0.88	0.91	1.43	1.92	2.64	3.1	---	---	13.85
1967	0.25	---	0.43	0.68	0.9	1.19	1.68	2.11	2.58	2.7	---	---	19.36
1966	0.23	---	0.35	0.45	0.69	0.89	1.39	1.5	2.02	2.69	---	---	14.82
1965	0.08	---	0.2	0.3	0.41	0.52	0.87	1.19	2.09	2.95	---	---	14.28
1964	0.23	---	0.37	0.56	0.63	0.81	1.3	1.5	1.54	1.54	---	---	8.53
1963	0.21	---	0.32	0.4	0.54	0.86	1.31	1.63	2	2.77	---	---	11.99
1962	0.2	---	0.3	0.47	0.67	1.25	1.53	1.78	2.89	5.77	---	---	24.48
1961	0.21	---	0.4	0.61	0.81	1.1	1.2	1.21	1.61	2.45	---	---	7.34
1960	0.24	---	0.38	0.58	0.79	1.12	1.6	2.02	2.2	2.3	---	---	11.36
1959	0.22	---	0.25	0.3	0.46	0.66	0.87	1.1	1.22	1.57	---	---	6.49
1958	0.22	---	0.48	0.67	0.9	1.4	2.17	2.37	2.39	2.75	---	---	29.26
1957	0.24	---	0.32	0.41	0.53	0.61	0.68	0.74	0.93	1.05	---	---	---
1956	---	---	---	---	---	---	---	---	---	---	---	---	---
1955	---	---	---	---	---	---	---	---	---	---	---	---	---
1954	---	---	---	---	---	---	---	---	---	---	---	---	---
1953	---	---	---	---	---	---	---	---	---	---	---	---	---
1952	---	---	---	---	---	---	---	---	---	---	---	---	---

Monthly Rainfall Total

Station	Statio No	County	Lat	Long	Elev.	Source	Ob Tir	Yrs Rec	Slope	Interce
Santa Paula	U03 7957 00	Ventur	34.317	-119.133	237	CD		111		

Return Period for Rainfall For Indicated Monthly Total Rain

	Sum	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
RP 2	16.02	0.26	0.99	2.14	2.77	3.23	2.14	0.83	0.08	0.01	0.00	0.01	0.12
RP 5	23.22	0.94	2.93	4.45	6.53	7.18	4.83	1.92	0.63	0.08	0.01	0.07	0.46
RP 10	27.96	1.50	4.33	6.03	9.34	9.77	6.83	2.65	1.15	0.14	0.03	0.16	0.96
RP 25	33.82	2.28	6.15	8.03	13.06	12.99	9.49	3.57	1.95	0.23	0.06	0.30	1.86
RP 50	38.09	2.89	7.53	9.50	15.92	15.32	11.52	4.24	2.61	0.31	0.08	0.43	2.68
RP 100	42.26	3.53	8.90	10.96	18.80	17.61	13.58	4.90	3.31	0.39	0.11	0.58	3.62
RP 200	46.37	4.18	10.29	12.41	21.72	19.86	15.67	5.56	4.05	0.48	0.14	0.74	4.66
RP 500	51.74	5.07	12.13	14.31	25.64	22.80	18.46	6.41	5.08	0.60	0.19	0.97	6.16
RP 1000	55.76	5.76	13.54	15.75	28.65	25.01	20.61	7.06	5.90	0.69	0.23	1.15	7.39
RP 10000	69.03	8.17	18.30	20.55	38.91	32.27	27.93	9.19	8.83	1.02	0.36	1.84	12.00
Average	17.52	0.53	1.54	2.69	3.95	4.05	2.99	1.07	0.34	0.04	0.01	0.04	0.26
Stdev	[illegible]	0.84	1.99	2.62	4.15	4.01	2.74	1.33	0.72	0.12	0.03	0.16	0.63
Rec Max	42.24	4.16	10.37	10.66	18.63	20.89	11.79	5.72	3.95	0.64	0.26	1.11	4.06
Rec Min	6.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Z	3.16	4.61	4.15	3.16	3.52	3.92	2.96	3.91	4.97	6.84	10.34	8.59	4.94
Yrs Rec	111	110	110	110	110	110	110	110	109	109	109	110	109
Calc CV	0.451	1.599	1.289	0.972	1.051	0.990	0.916	1.241	2.090	2.988	4.819	4.156	2.409
Reg CV	0.447	1.501	1.380	0.935	1.055	1.058	0.995	1.106	2.104	2.251	3.709	3.214	2.959
Skew	1.0	2.4	1.8	0.9	1.8	1.4	1.1	1.6	3.0	3.6	6.3	5.8	3.5
Reg Skew	1.2	2.4	1.7	1.4	1.9	1.2	1.9	1.3	3.2	3.0	4.4	4.4	4.8
Kurtosis	0.5	6.1	4.0	-0.3	3.2	2.7	0.8	2.5	9.8	12.9	43.8	35.4	14.8

Monthly Total Rain

Year	Sum	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1897	13.70	0.00	0.00	0.00	5.03	4.98	3.24	0.00	0.00	0.00	0.00	0.00	0.45
1898	6.32	1.07	0.00	0.00	0.92	0.70	1.55	0.00	1.22	0.00	0.00	0.00	0.86
1899	6.54	0.08	0.00	0.26	3.44	0.00	2.41	0.35	0.00	0.00	0.00	0.00	0.00
1900	9.57	1.84	1.17	1.66	1.67	0.00	1.36	0.38	1.49	0.00	0.00	0.00	0.00
1901	16.80	0.00	4.71	0.00	4.57	4.34	0.42	0.91	1.14	0.00	0.00	0.00	0.71
1902	12.38	2.24	0.54	0.00	1.30	4.49	3.31	0.50	0.00	0.00	0.00	0.00	0.00
1903	18.40	0.00	4.75	1.03	1.66	1.98	6.23	2.65	0.10	0.00	0.00	0.00	0.00
1904	13.36	0.00	0.00	0.00	0.31	3.83	5.94	1.46	0.00	0.00	0.00	0.00	1.82
1905	22.44	0.38	0.00	2.18	2.54	8.02	5.50	0.67	3.15	0.00	0.00	0.00	0.00
1906	17.93	0.00	1.50	0.00	3.35	3.60	9.03	0.40	0.05	0.00	0.00	0.00	0.00
1907	27.83	0.00	0.00	6.25	13.23	1.95	6.22	0.18	0.00	0.00	0.00	0.00	0.00
1908	15.13	3.30	0.00	0.65	5.08	4.56	0.05	0.94	0.00	0.00	0.00	0.00	0.55
1909	25.35	0.15	2.40	1.10	10.88	5.94	4.88	0.00	0.00	0.00	0.00	0.00	0.00
1910	16.72	0.13	1.36	7.27	2.82	0.00	2.36	0.00	0.00	0.00	0.00	0.00	2.78
1911	19.29	0.62	0.33	0.32	9.54	2.88	5.53	0.00	0.00	0.00	0.00	0.00	0.07
1912	11.07	0.00	0.00	1.21	0.18	0.00	7.17	1.67	0.84	0.00	0.00	0.00	0.00
1913	15.41	0.56	0.11	0.00	3.79	9.51	0.00	0.47	0.00	0.47	0.00	0.50	0.00
1914	28.48	0.00	3.09	2.33	12.73	8.40	0.66	0.76	0.51	0.00	0.00	0.00	0.00
1915	23.12	0.15	0.13	4.33	5.38	9.30	0.98	1.16	1.69	0.00	0.00	0.00	0.00
1916	24.49	0.00	0.68	2.60	18.17	0.56	1.04	0.00	0.00	0.00	0.00	0.00	1.44
1917	19.94	2.36	0.00	6.43	3.24	7.24	0.12	0.37	0.19	0.00	0.00	0.00	0.00
1918	21.88	0.00	0.30	0.00	0.26	13.00	6.28	0.00	0.00	0.00	0.26	0.00	1.78
1919	12.08	0.00	3.01	1.17	1.43	1.89	2.65	0.00	0.22	0.00	0.00	0.00	1.71
1920	12.53	0.33	0.12	2.18	0.41	2.93	5.74	0.82	0.00	0.00	0.00	0.00	0.00
1921	17.44	0.30	1.86	1.33	6.60	1.02	1.99	0.23	3.95	0.00	0.00	0.00	0.17
1922	20.93	0.34	0.00	10.66	4.55	3.43	1.49	0.00	0.46	0.00	0.00	0.00	0.00
1923	15.07	0.43	1.63	7.01	1.86	1.03	0.00	2.97	0.00	0.00	0.00	0.00	0.14
1924	7.57	0.72	0.00	0.04	1.94	0.18	3.46	1.23	0.00	0.00	0.00	0.00	0.00
1925	10.01	1.02	1.12	1.08	0.31	1.25	2.25	2.02	0.88	0.08	0.00	0.00	0.00
1926	16.41	0.81	0.89	2.23	2.04	4.42	0.12	5.72	0.16	0.02	0.00	0.00	0.00
1927	23.32	0.13	5.49	1.28	1.89	10.66	2.34	1.53	0.00	0.00	0.00	0.00	0.00
1928	11.16	1.84	1.27	2.64	0.00	2.27	2.25	0.29	0.59	0.00	0.00	0.00	0.00
1929	14.17	0.06	2.04	3.29	2.47	2.10	1.51	1.89	0.00	0.12	0.00	0.00	0.69
1930	11.59	0.00	0.00	0.00	6.58	0.92	3.14	0.17	0.76	0.00	0.00	0.00	0.02
1931	14.19	0.02	2.68	0.00	3.94	4.09	0.00	2.00	1.25	0.00	0.00	0.21	0.00
1932	20.54	0.05	3.13	8.70	2.03	5.78	0.09	0.54	0.02	0.05	0.00	0.00	0.15
1933	11.15	0.24	0.00	0.90	8.84	0.00	0.23	0.32	0.13	0.40	0.00	0.09	0.00
1934	14.94	0.44	0.00	6.86	3.19	3.85	0.00	0.00	0.00	0.52	0.00	0.00	0.08
1935	21.39	1.62	3.16	4.76	3.97	0.82	3.31	3.50	0.00	0.00	0.00	0.25	0.00
1936	16.31	0.37	1.12	1.74	0.17	10.32	1.91	0.69	0.00	0.00	0.00	0.00	0.00
1937	26.49	4.16	0.00	6.35	3.24	7.93	4.48	0.12	0.21	0.00	0.00	0.00	0.00
1938	26.98	0.00	0.00	4.92	0.87	9.49	11.17	0.19	0.09	0.00	0.00	0.00	0.25
1939	15.68	0.00	0.00	6.99	2.95	1.33	2.29	0.53	0.00	0.00	0.00	0.00	1.59
1940	13.29	0.00	0.31	1.22	3.57	5.24	0.73	2.22	0.00	0.00	0.00	0.00	0.00

Monthly Rainfall Total

Station	Statio No	County	Lat	Long.	Elev.	Source	Ob Tir	Yrs Rec	Slope	Interce
Santa Paula	U03 7957 00	Ventur	34.317	-119.133	237	CD		111		

Return Period for Rainfall For Indicated Monthly Total Rain

	Sum	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1941	38.11	1.80	0.15	7.31	5.97	10.52	8.70	3.66	0.00	0.00	0.00	0.00	0.00
1942	14.27	1.01	0.44	6.50	0.47	0.54	1.91	3.32	0.00	0.00	0.00	0.08	0.00
1943	28.98	1.07	0.19	1.00	16.53	2.96	6.42	0.81	0.00	0.00	0.00	0.00	0.00
1944	24.37	0.14	0.20	7.90	1.44	10.02	3.49	1.18	0.00	0.00	0.00	0.00	0.00
1945	16.04	0.00	3.25	0.90	0.23	6.65	5.01	0.00	0.00	0.00	0.00	0.00	0.00
1946	13.16	0.96	0.26	6.23	0.25	1.40	3.65	0.24	0.00	0.00	0.00	0.00	0.17
1947	13.00	0.23	8.32	4.08	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.34	0.00
1948	8.36	0.10	0.02	1.27	0.00	1.24	3.81	1.80	0.06	0.06	0.00	0.00	0.00
1949	9.60	0.01	0.00	3.36	2.20	1.27	1.46	0.02	1.23	0.05	0.00	0.00	
1950	13.74	0.00	1.27	4.31	3.06	2.61	1.03	0.98	0.02	0.15	0.06	0.00	0.25
1951	8.23	0.51	0.97	0.21	2.68	1.25	0.69	1.89	0.01	0.00	0.00	0.02	0.00
1952	32.54	0.85	2.56	4.95	12.07	0.12	10.29	1.70	0.00	0.00	0.00	0.00	0.00
1953	11.40	0.00	3.41	4.47	1.38	0.00	0.67	1.47	0.00	0.00	0.00	0.00	0.00
1954	14.68	0.00	2.09	0.08	4.97	3.41	3.64	0.47	0.02	0.00	0.00	0.00	0.00
1955	13.41	0.00	0.96	1.10	5.29	1.60	0.36	2.20	1.86	0.00	0.00	0.04	0.00
1956	15.88	0.00	1.37	3.31	7.03	0.75	0.00	2.36	1.06	0.00	0.00	0.00	0.00
1957	11.48	0.00	0.00	0.28	5.34	1.97	1.95	1.21	0.58	0.15	0.00	0.00	0.00
1958	31.05	2.02	0.50	4.39	2.72	7.27	8.41	5.48	0.00	0.00	0.00	0.00	0.26
1959	6.13	0.05	0.07	0.00	2.07	3.91	0.00	0.00	0.00	0.00	0.00	0.00	0.03
1960	11.42	0.08	0.00	1.39	3.95	2.80	0.50	2.70	0.00	0.00	0.00	0.00	0.00
1961	7.23	0.00	4.71	0.58	1.31	0.00	0.53	0.00	0.00	0.00	0.00	0.04	0.06
1962	27.29	0.00	3.80	1.25	2.71	18.10	1.35	0.00	0.08	0.00	0.00	0.00	0.00
1963	15.30	0.38	0.00	0.03	0.70	5.44	2.99	2.91	0.13	0.52	0.00	0.15	2.05
1964	9.93	0.48	3.65	0.10	2.75	0.00	2.00	0.81	0.00	0.11	0.00	0.03	0.00
1965	14.46	0.64	1.41	5.10	0.57	0.12	1.14	5.22	0.00	0.00	0.00	0.08	0.18
1966	19.31	0.00	10.37	5.68	1.73	1.43	0.00	0.00	0.00	0.00	0.00	0.00	0.10
1967	23.21	0.15	3.72	6.68	4.30	0.00	2.91	5.22	0.11	0.00	0.00	0.00	0.12
1968	14.93	0.00	6.95	1.09	0.99	1.26	3.49	1.05	0.00	0.00	0.00	0.10	0.00
1969	31.20	0.62	0.69	1.61	18.63	7.67	0.89	0.99	0.00	0.00	0.10	0.00	0.00
1970	14.06	0.00	1.83	0.05	2.41	3.65	6.12	0.00	0.00	0.00	0.00	0.00	0.00
1971	18.54	0.02	7.09	7.76	1.03	0.77	0.78	0.63	0.46	0.00	0.00	0.00	0.00
1972	9.22	0.08	0.43	8.20	0.15	0.23	0.00	0.08	0.03	0.02	0.00	0.00	0.00
1973	24.07	0.29	4.82	0.95	6.11	9.07	2.82	0.00	0.01	0.00	0.00	0.00	0.00
1974	16.12	0.17	2.10	1.11	9.61	0.07	2.97	0.07	0.00	0.00	0.02	0.00	0.00
1975	18.17	0.96	0.11	6.78	0.00	3.86	4.84	1.55	0.00	0.00	0.00	0.00	0.07
1976	12.34	0.22	0.00	0.12	0.00	5.21	1.85	*0.70*	0.00	0.11	0.02	0.05	4.06
1977	13.24	0.00	0.29	0.62	6.90	0.12	2.12	0.00	2.08	0.00	0.00	1.11	0.00
1978	37.24	0.03	0.17	4.62	8.39	8.93	11.79	2.42	0.00	0.00	0.00	0.00	0.89
1979	23.77	0.23	3.50	2.45	6.51	4.11	6.90	0.00	0.00	0.00	0.00	0.00	0.07
1980	29.24	0.46	0.86	1.78	8.57	13.04	3.87	0.40	0.26	0.00	0.00	0.00	0.00
1981	*11.88*	0.00	0.00	1.32	3.03	1.61	6.22	0.76					
1982	*14.64*											0.00	1.00
1983	34.90	0.51	5.10	2.74	9.97	4.99	5.80	3.45	0.17	0.00	0.00	1.11	1.06
1984	12.42	3.60	3.35	4.02	0.01	0.00	0.39	0.07	0.00	0.00	0.00	0.07	0.91
1985	11.69	0.38	2.92	4.19	1.35	1.40	1.45	0.00	0.00	0.00	0.00	0.00	0.00
1986	25.62	0.53	4.06	0.62	4.04	9.21	4.98	1.27	0.00	0.00	0.02	0.00	0.89
1987	7.58	0.00	1.42	0.40	2.02	1.33	2.26	0.02	0.00	0.05	0.05	0.00	0.03
1988	13.14	1.18	0.84	3.71	2.62	1.47	0.61	2.63	0.00	0.08	0.00	0.00	0.00
1989	8.56	0.00	1.04	3.30	0.48	2.94	0.66	0.00	0.08	0.00	0.00	0.00	0.06
1990	6.12	0.32	0.48	0.00	2.15	2.42	0.00	0.00	0.75	0.00	0.00	0.00	0.00
1991	12.52	0.00	0.60	0.00	1.08	2.87	7.92	0.02	0.00	0.00	0.00	0.00	0.03
1992	22.45	0.27	0.20	3.66	*2.12*	10.03	5.98	0.02	0.00	0.00	0.17	0.00	0.00
1993	29.01	1.43	0.00	4.53	9.76	8.92	3.59	0.00	0.12	0.64	0.02	0.00	0.00
1994	13.14	0.32	0.93	1.55	0.39	6.47	2.40	0.47	0.37	0.00	0.00	0.00	0.24
1995	34.01	0.90	1.32	1.14	18.26	1.36	9.44	0.45	0.88	0.26	0.00	0.00	0.00
1996	14.15	0.00	0.12	2.29	2.33	6.31	2.22	0.59	0.29	0.00	0.00	0.00	0.00
1997	15.74	1.65	2.61	5.94	5.28	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.06
1998	42.24	0.00	2.39	6.84	3.88	**20.89**	3.19	1.59	3.46	0.00	0.00	0.00	0.00
1999	10.78	0.00	1.37	0.61	2.47	0.30	3.23	2.32	0.00	0.36	0.00	0.00	0.12
2000	16.17	0.00	0.13	0.00	1.95	8.57	2.02	3.50	0.00	0.00	0.00	0.00	0.00
2001	23.37	1.80	0.00	0.00	6.12	7.83	6.15	1.47	0.00	0.00	0.00	0.00	0.00
2002	10.86	0.30	3.30	1.29	1.20	4.00	0.59	0.00	0.13	0.00	0.00	0.00	0.05
2003	21.32	0.00	5.03	4.07	0.00	5.43	3.97	1.09	1.73	0.00	0.00	0.00	0.00
2004	10.19	0.00	0.52	1.37	0.75	6.73	0.82	0.00	0.00	0.00	0.00	0.00	0.00
2005	37.50	3.73	0.03	7.04	12.85	8.65	4.27	0.00	0.93	0.00	0.00	0.00	0.00
2006	16.38	1.39	0.55	2.08	1.94	0.94	3.76	4.16	1.56	0.00	0.00	0.00	0.00
2007	8.50	0.22	0.00	0.96	4.54	1.56	0.00	0.90	0.00	0.00	0.00	0.00	0.32
2008													

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Summary of Monthly Normals 1981-2010

Generated on 12/08/2016

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Elev: 237 ft. Lat: 34.312° N Lon: 119.133° W

Station: **SANTA PAULA, CA US GHCND:USC00047957**

Temperature (°F)																						
Mean							Cooling Degree Days Base (above)						Heating Degree Days Base (below)				Mean Number of Days					
Month	Daily Max	Daily Min	Mean	Long Term Max Std. Dev.	Long Term Min Std. Dev.	Long Term Avg Std. Dev.	55	57	60	65	70	72	55	57	60	65	Max >= 100	Max >= 90	Max >= 50	Max <= 32	Min <= 32	Min <= 0
1	69.3	41.1	55.2	3.4	2.6	2.4	71	46	23	5	1	-7777	65	102	171	309	0.0	0.1	31.0	0.0	1.7	0.0
2	69.2	42.5	55.9	2.6	2.5	2.0	71	46	23	6	1	-7777	47	78	139	262	0.0	0.2	28.0	0.0	0.8	0.0
3	71.0	43.9	57.5	2.9	2.8	2.4	104	66	28	5	1	1	28	52	107	239	0.0	0.5	31.0	0.0	0.3	0.0
4	74.0	45.9	60.0	2.6	2.2	2.0	157	109	55	13	3	2	9	20	57	165	0.1	0.7	30.0	0.0	0.0	0.0
5	75.1	50.0	62.5	2.8	2.5	2.2	234	175	97	22	3	1	-7777	3	18	98	-7777	0.5	31.0	0.0	0.0	0.0
6	77.2	53.1	65.1	2.4	1.9	1.7	305	245	158	44	5	2	0	-7777	3	40	0.0	0.5	30.0	0.0	0.0	0.0
7	80.7	56.9	68.8	2.4	1.7	1.6	428	366	273	124	27	11	0	0	-7777	6	0.1	1.0	31.0	0.0	0.0	0.0
8	82.7	56.1	69.4	2.8	2.5	2.3	446	384	291	141	40	20	0	-7777	-7777	5	-7777	2.8	31.0	0.0	0.0	0.0
9	81.6	54.7	68.1	3.1	2.3	2.4	394	334	245	109	33	19	0	-7777	-7777	15	0.1	3.1	30.0	0.0	0.0	0.0
10	78.5	50.2	64.4	2.9	2.2	1.9	290	229	143	44	10	6	-7777	1	8	65	0.2	2.4	31.0	0.0	0.0	0.0
11	73.8	44.4	59.1	3.2	2.0	2.3	142	99	51	13	3	1	19	36	78	190	0.0	0.7	30.0	0.0	0.2	0.0
12	69.2	41.1	55.2	2.9	1.9	1.8	68	43	20	4	-7777	-7777	63	100	171	309	0.0	0.0	30.9	0.0	1.8	0.0
Summary	75.2	48.3	61.8	2.8	2.3	2.1	2710	2142	1407	530	127	63	231	392	752	1703	0.5	12.5	364.9	0	4.8	0

@ Denotes mean number of days greater than 0 but less than 0.05.
-7777: a non-zero value that would round to zero
Empty or blank cells indicate data is missing or insufficient occurrences to compute value.

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Asheville, North Carolina 28801

Elev: 237 ft. Lat: 34.312° N Lon: 119.133° W

Station: **SANTA PAULA, CA US GHCND:USC00047957**

Precipitation (in.)								
	Totals	Mean Number of Days				Precipitation Probabilities Probability that precipitation will be equal to or less than the indicated amount		
	Means	Daily Precipitation				Monthly Precipitation vs. Probability Levels		
Month	Mean	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.25	.50	.75
1	3.72	5.9	4.8	2.3	1.2	1.11	2.14	5.29
2	4.85	5.7	4.6	2.7	1.7	1.37	4.19	7.10
3	2.69	4.7	3.8	1.8	0.9	0.59	2.13	3.97
4	0.83	1.8	1.3	0.5	0.2	0.00	0.45	1.47
5	0.35	0.8	0.7	0.2	0.1	0.00	0.01	0.29
6	0.07	0.3	0.2	0.1	0.0	0.00	0.00	0.01
7	0.01	0.2	-7777	0.0	0.0	0.00	0.00	0.00
8	0.04	0.2	0.1	-7777	0.0	0.00	0.00	0.00
9	0.16	1.0	0.3	0.2	-7777	0.00	0.00	0.07
10	0.69	1.3	1.0	0.4	0.2	0.00	0.30	0.71
11	1.44	3.0	2.1	0.9	0.4	0.20	1.05	2.40
12	2.53	4.0	3.1	1.4	0.8	0.62	1.92	4.03
Summary	17.38	28.9	22.0	10.5	5.5	3.89	12.19	25.34

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Station: **SANTA PAULA, CA US GHCND:USC00047957**

Snow (in.)													
	Totals	Mean Number of Days									Snow Probabilities Probability that snow will be equal to or less than the indicated amount		
	Means	Snowfall >= Thresholds					Snow Depth >= Thresholds				Monthly Snow vs. Probability Levels Values derived from the incomplete gamma distribution.		
Month	Snowfall Mean	0.1	1.0	3.0	5.0	10.0	1	3	5	10	.25	.50	.75
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	-7777	-7777	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Summary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

@ Denotes mean number of days greater than 0 but less than 0.05.
-7777: a non-zero value that would round to zero
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Summary of Monthly Normals 1981-2010

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National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Elev: 237 ft. Lat: 34.312° N Lon: 119.133° W

Station: **SANTA PAULA, CA US GHCND:USC00047957**

Growing Degree Units (Monthly)												
Base	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
40	471	444	541	598	699	755	893	911	845	754	573	470
45	317	305	386	449	544	605	738	756	694	600	423	316
50	174	173	234	299	389	455	583	601	544	445	275	174
55	71	71	104	157	234	305	428	446	394	290	142	68
60	23	23	28	55	97	158	273	291	245	143	51	20
Growing Degree Units for Corn (Monthly)												
50/86	303	273	330	366	419	464	579	591	535	466	363	303

Growing Degree Units (Accumulated Monthly)												
Base	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
40	471	915	1456	2054	2753	3508	4401	5312	6157	6911	7484	7954
45	317	622	1008	1457	2001	2606	3344	4100	4794	5394	5817	6133
50	174	347	581	880	1269	1724	2307	2908	3452	3897	4172	4346
55	71	142	246	403	637	942	1370	1816	2210	2500	2642	2710
60	23	46	74	129	226	384	657	948	1193	1336	1387	1407
Growing Degree Units for Corn (Monthly)												
50/86	303	576	906	1272	1691	2155	2734	3325	3860	4326	4689	4992

Note: For corn, temperatures below 50 are set to 50, and temperatures above 86 are set to 86
M indicates the value is missing
-7777: a non-zero value that would round to zero
Empty or blank cells indicate data is missing or insufficient occurrences to compute value.

Appendix 3 – Soil & Groundwater Information

Soil Features

This table gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence generally results from either desiccation and shrinkage, or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. The table shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, saturated hydraulic conductivity (Ksat), content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

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

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

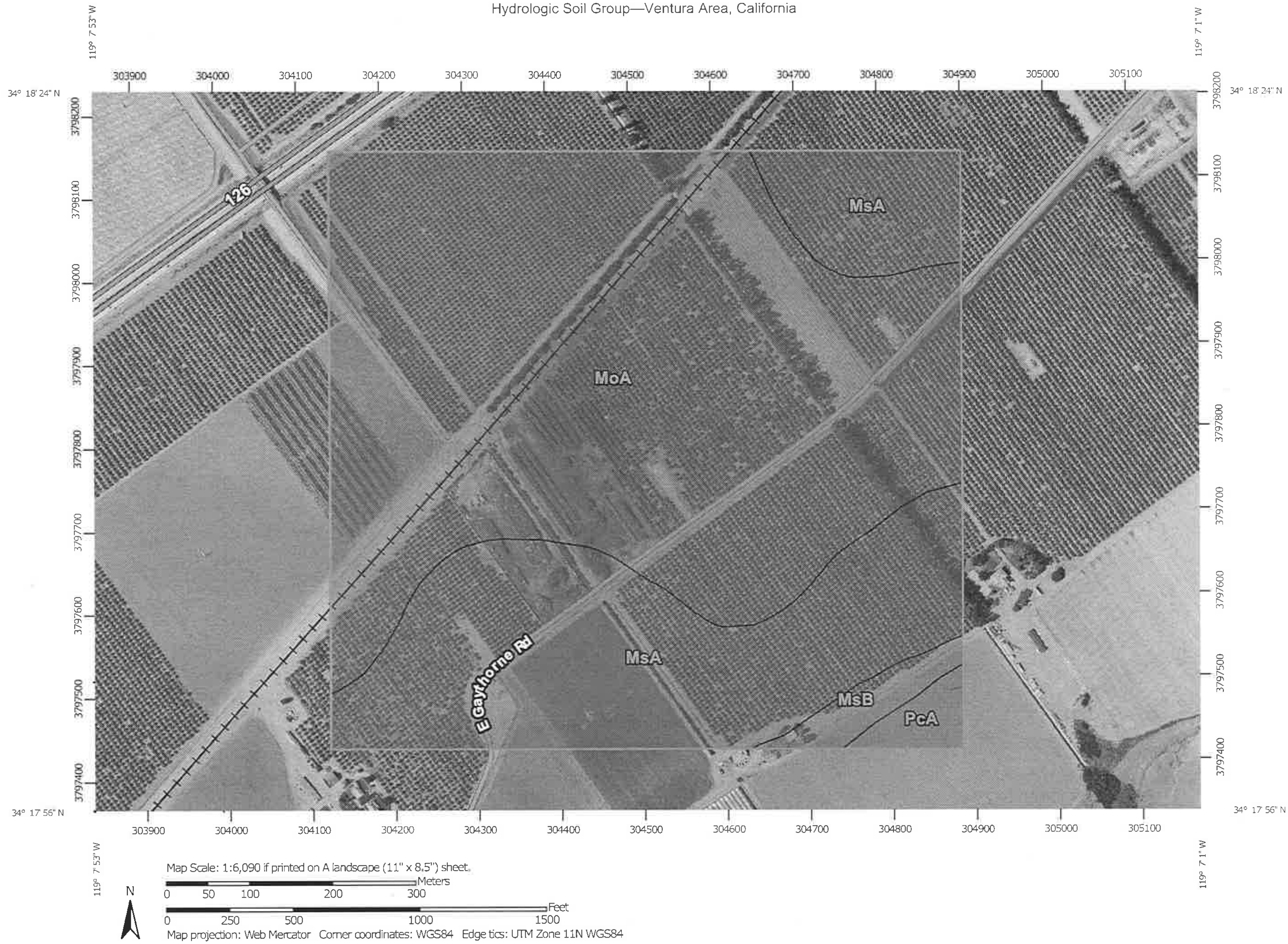
For concrete, the risk of corrosion also is expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Report—Soil Features

Soil Features–Ventura Area, California									
Map symbol and soil name	Restrictive Layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	*In*		*In*	*In*			
MoA—Mocho loam, 0 to 2 percent slopes									
Mocho		—	—		—	—		High	Low
MsA—Mocho clay loam, 0 to 2 percent slopes									
Mocho		—	—		—	—		High	Low
MsB—Mocho clay loam, 2 to 5 percent slopes									
Mocho		—	—		—	—		High	Low
PcA—Pico sandy loam, 0 to 2 percent slopes									
Pico		—	—		—	—		High	Low

Data Source Information

Soil Survey Area: Ventura Area, California
Survey Area Data: Version 6, Jan 3, 2008


119° 7' 53" W
119° 7' 1" W
34° 18' 24" N
34° 17' 56" N
303900
304000
304100
304200
304300
304400
304500
304600
304700
304800
304900
305000
305100
3798200
3798100
3798000
3797900
3797800
3797700
3797600
3797500
3797400
126
MsA
MoA
MsA
MsB
PcA
E Gaythorne Rd
Map Scale: 1:6,090 if printed on A landscape (11" x 8.5") sheet.
Meters
0 50 100 200 300
Feet
0 250 500 1000 1500
N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

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

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Ventura Area, California
Survey Area Data: Version 6, Jan 3, 2008

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

Date(s) aerial images were photographed: May 5, 2010—Aug 31, 2010

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

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Ventura Area, California (CA674)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
MoA	Mocho loam, 0 to 2 percent slopes	B	88.3	65.0%
MsA	Mocho clay loam, 0 to 2 percent slopes	B	43.1	31.7%
MsB	Mocho clay loam, 2 to 5 percent slopes	B	2.6	1.9%
PcA	Pico sandy loam, 0 to 2 percent slopes	B	1.9	1.4%
Totals for Area of Interest			**135.9**	**100.0%**

Description

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

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

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

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

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

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

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

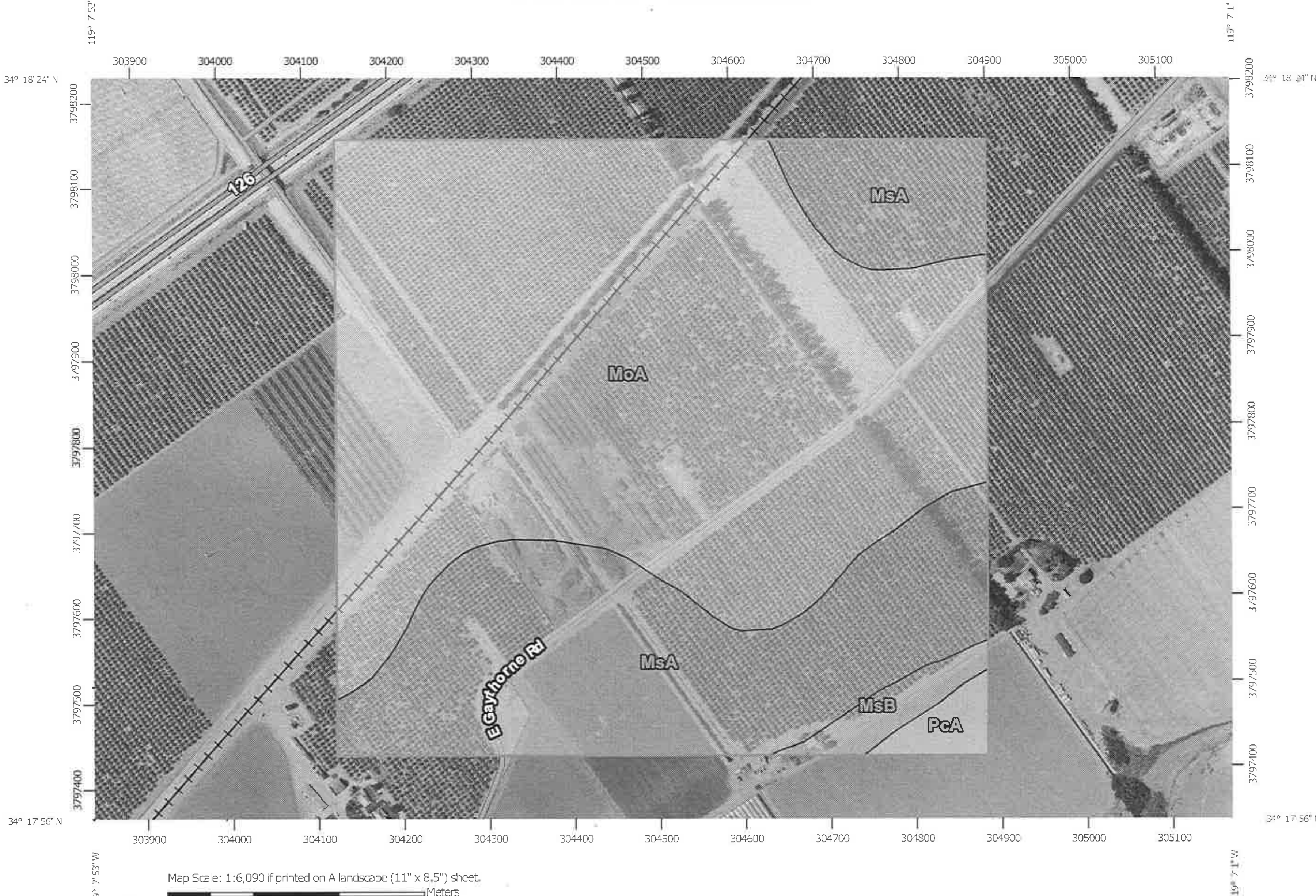
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

K Factor, Whole Soil—Ventura Area, California



Map Scale: 1:6,090 if printed on A landscape (11" x 8.5") sheet.

0 50 100 200 300 Meters

N

0 250 500 1000 1500 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

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

Soil Rating Lines

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

Soil Rating Points

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

Water Features

Streams and Canals

Transportation

Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background

Aerial Photography

MAP INFORMATION

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

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Ventura Area, California
Survey Area Data: Version 6, Jan 3, 2008

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

Date(s) aerial images were photographed: May 5, 2010—Aug 31, 2010

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

K Factor, Whole Soil

K Factor, Whole Soil— Summary by Map Unit — Ventura Area, California (CA674)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
MoA	Mocho loam, 0 to 2 percent slopes	.20	88.3	65.0%
MsA	Mocho clay loam, 0 to 2 percent slopes	.15	43.1	31.7%
MsB	Mocho clay loam, 2 to 5 percent slopes	.15	2.6	1.9%
PcA	Pico sandy loam, 0 to 2 percent slopes	.17	1.9	1.4%
Totals for Area of Interest			**135.9**	**100.0%**

Description

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

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

Rating Options

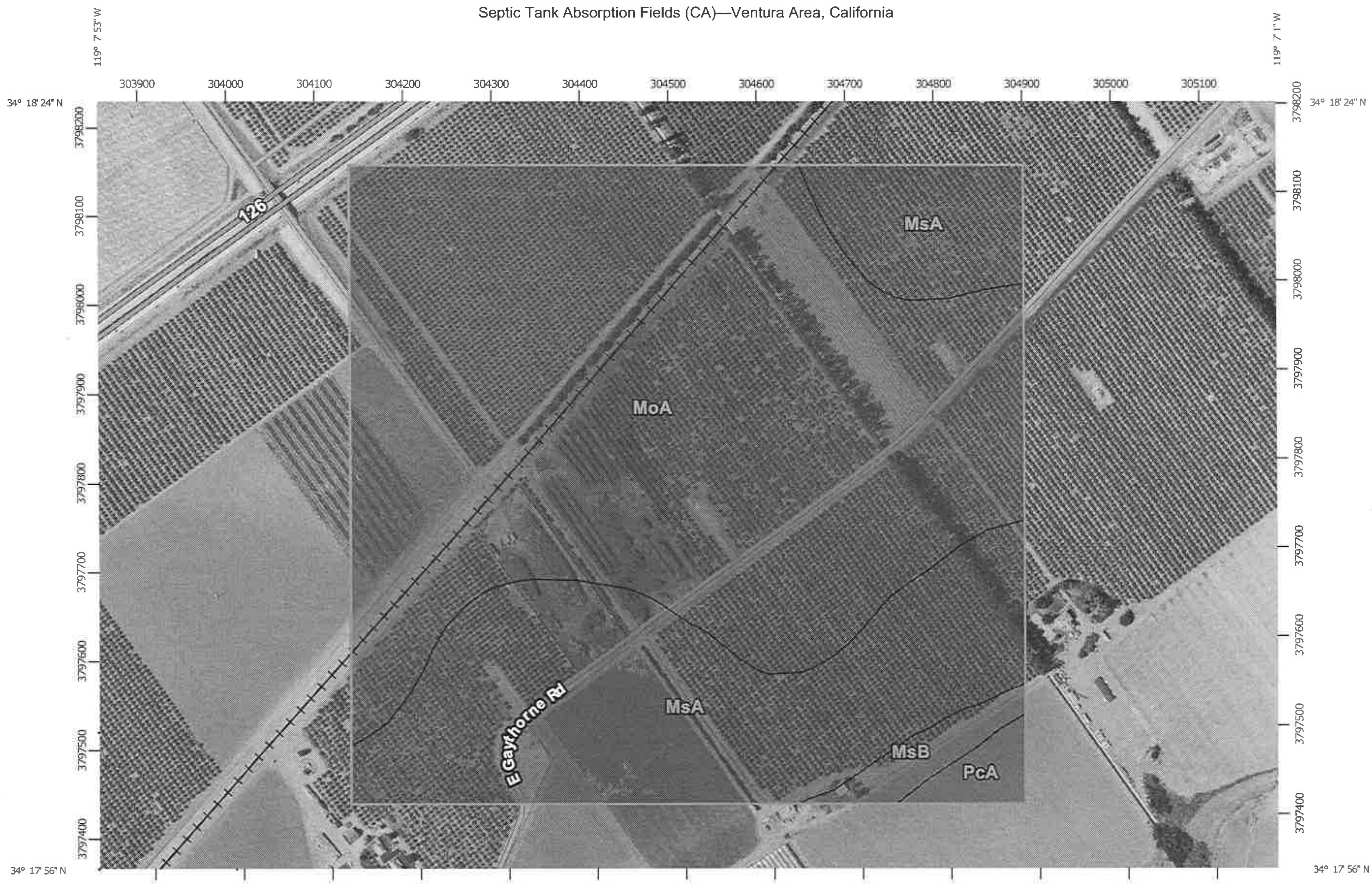
Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

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

Septic Tank Absorption Fields (CA)—Ventura Area, California



Map Scale: 1:6,090 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

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

Soils

Soil Rating Polygons
- Limitations
- No limitations
- Not rated or not available

Soil Rating Lines
- Limitations
- No limitations
- Not rated or not available

Soil Rating Points
- Limitations
- No limitations
- Not rated or not available

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Ventura Area, California
Survey Area Data: Version 6, Jan 3, 2008

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

Date(s) aerial images were photographed: May 5, 2010—Aug 31, 2010

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

Septic Tank Absorption Fields (CA)

Septic Tank Absorption Fields (CA)— Summary by Map Unit — Ventura Area, California (CA674)						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
MoA	Mocho loam, 0 to 2 percent slopes	Limitations	Mocho (85%)	Permeability ranges .6 - 2"/ hr (slow perc) (0.50)	88.3	65.0%
MsA	Mocho clay loam, 0 to 2 percent slopes	Limitations	Mocho (85%)	Permeability < .6"/hr in 24-60" (slow perc) (1.00)	43.1	31.7%
MsB	Mocho clay loam, 2 to 5 percent slopes	Limitations	Mocho (85%)	Permeability < .6"/hr in 24-60" (slow perc) (1.00)	2.6	1.9%
PcA	Pico sandy loam, 0 to 2 percent slopes	Limitations	Pico (85%)	Seepage in bottom layer (1.00)	1.9	1.4%
Totals for Area of Interest					**135.9**	**100.0%**

Septic Tank Absorption Fields (CA)— Summary by Rating Value		
Rating	**Acres in AOI**	**Percent of AOI**
Limitations	135.9	100.0%
Totals for Area of Interest	**135.9**	**100.0%**

Description

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between the depths of 24 and 60 inches is evaluated. This interpretation shows the degree and kind of soil limitations that affect septic tanks.

The ratings for septic tanks are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in down slope areas. Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. "No limitations" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance costs can be expected. "Limitations" indicates that the soil has features that are favorable to unfavorable for the specified use. The most limiting limitations are displayed for each soil. The limitations listed can be overcome or minimized by special planning, design, or installation. Fair to poor performance and moderate to high maintenance costs can be expected, depending on the number of limitations and the severity of each limitation.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.0. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.0) and the point at which a soil feature is not a limitation (0.0).

The components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as the one shown for the map unit. The percent composition of each component in a particular map unit is given to help the user better understand the extent to which the rating applies to the map unit.

Other components with different ratings may occur in each map unit. The ratings for all components, regardless the aggregated rating of the map unit, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

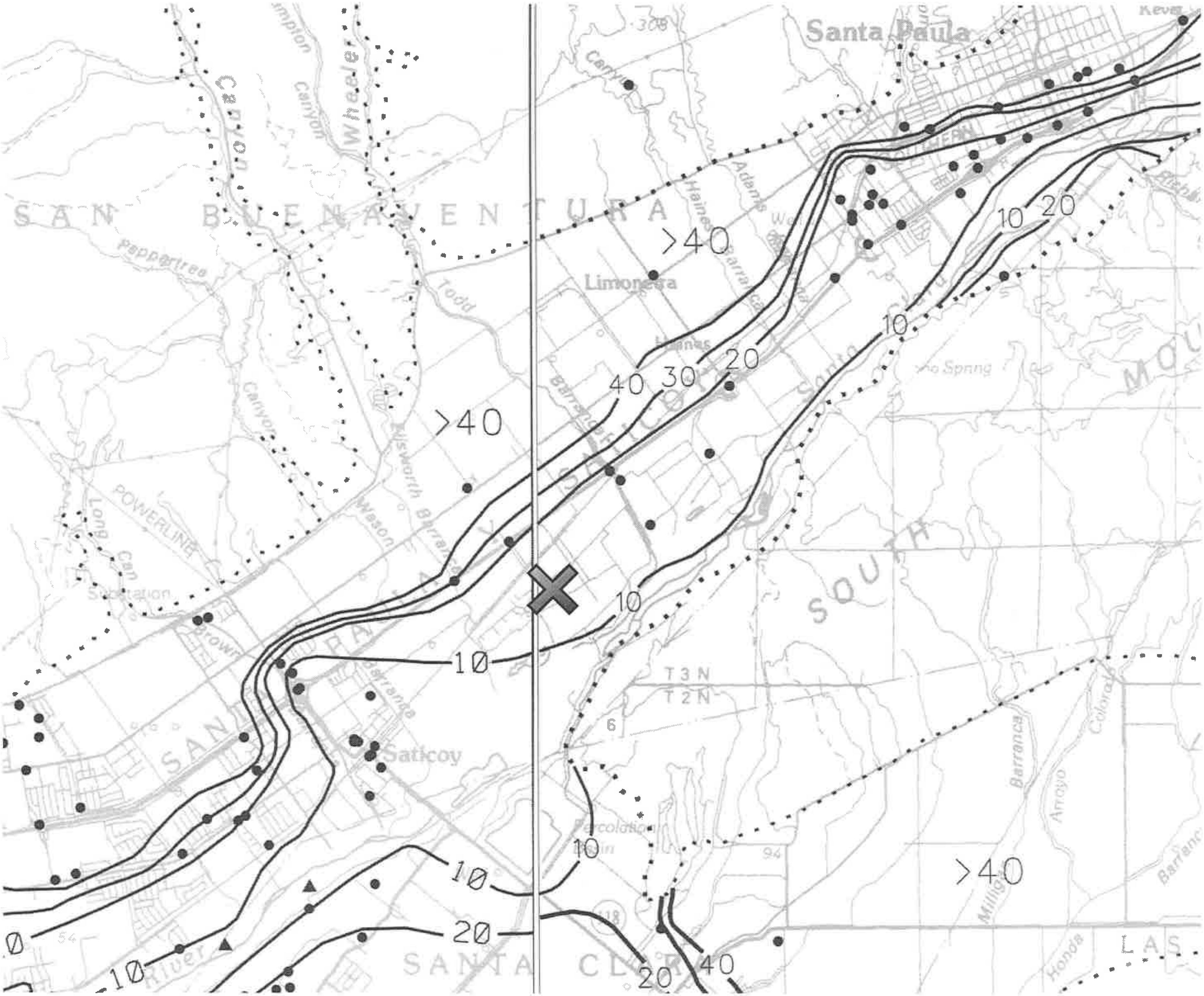
The California version of this interpretation differs from the national version in that the limiting features were edited in order to convey more information to the user. The rating classes were edited to read "no limitations" and "limitations".

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher


Santa Paula
Limoneira
SAN BUENAVENTURA
>40
>40
>40
40
30
20
10
20
10
10
10
10
10
10
20
20
40
Saticoy
SOUTH MOU
SANTA CLARA
T3N
T2N
Canyon
Wheeler
POWERLINE
Percolation Basin
LAS

Appendix 4 – Watershed Characteristics

Biogenic Energy Park

SCS Curve Number by Land Use

Land Use	Description	Effective Impervious Cover	SCS Curve Number Soil Type						
			A		B		C		D
			7	6	5	4	3	2	1
OS	Open Space (fair condition)	0	42	61	65	71	77	81	84
OS	Open Space (good condition)	0	29	52	57	64	71	76	80
OR	Orchard (fair condition)	5	45	63	67	72	78	82	85
CB	Covered Berries	80	87	91	91	93	94	95	95
BP	Berries with Plastic Beds	65	78	85	86	89	91	92	93
WR	Windrows	65	78	85	86	89	91	92	93
PS	Pavement/Equipment/Structures	90	92	94	95	95	96	96	97
1A	100% OR	5	45	63	67	72	78	82	85
3B	75% OR & 25% CB	24	55	70	73	77	82	85	87
7A	55% OR & 45% BP	32	60	73	76	80	84	86	88
9C	75% PS & 25% WR	84	89	89	92	93	94	95	95
11C	90% pond & 10% PS	95	94	96	97	97	98	98	98
13D	40% WR & 60%PS	80	87	87	91	91	93	94	95
15D	90% pond & 10% PS	95	94	96	97	97	98	98	98
17E	55% OR & 45% BP	32	60	73	76	80	84	86	88

1. calculated by using open space (fair condition) for pervious area and a curve number of 98 for impervious area

sub-basin	land use	soil group	composite curve number	watershed length (ft)	upper elevation (ft)	lower elevation (ft)	hydraulic length (ft)	average land slope (%)	S	Ia	lag (hr)	T_c (hr)	lag (min)
1A		C	78	10,350.0			8,280.0	3.60	2.8	0.6	0.97	1.6	57.96
3B		B	77	4,930.0			3,944.0	0.40	3.0	0.6	1.65	2.7	98.99
7A		B	80	4,580.0			3,664.0	0.40	2.5	0.5	1.42	2.4	85.19
9C		C	94	1,630.0			1,304.0	1.00	0.6	0.1	0.23	0.4	13.86
11C		C	98	425.0			340.0	0.20	0.2	0.0	0.14	0.2	8.52
13D		B	91	2,050.0			1,640.0	1.00	1.0	0.2	0.32	0.5	19.07
15D		C	98	515.0			412.0	0.20	0.2	0.0	0.17	0.3	9.94
17E		B	80	2,450			1,960	0.40	2.5	0.5	0.9	1.4	51.64

EXHIBIT 14A. AMC II NRCS CURVE NUMBERS FOR UNDEVELOPED LAND

UNDEVELOPED LAND USE AND CONDITION		% Impervious		HYDROLOGIC SOIL GROUP AND VCWPD NUMBERS						
Poor: Less than 50% Cover Fair: From 50% to 75% Cover Good: More Than 75% Cover				A (1), (2)		B		C		D (3)
		Effective	Average	7	6	5	4	3	2	1
Grassland (Annual Grass)	Poor	0	0	46	57	60	63	68	72	76
"	Fair	0	0	21	42	47	53	60	66	70
"	Good	0	0	-	-	41	47	54	59	64
Open Brush (Sagebrush, Flattop Buckwheat)	Poor	0	0	31	51	55	60	66	70	75
"	Fair	0	0	22	40	44	49	54	58	61
"	Good	0	0	-	-	33	39	46	51	56
Big Brush (Scrub Oak, Manzanita, Ceanothis)	Fair	0	0	23	39	42	46	51	54	59
"	Good	0	0	-	-	29	34	41	46	51
Chamise (Narrow Leaf Chaparral)	Fair	0	0	21	43	48	55	63	68	75
"	Good	0	0	-	-	44	49	55	60	64
Oak Savannah (Sparse Oaks & Annual Grass)	Poor	0	0	34	53	57	62	67	71	-
"	Fair	0	0	22	41	45	51	57	61	-
Orchard	Poor	0	0	42	56	59	62	65	67	71
Woodland	Fair	0	0	-	-	35	39	43	47	-
Pinon & Juniper	Fair	0	0	-	-	43	48	54	58	62
Forest	Fair	0	0	22	41	45	50	56	60	64
Pasture or Range	Poor	0	0	61	76	78	81	84	87	89
"	Fair	0	0	40	61	65	71	77	81	84
"	Good	0	0	29	52	57	64	71	76	80
	NOTE: WPD MODIFIED RATIONAL METHOD USES SOIL TYPES 1-7 AND EFFECTIVE IMPERVIOUS PERCENTAGE IN VCRat MODEL									
Note (1)	Curve numbers for soil types 6 and 7 not all available									
Note (2)	For CNs<30, ensure that P-0.2*S > 0									
Note (3)	Curve numbers for soil type 1 not all available									
Reference:	Boyle, 1967. Revised Hydrologic Analysis, Zone II except Pasture from NRCS TR-55 Table 2-2c. For other land use types see TR-55									

Exhibit 14b. AMC II NRCS Curve Numbers for Developed Land

DEVELOPED LAND USE	Condition (1)	% IMPERVIOUS EFFEC-TIVE	% IMPERVIOUS AVER-AGE	HYDROLOGIC SOIL GROUP (5) A 7	A 6	B 5	B 4	C 3	C 2	D 1
Open Spaces, Lawns, Parks, Golf Courses, Cemeteries, etc.	Good	0	0	29	52	57	64	71	76	80
"	Fair	0	0	42	61	65	71	77	81	84
Residential 1 ac. Lot	-	10	20	45	62	66	71	76	80	84
Residential 1/2 ac. Lot	-	13	25	45	65	68	73	78	81	85
Residential 1/3 ac. Lot	-	15	30	48	67	70	75	79	82	86
Residential 1/4 ac. Lot	-	19	38	53	70	73	77	81	84	87
Residential 1/5 ac. Lot	-	23	47	59	74	77	80	84	86	89
Residential 1/6 ac. Lot	-	28	56	66	79	81	84	86	88	90
Residential 1/8 ac. Lot	-	32	65	72	83	84	87	89	90	92
Residential - Condos	-	37	69	74	84	86	88	90	92	93
Industrial Unpaved Yards, etc.	-	36	72	77	86	87	89	91	92	93
Commercial & Business	-	50	85	88	90	91	93	93	95	95
Industrial Parks, Paved Parking, etc.	-	70	93	93	94	95	96	96	97	97
Parking Lots, Roofs, Driveways, Paved Streets with Curbs & Drains	-	90	100	98	98	98	98	98	98	98
Public Facilities & Institutions; Includes Schools, Government CenterS, Military Bases, etc. (2)	-	23	47	59	74	77	80	84	86	89
Transportation and utilities (3)	-	70	93	79	87	88	90	91	92	93
Newly graded/under construction - No veg.	-	0	0	71	83	85	88	90	92	94
Paved Streets with open ditches including right-of-way (3)	-	70	93	79	87	88	90	91	92	93
Gravel streets including right-of-way	-	0	0	71	82	84	86	88	90	91
Dirt street including right-of-way	-	0	0	66	79	81	83	86	88	89
Natural desert landscaping- native vegetation	-	0	0	55	72	75	79	83	86	88
Farmsteads- buildings, lanes, driveways, and surrounding lots (2)	-	23	47	51	69	72	76	80	83	86
Agriculture- Straight Row + Crop Residue Cover on >5% of surface	Good	0	0	57	72	74	77	80	83	85
Agriculture- Straight Row + Crop Residue Cover on <5% of surface	Poor	0	0	64	78	80	83	86	88	90

DEVELOPED LAND USE	Condition (1)	% IMPERVIOUS EFFEC-TIVE	AVER-AGE	HYDROLOGIC SOIL GROUP (5) A 7	A 6	B 5	B 4	C 3	C 2	D 1
Agriculture- Straight Row Good	Good	0	0	60	75	77	80	84	86	89
Agriculture- Straight Row Poor	Good	0	0	65	79	81	84	87	89	91
Strawberries, 36" beds on 48" centers, beds covered with plastic (4)	-	72	72	90	94	94	95	96	96	97
Fallow - Bare Soil or Newly Graded Lands	-	0	0	71	83	85	88	90	92	94
Fallow - with crop residue cover on >5% of surface	Good	0	0	68	80	82	84	87	88	90
Orchard or Tree Farm, 50/50 woods-grass	Poor	0	0	39	60	64	69	75	79	83
Orchard or Tree Farm, 50/50 woods-grass	Fair	0	0	26	48	53	59	67	72	77
Orchard or Tree Farm, 50/50 woods-grass	Good	0	0	21	42	47	54	61	66	72

NOTE: WPD MODIFIED RATIONAL METHOD USES SOIL TYPES 1-7 AND EFFECTIVE IMPERVIOUS PERCENTAGE IN VCRat MODEL

Note (1)	Poor is < 50% cover; Fair is from 50 to 75% cover; Good is >75% cover; also consider density of canopy and vegetative cover and degree of surface roughness
Note (2)	% Impervious and CNs assumed same as residential 1/5 ac lots
Note (3)	Assumed same as industrial parks
Note (4)	Calculated assuming planted on 200'x208' parcel with 8' road along one boundary.
Note (5)	TR-55 Notes: CNs developed using average % imperviousness with CN=98, pervious areas equivalent to open space in good condition. Greater than 30% impervious area considered directly connected.
Reference:	TR-55 Manual Table 2-2. For other land use types, see TR-55 Manual.

Appendix 5 – FEMA FIRM Maps

...d insurance is available in this community, contact your In...
...nal Flood Insurance Program at 1-800-638-6620.

METERS
300 0 300 600

NATIONAL FLOOD INSURANCE PROGRAM

NFIP

PANEL 0770E

FIRM
FLOOD INSURANCE RATE MAP

VENTURA COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 770 OF 1275
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
OXNARD, CITY OF	060417	[illegible]	[illegible]
SAN BUENAVENTURA, CITY OF	[illegible]	[illegible]	[illegible]
VENTURA COUNTY	060413	[illegible]	[illegible]

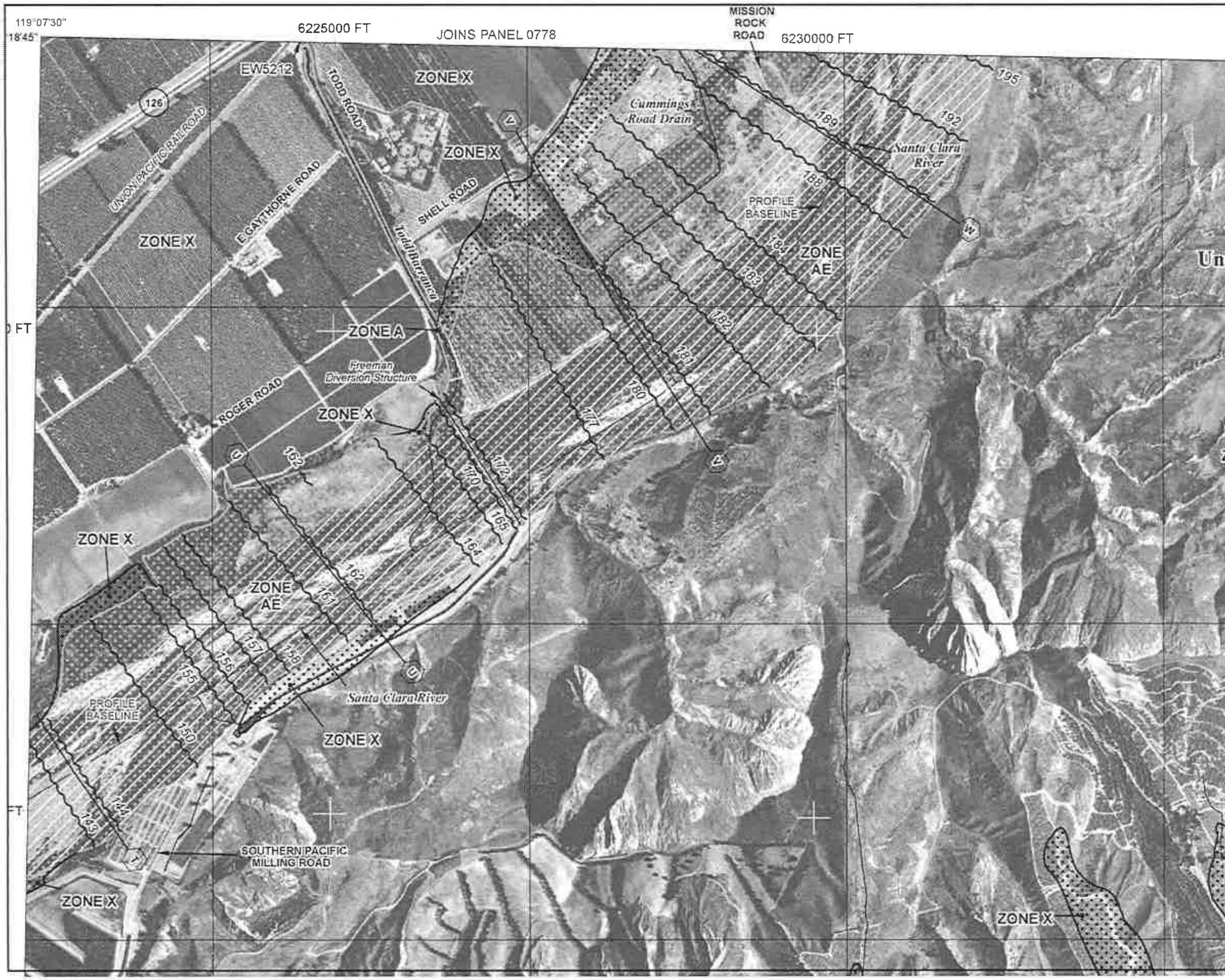
Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
06111C0770E

EFFECTIVE DATE
JANUARY 20, 2010

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



d insurance is available in this community, contact your In
nal Flood Insurance Program at 1-800-638-6620.

METERS
300 0 300 600

NATIONAL FLOOD INSURANCE PROGRAM

NFIP

PANEL 0790E

FIRM

FLOOD INSURANCE RATE MAP

VENTURA COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 790 OF 1275
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CAMARILLO, CITY OF	[illegible]	[illegible]	[illegible]
VENTURA COUNTY	[illegible]	[illegible]	[illegible]

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
06111C0790E

EFFECTIVE DATE
JANUARY 20, 2010

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Appendix 6 – Hydraulics

Worksheet for trap channel

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00700	ft/ft
Normal Depth	5.00	ft
Left Side Slope	1.10	ft/ft (H:V)
Right Side Slope	1.10	ft/ft (H:V)
Bottom Width	3.33	ft

Results

Discharge	762.37	ft^3/s
Flow Area	44.15	ft^2
Wetted Perimeter	18.20	ft
Hydraulic Radius	2.43	ft
Top Width	14.33	ft
Critical Depth	6.51	ft
Critical Slope	0.00219	ft/ft
Velocity	17.27	ft/s
Velocity Head	4.63	ft
Specific Energy	9.63	ft
Froude Number	1.73	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	5.00	ft
Critical Depth	6.51	ft
Channel Slope	0.00700	ft/ft

Worksheet for trap channel

GVF Output Data

Critical Slope	0.00219	ft/ft

Worksheet for 18E - double barrel

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.012	
Channel Slope	0.00800	ft/ft
Normal Depth	1.90	ft
Diameter	2.50	ft

Results

Discharge	36.79	ft^3/s
Flow Area	4.00	ft^2
Wetted Perimeter	5.29	ft
Hydraulic Radius	0.76	ft
Top Width	2.14	ft
Critical Depth	2.05	ft
Percent Full	76.0	%
Critical Slope	0.00682	ft/ft
Velocity	9.19	ft/s
Velocity Head	1.31	ft
Specific Energy	3.21	ft
Froude Number	1.18	
Maximum Discharge	42.75	ft^3/s
Discharge Full	39.74	ft^3/s
Slope Full	0.00686	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	76.00	%
Downstream Velocity	Infinity	ft/s

Worksheet for 18E - double barrel

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.90	ft
Critical Depth	2.05	ft
Channel Slope	0.00800	ft/ft
Critical Slope	0.00682	ft/ft

Worksheet for 18E - double barrel

Project Description

Solve For	Discharge

Input Data

Headwater Elevation	189.00	ft
Centroid Elevation	186.25	ft
Tailwater Elevation	187.00	ft
Discharge Coefficient	0.60	
Diameter	2.50	ft

Results

Discharge	33.41	ft^3/s
Headwater Height Above Centroid	2.75	ft
Tailwater Height Above Centroid	0.75	ft
Flow Area	4.91	ft^2
Velocity	6.81	ft/s

Worksheet for spillway

Project Description

Solve For	Discharge	

Input Data

Headwater Elevation	178.50	ft
Crest Elevation	178.00	ft
Tailwater Elevation	170.00	ft
Crest Surface Type	Paved	
Crest Breadth	15.00	ft
Crest Length	50.00	ft

Results

Discharge	53.17	ft³/s
Headwater Height Above Crest	0.50	ft
Tailwater Height Above Crest	-8.00	ft
Weir Coefficient	3.01	US
Submergence Factor	1.00	
Adjusted Weir Coefficient	3.01	US
Flow Area	25.00	ft²
Velocity	2.13	ft/s
Wetted Perimeter	51.00	ft
Top Width	50.00	ft

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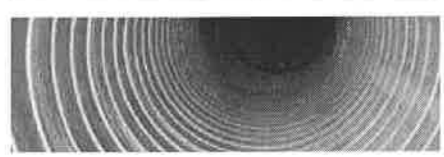
ENGINEERED SOLUTIONS

ULTRA FLO® Storm Sewer Pipe



Tomorrow's Environments Engineered

Table 4

Galvanized, ALUMINIZED STEEL Type 2 or **Polymer Coated**** ULTRA FLO H 20 and H 25 Live Load

Diameter (Inches)	Minimum/Maximum Cover (Feet) Specified Thickness and Gage			
	(0.064″) 16	(0.079″) 14	(0.109″) 12	(0.138″) 10
18	1.0/108	1.0/151		
21	1.0/93	1.0/130	1.0/216	
24	1.0/81	1.0/113	1.0/189	
30	1.0/65	1.0/91	1.0/151	
36	1.0/54	1.0/75	1.0/126	
42	1.0/46	1.0/65	1.0/108	
48	1.0/40	1.0/56	1.0/94	1.0/137
54	1.25/36	1.25/50	1.0/84	1.0/122
60	1.25*/32*	1.25/45	1.0/75	1.0/109
66		1.5/41	1.25/68	1.25/99
72		1.5*/37*	1.25/63	1.25/91
78		1.75*/34*	1.5/58	1.5/84
84			1.75/54	1.75/78
90			2.0*/50*	2.0/73
96			2.0*/47*	2.0/68
102			2.5*/43*	2.5/61
108				2.5*/54*
114				2.5*/49*
120				2.5*/43*

Table 5

Galvanized, ALUMINIZED STEEL Type 2 or **Polymer Coated** Steel** ULTRA FLO E 80 Live Load

Diameter (Inches)	Minimum/Maximum Cover (Feet) Specified Thickness and Gage			
	(0.064″) 16	(0.079″) 14	(0.109″) 12	(0.138″) 10
18	1.0 / 93	1.0 / 130		
21	1.0 / 79	1.0 / 111	1.0 / 186	
24	1.0 / 69	1.0 / 97	1.0 / 162	
30	1.0 / 55	1.0 / 78	1.0 / 130	
36	1.5 / 46	1.25 / 65	1.0 / 108	
42	1.5 / 39	1.5 / 55	1.25 / 93	
48	2.0 / 34	1.75 / 48	1.5 / 81	1.5 / 118
54	3.0* / 28*	2.0 / 43	1.5 / 72	1.5 / 104
60		2.0 / 39	1.75 / 65	1.75 / 94
66		2.5* / 35*	2.0 / 58	2.0 / 85
72			2.0 / 49	2.0 / 78
78			2.5 / 42	2.5 / 72
84			2.75* / 35*	2.5 / 67
90				2.5 / 62
96				2.5* / 58*
102				3.0* / 52*

Table 6

Aluminum ULTRA FLO HL 93 Live Load

Diameter (Inches)	Minimum/Maximum Cover (Feet) Specified Thickness and Gage			
	(0.060″) 16	(0.075″) 14	(0.105″) 12	(0.135″) 10
18	1.0/43	1.0/61		
21	1.0/38	1.0/52	1.0/84	
24	1.0/33	1.0/45	1.0/73	
30	1.0/26	1.25/36	1.25/58	
36	1.5*/21*	1.50/30	1.5/49	1.5/69
42		1.75*/25*	1.75/41	1.75/59
48			2.0/36	2.0/51
54			2.0/32	2.0/46
60			2.0*/29*	2.0/41
66				2.0/37
72				2.5*/34*

Table 7

Galvanized, ALUMINIZED STEEL Type 2 or **Polymer Coated**** Pipe-Arch ULTRA FLO H 20 and H 25 Live Load

Equiv. Pipe Dia. (Inches)	Span (Inches)	Rise (Inches)	Minimum/Maximum Cover (Feet) Specified Thickness and Gage		
			(0.064″) 16	(0.079″) 14	(0.109″) 12
18	20	16	1.0/16		
21	23	19	1.0/15		
24	27	21	1.0/13		
30	33	26	1.0/13	1.0/13	
36	40	31	1.0/13	1.0/13	
42	46	36	M.L.[8]	M.L.[8]	1.0/13
48	53	41	M.L.[8]	M.L.[8]	1.25/13
54	60	46	M.L.[8]	M.L.[8]	1.25/13
60	66	51	M.L.[8]	M.L.[8]	1.25/13

Table 8

Galvanized, ALUMINIZED STEEL Type 2 or **Polymer Coated**** Pipe-Arch ULTRA FLO E 80 Live Load

Span x Rise (Inches)	Round Equivalent	Minimum Cover (Inches)	Minimum Gage	Max Cover (Feet)
20x16	18	24	16	22
23x19	21	24	16	21
27x21	24	24	16	18
33x26	30	24	16	18
40x31	36	24	16	17
46x36	42	24	12	18
53x41	48	24	12	18
60x46	54	24	12	18
66x51	60	24	12	18

Table 9

Aluminum ULTRA FLO Pipe-Arch HL 93 Live Load

Equiv. Pipe Dia. (Inches)	Span (Inches)	Rise (Inches)	Minimum/Maximum Cover (Feet) Specified Thickness and Gage			
			(0.060″) 16	(0.075″) 14	(0.105″) 12	(0.135″) 10
18	20	16	1.0/16			
21	23	19	1.0/15			
24	27	21	1.25/13	1.25/13		
30	33	26	1.5/13	1.5/13	1.5/13	
36	40	31		1.75/13	1.75/13	
42	46	36			2.0/13	2.0/13
48	53	41			2.0/13	2.0/13
54	60	46			2.0*/13*	2.0/13
60	66	51				2.0/13

NOTES

1. The tables for Steel H 20 and H 25 loading are based on the NCSPA CSP Design Manual, 2008 and were calculated using a load factor of K=0.86. The tables for Steel E 80 loading are based on the AREMA Manual. The tables for Aluminum HL 93 loading are based on AASHTO LRFD Design Criteria.
2. The haunch areas of a pipe-arch are the most critical zone for backfilling. Extra care should be taken to provide good material and compaction to a point above the spring line.
3. E 80 minimum cover is measured from top of pipe to bottom of tie.
4. H 20, H 25 and HL 93 minimum cover is measured from top of pipe to bottom of flexible pavement or top of rigid pavement.
5. The H 20, H 25 and HL 93 pipe-arch tables are based on 2 tons per square foot corner bearing pressures.
6. The E 80 pipe-arch tables minimum and maximum covers are based on 3 tons per square foot corner bearing pressures shown.
7. Larger size pipe-arches may be available on special order.
8. M.L. (Heavier gage is required to prevent crimping at the haunches.)
9. For construction loads, see Page 15.
10. Sewer gage (trench conditions) tables for corrugated steel pipe can be found in the AISI book "Modern Sewer Design," 4th Edition, 1999. These tables may reduce the minimum gage due to a higher flexibility factor allowed for a trench condition.
11. All heights of cover are based on trench conditions. If embankment conditions exist, there may be restriction on gages for the large diameters. Your Contech Sales Representative can provide further guidance for a project in embankment conditions.
12. All steel ULTRA FLO is installed in accordance with ASTM A798 "Installing Factory-Made Corrugated Steel Pipe for Sewers and Other Applications."

* These sizes and gage combinations are installed in accordance with ASTM A796 paragraphs 18.2.3 and ASTM A798. For aluminum ULTRA FLO refer to ASTM B790 and B788.

** Contact your local Contech representative for more specific information on Polymer Coated ULTRA FLO for gages 12 and 10.

Appendix 7 – Hydrologic & Hydraulic Report – NextGen Engineering

NextGen
ENGINEERING

Hydrologic and Hydraulic (H&H) Report

Todd Barranca

Ventura County, California

November 27, 2018

Prepared by:

NextGen Engineering, Inc.
374 Poli St., Suite 207, Ventura, CA 93001
Mail: 5142 E. Homes St., Tucson AZ 85711
805-798-7664
www. NGenEng.com

On Behalf of:

AGROMIN™
Soil Products for a Greener World ®

Ventura County, CA

Contents

Figures

Tables

Executive Summary

This Hydrology and Hydraulic (H&H) Report summarizes the preparation and results of hydrologic and hydraulic models and analysis of Todd Barranca near Ventura, California. The results of the models will be used by Agromin Inc., whose property is west of Todd Barranca, to determine if there are flood conditions on their property. These results are part of a Conditional Use Permit (CUP) application to Ventura County. The floodplain generated by the 2D hydraulic model, using updated hydrology, produced the floodplain seen in Figure ES-1.

The results of the model under proposed conditions (with a curb) show that there is no flooding on the Agromin property, as seen in Figure ES-2.

Figure ES-1: Existing 100-Yr Flood Depths near Agromin Property

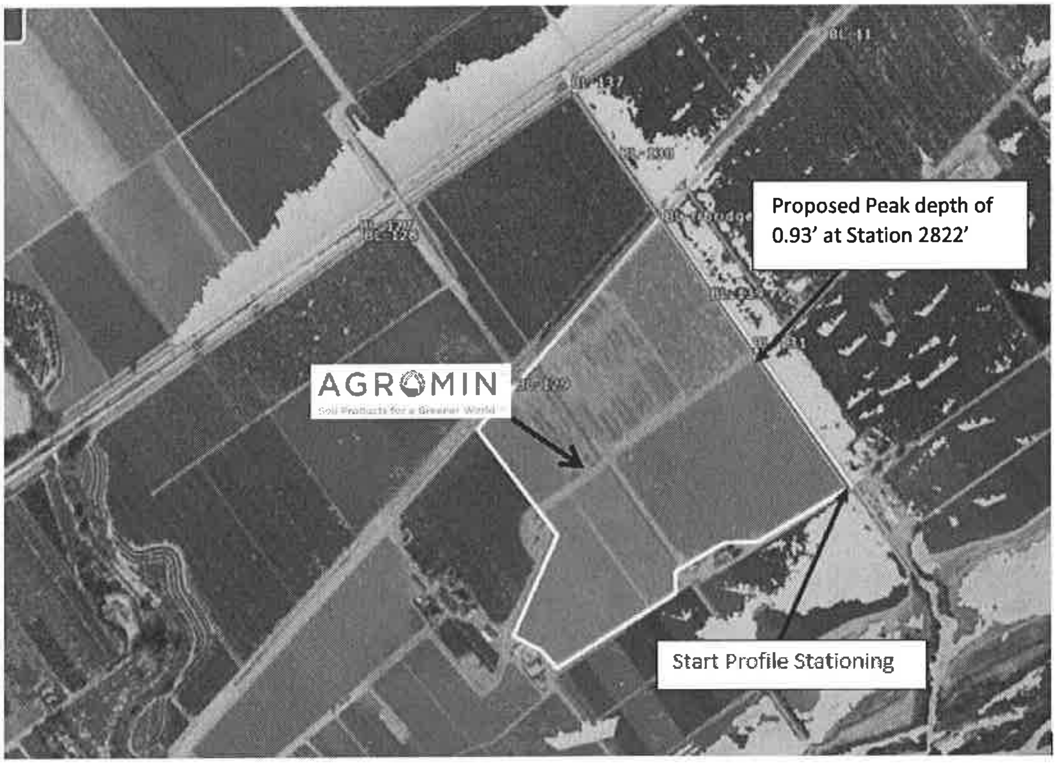


Figure ES-2: 100-Yr Flood Depths near Agromin Property under proposed conditions

Goals

The goal of this analysis is to refine the floodplain map near the Agromin property by the creation of a detailed hydrologic model and a 2D hydraulic model for the Todd Barranca. Agromin Inc. is a producer of mulch, compost, and other soil products. Their products are stored in mounds on their property and are thus susceptible to being moved by floodwaters. This detailed study of the area and delineation of an accurately defined 100-year floodplain around Agromin's property will be used to address concerns for a Conditional Use Permit in Ventura County.

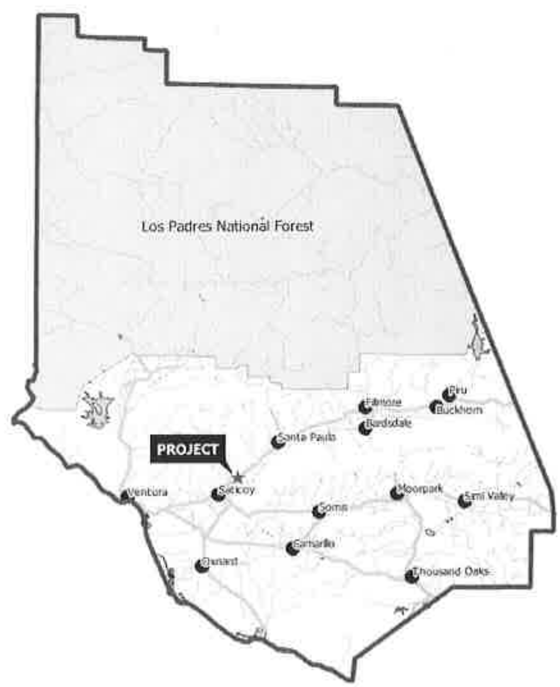


Figure 1: Project Location

The goals for the Hydrologic and Hydraulic models specifically include:

- **Hydrologic HEC-HMS model:** Hydrographs, based on the county methods and the best available data in the area, for use by floodplain 2D modeling.

- **Hydraulic HEC-RAS model:** 100-yr floodplain map of the studied area using unsteady flow and 2D techniques.

Introduction

Agromin Inc. has property located in Ventura County near State Highway 126 between Santa Paula and the City of Ventura. The property is located in the flat alluvial plains north of the Santa Clara River. Surrounding the property is agricultural land, predominantly lemon and avocado orchards. To the north of the property are the Santa Paula Mountains, to the south is the Santa Clara River, to the west is the town of Saticoy at a distance of 1.3 miles, and to east is the city of Santa Paula, at a distance of 3 miles. Figure 1 shows the project location, neighboring cities, and the Los Padres National Forest to the North which is home to the Headwaters of Todd Barranca in the Santa Paula Mountains.

The Agromin property considered for the CUP is parcel of approximately 70 acres. The lot is located approximately 3,700 ft. west of Todd Barranca, a tributary to the Santa Clara River, and is outside of the Santa Clara River 100-yr FEMA Floodplain. However, previous hydraulic models of the area (discussed later in this report) have shown Todd Barranca backing up and overflowing before it crosses under State Highway 126 during a 100 year event. The backwater flows both east and west of Todd Barranca, pooling north of the freeway and eventually passing through the double 8'x6' culverts (noted in Figure 2) and potentially overflowing the channels south of the freeway and flooding the property. The owners of Agromin Inc. are therefore particularly interested in the overflow of the Barranca north of Freeway 126, the backwater behind State Highway 126 and the resultant floodplain caused by the overflow. Such an analysis requires an accurate understanding of flow rate in Todd Barranca and a 2D floodplain model to better understand the extent of flooding caused by the overflow. Figure 2 shows key elements of the study, and Figure 6, in the hydraulics section of this report shows prominent hydraulic structures within the studied area.

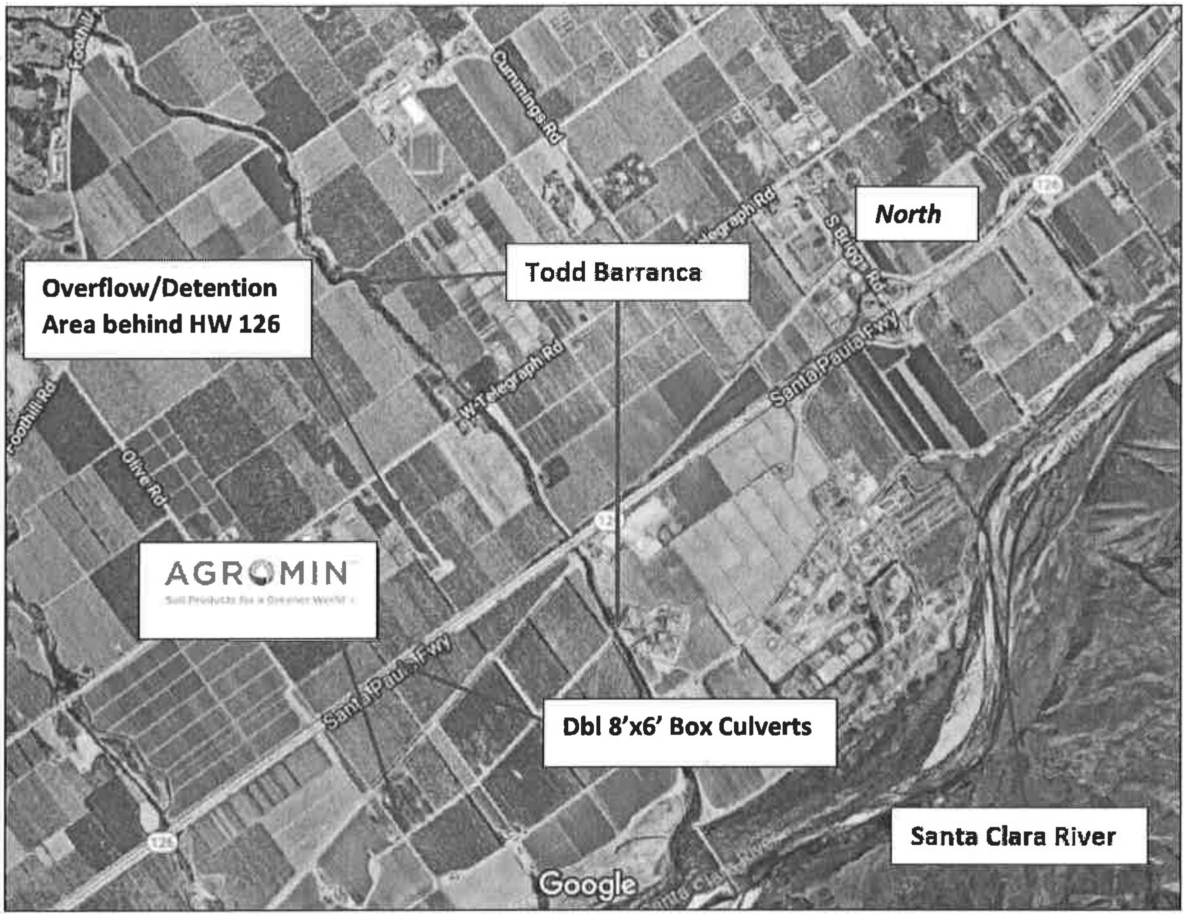


Figure 2: Key Elements of The Study

Purpose and Benefits

This H&H report and analysis broadens the County's knowledge of flooding in and around Todd Barranca, and provides the county with a well delineated floodplain for the studied reach. The methods used in the models are in accordance with Ventura County's Hydrology Design Manual (VCHDM, 2017), and produce results that can be easily verified by the county. More specifically, the H&H report provides information on potential flood conditions on or around the Agromin Property and will be used by Agromin Inc. to apply for a Conditional Use Permit. The floodplain boundaries and tables produced through the HEC-RAS study will provide Agromin Inc. with the floodplain information they need to better understand flooding risks, and to protect their property and the neighboring properties from the flooding produced by a 100-yr event.

Background and Pre-Design Studies

Todd Barranca has been the subject of a number of hydrologic and hydraulic studies. The Effective FEMA floodplain, determined by a FEMA study completed in April of 2018, does not include Agromin Inc. in the floodplain, or model any overflow behind State Highway 126. However, a number of other studies have been completed in the area; a few of which do include the property in the 100-yr floodplain or indicate overflow conditions around highway 126. Relevant studies are listed in chronological order below:

- **HSPF Hydrologic Study, 2009, Revised in 2011. AGUA TERRA Consultants** completed a Feasibility Study of the area, which included the creation of Hydrologic Simulation Program – Fortran (HSPF) hydrologic model and, hydraulic and sediment transport models of the watershed to evaluate natural, existing and future conditions of the Santa Clara River. The original document had an addendum added by Ventura County Watershed Protection District, Los Angeles County Department of Public Works, and the Los Angeles District of the U.S. Army Corps of Engineers in 2011. Figure 3 shows the results of the HSPF model for the area. There are certain inconsistencies in the HSPF hydrology used in the OAR, including greater run off in Wheeler Canyon than Todd Barranca, even though Wheeler Canyon has a much smaller cumulative drainage area, as seen in Figure 3.

Name	HSPF Sub-Area	Study	Area (ac.)	Cum. Area (sq. mi)	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	200-yr	500-yr	Multiplier
Adams Upstream	3841	CDM	1,122	-	81	270	491	907	1,332	1,873	2,519	3,657	Undeveloped
Adams Intermediate 1	2841	CDM	3,552	-	211	702	1,277	2,360	3,466	4,875	6,557	9,516	Undeveloped
Adams Intermediate 2	1841	CDM	4,717	-	267	888	1,616	2,986	4,386	6,169	8,298	12,043	Undeveloped
Adams Barranca	841	CDM	5,398	-	299	994	1,808	3,340	4,906	6,900	9,281	13,469	Undeveloped
Adams Barranca	842	CDM	412	9.1	298	991	1,803	3,330	4,892	6,880	9,254	13,430	Undeveloped
O'Hara Canyon	843	CDM	2,006	-	144	480	872	1,612	2,368	3,330	4,479	6,500	Undeveloped
Haines Barranca	844	CDM	227	3.5	128	425	773	1,428	2,097	2,950	3,968	5,758	Undeveloped
SCR @ Freeman Div	850	FEMA	1,722	1,584.9	9,784	32,544	59,212	109,384	160,686	226,000	303,970	441,152	Undeveloped
Wheeler Upstream	2851	CDM	819	-	69	229	417	770	1,131	1,591	2,140	3,106	Undeveloped
Wheeler Intermediate	1851	CDM	2,907	-	197	656	1,193	2,204	3,238	4,554	6,125	8,889	Undeveloped
Wheeler Canyon	851	CDM	4,788	7.5	298	992	1,805	3,335	4,899	6,890	9,267	13,449	Undeveloped
Todd Barranca	852	CDM	1,246	9.4	288	958	1,742	3,219	4,728	6,650	8,944	12,981	Undeveloped
Briggs Road Drain	853	CDM	800	1.3	53	177	322	595	875	1,230	1,654	2,401	Undeveloped
Cummings Road Drain	854	WPD	1,223	1.9	78	259	472	871	1,280	1,800	2,421	3,514	Undeveloped
Santa Clara River	860	FEMA	2,287	1,608.6	9,784	32,544	59,212	109,384	160,686	226,000	303,970	441,152	Undeveloped

Figure 3: HSPF Hydrology

- **Hydraulic Study: May 2012. CMD Smith** prepared an Overflow Analysis Report (OAR) for Todd Barranca for The U.S. Army Corps of Engineers (USACE). The OAR used the above mentioned 2011 HSPF hydrology. The red names in Figure 3 were calculated using USGS regression equations. The study included a hydraulic model which suggested overflow conditions between Telegraph Road and State Highway 126 during the 100-year, 24-hour storm event.

- **Hydrologic & Hydraulic Studies: June 2018. Harrison Industries** having noted the inconsistencies in the 2011 HSPF hydrology used by the USAC, created their own HEC-HMS hydrologic model. Using the hydrology generated by HEC-HMS, Harrison Industries created a HEC-RAS model to understand hydraulics of the area. The model used similar flows to the OAR, however did not account for runoff volume or duration. The model was modified to account for potential overflow volume and duration and confirmed the potential of westerly overflow of about 200 AF around State Highway 126 for a duration of 100 minutes; however conservation of mass, energy and momentum were not accounted for in the model.

The 2012 hydraulic study by the CDM Smith included the Agromin Property in the 100-yr. floodplain, as shown in Figure 4. The OAR floodplain shown in Figure 4 is recognized by Ventura County, however is based on the broad assumptions of the USPF hydrology. Harrison's attempt to redefine the floodplain using updated hydrology and a new hydraulic model in 2018 was inconclusive but supported the hypotheses of overflow around State Highway 126 during a 100-yr event.

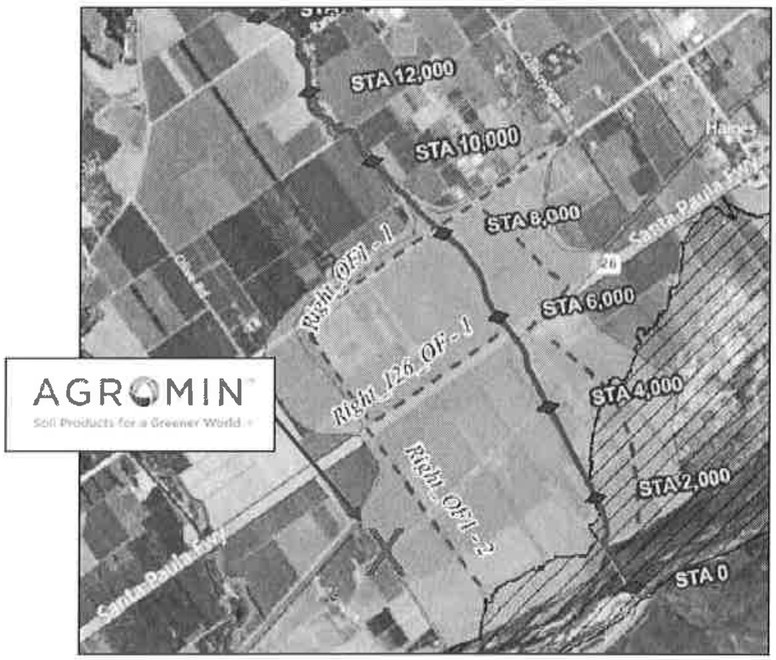


Figure 4: Overflow Analysis Report Floodplain (OAR, 2012)

Questions about the HSPF hydrology, which was used by the OAR to define the floodplain shown in Figure 4, as well as the limitations of the one dimensional HEC-RAS study done by Harrison Industries, prompted the need for a new hydrologic and a 2D hydraulic study of the area.

Topographic Data

All topographic data was georeferenced to NAVD 88 vertical datum and NAD 83 horizontal datum.

HEC-HMS Model

2005 LiDAR 1' contour intervals of The Todd Barranca Watershed, provided by the County, were used in combination with 2017 USGS NED 20' contour intervals to topographically map the watershed. County 1' intervals were used to delineate the farthest downstream sub-watershed (236 in the HEC-HMS model, see Exhibit 1). USGS 20' intervals were used to determine the values that were used in the other four sub-basins of the HEC-HMS model. The use of 1' contours adds precision to the model through better delineation of sub watershed 236, and improves upon the methods used in previous studies of the area.

HEC-RAS Model

2005 LiDAR 10' gridded points of the Todd Barranca Watershed, provided by the county, were used in the HEC-RAS model. The terrain file was modified to accurately model flow in the below mentioned culvert areas. Modifications were based on as-built drawings and field measurements.

- Double Box Culvert under highway 126 (west 2D area)
- Double round culvert at highway 126 and Todd Barranca
- Culvert at railroad bridge and Todd Barranca
- Railroad tunnel under highway 126.

Hydrology

A detailed HEC-HMS 4.2.1 study of the Todd Barranca was completed to produce a unit hydrograph at the foothills of the steep Santa Paula Mountains for use in a 2D HEC-RAS model. The results from the hydraulic model were compared to the 2018 HEC-HMS study completed by Harrison Industries, and calibrated with hydrographs produced by the 2011 HSPF study, per Ventura County standards. The following section describes in detail the methods and values used to model flow within Todd Barranca as the result of a design 100-yr storm.

Description of the Watershed Extents of Study

The Agromin fields are located within the Adams Canyon – Santa Clara River Watershed, in the Todd Barranca sub-watershed. The Todd Barranca watershed is elongated N.S. and the studied section stretches 6.3 miles with an area of 8.3 mi^2. The Barranca runs southeast leaving the Santa Paula Mountains at the base of Wheeler Canyon. Todd Barranca leaves the steep Santa Paula Mountains and enters the alluvial plains and continues through agricultural land, passing under the Santa Paula Freeway and draining into the Santa Clara River. NRCS soil surveys (NRCS, 2017, USDA 1970) characterized the watershed as containing loamy soils with 0-2% slopes. Run-off and stormwater flows from upstream developments. Hampton Canyon (located in the upstream foothills of Todd Barranca), and Wheeler Canyon (located downstream from Hampton Canyon), drain into Todd Barranca and were included in the HEC-HMS study.

The downstream extent of the hydrologic model is the upstream extent of the hydraulic model. The hydrologic study will consequently provide a hydrograph that represents the flow from the steep canyons that has accumulated within the channel. The hydraulic model will be used to model the gradual incline of the agricultural lands and the consequential flooding within the alluvial plains caused by overflow from the channel. The hydrologic model does not extend into the alluvial plains, as it is assumed infiltration of the tilled agricultural land would allow a majority of the rainfall to infiltrate, and would not compound the peak flow within the channel.

Local rainfall that drains into the box culverts under highway 126 is not included in the model because, while the culverts will direct local runoff; the peak of local runoff and the peak from the overflow from the channel can be assumed to not be coincident, and thus would not compound the detention effect behind the highway.

Basis of Hydrology

The studied watershed was broken down into five sub-basins and six reaches. Basin boundaries and reach extents were determined using the HEC-GeoHMS 10.1 plugin of ArcGIS Desktop 10.5.1. The VCWPD methods used have been compared with runoff data from 2005 storms (10 to 50-yr) storms in a number of undeveloped watersheds and generally create storm models with peaks that deviate 10% or less from stream gages in the modeled undeveloped watershed. The methods and values used are explained in detail within the following section.

HEC-HMS Methods and Assumptions

The model was completed adhering to the parameters laid out in the Ventura County Design Hydrology Manual (VCDHM, 2017). Specific attention was given to Section 5: HEC-HMS Design Storm Modeling of the manual. The HEC-HMS model uses more precise values for infiltration, sub-basin area, lag time, slope, and rainfall intensity as described in the following sections.

Design Storm

NOAA Atlas 14 100-yr rainfall isohyet was received from *Appendix E* of the VCDHM. The centroid of the studied watershed was determined using ArcGIS. Rainfall depth at the centroid was used with a SCS type 1 rainfall distribution to produce the 100-yr, 24 hour duration design storm. Exhibit 3 shows the centroid of the watershed and resultant rainfall yield. Rainfall at the watershed centroid was determined by performing inverse distance weighting of the NOAA isohyets in ArcMap. Rainfall at the centroid of the watershed was calculated to be 10.93 in.

Sub-Basins

The study was separated into five sub-basins. Delineation of sub-watersheds was done using HEC-GeoHMS plugin for ArcGIS, and using the topographic data described in the "Topographic Data" section of this report. The drainage point for the studied area is 1827 ft downstream of Foothill Road. The names of sub-basins were automatically generated in HEC-GeoHMS, and the assigned sub-basin number has no relevance to their characteristics. *TABLE* 1 is a summary of the values used in each sub basin, which is followed by a discussion on how the values in *TABLE* 1 were determined.

TABLE 1: SUMMARY OF VALUES USED IN SUB-BASINS IN HEC-HMS MODEL

Sub-Basin	142	232	332	172	236
Sub-Basin Area (sm)	1.2573	3.2454	2.9112	0.7118	0.1400
Initial Loss (in)	0	0	0	0	0
Infiltration Rate (in/hr)	0.208	0.471	0.641	0.492	N/A
% Impervious	0	0	0	0	0
Lag Time (hrs)	0.451	1.411	0.586	0.366	0.265

Sub-basin watershed area was determined using the HEC-GeoHMS plugin for ArcGIS. It is described in square miles based on the GRS 1980 ellipsoid for the EPSG:2229 NAD83 California Zone 5 projected coordinate system. The Topographic Data section of this report describes the topographic information used to delineate the watersheds.

SubBasin 236

Runoff contributed by SubBasin 236 was not included in the hydrologic model. The terrain in this watershed is relatively flat and is classified as agricultural land by the county. For this reason flow does converge to the drainage point where the 2D hydraulic model will begin, however it may not converge at the time of the peak hydrograph. The hydrograph at the outlet of 172 was thus routed to the outlet of 236 with no runoff added by SubBasin 236.

Figure 5: Agricultural Fields of SubBasin 236.

Transform Method: User-Specified S-Graph

After reviewing the S-Graph options in Section 5.2.6 of the VCDHM, the Ellsworth Barranca S-Graph was chosen due to the narrow nature of the watershed, and proximity of Todd Barranca to the Ellsworth Barranca.

Loss Method: Initial and Constant

Initial loss was set to zero, as specified in Section 5.2.5 of the VCDHM.

Infiltration for each sub-basin was determined through taking the weighted average of infiltration rates for NRCS soil types in the sub-basin. Weighting of infiltration rates was based on the percent concentration of each soil type within each sub-basin.

Soil number infiltration rates for each soil were determined through referencing ranges covered by multiple sources such as ASCE, SMAA, etc. *TABLE* 2 lists infiltration rates for each soil number. Exhibit 2 is a soil map for the studied area and was used to determine weighted values.

TABLE 2: INFILTRATION RATES FOR SOILS WITHIN THE TODD BARRANCA WATERSHED STUDY AREA

VCWPD Soil Number	Infiltration Rate (in./hr)
1	0.06
2	0.20
3	0.25
4	0.60
5	0.90
6	2.00
7	7.00

According to Ventura County's County View on-line maps for Land Use (Accessed July 2018), the majority of the watershed is classified as open space, with a small section of watershed 236 being classified as agricultural. The agricultural lands are mostly lemon and avocado orchards, and are thus classified as "orchards or tree farm". Exhibit 14a from the VCWM specifies 0% impervious for both open space and orchard and tree farm.

Lag time

The model used the USACE lag time equation, as specified in section 5.2.1 of the VCDHM. Key values, such as Manning's n and sub-basin slope are noted in *TABLE* 3.

TABLE 3: MANNING'S N AND SLOPES OF SUB-BASINS

Sub-Basin	Manning's N (n)	Sub-Basin Land Use	S_3 Slope (S)
142	**0.055**	**Undeveloped, steep slope.**	**691.15**
232	**0.045**	**Undeveloped, gradual slope**	**150.18**
332	**0.045**	**Undeveloped, gradual slope**	**193.66**
172	**0.045**	**Undeveloped, gradual slope**	**190.47**
236	**0.055**	**Undeveloped, steep slope**	**256.06**

Sub-Basin slope was determined to be a "S_3 slope" as defined in Section 5.2.2 of the VCDHM. The "S_3 slope" is a weighted average for elongated catchments and accounts for the fact that the travel time in different channel reaches do not vary linearly and therefore is representative of the basin response time. Values used to determine the slope were generated by HEC-GeoHMS.

Electronic File "E-1" (Attached on CD) was used to determine slopes and lag time, and contains all values used to determine lag time.

Reaches

The study consists of six reaches that were used to connect upstream sub-basins to downstream sub-basins. *TABLE* 4 is a summary of the values used in each reach, which is followed by an explanation of how the values in *TABLE* 4 were determined. Reaches were generated automatically by the HEC-GeoHMS plugin for ArcGIS.

TABLE 4: SUMMARY OF VALUES USED IN REACHES IN HEC-HMS MODEL

Reach	R1	R2	R3	R4	R5	R6
Length	4834	3234.7	4025	9756.3	6286.3	2694.3
Slope	0.04	0.026	0.0252	0.0164	0.0147	0.0141
Manning's N	.04	.04	.04	.04	.04	.05
Shape	Trap.	Trap.	Trap.	Trap.	Trap.	Triangle
Bottom Width	300	50	300	295	29.5	-
Side Slope	0.41	0.37	.057	0.44	0.48	0.14

Routing Method: Muskingum-Cunge

A routing method was not specified in Section 5 of the VCDHM so the Muskingum-Cunge, a traditional conservation of mass method and standard method, was chosen.

Reach Length

Reach length was measured from the inlet to the outlet of the sub-basin, and is the full length of the reach, measured at the centerline of the creek. Reach lengths were determined using HEC-GeoHMS.

Reach Slope

Reach slope was determined through the use of HEC-GeoHMS which calculated the average slope from inlet to outlet of each sub-basin.

Manning's N for Reaches

Manning's n roughness coefficient was determined by comparing observations from a visit to the Todd Barranca with standard values. **TABLE 4** lists Manning's n values used in the routing portion of this hydrologic model (Acrement, 1989). Willows and sycamores were observed growing within the channel along with a number of smaller trees and bushes. Vegetation seems to become sparser upstream. All reaches were determined to have a large amount of vegetation and consequently assigned a Manning's n ranging from 0.04-0.05.

Reach Shape

Shape and dimensions of the channel were determined by cutting cross sections of the studied reach. ArcMAP and the 3-D Analyst Line interpolation plugin were used to generate the cross-sections. Topography used to determine the cross-section shape is discussed in the Topographic Data section of this report. Reach shape and dimensions are discussed in TABLE 4. Cross sections corresponding to Reaches 1-5 were then simplified into trapezoidal sections and then organized by reach. Reach 6 cross sections were then simplified as a triangular channel given that these channels were roughly were estimated as triangular. The average shape of all reaches were calculated in excel and the results are found in Appendix C.

Calibration

The resultant raw hydrograph at the outlet of sub-basin 332; was calibrated with the peak flow value of the County Standard HSPF hydrograph at the same location, by increasing infiltration rates by 38%. The resultant calibrated hydrograph, at the outlet of sub-basin 236, was the final hydrograph that was used in the 2-D floodplain model.

TABLE 5: HYDROGRAPH FLOW AND VOLUME AT OUTLET OF SUB-BASIN 332

	Peak Flow (cfs)	Volume (acre-ft)
HEC-HMS (NextGen) Results	6838	1455
HSPF Model	6890	2999

The calibrated HEC-HMS hydrograph using a 1-minute time step produced a peak and volume that is compared to the HSPF models peak and volume in *TABLE 5: HYDROGRAPH FLOW AND VOLUME AT OUTLET OF SUB-BASIN 332*. The difference of the peaks was less than 0.8 percent. The calibrated HEC-HMS hydrograph is compared to the HSPF and Harrison hydrograph in Appendix A.

Analysis and Resultant Hydrograph

Figure 5 shows the HEC-HMS resultant hydrograph at the outlet of sub-basin 236, which was used in the 2D HEC-RAS model.

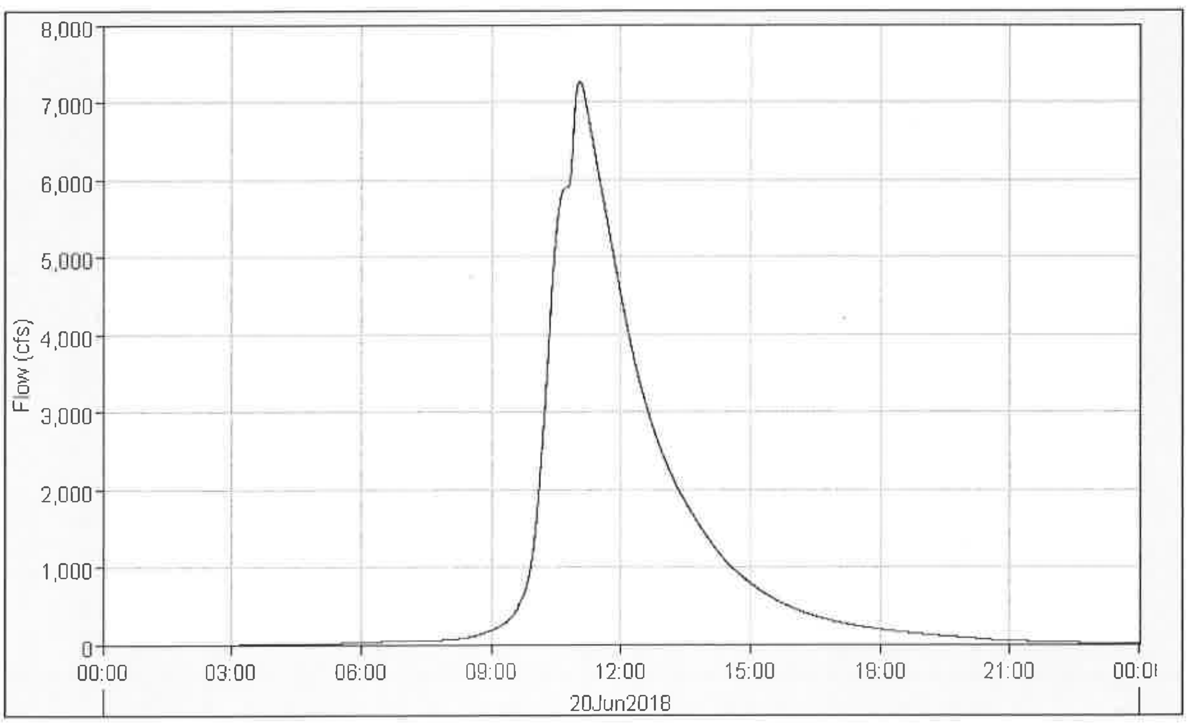


Figure 5: Hydrograph at the Outlet of Sub-Basin 236 used in HEC-RAS model (1 minute time intervals)

Hydraulics

The following section describes in detail the methods used to determine 100-year floodplain extents, depths, and velocities, along Todd Barranca and near Agromin's property. A hybrid one-dimensional and two-dimensional (1D/2D) HEC-RAS model was created to determine flooding within the studied area.

Description of Hydraulic Structures and Project Components

The area of interest for the hydraulic HEC-RAS study contains a number of hydraulic structures; the most significant are noted in Figure 6 and discussed below.

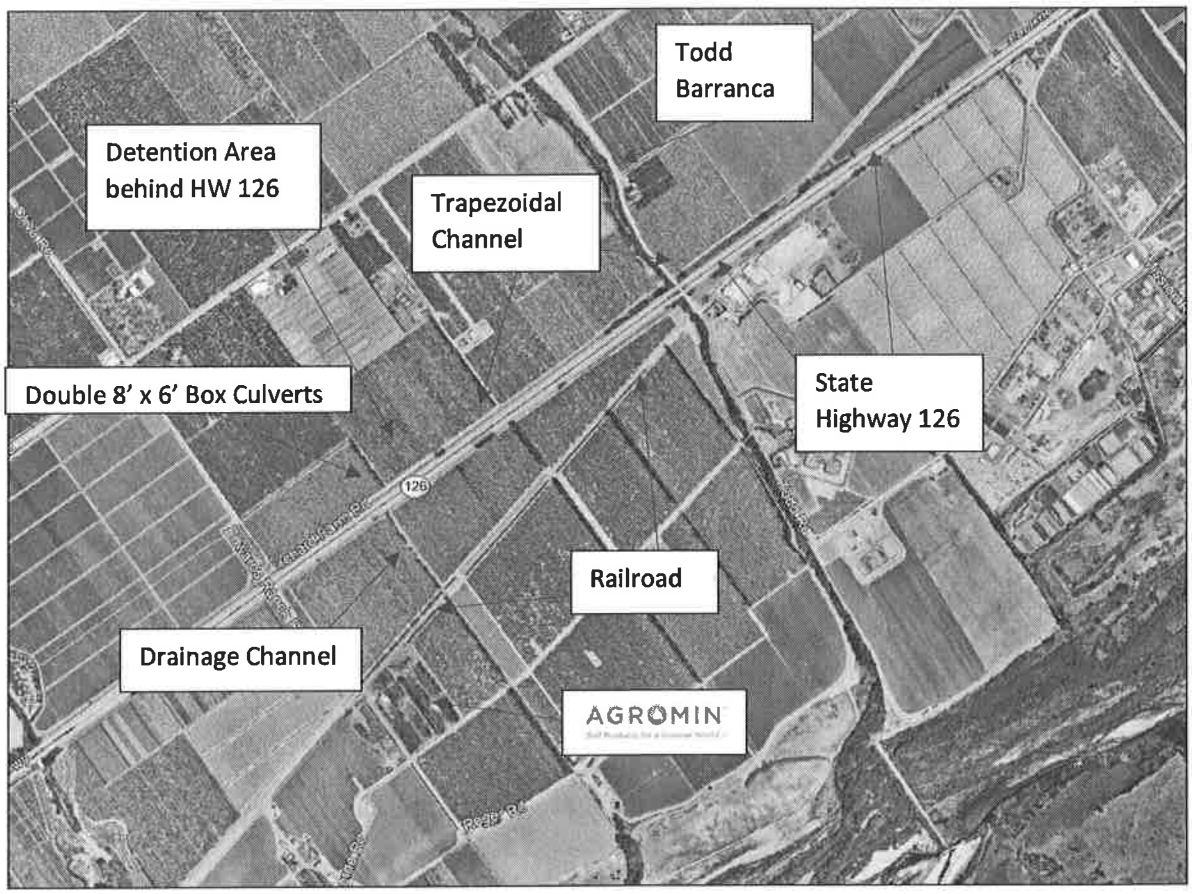


Figure 6: Prominent Hydraulic Structures in Studied Area

Trapezoidal Channel: An existing concrete trapezoidal channel on the Northside of the Highway 126 parallels the freeway from about 700 ft. West of Todd Barranca to about 700 Ft. West of Edwards Ranch Road. It is assumed that this channel was intended to drain the local drainage area on the north side of the freeway and not to receive overflow from Todd Barranca. The Channel drains into existing double box converts roughly 1,300 ft. east of Edwards ranch Road. From there, a private concrete channel drains water into the Santa Clara River roughly 3,900 ft. from the box culverts.

Double 8' x 6' Box Culvert: This double box culvert conveys runoff from north of Highway 126 under the highway, to drain toward the Santa Clara River to the South. The culvert was presumably designed to drain the runoff from the trapezoidal channel and not intended to receive overflow from Todd Barranca.

Harrison Industries estimated the capacity of the culvert at 1,065 cfs with roughly a high-water elevation 2.5 above the box soffit and 5.5 ft. of tail water depth.

Detention Area behind HW 126: There is backwater capacity behind HW 126 that could allow runoff to pond until it passed through the box culverts. Harrison industries estimated about 70 AF of storage behind the freeway.

State Highway 126: The highway is elevated above the grade of the land, causing a detention effect behind the highway. Based on as-built plans and topographic information, the low point of the highway is about 750 ft. West of Edwards Ranch Road, and would be the initial overflow location of ponded water north of the Freeway.

Railroad. The railroad track crosses under State Highway 126 approximately 900 ft. East of Todd Barranca, and crosses over the Barranca around Todd Road. The railroad is also elevated above the grade of the land and has a ponding effect on water that overflowed from Todd Barranca.

HEC-RAS Methods and Assumptions

The HEC-RAS model expands upon an existing 1D hydraulic model, provided by Ventura County, by adding 2D elements outside of the Todd Barranca channel. The model added key specific hydraulic elements within the 2D area, and used topography discussed in the "Topographic Data" section of this report. Results from the model have been compared to the OAR floodplain (Figure 4).

HEC-RAS v. 5.03 and GeoHEC-RAS was used to add 2D elements to an existing 1D HEC-RAS model.

Utilization and Modification of Existing 1D HEC-RAS Model

The 1D HEC-RAS model from the County was utilized to model the main channel. The model was modified in the following ways:

- *Eliminated* all reaches within the model with the exception of Todd Barranca
- *Eliminated* all sections upstream of section 16071.
- *Added* addition sections as required.
- *Added* 2D areas east and west of Todd Barranca
- *Added* six lateral structures to model which routes overflow from 1D to 2D areas.
- *Added* double box culvert under highway 126.

Manning's N Values

Manning's N Values are listed below:

- Manning's N values for Todd Barranca in 1D model remained the same.
    - 0.052 for the main channel.
    - 0.075 for both over banks
    - 0.015 for the ditch area
    - USDA National Land Cover Database (NLCD) was used for Manning's N values in the 2D areas. Figure 7 and Figure 8 show land use and Manning's N values used in the model.

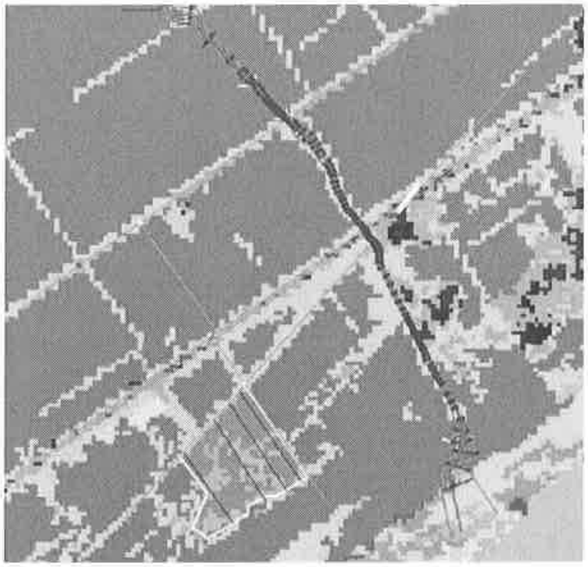
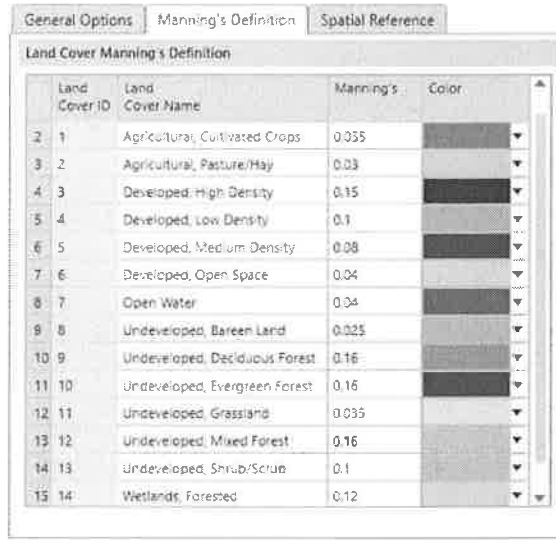


Figure 7: Map of Land Cover Area



General Options | Manning's Definition | Spatial Reference

Land Cover Manning's Definition

	Land Cover ID	Land Cover Name	Manning's	Color
2	1	Agricultural, Cultivated Crops	0.035	
3	2	Agricultural, Pasture/Hay	0.03	
4	3	Developed, High Density	0.15	
5	4	Developed, Low Density	0.1	
6	5	Developed, Medium Density	0.08	
7	6	Developed, Open Space	0.04	
8	7	Open Water	0.04	
9	8	Undeveloped, Bareen Land	0.025	
10	9	Undeveloped, Deciduous Forest	0.16	
11	10	Undeveloped, Evergreen Forest	0.16	
12	11	Undeveloped, Grassland	0.035	
13	12	Undeveloped, Mixed Forest	0.16	
14	13	Undeveloped, Shrub/Scrub	0.1	
15	14	Wetlands, Forested	0.12	

Figure 8: NLCD Manning's N Values

Model Extents

The HEC-RAS 1D reach of the model begins at section 16071, approximately 1827 feet downstream of Foothill Rd. The downstream end of the HEC-RAS 1D model is section 1365 at the Santa Clara River. The 2D area limits are sufficient for flood analysis at the Agromin Property, but were not extended to the Santa Clara River.

Structures

A number of hydraulic structures are present in the studied area. Structures that affected the flow around Agromin's property were added to the model, otherwise the terrain file was simply modified to model the structures effect on the floodplain.

Lateral Structures

- Six lateral structures were created to route overflow from Todd Barranca to 2D areas.
- Weir crest elevations were cut to 2005 LiDAR 1' contours.
- Structure width: 3 feet
- Weir Coefficient (for lateral structures): 0.3

Culverts in 2D Areas

- Double box 8' x 6' culvert was added under Highway 126 (west 2D area). The terrain file was adjusted to allow for the culvert to be added to the model. Figure 9 shows flow through the double box culvert. The flow through this culvert greatly influences the floodplain around the Agromin property.

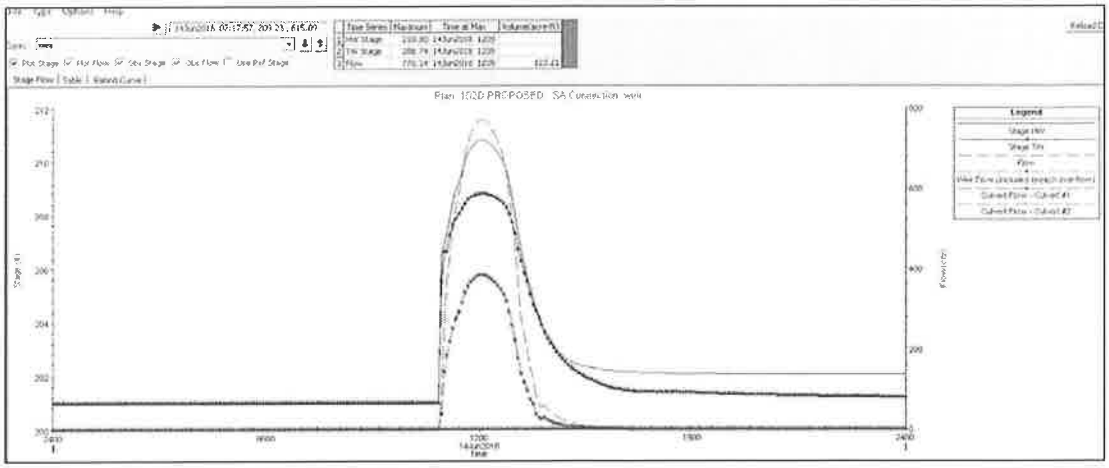


Figure 9: Flow Through Double Box 8x6 Culvert

- Double box culverts under Telegraph Road were not added to the model because no backwater reaches this area.
- Double 3.5' corrugated metal pipe located 40 feet upstream of Highway 126 at Todd Barranca was added to the model by adjusting the terrain file to account for flow back into Todd Barranca, however the culvert details were not added because the culverts do not affect flow at the Agromin property.
- Single concrete culvert located at Todd Barranca and Railroad Bridge was added to the model by adjusting the terrain file to account for flow back into Todd Barranca. However, culvert details were not added because the culvert does not affect flow at the Agromin Property.

Analysis and Resultant Floodplain

Unsteady flow analysis was performed using HEC-RAS 5.03. The 24- hour hydrograph, explained in the Hydrology section of this report, provided the flow used in the model. The model performed computations every 15 seconds during the modeled time period and the output was plotted at 5 minutes intervals. Figure 10 shows the maximum extents of the flooding and maximum depths, at the peak flow.

Figure 10: Proposed Flood Boundaries and Depths

Conclusions

The results from the 2D HEC-RAS model corroborate the results of the OAR produced in 2012 in that the 2D HEC-RAS model also models backwater behind highway 126. However, the floodplain extents produced in the OAR are much less detailed than the study herein.

Valuable information provided by the 2D HEC-RAS model include a better defined boundary of flooding and, more importantly, shallow flooding (less than 1 foot in most places) on and around the Agromin Property. This area would be classified as a Special Flood Hazard Area, Zone X. Precautions would have to be taken accordingly for a Zone X Flood Hazard Area, and additional mitigation strategies could be taken. Additionally the model did not show flooding over Highway 126 west of Todd Barranca.

The model does indicate that proposed flooding on the Agromin Property is an average of 0.27' (Approx. 3 inches) deep, and thus qualifies as a Zone X for FEMA floodplain maps, and the average velocity at the profile line is 0.87 ft/sec.

"Islands" within the floodplain are filled depressions within the topography. While they appear isolated, they are connected to the other floodwaters and are filled with overflow from the channel, and not pooled rainfall.

Recommendations

The flooding under the Existing Conditions is minimal and may not require a curb depending on land use. The construction of a curb on the eastern side of the property would keep water off of the Agromin Property. Figure 11 shows the floodplain with the wall. Appendix D further discusses this idea.

Figure 11: Floodplain with Proposed Conditions

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Appendixes

Appendix A: Hydrograph at the Outlet of County Sub-Basin 851 and NextGen Sub-Basin 332 and Harrison HE-HMS Model Sub-Basin 6A

Appendix B: Maximum Water Surface Profile Elevations and Velocities

Appendix C: Average Cross Section Determination Spreadsheet

Appendix D: Proposed Conditions

Exhibits

Exhibit 1: Hydrology Map

Exhibit 2: Soils Map

Exhibit 3: Isohyet Map

Exhibit 4: Annotated FIRM with Proposed Conditions and Curb

Exhibit 5: Existing vs Proposed Floodplain on Agromin Property

Electronic Files

E1: Basin Slopes Spreadsheet

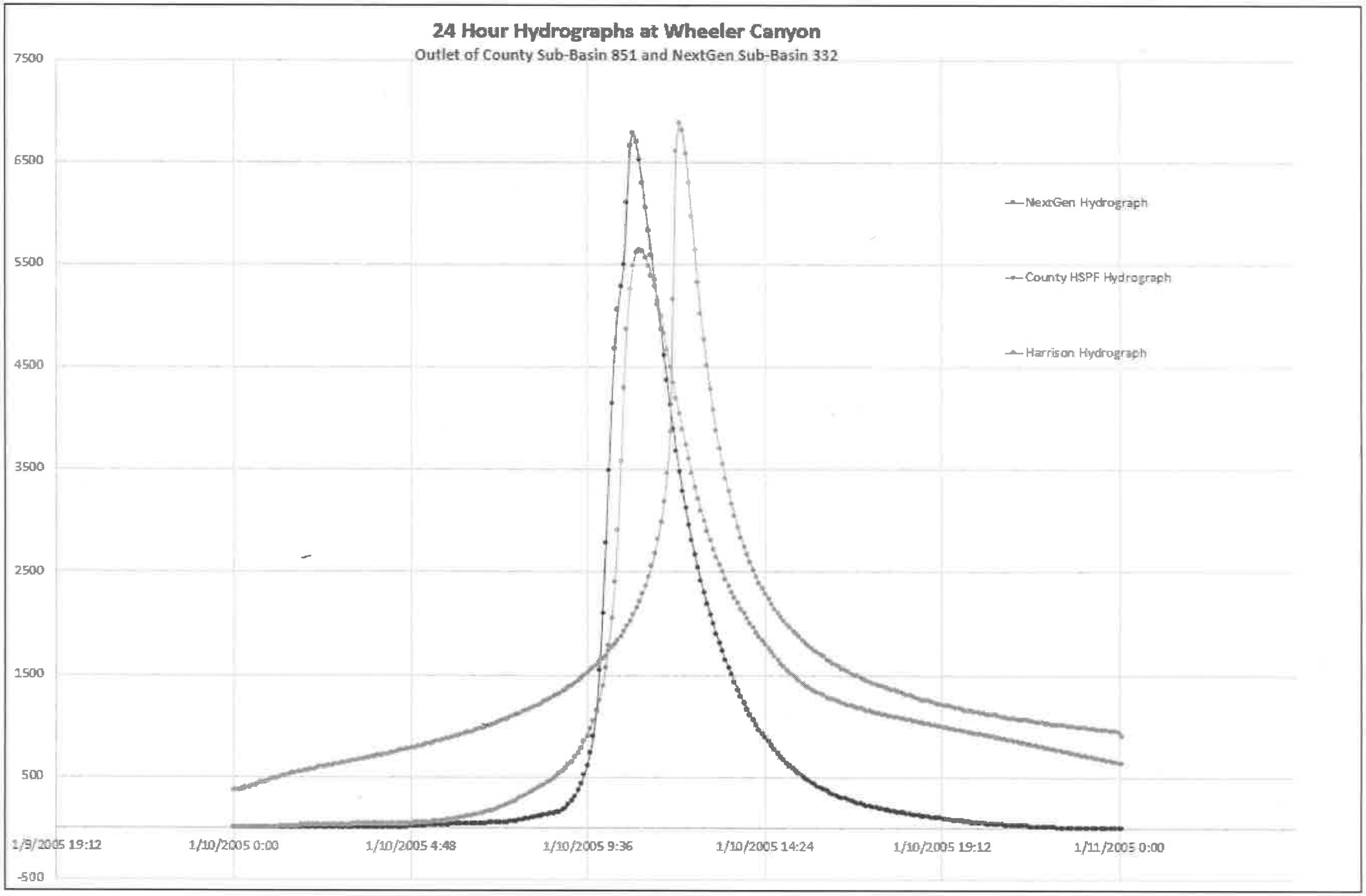
E2: 2018 HEC-HMS 4.2.1 Study

E3: 2018 HEC-RAS 5.03 2-D Study

E4: 2018 HEC-HMS Study Completed By Harrison Industries

Appendix A: Hydrograph at the Outlet of County Sub-Basin 851 and NextGen Sub-Basin 332 and Harrison HE-HMS Model Sub-Basin 6A)

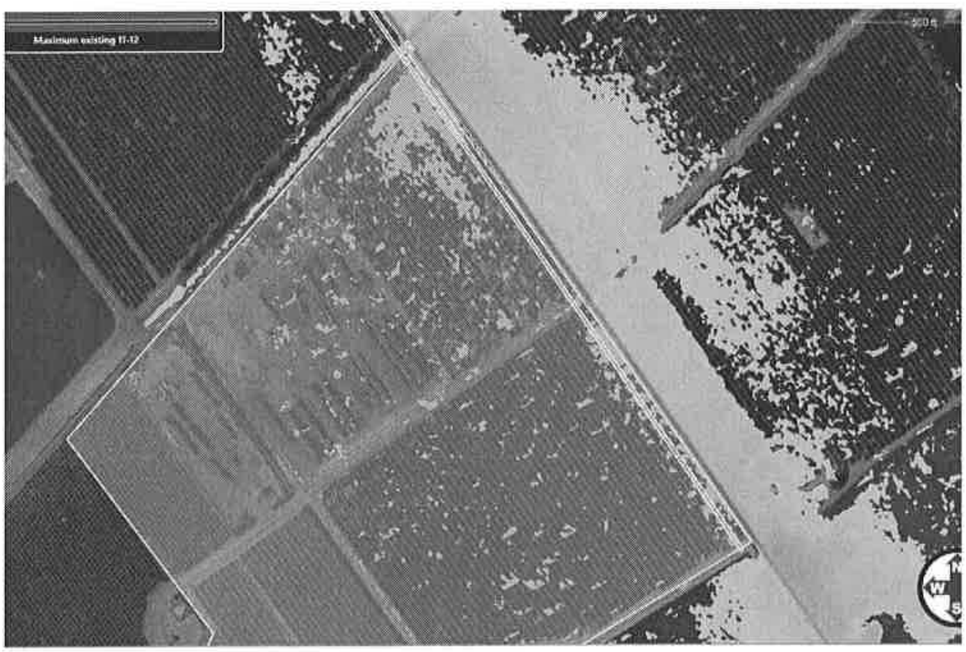
HEC–HMS used for NextGen and Harrison Hydrographs


24 Hour Hydrographs at Wheeler Canyon
Outlet of County Sub-Basin 851 and NextGen Sub-Basin 332
7500
6500
5500
4500
3500
2500
1500
500
-500
1/9/2005 19:12
1/10/2005 0:00
1/10/2005 4:48
1/10/2005 9:36
1/10/2005 14:24
1/10/2005 19:12
1/11/2005 0:00
NextGen Hydrograph
County HSPF Hydrograph
Harrison Hydrograph

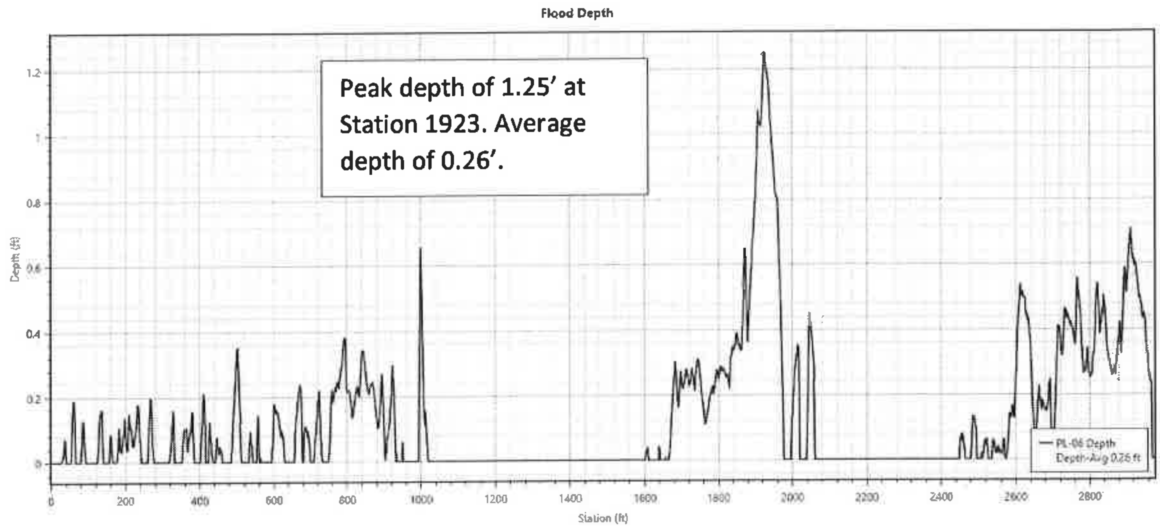
Appendix B: Maximum Water Surface Profile Elevations and Velocities In the Existing Floodplain

Existing floodplain.

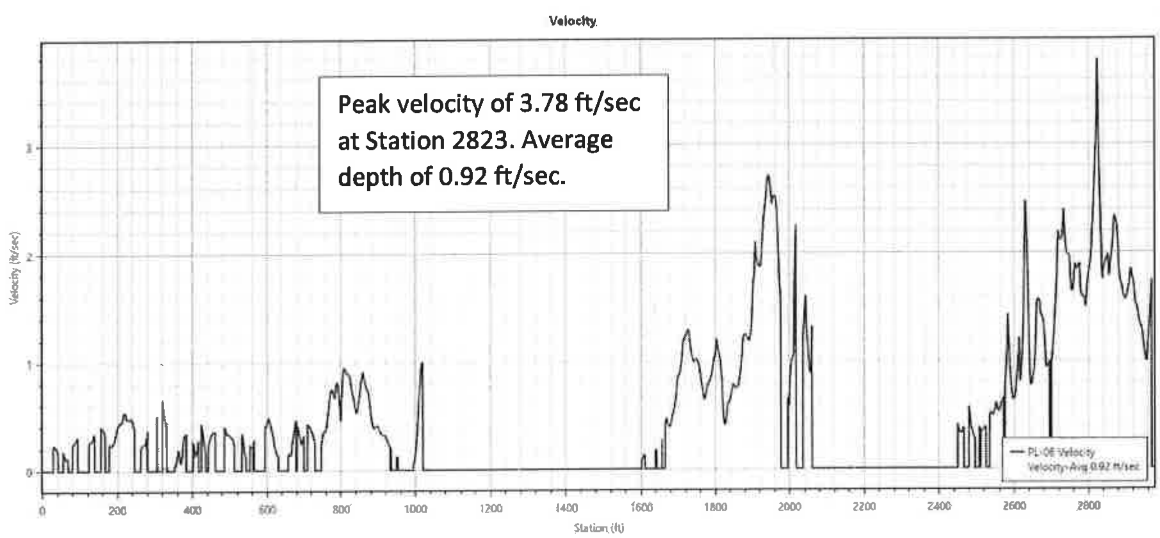
Zoomed in existing floodplain view.



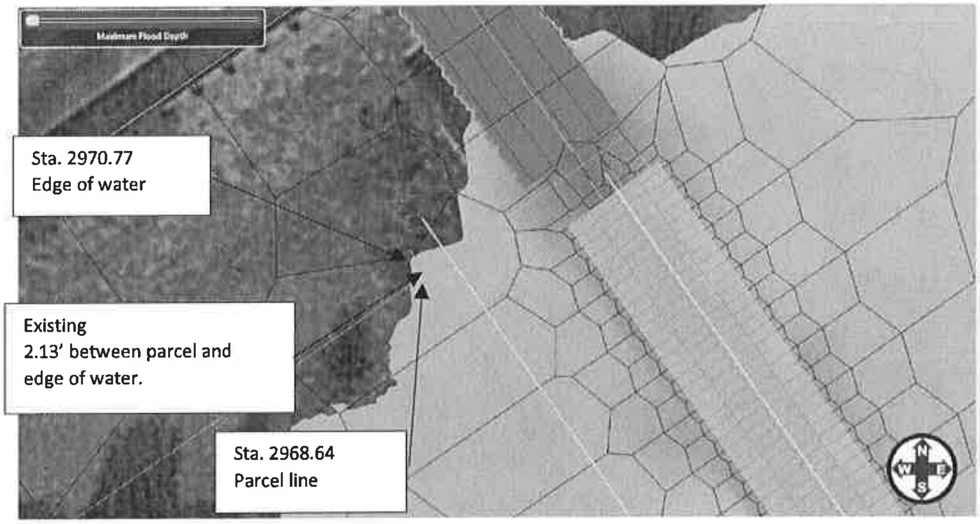
Existing flood depth at Station 1923.



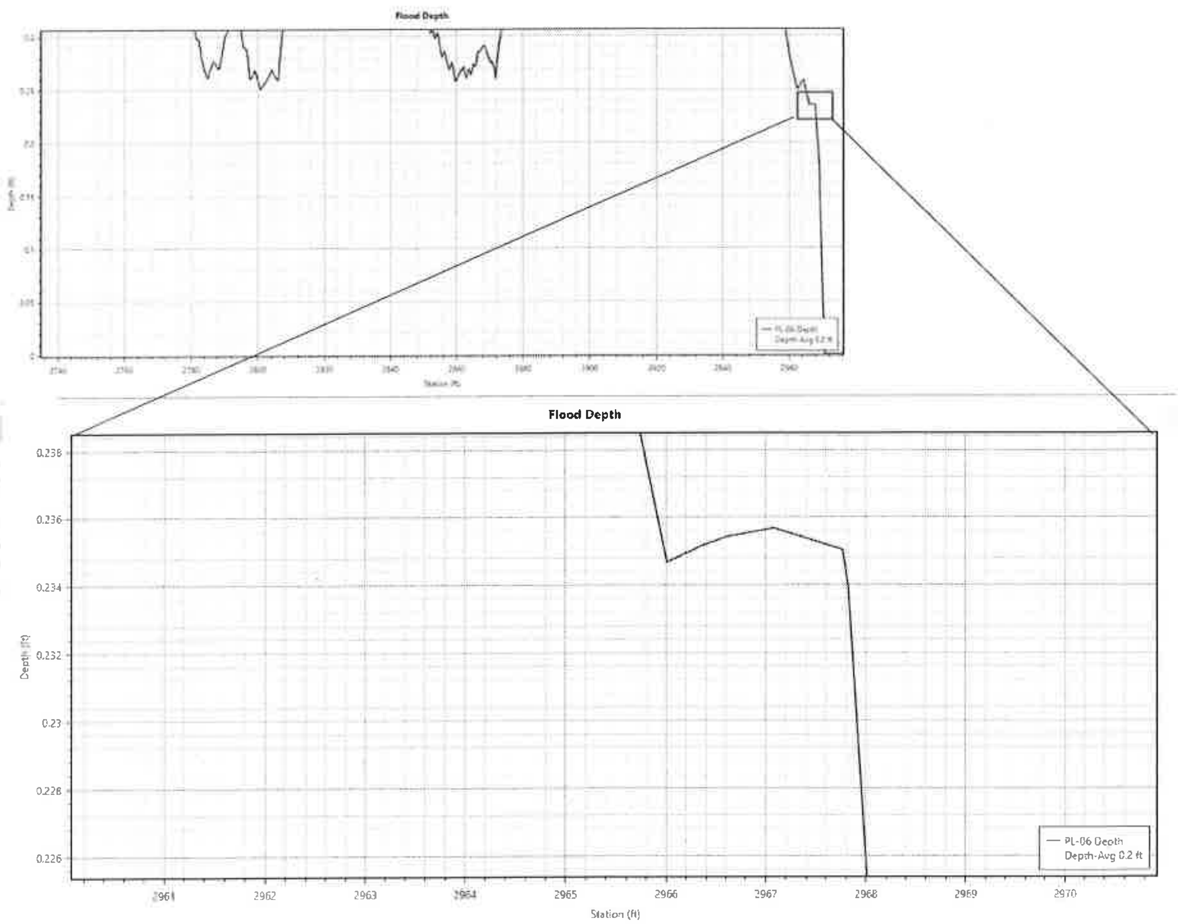
Existing velocity at Station 2823.



Detailed view of edge of parcel line under exiting conditions.



Flood depth at Station 2968.64 under existing conditions.



Appendix C: Average Cross Section Determination Spreadsheet

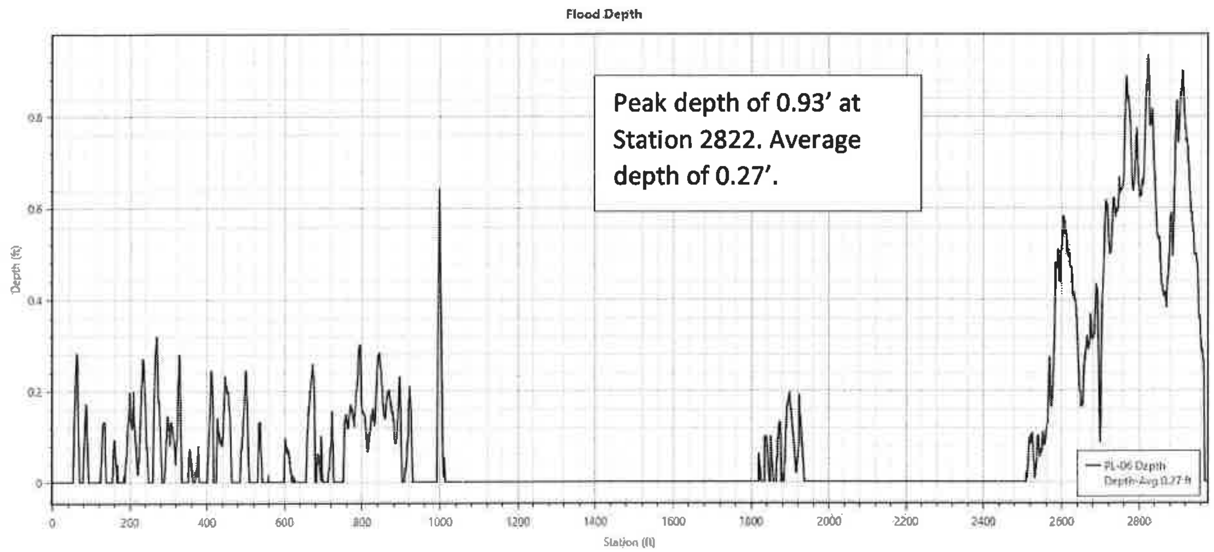
Trapezoidal Channels						
Sub-Basin	Reach	Station	L slope	Base Width (ft)	R slope	Avg Slope
232	R1	1	0.04	205	0.22	0.13
		2	0.07	364	0.44	0.25
		3	0.32	465	0.61	0.47
		4	0.28	231	0.27	0.28
		5	1.13	327	0.19	0.66
		6	0.83	711	0.45	0.64
		7	0.21	216	0.33	0.27
		8	0.21	182	0.15	0.18
		9	1.29	326	0.29	0.79
		Average	0.39	338	0.33	0.41
232	R2	1	0.25	314	0.29	0.27
		2	0.26	692	1.35	0.80
		3	0.35	108	0.29	0.32
		4	0.37	488	0.40	0.39
		5	0.37	596	0.12	0.25
		6	0.09	308	0.28	0.19
		Average	0.28	418	0.46	0.37
232	R3	1	0.40	400	0.37	0.38
		2	0.07	308	0.60	0.34
		3	0.30	167	0.23	0.27
		4	0.79	609	0.08	0.43
		5	0.12	308	1.67	0.90
		6	0.22	308	1.48	0.85
		7	1.61	720	0.60	1.11
		8	0.21	348	0.34	0.28
		Average	0.47	395.78	0.67	0.57
332	R4	1	0.17	432	0.27	0.22
		2	0.24	157	0.69	0.46
		3	0.11	245	0.68	0.40
		4	0.19	432	0.48	0.34
		5	1.31	308	0.16	0.74
		6	1.19	692	0.68	0.94
		7	0.02	273	0.23	0.12
		8	0.35	308	0.31	0.33
		9	0.22	308	0.27	0.25
		10	0.38	348	0.22	0.30
		11	0.22	178	0.77	0.50
		12	0.12	348	1.03	0.57
		13	0.20	320	1.18	0.69
		14	0.05	308	1.16	0.60
		15	0.13	1077	0.11	0.12
		Average	0.33	382	0.55	0.44
172	R5	1	0.32	615	1.07	0.70
		2	0.99	640	1.55	1.27
		3	0.34	320	0.36	0.35
		4	0.23	186	1.16	0.69
		5	0.10	261	0.17	0.13
		6	0.36	500	0.30	0.33
		7	0.02	615	0.66	0.34
		8	0.17	348	0.21	0.19
		9	0.59	653	0.20	0.40
		10	0.35	340	0.37	0.36
		Average	0.35	448	0.60	0.48

Triangular Channels						
Sub-Basin	Reach	Station	Height (ft)	L Slope	R Slope	Avg Slope
236	R6	1	11	0.24	0.13	0.18
		2	9	0.11	0.06	0.08
		3	6	0.07	0.06	0.06
		4	21	0.27	0.27	0.27
		5	8	0.08	0.08	0.08
		Average	11	0.15	0.12	0.14

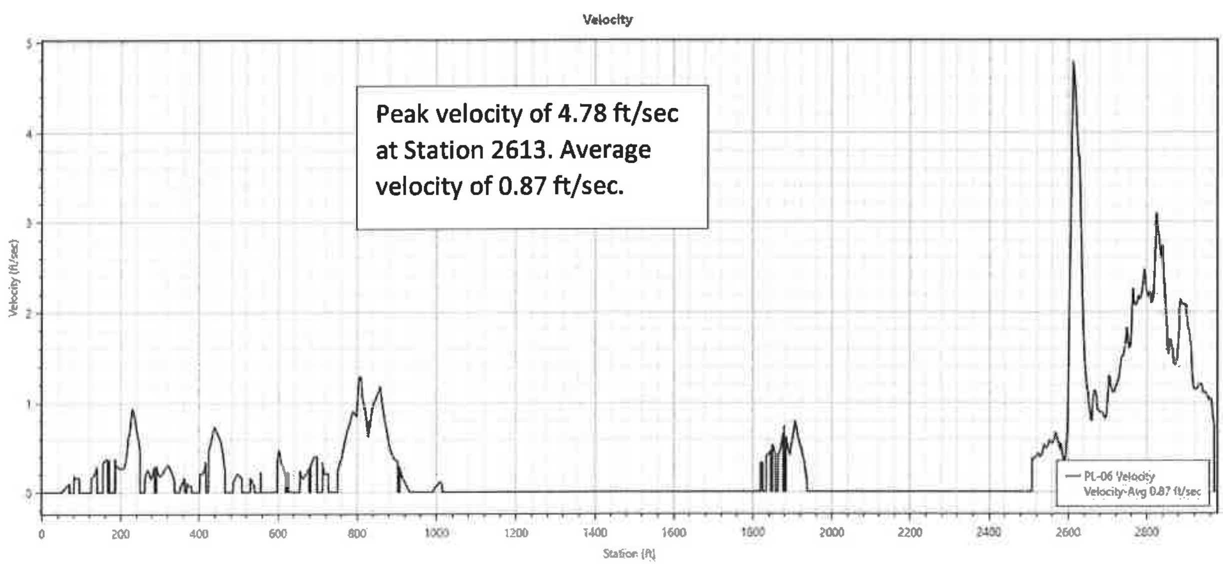
Appendix D: Proposed Conditions

PROPOSED CONDITIONS – 7239.4 cfs Peak - There is no water on the Agromin Property or the property to the north and it does not overtop Highway 126 to the north.

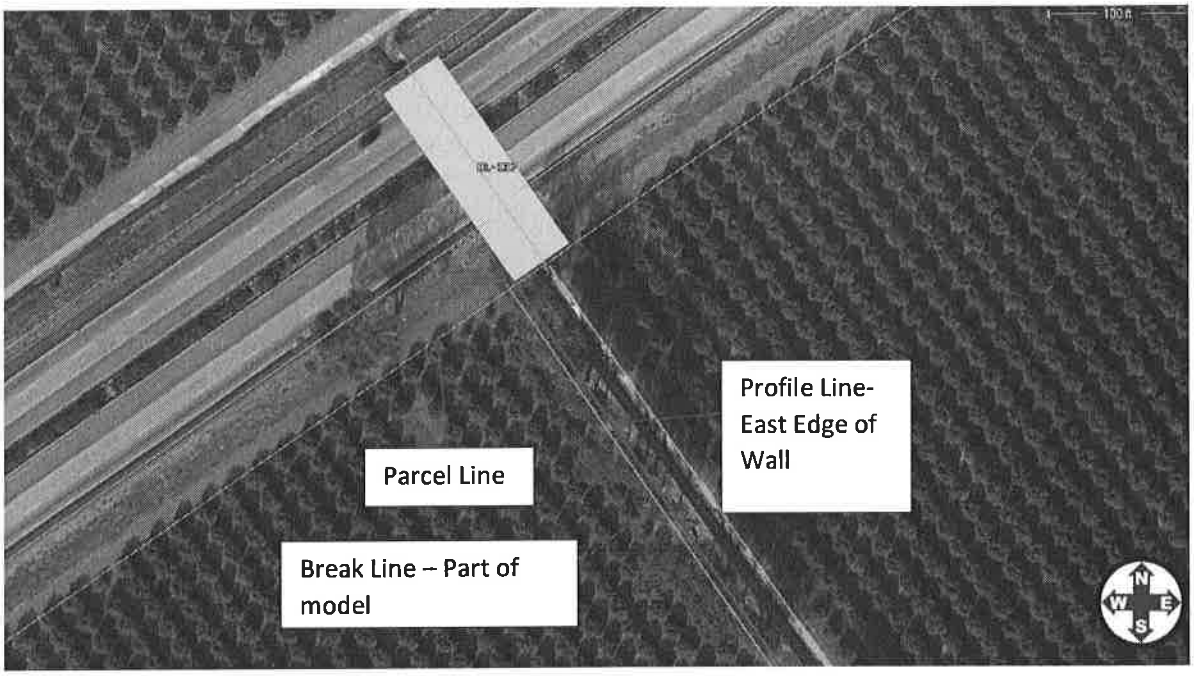
Flood depth along proposed wall at Station 2822.



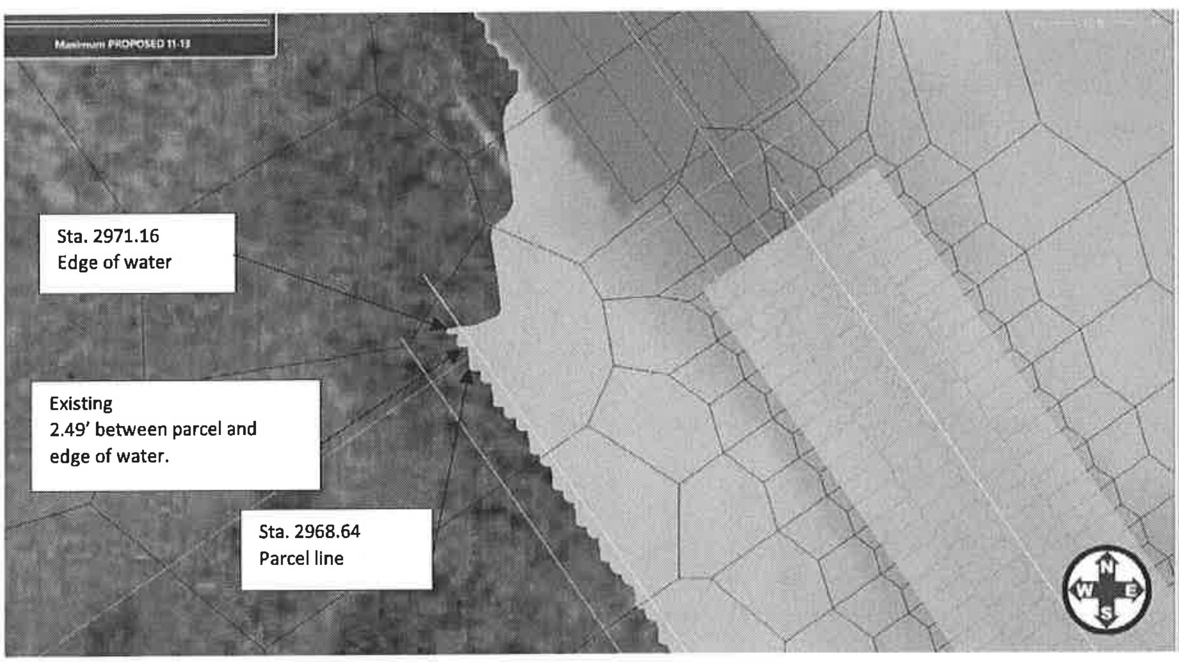
Velocity along proposed wall at Station 2613.



Detail of Double Box culvert under Hwy 126:

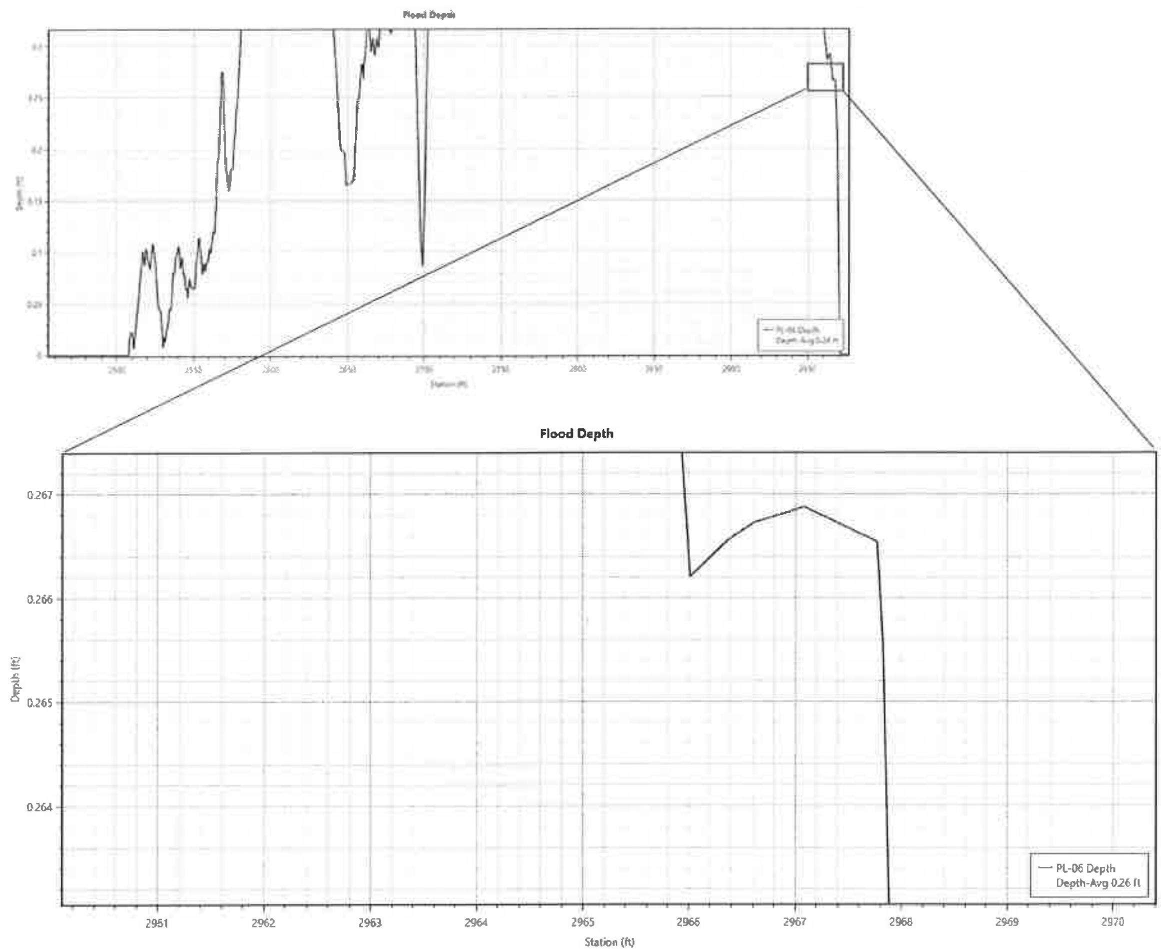


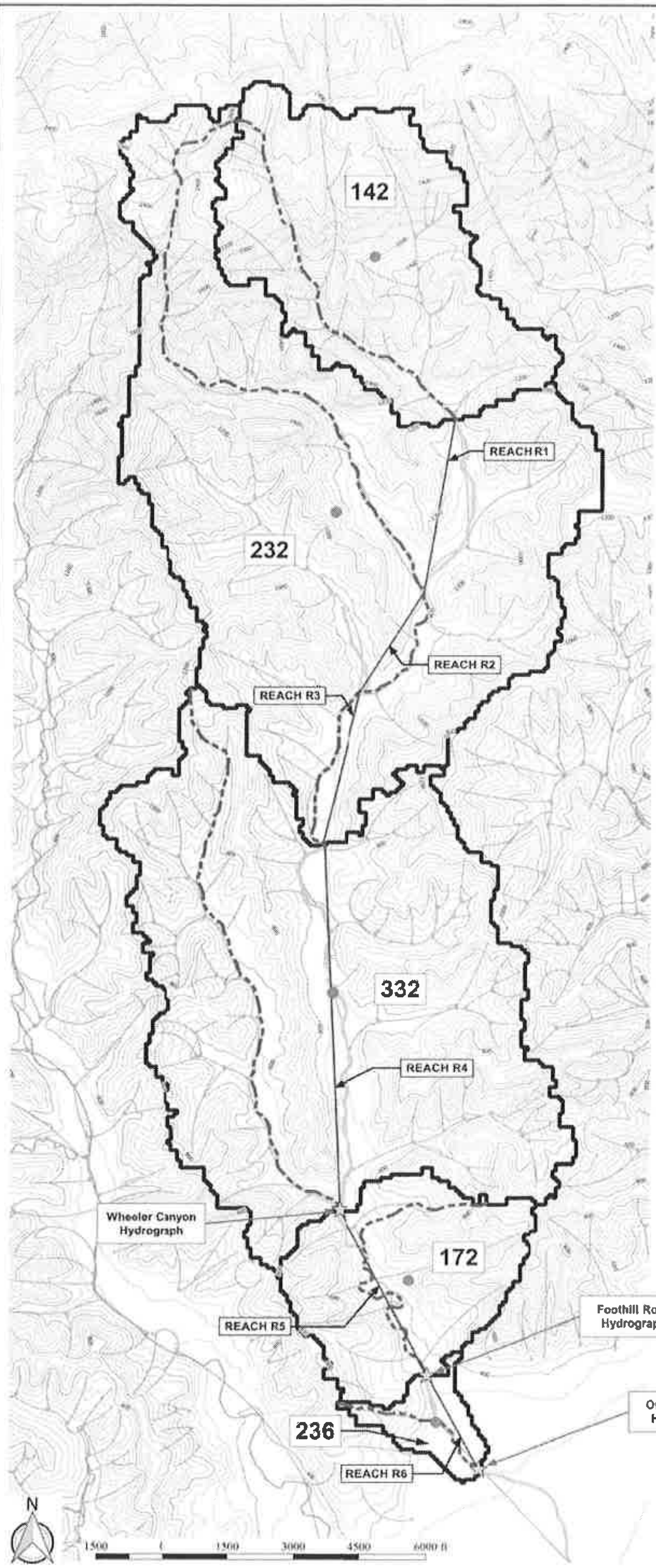
Detailed view of end of wall with parcel line:



The current has the wall extending to culvert to the 208' contour line. This is approximately 8' beyond the parcel line. This prevents any water to flow on to the Agromin property.

Flood depth at Station 2968.64 under proposed conditions.





Legend

- Todd Barranca
- Sub-Basin Longest Flow Path
- Todd Barranca Reach
- Overland Water Flow Path
- 40-foot Elevation Contours
- Sub-Basin Centroid
- Hydrograph Location
- Todd Barranca Watershed Sub-Basin Boundary

Sub-Basin Location	Elevation (ft)	100-Year Rainfall (in)	CA Zone 5 State Plane Coordinates (US ft) Northing	Easting
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Sub-Basin	Elevation (ft)	100-Year Rainfall (in)	CA Zone 5 State Plane Coordinates (US ft) Northing	Easting
142	[illegible]	[illegible]	[illegible]	[illegible]
232	[illegible]	[illegible]	[illegible]	[illegible]
332	[illegible]	[illegible]	[illegible]	[illegible]
172	[illegible]	[illegible]	[illegible]	[illegible]
236	[illegible]	[illegible]	[illegible]	[illegible]

Sub-Basin	Area (mi^2)	Cumulative Area (mi^2)
142	[illegible]	[illegible]
232	[illegible]	[illegible]
332	[illegible]	[illegible]
172	[illegible]	[illegible]
236	[illegible]	[illegible]
Total		[illegible]

Sub-Basin	Reach	Length (ft)	Start Elevation (ft)	Slope	Manning's n
[illegible]	R1	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	R2	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	R3	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	R4	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	R5	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	R6	[illegible]	[illegible]	[illegible]	[illegible]

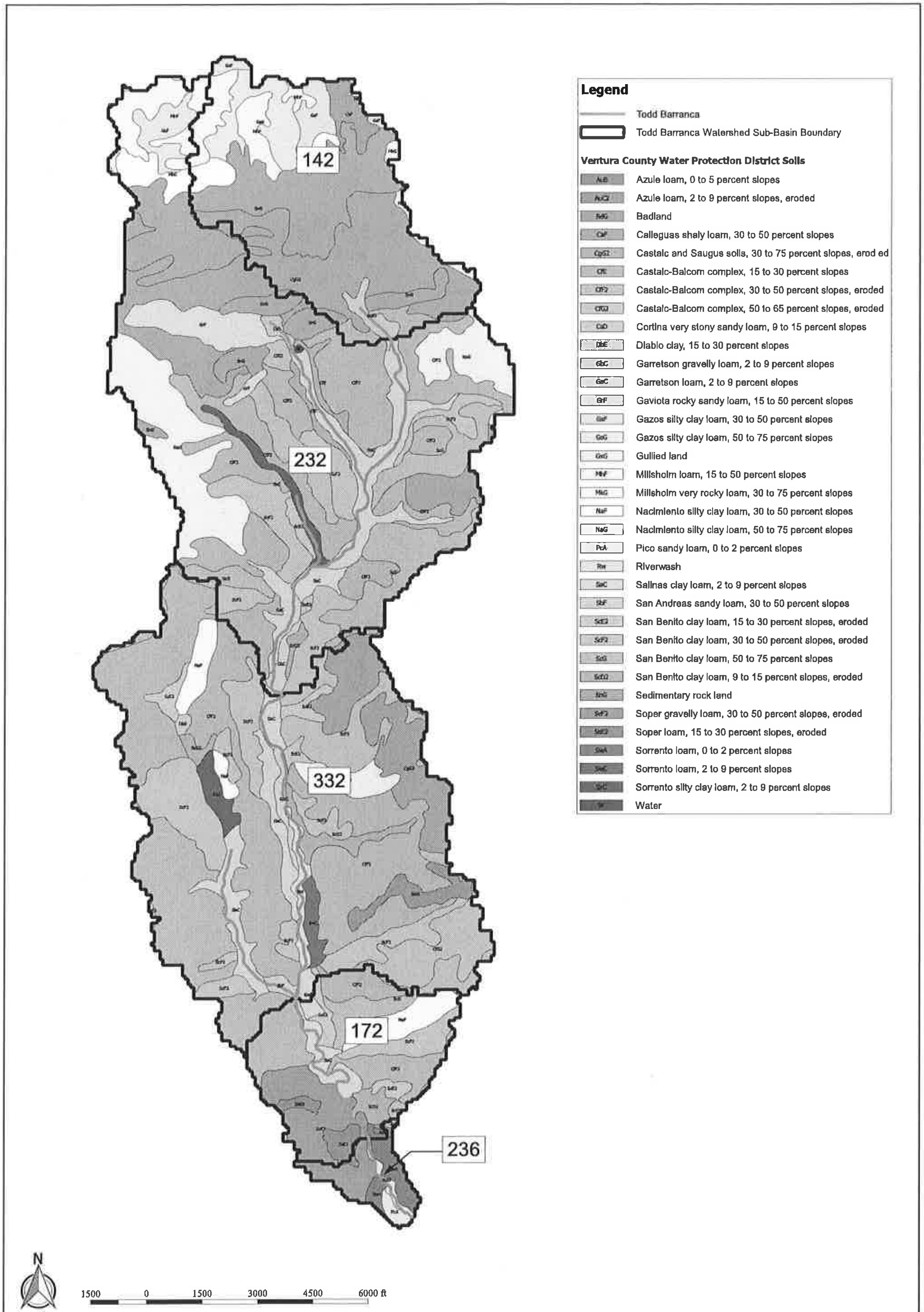
Sub Basin	Longest Flowpath Length (mi)	Longest Flow Path to Centroid (mi)	Basin S3 Slope (ft/mi)	Basin N Factor	Elongation Ratio	Southern California Flood Exponent	Lag Time (hr)
142	1.7601	0.8842	691.154	0.055	0.2196	0.38	0.4509
232	13.1357	1.8881	150.177	0.045	0.0471	0.38	1.4118
332	2.6196	1.0657	193.663	0.045	0.2246	0.38	0.5866
172	1.5795	0.5079	190.472	0.045	0.1642	0.38	0.3663
236	0.7479	0.3125	256.063	0.055	0.1725	0.38	0.2650

NextGen

Harrison

TODD BARRANCA
VENTURA COUNTY, CA
HYDROLOGY MAP

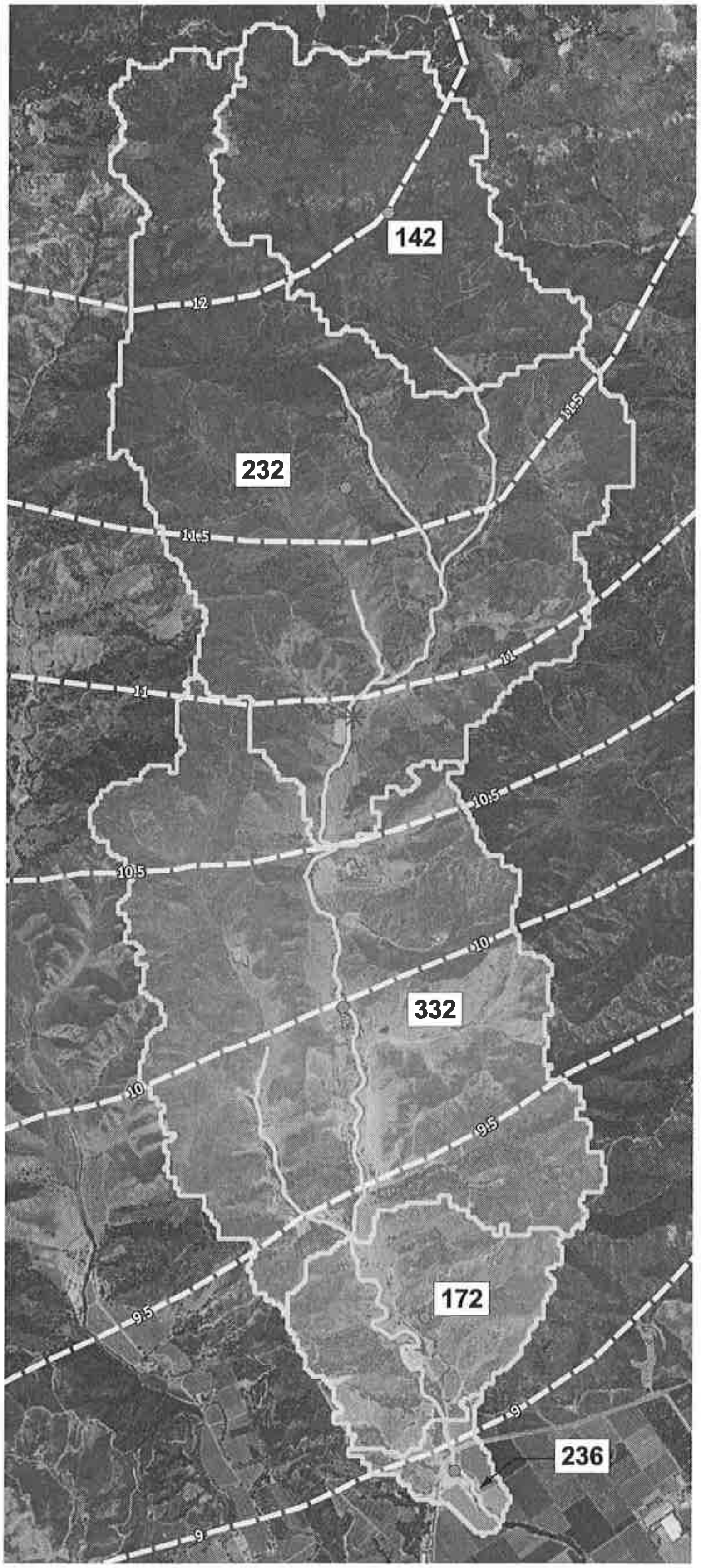
SHEET NUMBER
1 OF 5



NextGen

Harrison

TODD BARRANCA VENTURA COUNTY, CA SOILS MAP	SHEET NUMBER 2 OF 5



Legend

- Watershed Centroid
- Sub-Basin Centroid
- 24-Hour 100-Year Rainfall Isohyets (Inches)
- Todd Barranca
- Todd Barranca Watershed Sub-Basin Boundary

Todd Barranca Watershed Centroid				
Sub-Basin Location	Elevation (ft)	100-Year Rainfall (in)	CA Zone 5 State Plane Coordinates (US ft)	
			Northing	Easting
232	720	10.93	1961481.948	6215420.577

Sub-Basin Centroids				
Sub-Basin	Elevation (ft)	100-Year Rainfall (in)	CA Zone 5 State Plane Coordinates (US ft)	
			Northing	Easting
142	1693	12.00	1972055.124	6215985.978
232	1120	11.60	1966291.284	6215106.586
332	562	9.99	1955394.895	6215082.197
172	521	9.23	1948883.711	6216834.184
236	353	8.95	1945672.572	6217470.209

Sub-Basin	Longest Flowpath Length (mi)	Longest Flow Path to Centroid (mi)	Basin S3 Slope (ft/mi)	Basin N Factor	Elongation Ratio	Southern California Flood Exponent	Lag Time (hr)
142	1.7601	0.8842	601.154	0.055	0.2196	0.38	0.4509
232	13.1357	1.8881	150.177	0.045	0.0473	0.38	1.4118
332	2.6196	1.0657	193.665	0.045	0.2246	0.38	0.5856
172	1.5795	0.5079	190.472	0.045	0.1842	0.38	0.3653
236	0.7479	0.3129	256.063	0.055	0.1725	0.38	0.2650

N

1500 0 1500 3000 4500 6000 ft

DATE: 11/16/2018

PREPARED BY: NextGen

DESIGNED BY: Sara Hardee

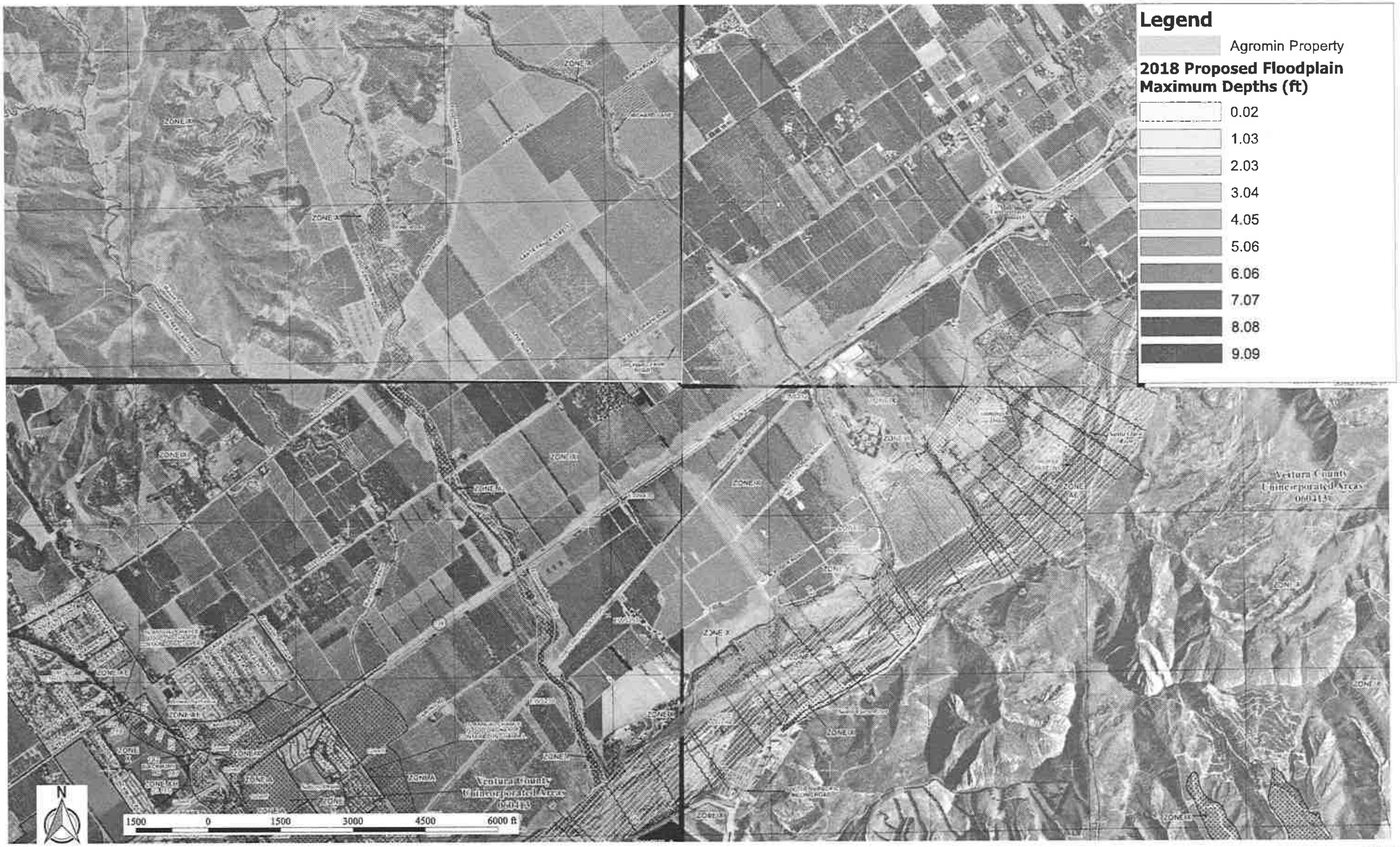
DRAWN BY: Sara Hardee

CHECKED BY: Bill O'Brien

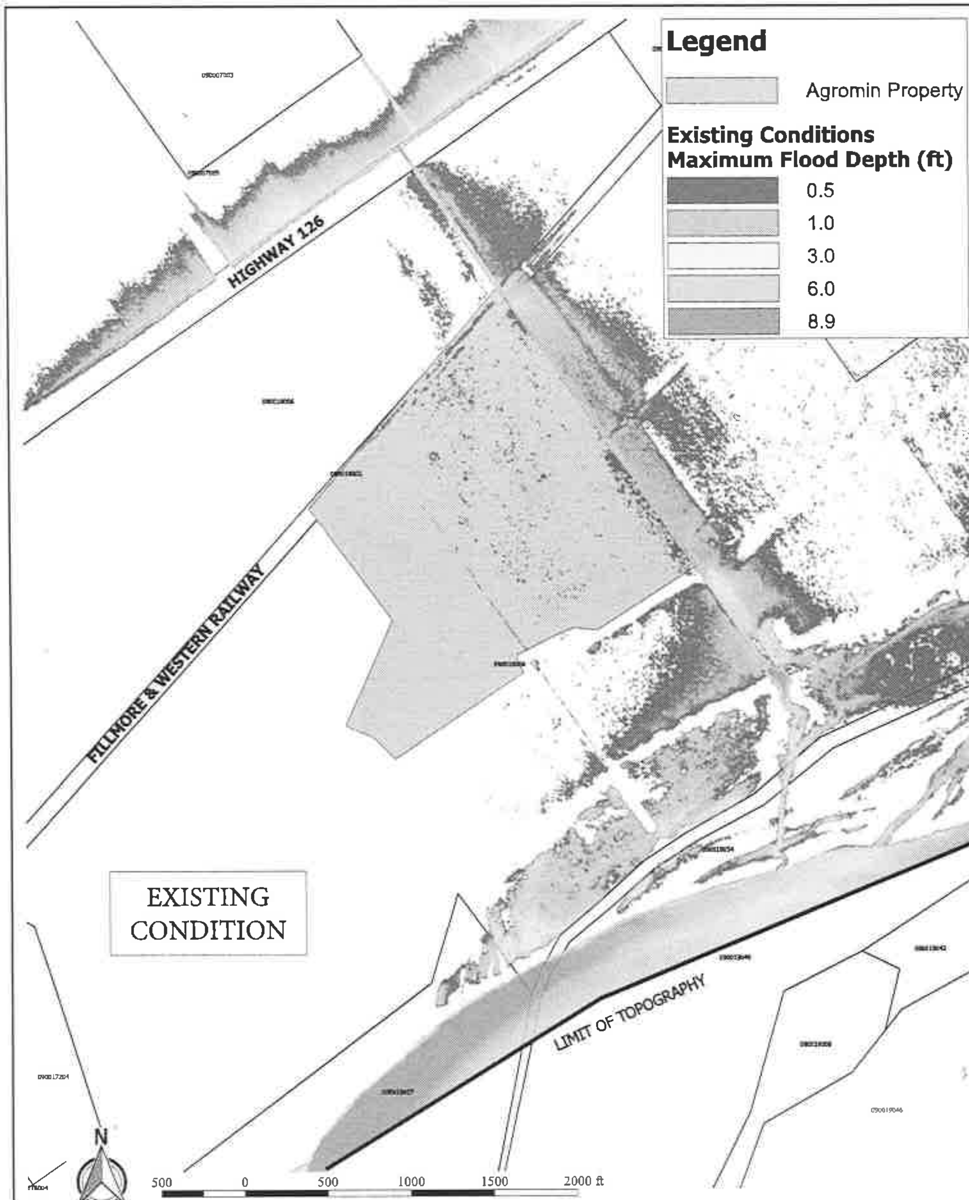
Harrison

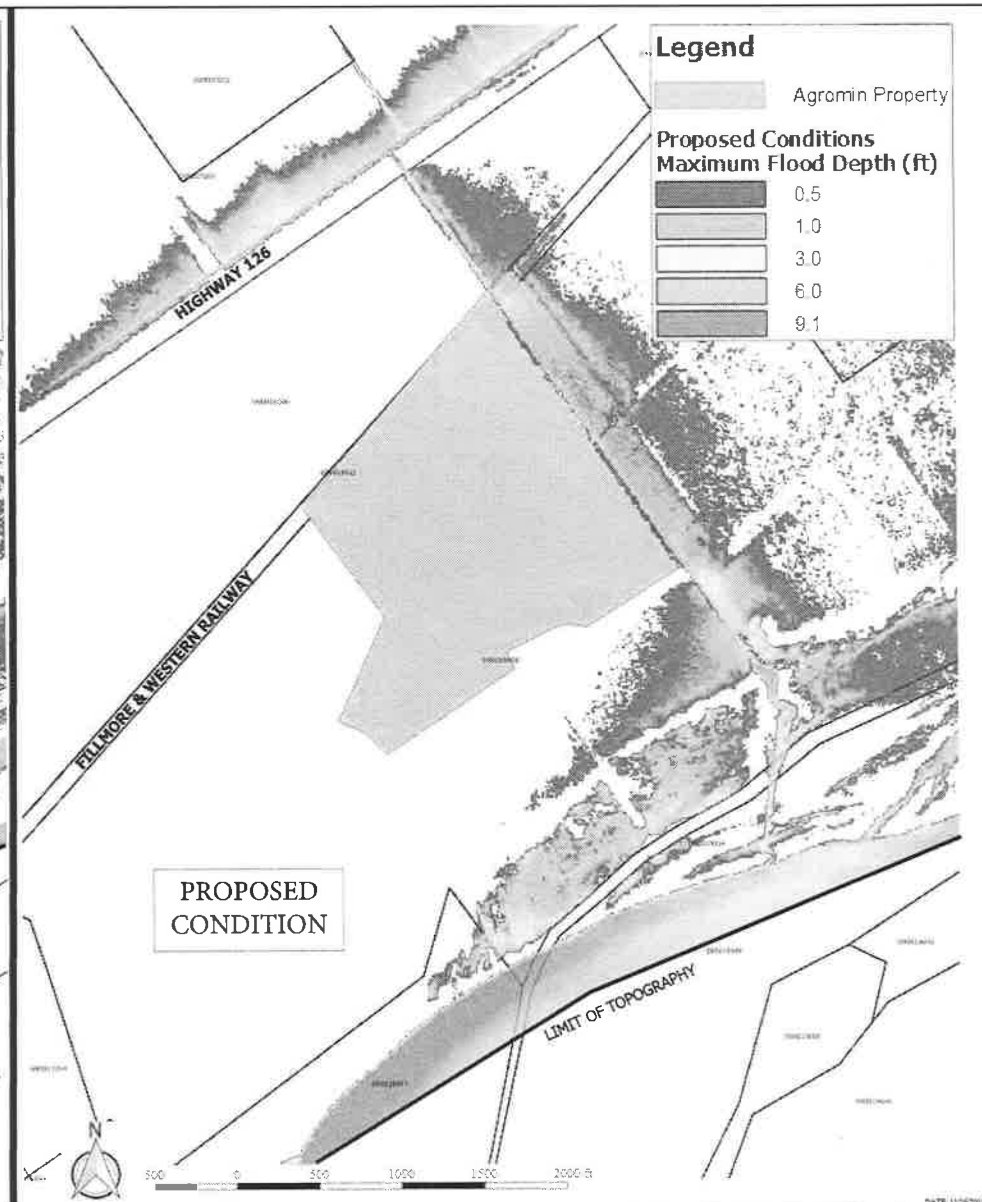
TODD BARRANCA
VENTURA COUNTY, CA
ISOHYET MAP

SHEET NUMBER
3 OF 5



NextGen ENGINEERING	EJ Harrison & Sons, Inc.	**TODD BARRANCA VENTURA COUNTY, CA** PROPOSED CONDITION ANNOTATED FIRM WITH CURB	SHEET NUMBER 4 OF 5





PREPARED BY NextGen ENGINEERING

DESIGNED BY: Sara Harden
DRAWN BY: Sara Harden
CHECKED BY: BE O'Brien

Harrison
EJ Harrison & Sons, Inc.

TODD BARRANCA VENTURA COUNTY, CA

PROPOSED vs EXISTING CONDITIONS

SHEET NUMBER
5 OF 5

SESPE
CONSULTING, INC.

374 Poli Street, Suite 200 • Ventura, California 93001

NOISE IMPACT ASSESSMENT

Agromin
Commercial Organics Processing Operation
Santa Paula, California 93060

March 8, 2017
Revised: February 25, 2020

Prepared for: Agromin
201 Kinetic Drive
Oxnard, CA 93030

Prepared by: Sespe Consulting, Inc.
374 Poli Street, Suite 200
Ventura, CA 93001
(805) 275-1515

County of Ventura
Notice of Preparation
of an EIR
PL17-0154
Attachment 15 - Noise Impact
Assessment

SESPE
CONSULTING, INC.

374 Poli Street, Suite 200 • Ventura, California 93001

NOISE IMPACT ASSESSMENT

Agromin
Commercial Organics Processing Operation
Santa Paula, California 93060

March 8, 2017
Revised: February 25, 2020

EXECUTIVE SUMMARY

This Noise Impact Assessment (NIA), originally prepared March 8, 2017, has been updated to correct the use of daytime noise criteria and to revise mitigation measures recommended in the original report. Since preparing the 2017 NIA, it was determined that certain Ventura County noise criteria/significance thresholds were inappropriately applied to determine the significance of construction noise impacts at nearby receptors. This revised NIA has been prepared to reevaluate the 2017 construction noise assessment and revise the previously recommended mitigation measures where appropriate.

This NIA has been prepared for Agromin to quantify and determine the significance of noise impacts associated with the construction and operation of the proposed Commercial Organics Processing Operation (Facility) located near the City of Santa Paula, Ventura County, California. Agromin is proposing to expand their existing 15-acre agricultural compost operation into a 70-acre commercial composting facility (Project). This NIA follows methodologies outlined in the *Ventura County General Plan*, the Ventura County *Initial Study Assessment Guidelines*, and Ventura County's *Construction Noise Threshold Criteria and Control Plan*.

The Facility will process green and food material feedstocks into saleable compost and other organic products using the following processes:

- Open Windrows;
- Covered Aerated Static Piles (CASP's); and
- Anaerobic Digesters (AD's).

Feedstock materials will be delivered to the Facility via haul trucks from locations throughout Ventura County and the City of Carpinteria. The Facility will also receive feedstock materials from self-haulers (e.g. landscapers, residents) and shipments of soil amendment products (peat moss, gypsum, mulch), which are then blended with compost to produce specialty products. Onsite bulk sales to customers will also occur at the Facility.

This NIA, which addresses noise impacts from Project construction, industrial (i.e. onsite), and traffic sources, finds that:

- Mitigated Project construction phase noise impacts are less than significant at all noise sensitive receptors (dwellings, schools, hospitals, nursing homes, and libraries).
- Unmitigated Project operation phase noise impacts are less than significant at all noise sensitive receptors (dwellings, schools, hospitals, nursing homes, and libraries).
- The Project will result in a Class II impact, significant but mitigable to less than significant.

NOISE IMPACT ASSESSMENT

Agromin
Commercial Organics Processing Operation
Santa Paula, California 93060

March 8, 2017
Revised: February 25, 2020

TABLES

APPENDICES

NOISE IMPACT ASSESSMENT

Agromin
Commercial Organics Processing Operation
Santa Paula, California

March 8, 2017
Revised: February 25, 2020

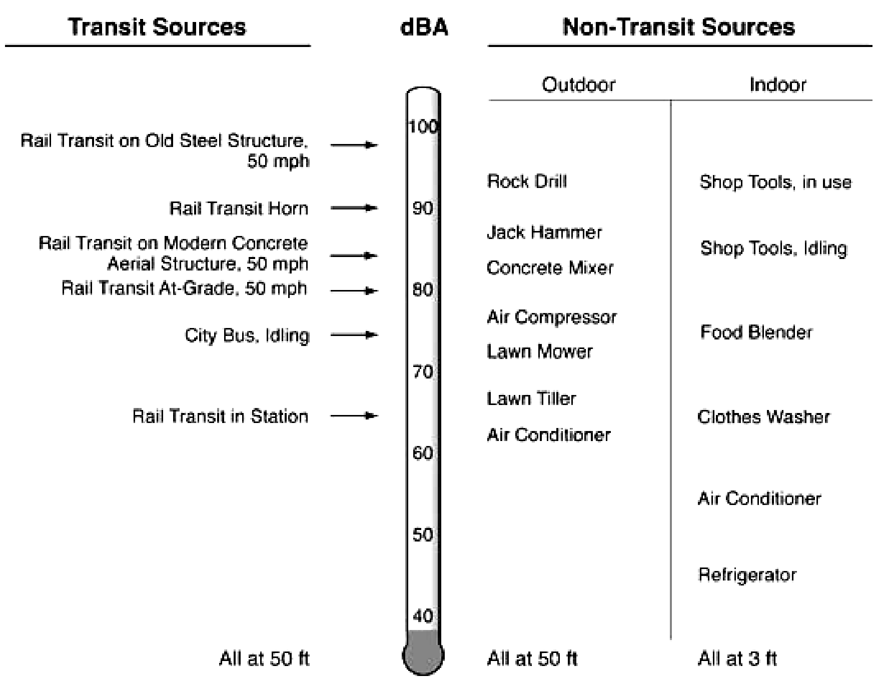
1.0 INTRODUCTION

This Noise Impact Assessment (NIA) has been prepared for Agromin to quantify and determine the significance of noise impacts associated with the construction and operation of the proposed Commercial Organics Processing Operation (Facility) located near the City of Santa Paula, Ventura County, California (Figure 1, Appendix A). Agromin is proposing to expand their existing 15-acre agricultural compost operation into a 70-acre commercial composting facility (Project).

This NIA has been prepared for use in California Environmental Quality Act (CEQA) documentation for the Project. This NIA follows methodologies outlined in the Ventura County *General Plan Noise Element* (Noise Element), the Ventura County *Initial Study Assessment Guidelines* (CEQA Guidelines), and Ventura County *Construction Noise Threshold Criteria and Control Plan* (Construction Guidelines). Facility industrial source noise (i.e. equipment operating onsite) and transportation noise (i.e. vehicles on local haul routes) have been quantified and compared to appropriate significance thresholds in this NIA. Project construction noise impacts are also addressed.

As a frame of reference for the noise levels presented in this NIA, the following illustration from the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment* presents the level of noise generated by common activities.

Common Sound Levels (A-weighted)



2.0 PROJECT DESCRPTION

This section presents the portions of the Project Description that are applicable to noise. For more detailed and complete Project information, please see the full Project Description.

2.1 Project Operation

The Project site is located at the south end of Edwards Ranch Road in unincorporated Ventura County, south of the City of Santa Paula (Figure 1, Appendix A). Agromin currently operates the site as a 15-acre green and agricultural materials compost facility, called the Limoneira/Agromin Agricultural Composting Operation, which processes approximately 55,000 tons of green material per year. Current operations here include material receiving and sorting, pre-processing using a grinder and trommel screens, and composting of organics in open windrows. The Project involves transforming this existing 15-acre operation into a 70-acre commercial composting facility.

Also as part of the Project, Agromin will close down their existing compost facility located in Oxnard, commonly known as the Oxnard-Shoreline facility, transferring all operations to the new Facility in Santa Paula. Current operations at the Oxnard-Shoreline facility include feedstock receiving and sorting, pre-processing using grinders and trommel screens, green material composting in open windrows, food materials composting using a Covered Aerated Static Pile (CASP) pilot program, as well as bagging and bulk sales activities. Many of the existing operations at the 11-acre Oxnard-Shoreline facility (e.g. windrow composting, preprocessing and grinding, bagging and bulk sales, mobile and stationary processing equipment, etc.) are identical to the operations proposed for this Project. As such, noise measurements collected at the Oxnard-Shoreline facility are used to quantify noise levels of certain Project operations (i.e. open windrow processing) within this NIA. See Section 6.1 and Appendix F for more details regarding Facility noise sources and methodologies.

Once constructed, the Facility will process approximately 295,000 tons per year of green and food materials, using a combination of open windrows, Covered Aerated Static Piles (CASP), and Anaerobic Digesters (AD). See Figure 3 (Appendix A) for a site plan showing the proposed Facility layout. The following is a brief description of these three (3) primary Facility operations with the potential to generate noise impacts to nearby receptors:

Open Windrows: Open windrow composting will be greatly expanded at the new Facility, processing approximately 180,000 tons of green and agricultural materials per year. Open windrows aerobically compost feedstock material in elongated piles. Green and agricultural material “unders” generated after chipping and grinding are formed into windrow piles using front-end loaders. During the active composting phase windrows are periodically turned using a pile turner to maintain proper temperature and moisture levels. A water truck is also utilized to maintain moisture levels within the windrows. The total windrow composting process can take up to 90 days for active composting and curing. Equipment utilized for windrow processing includes off-road equipment (front-end loaders, pile turners), portable equipment (screens, grinders) and on-road trucks (dump/water truck). Equipment utilized for open windrow composting will operate during daylight hours (sunrise-sunset) only.

CASP’s: Covered Aerated Static Pile (CASP) systems will be installed to aerobically decompose green and food material feedstocks into useable compost. The CASP will incorporate a multi-laminate GORE™ Cover System, a concrete in-floor aeration system, aeration blowers, oxygen/temperature control systems, and a cover handling system. Feedstocks will be placed in open “bunkers” and covered with the GORE™ Cover System. Front-end loaders are utilized to load each bunker. Leachate from the CASP is collected via drainage channels and reused to water the piles in a closed loop system. The CASP process takes approximately 22 days to complete. The primary noise source associated with the CASP system is the blower/fan group that powers the in-floor aeration system. The CASP system will operate 24-hours per day.

AD's: Zero Waste Energy's (ZWE) SmartFerm® Anaerobic Digester (AD) systems will be installed to compost green and food materials within a state-of-the-art dry system for organic waste processing in a non-continuous "batch" process. Feedstocks will be placed into the AD chambers using front-end loaders, where microorganisms will decompose the material into useable compost within a completely enclosed system. In addition to compost, the system also collects produced biogas which can then be converted to compressed natural gas (CNG) and used to fuel an internal combustion combined heat and power (CHP) engine which will generate electrical power that will be used to serve the parasitic loads of the system and supporting facility operations. Microorganism percolate is applied to the feedstocks to promote decomposition then collected and reused within a close loop system. Each AD batch takes approximately 21 days total to process. The primary noise source associated with the AD system is the internal combustion engine and exhaust, which are part of the biogas collection system. All four (4) proposed AD units will connect to a single CHP engine located on the utility pad on the southern portion of the Facility (Figure 3, Appendix A). The AD units will operate 24-hours per day.

Table 1 compares the operation hours of the existing compost operation in Santa Paula to the proposed Project. The existing 15-acre Limoneria/Agromin Agricultural Composting Operation currently employs 11 full-time employees while the proposed Facility is expected to employ approximately 52 employees.

Table 1 Facility Operating Hours

Operation/Activity	Existing Santa Paula Operations (Limoneira/Agromin Agricultural Composting Operation)		Proposed Operations (Commercial Organics Processing Operation)	
	Days of the Week	Hours of Operation	Days of the Week	Hours of Operation
Waste Receiving	Mon. – Fri.	6:00 AM – 6:00 PM	Mon. – Sat.	7:00 AM – 5:00 PM
Outdoor Processing	Mon. – Fri.	6:00 AM – 6:00 PM	Mon. – Sun.	6:00 AM – 6:00 PM
Material Processing Buildings[1]	---	---	Mon. – Sun.	6:00 AM – 10:00 PM
Packaging[1]	---	---	Mon. – Sat.	6:00 AM – 10:00 PM
Maintenance	---	---	Mon. – Sat.	7:00 AM – 5:00 PM
Office	---	---	Mon. – Fri.	7:00 AM – 5:00 PM

1 – Material Processing & Packaging operations will occur indoors within enclosed structures (Figure 3, Appendix A).

Existing facility operations (i.e. Limoneira/Agromin Agricultural Composting Operation) are considered baseline for this NIA. The primary modification proposed by this Project from a noise perspective is the expansion of outdoor open windrow composting operations as well as implementation of the CASP and AD processes. The following noise generating equipment is expected to be utilized outdoors at the Facility:

Outdoor Processing (i.e. open windrows)

- Chippers/Grinders
- Trommel Screens
- Loaders/Excavators/Backhoes
- Water/Dump Trucks
- Pile Turners
- Forklifts

Covered Aerated Static Piles (CASP)

- Blower/Fan Group

Anaerobic Digesters (AD)

- Internal Combustion Engine Exhaust

2.2 Project Construction

Facility construction is expected to begin in early 2019, following Project approval. The existing 15-acre Limoneira/Agromin Agricultural Composting Operation will be significantly expanded to accommodate the new Facility structures and organics processing operations. Primary construction activities include removal of existing vegetation and agricultural fields, minor grading of the site, installation of building foundations and utilities, construction of the buildings and retention basins, paving and installation of processing equipment. Construction equipment anticipated to be utilized includes graders, excavators, dozers, backhoes, front-end/skid steer loaders, and dump trucks. Based on estimates provided by Agromin, the entire construction phase is anticipated to last approximately 8 months. Specifically the following construction activities and schedules are included in this analysis:

- **Demolition (14 Days):** Approximately 55 acres of the Project site is currently active orchards and row crops, which will need to be removed to accommodate the expanded Project. Portions of the existing 15-acre compost facility will also need to be demolished/cleared.

- **Site Preparation (21 Days):** Following clearing of existing agricultural fields/vegetation, construction materials and equipment will be brought onsite. Existing compost equipment and areas not demolished will be temporarily relocated to allow for the construction of the new Facility structures and compost working surfaces.

- **Grading (28 Days):** The Project area is nearly flat, however minor grading will be required across the entire 70-acre site to establish final grade. Additionally, two (2) retention basins will be excavated along the south boundary of the Facility. A system of underground storm drains connecting to the basins will also be trenched throughout the Facility during the grading phase.

- **Building Construction (90 Days):** The Dry Organics and Wet Organics Buildings, Facilities Administration Building, Production Building (i.e. Packaging Building), and Maintenance Building will be constructed. Working surfaces for windrow composting areas as well as the CASP, AD systems, and utility pad are expected to be installed during this construction phase. This phase will also entail treating of the native soil with cement in the open windrow composting areas. Ancillary equipment such as the scale house, staging pads and tipping areas, as well as utility structures (e.g. utility pad and transformers) will also be installed during the building phase.

- **Architectural Coatings (60 Days):** Following construction of the buildings, painting and finishing of surfaces will occur. Portions of architectural coatings phase may occur concurrently with the building and paving construction phases.

- **Paving (21 Days):** A large portion of the site will be paved with either cement or asphalt concrete to accommodate vehicle and equipment operations. Parking spaces for employees and visitors will be installed adjacent to the scale house near the facilities administration and maintenance buildings. The paving phase may occur concurrently with the building and architectural coatings phases.

Construction activities that generate noise will be confined to daytime hours only, as defined by Ventura County's *Construction Noise Threshold Criteria and Control Plan* (7:00 AM-7:00 PM Monday through Friday, 9:00 AM-7:00 PM Weekends/Holidays).

3.0 EXISTING SETTING

The proposed Facility is located approximately 0.2 miles south of California State Route (SR) 126, at the south end of Edwards Ranch Road, in unincorporated Ventura County near the City of Santa Paula (Figure 1, Appendix A). The Facility is located within the Santa Clara River Valley, and the Santa Clara River basin runs east-west approximately 0.3 miles to the south (Figure 2, Appendix A). This section discusses the existing regulatory and environmental setting of the Project.

3.1 Regulatory Setting

This section discusses the Project's regulatory setting, specifically the Ventura County *General Plan Noise Element* (Noise Element), the Ventura County *Initial Study Assessment Guidelines* (CEQA Guidelines), and Ventura County's *Construction Noise Threshold Criteria and Control Plan* (Construction Guidelines).

3.1.1 Ventura County General Plan Noise Element

The Ventura County *General Plan Noise Element* (Noise Element), both in the *Goals, Policies & Programs* section and the *Hazards Appendix*, contains details regarding the recommended methodology for assessment of noise impacts. The Noise Element presents standards for development of new noise-generating uses based on the noise sensitivity of a Project's surroundings. The Noise Element includes specific significance thresholds for daytime (6:00 AM to 7:00 PM), evening (7:00 PM to 10:00 PM), and nighttime (10:00 PM to 6:00 AM) hours. The thresholds are applicable only to sensitive receptors, which are defined as "dwellings, schools, hospitals, nursing homes, churches, and libraries" within the Noise Element. A copy of the relevant text is included in Appendix B.

3.1.2 Ventura County Initial Study Assessment Guidelines

The Ventura County *Initial Study Assessment Guidelines* (CEQA Guidelines) presents methodologies for measuring noise levels and determining if noise impacts are significant. Significance thresholds depend on ambient noise levels in the area of the project during each of the defined time periods (i.e. daytime, evening, and nighttime). If the ambient levels are lower than the thresholds, the "fixed" thresholds are utilized. If ambient levels are greater than the fixed thresholds, the "ambient level +3 decibels (dB)" is utilized. The CEQA Guidelines reflect the standards established by the General Plan Noise Element. Please note, the standards and thresholds presented in the Noise Element and CEQA Guidelines do not apply to construction noise. Per the CEQA Guidelines, "construction noise impacts shall be evaluated using the assessment methodology, criteria, and reporting procedures provided in the Construction Noise Threshold Criteria and Control Plan" outlined in Section 3.1.3 below.

3.1.3 Construction Noise Threshold Criteria and Control Plan

The Ventura County *Construction Noise Threshold Criteria and Control Plan* (Construction Guidelines) present methodologies for quantification of construction noise impacts, default noise level assumptions for common construction equipment, mitigated equipment noise levels, and construction noise threshold criteria. This NIA utilizes the methodologies presented in the Construction Guidelines to quantify the expected Project construction phase impacts and determine if construction noise impacts would be significant. Mitigation measures presented in the Construction Guidelines could also be utilized for instances where construction noise impacts are above applicable significance thresholds.

3.1.4 Definitions

The following terms are employed in this NIA:

- **Decibel (dB):** A unit division, on a logarithmic scale, whose base is the tenth root of ten, used to represent ratios of quantities proportional to power. In simple terms, if the power is multiplied by a factor of ten, then ten is added to the representation of the power on the decibel scale. If 0 dB represents 1 unit of power, 30 dB represents one thousand units, 60 dB represents one million units, etc.

- **A-Weighted Sound Level (dBA):** Sound pressure level measured using the A-weighting network, a filter which discriminates against low and very high frequencies in a manner similar to the human hearing mechanism at moderate sound levels. The A-weighted sound level is generally used when discussing environmental noise impacts.
- **Equivalent Continuous Noise Level (L_{eq}):** The noise level, in decibels, of the mean sound pressure averaged over a time period, generally one hour. This is often referred to as the "equivalent sound level" (hence the "eq" subscript). The "equivalence" is a sound of constant level that has the same total acoustic energy content as the measurement.
- **Ambient (i.e. Background) Noise Level:** The current noise level in the vicinity of the proposed Project that results from the combination of all sources, near and far. Please note that ambient noise measurements presented in this NIA include existing noise generated at the 15-acre Limoneira/Agromin Agricultural Composting Operation (see Section 3.2.3).
- **Community Noise Equivalent Level (CNEL – dBA):** The long-term time average sound level, weighted as follows (note that the daytime/evening/nighttime time periods for CNEL are different than the daytime/evening/nighttime timeframes in the Ventura County thresholds of significance):
    - Frequency response is filtered using the A-weighting network.
    - Daytime noise (7:00 AM to 7:00 PM) is not weighted.
    - Evening noise (7:00 PM and 10:00 PM) is weighted by +5 dB.
    - Nighttime noise (10:00 PM and 7:00 AM) is weighted by +10 dB.
- **Sound Pressure Level (SPL):** The logarithmic measure of the power of a sound relative to a reference value, measured in dB. The sound pressure level is always associated with a specific location or distance from a sound source.
- **Sound Power Level (SWL):** The acoustical energy emitted by the sound source. The SWL is an absolute value that is not affected by the environment, unlike SPL.

3.2 Environmental Setting

This section describes the noise environment and existing noise sources in and around the Project site, the receptors of concern near the Facility and along the Project haul routes, as well as the ambient noise levels in these areas. For this Project, the existing setting and ambient noise levels include current operations at the 15-acre Limoneira/Agromin Agricultural Composting Operation located at the Project site.

3.2.1 Regional Setting

The Facility is located in a rural area of unincorporated Ventura County, California, south of the City if Santa Paula. It is surrounded primarily by agricultural and open space land uses. The Ventura County General Plan does not identify any other noise generating land uses in the immediate vicinity of the Project site. The surrounding environment is characterized primarily by agricultural operations, rural dwellings, and small urban centers located in Ventura approximately 1.25 miles away to the southwest. Sources of noise in the region are typical for such rural areas, generally associated with agricultural production, traffic noise from nearby roadways (SR 126, Telegraph Road), occasional aircraft over-flights, and urban activities from the nearby communities. The closest airport/airstrip is the Santa Paula Airport located approximately 4.25 miles away to the northeast, and has no appreciable influence on noise levels near the Facility.

Existing noise sources near Facility Receptors 1, 2, and 3 (R1, R2, and R3) include equipment noise from existing compost operations (i.e. Limoneira/Agromin Agricultural Composting Operation), nearby Limoneria agricultural activities, traffic noise from roadways (SR 126, Edwards Ranch Road), occasional aircraft over-flights, and natural sounds (wind, plants rustling, birds/insects, etc.). See Figure 2 (Appendix A) which shows the locations of Facility receptors.

Existing noise sources near Project haul route Receptors 4, 5, 6, 7, 8, and 9 (R4, R5, R6, R7, R8, and R9) include cars on adjacent roadways (SR 126, Telegraph Road, Briggs Road Wells Road), nearby agricultural activities, occasional aircraft over-flights, and urban activities from the nearby communities of Santa Paula and Ventura. Existing compost operation noise from the Limoneira/Agromin Agricultural Composting Operation was not audible in the areas around the haul route receptors (R4, R5, R6, R7, R8, and R9). The large distance between this source and receptors was noted to attenuate the existing facility noise to the point that is was not audible during a January 31st, 2017 site visit. As such, onsite operations at the new 70-acre Facility are also not expected to generate noise impacts to haul route receptors. See Figure 4 (Appendix A) which shows the locations of haul route receptors.

Existing compost operations, both industrial (i.e. onsite) and traffic, are included in the baseline noise sources. The incremental increase in noise levels from the Project is analyzed within this NIA.

3.2.2 Receptors

In the CEQA Guidelines, noise sensitive receptors are defined as "dwellings, schools, hospitals, nursing homes, churches and libraries." The receptors considered in this NIA, all of which are residential dwellings, are described below. The closest relevant receptor in each direction from the Facility and along the proposed Project haul routes were included. Furthermore, measurements at these closest receptors conservatively account for potentially-affected receptors at locations farther from the Project noise sources. When appropriate, receptors are grouped together and the noise impact at the worst-case portion of the group is determined. See Figure 2 and Figure 4 in Appendix A for the locations of the Facility and haul route receptors respectively.

- **Receptor 1 (R1)** is the residential dwelling located to the southwest of the Project site. This residence and the surrounding property are owned by Limoneria and leased out to farm workers employed in their nearby agricultural fields.
- **Receptor 2 (R2)** is the residential dwelling located immediately south of the Project site. This small residence and the surrounding property are owned by Limoneria and leased out to farm workers employed in their nearby agricultural fields.
- **Receptor 3 (R3)** is the residential dwelling located to the southeast of the Project site. This residence and the surrounding property is owned by Limoneria and leased out to farm workers employed in their nearby agricultural fields.
- **Receptor 4 (R4)** is the Briggs School located at the southeast corner of Briggs Road and Telegraph Road intersection, along the proposed Project haul route. This school serves elementary and middle school children (K-8).
- **Receptor 5 (R5)** is the privately-owned residential dwelling located to the southwest corner of the Todd Road and Telegraph Road intersection, along the proposed Project haul route. Noise impacts at this receptor are meant to represent worst-case impacts for other residences along this portion of the Project haul route.
- **Receptor 6 (R6)** is the privately-owned residential dwelling located to the southeast of the Telegraph Road and Edwards Ranch Road intersection, along the proposed Project haul route. Noise impacts at this

receptor are meant to represent worst-case impacts for other residences along this portion of the Project haul route.

- **Receptor 7 (R7)** is the privately-owned residential dwelling located to the northeast of the Telegraph Road and Edwards Ranch Road intersection, along the proposed Project haul route. Noise impacts at this receptor are meant to represent worst-case impacts for other residences along this portion of the Project haul route.
- **Receptor 8 (R8)** collectively represents the group of residences southeast of the Telegraph Road and Wells Road intersection, along the proposed Project haul route. The residence within this housing tract nearest to this intersection, specifically located at the north end of Camelia Way, was assessed. Noise impacts at this receptor are meant to represent worst-case impacts for other residences along this portion of the Project haul route. Please note that an approximately 4-foot wall exists between this group of receptors and Telegraph Road (Figures 6 & 7, Appendix A).
- **Receptor 9 (R9)** is the Palms at Bonaventure Assisted Living & Memory Care facility northwest of the Telegraph Road and Wells Road intersection, along the proposed Project haul route. Noise impacts at this receptor are meant to represent worst-case impacts for other residences along this portion of the Project haul route.

3.2.3 Local Noise Environment

The existing ambient noise environment is consistent with that of typical rural/semi-urban areas, and consists primarily of equipment operating at the 15-acre compost facility (font-end loaders, grinders, screens), nearby local roadway and freeway traffic noise (SR 126, Telegraph Road, Wells Road, small dirt roads), agricultural production equipment, and of natural sounds (wind, birds, insects, etc.).

To quantify the existing ambient noise environment experienced by Facility receptors closest to the Project site, three (3) short-duration (15-minute) measurements and one (1) long-duration (24-hour) reference noise measurement were conducted at four (4) locations surrounding the Project site on July 22nd and 23rd, 2014 (Figure 2, Appendix A). The noise measurements were recorded using two (2) Quest DL SoundPro, Type 2 noise meters (Serial #'s BGI04008, BIJ090010). Noise meters were programmed in "slow" mode, in "A" weighted form, and logging every minute for the long-duration measurement and 10 seconds for the short-duration measurements. The microphones were equipped with a windscreen during measurements, and noise meters were calibrated using two (2) Quest QC-10 calibrators (Serial #'s QIB070141, QIJ090052) prior to, and following each, measurement taken. The noise meters and calibrators were calibrated by Engineering Dynamics, Inc., who provided Certificates of Compliance and Calibration for each piece of equipment.

Noise sensitive receptors are defined as "dwellings, schools, hospitals, nursing homes, churches, and libraries." within the CEQA Guidelines. As they are separated by considerable distances, and they experience different types of noise from the Project, receptors near the Facility and receptors near the Project haul route are addressed separately in this NIA. The locations of the noise measurements and the corresponding Facility receptors are shown on Figure 2 (Appendix A). Haul route receptors are shown on Figure 4 (Appendix A). The long-duration (24-hour) measurement does not represent a receptor, but rather is utilized as a reference measurement to quantify the daytime, evening, and nighttime noise levels at the other receptor locations where only short-duration measurements were collected. The details of these calculations are presented in Appendix C.

Table 2 presents the existing ambient noise levels at the receptors in the Project site vicinity, which are based on ambient noise measurements taken on July 22nd and 23rd, 2014. Although these measurements were collected over 2 years ago, site conditions and operations have not changed during this timeframe and these measurements remain a valid characterization of the current existing background noise environment surrounding the Facility.

Noise from the existing 15-acre Limoneira/Agromin Agricultural Composting Operation are included in the ambient noise levels as the site was operating while the measurements were taken. Noise measurement logs and additional information regarding the background noise level determination are included in Appendix C. Facility monitoring locations are illustrated on Figure 2 (Appendix A).

Table 2 Ambient Noise in Facility Vicinity (L_{max} 1-hour)

Receptor	Receptor Type	Peak Day Hour (dBA)	Peak Evening Hour (dBA)	Peak Night Hour (dBA)
R1 (Southwest)	Residence	58.2	46.7	52.5
R2 (South)	Residence	52.8	41.3	47.1
R3 (Southeast)	Residence	50.4	38.9	44.7

Daytime = 6:00AM-7:00PM, Evening = 7:00PM-10:00PM, Nighttime = 10:00PM-6:00AM.

When considering a straight road segment, the noise levels are symmetrical on each side of the road and the same at any specified distance along the road (except near the ends of the road segment). For this reason, the nearest receptor to the road can be selected to represent noise impacts for a group of receptors (e.g. housing tract). In this NIA, one (1) receptor is selected for each group of residences located near a unique portion of the haul road geometry. These receptors represent the worst-case impact for all receptors in that grouping. Figure 4 (Appendix A) shows the locations of the haul route receptors assessed.

Table 3 presents the existing background noise levels at representative receptors along the Project's haul routes. These noise levels were determined using a computer noise propagation model called SoundPLAN Essential 3.0, with existing traffic data collected by Associated Traffic Engineers (ATE) and provided by Agromin. SoundPLAN Essential utilizes the same methods as the Federal Highway Administration's *Traffic Noise Model* to calculate noise impacts from traffic. See Sections 6.3 and 6.4 as well as Appendix G for additional information regarding this approach. Figure 6 (Appendix A) displays the results of the baseline traffic noise model.

Table 3 Background Noise in Project Haul Route Vicinity (L_{eq} 1-hour)

Receptor	Nearby Haul Route Segments	Predicted Ambient Noise Level (dBA)
R4	Telegraph Road, Briggs Road, Santa Paula side streets	49.1
R5	Telegraph Road	55.8
R6	Telegraph Road, Edwards Ranch Road, Olive Road	57.0
R7	Telegraph Road, Edwards Ranch Road, Olive Road	49.7
R8	Telegraph Road, Wells Road	58.9
R9	Telegraph Road, Wells Road, Ventura side streets	56.8

4.0 SIGNIFICANCE THRESHOLDS

As discussed in Section 3.1, the CEQA Guidelines recommend that the General Plan noise standards be used as the significance thresholds for noise impacts. The General Plan noise standards applied to this Project are the following:

(1) Noise sensitive uses proposed to be located near highways, truck routes, heavy industrial activities and other relatively continuous noise sources shall incorporate noise control measures so that:

a. Indoor noise levels in habitable rooms do not exceed CNEL 45.

b. Outdoor noise levels do not exceed CNEL 60 or Leq1H of 65 dB(A) during any hour.

(4) Noise generators, proposed to be located near any noise sensitive use, shall incorporate noise control measures so that ongoing outdoor noise levels received by the noise sensitive receptor, measured at the exterior wall of the building, does not exceed any of the following standards:

a. L_{eq}1H of 55 dB(A) or background noise level plus 3dB(A), whichever is greater, during any hour from 6:00 a.m. to 7:00 p.m.

b. L_{eq}1H of 50 dB(A) or background noise level plus 3dB(A), whichever is greater, during any hour from 7:00 p.m. to 10:00 p.m.

c. L_{eq}1H of 45 dB(A) or background noise level plus 3dB(A), whichever is greater, during any hour from 10:00 p.m. to 6:00 a.m.

Part (1) of this standard is primarily intended to be applied to proposed receptors located next to existing noise sources (i.e. roads, railroads). However, this standard may also appropriately be applied to projects that cause traffic noise impacts to existing receptors. Because both existing and Project vehicle traffic occur during daytime hours only when the respective facilities are operating (sunrise-sunset), the L_{eq}(1H) standard in Part (1) is more appropriate than the CNEL standard which assesses noise impacts over a 24-hour period. Similarly, the L_{eq}(1H) standards in Part (4) are more appropriate for the inconsistent noises generated by industrial sources.

For this reason, to assess the Project's operational noise impacts, the L_{eq}(1H) threshold presented in Part (1) is applied to receptors located near the Project haul route (R4 through R9) and the daytime, evening, and nighttime thresholds presented in Part (4) are applied to receptors located near the Facility (R1 through R3). This approach is consistent with environmental documents prepared for previous Ventura County development projects.

In general, noise level changes of less than 3 dBA are not perceptible. It is for this reason 3+ dBA is commonly considered a "substantial increase" for the purposes of environmental noise assessment. This concept is used in Part (4) of the standard to account for receptors where the background noise exceeds the specified "fixed" standard. In this case, a Project is considered significant if it increases the noise level at a receptor by 3+ dBA or more. Similarly, because Part (1) of the standard is being applied to existing haul route receptors in this NIA, ambient plus 3+ dBA is also considered the significance threshold for Part (1) when the background noise levels exceed the specified standard. These noise standards are summarized in Table 4.

Table 4 General Plan Noise Standards

Time Period	Hours	Industrial Source Threshold	Traffic Source Threshold
Daytime	6:00 AM – 7:00 PM	L_{eq}(1hr): 55 or ambient +3 dBA	L_{eq}(1hr): 65 or ambient +3 dBA
Evening	7:00 PM – 10:00 PM	L_{eq}(1hr): 50 or ambient +3 dBA	
Nighttime	10:00 PM – 6:00 AM	L_{eq}(1hr): 45 or ambient +3 dBA	

As described above, the significance threshold for each receptor is based on whether it is located near the Project haul route or the Facility, as well as the existing ambient noise level at that receptor. Table 5 presents the significance thresholds for each of the receptors considered in this NIA, adjusted to encompass the ambient noise level presented in Table 2 (see Section 3.2.3). As no proposed Project haul truck traffic will occur during the evening (7:00 PM-10:00 PM) or nighttime (10:00 PM-6:00 AM) hours, only the daytime significance threshold for traffic is presented in Table 5. These thresholds are utilized to determine the significance of operational noise impacts resulting from the Project. See Appendix C for more information regarding the background noise levels from which these thresholds were determined.

Table 5 Project Operation Significance Thresholds (dBA)

Time Period	R1	R2	R3	R4	R5	R6	R7	R8	R9
	Industrial – L_{eq}(1hr)			Traffic – L_{eq}(1hr)					
Daytime	55.0	55.0	55.0	65.0	65.0	65.0	65.0	65.0	65.0
Evening	50.0	50.0	50.0	---	---	---	---	---	---
Nighttime	48.1	45.0	45.0	---	---	---	---	---	---

The Ventura County Construction Guidelines include noise threshold criteria that are based on the duration and hour of construction activities as well as the types of receptors affected by construction. As discussed previously, construction activities will be restricted to daytime hours (7:00 AM-7:00 PM) only. The closest relevant receptors in each direction from the Facility (i.e., R1, R2, and R3) that will be potentially impacted by Project construction noise are all "single-family and multi-family dwellings (residential)" as defined in the County's Construction Guidelines. Because the Project will generate construction noise during the daytime hours only and the affected receptors are residential dwellings, the Project is not required to adhere to any specific standard/threshold. County guidance clearly states that the construction daytime noise criteria "***only** apply to the noise-sensitive receptors that are sensitive to noise impacts during the daytime*". Therefore, so long as Project construction activities occur during daytime hours only, Ventura County significance criteria would not apply. However, noise levels at Facility receptors due to Project construction activities have been quantified and disclosed for informational purposes in Section 5.0.

5.0 PROJECT CONSTRUCTION IMPACTS

Noise levels associated with Project construction were quantified according to the methodologies in the Ventura County *Construction Noise Threshold Criteria and Control Plan* (Appendix B). The following assumptions are utilized to determine noise impacts resulting from construction activities:

- **Equipment List:** The equipment list required for construction of the Facility has been provided by Agromin. This list was broken down into construction phases based on assumptions in the South Coast Air Quality Management District's *CalEEMod* program (v. 2016.3.1) and *RS Means Heavy Construction Cost Data* defaults, adjusted for the size and scope of the proposed construction activities. Conservatively, each type of noise-generating equipment per construction phase is assumed to be operating simultaneously to determine worst-case noise impacts to nearby receptors.
- **Equipment (L_{eq}) Noise Level:** The noise levels (L_{eq}) associated with the construction equipment are based on the default assumptions presented in Ventura County's *Construction Noise Threshold Criteria and Control Plan* and the Federal Highway Administration's (FHWA) *Roadway Construction Noise Model*. Agromin has committed to utilizing or purchasing new equipment for Facility operations. It is assumed that construction equipment use will also be relatively new. New equipment is expected to incorporate modern noise-controls (upgraded mufflers, acoustical engine lining, etc.) by design. As such, the mitigated L_{eq} equipment noise levels presented in Figure A-4/Appendix A of the *Construction Noise Threshold Criteria and Control Plan* are utilized to determine construction noise levels. These equipment noise levels represent "estimated level obtainable by quieter methods or equipment and implementing feasible noise controls."
- **Distance to Receptor:** The distances from the Facility receptors (R1, R2 and R3) to the closest construction activity was approximated using Google Earth.
- **Equipment Usage:** The percent usage of each piece of equipment is estimated based on the defaults in Ventura County's *Construction Noise Threshold Criteria and Control Plan* and FHWA's *Roadway Construction Noise Model*. Equipment usage was adjusted to accurately reflect the scope of construction activities.
- **Construction Hours:** Per information provided by Agromin, construction activities will be restricted to daytime hours (7:00 AM-7:00 PM) only as defined in Ventura County Construction Guidance.

Table 6 presents the estimated construction noise levels at the Facility receptors (R1, R2, R3) based on the above assumptions. All other noise sensitive receptors are expected to experience lower construction noise levels than those presented in Table 6. Note that the noise levels from the construction phase with the highest expected noise impacts (i.e. grading) are presented below. To ensure Project noise levels are less than significant and consistent with Ventura County Construction Guideline standards, Section 7.1 presents recommended mitigation measures. Also see Appendix E for the full construction noise impact calculations and the results for each construction phase not shown in Table 6.

Table 6 Project Construction Noise Levels (dBA)

Parameter	Receptor 1 (R1)		Receptor 2 (R2)		Receptor 3 (R3)	
	L_{eq}	L_{max}	L_{eq}	L_{max}	L_{eq}	L_{max}
Construction Noise Impact	54.1	63.0	66.1	75.0	58.7	67.6

Note: Noises impacts shown above were calculated for the grading construction phase, which represents the construction phase with the highest expected noise impacts. See Appendix E.

6.0 PROJECT OPERATIONAL IMPACTS

This section discusses the inputs, methodologies, and the results of the noise models used to predict Project noise impacts to nearby receptors. Specifically, noise impacts resulting from Facility operations (i.e. onsite sources) and Project vehicle traffic on nearby haul routes are assessed.

6.1 Industrial Noise Source Characterization

Industrial noise sources include stationary and mobile equipment operating onsite. This NIA utilizes a combination of noise measurements and documented noise source information to determine the noise level of the proposed industrial operations. For sources of noise currently in operation at the Oxnard-Shoreline facility, monitoring was utilized to determine the actual noise level these operations generate. For new sources of noise proposed by the Project (e.g. CASP and AD systems), information provided by the equipment manufactures was used to determine the noise levels these sources are expected to generate.

Noise measurements were collected at Agromin's existing Oxnard-Shoreline facility on July 23rd, 2014 in order to characterize the noise level of equipment operations (Appendix D). Operations occurring at the 11-acre Oxnard-Shoreline facility include feedstock receiving and sorting, pre-processing using grinders and trommel screens, green material composting in open windrows, food material composting using a small Covered Aerated Static Pile (CASP) pilot program, as well as bagging and bulk sales activities. These existing operations at the Oxnard-Shoreline facility (e.g. windrow composting, pre-processing and grinding, bagging and bulk sales, mobile and stationary processing equipment, etc.) are similar to the open windrow and general support operations proposed for the new Facility. As such, the noise measurements collected at Oxnard-Shoreline are utilized to represents noise generated from open windrow composting operations and the general support activities at the new Facility. To more accurately reflect the expanded operations at the new Facility, the Oxnard-Shoreline source noise level was scaled upward based on comparison of the total yearly throughputs from this existing facility and the proposed Project (Appendix D). This assumes the quantity of operating and support equipment, increases proportionally with throughput.

The expected noise levels generated by the CASP and AD systems were determined based on documented noise information provided by the equipment manufacturers. Based on manufacturer guidance, the two (2) aeration fans in the CASP systems are the primary noise source associated with CASP operation. Zero Waste Energy (ZWE) confirmed the primary noise component of their SMARTFERM® AD system is the exhaust outlet from the internal combustion engine. Both manufacturers provided measured noise data for each piece of equipment, and this was utilized to model their noise impacts to nearby receptors. See Appendix F for the source noise data and calculations.

Table 7 below shows the industrial noise source data utilized to model noise levels generated by Facility operations. Additional information regarding these calculations and the referenced documents are included in Appendix F.

Table 7 Facility Noise Source Data

Noise Source	Description	Source Type	L_{eq} @ 50' (dBA)	Basis
Windrow Processing & Ancillary/Support Activities	Off-Road Equipment, On-Road Equipment, Portable Equipment, Onsite Vehicles	Area	89.0	Oxnard-Shoreline Facility Source Measurements
CASP System	Blower/Fan Group	Point	67.0	Manufacturer Information

Noise Source	Description	Source Type	L_{eq} @ 50' (dBA)	Basis
AD System	Internal Combustion Engine & Exhaust	Point	61.3	Manufacturer Information

6.2 Industrial Noise Impact Calculation Methodology

Using the source data shown in Table 7, SoundPLAN Essential 3.0 computer noise model software was utilized to determine the expected noise impacts to nearby receptors from Facility operations. Source-receptor geometry, noise source data, terrain information, and noise obstructions (e.g., buildings) were input into the model. SoundPLAN models industrial noise impacts at receptors based on the International Organization for Standardization's (ISO) "ISO 9613-2" standard for calculating outdoor sound propagation. Figure 5 (Appendix A) shows the modeled source-receptor geometry. The model output files are included in Appendix F.

The following assumptions were utilized in the industrial source model:

- Specific noise sources (i.e. CASP, AD) were modeled as point sources in the appropriate locations. Open windrow composting and ancillary/support equipment noise sources (i.e. adjusted Oxnard-Shoreline measurements) were modeled as areas sources within the compost working areas. See Figure 3 and Figure 5 (Appendix A) which display the locations of these modeled noise sources.
- Because the area is relatively flat, terrain elevations were not included within the model.
- All of the sources were conservatively assumed to operate simultaneously during the day, evening, and night peak hours. Please note, waste receiving, outdoor process, maintenance and office activities will occur during daytime hours (sunrise to sunset) only. Indoor operations, specifically processing and packaging operations, may occur during the daytime or evening (7:00 PM-10:00 PM) hours. However these evening operations will occur indoors only, and therefore are not expected to generate noise impacts at Facility receptors. The CASP and AD systems will operate 24-hours per day. No other nighttime operations are proposed at the Facility.
- The following reference noise spectrums from the SoundPLAN Essential 3.0 database were utilized. The centrifugal blower spectrum was utilized for the CASP, the axial fan was utilized for the AD system, and the averaged industrial spectrum (this spectrum is the average of about 150 industrial sources, such as compressors, fans, and coolers) was utilized for the open windrow and ancillary/support activities.
- The Facility's five (5) large buildings were included in the model as permanent noise obstructions. While a large portion of the site will usually be covered by the windrow piles of organic material (around 12-feet tall), it is not possible to predict the exact quantity and location of the piles. Due to their unpredictable and transient nature, these piles were not included in the model. This is a conservative assumption because in reality the piles will cause a reduction in noise by acting as earthen berm barriers.
- The surrounding orchards, specifically near R1, were included in the model as a foliage-type ground absorption attenuation area. The row of windbreak trees (approximately 30-feet high) that runs along the eastern Facility boundary, adjacent to R3, was also included as a volume attenuation area. These areas provide a very small amount of added attenuation as noise propagates through them.

6.2.1 Industrial Noise Impact Results

Table 8 presents the results of the industrial source noise prediction model for the receptors near the Facility (R1, R2 and R3). The modeled noise impacts at each receptor are compared to the applicable significance threshold. Modeling files presented in Appendix F and results displayed on Figure 5 (Appendix A) present the noise impacts generated by these industrial sources. Note that all impacts are below the applicable Ventura County significance threshold.

Table 8 Industrial Noise Source Impacts (L_{eq}-Hr dBA)

Parameter	Receptor 1 (R1)			Receptor 2 (R2)			Receptor 3 (R3)		
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night
Baseline Noise	51.8	43.0	45.1	46.4	37.6	39.7	44.0	35.2	37.3
Project Noise	24.9	0.0	0.0	30.7	17.0	17.0	23.0	7.1	7.1
Total Noise	**51.9**	**43.0**	**45.1**	**46.6**	**37.6**	**39.7**	**44.1**	**35.2**	**37.3**
Threshold	**55.0**	**50.0**	**48.1**	**55.0**	**50.0**	**45.0**	**55.0**	**50.0**	**45.0**
Significant?	No	No	No	No	No	No	No	No	No

6.3 Traffic Noise Source Characterization

Prediction of noise impacts from Project traffic sources is addressed in this section. Project traffic noise will result from collection and delivery haul trucks as well as employee vehicles on nearby roadways. Specifically, traffic noise impacts were modeled on affected road segments of Edwards Ranch Road, Telegraph Road, Olive Road, Briggs Road, Wells Road, and side street traffic originating from the nearby cities of Ventura and Santa Paula.

Baseline traffic data for the existing Limoneira/Agromin Agricultural Composting Operation was provided by Agromin, and represents the actual vehicle ticket counts from the 2014 operational year. The expected vehicle trips associated with the Project were estimated by scaling up the baseline trips to reflect the expanded operations and processing capacity of the new Facility. Based on existing operations as well as those proposed for the Project, Agromin estimated that the peak hour for existing and Project vehicle activity on roadways would be between 10:00 AM-11:00 AM. Existing daily traffic volumes on Telegraph Road and Edwards Ranch Road, unrelated to Agromin's existing compost operation, were taken from the *Traffic Study* completed by Associated Traffic Engineers (ATE) for the Project. These existing traffic volumes are based on actual measurements collected by ATE on 1/21/2016 on Telegraph Road and Edwards Ranch Road.

Table 9 presents the incremental increase in peak hour traffic volume associated with the Project. These traffic volumes were utilized to model peak hour noise impacts to haul route receptors (R4, R5, R6, R7, R8, and R9) in SoundPLAN Essential.

Table 9 Peak Hour (10:00 AM-11:00 AM) Trips by Vehicle Type

Vehicle Type	Baseline Trips	Project Trips	Increment
Haul Truck (HHD)	13	59	+46
Light-Duty Truck (LDT)	7	46	+39
Passenger (LDA)[A]	2	54	+52
Totals:	22	159	+137

A – Although employees (i.e. passenger vehicles) are not expected to arrive or leave during the peak hour, it is conservatively assumed that 50% of the employee trips will occur during the peak hour. See Appendix G for more detail.

6.4 Traffic Noise Impact Results

In order to determine Project traffic noise impacts, the SoundPLAN Essential 3.0 computer noise model software was utilized. SoundPLAN Essential uses the Federal Highway Administration's Traffic Noise Model (TNM) algorithm to model traffic noise impacts at chosen receptors. In the TNM, a transportation noise source (e.g. Edwards Ranch Road, Telegraph Road, etc.) is input along with receptor locations to predict the noise levels associated with a specific vehicle trip count.

In order to calibrate the SoundPLAN model to fit the Project's environment, two (2) 30-minute noise measurements were conducted near haul route road segments and a traffic count was obtained simultaneously. This traffic count was then entered into the model. By comparing the resulting modeled noise level to the actual measured noise level, a correction factor can be determined. In this case, the measured noise levels were an average of 11 dBA below the modeled noise level. Therefore it is appropriate to apply a correction factor of -11 dBA to all of the SoundPLAN Essential haul route modeling results. However, in order to be conservative this correction factor was not utilized. Although it was not utilized, the fact that the correction factor is so large indicates that the model results are highly conservative when compared to reality. See Appendix G for details regarding the SoundPLAN Essential model inputs, methods, and assumptions.

Noise impacts to haul route receptors were modeled for both the existing trips from the Limoneira/Agromin Agricultural Composting Operation (i.e. baseline) and the proposed Project trips. The total incremental noise impacts to each receptor are then compared to the appropriate threshold to determine significance. Figure 6 and Figure 7 (Appendix A) display the results of both the baseline and Project road noise model respectively. Table 10 presents the total noise level for receptors along the Project haul routes. All impacts are below the applicable significance threshold.

Table 10 Total Traffic Noise Level & Significance Determination

Parameter	Daytime L_{eq}1H (dBA)					
	R4	**R5**	**R6**	**R7**	**R8**	**R9**
Baseline Noise Level	49.1	55.8	57.0	49.7	58.9	56.8
Project Noise Level	53.5	57.7	61.3	54.8	63.4	62.3
Total Noise Level	**54.8**	**59.9**	**62.7**	**56.0**	**64.7**	**63.4**
Significance Threshold	**65.0**	**65.0**	**65.0**	**65.0**	**65.0**	**65.0**
Significant?	No	No	No	No	No	No

7.0 MITIGATIONS

This section discusses mitigation measures proposed to ensure Project induced noise impact levels are less than significant. Please note, no mitigation is required for operational impacts (traffic or industrial) as these were below the applicable significance thresholds.

7.1 Construction Noise Design Features/Mitigation

As described in Section 5.0, per schedules provided by Agromin, the Project construction phase is anticipated to last approximately 4 to 8 months (16 to 32 weeks), and construction activities that generate noise will be confined to daytime hours only, as defined by Ventura County's Construction Guidelines document (i.e. 7:00 AM – 7:00 PM Monday through Friday, 9:00 AM – 7:00 PM Weekends/Holidays).

While the disclosure of Project daytime construction noise levels, as presented in Table 6, is beneficial for informational purposes, because the Project will generate construction noise during the daytime hours only and the affected receptors are residential dwellings, the Project is not required to adhere to any specific standard/threshold. County guidance clearly states that the construction daytime noise criteria "***only** apply to the noise-sensitive receptors that are sensitive to noise impacts during the daytime*". The closest relevant receptors in each direction from the Facility (i.e., R1, R2, and R3) are all residential dwellings. Referring again to the County's guidance document, "*single-family and multi-family dwellings (residential)*" are only considered "*noise-sensitive locations*" during the "*evening/nighttime*" periods (i.e., between 7:00 p.m. – 10:00 p.m. and 10:00 p.m. – 7:00 a.m. respectively). Therefore, so long as Project construction activities occur during daytime hours only, the Project's noise impacts at nearby Facility receptors would be considered less than significant.

Although noise impacts resulting from construction will be temporary, the following mitigation measures are proposed to ensure that Project construction noise is consistent with Ventura County standards. With implementation of these measures, Project construction noise impacts would be less than significant:

NO-1. Construction equipment shall not idle for more than 30 minutes at any one time.

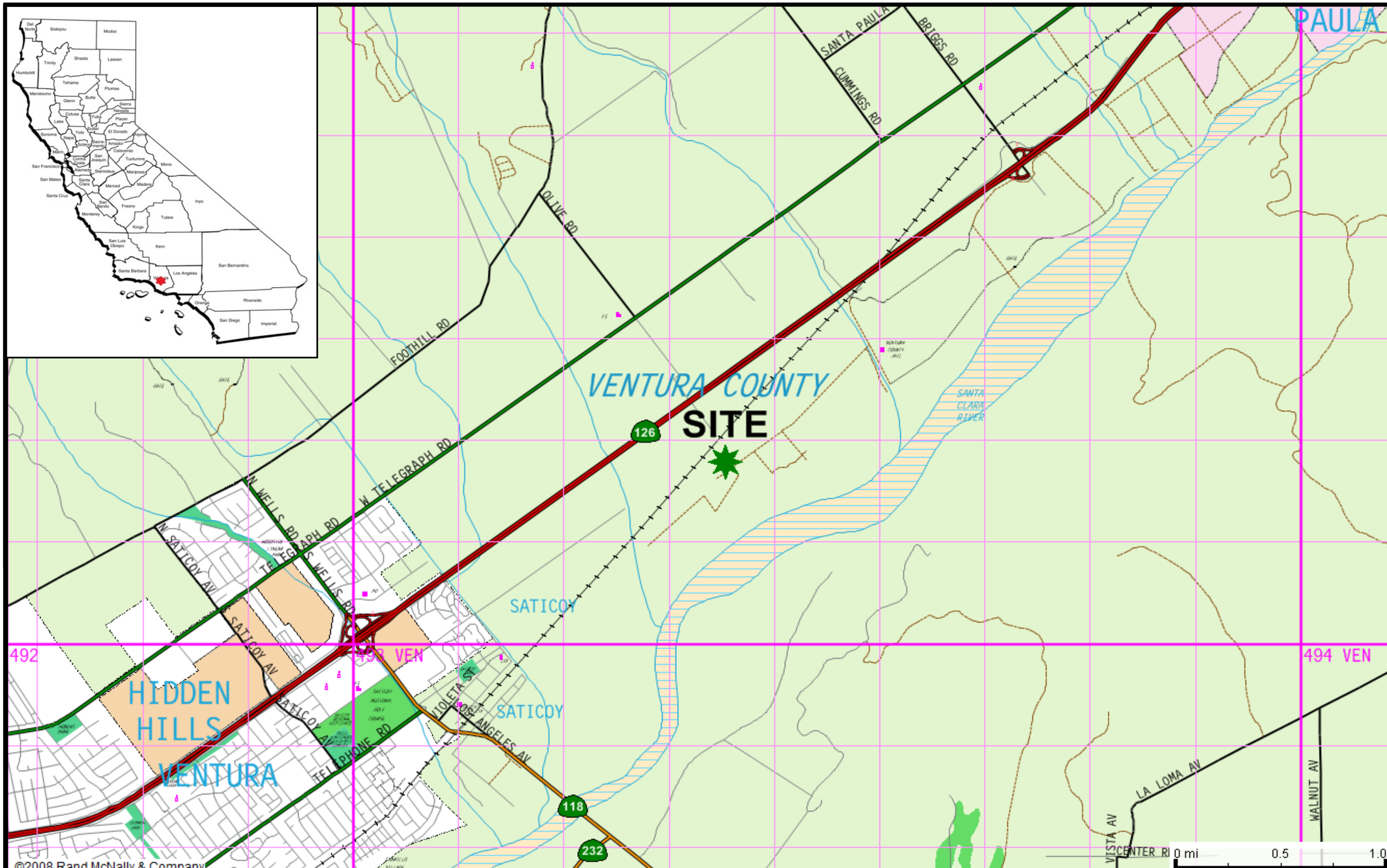
NO-2. Project construction activities shall only occur between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday, and from 9:00 a.m. and 7:00 p.m. Saturday, Sunday and local holidays, as defined in the Ventura County Construction Noise Threshold Criteria and Control Plan (Ventura County, 2010).

If Project construction activities are required to occur outside the daytime hours defined above, Agromin will conduct a study, including noise measurements, to ensure that the construction noise impacts at nearby receptors are acceptable per Ventura County guidance. If a significant impact is determined, noise reducing modifications (e.g., berms, sound blankets/curtains, walls, equipment/operations modifications, etc.) shall be implemented to reduce the construction noise impacts, and the monitoring will be repeated. This process will continue until sufficient mitigation is provided and the measure noise levels at affected receptors are below applicable Ventura County criteria for construction noise.

Through adherence to the requirements outlined in the Ventura County *Construction Noise Threshold Criteria and Control Plan* and implementation of the revised Mitigation Measure NO-2 described above, the Project's construction noise impacts to nearby receptors would be less than significant with no additional mitigation required. Additionally, the County guidance notes that "*often a construction contractor can avoid most community complaints simply by notifying the potentially affected residents and other sensitive receptors regarding the purpose of the project and the expected completion schedule*" (Ventura County, 2010). If deemed appropriate by the County, Agromin may notify nearby residents prior to commencing Project construction activities. Furthermore, construction noise impacts will be temporary and the grading phase, the construction phase with the highest noise impacts, is expected to last for only 21 days. Please see Appendix E for the full construction phase noise impact calculations.

APPENDIX A

FIGURES



Source: 2008 Rand McNally & Company

N

SESPE CONSULTING, INC.

FIGURE	REGIONAL LOCATION MAP		
1	Agromin Commercial Organics Processing Operation Santa Paula, California 93060		
PROJECT #:	AG01.11.02	DATE:	1/7/17
SCALE:	as shown	DRAWN BY:	GPS

Source: Google Earth 2016

- Existing Limoneira/Agromin Compost Facility (15-acres)
- Proposed Facility Boundaries (70-acres)
- Long-Duration (24-Hours) Noise Monitoring Location
- Short-Duration (30-Minutes) Noise Monitoring Locations

N

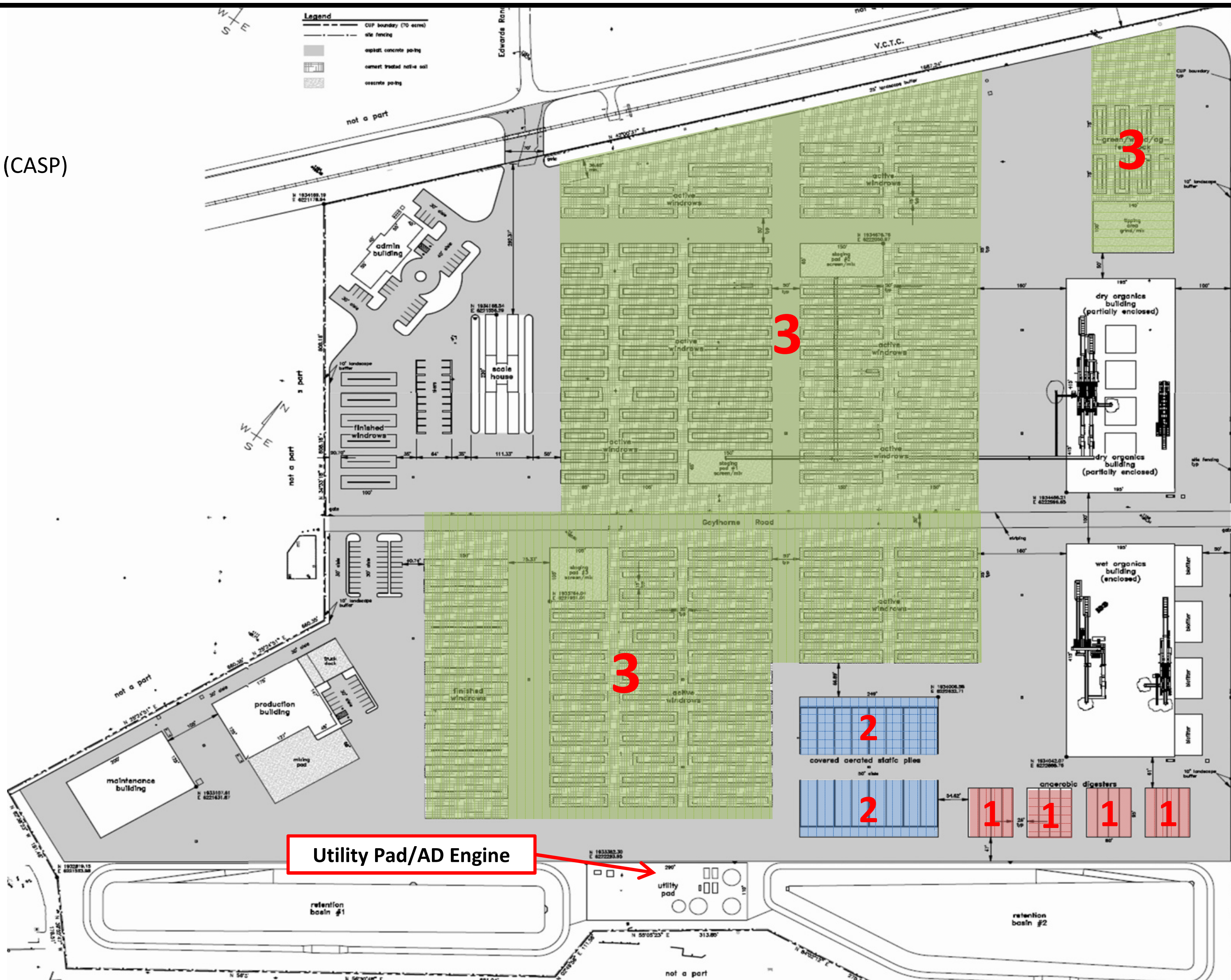
SESPE CONSULTING, INC.

FIGURE 2	MONITORING/RECEPTOR LOCATIONS Agromin Commercial Organics Processing Operation Santa Paula, California 93060		
PROJECT #:	AG01.11.02	DATE:	1/24/17
SCALE:	as shown	DRAWN BY:	GPS

LEGEND

Noise Source Areas

1 - Anaerobic Digesters (AD)
2 - Covered Aerated Static Piles (CASP)
3 - Open Windrow Composting



Source: Agromin/E.J. Harrison

SESPE CONSULTING, INC.

FIGURE 3	FACILITY SITE PLAN Agromin Commercial Organics Processing Operation Santa Paula, California 93060		
PROJECT #:	AG01.11.02	DATE:	1/7/17
SCALE:	not to scale	DRAWN BY:	GPS

Source: Google Earth 2017

Approximate Facility Boundaries

Haul Routes

SESPE CONSULTING, INC.

FIGURE	HAUL ROUTE SUMMARY		
4	Agromin Commercial Organics Processing Operation Santa Paula, California 93060		
PROJECT #:	AG01.11.02	DATE:	1/7/17
SCALE:	N/A	DRAWN BY:	GPS

FIGURE 5
Industrial Model Results Day/Evening/Night (Leq)

Time Slices Analyzed:
Daytime = 6:00 AM-7:00 PM
Evening = 7:00 PM-10:00 PM
Nighttime = 10:00 PM-6:00 AM

Receptors:
#1 = R1 (southwest)
#2 = R2 (south)
#3 = R3 (southeast)

Facility Noise Sources:
-Open Windrow Composting
-Covered Aerated Static Piles (CASP)
-Anaerobic Digesters (AD)

Signs and symbols

- Line
- Ground Absorption
- Volume Attenuation Areas
- Auxiliary Building
- Receiver
- Point Source
- Area source

0 25 50 100 150 200 m

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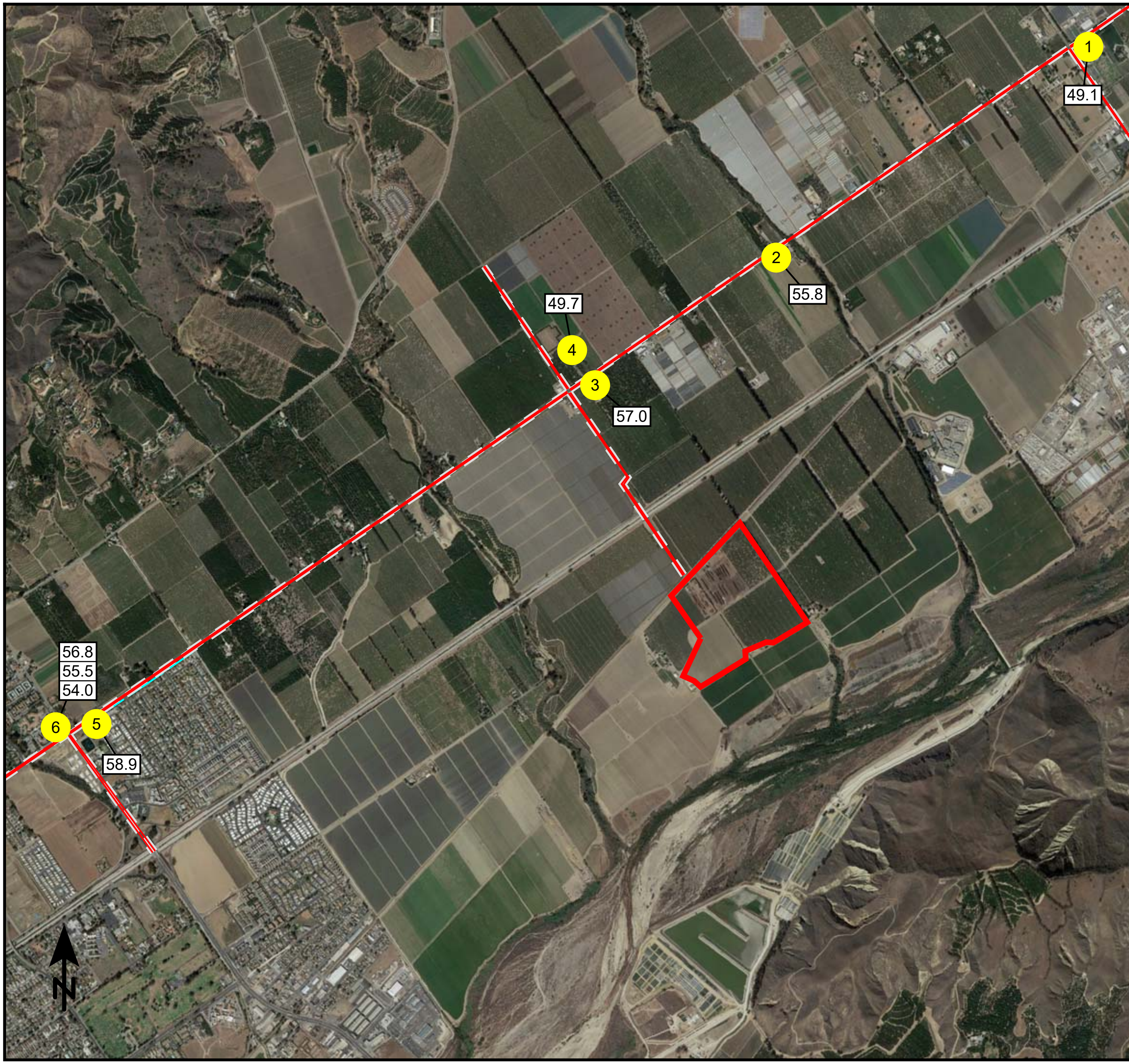


FIGURE 6
Traffic Noise Model - Baseline
Daytime Peak Hour (Leq)

Receptors:
#1 = R4 (Briggs School)
#2 = R5 (Residential Dwelling)
#3 = R6 (Residential Dwelling)
#4 = R7 (Ventura County Fire Station)
#5 = R8 (Residential Housing Tract)
#6 = R9 (Retirement Home)

Vehicle Types Modeled:
-Haul/Delivery Trucks (HHD)
-Light-Duty Trucks (LDT)
-Passenger (LDA)

Signs and symbols

Facility
Wall
Receiver
Emission Line
Surface

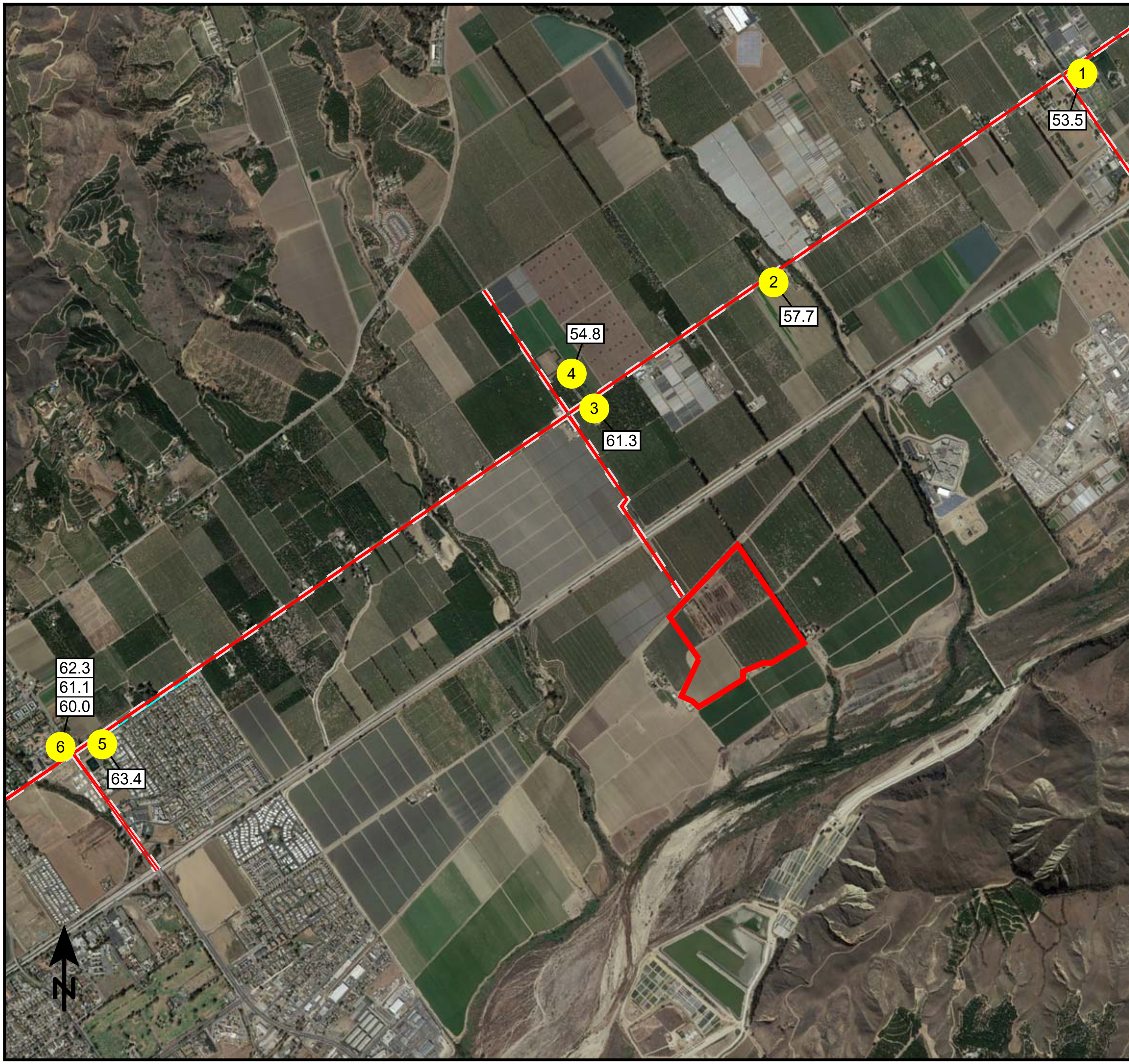
0 125 250 500 750 1000 m

SESPE CONSULTING, INC.

FIGURE 7
Traffic Noise Model - Project
Daytime Peak Hour (Leq)

Receptors:
#1 = R4 (Briggs School)
#2 = R5 (Residential Dwelling)
#3 = R6 (Residential Dwelling)
#4 = R7 (Ventura County Fire Station)
#5 = R8 (Residential Housing Tract)
#6 = R9 (Retirement Home)

Vehicle Types Modeled:
-Haul/Delivery Trucks (HHD)
-Light-Duty Trucks (LDT)
-Passenger (LDA)



Signs and symbols

Facility
Wall
Receiver
Emission Line
Surface

0 125 250 500 750 1000
m

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APPENDIX B

REGULATORY TEXT

4. County Health and Safety/Loss Prevention (General Service Agency) is responsible for monitoring *hazardous materials* in the work place for all County employees through the Hazardous Materials Abatement Program.

5. CEO-Risk Management, Health, Safety & Loss Prevention (HSLP) will continue administration of the Asbestos Management Program which provides a full range of asbestos abatement surveillance guidance and regulatory compliance advisory services applicable to all County owned facilities and operations.

6. The County Agricultural Commissioner's Office is responsible for enforcing all pesticide regulations, issuing licenses to applicators, distributors and dealers who handle pesticides and conducting inspections of all application and distribution facilities.

7. The County Environmental Health Division will continue to work with the appropriate State agencies to assess the public health and environmental impacts of identified waste disposal sites in the County, including abandoned and illegal sites.

8. The County Sheriff's Department Office of Emergency Services, in cooperation with the County Fire Protection District will annually review and revise the County *Multihazard Functional Plan*'s Major Hazardous Materials Incident Contingency section.

9. The County Public Works Agency Environmental & Energy Resources Department will maintain a CHWMP that includes goals, policies, programs and an implementation schedule for management of household *hazardous waste* for action by the County and participating cities.

10. The County Sheriff's Department Office of Emergency Services, will coordinate with local, state and federal agencies regarding off shore oil incidents and onshore oil pipeline incidents and annually update the County *Multihazard Functional Plan*'s Off Shore Oil Incidents Contingency section.

11. The Environmental Health Division is responsible to implement the requirements of Division 20, Chapter 6.5, Section 25189.5 (Health and Safety Code), involving any illegal discharge or threatened illegal discharge of a *hazardous waste* within the County.

12. The Environmental & Energy Resources Department and the Environmental Health Division will continue to coordinate with the Ventura Regional Sanitation District and local cities on the Household Hazardous Waste Program, which involves a) the collection of unused household products and pesticides that are considered hazardous, and b) a community education program on the safe use and disposal of household chemical products.

2.16 Noise

For purposes of this Plan, "noise" can be defined as any sound having an intensity (in terms of volume, pitch or duration) at the point of human perception that has the potential to stress or damage the organs of human hearing or to cause unwanted or unhealthy physiological effects, or is otherwise considered unwanted or annoying by the listener. The effects of noise accumulate over time, so it is necessary to deal not only with the intensity of sound but also the duration of human exposure to the sound.

Noise can be annoying and physically harmful to human beings and to animals. Human exposure to intense noise can result in irreversible hearing damage, and has been linked to other physiological effects including headaches, nausea, irritability, constriction of peripheral blood vessels, changes in heart and respiratory rates and in glandular and gastrointestinal activity and increased muscular tension. The effects of noise exposure in residential environments can include coughs and hoarseness caused by the strain of shouting above the noise. Noise can also affect accuracy at work, and has been found to be linked to job-related accidents and absenteeism.

High levels of noise can have effects on animals that are similar to those on humans, in terms of tissue damage, changes in blood pressure and chemistry, and hormonal changes. Hatching failures (in birds) and other changes in reproductive processes have also been reported. Additional effects on wildlife can include panicking, disruption of breeding and nesting behavior, birth defects, changes in migratory patterns, and even changes in the size of bodily organs. Noise can also mask animals' auditory signals and interfere with some animals' communication of necessary information. Adverse effects of noise on farm animals can include changes in milk production, incubation behavior, mating behavior, and animal size and weight.

Noise can also have adverse effects on materials and structures, particularly as a result of sonic booms and related aircraft noises. These aircraft generated noises can excite buildings to vibrate and can break windows and crack plaster.

While any number of individual measures have been proposed, mitigation measures for identifiable noise problems fall into three categories:

- Reduction of the noise at its source.
- Modification of the path of the noise.
- Reduction of noise at the receiver with various types of insulation.

Noise is directly associated with human activity, and is primarily a function of traffic, machinery and airports. On a generalized basis, motor vehicles, as a group, are the most pervasive contributors to urban noise, while aircraft, railroads and certain high intensity industrial noise generators may produce the most aggravated community annoyance reactions. Due to wide distribution and the types of machinery used, industrial sources are the second greatest noise generator. Airports are regarded as the third greatest noise generator. Other significant noise sources are powered gardening equipment, amplified music, power tools and air conditioners.

Land uses considered *noise sensitive uses* include residential, educational, and health facilities, research institutions, certain recreational, and entertainment facilities (typically, indoor theaters and parks for passive activities) and churches. Uses considered less sensitive to noise include commercial and industrial facilities and certain noise-generating recreational facilities such as playgrounds and gymnasiums.

The goal, policies and programs that apply to noise are as follows:

2.16.1 Goal

To protect the health, safety and general welfare of County residents by elimination or avoidance of adverse noise impacts on existing and future *noise sensitive uses.*

2.16.2 Policies

1. All *discretionary development* shall be reviewed for noise compatibility with surrounding uses. Noise compatibility shall be determined from a consistent set of criteria based on the standards listed below. An acoustical analysis by a qualified acoustical engineer shall be required of *discretionary developments* involving noise exposure or noise generation in excess of the established standards. The analysis shall provide documentation of existing and projected noise levels at on-site and off-site receptors, and shall recommend noise control measures for mitigating adverse impacts.

   (1) *Noise sensitive uses* proposed to be located near highways, truck routes, heavy industrial activities and other relatively continuous noise sources shall incorporate noise control measures so that:

   a. Indoor noise levels in habitable rooms do not exceed CNEL 45.

   b. Outdoor noise levels do not exceed CNEL 60 or L_{eq}1H of 65 dB(A) during any hour.

   (2) *Noise sensitive uses* proposed to be located near railroads shall incorporate noise control measures so that:

   a. Guidelines (1)a. and (1)b. above are adhered to.

   b. Outdoor noise levels do not exceed L_{10} of 60 dB(A).

   (3) *Noise sensitive uses* proposed to be located near airports:

   a. Shall be prohibited if they are in a CNEL 65 or greater, noise contour.

   b. Shall be permitted in the CNEL 60 to CNEL 65 noise contour area only if means will be taken to ensure interior noise levels of CNEL 45 or less.

(4) Noise generators, proposed to be located near any *noise sensitive use*, shall incorporate noise control measures so that ongoing outdoor noise levels received by the noise sensitive receptor, measured at the exterior wall of the building, does not exceed any of the following standards:

   a. L_{eq}1H of 55dB(A) or ambient noise level plus 3dB(A), whichever is greater, during any hour from 6:00 a.m. to 7:00 p.m.

   b. L_{eq}1H of 50dB(A) or ambient noise level plus 3dB(A), whichever is greater, during any hour from 7:00 p.m. to 10:00 p.m.

   c. L_{eq}1H of 45dB(A) or ambient noise level plus 3dB(A), whichever is greater, during any hour from 10:00 p.m. to 6:00 a.m.

   Section 2.16.2(4) is not applicable to increased traffic noise along any of the roads identified within the 2020 Regional Roadway Network (Figure 4.2.3) Public Facilities Appendix of the Ventura County General Plan (see 2.16.2-1(1)). In addition, State and Federal highways, all railroad line operations, aircraft in flight, and public utility facilities are noise generators having Federal and State regulations that preempt local regulations.

(5) Construction noise shall be evaluated and, if necessary, mitigated in accordance with the County Construction Noise Threshold Criteria and Control Plan.

2. Discretionary development which would be impacted by noise, or generate project related noise which cannot be reduced to meet the standards prescribed in Policy 2.16.2-1., shall be prohibited. This policy does not apply to noise generated during the construction phase of a project.

3. The priorities for noise control shall be as follows:

   (1) Reduction of noise emissions at the source.

   (2) Attenuation of sound transmission along its path, using barriers, landforms modification, dense plantings, and the like.

   (3) Rejection of noise at the reception point via noise control building construction, hearing protection or other means.

2.16.3 Programs

1. The Oxnard and Camarillo Airport Master Plans recommend the preparation of noise abatement plans, the formation of local noise abatement committees with input from local citizens, and distribution of a periodic newsletter documenting noise abatement policies to aircraft operators and other interested parties. The airport plans also recommend periodic sampling measurements and updating of the CNEL noise model parameters, and discussion of alternative approaches for noise abatement.

   In addition, the Oxnard plan recommends publication of a map of recommended noise abatement flight tracks and operating procedures, for distribution to area airports and other interested parties.

2. The Public Works Agency will continue to work with CalTrans and City transportation offices to optimize signal timings and arterial stop sign location so that stop-go truck traffic is minimized in areas surrounded by noise-sensitive uses.

3. The noise *goals, policies* and *programs,* as well as the noise appendix, will be reviewed by the Planning Division as needed.

4. The Public Works Agency will prepare a proposal for consideration by the Board of Supervisors to study the feasibility of constructing noise barriers in areas containing existing *noise sensitive uses* which are or will be significantly impacted by traffic noise.

5. The Building and Safety Division will continue to enforce Appendix Chapter 35 of the Uniform Building Code (UBC) and UBC Appendix 3501 of the Ventura County Building Code for the purposes of protecting persons within new hotels, motels, apartment houses, and dwelling units from effects of excessive noise including external community noise.

6. The Building and Safety Division and Public Works Agency shall prepare a budgetary proposal for Board consideration to amend the County Building Code, including Excavation and Grading Standards, to impose the noise criteria and mitigation measures contained within the County Construction Noise Threshold Criteria and Control Plan.

2.17 Civil Disturbance

Civil unrest, terrorism, and national security emergency hazards are forms of civil disturbance, which are of major public concern and necessitate a planned and coordinated response by a number of public agencies.

Civil Unrest

Civil unrest is the spontaneous disruption of normal, orderly conduct and activities in urban areas, or outbreak of rioting or violence that is of a large-scale nature. Civil unrest can be spurred by specific events, such as large sporting events or criminal trials, or can be the result of long-term disfavor with authority. Civil unrest is usually noted by the fact that normal on-duty police and safety forces cannot adequately deal with the situation until additional resources can be acquired. This is the time period when civil unrest can grow to large proportions.

Threat to law enforcement and safety personnel can be severe and bold in nature. Securing of *essential facilities* and services is necessary. Looting and fires can take place as a result of perceived or actual non-intervention by authorities.

The various agencies that are vested with providing emergency response services within their respective jurisdictions are very adept at dealing with ordinary and routine emergency incidents. There are, however, incidents and circumstances that by their very nature exceed the ability and capacity of a single jurisdiction to cope with the situation. When this occurs, a request for additional resources is initiated and is accommodated through mutual aid agreements. Incidents, whether they are natural (e.g., flooding, earthquakes), or civil disturbances that occur simultaneously in a widespread manner affecting multiple jurisdictions, require a greater degree of coordination and organization. The Ventura County Law Enforcement Mutual Aid Manual addresses the mechanics of mutual aid activation and level of response. It also speaks to the establishment of a unified command structure organized to deal with incidents that affect the entire operational area whether in a direct or indirect fashion.

Active participation in the unified command and incident command system is essential if a coordinated effort is to be initiated and maintained.

The entire County, consisting of residential, industrial and commercial properties, is vulnerable to the effects of civil unrest.

Terrorism

Terrorism is defined as the use of fear for intimidation, usually for political goals. Terrorism is a crime where the threat of violence is often as effective as the commission of the violent act itself. Terrorism affects us through fear, physical injuries, economic losses, psychological trauma, and erosion of faith in government. Terrorism is not an ideology. Terrorism is a strategy used by individuals or groups to achieve their goals.

In the wake of the 1993 World Trade Center bombing in New York and the Oklahoma City bombing in 1995, terrorism became a serious concern for emergency management, emergency responders, and the public at large. However, the 2001 attack on the World Trade Center and the Pentagon has now elevated our concern about terrorism to a level we never imagined, and requires us to be prepared to respond to situations that go beyond the terrorist incident scenarios that we are familiar with.

Terrorists espouse a wide range of causes. They can be for or against almost any issue, religious belief, political position, or group of people of one national origin or another. Because of the tremendous variety of causes supported by terrorists and the wide variety of potential targets, there is no place that is truly safe from terrorism. Throughout California there is nearly limitless number of potential targets, depending on the perspective of the terrorist. Some of these targets include: medical facilities/clinics, religious facilities, government offices, public places (such as shopping centers), schools, power plants, refineries, utility infrastructures, water storage facilities, dams, private homes of prominent individuals, financial institutions and other businesses.

21. Noise and Vibration

A. Definition of Issue

Noise is defined as any unwanted sound that is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. Noise impacts can occur during the construction and/or operational phases of a project.

With the exception of a few large-scale construction projects that last a period of years, most projects involve only short term construction noise impacts. The severity of construction noise impacts varies based on the location of sensitive receptors; type or phase of construction; combination of equipment used; site layout; and, construction methods that are employed.

Operational noise typically includes long-term impacts—that is, impacts that persist throughout the life of a project. Impacts from operational noise vary based on the: location of sensitive receptors; type of equipment or machinery that is used; site layout; and, duration and times during which noise-generating uses occur.

Vibration is defined as a motion that repeatedly reverses itself. The most common type of environmental impact involving vibration consists of ground vibration, which is the periodic displacement of earth, which creates vibration waves that move through soil and rock strata, foundations of nearby buildings, and then throughout the parts of the building structure. Ground-borne vibration can result in sensible movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. The rumbling sound caused by the vibration of room surfaces is called ground-borne noise.

The operation of construction equipment and construction techniques (e.g., pile driving, blasting, or excavation) can generate temporary ground vibration impacts. Moreover, heavy duty vehicles traveling along roadways with potholes and bumps, steel-wheeled/steel-rail vehicles (e.g., trains), and equipment used in industrial operations which are related to a proposed project can generate recurring ground vibration impacts throughout the life of a project. If the amplitudes are high enough, ground vibration can: cause damage to buildings, ranging from more severe (yet uncommon) structural damage to less severe cosmetic damage (e.g., cracked plaster); and, generate ground-borne noise that is discomforting or a nuisance to individuals who live or work close to vibration-generating activities.

B. Definition of Terms

The following is a partial glossary of acoustic and vibration terminology. For a more comprehensive glossary of noise-related terms, see the Ventura County General Plan Hazards Appendix (§2.16.2). For a more comprehensive glossary of vibration-related terms, see the Transit Noise and Vibration Impact Assessment.[1]

Ambient Noise **-** The noise that results from the combination of all sources, near and far, which constitutes the existing environmental setting for the purposes of evaluating noise impacts. The ambient noise levels are expressed as L_{eqT} or CNEL as judged appropriate to the situation.

A-weighted Sound Level [L_A - dB(A)] **-** Sound pressure level measured using the A-weighting network, a filter which discriminates against low and very high frequencies in a manner similar to the human hearing mechanism at moderate sound levels (ANSI S1.4).

Community Noise Equivalent Level [CNEL - dB(A)] **-** The long-term time average sound level, weighted as follows:

- Frequency response is filtered using the A-weighting network.
- Sounds occurring between 7 p.m. and 10 p.m. are weighted by 5 dB (in effect, the number of noise events is multiplied by 3.15).

[1] Hanson, Carl E., David A. Towers, and Lance D. Meister. (May 2006). *Transit Noise and Vibration Impact Assessment.* Federal Transit Administration, Office of Planning and Environment. FTA-VA-90-1003-06. Available on-line at: http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf.

- Sounds occurring between 10 p.m. and 7 a.m. are weighted by 10 dB (in effect, the number of noise events is multiplied by 10).

Decibel (dB) **-** A unit of sound measurement equal to 10 times the base-10 logarithmic ratio squared of the magnitude of acoustic pressure divided by and relative to a specified reference level. The airborne acoustic pressure reference level is the threshold of hearing of an average human, which is equal to 20 micropascals (μPa or 2×10^{-5} Pa) and is equivalent to 0 dB, the quietest sound a human can hear. A 3 dB increase is barely detectable. A 10 dB increase represents a doubling of loudness.

Noise Contour **-** A line on a map that indicates locations of constant ambient sound level near or around known sources of noise. In practice, noise contours are often shown as calculated for the dominant source of noise only.

Noise Sensitive Uses **-** Dwellings, schools, hospitals, nursing homes, churches and libraries.

Time Average Sound Level (L_{eqT} - dB) **-** The level, in decibels, of the mean sound pressure averaged over time period T. This is often referred to as "equivalent sound level" and hence the "eq" subscript. The "equivalence" is to a sound of constant level that has the same total acoustic energy content.

Vibration Category 1 (High Sensitivity Use) **-** Buildings where vibration would interfere with operations within the building, including levels that may be well below those associated with human annoyance. Examples include: concert halls; vibration-sensitive research and manufacturing; hospitals with vibration-sensitive equipment; and, university research operations.

Vibration Category 2 (Residential) - All residential land uses and any buildings where people sleep, such as hotels and hospitals.

Vibration Category 3 (Institutional) - Schools, churches, other institutions, and quiet offices that do not have vibration-sensitive equipment, but still have the potential for activity interference.

C. Applicable General Plan Goals and Policies

The following goals and policies of the Ventura County General Plan are applicable to this issue:

Countywide Goals, Policies and Programs:

Goal 2.16.1

Policies 2.16.2-1 through -3

Lake Sherwood/Hidden Valley Area Plan:

Goals 3.3.1-1 & -2

Policies 3.3.2-1 through 5

Oak Park Area Plan:

Goals 2.4.1-1 & -2

Policies 2.4.2-1 through -5

Ojai Valley Area Plan:

Goals 2.4.1-1 & -2

Policies 2.4.2-1 through -3

Piru Area Plan:

Goals 2.4.1-1 & -2

Policies 2.4.2-1 through -3

Thousand Oaks Area Plan:

Goals 2.3.1-1 & -2

Policy 2.3.2

D. Threshold of Significance Criteria

Noise Thresholds:

Any project that produces noise in excess of the standards for noise in the Ventura County General Plan Goals, Policies and Programs (Section 2.16) or the applicable Area Plan , has the potential to cause a significant noise impact. Noise-generating uses that either individually or when combined with other recently approved, pending, and probable future projects, exceeds the noise thresholds of General Plan Noise Policy 2.16.2-1(4) are considered to have a potentially significant impact.

Vibration Thresholds:

1. Construction Threshold - Any project that either individually or when combined with other recently approved, pending, and probable future projects, includes construction activities involving blasting, pile-driving, vibratory compaction, demolition, and drilling or excavation which exceed the threshold

criteria provided in the Transit Noise and Vibration Impact Assessment (Section 12.2),[2] is considered to have a potentially significant impact.

Table 1 - Screening Distances for Vibration Assessment

Vibration-Generating Transit Use	**Critical Distance for Land Use Categories* Distance from Right-of-Way or Property Line (feet)**		
	Category 1	**Category 2**	**Category 3**
Steel-Wheeled/Steel-Rail Vehicle Transit Uses			
Conventional Commuter Railroad	600	200	120
Rail Rapid Transit	600	200	120
Light Rail Transit	450	150	100
Intermediate Capacity Transit	200	100	50
Rubber-Tire Heavy Vehicle Uses			
Rubber-Tire Heavy Vehicles (if not previously screened out)**	100	50	--

*See the “Definition of Technical Terms” (above) for the land uses that fall within each of the Categories, as well as the Transit Noise and Vibration Impact Assessment, Appendix A, for the definitions of vibration-generating transit uses listed in this table. For the purposes of screening procedures, concert halls and television studios should be evaluated as Category 1, and theaters and auditoriums should be evaluated as Category 2.

**See the discussion below.

Source: Transit Noise and Vibration Impact Assessment, Table 9.2.

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2. Transit Use Thresholds - Table 1 lists the thresholds for vibration-generating transit uses, based on the type of transit use and the location of the transit use in relation to sensitive use categories. If a project would result in a transit use located within any of the critical distances of the vibration-sensitive uses listed in Table 1, the project has the potential to result in a significant impact and must be evaluated using the Transit Noise and Vibration Impact Assessment (Chapters 8 through 11).[3]

3. Commercial/Industrial Use Vibration Thresholds:

   a. Any project that would generate new heavy vehicle (e.g., semi truck or bus) trips on uneven roadways located within proximity to sensitive uses has the potential to either individually or when combined with other recently approved, pending, and probable future projects, exceed the threshold criteria of the Transit Use Thresholds for rubber-tire heavy vehicle uses (Item No. 3 and Table 1, above), thereby resulting in a potentially significant impact.

[2] Ibid

[3] Ibid.

b. Any project that involves blasting, pile-driving, vibratory compaction, demolition, drilling, excavation, or other similar types of vibration-generating activities has the potential to either individually or when combined with other recently approved, pending, and probable future projects, exceed the threshold criteria[4] provided in the *Transit Noise and Vibration Impact Assessment* (Section 12.2),[5] thereby resulting in a potentially significant impact.

E. Methodology

Noise

Construction noise impacts shall be evaluated using the assessment methodology, criteria, and reporting procedures provided in the Construction Noise Threshold Criteria and Control Measures.[6] All other types of noise impacts shall be evaluated pursuant to the following procedures.

Step 1 - Preliminary Noise Assessment

A preliminary noise assessment shall be conducted by the County Agency responsible for administering the proposed development project. The purpose of the preliminary noise assessment is to determine if a consultant prepared acoustical analysis is required. (See Step 2, below) The preliminary noise assessment shall consist of the following:

a. **Determine if the Proposed Use is Noise Sensitive or a Noise Generator -** If the proposed use is *noise sensitive*, see Steps 1.b, 1c and 1.d below. If the proposed use is a potential noise generator, see Step 1.e below.

b. **Consult) GIS Noise Exposure/Contour Maps -** Using Planning GIS, view the project site with the noise layers turned on, in order to determine whether or not the noise-sensitive use site is within the 60 dB(A) CNEL contour of a highway or airport . If the project is located within this contour, the noise impact is potentially significant and a consultant prepared acoustical analysis must be completed.

c. **Consult Land Use Maps -** Locate the project area on the General Land Use, Existing Community and Area Plan Maps (as appropriate) of the General Plan, which are available from the Resource Management Agency, GIS Development and Mapping Services Division. If the project is noise-sensitive and is within 500 feet of an industrially designated area, the noise impact is potentially significant and a consultant prepared acoustical analysis must be completed.

d. **Consult GIS Aerial Imagery –** Using Planning GIS, view the project site with the most current aerial imagery layer turned on to determine if a railroad exists within the vicinity of the project site. If a railroad exists, use the measuring tool to determine the distance between the noise-sensitive use site and the railroad. If the noise-sensitive project site is located within 3,400[7] feet of a railroad, the noise impact is potentially significant and a consultant prepared acoustical analysis must be completed.

e. **Estimate Potential Noise Impact -** If the project is a noise-generator, it will be necessary to determine:

- The noise-generating equipment's and activities' estimated noise levels and the times at which the noise levels would occur; and,

---

4 The severity of vibration-related impacts to buildings and humans are the same regardless of the source of the vibration, be it from construction or operational activities, provided that the equipment is equivalent in terms of their vibration-generating potential. Therefore, the construction-related threshold criteria are to be used for commercial/industrial operations.

5 Hanson, Carl E., David A. Towers, and Lance D. Meister. (May 2006).

6 Advanced Engineering Acoustics. (November 2005). *County of Ventura Construction Noise Threshold and Criteria Plan*. Available on-line at: http://www.ventura.org/rma/planning/pdf/ceqa/Construction_Noise_Thresholds.pdf..

7 This distance was determined based on: (1) the maximum indoor noise level for habitable rooms (45 CNEL) stated in the Ventura County General Plan *Goals, Policies and Programs*, Noise Policy 2.16.2-1(1)a; and, (2) the calculated distance in feet between main line railroad tracks and the 45 CNEL contours, for railroads within Ventura County (Ventura County General Plan *Hazards Appendix*, 2005, 94).

- The proximity of the noise-generating equipment to the noise-sensitive uses using the project plans, information gathered during a site visit, aerial imagery, and land use maps that are available from the Resource Management Agency, GIS Development and Mapping Services Division.

In general, noise decreases by 5 dB for each doubling of the distance from the noise source. If the noise from the proposed project is estimated to exceed any of the following standards at the nearest *noise sensitive use*, the noise impact is deemed to have a potentially significant noise impact and a consultant prepared acoustical analysis must be completed:

55 dB(A) between 6:00 a.m. and 7:00 p.m.,

50 dB(A) between 7:00 p.m. and 10:00 p.m., or

45 dB(A) between 10:00 p.m. and 6:00 a.m.

If the preliminary noise assessment reveals that the project does not have the potential to create a significant noise impact and an acoustical analysis is not required, the agency that is responsible for administering the project shall complete the Initial Study Checklist and discussion of responses to the checklist pursuant to the "Instructions for Preparing an Initial Study" provided in the Ventura County Initial Study Assessment Guidelines. However, if the preliminary noise assessment reveals that the project has the potential to create a significant noise impact, a consultant prepared acoustical analysis must be prepared pursuant to the criteria provided in Step 2 (below).

Step 2 - Consultant Prepared Acoustical Analysis

If it is determined that a quantitative assessment is required, a qualified noise consultant shall prepare the analysis (see attached Noise Consultant Qualifications). The agency that is responsible for administering the project will ensure that the consultant meets the minimum qualifications.

Acoustical Analysis Requirements

The purpose of the consultant prepared acoustical analysis is to: determine if the project would result in any potentially significant noise impacts; identify any feasible mitigation measures that might exist to reduce the severity of the noise impacts; and, determine if the noise impacts, after mitigation, are still potentially significant. As such, the acoustical analysis must include a(n):

- Discussion of the existing environmental setting (e.g., a description of the noise sources and *ambient noise* levels of the project site and surrounding area);
- Discussion of recently approved, pending, and probable future noise-generating projects[8] that have the potential to contribute to cumulative impacts to the noise environment and, as such, are included in the acoustical analysis;
- Discussion of the methodology used in collecting noise data (e.g., noise equipment and metrics used). Noise measurements should be taken using standard industry practices, after taking into consideration site-specific characteristics (e.g., buildings, walls, topography, and the location of existing and potential future noise-sensitive receptors in relation to noise generators) which might have an influence on the noise measurements;
- Discussion of the methodology used in calculating project-specific and cumulative noise impacts (e.g., noise models used);
- Presentation of the data on the existing noise environment, as well as data on projected noise levels; and,
- Initial Study checklist and discussion pursuant to the requirements of the "Instructions for Preparing an Initial Study" in the Ventura County Initial Study Assessment Guidelines.

[8] The list of recently approved, pending, and probable future projects is available on-line at: http://www.ventura.org/rma/planning/Permits/projects.html.

Step 3 - Environmental Document Determination

If the acoustical analysis shows that there would be no significant impact, the Initial Study Checklist should be checked LS. If the study shows that there would be potentially significant noise impacts, but feasible mitigation measures could be incorporated into the project which could reduce the impact to a less than significant level, then the Initial Study Checklist should be checked PS-M. If the study shows that there would be significant, immitigable noise impacts (except construction related noise), the project could not be approved because of the General Plan noise policies. .

Step 4 - Update Data Base

In a continuing effort to update County noise data, a copy of all consultants' acoustical analysis shall be sent to the Planning Director.

Vibration:

Construction-Related Vibration

The agency that is responsible for administering the project shall request from the applicant information regarding the: types of construction activities that will be required; duration of each construction phase; and, types and number of construction equipment that will be used during each phase of construction. Using the list of recently approved, pending, and probable future projects,[9] the agency also shall identify other vibration-generating projects located within the vicinity of the project site that have the potential to contribute to cumulative impacts relating to vibration. Once this information is obtained, the agency that is responsible for administering the project shall evaluate potential construction-related vibration impacts using the assessment methodology provided in the Transit Noise and Vibration Impact Assessment (Section 12.2 et seq).[10]

As discussed in the Transit Noise and Vibration Impact Assessment, many projects will not have the potential to create prolonged annoyance or damage from construction vibrations and, therefore, will only require a qualitative assessment of potential construction-related vibration impacts. In these cases, the agency that is responsible for administering the project shall prepare the Initial Study checklist and discussion pursuant to the requirements of the "Instructions for Preparing an Initial Study" in the Ventura County Initial Study Assessment Guidelines.

Steel-Wheeled/Steel-Rail Vehicle Transit Uses

In order to determine if a project has the potential to generate a significant impact using the threshold criteria provided above (Threshold Criterion No. 3 and Table 1), the agency that is responsible for administering the project will need to determine if any vibration-sensitive uses are located within proximity to the project site. This information can be gathered by observation during a site visit and using the aerial imagery in Planning GIS. During the site visit, the agency that is responsible for administering the project shall identify any vibration-sensitive uses located within proximity to the project site. Using Planning GIS, the agency that is responsible for administering the project should view the project site with the most current aerial imagery data layer, identify the location of the vibration sensitive use that was identified during the site visit vis-à-vis the project site, and use the measuring tool to determine the distance between the vibration-sensitive use and the project site.

If the project site is located outside of the critical distance for the vibration-sensitive use specified in Table 1 (above), the project would have a less-than-significant impact, and the agency that is responsible for administering the project shall complete the Initial Study checklist and discussion pursuant to the requirements of the "Instructions for Preparing an Initial Study" in the Ventura County Initial Study Assessment Guidelines.

If the project site is located within the critical distance specified in Table 1 (above), the project shall be evaluated for potential vibration impacts using the assessment methodology, criteria, and reporting procedures provided in the Transit Noise and Vibration Impact Assessment (Chapters 9 through 11, and

[9] See Footnote 13 (above).

[10] Hanson, Carl E., David A. Towers, and Lance D. Meister. (May 2006).

13).[11] Both project-specific and the project's contribution to cumulative impacts shall be evaluated. Cumulative impacts shall be evaluated by incorporating into the assessment all recently approved, pending, and probable future projects located within the vicinity of the project site that have the potential to contribute to cumulative impacts relating to vibration.[12] A qualified engineer must prepare the analysis. The agency that is responsible for administering the project will be responsible for selecting the consultant, and shall develop its own contract procedures with which to hire consultants. The consultants must meet the qualifications discussed in the Construction-Related Vibration Section (above). The analysis must include an Initial Study checklist and discussion that meets the requirements of the "Instructions for Preparing an Initial Study" in the Ventura County Initial Study Assessment Guidelines.

Rubber-Tire Heavy Vehicle Transit Uses

Rubber-tire heavy vehicles traveling on roadways typically will not produce a significant vibration impact, except in situations where a large number of heavy vehicles (e.g., semi trucks or buses) are traveling along uneven roadways within proximity to sensitive uses. Therefore, if a project would build, place or expand vibration-sensitive uses in close proximity to roadways on which a large number of rubber-tire heavy vehicles travel, the following initial screening questions must be asked to determine if the project would result in a potentially significant vibration impact:

1. Will the project result in the location of vibration-sensitive uses in close proximity to roadways with expansion joints, speed bumps, or other design features that result in unevenness in the road? Such roadway irregularities can result in perceptible ground-borne vibration at distances up to 75 feet away.
2. Will the project result in buses, trucks or other heavy vehicles operating near a vibration-sensitive use? Research using electron microscopes and manufacturing of computer chips are examples of vibration-sensitive uses.
3. Will the project result in the operation of vehicles inside or directly underneath buildings that are vibration-sensitive? Special considerations are often required for shared-use facilities such as a bus station located inside an office building complex.

If the answer is "no" to all three of the initial screening questions, the project would have a less-than-significant impact, and the agency that is responsible for administering the project shall complete the Initial Study checklist and discussion that meets the requirements of the "Instructions for Preparing an Initial Study" in the Ventura County Initial Study Assessment Guidelines.

If the answer is "yes" to any one of the initial screening questions, the project must be evaluated using the screening criteria in Table 1 (above). If the project would result in the location of rubber-tire heavy vehicle uses within any of the critical distances of the sensitive use categories listed in Table 1, the project has the potential to generate a significant impact, and must be evaluated using the Transit Noise and Vibration Impact Assessment.[13] Both project-specific and the project's contribution to cumulative noise impacts shall be evaluated. Cumulative impacts shall be evaluated by incorporating into the assessment all recently approved, pending, and probable future projects located within the vicinity of the project site that have the potential to contribute to cumulative impacts relating to vibration.[14] A qualified engineer must prepare the analysis. The agency that is responsible for administering the project will be responsible for selecting the consultant, and shall develop its own contract procedures with which to hire consultants. The consultants must meet the qualifications discussed in the Construction-Related Vibration Section (above). The analysis must include an Initial Study checklist and discussion that meets the requirements of the "Instructions for Preparing an Initial Study" in the Ventura County Initial Study Assessment Guidelines.

[11] Hanson, Carl E., David A. Towers, and Lance D. Meister. (May 2006).

[12] See Footnote 13 (above).

[13] Hanson, Carl E., David A. Towers, and Lance D. Meister. (May 2006).

[14] See Footnote 13 (above).

Commercial- or Industrial-Generated Vibration

Any project that would generate new heavy vehicle (e.g., semi truck or bus) trips on uneven roadways located within proximity to sensitive uses shall be evaluated using the methodology prescribed for rubber-tire heavy vehicle transit uses (above).

Any project that involves blasting, pile-driving, vibratory compaction, demolition, drilling, excavation, or other similar types of vibration-generating activities shall be evaluated using the methodology prescribed for construction-related vibration (above).

Adopted by the Board of Supervisors on July 27, 2010

Attachment
Noise Consultant Qualifications

The Environmental Quality Advisory Committee has established the following minimum qualifications for noise consultants for the purpose of conducting acoustical analysis. Noise consultants must demonstrate that they meet the minimum qualifications as defined below:

Education - Consultants should hold an advanced degree from an accredited institution (e.g., M.A., M.S., or Ph.D.) in Physics, Mathematics, Engineering or related discipline. Consultants without an advanced degree in these fields must provide documentation of at least five years of relevant research or field work in acoustical engineering.

Experience - All consultants must possess a working knowledge of physics, acoustical principles, utilization of sound level meters, and applicable state codes. Experience with CEQA is highly desirable. Consultants also must have experience in the following:

- Acquiring and evaluating data;
- Creating mitigation monitoring and reporting programs; and,
- Evaluating designs for compliance with standards relative to land use.

Local and State Expertise - Consultants must provide evidence of expertise in community/industrial noise (e.g., the preparation of Noise Elements of General Plans, technical reports, studies, mitigation measures, or noise ordinances).

Professional Certification - Evidence of professional certification is highly desirable though not required.

Vibration Consultant Qualifications

Environmental Quality Advisory Committee has established the following minimum qualifications for vibration consultants for the purpose of conducting vibration analyses. Vibration consultants must demonstrate that they meet the minimum qualifications for vibration consultants as defined below:

Education - Consultants should hold an advanced degree from an accredited institution (e.g., M.A., M.S., or Ph.D.) in Physics, Mathematics, Engineering or related discipline. Consultants without an advanced degree in these fields must provide documentation of at least five years of relevant research or field work in engineering activities involving vibration impact assessment.

Experience: All consultants must possess a working knowledge of physics, vibration principles, and applicable state codes. Experience with CEQA is highly desirable. Consultants also must have at least five years experience in the following:

- Acquiring and evaluating data;
- Creating mitigation monitoring and reporting programs; and,
- Evaluating designs for compliance with standards relative to land use.

Local and State Expertise - Consultants must provide evidence of expertise in transportation, construction, and/or industrial vibration (e.g., the preparation of environmental assessments, technical reports, studies, or mitigation measures).

Professional Certification - Evidence of professional certification is highly desirable though not required.

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COUNTY OF VENTURA

CONSTRUCTION NOISE THRESHOLD CRITERIA AND CONTROL PLAN

Adopted November 2005
Amended July 2010

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APPENDICES

Construction and Noise

A distinct difference between the construction industry and other industries is that construction is, in the vast majority of cases, a temporary activity. There are very few construction projects that last several years. Even very large buildings and roads are under construction in a particular area for only a reasonably short time period, seldom more than two years. As the construction project progresses, the noise from such a project changes as the different phases of the construction are undertaken. Noise mitigation programs that take a long time to implement or officials that are very slow to act usually find that the problem is gone by the time the remedies are in place. Often a construction contractor can avoid most community complaints simply by notifying the potentially affected residents and other sensitive receptors regarding the purpose of the project and the expected completion schedule. People want to know how soon the construction will be finished and what are the project benefits to the neighborhood.

Thus, rather than being a continuous problem, construction noise is always a temporary site-specific problem. As such, there are many factors that contribute to the potential impacts due to construction noise, including the location of sensitive receptors, the type or phase of construction, the combination of equipment used, the site layout, and the construction methods employed. The noise created by construction equipment will vary greatly during a project, depending on such factors as the type of equipment, the specific equipment models, the operation being performed, the care employed by equipment operators and the condition of the equipment being used.

Fundamentals of Sound

A brief introduction to the fundamentals of sound may be useful. Physically, sound magnitude is measured and quantified in terms of the decibel (dB), which is a unit on a logarithmic scale based on the ratio of the measured sound pressure to the reference sound pressure of 20 micropascal (20 μPa = 20 x 10^{-6} N/m^2). The decibel system can be very confusing to people since it is logarithmic and not arithmetic. For example, doubling or halving the number of sources of equal sound (a 2-fold change in acoustic *energy*) changes the receptor sound by only 3 dB, which is a barely perceptible sound loudness change for humans. On the other hand, a doubling or halving the sound *loudness* at the receiver results from a 10 dB change, which also represents a 10-fold change in the acoustic *energy*.

In addition, the human hearing system exhibits a slow time response and also is not equally sensitive to the same sound pressure level at low, middle and high acoustic frequencies. Because of this variability, a frequency-dependent, adjustment called “A-weighting” has been devised so that sound may be measured in a manner similar to the way the human hearing system responds. The A-weighted sound level is abbreviated "dBA". Figure 1 gives typical A-weighted sound levels for various noise sources and the typical reactions to these levels. All sound levels referred to in this document are A-weighted, slow response, sound pressure levels.

The two acoustical metrics most frequently used to provide a single number sound level for time-varying sounds over a given time period are the energy equivalent or energy average sound level (L_{eq}) and the “slow response” maximum sound level (L_{max}). The long-term A-weighted energy average sound level, called the 24-hour equivalent sound level, L_{eq}(24h), is the logarithmic average of the individual 24 hourly equivalent sound levels, $L_{eq}(h_i)$. Since it has been found that noise is more disturbing in the evening and nighttime when the ambient noise is generally quieter, modifications to the 24-hour L_{eq} have been adopted. The Day-Night sound level (DNL or L_{dn}) is a 24-hour energy average noise level based on the daytime and nighttime hourly average L_{eq}(h) noise levels, with a 10 dB penalty added to each hourly nighttime average

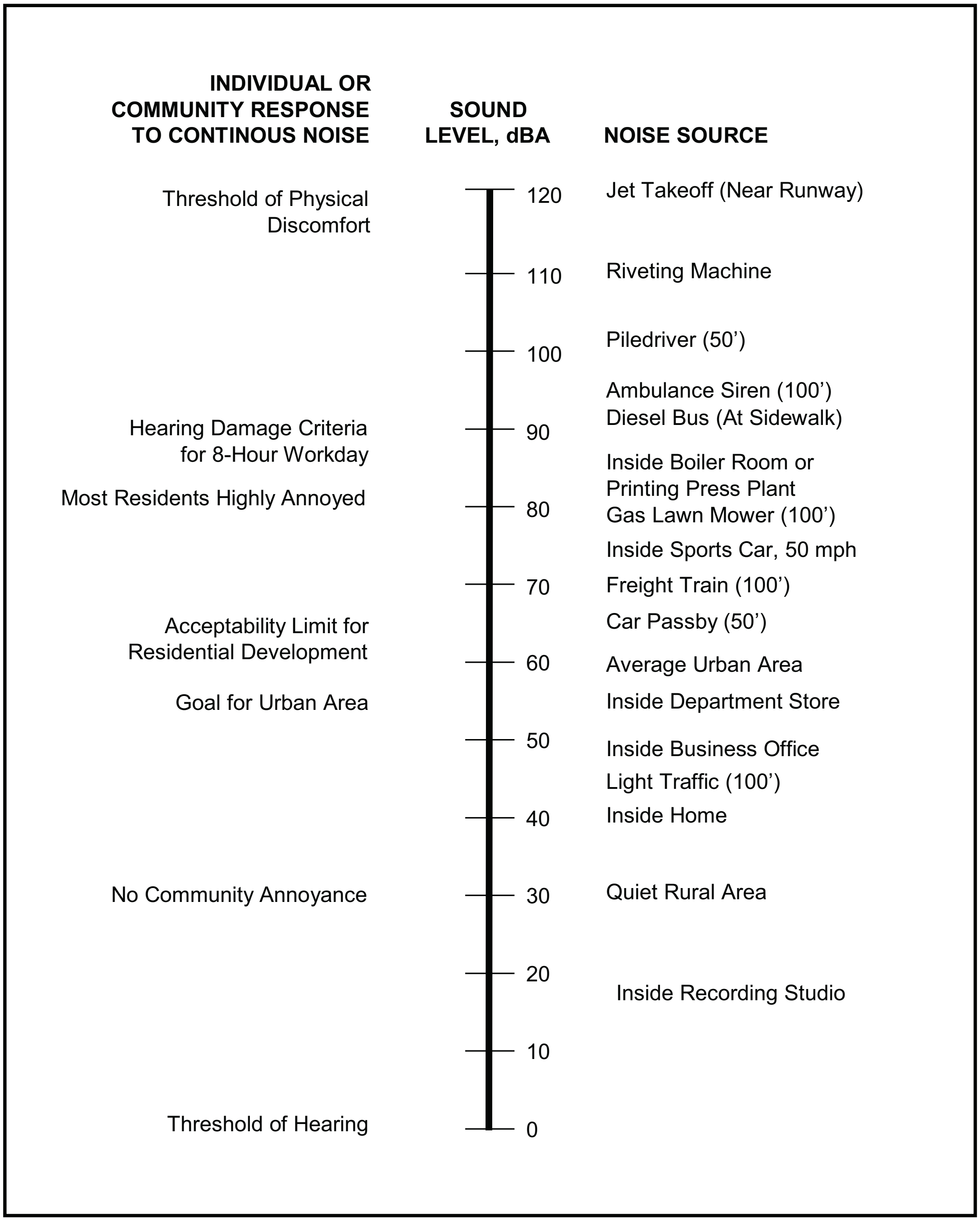

Figure 1. Typical Sound Levels of Noise Sources and Expected Reactions

noise level. Another long-term noise descriptor is the Community Noise Equivalent Level (CNEL or L_{den}). The CNEL is a 24-hour average noise level based on the daytime, evening and nighttime hourly average noise levels, with a 5 dB penalty added to each of the three evening hourly average noise levels and a 10 dB penalty added to each of the nine hourly nighttime average noise levels. The CNEL is used primarily in the State of California.

Noise from Typical Construction Equipment and Operations

The equivalent sound level (L_{eq}) as it relates to construction activity depends on several factors including machine power, the manner of operation and the amount of time the equipment is operated over a given time period. The following provides information on typical levels generated by various construction equipment and provides guidance on determining the noise from construction activities.

The most dominant source of noise for the majority of construction equipment is the engine exhaust, which is usually a diesel engine. However, for some construction work, such as impact pile driving or pavement breaking, the noise produced by the work process is the dominant source. Similar construction activities can create different noise impacts, depending on the location of the construction site, the terrain and other intervening features and the type of receptor populations in the vicinity of the construction site.

For most construction activities, different construction equipment operate in one of two modes, *stationary* and *mobile*. *Stationary* equipment are those that operate in one small area for one or more days at a time, with either a steady power cycle operation (e.g., pumps, generators, compressors, etc.) or a periodic impulsive operation (e.g., pile drivers, pavement breakers, etc.). *Mobile* equipment are those that frequently move around a much larger area of the construction site with power applied in a rapidly changing, non-steady fashion (e.g., bulldozers, loaders, etc.), or move to and from the construction site (e.g., haul trucks, material trucks, etc.). These variations in operating power and location add a great deal of complexity in characterizing the source noise level of a given piece of construction equipment. This complexity can be simplified by determining the equipment noise level at a 50-foot reference distance from the equipment operating at full power and adjusting its full power noise level according to the duty cycle or “usage factor” of the particular construction activity and project phase to determine the characteristic noise level of the operation during each phase.

The Society of Automotive Engineers has developed standardized procedures for measuring reference noise levels for the certification of mobile and stationary construction equipment. For informational purposes, typical 50-foot reference noise levels from representative pieces of construction equipment are listed in Figure 2. The major noise producing construction activities within the County would likely be pile driving, pavement breaking, demolition, excavation, earth moving, and haul trucking.

Noise-sensitive receptors that would be affected by such construction activities within the County are listed in Figure 3, along with their periods of greatest sensitivity to construction noise.

Construction activity noise is characterized by the combined duty cycle and resulting noise emission of each piece of equipment. The duty cycle is expressed in terms of the "usage factor" of the equipment, which is the percentage of time during the work period that the equipment is operating under load or at near full power. In addition to the minute-by-minute variations in noise producing activities, construction projects are carried out in several different phases.

Figure 2. Typical Construction Equipment Noise

Equipment Type Noise Source	Dominant Noise Components[1]	50-Foot Noise Level (L_{eq}) dBA[2, 3]	Noise Level Range (L_p) dBA[2, 3]	50-Foot Maximum Noise Level (L_{max}) dBA[2 3]
Air Compressor (portable)[4]	E, C, H, I	81	76-89	89
Air Compressor (stationary)	E, C, H, I	82	76-89	89
Auger, Drilled Shaft Rig	E, C, F, I, W	82	76-89	89
Backhoe	E, C, F, I, H, W	85	81-90	90
Bar Bender	E, P, W	82	78-88	85
Chain Saw	E, W, C	85	72-88	88
Compactor	E, C, F, I, W	82	81-85	85
Concrete Batch Plant	W, E, C	92	80-96	96
Concrete Mixer (small trailer)	W, E, C	67	65-68	68
Concrete Mixer Truck	E, C, F, W, T	85	69-89	89
Concrete Pump Trailer	E, C, H	82	74-84	84
Concrete Vibrator	W, E, C	76	68-81	81
Crane, Derrick	E, C, F, I, T	88	79-90	90
Crane, Mobile	E, C, F, I, T	83	80-85	85
Dozer (Bulldozer)	E, C, F, I, H	80	77-90	90
Excavator	E, C, F, I, H, W	87	83-92	92
Forklift	E, C, I, W	84	81-86	86
Front End Loader	E, C, F, I, H	79	77-90	90
Generator	E, C	78	71-87	87
Gradall	E, C, F, I, W	82	78-85	85
Grader	E, C, F, I, W	85	79-89	89
Grinder	W	80	75-82	82
Hydraulic Hammer	W, E, C, H	102	99-105	105
Impact Wrench	W, P	85	75-85	85
Jack Hammer	P, W, E, C	82	75-88	88
Paver	E, D, F, I	89	82-92	92
Pile Driver (Impact/ Sonic/ Hydraulic)	W, P, E	101 / 96 / 65	94-107 / 90-99 / 65	107 / 99 / 65
Pavement Breaker	W, E, P	82	75-85	85
Pneumatic Tool	P, W, E, C	85	78-88	88
Pump	E, C	76	68-80	80
Rock Drill	W, E, P	98	83-99	99
Roller	E, C, F, I, W	74	70-83	83
Sand Blaster	W, E, C, H, I	85	80-87	87
Saw, Electric	W	78	59-80	80
Scraper	E, C, F, I, W	88	82-91	91
Shovel	E, C, F, I, W	82	77-90	90
Tamper	W, E, C	86	85-88	88
Tractor	E, C, F, I, W	82	77-90	90
Trencher		83	81-85	85
Trucks (Under Load)	E, C, F, I, T	88	81-95	95
Water Truck	W, E, C, F, I, T	90	89-94	94
Other Equipment with Diesel	E, C, F, I	82	75-88	88

Note 1. Ranked noisy components. C=Casing, E=Exhaust, F=Fan, H=Hydraulics, I=Intake air, P=Pneumatic exhaust, T=Transmission, W=Work tool.
Note 2. Table based on EPA studies and measured data from various construction equipment and manufacturer's data.
Note 3. Equipment noise levels are at 50 feet from individual construction equipment and with no other noise contributors.
Note 4. Portable air compressor rated at 75 cfm or greater and operating at greater than 50 psi.

Each phase has a different equipment mix depending on the work to be accomplished. Some have more continuous noise, while others may have more impact type noise. Typical construction phases and equipment usage factors are given in Appendix A. Construction phase equipment usage factors, combined with receptor distances and equipment noise emissions, can be used in estimating future project noise. Such methods are discussed in Appendix B.

Figure 3. Noise-Sensitive Receptors

Receptor Description	Typical Sensitive Time Period
Hospitals, Nursing Homes (quasi-residential)	24 hours
Single-Family and Multi-Family Dwellings (residential)	Evening/Night
Hotels/Motels (quasi-residential)	Evening/Night
Schools, Churches, Libraries (when in use)	Daytime/Evening

Construction Noise Threshold Criteria

Standardized federal or state criteria have not been adopted for assessing construction noise impacts. Therefore, municipal planning criteria are generally developed and applied on a project-specific basis. Construction project noise criteria take into account the existing noise environment, the time-varying noise during the various phases of construction activities, the duration of the construction, and the adjacent land use.

Specific construction noise limits for noise-sensitive locations are not currently specified in the General Plan or administrative code of the County of Ventura. This document, therefore, is intended to establish construction noise thresholds and standard noise monitoring and control measures. These threshold criteria, monitoring and control measures shall be applied to all discretionary development projects (public projects, PD Permits, Conditional Use Permits) and should be applied to ministerial development permits by amending the county building code (including excavation and grading). Construction noise monitoring methods are discussed in Appendix C. Construction projects that exceed the noise threshold criteria at sensitive receptor sites, shall implement effective noise mitigation measures recommended by the manufacturers, considering the guidelines of Appendix D. The permitting agency/department shall review the construction noise mitigation measures and confirm compliance with the noise threshold criteria.

During daytime hours, construction work should comply with the County of Ventura construction noise threshold criteria (NTC), defined hereafter. Normally, no evening or nighttime construction activity is permitted in areas having noise-sensitive receptors. However, in the event such activity is deemed necessary and is permitted, reduced noise threshold criteria are provided for construction that must occur during evening and/or nighttime hours. Emergency construction work is exempt from these construction noise thresholds.

Daytime Construction[1] - Daytime (7:00 a.m. to 7:00 p.m. Monday through Friday, and from 9:00 a.m. to 7:00 p.m. Saturday, Sunday and local holidays) generally means any time period not

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[1] These criteria only apply to the noise-sensitive receptors that are sensitive to noise impacts during the daytime. See Figure 3 (above).

specifically defined as a more noise-sensitive time period. The daytime construction noise threshold criteria are given in Figure 4. Depending on project duration, the daytime noise threshold criteria shall be the greater of the fixed $L_{eq}(h)$ limit (which includes non-construction evening and nighttime noise) or the measured ambient $L_{eq}(h)$ plus 3 dB.

Evening Construction[2] - Evening hours (7:00 p.m. to 10:00 p.m.) are more noise-sensitive time periods. Therefore, evening construction noise threshold criteria differ from the daytime criteria. Overall project construction noise, for the noise-sensitive hours specified, shall not exceed the noise threshold criteria listed in Figure 5, at the nearest noise-sensitive receptor area or 10 feet from the façade of the nearest noise-sensitive building.

Nighttime Construction[3] - Nighttime hours (10:00 p.m. to 7:00 a.m. Monday through Friday, and from 10:00 p.m. to 9:00 a.m. Saturday, Sunday and local holidays) are the most noise-sensitive time periods. Therefore, nighttime and holiday construction noise threshold criteria differ from the daytime and evening criteria. Overall project construction noise, for the noise-sensitive hours specified, shall not exceed the noise threshold criteria listed in Figure 6, at the nearest noise-sensitive receptor area or 10 feet from the façade of the nearest noise-sensitive building.

Maximum Construction Noise - In addition, the construction-related, slow response, instantaneous maximum noise (L_{max}) shall not exceed the noise threshold criteria by 20 dBA more than eight times per daytime hour, more than six times per evening hour and more than four times per nighttime hour.

Determination of Compliance - The construction noise at sensitive receptor locations for each construction phase is due to the contributions of each piece of noise producing equipment used in each construction phase. The resulting construction phase noise must be compared to the construction noise threshold criteria to determine whether noise mitigation measures are required. The construction noise monitoring methods are discussed in Appendix C and typical noise mitigation measures are given in Appendix D. During periods of greater construction noise activity, the construction noise shall be monitored by a designated person trained in the use of a sound meter in accordance with the methods of Appendix C. When construction noise fails to comply with the appropriate noise threshold criteria, or falls out of compliance during use, the designated noise monitor shall immediately identify the non-compliant activity or equipment. Either the non-compliant activity must be stopped and the equipment removed from service or effective remedial action must be taken, similar to the noise mitigation measures of Appendix D, to restore compliance with the respective noise threshold criteria.

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[2] These criteria apply to all noise-sensitive receptors. See Figure 3 (above).

[3] These criteria only apply to the noise-sensitive receptors that are sensitive to noise impacts during the nighttime. See Figure 3 (above).

Figure 4. Daytime Construction Activity Noise Threshold Criteria

Construction Duration Affecting Noise-sensitive Receptors	Noise Threshold Criteria shall be the greater of these noise levels at the nearest receptor area or 10 feet from the nearest noise-sensitive building	
	Fixed Leq(h), dBA	Hourly Equivalent Noise Level (L_{eq}), dBA[1, 2]
0 to 3 days	75	Ambient L_{eq}(h) + 3 dB
4 to 7 days	70	Ambient L_{eq}(h) + 3 dB
1 to 2 weeks	65	Ambient L_{eq}(h) + 3 dB
2 to 8 weeks	60	Ambient L_{eq}(h) + 3 dB
Longer than 8 weeks	55	Ambient L_{eq}(h) + 3 dB

Note 1. The instantaneous L_{max} shall not exceed the NTC by 20 dBA more than 8 times per daytime hour.
Note 2. Local ambient Leq measurements shall be made on any mid-week day prior to project work.

Figure 5. Evening Construction Activity Noise Threshold Criteria

Receptor Location	Evening Noise Threshold Criteria shall be the greater of these noise levels at the nearest receptor area or 10 feet from the nearest noise-sensitive building	
	Fixed Leq(h), dBA	Hourly Equivalent Noise Level (L_{eq}), dBA[1, 2]
Residential	50	Ambient L_{eq}(h) + 3 dB

Note 1. The instantaneous L_{max} shall not exceed the NTC by 20 dBA more than 6 times per evening hour.
Note 2. Hourly evening local ambient noise measurements shall be made on a typical mid-week evening prior to project work.

Figure 6. Nighttime Construction Activity Noise Threshold Criteria

Receptor Location	Nighttime Threshold Criteria shall be the greater of these noise levels at the nearest receptor area or 10 feet from the nearest noise-sensitive building	
	Fixed Leq(h), dBA	Hourly Equivalent Noise Level (L_{eq}), dBA[1, 2]
Resident, Live-in Institutional	45	Ambient L_{eq}(h) + 3 dB

Note 1. The instantaneous L_{max} shall not exceed the NTC by 20 dBA more than 4 times per nighttime hour.
Note 2. Hourly nighttime local ambient noise measurements shall be made on a typical mid-week night prior to project work.

Construction Noise Complaints

The daytime noise threshold criteria for construction activity are provided in Figure 4. When evening and nighttime construction is necessary, evening and nighttime construction operations (except for emergency construction) must comply with the evening and nighttime noise threshold criteria listed in Figures 5 and 6, respectively. If these respective construction noise threshold criteria are exceeded, there would likely be strong adverse community reaction. However, noise complaints are possible, even when construction work complies with the criteria.

The project, therefore, must be prepared to appropriately respond to complaints and keep a "Complaint Log," noting date, time, complainant's name, nature of the complaint, and any corrective action taken. The project manager shall publish and distribute to the potentially affected community, a "Hot Line" telephone or pager number, that is attended during active construction working hours, for use by the disturbed public to register complaints.

Since noise complaints are still possible, even when construction work complies with the noise threshold criteria. Noise characteristics other than loudness (e.g., squeals, incessant banging, etc.) can result in complaints. An unusual number of construction noise complaints may require that additional noise mitigation be undertaken. Careful identification of the specific conditions of activity responsible for the noise complaints would be necessary to determine additional appropriate mitigation measures. Appendix D suggests typical measures to be considered for greater mitigation than previously implemented. Proper measures shall be applied before continuing the activity responsible for the unusual number of complaints. For especially difficult cases, the assistance of a qualified construction noise control consultant may be required.

APPENDICES

A. Typical Equipment Noise, Construction Phases and Use Factors

B. Estimating Construction Equipment and Project Noise

C. Construction Noise Monitoring

D. Construction Noise Mitigation Measures

Appendix A
Typical Equipment Noise, Construction Phases and Use Factors
Figure A-1. Typical Construction Equipment Noise

Equipment Type Noise Source	Dominant Noise Components[1]	50-Foot Noise Level (L_{eq}) dBA[2, 3]	Noise Level Range (L_p) dBA[2, 3]	50-Foot Maximum Noise Level (L_{max}) dBA[2 3]
Air Compressor (portable)[4]	E, C, H, I	81	76-89	89
Air Compressor (stationary)	E, C, H, I	82	76-89	89
Auger, Drilled Shaft Rig	E, C, F, I, W	82	76-89	89
Backhoe	E, C, F, I, H, W	85	81-90	90
Bar Bender	E, P, W	82	78-88	85
Chain Saw	E, W, C	85	72-88	88
Compactor	E, C, F, I, W	82	81-85	85
Concrete Batch Plant	W, E, C	92	80-96	96
Concrete Mixer (small trailer)	W, E, C	67	65-68	68
Concrete Mixer Truck	E, C, F, W, T	85	69-89	89
Concrete Pump Trailer	E, C, H	82	74-84	84
Concrete Vibrator	W, E, C	76	68-81	81
Crane, Derrick	E, C, F, I, T	88	79-90	90
Crane, Mobile	E, C, F, I, T	83	80-85	85
Dozer (Bulldozer)	E, C, F, I, H	80	77-90	90
Excavator	E, C, F, I, H, W	87	83-92	92
Forklift	E, C, I, W	84	81-86	86
Front End Loader	E, C, F, I, H	79	77-90	90
Generator	E, C	78	71-87	87
Gradall	E, C, F, I, W	82	78-85	85
Grader	E, C, F, I, W	85	79-89	89
Grinder	W	80	75-82	82
Hydraulic Hammer	W, E, C, H	102	99-105	105
Impact Wrench	W, P	85	75-85	85
Jack Hammer	P, W, E, C	82	75-88	88
Paver	E, D, F, I	89	82-92	92
Pile Driver (Impact/ Sonic/ Hydraulic)	W, P, E	101 / 96 / 65	94-107 / 90-99 / 65	107 / 99 / 65
Pavement Breaker	W, E, P	82	75-85	85
Pneumatic Tool	P, W, E, C	85	78-88	88
Pump	E, C	76	68-80	80
Rock Drill	W, E, P	98	83-99	99
Roller	E, C, F, I, W	74	70-83	83
Sand Blaster	W, E, C, H, I	85	80-87	87
Saw, Electric	W	78	59-80	80
Scraper	E, C, F, I, W	88	82-91	91
Shovel	E, C, F, I, W	82	77-90	90
Tamper	W, E, C	86	85-88	88
Tractor	E, C, F, I, W	82	77-90	90
Trencher		83	81-85	85
Trucks (Under Load)	E, C, F, I, T	88	81-95	95
Water Truck	W, E, C, F, I, T	90	89-94	94
Other Equipment with Diesel	E, C, F, I	82	75-88	88

Note 1. Ranked noisy components. C=Casing, E=Exhaust, F=Fan, H=Hydraulics, I=Intake air, P=Pneumatic exhaust, T=Transmission, W=Work tool.
Note 2. Table based on EPA studies and measured data from various construction equipment and manufacturer's data.
Note 3. Equipment noise levels are at 50 feet from individual construction equipment and with no other noise contributors.
Note 4. Portable air compressor rated at 75 cfm or greater and operating at greater than 50 psi.

Figure A-2
Typical Domestic Housing Construction Equipment and Use Factors

Equipment Item	50-Foot Leq, dBA	Mitigated1 Leq, dBA	Highest Hourly Use Percentage per Construction Phase				
			Clear	Excavate	Base	Build	Finish
Air Compressor	81	75	--2	10	--	--	25
Backhoe	85	75	2	4	--	--	2
Concrete Mixer	85	75	--	--	4	8	16
Concrete Pump	82	75	--	--	--	--	--
Concrete Vibrator	76	75	--	--	--	--	--
Crane, Derrick	88	75	--	--	--	--	--
Crane, Mobile	83	75	--	--	--	10	4
Dozer	80	75	4	8	--	--	4
Generator	78	75	4	--	--	--	--
Grader	85	75	5	--	--	--	2
Jack Hammer	82	75	--	--	--	--	3
Loader	79	75	4	8	--	--	4
Paver	89	80	--	--	--	--	3
Pile Driver	101	95	--	--	--	--	--
Pneumatic Tool	85	80	--	--	4	10	4
Pump	76	75	--	4	7	--	--
Rock Drill	98	80	--	1	--	--	0.5
Roller	74	74	--	--	--	--	4
Saw, Electric	78	75	--	--	4 (2) 3	10 (2)	4 (2)
Scraper	88	80	5	--	--	--	1
Shovel	82	75	--	2	--	--	--
Truck	88	75	16	40	--	--	16

Note 1. Estimated level obtainable by quieter methods or equipment and implementing feasible noise controls.
Note 2. “--“ indicates typically zero or very little use during construction phase.
Note 3: Numbers in parentheses are greatest multiple number of same items in use.

Figure A-3
Typical Large Building and Institutional Construction Equipment and Use Factors

Construction Equipment	50-Foot Leq, dBA	Mitigated1 Leq, dBA	Highest Hourly Use Percentage per Construction Phase				
			Clear	Excavate	Base	Build	Finish
Air Compressor	81	75	--2	100 (2) 3	100 (2)	100 (2)	40 (2)
Backhoe	85	75	04	16	--	--	4
Concrete Mixer	85	75	--	--	40	40	16
Concrete Pump	82	75	--	--	40	8	8
Concrete Vibrator	76	75	--	--	40	10	4
Crane, Derrick	88	75	--	--	--	16	4
Crane, Mobile	83	75	--	--	--	16 (2)	4 (2)
Dozer	80	75	16	40	--	--	16
Generator	78	75	40 (2)	100 (2)	--	--	--
Grader	85	75	8	--	--	--	2
Jack Hammer	82	75	--	10	4	4	4
Loader	79	75	16	40	--	--	16
Paver	89	80	--	--	--	--	10
Pile Driver	101	95	--	--	4	--	--
Pneumatic Tool	85	80	--	--	4	16 (2)	4 (2)
Pump	76	75	--	100 (2)	100 (2)	40	--
Rock Drill	98	80	--	4	--	--	0.5
Roller	74	74	--	--	--	--	--
Saw, Electric	78	75	--	--	4 (3)	100 (3)	--
Scraper	88	80	55	--	--	--	--
Shovel	82	75	--	40	--	--	--
Truck	88	75	16 (2)	40	--	--	16

Note 1. Estimated level obtainable by quieter methods or equipment and implementing feasible noise controls.
Note 2. "--" indicates typically zero or very little use during construction phase.
Note 3: Numbers in parentheses are greatest number of same items in use during any hour.

Figure A-4
Typical Commercial and Industrial Construction Equipment and Use Factors

Construction Equipment	50-Foot Leq, dBA	Mitigated1 Leq, dBA	Highest Hourly Use Percentage per Construction Phase				
			Clear	Excavate	Base	Build	Finish
Air Compressor	81	75	--2	100	40	40	40
Backhoe	85	75	4	16	--	--	4
Concrete Mixer	85	75	--	--	40	16	16
Concrete Pump	82	75	--	--	40	--	8
Concrete Vibrator	76	75	--	--	--	--	--
Crane, Derrick	88	75	--	--	--	4	2
Crane, Mobile	83	75	--	--	--	8	4
Dozer	80	75	4	16	--	--	4
Generator	78	75	40	40	--	--	--
Grader	85	75	5	--	--	--	2
Jack Hammer	82	75	--	10	4	4	4
Loader	79	75	16	16	--	--	4
Paver	89	80	--	--	--	--	12
Pile Driver	101	95	--	--	4	--	--
Pneumatic Tool	85	80	--	--	4	10 (3) 3	4 (3)
Pump	76	75	--	40	100 (2)	40	--
Rock Drill	98	80	--	4	--	--	5
Roller	74	74	--	--	--	--	10
Saw, Electric	78	75	--	--	4 (2)	10 (2)	--
Scraper	88	80	14	--	--	--	8
Shovel	82	75	--	20	--	--	6
Truck	88	75	16 (2)	16 (2)	--	--	16

Note 1. Estimated level obtainable by quieter methods or equipment and implementing feasible noise controls.
Note 2. “--“ indicates typically zero or very little use during construction phase.
Note 3: Numbers in parentheses are greatest number of same items in use during any hour.

Figure A-5
Typical Public Works and Roadway Construction Equipment and Use Factors

Construction Equipment	50-Foot Leq, dBA	Mitigated1 Leq, dBA	Highest Hourly Use Percentage per Construction Phase				
			Clear	Excavate	Base	Build	Finish
Air Compressor	81	75	--2	100 (2)3	40	40	40 (2)
Backhoe	85	75	4	40	--	--	16
Concrete Mixer	85	75	--	--	16 (2)	40 (2)	16 (2)
Concrete Pump	82	75	--	--	--	--	--
Concrete Vibrator	76	75	--	--	--	--	--
Crane, Derrick	88	75	--	10	4	4	--
Crane, Mobile	83	75	--	--	--	16	--
Dozer	80	75	4	40	--	--	16
Generator	78	75	100 (2)	40 (2)	40 (2)	40	40 (2)
Grader	85	75	8	--	--	20	8
Jack Hammer	82	75	--	--	--	4	10 (2)
Loader	79	75	4	40	--	--	16
Paver	89	80	--	--	--	--	--
Pile Driver	101	95	--	--	--	--	--
Pneumatic Tool	85	80	--	--	4 (2)	10	4
Pump	76	75	--	40 (2)	100 (2)	40 (2)	--
Rock Drill	98	80	--	4	--	--	--
Roller	74	74	--	--	100	--	--
Saw, Electric	78	75	--	--	4 (2)	--	--
Scraper	88	80	8		20	8	8
Shovel	82	75	4	40	4	--	4
Truck	88	75	16 (2)	16	40 (2)	--	16 (2)

Note 1. Estimated level obtainable by quieter methods or equipment and implementing feasible noise controls.
Note 2. "--" indicates typically zero or very little use during construction phase.
Note 3: Numbers in parentheses are greatest number of same items in use during any hour.

Appendix B
Estimating Construction Project Noise

For project planning purposes, where the potential for noise impacts exist, it is possible to estimate the potential construction noise impacts in advance by developing an inventory of noisy construction equipment and processes for the various stages and phases of the project. Such screening methods assist construction project managers and estimators in planning for the potential need for noise mitigation.

Construction Equipment Inventory

An inventory of the number and type of noisy construction equipment to be used during planned daytime, evening and nighttime construction activities, their associated noise emissions, and other relevant information can be included on Figure B-2, Construction Phase Receptor Noise Estimation Worksheet. Using this form, construction noise levels for the various phases of construction can be estimated using the phase's equipment inventory, the typical 50-foot equipment noise levels (listed in Figure A-1 of Appendix A) along with typical by-phase construction equipment use factors, provided in Figures A-1 through A-5 of Appendix A.

Construction Noise Estimates

Calculations can be performed to estimate the daytime, evening and nighttime maximum (L_{max}) and one-hour energy average (L_{eq}) noise levels expected at the noise-sensitive location, based on the typical maximum equipment noise levels listed in Figure A-1 in Appendix A. The calculations are to be made for the various activities and locations where project construction noise will result in the greatest noise impact (*noise levels at other sensitive locations can also be calculated, if necessary*). The calculations and results should be entered on a form similar to Figure B-2, the Construction Phase Receptor Noise Estimation Worksheet. The result of a sample construction noise calculation is provided in Figure B-1.

The following calculation procedures may be used to estimate the construction noise by phase.

1. Calculate each phase's L_{max} according to the following method:

   L_{max} [equipment type] = ML – 20 $\log_{10}$ (D/50)

   where:

   ML = Typical single equipment maximum noise level (L_{max}) at 50 feet, in dBA. (*This may be replaced by a measured, under-load, maximum noise level*).

   D = Distance from the equipment to the noise-sensitive location, in feet.

   Repeat the above calculation for each item of potentially noisy equipment. Then, select the noisiest individual pieces of equipment that operate in their loudest mode at the very same time and combine them logarithmically to estimate the overall maximum construction noise level (L_{max}) at the noise-sensitive location(s) for each project phase, as follows:

   L_{max} [overall project at receptor] = 10 $\log_{10}(\Sigma 10^{(L_{max}\,[\text{equipment type}]\,/\,10)})$

2. Calculate each phase's one-hour L_{eq} according to the method recommended by the U.S. Federal Highway Administration ("Highway Construction Noise: Measurement, prediction and mitigation," U.S. Department of Transportation, Federal Highway Administration Special Report, March 1977), as follows:

   First, the construction phase's one-hour L_{eq} is to be calculated at the sensitive receptor location for each item of potentially noisy equipment using the following equation:

   L_{eq}(h) [equipment type] = ML – 20 $\log_{10}$ (D/50) + 10 $\log_{10}$ (N x HP/100)

   where:

   ML = Typical single equipment maximum noise level (L_{max}) at 50 feet, in dBA. (*This may be replaced by a measured, under-load, maximum noise level*).

   D = Shortest distance (feet) from the equipment type to the nearest noise-sensitive location, or if a more sensitive receptor is further away, to the noise-sensitive receptor with the greatest impact. If the distance is measured in meters, use the ratio D/15 instead of D/50.

   N = Maximum number of the same equipment type operating hourly on the project during the construction phase.

   HP = "Hourly percentage," expressed as the greatest nominal percent of time that the equipment is operated under load at the project site. This factor is based on EPA values or is estimated based on past experience with similar projects. Thus, the effective usage factor is (EUF) = N x HP/100.

   Repeat the above calculations for each item of potentially noisy equipment. Then, the individual contribution of every item of equipment are to be combined logarithmically to obtain the overall construction hourly L_{eq} at the noise-sensitive location(s) for each project phase, as follows:

   L_{eq}(h) [overall project at receptor] = 10 $\log_{10}$ ($\Sigma 10^{\text{(one-hour Leq [equipment type] / 10)}}$)

3. The calculated L_{max} and L_{eq}(h) levels can then be compared with the construction noise threshold criteria. Where it is estimated that the criteria would be exceeded, noise mitigation planning can be undertaken.

Figure B-1.
Example of Construction Phase Receptor Noise Estimation Worksheet

A	B	C	D	E	F	G	H	I	J	K
Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA	Dist. to Recptr.	Item Usage Percent	Usage Factor	Dist. Adj., dB	Usage Adj., dB	Recptr. Item Lmax, dBA	Recptr. Item Leq, dBA	Log_{10} Sums of Receptor Item L_{eq} Yield the Combined Receptor L_{eq}, dBA
1. DOZER	1	90	100	70	0.70	-6	-1.6	84.0	82.4	82.4
2. GRADER	1	89	200	75	0.75	-12	-1.2	77.0	75.7	83.3
3. SCRAPER	2	91	150	20	0.40	-6	-4.0	81.5	77.5	84.4
4. WATER TRUCK	1	94	50	5	0.05	-6	-13.0	94.0	81.0	86.0
5.										
6.										
							Log Sum	94.7	86.0	

Figure B-2.
Construction Phase Receptor Noise Estimation Worksheet

A	B	C	D	E	F	G	H	I	J	K
Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA	Dist. to Recptr.	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Recptr. Item Lmax, dBA	Recptr. Item Leq, dBA	Log10 Sums of Receptor Item Leq Yield the Combined Receptor Leq, dBA
1.										
2.										
3.										
4.										
5.										
6.										
							Log Sum			

Appendix C
Construction Noise Monitoring

This appendix outlines the noise measurement instrumentation and monitoring procedures.

Noise Measurement Instruments

1. Noise measurements shall be performed with an instrument that is in compliance with or exceeds the criteria for a Type 2 (General Purpose) Sound Level Meter, as defined in the most recent revision of ANSI Standard S1.4.2.

2. Sound level meters shall be capable of measuring the slow response L_{max} and one-hour L_{eq} on the A-Weighted scale, as required by the construction noise threshold criteria and construction project noise limits. Where possible, integrating-type instruments may monitor the percentile (L_1, L_{50}, etc.) noise levels, as well, to show construction noise statistics.

3. Sound level meters, microphones, and field calibrators shall be calibrated by a certified laboratory at least once a year. A valid certificate of calibration conformance shall be obtained and be available for each instrument before using sound level meters. Updated certificates shall be maintained following subsequent yearly calibrations and upon the completion of repairs to noise monitoring instruments.

Noise Measurement Procedure

1. The sound level meter shall be calibrated using an acoustic calibrator, according to the manufacturer's specifications, just before each measurement.

2. Except as otherwise indicated, measurements shall be performed using the A-weighting network and the slow response setting of the sound level meter.

3. Impulsive or impact noises shall be measured using the C-weighting network and the fast response setting of the sound level meter.

4. The measurement microphone shall be fitted with an appropriate windscreen and the sound level meter shall be placed at the location of the sensitive receptor with the microphone approximately 5 feet above the ground or floor and at least 10 feet away from any vertical surfaces.

5. Ambient noise measurements shall be taken during periods of the least noise-producing activity in the vicinity of noise sensitive locations that may be impacted by the construction operations. Ambient noise measurements shall be conducted for at least 20 minutes at representative locations for potentially impacted receptors.

6. Construction noise measurements shall be taken during periods of greatest noise-producing activity at noise sensitive locations in the vicinity of the construction site a minimum of once each shift and also after a sustained perceptible change in noise-producing construction activity or location. Noise measurements shall be conducted for at least 20 minutes each monitoring session.

7. Construction noise measurements shall coincide with daytime, evening and nighttime daily time periods of maximum noise-generating construction activity and shall be taken or repeated during the construction phase or activity that has the greatest potential to create annoyance or to exceed applicable noise regulations and restrictions.

8. If, in the estimation of the person performing the measurements, non-project related noise sources contribute significantly to the measured noise level, additional measurements (with the same non-project noise source contributions) shall be repeated when project construction is inactive to determine the non-project ambient background noise level.

9. Noise data shall be logged using the Noise Measurement Report Form and maintained for at least six months following the completion of the construction project. The type of measurement (e.g. baseline ambient, on-going construction, major change, etc.) shall be noted on the form.

10. Monitoring locations shall be clearly identified and sketched on the Noise Measurement Report Form along with the locations of and monitoring site distances to the noise-sensitive receptors.

11. Construction equipment operating during the noise monitoring period and their locations shall be identified and sketched on the Noise Measurement Report Form, along with the locations of and equipment distances to the noise sensitive receptors.

Figure C-1
Noise Measurement Report Form - Part A

Project: ____Contract No(s): ___________________

Date: ______________________ Day of Week: ____________________________ Time: _________________

Monitoring Site Number: _____ Monitoring Site Address: ____

Measurement Taken By: __________________________________ of __________________________________

Approximate Wind Speed: ___________ mph [km/hr]. Approximate Wind Direction: From the _____________

Approximate distance of Sound Level Meter from Receptor Location: ____________________________________

Approximate distance of Sound Level Meter from Construction Site: _____________________________________

(Leave Blank for Baseline Ambient)

Receptor Land Use (Check One): ☐ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: ______________________________ Serial Number ___________________

Meter Setting: ☐ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: _________________________ (at least 20 Minutes)

Check the measurement purpose:

☐ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
CALIBRATION		n/a	n/a
L_{eq}			
L_{max}			
L_1		n/a	n/a
L_8 or L_{10} (circle which)		n/a	n/a
L_{25}		n/a	n/a
L_{50}		n/a	n/a
L_{90}		n/a	n/a

Field Notes:

1. ____

2. ____

3. ____

4. ____

<u>Complete all that apply below:</u>

Active Equipment: ____________________________________

(List construction equipment that contribute to measured noise)

Complaint Response: ____________________________________

(Describe complaint; include log-in number)

Complaint Mitigation Measure(s): ____________________________________

(Describe complaint response mitigation)

Figure C-2
Noise Measurement Report Form - Part B

Project: ____Contract No(s):_________________

Date: ______________________ Day of Week: ____________________________ Time: _________________

Monitoring Site Number: _____ Monitoring Site Address: ____

Site Map

Field Notes:

1. ____

2. ____

3. ____

4. ____

5. ____

6. ____

Noise Monitor's Signature: ________________________________ Date: __________

Appendix D
Construction Noise Mitigation Measures

Construction noise is to be monitored at the most affected sensitive receptor location (10 feet from the construction activity side of a noise-sensitive receptor building or at the outdoor living area). Noise measurements are to be conducted using the procedures in this Appendix and the measurement results logged in a format similar to that of the Construction Noise Mitigation Form in this Appendix. Where the construction noise threshold criteria are exceeded, at noise-sensitive locations, noise abatement measures, such as those in this Appendix, are to be implemented and adequate noise reduction achieved to bring the construction activities into compliance with the construction noise threshold criteria.

Construction noise mitigation may be achieved using various combinations of equipment source noise reduction, propagation path noise reduction and sensitive receptor noise reduction.

Construction Equipment Source Noise Reduction Methods

Feasible and reasonable equipment noise mitigation measures may need to be implemented to meet the construction noise threshold criteria. Examples of equipment source noise reduction methods to reduce construction noise impacts at sensitive receptor locations are listed in this section. The implementation of one or more of these measures, along with those of the other sections, may be necessary to achieve compliance with the construction noise threshold criteria.

<u>Equipment Noise Reduction:</u>

1. Minimize the use of impact devices, such as jackhammers, pavement breakers, and hoe rams. Where possible, use concrete crushers or pavement saws rather than hoe rams for tasks such as concrete or asphalt demolition and removal.

2. Pneumatic impact tools and equipment used at the construction site shall have intake and exhaust mufflers recommended by the manufacturers thereof, to meet relevant noise limitations.

3. Provide impact noise producing equipment, i.e. jackhammers and pavement breaker(s), with noise attenuating shields, shrouds or portable barriers or enclosures, to reduce operating noise.

4. Line or cover hoppers, conveyor transfer points, storage bins, and chutes with sound-deadening material (e.g., apply wood or rubber liners to metal bin impact surfaces).

5. Provide upgraded mufflers, acoustical lining or acoustical paneling for other noisy equipment, including internal combustion engines.

6. Avoid blasting and impact-type pile driving.

7. Use alternative procedures of construction and select a combination of techniques that generate the least overall noise and vibration. Such alternative procedures could include the following:

    a. Use electric welders powered by remote generators.

   b. Mix concrete at non-sensitive off-site locations, instead of on-site.

   c. Erect prefabricated structures instead of constructing buildings on-site.

8. Use construction equipment manufactured or modified to reduce noise and vibration emissions, such as:

   a. Electric instead of diesel-powered equipment.

   b. Hydraulic tools instead of pneumatic tools.

   c. Electric saws instead of air- or gasoline-driven saws.

9. Turn off idling equipment when not in use for periods longer than 30 minutes.

<u>Operations Noise Reduction Methods:</u>

In no case shall the following mitigation measures alter the project's responsibility for compliance with applicable Federal, state, and local safety ordinances and regulations, as well as project-specific construction specifications.

1. Operate equipment so as to minimize banging, clattering, buzzing, and other annoying types of noises, especially near residential and other noise sensitive areas during the evening and nighttime hours.

2. To the extent feasible, configure the construction site in a manner that keeps noisier equipment and activities as far as possible from noise sensitive locations and nearby buildings.

3. All back-up alarms should be disarmed at 8:00 p.m. and not reactivated until 7:00 a.m. on weekdays and 9:00 a.m. on weekends and local holidays. Signal persons and strobe lights must be used during periods when the back-up alarms are disarmed.

4. Maximize physical separation, as far as practicable, between noise generators and noise receptors. Separation includes following measures:

   a. Provide enclosures for stationary items of equipment and noise barriers around particularly noisy areas at the project site.

   b. Locate stationary equipment to minimize noise and vibration impacts on community.

5. Minimize noise-intrusive impacts during most noise sensitive hours.

   a. Plan noisier operations during times of highest ambient noise levels.

   b. Keep noise levels relatively uniform; avoid excessive and impulse noises.

   c. Turn off idling equipment.

   d. Phase in start-up and shut-down of project site equipment.

6. Select truck routes for material delivery and spoils disposal so that noise from heavy-duty trucks will have a minimal impact on noise sensitive receptors. Proposed truck haul routes are to be submitted to the County Transportation Division for approval.

   a. Conduct truck loading, unloading, and hauling operations so noise and vibration are kept to a minimum.

   b. Route construction equipment and vehicles carrying soil, concrete or other materials over streets and routes that will cause the least disturbance to residents in the vicinity of construction sites and haul roads.

   c. Do not operate haul trucks on streets within 250 feet of school buildings during school hours or hospitals and nursing homes at any time, without a variance.

   d. Submit haul routes and staging areas to the County Transportation Division for approval, at least 30 days before the required usage date.

A summary of equipment noise control methods is given in Figure D-1. Incorporating the construction noise mitigation methods and techniques would reduce construction noise and vibration impacts.

Construction Noise Propagation Path Reduction Methods

Feasible and reasonable propagation path mitigation measures may need to be implemented to help meet the construction noise threshold criteria. Examples of propagation path noise reduction methods to reduce construction noise impacts at sensitive receptor locations are listed in this section. The implementation of one or more of these measures, along with those of the other sections, may be necessary to achieve compliance with the construction noise threshold criteria.

<u>Construction Site Noise Barriers</u>

Moveable noise barriers can be positioned and relocated along a construction corridor, while fixed noise barriers can be located at a fixed construction site.

<u>Moveable Construction Noise Blankets</u>

1. For lesser noise reduction, install moveable frame-mounted noise curtains, blankets or enclosures adjacent to or around noisy equipment where required to meet the project noise limits. Noise control shields shall be made of a durable, flexible composite material featuring a noise barrier layer bonded to a weather-protected, sound-absorptive material on the construction-activity side of the noise shield.

2. Provide readily removable and moveable noise shields so that they may be repositioned, as necessary, to provide noise abatement for non-stationary and stationary processes along a construction corridor as the construction process moves.

Figure D-1
Some Construction Equipment Noise Sources and Typical Mitigation Measures

<table>
<tr><th>Construction Equipment</th><th>Source(s) of noise</th><th colspan="2">Possible mitigation measures (may need to be discussed with equipment manufacturer)</th><th>Possible alternative construction methods[1]</th></tr>
<tr><td rowspan="4">Impact Pile Driver</td><td>Pneumatic/diesel hammer or steam winch vibrator driver</td><td colspan="2">Enclose hammer head and top of pile in an acoustical screen or acoustical blankets, apply acoustical damping to sheet steel piles to reduce vibration and resonant noise</td><td rowspan="4">(1) Use alternative methods of pile driving, e.g. drill and drop, poured in place, hydraulic driver, etc.

(2) Alternative methods of soil retention and ground improvement, e.g. retaining walls, ground anchors, shafts formed of pre-cast concrete segments sunk into the ground, etc.</td></tr>
<tr><td>Impact on pile</td><td colspan="2">Use resilient pad between pile and hammer head.</td></tr>
<tr><td>Crane cables, pile guides and attachments</td><td colspan="2">Careful alignment of pile and rig, lubricate screeching cables, guides and pulleys.</td></tr>
<tr><td>Power unit</td><td colspan="2">Install more efficient exhaust silencer; apply acoustical damping and protected internal noise absorption layers to vibrating panels and covers. Manufacturer’s access panels should be kept closed. Use properly ventilated acoustical enclosures where possible.</td></tr>
<tr><td>Bulldozer
Compactor
Crane
Dump truck
Excavator
Grader
Loader
Scraper
Shovel</td><td>Engine</td><td colspan="2">Install more efficient exhaust silencer.

Apply acoustical damping and protected internal noise absorption layers to vibrating panels and covers.

Enclosure panels should be kept closed.

Operate without excessive engine revving.</td><td></td></tr>
<tr><td rowspan="2">Compressor

Generator</td><td>Engine</td><td>Install more efficient exhaust silencer.</td><td rowspan="2">Locate the compressor or generator within an acoustical enclosure or behind an absorptive, three-sided sound wall.</td><td rowspan="2">Use electric motors instead of diesel or gasoline engines to drive compressors. If there is no electrical supply, use a reduced noise compressor or generator. A remote electrical generator can be used to supply power to several pieces of equipment.</td></tr>
<tr><td>Compressor or generator</td><td>Apply acoustical damping and protected noise absorption layers to internal of vibrating panels and covers. Enclosure panels should be kept closed</td></tr>
</table>

Construction Noise Threshold Criteria

Pneumatic concrete breaker and tools	Tool	Install a muffler and acoustic shroud to reduce noise without impairing efficiency	Operate equipment inside a portable acoustical enclosure	Use rotary drill and buster. Use hydraulic and electric equipment. A thermal lance can be used to burn holes in concrete and to cut through large sections of concrete. For breaking large areas of concrete, use equipment which breaks concrete by bending it.
	Bit	Use a damped bit to eliminate "bit ringing." Noise drops as surface is broken through		
	Air line	Stop all air line leaks.		
	Motor	Install muffler to pneumatic saws		
Power saws	Vibration of blade and cut material	Keep saw blades sharp. Use a damped blade. Use blades with random tooth spacing. Tightly clamp material during cutting, if possible		
Rotary drills, diamond drilling and boring	Drive motor and bit	Use equipment inside an acoustical enclosure.		Use thermal lance
Construction Equipment	**Source(s) of noise**	**Possible mitigation measures (may need to be discussed with equipment manufacturer)**		**Possible alternative construction methods[1]**
Riveters	Impact on rivets	Enclose working area with acoustic barriers.		Use high tensile steel bolts instead of rivets
Cartridge gun	Cartridge blast	Use a muffled cartridge gun.		Drilled attachments
Pump	Engine or motor, pulsing, cavitation	Use an acoustical enclosure (allow for engine cooling and exhaust) or use motor suction and girdle mutes.		
Batch plant	Engine	Install more efficient silencer on diesel or gasoline engine. Enclose engine.	Locate batch or mixing plant as far as possible from noise-sensitive receptors.	Use electric motor instead of diesel or gasoline engine
	Filling	Keep aggregate from falling from an excessive height		
Concrete mixer	Cleaning	Do not hammer the drum.		
Hammer	Impact on nail			Use screw attachment
Impact chisel	Impact on stock			Use rotary hand milling machine
Materials handling	Impact of material	Prevent high material drops. Shield drop areas, especially for conveyor systems		Cover surface with resilient material or unload remotely
Steam cleaning	Escaping jet of steam, interaction with surface	Pass escaping steam through silencer or screen the cleaning area and use quieter nozzles.		

Note 1. Care should be taken when selecting a quieter process, so that ancillary equipment noise sources, such as cranes and compressors, are mitigated so they do not become new dominant noise sources.

3. Installation and Maintenance:

    a. Install noise blanket shields with sound-absorptive surfaces facing the noise source.

    b. Maintain the moveable noise shields and repair damage that occurs, including, but not limited to, keeping noise shields clean and free from graffiti, and maintaining structural integrity. Promptly repair or replace gaps, holes, and weaknesses in the noise shields, and openings between, or under the noise shield blankets.

Moveable Construction Noise Barriers

1. For greater noise reduction, install moveable paneled noise shields, barriers or enclosures adjacent to or around noisy equipment where required to meet the project noise limits. Noise control shields shall be made of panels featuring a solid panel with a weather-protected, sound-absorptive material on the construction-activity side of the noise shield.

2. Provide readily removable and moveable noise shields so that they may be repositioned, as necessary, to provide noise abatement for non-stationary and stationary processes along a construction corridor as the construction process moves.

3. Installation and Maintenance:

    a. Install paneled noise shields with sound-absorptive surfaces facing the noise source.

    b. Maintain the moveable noise shields and repair damage that occurs, including, but not limited to, keeping noise shields clean and free from graffiti, and maintaining structural integrity. Promptly repair or replace gaps, holes, and weaknesses in the noise shields, and openings between, or under the noise shield panels.

Fixed Construction Noise Curtains

1. For lesser noise reduction, install frame-mounted sound noise control curtains or noise control blankets in locations adjacent to or around noisy equipment as required to meet the noise limits specified in this document and to shield the public from excessive construction noise. Noise control curtains shall be made of a durable, flexible composite material featuring a noise barrier layer bonded to a weather-protected, sound-absorptive material on one or both sides. The supporting structure shall be engineered and erected according to applicable codes.

2. Noise control curtains shall be installed, as necessary, to provide greater noise abatement for non-stationary and stationary processes.

3. Installation, Maintenance and Removal

    a. Noise control curtains shall be installed without any gaps and with the sound absorptive side facing the construction activity area.

    b. Maintain the noise control curtains and promptly repair any damage that may occur. Gaps, holes or weaknesses in the curtain, or openings between the curtain and the ground shall be promptly repaired.

c. The fixed noise control curtains and associated elements shall be completely removed and the site appropriately restored upon the conclusion of the construction activity.

Fixed Noise Control Barriers

1. For greater noise reduction, install solid noise control panels or enclosures in locations adjacent to or around noisy equipment as required to meet the noise threshold criteria specified in this document and to shield the public from excessive construction noise. Noise control panels shall be made of a solid, heavy noise barrier material with a weather-protected, sound-absorptive material on the construction-activity side of the barrier. The supporting structure shall be engineered and erected according to applicable codes.

2. Noise control panels shall be erected, as necessary, to provide greater noise abatement for non-stationary and stationary processes.

3. Installation, Maintenance, and Removal

   a. Solid noise control panels shall be installed without any gaps and with the sound absorptive side facing the construction activity area.

   b. Maintain the noise control panels and promptly repair any damage that may occur. Gaps, holes or weaknesses in the panels or openings between the panels and the ground shall be promptly repaired.

   c. The fixed noise control panels and associated elements shall be completely removed and the site appropriately restored upon the conclusion of the construction activity.

Sensitive Receptor Construction Noise Reduction Methods

Feasible and reasonable receptor noise mitigation measures may be implemented to meet the construction noise threshold criteria. Examples of receptor noise reduction methods to reduce construction noise impacts at sensitive receptor locations are listed in this section. The implementation of one or more of these measures, along with those of the other sections, may be necessary to achieve compliance with the construction noise threshold criteria.

Receptor Building Interior Noise Control Measures

1. For noise reduction at fixed, mid-term construction sites, install removable secondary acoustic window inserts (i.e., Quiet Window, or equal) to existing windows in sensitive receptor buildings as required to meet the noise threshold criteria specified in this document.

2. For noise reduction at fixed, long-term construction sites, install permanent replacement acoustic windows with an STC rating 5 dB greater than the construction noise reduction needed. Where sliding doors are exposed to excessive construction noise, acoustic sliding patio doors may also need to be installed. Careful attention must be taken to seal the frame airtight to the existing structure.

3. Install properly fitted, tubular compression-type weather strip gasketing around the door frames (jamb and head) and install automatic drop thresholds and threshold plates to exposed swinging doors. Careful attention must be taken to seal the existing door frame airtight to the existing structure.

Construction Noise Threshold Criteria

Moveable Exterior Receptor Noise Control Barriers

1. For construction along a construction corridor, install moveable paneled noise shields or barriers at noise sensitive receptor sites. Noise control shields shall be made of panels featuring a solid panel with a weather-protected, sound-absorptive material on the construction-activity side of the noise shield.

2. Provide readily removable and moveable noise shields so that they may be repositioned, as necessary, to provide greater noise abatement along a construction corridor as the construction process moves.

3. Installation and Maintenance:

   a. Install paneled noise shields with sound-absorptive surfaces facing the noise source.

   b. Maintain the moveable noise shields and repair damage that occurs, including, but not limited to, keeping noise shields clean and free from graffiti, and maintaining structural integrity. Promptly repair or replace gaps, holes, and weaknesses in the noise shields, and openings between, or under the noise shield panels.

Fixed Exterior Receptor Noise Control Barriers

1. For noise reduction at fixed construction sites, install solid noise control panels at sensitive receptor locations as required to meet the noise threshold criteria specified in this document and to shield the sensitive receptor from excessive construction noise. Noise control panels shall be made of a solid, heavy noise barrier material with a weather-protected, sound-absorptive material on the construction-activity side of the barrier. The supporting structure shall be engineered and erected according to applicable codes.

2. Noise control panels shall be erected, as necessary, to provide greater noise abatement for non-stationary and stationary processes at fixed construction sites.

3. Installation, Maintenance, and Removal

   a. Solid noise control panels shall be installed without any gaps and with the sound absorptive side facing the construction activity area.

   b. Maintain the noise control panels and promptly repair any damage that may occur. Gaps, holes or weaknesses in the panels or openings between the panels and the ground shall be promptly repaired.

   c. The fixed noise control panels and associated elements shall be completely removed and the site appropriately restored upon the conclusion of the construction activity.

Figure D-2. Construction Noise Mitigation Form

Part A –Construction Equipment Mitigation Measures

Project: ____Contract No(s):_______________ Construction Phase: _________________________

Measured By: _____________________________________ of ___________________________ Date: _____________ Time: ____________

IMPORTANT: Attach construction equipment noise measurement location sketches (also identify other noise sources in area).

Construction Phase Equipment Inventory: Overall Project Phase Noise Reduction Requirement[1] = ________ dBA.

Code Letter (a)	Equipment				Typical 50-Foot Noise Level (dBA) (f)	Measured 50-Foot Noise Level (dBA) (g)	Equipment Noise Mitigation Measure (h)	Measured 50-Foot Mitigated Noise (dBA) (i)
	Category (b)	Make & Model (c)	ID# (d)	HP (e)				
Example	Front End Loader	Caterpillar 988	50W043xxx	375	85	91	Critical muffler	79

Notes:
Note 1. The noise reduction requirement is the exceedance between the overall construction phase noise from Appendix C and the sensitive receptor noise threshold criteria.
Column (a): Code letter in sketch to indicate position of equipment during noise measurement.
Column (b): Equipment type from Table B-1.
Column (c): Equipment manufacturer and model.
Column (d): Unique identifier (ID), such as VIN or registration number.
Column (e): Equipment rated horsepower.
Column (f): Equipment typical noise level from Table B-1.
Column (q): Estimated noise level at 50 ft. If greater than the level in Column (f), mitigation measures (e.g. mufflers, lower throttle, etc.) shall be implemented.
Column (h): Noise mitigation measure(s) implemented to help achieve compliance with the noise threshold criteria at the sensitive receptor location.
Column (i): Estimated or measured mitigated noise level at 50 ft

Figure D-3. Construction Noise Mitigation Form

Part B – Propagation Path Mitigation Measures

Project: ______________________ Contract No(s):____________ Construction Phase: ______________

Measured By: ______________________ of ______________ Date: ________ Time: ________

(Attach Construction Vicinity Sketch)

Sensitive Receptor Measurement Location during Construction Activities <u>Without</u> Mitigation	**Measured Noise Level at Receptor Location, (dBA)***			
	Ambient L_{eq} (dBA)	**L_{eq} w/ Project (dBA)**	**Ambient L_{max} (dBA)**	**L_{max} w/ Project (dBA)**
Noise Threshold Criteria >	n/a		n/a	
1.				
2.				
3.				
4.				

<u>Propagation Path Noise Abatement Measures</u>

1. ______________________
2. ______________________
3. ______________________
4. ______________________

<u>Anticipated Results</u>

1. ______________________
2. ______________________
3. ______________________
4. ______________________

Sensitive Receptor Measurement Location during Construction Activities With Additional Mitigation	**Measured Noise Level at Receptor Location, (dBA)***			
	Ambient L_{eq} (dBA)	**L_{eq} w/ Project (dBA)**	**Ambient L_{max} (dBA)**	**L_{max} w/ Project (dBA)**
Noise Threshold Criteria >	n/a		n/a	
1.				
2.				
3.				
4.				

Figure D-4. Construction Noise Mitigation Form

Part C – Sensitive Receptor Measures

Project: ______________________ Contract No(s): ____________ Construction Phase: ______________

Measured By: ______________________ of ________________ Date: ________ Time: ________

(Attach Construction Vicinity Sketch)

Sensitive Receptor Measurement Location during Construction Activities Without Mitigation	**Measured Noise Level at Receptor Location, (dBA)***			
	Ambient L_{eq} (dBA)	**L_{eq} w/ Project (dBA)**	**Ambient L_{max} (dBA)**	**L_{max} w/ Project (dBA)**
Noise Threshold Criteria >	n/a		n/a	
1.				
2.				
3.				
4.				

Sensitive Receptor Noise Abatement Measures

1. ______________________
2. ______________________
3. ______________________
4. ______________________

Anticipated Results

1. ______________________
2. ______________________
3. ______________________
4. ______________________

Sensitive Receptor Measurement Location during Construction Activities With Additional Mitigation	**Measured Noise Level at Receptor Location, (dBA)***			
	Ambient L_{eq} (dBA)	**L_{eq} w/ Project (dBA)**	**Ambient L_{max} (dBA)**	**L_{max} w/ Project (dBA)**
Noise Threshold Criteria >	n/a		n/a	
1.				
2.				
3.				
4.				

APPENDIX C

AMBIENT NOISE MEASUREMENT LOGS

Ambient Noise Summary

Ambient Noise Levels + Significance Thresholds

Ambient Measurement: 24-Hour Reference Location

Date(s)	Duration	Time Start	Time Stop	Average Noise Level (L_{eq})			Peak Noise Level (L_{max})		
				Daytime[A]	Evening[A]	Nighttime[A]	Daytime[A]	Evening[A]	Nighttime[A]
7/22/2014 - 7/23/2014	24-hours	2:32:48 PM	2:32:48 PM	50.0	41.2	43.3	56.4	44.9	50.7

Ambient Measurements & Correction Factors: Receptors N1, N2 and N3 (15-Minute)

Receptor	Date	Duration	Time Start	Time Stop	15-Minute Measured L_{eq}	24-Hour L_{eq} (during same period)	L_{eq} Correction Factor[B]
R1 (Southwest)	7/23/2014	15-Min	3:12:00 PM	3:42:00 PM	53.0	51.2	1.8
R2 (South)	7/23/2014	15-Min	3:49:00 PM	4:19:00 PM	48.3	51.9	-3.6
R3 (Southeast)	7/23/2014	15-Min	4:28:00 PM	4:58:00 PM	46.9	52.9	-6

Ambient Noise Determination @ Receptors R1, R2, and R3

Receptor	Date(s)	Time Start	Time Stop	Average Noise Level (L_{eq})			Peak Noise Level (L_{max})		
				Daytime[A]	Evening[A]	Nighttime[A]	Daytime[A]	Evening[A]	Nighttime[A]
R1 (Southwest)	7/23/2014	3:12:00 PM	3:42:00 PM	51.8	43.0	45.1	58.2	46.7	52.5
R2 (South)	7/23/2014	3:49:00 PM	4:19:00 PM	46.4	37.6	39.7	52.8	41.3	47.1
R3 (Southeast)	7/23/2014	4:28:00 PM	4:58:00 PM	44.0	35.2	37.3	50.4	38.9	44.7

A - Daytime is 6:00 AM-7:00 PM. Evening is 7:00 PM-10:00 PM. Nighttime is 10:00 PM-7:00 AM. These timeframes correspond with the significance thresholds presented in the Ventura County *General Plan Noise Element* .

B - The dBA change shown above was calculated by comparing the measured L_{eq} values at each short-duration (15-min) receptor/monitoring locations to the measured L_{eq} at the long-duration (24-hour) reference location during the same time periods. The difference (i.e. correction factor) shown above is then applied to the measured 24-hour L_{eq} data points to quantify the daytime, evening, and nighttime noise levels at each receptor location (R1, R2 and R3).

Ambient Noise Summary

Ambient Noise Levels + Significance Thresholds

OPERATIONAL SIGNIFICANCE THRESHOLDS

Ambient Noise Level Summary: Average Noise (L_{eq}) & Ventura County Significance Thresholds

Receptor	Receptor Type	Average Noise Level (L_{eq})			Ventura County Significance Thresholds[B]		
		Daytime[A]	Evening[A]	Nighttime[A]	Daytime[A]	Evening[A]	Nighttime[A]
R1 (Southwest)	Residential	51.8	43.0	45.1	55.0	50.0	48.1
R2 (South)	Residential	46.4	37.6	39.7	55.0	50.0	45.0
R3 (Southeast)	Residential	44.0	35.2	37.3	55.0	50.0	45.0

Ambient Noise Level Summary: Peak Noise (L_{max}) & Ventura County Significance Thresholds

Receptor	Receptor Type	Peak Noise Level (L_{max})			Ventura County Significance Thresholds[B]		
		Daytime[A]	Evening[A]	Nighttime[A]	Daytime[A]	Evening[A]	Nighttime[A]
R1 (Southwest)	Residential	58.2	46.7	52.5	61.2	50.0	55.5
R2 (South)	Residential	52.8	41.3	47.1	55.8	50.0	50.1
R3 (Southeast)	Residential	50.4	38.9	44.7	55.0	50.0	47.7

A - Daytime is 6:00 AM-7:00 PM. Evening is 7:00 PM-10:00 PM. Nighttime is 10:00 PM-7:00 AM. These timeframes correspond with the significance thresholds presented in the Ventura County *General Plan Noise Element* .

B - The Ventura County *General Plan Noise Element* presents significance thresholds for daytime, evening, and nighttime. Significance thresholds depend on ambient noise levels in the area during the defined time period. If ambient levels are lower than the thresholds, the "fixed" thresholds are utilized. If ambient levels exceed the fixed thresholds, the "ambient level +3 decibels (dB)" is utilized. The significance thresholds are summarized below:

-Daytime (6:00 AM-7:00 PM) = L_{eq} of 55 dBA or ambient noise level +3 dBA

-Evening (7:00 PM-10:00 PM) = L_{eq} of 50 dBA or ambient noise level +3 dBA

-Nighttime (10:00 PM-6:00 AM) = L_{eq} of 45 dBA or ambient noise level +3 dBA

Ambient Noise Summary

Ambient Noise Levels + Significance Thresholds

CONSTRUCTION SIGNIFICANCE THRESHOLDS

Daytime Construction Noise Threshold Criteria			
Receptor	**Daytime L_{eq} (dBA)**	**Average Noise Level (L_{eq}) Significance Threshold (dBA)**	**Peak Noise Level (L_{max}) Significance Threshold (dBA)**
R1 (Southwest)	51.8	55	75
R2 (South)	46.4	55	75
R3 (Southeast)	44.0	55	75

Note: For construction periods longer than 8 weeks, the significance threshold for noise impacts is either the "fixed" threshold of 55 dBA or the "ambient level +3 decibels (dB)" when ambient noise levels exceed the fixed threshold. Since the ambient daytime noise levels at Facility receptors are below the "fixed" threshold, 55 dBA is utilized. Additionally, the peak noise impacts (L_{max}) shall not exceed this significance threshold by +20 dBA more than 8 times per daytime hour.

(Source: Ventura County *Construction Noise Threshold Criteria*)

24-Hour Reference Location

7/22/2014 - 7/23/2014

Serial Number	BIJ090010		UNIT REV	R13B
Start Time	2:32:48 PM	7/22/2014		
Run Length	24:00:00	5529600		
Stop Time	2:32:48 PM	7/23/2014		

Microphone Information		
Description	Units	Value
Sensitivity	dB	29
Polarization	Volts	0
Meter Range	dB	120
Max Level	dB	140
Meas. Floor	dB	-20

Calibration Information			
Description		Units	Value
Pre-Cal	Level	dB	114
	Date		14:29:26 22-Jul-2014
Post-Cal	Level	dB	
	Date		
ReCert	Date		Unavailable

Configuration Information			
Description	Units	Meter 1	Meter 2
Integration Threshold	dB	OFF	OFF
Exchange Rate	dB	5	5
Criterion Level	dB	90	90
Upper Limit Level	dB	140	140
Projected Time	Hrs	8	8
Weighting		A	A
Time Response		SLOW	SLOW

Sound Curve Configuration	
Description	Value
Mode	OFF
Type	Noise Criterion (NC)
Criterion	NA
Method	Tangency

Measurement	Units	Meter 1 Broadband	Meter 2 Broadband	16 Hz	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	16000 Hz
Lavg	dB	47.7	47.6	19.1	28.9	36.6	38.2	37.5	39.7	42.8	37.9	33.3	35.4	35.3
Lmax	dB	80.6	86.4	39.5	54.4	61.1	63	67.5	68.2	78.5	74.5	70.7	64.6	54.2
Lmin	dB	35.3	32.1	10.5	11.2	20	24.4	23.2	23.3	26.3	29.3	32.3	35.3	35.3
Lpk	dB	110.3	110.3	50.6	65.6	73	75.2	77.3	90.6	100.3	105.6	102.5	100.6	93.6
TWA	dB	55.6	55.5	27	36.8	44.5	46.1	45.4	47.7	50.7	45.8	41.2	43.3	43.2
PTWA	dB	47.7	47.6	19.1	28.9	36.6	38.2	37.5	39.7	42.8	37.9	33.3	35.4	35.3
DOSE	%	0.85	0.84	0.02	0.06	0.18	0.23	0.21	0.28	0.43	0.22	0.12	0.15	0.15
PDOSE	%	0.28	0.28	0.01	0.02	0.06	0.08	0.07	0.09	0.14	0.07	0.04	0.05	0.05
SEL	dB	129.6	129.6	101.1	110.9	118.6	120.2	119.5	121.7	124.7	119.9	115.3	117.4	117.3
EXP	p2s	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Measurement	Units	Value
LDN	dB	N/A
CNEL	dB	N/A
TAKTMAX (5sec)	dB	N/A
LC-A	dB	N/A

Exceedence	Units	Value
L02	dB	57.5
L10	dB	52.1
L50	dB	44.9
L90	dB	37.7

24-Hour Reference Location

7/22/2014 - 7/23/2014

		Meter 1			Meter 2		
		Count	Percent	Time	Count	Percent	Time
Overload	(OL)	0	0	00:00:00	0	0	00:00:00
Under-Range	(UR)	1043949	18.87	04:31:51	1085029	19.62	04:42:33
Upper Limit	(UL)	0	0	00:00:00	0	0	00:00:00

Exceedence Table

	0	1	2	3	4	5	6	7	8	9
0	80.6	59.6	57.5	56.1	55.2	54.4	53.8	53.3	52.8	52.4
10	52.1	51.8	51.5	51.2	51	50.8	50.6	50.3	50.1	50
20	49.8	49.6	49.4	49.2	49	48.9	48.7	48.5	48.4	48.2
30	48	47.9	47.7	47.5	47.4	47.2	47	46.9	46.7	46.5
40	46.4	46.2	46.1	45.9	45.8	45.6	45.5	45.3	45.2	45
50	44.9	44.8	44.7	44.5	44.4	44.3	44.2	44	43.9	43.7
60	43.6	43.5	43.3	43.2	43	43	42.8	42.6	42.4	42.3
70	42.2	42.1	41.9	41.6	41.4	41.3	41.1	40.8	40.4	40
80	40	39.9	39.5	38.9	38.4	38.3	38.2	38.2	38.2	38.2
90	37.7	37	35.9	35.3	35.3	35.2	35.2	35.2	35.2	35.2

Statistics Table

	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
35				5.86	1.21	0.26	0.18	0.14	0.12	0.11
36	0.11	0.11	0.04	0.09	0.1	0.1	0.09	0.09	0.1	0.1
37	0.1	0.11	0.11	0.11	0.11	0.13	0.13	0.13	0.14	0.16
38	0.19	0.24	0.38	3.64	1.16	0.3	0.22	0.2	0.18	0.19
39	0.18	0.18	0.08	0.13	0.17	0.19	0.19	0.22	0.26	0.32
40	0.56	1.61	0.35	0.25	0.24	0.22	0.22	0.23	0.23	0.23
41	0.25	0.3	0.39	0.94	0.98	0.43	0.37	0.35	0.37	0.4
42	0.46	0.59	0.51	1.31	0.79	0.54	0.5	0.47	0.49	0.56
43	0.76	1.32	0.67	0.58	0.55	0.58	0.67	0.86	1.11	0.65
44	0.6	0.61	0.68	0.95	1.01	0.66	0.64	0.69	0.92	0.93
45	0.69	0.71	0.53	0.65	0.72	0.62	0.65	0.86	0.68	0.59
46	0.61	0.78	0.59	0.56	0.68	0.69	0.58	0.59	0.65	0.54
47	0.57	0.65	0.56	0.58	0.64	0.54	0.64	0.56	0.62	0.69
48	0.65	0.73	0.53	0.41	0.64	0.63	0.58	0.63	0.59	0.62
49	0.56	0.61	0.55	0.59	0.54	0.53	0.54	0.52	0.53	0.52
50	0.51	0.52	0.52	0.48	0.48	0.49	0.47	0.47	0.48	0.47
51	0.49	0.46	0.43	0.2	0.43	0.38	0.37	0.36	0.35	0.34
52	0.32	0.32	0.31	0.28	0.26	0.25	0.25	0.25	0.24	0.24
53	0.22	0.21	0.21	0.2	0.2	0.2	0.2	0.2	0.2	0.18
54	0.17	0.18	0.18	0.06	0.15	0.15	0.14	0.13	0.12	0.13
55	0.12	0.13	0.12	0.12	0.12	0.12	0.11	0.11	0.12	0.1
56	0.09	0.09	0.09	0.08	0.08	0.08	0.09	0.08	0.07	0.07

Raw Stat Table

dB	Count
35.3	324231
35.4	67316
35.5	14926
35.6	10105
35.7	7793
35.8	6840
35.9	6291
36	6092
36.1	6472
36.2	2348
36.3	5520
36.4	5609
36.5	5653
36.6	5327
36.7	5254
36.8	5768
36.9	5938
37	5945
37.1	6267
37.2	6384
37.3	6529
37.4	6261
37.5	7318
37.6	7429
37.7	7495
37.8	8179
37.9	8872
38	10854
38.1	13613
38.2	21506
38.3	201546
38.4	64664
38.5	16656
38.6	12652
38.7	11286
38.8	10167

24-Hour Reference Location

7/22/2014 - 7/23/2014

Study	Study Time	Session Time	OL Status	Lavg Meter1	Lpk Meter1	Lmax Meter1	Lmin Meter1	Ln1 Meter1	Ln2 Meter1	Lavg Meter2	Lpk Meter2	Lmax Meter2	Lmin Meter2
Study 1	0:01:00	0:01:00		51.3	83.6	62.8	48.1	60.8	52.4	51	83.6	66.2	46.8
(24-Hour)	0:02:00	0:02:00		59.1	110.3	76.2	48.9	72.6	65.8	56.1	110.3	85	47.2
	0:03:00	0:03:00		49.9	76.6	54	47.3	53.3	51.5	49.8	76.5	58.3	46.3
	0:04:00	0:04:00		50.7	85.7	56.6	47.5	55.8	52.9	50.6	85.7	63.2	46.2
	0:05:00	0:05:00		52.9	80.4	59	48.3	58	56.9	52.7	80.4	60.5	47.2
	0:06:00	0:06:00		48.8	65.8	51.8	46.6	51.5	50.5	48.8	65.7	54.6	46.1
	0:07:00	0:07:00		48.8	64.8	51.7	46.2	51.1	50.5	48.8	64.7	53.2	45.6
	0:08:00	0:08:00		50.3	69.4	55	47	54.6	52.7	50.2	69.3	57.4	45.9
	0:09:00	0:09:00		50	68.7	54.8	45.4	54.1	52.6	49.9	68.7	56.6	44.3
	0:10:00	0:10:00		50.5	69.9	54.6	44.8	53.6	53	50.6	70	56.2	43.8
	0:11:00	0:11:00		51.3	70.4	57.2	46.9	57	53.8	51.2	70.4	59.6	45.7
	0:12:00	0:12:00		49.5	69.3	54.6	44.9	54.3	53.3	49.5	69.3	57.8	43.7
	0:13:00	0:13:00		49.6	67.2	53.1	46.6	52.8	51.7	49.5	67.2	56.7	45.5
	0:14:00	0:14:00		48.5	64.7	51.6	46.3	51.2	49.8	48.5	64.7	53.2	45.5
	0:15:00	0:15:00		48.4	65.8	52.5	45.7	52.4	50.4	48.5	65.8	54.3	44.7
	0:16:00	0:16:00		49.7	70.6	56.1	45.6	55.6	53.4	49.6	70.6	58.5	45.1
	0:17:00	0:17:00		47.2	65.8	49.1	44.7	48.9	48.3	47.2	65.6	53.1	43.9
	0:18:00	0:18:00		50.8	79.9	64.1	45.9	61.9	54.1	50.5	79.8	67.6	45.1
	0:19:00	0:19:00		51.1	71.8	56.3	46.7	55.4	54	51	71.8	60.1	45.4
	0:20:00	0:20:00		49.7	69	56	46.2	54.2	52.1	49.6	68.9	59.3	44.6
	0:21:00	0:21:00		49	67	53.3	45.7	52.7	51.2	49	66.9	55.7	45.1
	0:22:00	0:22:00		52	70	57.2	48.2	57.1	56.2	51.9	69.9	58.6	47.4
	0:23:00	0:23:00		51	70.6	55.8	48.2	54.9	53.3	50.9	70.5	58.9	47.4
	0:24:00	0:24:00		50.1	69.2	53.4	45.3	53.2	52.4	50	69.3	56.4	44.6
	0:25:00	0:25:00		49.2	65.9	51.3	45.6	51.1	50.7	49.2	65.9	54	45
	0:26:00	0:26:00		51.4	71.4	57.7	45.6	57.2	53.9	51.3	71.3	59.7	45.1
	0:27:00	0:27:00		50.6	70.3	56	47.8	55.1	53.6	50.5	70.3	59.3	46.7
	0:28:00	0:28:00		51.5	70.7	56.5	48.3	55.9	54	51.4	70.7	59.4	47.2
	0:29:00	0:29:00		63.8	83.7	68.7	47.8	68.2	67.4	63.7	83.7	70.2	46.7
	0:30:00	0:30:00		55	74.1	61.5	48.4	61.1	59.7	54.8	74.1	62.2	47.5
	0:31:00	0:31:00		51.1	69.9	54.8	47.7	54.3	53.3	51	70	58.2	47
	0:32:00	0:32:00		50.6	71.5	56.9	48.2	55.5	52.7	50.5	71.5	59.9	46.9
	0:33:00	0:33:00		51.3	78.1	58	47.5	57.1	53.9	51.1	78.1	64.3	45.9
	0:34:00	0:34:00		50.3	67.9	54.1	46.8	53.5	52.1	50.3	67.9	56.7	45.7
	0:35:00	0:35:00		52.7	69.6	58.6	47.9	57.9	55.1	52.6	69.6	60.5	47.1
	0:36:00	0:36:00		49.1	67.2	51.6	47.3	51.2	50.3	49.1	67.2	54.5	46.3
	0:37:00	0:37:00		50.1	66.9	52.5	47.8	52.2	51.6	50.1	66.9	55.2	47.1
	0:38:00	0:38:00		49.3	67.2	52.2	46.8	51.6	51.1	49.3	67.1	54.7	46.1
	0:39:00	0:39:00		49.6	66.9	53.5	45.9	52.7	51.7	49.6	66.9	55.6	45.1
	0:40:00	0:40:00		49.2	67.8	52.9	45.6	51.9	50.9	49.2	67.7	55.9	44.2
	0:41:00	0:41:00		49.3	67.4	52.1	47.3	51.6	50.8	49.3	67.4	55.8	46.5
	0:42:00	0:42:00		50.3	69.6	53.7	47.1	53.1	52.2	50.2	69.6	57.1	46.1
	0:43:00	0:43:00		49.9	71.3	54.9	46.9	53.8	52	50	71.3	58	46.2
	0:44:00	0:44:00		52.3	75.5	58.9	48.5	57.8	55.1	52.2	75.4	62.8	47.9
	0:45:00	0:45:00		51	70	54.6	46.6	54.1	53.5	51	69.9	56.7	45.9
	0:46:00	0:46:00		51.2	73.9	57.4	47.6	56.4	54.9	51	73.9	61.9	46.8
	0:47:00	0:47:00		50.4	71.8	54.6	46.6	53.8	52.4	50.2	71.7	59.1	45.7
	0:48:00	0:48:00		50.5	71	52.9	47.9	52.5	52	50.4	71	57.8	47.3
	0:49:00	0:49:00		48.9	65.5	50.6	47	50.3	49.9	48.9	65.4	53.1	46.2
	0:50:00	0:50:00		48.1	67	50.2	45.7	49.9	49.5	48.1	67	52.7	44.8
	0:51:00	0:51:00		50.2	67.1	52.8	47.3	52.6	52	50.1	67.1	55	46.3
	0:52:00	0:52:00		49.8	68.6	52.7	47.3	52.3	51.4	49.8	68.5	55.9	46.6
	0:53:00	0:53:00		51.7	72.8	56.1	48.1	55.8	54.8	51.8	72.7	58.7	47.4
	0:54:00	0:54:00		54.9	72.2	57.4	51.5	57.1	56.4	54.8	72.1	59.1	49.9
	0:55:00	0:55:00		52.1	72.8	55.8	48.7	55.4	54.3	51.9	72.7	58.1	47.8
	0:56:00	0:56:00		50.4	69.7	55.5	46.8	54.3	52.9	50.2	69.7	57.6	45.8
	0:57:00	0:57:00		51.1	69.4	55.2	48.2	54.9	53.9	51.1	69.4	57.2	47.7
	0:58:00	0:58:00		50.8	72.5	54.8	48.4	54.3	52.2	50.7	72.5	57.7	47.1
	0:59:00	0:59:00		51.1	69.3	55.3	48.7	54.8	53.3	50.9	69.3	58.6	46.3
	1:00:00	1:00:00		51.3	73.7	57.8	47.8	57.5	54.3	51.2	73.7	62	46.4
	1:01:00	1:01:00		51.3	68.6	54.7	48.2	54.4	53.7	51.3	68.6	56.9	47.2
	1:02:00	1:02:00		53.2	73.4	58.8	48	58.1	56.2	53.1	73.4	62	46.9
	1:03:00	1:03:00		51.3	68.2	54.7	48	54.1	53.3	51.1	68.2	56.9	47.1
	1:04:00	1:04:00		50.8	69.2	54.6	46.9	54.5	53.8	50.7	69.2	56.9	46.1
	1:05:00	1:05:00		52.4	70.2	56.9	48.5	56.6	54.3	52.4	70.2	59	47.8
	1:06:00	1:06:00		53.6	88.2	61.6	47.4	60.1	56.9	53.3	88.2	66	46.6
	1:07:00	1:07:00		50.7	68	53.3	47.3	53	52.4	50.7	68	56.6	45.7
	1:08:00	1:08:00		51.5	71.1	57.1	46.5	56.7	54.8	51.3	71	58.2	46
	1:09:00	1:09:00		49.7	72	56.6	46.5	55.7	52.3	49.7	72	60.1	45.7
	1:10:00	1:10:00		53.3	72.6	57.1	49	56.8	55.7	53.1	72.5	60.1	47.9
	1:11:00	1:11:00		51.2	68.8	53.3	50	52.8	52.1	51.2	68.7	54.7	48.9
	1:12:00	1:12:00		50.2	67.8	54.7	47.7	53.8	52.2	50.1	67.8	57.1	46.3
	1:13:00	1:13:00		50.8	67.9	53.4	47.3	53	52.3	50.7	67.9	55.5	46.9
	1:14:00	1:14:00		51.4	69.9	56.4	47.7	55.5	53.6	51.3	69.8	59.2	47.6
	1:15:00	1:15:00		50.8	70.1	55.6	47.3	55.1	53.7	50.8	70	57.6	46.6
	1:16:00	1:16:00		51.7	72.3	57.9	48.3	56.4	54.1	51.6	72.2	60.1	47
	1:17:00	1:17:00		51.3	68.6	55	48	54.3	53.2	51.2	68.6	57.7	47.1
	1:18:00	1:18:00		50.8	74.8	56.6	46.8	54.8	53.5	50.6	74.7	61.2	45.8
	1:19:00	1:19:00		51.2	71.1	56	48.2	55.2	52.9	51.1	71	59.2	46.6
	1:20:00	1:20:00		53.7	70.9	57.2	49.1	56.8	56	53.6	70.8	58.9	47.8
	1:21:00	1:21:00		49.8	65	51.2	47.7	51.2	51	49.8	65	52.2	47.2
	1:22:00	1:22:00		52.9	74.1	58.4	48.4	57.9	55	52.9	74.1	62.6	47.8
	1:23:00	1:23:00		52.2	73.7	58	49.2	57.6	56	52	73.7	62.5	48.6
	1:24:00	1:24:00		50.5	77.2	57	46.3	56.7	53.4	50.4	77.1	62.6	45.3
	1:25:00	1:25:00		50.4	70.3	56	46.4	55.3	53.4	50.4	70.1	58.7	45.7
	1:26:00	1:26:00		53	74.9	57.5	47.8	57.1	55.7	52.8	74.9	60.9	47
	1:27:00	1:27:00		51.5	71.4	57.7	46.8	57.2	55.4	51.4	71.4	59.8	46.2
	1:28:00	1:28:00		51.6	73.2	57.5	48	56.7	54.9	51.5	73.2	60.1	47.1
	1:29:00	1:29:00		49.4	67.6	53.7	47.2	53.1	51.1	49.4	67.5	55.8	46.2
	1:30:00	1:30:00		47.8	66.5	52.5	45.9	51.6	48.8	47.7	66.5	55.5	45.3
	1:31:00	1:31:00		48.8	65	52.5	46.5	51.5	50.1	48.8	65	54.6	45.5

Start: 2:32:48 PM 7/22/2014
Stop: 2:32:48 PM 7/23/2014

24-Hour Measurement Summary

	Day	Evening	Night
Peak Hour (dBA):	56.4	44.9	50.7
Average Hour (dBA):	50.0	41.2	43.3

1:32:00	1:32:00	49.4	65.6	52.7	46.7	52.5	51.3	49.4	65.7	53.9	45.5
1:33:00	1:33:00	53.6	75.5	57.5	46.5	57	56.2	53.5	75.4	60.9	46.2
1:34:00	1:34:00	51.9	70.2	55.5	49	55.2	53.9	51.9	70.1	58.9	47.7
1:35:00	1:35:00	52.9	72	57.9	47.6	56.9	55.7	52.7	71.9	61.6	45.9
1:36:00	1:36:00	48.7	69	52.4	46.6	51.8	50.9	48.7	69	54	45.8
1:37:00	1:37:00	51.4	74.8	58.6	46.2	57	55.7	51.3	74.7	61.8	45.5
1:38:00	1:38:00	51	69.8	55.7	47.8	55.3	53.8	50.8	69.7	58	46.6
1:39:00	1:39:00	51.6	71.9	55.1	47.2	55	54.5	51.5	71.9	59	45.7
1:40:00	1:40:00	50.8	67.8	54.5	47.4	53.9	52.6	50.7	67.7	56.5	45.8
1:41:00	1:41:00	51.8	73.1	57.6	46.9	57.2	55.9	51.7	73	61	45.6
1:42:00	1:42:00	50.8	71.2	55.8	46.5	54.8	53.9	50.7	71.2	59	45.7
1:43:00	1:43:00	52	73.7	56.3	48.6	55.8	54.5	52	73.6	58.8	46.6
1:44:00	1:44:00	55.8	73.6	59.6	50.9	59.4	58.5	55.6	73.6	61.7	49.5
1:45:00	1:45:00	54.2	72.7	58.2	49.7	58	57.3	54.2	72.7	60.8	47.7
1:46:00	1:46:00	54.6	74.5	58.5	49.9	57.7	57	54.3	74.4	61.9	47.2
1:47:00	1:47:00	50.6	68.8	55	46.8	54.7	53.5	50.5	68.8	56.3	45.8
1:48:00	1:48:00	52.3	73.6	59.1	46.1	58.4	56.7	52.2	73.6	62.4	45.3
1:49:00	1:49:00	53.6	76.5	60	46.4	59.5	56.8	53.5	76.5	62.9	46.1
1:50:00	1:50:00	51.7	72.2	56.7	48.2	56.3	54.3	51.6	72.1	58.8	46.6
1:51:00	1:51:00	52	75.8	57.4	47.9	56.1	54.7	51.8	75.8	60.1	46.7
1:52:00	1:52:00	51.9	72	56.9	47.6	55.8	55.1	51.8	72	60.7	46.5
1:53:00	1:53:00	53.9	75.2	57.7	49.8	56.5	55.5	53.8	75.2	61.6	48.5
1:54:00	1:54:00	51.7	69.6	54.9	48.4	54.5	53.8	51.5	69.6	56.6	47.5
1:55:00	1:55:00	52	72.1	56.6	48.6	56	54	52	72	60	48.1
1:56:00	1:56:00	49.2	67.4	52.3	46.7	51.8	50.6	49.2	67.4	55.3	45.8
1:57:00	1:57:00	52	75.5	58	47.9	57.1	55.5	52	75.4	62.4	47.2
1:58:00	1:58:00	51	70.4	55.4	47.8	55	53.1	51	70.3	57.7	47.1
1:59:00	1:59:00	49.6	68.4	54.5	47	53.8	51.3	49.6	68.3	56.1	46
2:00:00	2:00:00	50.5	70	53.5	48.1	53	52.2	50.4	70	56	47
2:01:00	2:01:00	52.9	79.4	59.1	49.1	57.9	54.8	52.9	79.4	64.2	48.4
2:02:00	2:02:00	51.5	71.9	55.5	49	54.6	53.5	51.3	71.8	60.1	48.1
2:03:00	2:03:00	50	66.1	52.7	48	52.5	51.5	50	66.1	53.9	47
2:04:00	2:04:00	49.9	65.3	52	48.2	51.8	50.7	49.9	65.3	54	47.6
2:05:00	2:05:00	50.9	69.5	56.9	47.6	54.5	53.2	51	69.5	59.6	46.8
2:06:00	2:06:00	60.7	84.7	70.3	52.6	69	67.2	60.5	84.7	73.3	50.3
2:07:00	2:07:00	52.3	74.3	55.4	49.5	55	54.1	52.2	74.3	58.5	48.6
2:08:00	2:08:00	53.3	71.4	57.1	49.9	56.6	55.5	53.3	71.2	59.3	49.3
2:09:00	2:09:00	51.3	71.1	55.4	48.8	54.9	53.6	51.2	71	58	48
2:10:00	2:10:00	60.4	90.3	69.3	51.1	68.8	67.8	60.2	90.3	71.6	50.7
2:11:00	2:11:00	54.6	75.3	58.2	51.5	57.8	56.7	54.5	75.3	61.5	50.7
2:12:00	2:12:00	49.8	67.8	54.4	46.7	54	53.2	49.8	67.8	55.6	46
2:13:00	2:13:00	50.1	67.7	53	48	52.5	51.8	50.1	67.7	55.6	47.2
2:14:00	2:14:00	50.5	68.5	52.8	48.3	52.6	52	50.4	68.5	55.3	47.2
2:15:00	2:15:00	51.5	71.1	56	48.4	54.8	53.3	51.4	71	58.8	47.3
2:16:00	2:16:00	48.3	72.4	54	45.7	53.3	51	48.4	72.3	58	45
2:17:00	2:17:00	51.8	70.2	54.5	49.2	54.1	53.7	51.7	70.1	57.8	48.2
2:18:00	2:18:00	50.8	74.1	55.2	47.7	54.7	52.8	50.7	74	58.3	46.9
2:19:00	2:19:00	50.2	68.6	52.7	47.5	52.3	51.6	50.1	68.6	55.9	47
2:20:00	2:20:00	51	68.4	54.6	49.2	53.9	52.7	51	68.3	58	47.9
2:21:00	2:21:00	50.8	70.2	55.9	48.1	54.8	53.1	50.7	70.2	59.8	47.5
2:22:00	2:22:00	51.9	69.5	54.6	49.2	54	53.5	51.7	69.4	57.7	48.3
2:23:00	2:23:00	49.4	68	52.8	47.6	51.7	51.1	49.4	67.9	55.8	46.2
2:24:00	2:24:00	48.8	64.8	51.1	47.3	50.7	49.9	48.8	65	54.6	46.1
2:25:00	2:25:00	50	74.4	55.3	46.1	53.9	52.1	49.9	74.3	59.8	45.6
2:26:00	2:26:00	50	67	52.8	47	52.4	51.5	49.9	66.9	55.8	45.8
2:27:00	2:27:00	49.4	65.4	51	48	50.6	50.3	49.4	65.3	54.5	47.4
2:28:00	2:28:00	49.2	64.8	52.2	46.9	51.8	51.3	49.2	64.7	53.6	46.2
2:29:00	2:29:00	49.9	66	52.9	47.6	52.7	51.5	49.8	66	53.8	46.8
2:30:00	2:30:00	48.5	66.3	52	46.4	51.3	49.9	48.5	66.2	53.7	45.3
2:31:00	2:31:00	48.9	64.9	50.6	46.3	50.5	50.2	48.9	64.8	51.9	45.7
2:32:00	2:32:00	52	72.2	58.2	48.2	58	57	52	72.1	59.9	47.5
2:33:00	2:33:00	49.7	66.8	54.4	47.6	53.5	52.2	49.6	66.8	55.3	46.7
2:34:00	2:34:00	48.2	65.8	50.1	46.5	49.7	49.3	48.2	65.8	51.4	45.6
2:35:00	2:35:00	49.9	68.3	54.7	46.5	54.3	51.4	49.9	68.1	56.7	46.1
2:36:00	2:36:00	48.3	65.9	50.6	46.4	50.6	49.9	48.3	65.9	53.1	45.6
2:37:00	2:37:00	50.6	67.5	53.9	48.9	52.6	51.5	50.6	67.4	56.1	47.1
2:38:00	2:38:00	50.9	70.5	56.9	46.5	56.6	55.9	50.8	70.5	59.7	45.6
2:39:00	2:39:00	49.8	67	52.2	47.1	51.7	51	49.8	67	54.2	46.1
2:40:00	2:40:00	50	68.4	53.6	47.8	53.1	52.2	50	68.4	55.9	47
2:41:00	2:41:00	51.1	69.5	54.2	49.3	53.2	52.5	51.1	69.5	57.1	48.5
2:42:00	2:42:00	49.3	68	52.4	46.6	52	50.9	49.2	67.9	54.2	46.1
2:43:00	2:43:00	48.1	66.2	51.1	45.6	50.7	49.4	48.1	66	53.5	44.5
2:44:00	2:44:00	48.1	66.4	52.9	45.3	52.4	51.6	48.1	66.4	54.7	44.5
2:45:00	2:45:00	49.2	66.2	52.3	46.4	52	51.3	49.2	66.2	54.7	45.7
2:46:00	2:46:00	48.1	64.9	51	44.6	50.4	49.8	48.1	64.9	53.5	43.9
2:47:00	2:47:00	50.2	66.5	52.7	47.6	52.5	51.9	50.2	66.4	54.5	46.7
2:48:00	2:48:00	47.2	62.7	49.6	45.5	48.8	48.2	47.3	62.5	50.9	44.8
2:49:00	2:49:00	51	73.2	56.1	47.3	55.4	53.7	51	73.2	58	46.9
2:50:00	2:50:00	52.9	69	58.3	49.9	57.1	55	52.7	68.9	60.3	48.4
2:51:00	2:51:00	48.7	64	52.3	46.6	51.9	50.9	48.7	64.1	52.8	45.7
2:52:00	2:52:00	50.3	76.2	59.5	46.7	57	52.5	50.2	76.2	64.7	46.3
2:53:00	2:53:00	49.4	66.1	52.8	47.4	52.7	51	49.4	66.1	54.9	46.2
2:54:00	2:54:00	49.3	67.1	54.2	44.9	52.6	52	49.2	66.9	57.6	44.3
2:55:00	2:55:00	48.6	64.8	50.4	45.3	50.4	49.9	48.6	64.7	52.5	44.8
2:56:00	2:56:00	48.8	63.6	50.5	47.4	50.1	49.5	48.8	63.5	52	45.9
2:57:00	2:57:00	48.9	70.5	55	45.7	54.2	51	48.9	70.5	56.5	45.3
2:58:00	2:58:00	49.4	69	54.9	45.7	54.8	51.1	49.3	69	56.8	45.3
2:59:00	2:59:00	48	63.2	49.8	46.1	49.7	49.3	48	63.2	51.2	45.6
3:00:00	3:00:00	48.8	66.7	52.2	46	51.8	51	48.8	66.6	54.5	45.1
3:01:00	3:01:00	48.6	66.6	51.7	45.8	51.4	50.4	48.6	66.6	53.6	45.1
3:02:00	3:02:00	49.2	67.3	54.6	44.2	53.8	51.3	49.2	67.2	56.8	43.6
3:03:00	3:03:00	49.4	70.7	55.8	45.1	54.7	52.9	49.3	70.6	58.9	44.9
3:04:00	3:04:00	48.1	69.1	53.4	43.8	53.1	52	48.2	69.1	56.1	43.2
3:05:00	3:05:00	49	68.4	54.2	45.6	53.9	53.1	48.9	68.3	55.8	44.9

3:06:00	3:06:00	49.1	66.8	52.5	46.4	52.2	51.3	49.1	66.8	53.7	45.5
3:07:00	3:07:00	50.9	70.1	54.1	47.4	53.9	53.5	50.8	70.1	56.7	46.9
3:08:00	3:08:00	50.1	66.4	53.2	48.2	53	51.8	50.1	66.4	54.3	47.3
3:09:00	3:09:00	49.2	65.7	52.5	47.3	51.9	50.8	49.1	65.6	54.1	46.4
3:10:00	3:10:00	50.8	74.9	55.8	47.3	54.8	53.4	50.8	74.9	61.5	46.3
3:11:00	3:11:00	50.2	67	53.9	46.3	53.8	52.8	50.2	66.9	55.6	45.5
3:12:00	3:12:00	48.5	65.5	51.8	46.4	51.3	50.2	48.5	65.4	53.7	45.9
3:13:00	3:13:00	51.9	68.6	55.6	48.2	55.1	53.6	51.8	68.5	56.7	47.4
3:14:00	3:14:00	51.4	71.8	55.5	46.6	54.7	53.6	51.3	71.8	58.4	44.8
3:15:00	3:15:00	48.1	63.2	50.2	45.8	49.9	49.5	48.1	63.2	52.2	44.5
3:16:00	3:16:00	47.6	64.2	50.2	43.8	50	49.6	47.6	64.2	51.8	43.4
3:17:00	3:17:00	52.8	80.9	64.3	44.9	63.5	57.5	53	80.9	68.5	44.5
3:18:00	3:18:00	59.3	82.8	67.1	49.2	66.6	65.7	59	82.7	68.5	48.3
3:19:00	3:19:00	49	65.3	51.9	46.8	51.5	50.7	48.9	65.3	53.7	45.7
3:20:00	3:20:00	48	65.6	50.5	45.2	50.2	49.8	48	65.5	53.1	44.2
3:21:00	3:21:00	50.4	75	55.1	46.5	53.9	52.5	50.3	75	60.2	46
3:22:00	3:22:00	48.8	68.4	54.5	44.4	53.5	51.3	48.8	68.4	57.4	44
3:23:00	3:23:00	50	67.8	54.1	46.8	53.6	52.1	50	67.7	56.7	45.8
3:24:00	3:24:00	48.9	66	51.9	45.7	51.6	50.6	48.8	66	55.2	44.9
3:25:00	3:25:00	47.4	64.7	50.5	45	50.3	49.4	47.5	64.6	52	44.1
3:26:00	3:26:00	49.7	67.4	52.9	46.5	52.6	51.3	49.6	67.3	55.5	45.7
3:27:00	3:27:00	48.3	67.1	51.8	45.2	50.8	50.1	48.3	67.1	53.7	44.7
3:28:00	3:28:00	49.3	66.2	53.1	45.2	52.5	51.6	49.3	66.2	55.6	44.5
3:29:00	3:29:00	47.7	64.6	51.1	44.6	50.7	49.6	47.7	64.5	54.1	43.8
3:30:00	3:30:00	47.5	63.5	50.6	44.1	50.4	49.1	47.5	63.4	52.7	43.5
3:31:00	3:31:00	48.5	64.9	50.7	46.1	50.3	50	48.5	64.9	52.1	45.2
3:32:00	3:32:00	49.4	66.9	53.5	46	53.1	51.6	49.4	66.9	54.5	44.7
3:33:00	3:33:00	48.9	67.6	54.7	44.8	54.4	52.3	48.9	67.6	56.5	43.8
3:34:00	3:34:00	48.3	70.1	53.4	44.8	52.6	50.1	48.2	70.1	56.7	44
3:35:00	3:35:00	48.1	67.6	52.7	44.5	52.4	50.8	48.1	67.4	54.5	43.6
3:36:00	3:36:00	48.7	65.9	51.6	45.1	51	50.6	48.7	66	54.1	44.3
3:37:00	3:37:00	48.8	77.5	58.1	45.7	52.1	50.6	49	77.5	61.8	44.4
3:38:00	3:38:00	59.7	82.1	67.4	50.6	67.1	65.6	59.5	82	69.2	48
3:39:00	3:39:00	50.8	71.1	53.6	48.1	53.3	52.4	50.6	71.1	56.4	47.3
3:40:00	3:40:00	49	66.5	52.7	45.6	52.6	51	48.9	66.4	53.6	44.8
3:41:00	3:41:00	48.1	66.4	52	45.7	51.1	50.4	48.1	66.4	54.5	44.5
3:42:00	3:42:00	58.1	82.4	66	46.7	65.7	64.1	57.9	82.4	69.7	45.6
3:43:00	3:43:00	50	73.3	53.4	46.7	52.9	51.8	49.7	73.3	56.8	45.2
3:44:00	3:44:00	48.4	64.8	51	46.4	50.8	50.3	48.4	64.7	53.1	45.2
3:45:00	3:45:00	47.4	64.4	50.4	45.1	50.1	49	47.4	64.3	51.5	44.2
3:46:00	3:46:00	59.3	91.9	68.6	46.1	67.2	65.5	59.1	91.8	72.9	45
3:47:00	3:47:00	51.2	77.1	54.1	48.6	53.9	53.1	51.2	77.1	57	47.8
3:48:00	3:48:00	48.7	65.5	52.5	46.1	52.4	50.5	48.7	65.6	53.6	44.6
3:49:00	3:49:00	48.1	66.8	52.7	45	52.3	51.2	48	66.7	54.2	44.2
3:50:00	3:50:00	46.7	65	50.8	44.1	50.5	48.9	46.7	64.9	52.4	42.9
3:51:00	3:51:00	46.4	66.2	49.6	43.6	49	48	46.5	66.2	53.8	42
3:52:00	3:52:00	47.8	62.9	49.1	45.4	49	48.8	47.8	63	50.1	44.7
3:53:00	3:53:00	47.1	64.3	50.8	43.8	50.3	49.1	47.1	64.3	53.7	43.5
3:54:00	3:54:00	46	61.9	49.2	43.5	49.1	47.9	46	61.9	50.5	42.9
3:55:00	3:55:00	44.9	61.7	46.8	42.2	46.7	46.2	45	61.8	48.4	41.5
3:56:00	3:56:00	46.9	62.5	48.8	44.3	48.7	48.4	47	62.4	50.5	43.4
3:57:00	3:57:00	46.3	64.8	48.9	42.9	48.7	48.4	46.3	64.8	50.6	42
3:58:00	3:58:00	46.8	63	49.8	43.5	49.6	48.9	46.8	63	51.9	42.9
3:59:00	3:59:00	48	65	52.2	45.8	51.8	49.8	48	64.9	53.3	43.8
4:00:00	4:00:00	46.5	64.9	49.4	43.9	49.2	48.6	46.5	64.9	50.6	43
4:01:00	4:01:00	46.3	64.4	49.5	41.7	49.3	48.5	46.4	64.4	52.7	41.1
4:02:00	4:02:00	49.8	65.8	52.6	47.1	51.9	51.3	49.7	65.9	54.6	46.1
4:03:00	4:03:00	48.1	70.3	53.2	46	52.1	49.3	48.1	70.3	57.4	45.4
4:04:00	4:04:00	49.4	66.9	53	45.2	52.6	51.6	49.3	66.9	54.4	44.4
4:05:00	4:05:00	47.4	72.2	55	44.5	54	49.4	47.3	72.2	61.2	43.7
4:06:00	4:06:00	44.8	61.3	48.7	42.8	47.9	47.2	44.9	61.2	50.3	42
4:07:00	4:07:00	45.2	62.7	48.9	42.6	48.4	46.5	45.2	62.7	51.1	41.9
4:08:00	4:08:00	46.7	66.4	51.1	43	50.8	49.4	46.7	66.4	54.4	42.3
4:09:00	4:09:00	46.9	62.8	50.1	44.6	49.5	48.5	46.9	62.8	51.2	44
4:10:00	4:10:00	45.9	62.6	49	43	48.8	48.3	46	62.5	50.5	42.5
4:11:00	4:11:00	47.2	66.1	51.5	43	51.1	50.1	47.1	66.1	53.7	41.8
4:12:00	4:12:00	45.7	62.8	48.9	42.6	48.8	47.9	45.8	62.9	50.5	42.1
4:13:00	4:13:00	46.5	67	51.2	44.3	50	48.2	46.5	66.9	55.4	43.1
4:14:00	4:14:00	46.7	61.6	48.5	43.7	48.3	48.1	46.7	61.6	50.1	43.1
4:15:00	4:15:00	47.2	63.4	49.4	45.3	49.4	48.4	47.2	63.2	50.6	44
4:16:00	4:16:00	47.3	63.2	49.8	44.6	49.3	48.6	47.3	63.2	51.4	43.9
4:17:00	4:17:00	46.2	63.1	48.6	44.1	48.2	47.4	46.2	63.1	50.2	42.9
4:18:00	4:18:00	44.2	60	46.3	42.6	46	45.2	44.3	60	48.6	41.8
4:19:00	4:19:00	44.4	62.1	47.3	42.5	47.1	46.1	44.5	62.1	49.8	41.9
4:20:00	4:20:00	45.7	62.6	48.4	42.3	48	47	45.7	62.7	50.8	41.2
4:21:00	4:21:00	45.2	64.2	48.6	42.2	47.7	46.8	45.3	64.2	50.6	41.5
4:22:00	4:22:00	45.7	62.6	47.8	42.9	47.7	47.2	45.7	62.7	49.2	41.9
4:23:00	4:23:00	44.2	61.5	48.4	42.4	47.8	45.7	44.3	61.6	51	41.6
4:24:00	4:24:00	44.1	66.5	52.3	40.9	51.6	47	44.2	66.5	54.8	40.3
4:25:00	4:25:00	44.7	60.6	47.3	42.1	46.9	46.4	44.7	60.8	48.8	41.4
4:26:00	4:26:00	44.7	62.1	47.7	41.5	47.5	46.7	44.7	62	49.6	40.8
4:27:00	4:27:00	44	64.7	46.4	42.6	45.5	45	44.1	64.8	50.7	41.6
4:28:00	4:28:00	43.4	60.2	46.7	41.1	46.5	45.1	43.5	60.2	47.9	40.2
4:29:00	4:29:00	44.5	61.7	47.1	41.3	46.7	46	44.6	61.8	49.6	40.7
4:30:00	4:30:00	44.7	59.9	46.3	42.2	46.2	45.8	44.7	60	47.8	41.5
4:31:00	4:31:00	43.6	60.2	46.7	40.6	46.2	45.2	43.7	60.2	48.6	40
4:32:00	4:32:00	45.5	65.7	49.7	42	49.2	47.7	45.4	65.6	53	40.8
4:33:00	4:33:00	44.9	62.4	48.8	42.3	47.9	46.6	44.9	62.6	51.5	41.5
4:34:00	4:34:00	45.4	64	48.4	42.7	48	47.1	45.3	64	50.7	41.9
4:35:00	4:35:00	43.8	63.1	47.7	40.4	47.5	46.1	43.8	63.1	48.9	39.5
4:36:00	4:36:00	44.8	61.3	48.1	40.5	47.9	47.1	44.9	61.2	50.1	40
4:37:00	4:37:00	43.8	60.4	46.6	42.1	46.3	45.3	43.8	60.6	47.7	41.4
4:38:00	4:38:00	46.4	62.3	48.5	44	48.3	47.6	46.5	62.2	49.6	44
4:39:00	4:39:00	45.6	62.2	48.5	43.6	48.3	47.8	45.6	62.1	50.3	42.5

4:40:00	4:40:00	42.9	58	44.6	41.3	44.5	44.1	43	58	45.8	40.9
4:41:00	4:41:00	46	64.5	51.2	42.3	49.6	47.7	46	64.5	53.8	42.5
4:42:00	4:42:00	45.4	64.6	50.9	41.5	50.5	47.4	45.5	64.6	52.2	40.9
4:43:00	4:43:00	52.4	75.1	58.8	47.8	58.3	56.7	52.3	75	61.8	46.6
4:44:00	4:44:00	47.8	69.2	50.4	45.3	50.1	49.4	47.7	69.3	54.6	44.4
4:45:00	4:45:00	44.7	61.8	48.3	42.4	47.7	47	44.7	61.8	50	41.7
4:46:00	4:46:00	45.6	71.4	52	42.6	50.3	48.3	45.6	71.3	57.4	41.7
4:47:00	4:47:00	45.4	68.9	50.3	42.9	49.4	47.9	45.4	68.9	55.5	42.1
4:48:00	4:48:00	45.7	63.9	49.7	43.7	49	47.7	45.7	64	51.4	43.1
4:49:00	4:49:00	45	71.3	51.9	42.1	49.9	46.3	45	71.3	57.5	41.6
4:50:00	4:50:00	44.5	62.5	48.5	42.7	46.5	45.8	44.6	62.6	52	41.8
4:51:00	4:51:00	46	60.8	48	44.2	48	47.2	46	60.7	49.4	43.1
4:52:00	4:52:00	46.2	62.3	47.9	44.4	47.7	47.1	46.2	62.2	49.1	43.8
4:53:00	4:53:00	46.1	68.9	48.8	44	48.1	47.5	46.1	69	51.4	43
4:54:00	4:54:00	46.6	64.3	48.7	45.1	48.4	47.8	46.7	64.1	50.4	44.2
4:55:00	4:55:00	45.3	63.4	49.6	42.1	48.9	47.5	45.3	63.2	51.1	41.4
4:56:00	4:56:00	45.4	62.7	48	42.6	47.7	46.6	45.4	62.8	50.4	41.9
4:57:00	4:57:00	45.6	62.8	48	44.2	47.5	46.8	45.7	62.8	49.4	43.3
4:58:00	4:58:00	45.1	62	47	43	46.9	46.1	45.1	62.2	48.6	41.7
4:59:00	4:59:00	44.6	62.8	47	42.9	46.4	45.6	44.7	62.7	49.2	42.5
5:00:00	5:00:00	44.9	59.9	47.5	42.3	47.3	46.5	45	59.9	48.8	41.9
5:01:00	5:01:00	46.9	63.8	49.4	44.9	49.4	48.4	47	63.8	51.4	43.8
5:02:00	5:02:00	46.4	64.2	49.4	44.3	49.2	47.7	46.4	64.2	50.9	43.4
5:03:00	5:03:00	43.1	61.9	45.4	41.3	45.2	44.7	43.1	62.1	47.4	40.4
5:04:00	5:04:00	43	58.6	44.3	41.3	44.3	43.9	43.1	58.7	45.8	40.8
5:05:00	5:05:00	43.9	59.5	47.3	41.8	45.8	45.3	44.1	59.3	49.5	41.2
5:06:00	5:06:00	45.4	61.6	48.2	41.8	48	47.3	45.4	61.5	49.7	41.1
5:07:00	5:07:00	45.2	65.3	48.4	42.5	47.6	47.1	45.3	65.2	50.6	41.8
5:08:00	5:08:00	45.4	60.2	47.8	42.5	47.4	46.8	45.5	60.2	48.8	41.7
5:09:00	5:09:00	44.5	60.6	47.1	42.5	46.6	45.8	44.6	60.7	49.1	41.8
5:10:00	5:10:00	43.9	62.2	49.3	41.3	47.9	45.7	43.9	62.2	51.8	40.5
5:11:00	5:11:00	41.8	57.1	43.9	40.1	43.2	42.6	41.9	56.9	45	39.8
5:12:00	5:12:00	41.5	61.2	45.8	38.3	45.4	44.3	41.8	61.1	47.8	38.5
5:13:00	5:13:00	42.4	64	45.4	40.3	45.2	44.3	42.4	64	49.3	40
5:14:00	5:14:00	45.6	64.9	48.1	41.4	47.9	47.3	45.7	64.6	50.4	41.1
5:15:00	5:15:00	42.2	59.7	45.8	40	45.5	44.7	42.3	59.9	46.6	39.3
5:16:00	5:16:00	44	59.2	46.3	42.4	45.8	45.1	44.1	59.5	48.5	41.8
5:17:00	5:17:00	42.1	58.6	44.9	40	44.8	43.2	42.3	58.4	46.3	39.6
5:18:00	5:18:00	41.3	56.8	42.6	40	42.5	42.4	41.5	56.9	44	39.3
5:19:00	5:19:00	42.2	59.3	45.9	39.9	45.3	43.8	42.3	59.3	48.7	39
5:20:00	5:20:00	40.1	57.2	42.1	38.3	41.7	41.3	40.3	57.2	44.5	37.9
5:21:00	5:21:00	41.4	59	44.7	38.3	44.2	42.9	41.6	58.8	45.9	38.4
5:22:00	5:22:00	43.5	60.2	45.7	40.6	45.5	44.9	43.6	60.2	47.5	39.7
5:23:00	5:23:00	42	57.5	43.6	40	43.5	43.1	42.1	57.6	44.9	39.1
5:24:00	5:24:00	40.8	59.1	42.6	38.3	42.4	41.9	40.9	59.4	44.6	37.9
5:25:00	5:25:00	40.9	58.2	43.3	39.8	43.1	42.1	41.1	58.1	45.5	38.7
5:26:00	5:26:00	42	62.8	46.7	38.3	46.4	44.5	42.1	62.9	48.8	38.3
5:27:00	5:27:00	39.9	63	45.2	38.3	44.5	41.2	40.1	63	49.4	37.6
5:28:00	5:28:00	42.8	67.9	50.1	38.3	48.5	46	42.8	67.9	53.8	37.9
5:29:00	5:29:00	41	58	45	38.3	44.4	42.9	41	57.8	46.6	38.2
5:30:00	5:30:00	42.8	60.8	46.9	40	46.6	44.8	42.9	60.7	48.9	39.3
5:31:00	5:31:00	42.9	58.6	45.1	40	45	44.4	42.9	58.5	46.8	39.3
5:32:00	5:32:00	40.6	59.9	43.4	39.6	42.8	41.6	40.6	60.1	46.5	38.5
5:33:00	5:33:00	39.9	57.7	43.7	38.3	43.2	41.3	40.2	57.6	46.1	38
5:34:00	5:34:00	41.9	58.7	43.9	39.7	43.4	43	42	58.7	46.1	38.4
5:35:00	5:35:00	41.8	60.9	45.3	40	45	43.2	42	60.9	48.2	39.4
5:36:00	5:36:00	43.2	63.8	46.4	40	45.8	45.1	43.2	63.6	48.6	39.3
5:37:00	5:37:00	43.6	61.6	47.1	41	46.7	46.1	43.6	61.6	49.2	39.5
5:38:00	5:38:00	41.8	59.5	44.1	39.8	43.7	43.1	41.8	59.6	47.5	38.8
5:39:00	5:39:00	43.5	61.1	46.4	41.1	46	45.4	43.5	61.2	49	39.9
5:40:00	5:40:00	42.3	60.5	46.5	40.2	46.1	44.2	42.4	60.7	48.6	39
5:41:00	5:41:00	42.3	59.1	46.3	39.8	45.9	44.9	42.3	59.1	49	38.8
5:42:00	5:42:00	38.3	54	40.4	35.3	40.2	39.6	38.4	54.1	42.6	36
5:43:00	5:43:00	39.2	65.8	47.2	35.3	46.3	41.6	39.6	65.9	52.6	36
5:44:00	5:44:00	41.9	60	46.8	39	45.8	44	41.9	60	48.8	38
5:45:00	5:45:00	39.7	61	45	38.3	44.5	41.4	39.9	60.8	47.5	37.1
5:46:00	5:46:00	38.8	56	41.5	37.9	40.8	40.2	38.8	56.2	44.8	36.6
5:47:00	5:47:00	37.9	53.7	39	35.3	38.8	38.5	38	54.4	41.8	35.4
5:48:00	5:48:00	38.8	57.8	42.7	36.1	42.1	41	38.8	57.7	45.2	35.9
5:49:00	5:49:00	39.7	56.2	41.4	38.3	41	40.5	39.9	56.2	43.9	37
5:50:00	5:50:00	39.8	54.8	41	38.3	40.8	40.3	39.8	54.8	43	37.3
5:51:00	5:51:00	38.3	53.8	39.7	37.1	39.5	38.7	38.2	53.5	42.1	36.3
5:52:00	5:52:00	37.8	66.2	46	35.3	44.6	38.9	38.1	66.1	51.1	35.7
5:53:00	5:53:00	38.8	56	40.9	38.2	40.3	40	39	55.8	42.7	37
5:54:00	5:54:00	38	54.5	40.5	35.3	40.2	39.7	38.3	54.4	41.8	35.4
5:55:00	5:55:00	51.9	75.5	63.9	38.5	63.6	58.2	52.3	75.4	65.1	38
5:56:00	5:56:00	48.9	74.3	63.2	38.3	61.3	56.9	48	74.3	62	37
5:57:00	5:57:00	39.4	55.8	42.5	38.1	41.7	41.2	39.5	55.7	45.1	36.4
5:58:00	5:58:00	41.4	62.1	44.4	38.2	43.8	43.3	41.4	62.2	48.5	36.1
5:59:00	5:59:00	39.1	58.9	42.6	35.8	42	41.4	39.3	58.7	45.9	35.4
6:00:00	6:00:00	40.8	59.8	43.9	38.3	43.2	42.3	40.9	59.8	46.7	37.4
6:01:00	6:01:00	40.8	62	45.3	37	44.6	43.2	40.7	61.9	50.5	35.8
6:02:00	6:02:00	39.2	64.7	45	36.6	44	41.6	39.2	64.7	50.4	35.1
6:03:00	6:03:00	40.3	58.5	43.5	38.2	42.9	42	40.3	58.6	47.8	36.7
6:04:00	6:04:00	39.3	66	49.8	35.3	47.6	41.9	39.2	66	56.2	35.2
6:05:00	6:05:00	39.1	65.8	45.7	36.3	45	40.8	38.9	65.8	50.7	35.7
6:06:00	6:06:00	39.7	61.7	46.4	36.5	44.7	42.7	39.5	61.8	52.5	35.6
6:07:00	6:07:00	41.2	68.3	49.1	38.2	47.6	44.5	41	68.3	55.8	36.5
6:08:00	6:08:00	39.2	57.8	41.8	38	41.3	40.4	39.2	57.8	45.6	36.3
6:09:00	6:09:00	39.3	61.4	44.8	37.8	41.7	40.5	39.3	61.3	51	35.9
6:10:00	6:10:00	47	66.4	53.8	38.2	53.2	51.3	46.9	66.4	56.3	36.7
6:11:00	6:11:00	39.4	65.7	46.4	35.4	44.7	42.8	39.2	65.5	53	35.3
6:12:00	6:12:00	37.5	54.6	39.7	35.3	39.2	38.7	37.6	54.6	42.6	35
6:13:00	6:13:00	39.2	62.1	46.6	35.3	45.3	42.3	39.1	62.3	50.2	35

6:14:00	6:14:00	37.5	58.7	39.3	35.3	38.9	38.5	37.6	58.6	42.7	35.2
6:15:00	6:15:00	37.5	54	39.7	35.3	39	38.5	37.5	53.9	41.7	34.8
6:16:00	6:16:00	35.6	53.6	37.9	35.3	37.8	36.7	36.3	53.4	41.8	34.1
6:17:00	6:17:00	35.4	54.2	36.4	35.3	35.9	35.6	36.1	53.8	39	34.2
6:18:00	6:18:00	35.6	51.4	37.8	35.3	37.7	36.5	36.3	51.9	39.5	34.2
6:19:00	6:19:00	37.4	59.5	42.9	35.3	40.7	39.1	37.5	59.5	48.8	34.9
6:20:00	6:20:00	37.5	63.5	44.7	35.3	43.4	40.3	37.8	63.4	48.5	34.5
6:21:00	6:21:00	36.9	56.4	42.9	35.3	41.7	39.8	37.2	56.2	46	34.7
6:22:00	6:22:00	36.1	55.1	40	35.3	39.8	38.3	36.6	54.6	42.6	34.6
6:23:00	6:23:00	35.5	51.1	37.2	35.3	37	35.8	36.5	51.4	39.7	34.7
6:24:00	6:24:00	35.9	56.7	40.8	35.3	39.6	37.5	35.9	56.5	46.1	34
6:25:00	6:25:00	35.3	51.3	35.6	35.3	35.5	35.5	35.9	51.4	37.7	34.5
6:26:00	6:26:00	35.5	53.4	36.8	35.3	36.8	36.2	36.4	53.1	41	34
6:27:00	6:27:00	36	54.5	38.8	35.3	38.5	38.2	36.6	54.5	42	34.2
6:28:00	6:28:00	35.4	51.6	36.3	35.3	35.9	35.6	36.5	51.5	39.5	34.8
6:29:00	6:29:00	37.6	53.1	39.6	35.3	39.5	38.7	37.8	52.8	41.7	35.6
6:30:00	6:30:00	36.3	51.9	38.4	35.3	38.4	38.4	36.6	51.6	38.7	34.5
6:31:00	6:31:00	35.5	50.7	37.7	35.3	37.6	35.7	36.1	50	38.7	34.4
6:32:00	6:32:00	36	50.8	38.4	35.3	38.5	38.4	36.8	50.8	39.4	35.1
6:33:00	6:33:00	36.6	63	44.9	35.3	43.9	38.4	36.9	62.7	49.5	34.6
6:34:00	6:34:00	36.5	59.8	43.6	35.3	42.5	38.4	37.2	59.7	46.9	34.7
6:35:00	6:35:00	35.4	50.5	38	35.3	37.9	35.5	36.2	50.4	37.9	34.8
6:36:00	6:36:00	37.4	53.8	40.1	35.3	39.1	38.5	38	53.5	41.1	35.3
6:37:00	6:37:00	39.1	53.2	40.4	37.1	40.3	40.2	38.8	53.3	42.3	35.7
6:38:00	6:38:00	39.5	54.7	44.6	38.2	44.4	42.7	39.6	55	46.4	37.1
6:39:00	6:39:00	38.4	52.8	39.3	37.9	39.2	38.8	38	52.6	41.2	36.1
6:40:00	6:40:00	38.2	52.8	39.6	37.2	39.5	38.5	38	52.4	40.9	35.9
6:41:00	6:41:00	37.1	52.3	38.4	35.3	38.5	38.4	37.5	52.2	39.8	36
6:42:00	6:42:00	37.9	53.7	39.5	35.3	39	38.5	38.1	53.9	40.7	35.4
6:43:00	6:43:00	38.3	54.2	40.6	35.3	40.2	39.7	38.5	54.1	42.9	36.1
6:44:00	6:44:00	38.5	63.4	45.3	35.3	44.8	38.7	38.5	63.4	50.1	36.1
6:45:00	6:45:00	35.9	51.1	38.4	35.3	38.4	37.1	36.7	51.7	39	34.9
6:46:00	6:46:00	37.5	66.1	44.4	35.3	43.3	38.5	37.8	65.9	49.1	35.7
6:47:00	6:47:00	36.3	51.9	38.6	35.3	38.5	38.4	36.9	51.9	40.3	34.8
6:48:00	6:48:00	35.4	51.5	36.8	35.3	36.2	35.6	36.4	51.2	38.9	34.6
6:49:00	6:49:00	36.4	51.1	38.5	35.3	38.5	38.4	36.7	50.9	39.2	35.1
6:50:00	6:50:00	36.4	51.8	39	35.3	38.6	38.4	37	51.4	40.7	34.7
6:51:00	6:51:00	39	52.5	41.3	37.2	40.7	40.2	39	52.7	43.3	35.9
6:52:00	6:52:00	36.9	52.1	40.5	35.3	40.2	38.6	37.3	52.2	41.7	34.7
6:53:00	6:53:00	38.1	63.4	44	35.3	43.1	38.5	38	63.2	48.6	35.5
6:54:00	6:54:00	36.8	53.4	38.4	35.3	38.5	38.4	37.3	53.6	39.4	35.2
6:55:00	6:55:00	38.7	57.9	41.9	38.3	41.4	39.9	39.1	57.7	43.7	37.3
6:56:00	6:56:00	37.1	51.8	38.5	35.3	38.5	38.4	37.3	51.8	39.6	35.5
6:57:00	6:57:00	36.5	52	38.4	35.3	38.4	38.4	37.1	52	39.3	35.3
6:58:00	6:58:00	35.7	51.2	37.9	35.3	37.7	36.8	36.9	51.5	38.4	35.4
6:59:00	6:59:00	37.4	52.3	38.6	35.3	38.5	38.4	37.6	51.9	40.3	35.9
7:00:00	7:00:00	36	50.8	38.2	35.3	38.1	37	37	50.9	39.1	35.5
7:01:00	7:01:00	35.7	51.3	37.6	35.3	37.6	37.2	36.7	51	39.4	35.2
7:02:00	7:02:00	35.6	51.4	38.5	35.3	38.4	36.2	36.4	51.5	39.6	34.6
7:03:00	7:03:00	36.3	63.4	44.1	35.3	43.8	38.1	36.7	63	49.1	34.7
7:04:00	7:04:00	36.5	65	44.5	35.3	44	38.3	36.8	65.2	49.8	34.6
7:05:00	7:05:00	37	51.3	38.5	35.3	38.5	38.4	37.3	51.5	39.8	35.4
7:06:00	7:06:00	37.2	53.7	40.1	35.3	40	38.8	37.7	53.9	41.2	35.6
7:07:00	7:07:00	38.2	53.3	40	36.4	39.6	38.7	38.1	53.4	41.5	36.5
7:08:00	7:08:00	37.4	52.3	38.4	35.3	38.5	38.4	37.4	52.1	39.3	36
7:09:00	7:09:00	45.7	63.8	51	36	50.9	50.1	45.8	63.8	52	36.5
7:10:00	7:10:00	42.1	60.4	48.2	38.1	48.2	46.8	41.9	60.4	49.5	36.3
7:11:00	7:11:00	38.1	52.4	39.2	35.3	38.8	38.5	37.9	52.3	41.1	35.8
7:12:00	7:12:00	37.1	52.3	38.8	35.3	38.6	38.4	37.3	52.2	40.4	35
7:13:00	7:13:00	35.5	51.5	37.2	35.3	36.9	35.9	36.4	50.8	39.1	34.7
7:14:00	7:14:00	35.9	51.5	38.3	35.3	38.3	37.8	36.6	51.5	39.5	34.7
7:15:00	7:15:00	35.4	51.1	36	35.3	35.7	35.5	35.8	51.1	38.1	34.3
7:16:00	7:16:00	35.3	50.5	35.7	35.3	35.5	35.4	35.1	50.5	38.3	33.8
7:17:00	7:17:00	36.6	64.4	44.2	35.3	43.8	38.3	36.4	64.5	49.1	33.6
7:18:00	7:18:00	35.3	50.6	35.5	35.3	35.5	35.5	35.7	50.2	37.8	34
7:19:00	7:19:00	36.1	63.8	43.9	35.3	43.4	36.2	36.7	63.9	49.4	34.7
7:20:00	7:20:00	35.3	50.4	35.7	35.3	35.6	35.5	36.2	50.8	38	34.7
7:21:00	7:21:00	35.3	50.3	35.5	35.3	35.5	35.5	36.1	50.1	37.7	34.6
7:22:00	7:22:00	35.3	50.9	35.4	35.3	35.5	35.5	36	50.6	37.4	34.3
7:23:00	7:23:00	35.3	49.7	35.4	35.3	35.5	35.4	35.5	49.6	36.9	34.3
7:24:00	7:24:00	35.3	50	35.5	35.3	35.5	35.5	35.7	49.7	37.4	34.4
7:25:00	7:25:00	35.3	50.2	35.5	35.3	35.5	35.4	35.7	50.4	37.2	34.2
7:26:00	7:26:00	35.3	49.9	35.4	35.3	35.5	35.4	35.6	49.9	37.6	33.5
7:27:00	7:27:00	35.5	50.8	36.7	35.3	36.5	36	36.2	51.1	39.3	34.2
7:28:00	7:28:00	36.1	52	38.4	35.3	38.4	38.3	36.5	51.8	39.1	33.9
7:29:00	7:29:00	37.5	51.8	38.7	35.3	38.5	38.4	37.4	51.7	40.8	35.6
7:30:00	7:30:00	36.4	55.4	43.3	35.3	42.7	38.4	37.2	54.9	44.4	35.1
7:31:00	7:31:00	37.6	63.2	46	35.3	45.1	41.6	37.9	63.2	50.2	34.8
7:32:00	7:32:00	35.7	51.3	38.5	35.3	38.4	36.6	36.3	51.2	40.4	34.8
7:33:00	7:33:00	35.3	50	35.6	35.3	35.5	35.5	36	50	37.9	34.5
7:34:00	7:34:00	35.3	51.4	35.5	35.3	35.5	35.5	35.7	51.1	37.8	34
7:35:00	7:35:00	36.4	53	40	35.3	39.4	38.4	37	53.2	41.2	34.5
7:36:00	7:36:00	36.4	53.1	38.9	35.3	38.5	38.4	37	53.1	40.7	34.6
7:37:00	7:37:00	35.4	51	37.8	35.3	37.7	35.5	36.1	50.9	39.6	34.3
7:38:00	7:38:00	35.5	50.4	38	35.3	37.7	35.6	35.7	50.2	38.3	34
7:39:00	7:39:00	36	53.1	38.5	35.3	38.5	37.8	36.4	53.2	39.8	34.1
7:40:00	7:40:00	38.1	56.3	42.6	35.3	42.4	41.4	38.5	56.3	44	35.1
7:41:00	7:41:00	35.3	50.5	35.4	35.3	35.5	35.4	35.9	50.3	37.4	34.3
7:42:00	7:42:00	35.9	52.2	38.4	35.3	38.5	38	36.6	52.3	40.8	34.5
7:43:00	7:43:00	36.3	51.9	38.5	35.3	38.5	38.4	36.8	51.6	40.1	34.5
7:44:00	7:44:00	37.2	65.7	45.3	35.3	44	38.4	37.5	65.7	50.5	34.9
7:45:00	7:45:00	36.8	63.6	44.2	35.3	43.7	38.4	37.3	63.4	49.1	34.8
7:46:00	7:46:00	35.7	52.5	38.4	35.3	38.4	38.1	35.7	52.6	38.8	33.7
7:47:00	7:47:00	35.3	50.1	35.8	35.3	35.5	35.5	36.2	50	38.4	34.7

7:48:00	7:48:00	35.3	50.3	35.6	35.3	35.5	35.4	35.8	50.6	37.9	33.9
7:49:00	7:49:00	36.4	51.4	38.4	35.3	38.4	38.4	36.8	51	38.9	34.6
7:50:00	7:50:00	35.3	51.8	35.8	35.3	35.7	35.4	35.7	51.6	37.9	34.2
7:51:00	7:51:00	35.3	50	35.5	35.3	35.5	35.4	35.6	49.7	37.6	33.9
7:52:00	7:52:00	35.3	51.2	35.6	35.3	35.5	35.5	35.7	51.7	37.6	33.5
7:53:00	7:53:00	35.4	50.8	37	35.3	36.8	35.8	36.4	50.8	38.6	34.9
7:54:00	7:54:00	36	63.5	44.4	35.3	43.6	36.2	36.6	63.4	49.5	34.5
7:55:00	7:55:00	35.6	51.7	36.9	35.3	36.7	36.2	36.9	51.8	39	35
7:56:00	7:56:00	38.1	54.6	41.4	35.3	41.1	39.4	38.6	54.7	43.1	35.3
7:57:00	7:57:00	37.7	52.3	39.3	35.3	39	38.5	37.9	52.3	41.3	35.4
7:58:00	7:58:00	35.4	51.3	36.1	35.3	35.7	35.5	36.3	52.2	37.9	34.7
7:59:00	7:59:00	36.6	53.5	39.6	35.3	39.2	38.5	37.3	53.5	40.6	34.6
8:00:00	8:00:00	37.6	54.1	40.6	35.3	40.4	39.5	37.9	54.3	41.8	35.8
8:01:00	8:01:00	36.1	51.8	38.4	35.3	38.4	38.4	36.9	51.5	38.5	35
8:02:00	8:02:00	37.9	53.5	40.5	35.3	40.2	39.2	38.2	53.5	42.1	35.4
8:03:00	8:03:00	38.7	54	41	37.7	40.8	40.1	38.8	54	42.1	36.5
8:04:00	8:04:00	38.5	53.5	40.2	35.3	40.2	39.6	38.3	53.4	41.5	35.6
8:05:00	8:05:00	37.5	63.7	44.8	35.3	44.4	38.5	37.6	63.5	49.9	34.2
8:06:00	8:06:00	37.2	53.4	39.6	35.3	39.2	38.5	37.6	53.6	41.6	35
8:07:00	8:07:00	38.9	62.8	44.4	37	43.9	39.8	38.9	62.7	49.1	36
8:08:00	8:08:00	37	53.3	38.5	35.3	38.5	38.4	37.2	53.1	39.9	35.3
8:09:00	8:09:00	37.6	52.2	38.5	35.3	38.5	38.4	37.6	52.3	39.9	36
8:10:00	8:10:00	38.6	55.6	41.8	36.9	40.9	40	38.9	55.2	44.5	36.5
8:11:00	8:11:00	38.2	55.6	39.6	36.7	38.7	38.4	37.8	55.3	42.9	36.1
8:12:00	8:12:00	37.2	55.7	38.5	35.3	38.4	38.4	37.4	55.5	40.1	35.7
8:13:00	8:13:00	36.1	52.3	38.9	35.3	38.4	38.3	36.8	52.2	41.5	34.9
8:14:00	8:14:00	38.1	53.8	39.6	35.3	39.4	38.7	38.2	53.5	42.4	36
8:15:00	8:15:00	38.4	54.1	38.7	38.2	38.8	38.5	38.4	53.7	40.5	36.7
8:16:00	8:16:00	39	53.7	40.3	36.8	40.3	40.2	39	53.8	41.7	35.7
8:17:00	8:17:00	39.3	54.7	40.2	38.3	40.2	40.2	39.6	54.6	41.2	38.1
8:18:00	8:18:00	38.5	53	40.1	38.2	40.1	39.2	38.7	53.4	40.9	36.6
8:19:00	8:19:00	38.6	53.9	40.2	38	40.2	39.9	38.6	54.2	41.3	36.6
8:20:00	8:20:00	39.3	55.9	41.6	37.8	41.5	40.6	39.3	55.9	43	36.3
8:21:00	8:21:00	39.3	56.5	42.5	36.3	42.4	41.5	39.5	56.3	43.6	36
8:22:00	8:22:00	40.6	55.1	42.6	38.9	42.5	42.3	40.7	55.4	43.8	38.4
8:23:00	8:23:00	42.2	57.2	45	39.2	44.4	43.2	42.4	57.2	46.7	39.3
8:24:00	8:24:00	41.1	55.6	43.1	39.9	42.5	41.7	41.3	55.6	43.4	39
8:25:00	8:25:00	41.4	64.5	46.9	39.6	46.3	42.9	41.6	64.5	50.7	38.6
8:26:00	8:26:00	43.2	64.1	46.6	40.7	46.1	44.5	43.4	64.2	50.1	40
8:27:00	8:27:00	42.2	62.4	44.6	38.3	44.5	44	42.3	62.4	47.3	37.8
8:28:00	8:28:00	42.5	64.9	48	38.3	46.7	44.9	42.6	64.7	50.4	38.5
8:29:00	8:29:00	43	58.8	46.1	40	45.5	44.5	43.2	58.4	48	39.1
8:30:00	8:30:00	42.7	59.4	45.2	40.6	45	44.6	42.9	59.3	46.2	40.1
8:31:00	8:31:00	43.6	59.8	45.7	41	45.6	45.2	43.7	59.9	47	40.1
8:32:00	8:32:00	43.4	60.7	46.9	40.1	46.8	45.4	43.5	60.7	48	39.5
8:33:00	8:33:00	45.1	63.3	49.1	42.1	48.5	46.9	45.2	63.1	50.6	41.6
8:34:00	8:34:00	43.6	58.4	45.5	41.3	45.5	45	43.7	58.6	47	40.3
8:35:00	8:35:00	42.7	59.9	46.1	40.2	45.4	44.2	42.8	59.8	47.6	39.5
8:36:00	8:36:00	43.4	61.2	45.9	40.5	45.8	45	43.5	61	47.1	39.5
8:37:00	8:37:00	42.5	59.6	45.4	40.1	44.6	43.9	42.5	59.7	47.9	39.4
8:38:00	8:38:00	40.6	58.3	44.9	38.2	44.1	43.3	40.8	58.2	47.3	36.9
8:39:00	8:39:00	45.9	63.2	48.5	42.3	48.5	47.9	46	63.1	50.9	41.4
8:40:00	8:40:00	46.3	64	50.2	42.9	49.8	48.1	46.3	64.1	51.9	41.9
8:41:00	8:41:00	44.8	63	48.2	41.5	48	46.9	44.7	63	49.8	39.8
8:42:00	8:42:00	43.6	59	45.8	40	45.5	45.1	43.7	59.1	47	39.4
8:43:00	8:43:00	43.6	63	47.1	40.7	46.5	44.6	43.7	63.1	50.1	38.8
8:44:00	8:44:00	43.9	64.5	47	41.6	46.8	45.5	43.9	64.5	49.7	40.3
8:45:00	8:45:00	42.3	58.4	45.5	39.6	45.5	44.4	42.4	58.5	46.8	38
8:46:00	8:46:00	43.7	62.9	46.4	40.7	46.2	45.5	43.8	62.7	49.9	39.4
8:47:00	8:47:00	39	56.9	43.7	35.3	43.6	43.3	39.2	56.7	45.1	35.1
8:48:00	8:48:00	40.3	57.1	44.2	35.3	43.7	43	40.4	57.2	45.9	36.3
8:49:00	8:49:00	43.6	65.1	48.1	40.1	48	47	43.7	65	51.5	38.9
8:50:00	8:50:00	39.2	60.1	45.5	35.3	45.2	42.4	39.4	59.7	48.1	35.3
8:51:00	8:51:00	42.9	60.9	47.8	38.3	47.5	45.8	43	60.9	48.8	37
8:52:00	8:52:00	44.7	63.2	49.3	39.7	48.9	47.8	44.7	63.1	50.5	38.8
8:53:00	8:53:00	42.6	60.9	46	39.2	45.7	44.7	42.7	61	47.9	38.2
8:54:00	8:54:00	42.1	58.9	45.5	39.9	44.6	43.9	42.3	58.7	47.6	38.9
8:55:00	8:55:00	40.7	59.7	46.1	35.3	45.3	44.2	40.7	59.5	48.3	35.1
8:56:00	8:56:00	42.1	62	47.8	37.4	47.2	45.3	42.2	62	49.5	35.7
8:57:00	8:57:00	41.6	60.8	46	39.4	45.6	44	41.6	61	48.6	38.4
8:58:00	8:58:00	40.4	58.4	44.1	38.1	44	42.6	40.5	58.6	46	36.6
8:59:00	8:59:00	44.6	68.2	50.7	39.9	50	48.7	44.6	68.1	52.6	38.7
9:00:00	9:00:00	42.6	64	48.4	38.3	47.3	45.6	42.6	64	50.1	37.3
9:01:00	9:01:00	43	59.6	47	39.6	46.7	45	43.1	59.7	48.8	38.6
9:02:00	9:02:00	41.7	58.6	44.9	39	44.7	43.9	41.7	58.7	46.1	38.3
9:03:00	9:03:00	44.6	61.8	49.8	40.1	49.1	47.7	44.6	61.9	51.1	39.8
9:04:00	9:04:00	43	60.1	46.4	41.1	45.9	44.4	43.1	59.9	47.8	40.2
9:05:00	9:05:00	44.6	62.8	48.9	41.2	47.9	46.7	44.7	62.7	50.8	40.4
9:06:00	9:06:00	44.9	63	49.7	41	48.7	47.5	45	63.1	51.4	39.8
9:07:00	9:07:00	46.3	66.7	51.1	42.1	49.8	49.2	46.3	66.7	53.5	41.1
9:08:00	9:08:00	47.1	69.6	51	41.3	50.4	49.8	47	69.6	52.9	40.8
9:09:00	9:09:00	45	65.7	52.9	40.3	52	48.9	45.1	65.6	55.1	40
9:10:00	9:10:00	46.1	67.6	53.8	40	53.6	49.6	46	67.7	55.2	38.9
9:11:00	9:11:00	44	65.8	51.1	40	49.6	47.5	44	65.8	53.2	39.2
9:12:00	9:12:00	46.9	64.3	50.1	43.3	50	49.3	46.8	64.1	52.1	42.5
9:13:00	9:13:00	44.9	66.2	52.8	40.1	52.1	49.5	45	66.2	54.9	39.6
9:14:00	9:14:00	44.4	67.7	50.5	39.8	49.6	46.9	44.4	67.7	52.4	38.8
9:15:00	9:15:00	43.6	67.4	53.8	35.3	53.2	47.9	43.6	67.4	56.1	35
9:16:00	9:16:00	45	65.9	50.2	38.3	50.1	48.8	45.1	65.7	51.8	38.3
9:17:00	9:17:00	44.3	64.5	47.4	41.9	47.3	45.6	44.3	64.6	50.5	41
9:18:00	9:18:00	44.2	61.2	47.7	40.5	47.6	46.7	44.3	61.4	49.1	39.8
9:19:00	9:19:00	39.1	60	45	35.3	44.9	41.5	39.3	59.8	46.5	35.4
9:20:00	9:20:00	42.7	64.5	48.3	38	47.5	45.2	42.8	64.5	49.6	36.6
9:21:00	9:21:00	45	65.8	50.3	38.3	50.3	49.2	45.1	65.8	52.2	37

9:22:00	9:22:00	43.2	60.9	48.5	39	48.3	45.2	43.1	60.8	49.1	38.3
9:23:00	9:23:00	39.7	60.3	43.7	35.3	43.2	42.4	39.9	60.1	47.6	35.1
9:24:00	9:24:00	41.9	58.1	45	37.7	44.8	43.8	42	57.9	46.1	36.1
9:25:00	9:25:00	38.7	64.4	45.5	36.9	44.5	39.6	38.7	64.6	50.3	35.6
9:26:00	9:26:00	36.1	54.1	39.6	35.3	38.5	38	37	54.5	40.8	35
9:27:00	9:27:00	42.7	61.1	48.6	38.3	48.4	46.8	42.9	61.1	50.6	37.2
9:28:00	9:28:00	39.3	58.2	45	35.3	44.7	43.5	39.5	58.2	46.3	34.7
9:29:00	9:29:00	42.2	59.7	47	37.2	47	46.5	42.4	59.7	47.8	37
9:30:00	9:30:00	39.9	57.8	44.7	37.8	44.4	42.7	40.1	57.7	46.1	36.5
9:31:00	9:31:00	41.6	62.9	48.1	37	47.9	45.4	41.6	62.7	49.7	36.2
9:32:00	9:32:00	44.4	67.6	54	38.3	53.5	49.8	44.4	67.6	55	37.9
9:33:00	9:33:00	41.5	61.4	48.4	38.3	47.8	45.6	41.8	61.4	49.9	37.3
9:34:00	9:34:00	43.4	65	48.2	39.9	47.8	46.1	43.4	65	51.4	38.8
9:35:00	9:35:00	45.5	63.5	50	39.6	49.8	49.3	45.5	63.2	51.1	38.7
9:36:00	9:36:00	42.7	65.3	49.1	38.3	48.6	47	42.9	65.3	50.6	38.2
9:37:00	9:37:00	42.1	64.8	46.6	38.3	45.5	44.7	42.1	64.8	48.1	37.3
9:38:00	9:38:00	41.4	67	47.4	38	46.1	44.1	41.6	67.1	50.5	36.4
9:39:00	9:39:00	43.1	62.9	47.5	38.3	47.2	46.1	43.2	63	50.1	37.8
9:40:00	9:40:00	44.9	65.9	52.1	40.6	51.1	47.8	44.9	66	53.8	40.1
9:41:00	9:41:00	47.8	69.6	53.8	43	53.4	52.1	47.8	69.6	55.9	41.5
9:42:00	9:42:00	45.7	63.7	48.7	42	48.3	47.7	45.7	63.7	50.7	41.1
9:43:00	9:43:00	47	64.4	50.9	44.2	50.5	49.3	47.1	64.5	52.8	43.6
9:44:00	9:44:00	44.6	61.3	48.2	41.3	47.8	47.3	44.7	61.2	49.9	40.3
9:45:00	9:45:00	45.6	62.4	48.8	41.4	48.4	47.8	45.7	62.4	50.6	40.8
9:46:00	9:46:00	41.4	60.1	46.2	37.6	45.5	43.9	41.4	60	48.7	35.5
9:47:00	9:47:00	43.9	63.5	50.1	39.2	49.7	47.2	43.9	63.5	51.4	37.9
9:48:00	9:48:00	44.5	63.4	47.4	41.3	47.3	46.9	44.6	63.4	49.7	40.7
9:49:00	9:49:00	47.2	64	50.7	44.2	50.3	48.2	47.3	63.9	52.2	43.7
9:50:00	9:50:00	45.4	62.6	49.7	40	49.2	48.5	45.4	62.7	51.1	38.7
9:51:00	9:51:00	41.1	66.2	48.1	38.3	47.3	43.2	41.2	66.3	50.9	37.3
9:52:00	9:52:00	46.3	64.4	50.6	42.6	50.1	49.1	46.3	64.4	52.3	41.8
9:53:00	9:53:00	46.7	69.2	52	43.6	51.1	48.9	46.7	69.2	54.4	42.4
9:54:00	9:54:00	49.5	66.1	53.1	46.4	52.9	52.1	49.5	66.2	54.4	45.1
9:55:00	9:55:00	48.7	67.5	52.9	44.6	52.7	51.9	48.7	67.4	54.5	43.3
9:56:00	9:56:00	44	61.4	48.5	40.1	48.1	46.6	44	61.2	51.1	39.6
9:57:00	9:57:00	44.1	62.2	49.5	41.2	48.9	46.8	44.1	62.2	51.6	39.1
9:58:00	9:58:00	41.9	58.9	44.5	38.3	44.4	43.5	42	59	46	37.9
9:59:00	9:59:00	41.4	56.6	43.5	38.3	43.3	42.9	41.6	56.2	45.1	38.4
10:00:00	10:00:00	41.3	56.5	42.7	38.3	42.5	42.4	41.3	56.5	43.9	37
10:01:00	10:01:00	39.5	56.1	42.9	36.5	42.9	41.4	39.6	56.4	44.1	35.9
10:02:00	10:02:00	39.2	54.9	41.8	36.3	41.6	40.2	39.3	54.9	43	35.1
10:03:00	10:03:00	38.8	55.6	41.8	35.3	41.5	40.9	39.1	55.2	43.6	34.9
10:04:00	10:04:00	39.3	57.5	44.8	38.1	41.7	40.8	39.6	57.6	46.4	36.3
10:05:00	10:05:00	40.6	59.8	46	38.3	45.5	42.2	40.7	59.8	47.4	37.6
10:06:00	10:06:00	42.7	59.8	44.5	40	44.4	44.2	42.9	59.9	46.3	39.2
10:07:00	10:07:00	42.5	59	45.4	38.3	45.3	44.4	42.6	59	46.2	37.3
10:08:00	10:08:00	41.5	63.7	47.3	35.7	46.9	43.9	41.6	63.8	50.7	35.4
10:09:00	10:09:00	39.4	65.7	45.7	35.3	45.3	42	39.5	65.6	49.2	35.2
10:10:00	10:10:00	43.3	59.6	46.3	38.3	46.1	45.8	43.4	59.6	47.5	38.1
10:11:00	10:11:00	43.6	64.3	50.1	38.6	49.3	46.9	43.7	64.2	52.1	38.2
10:12:00	10:12:00	45.6	64	52	40.9	51.6	48.2	45.6	63.9	52.7	40.1
10:13:00	10:13:00	43.2	58.2	45.5	38.3	45.5	45.1	43.3	58.1	46.4	37.4
10:14:00	10:14:00	39	58	44.4	35.3	44.4	42.5	39.3	58	45.3	34.5
10:15:00	10:15:00	41.2	63	46.1	35.3	45.3	44	41.2	63	48.8	35
10:16:00	10:16:00	40.2	58	43.9	38.3	43.8	41.6	40.5	58.1	45.4	37.9
10:17:00	10:17:00	40.7	57.4	44.8	37.7	44.2	43	40.8	57.4	46.4	36.3
10:18:00	10:18:00	39.8	56.9	43.2	37.8	43.1	42.6	39.9	57.4	44.5	36.4
10:19:00	10:19:00	41.1	58.7	45.8	35.3	45.7	44.2	41.3	58.8	46.8	35.5
10:20:00	10:20:00	40.2	60.2	45.1	38.3	44.1	42.7	40.4	60.3	47	37.1
10:21:00	10:21:00	42.9	59.1	46.6	37.9	46.5	46.2	43	59	47.6	36.3
10:22:00	10:22:00	41.7	58.4	45.1	38.3	44.9	44.3	41.8	58.3	46.1	37.7
10:23:00	10:23:00	40.4	56.5	44.1	37.4	43.4	43.2	40.4	56.4	44.4	35.9
10:24:00	10:24:00	39.4	54.7	40.8	38.1	40.8	40.4	39.6	54.9	42.1	36.8
10:25:00	10:25:00	39	57	42.4	35.3	41.8	41.3	39.2	56.7	43.6	35.1
10:26:00	10:26:00	38.2	57.2	41.9	35.3	41.7	40.6	38.5	57.4	44.3	35.3
10:27:00	10:27:00	40.6	64.7	45.7	35.9	45.2	42.5	40.8	64.5	49.7	36.5
10:28:00	10:28:00	38.8	63.4	44.2	35.3	43.9	41.1	38.6	63.6	48.7	35.1
10:29:00	10:29:00	39.4	57.9	44	35.3	43.7	41.6	39.6	58.3	45.2	35.1
10:30:00	10:30:00	36.1	52.5	39	35.3	38.4	38.3	36.7	53.4	41.1	34.6
10:31:00	10:31:00	35.5	50.9	38.3	35.3	38	36.1	36	51.8	38.6	33.8
10:32:00	10:32:00	36.3	54.9	38.6	35.3	38.4	38.4	36.8	54.8	39.8	34
10:33:00	10:33:00	35.9	59.7	39.8	35.3	38.2	37.2	36.4	59.5	46.6	33.8
10:34:00	10:34:00	35.4	57.9	38	35.3	37	35.5	34.7	57.9	42.9	32.8
10:35:00	10:35:00	35.3	50.4	35.9	35.3	35.7	35.4	34.9	51.1	38.4	33
10:36:00	10:36:00	38.1	52.9	40.1	35.3	40.1	38.9	38.2	52.8	41.2	34.1
10:37:00	10:37:00	36.1	52.8	38.4	35.3	38.4	37.7	37	52.7	39.7	34.6
10:38:00	10:38:00	36.8	52.5	38.7	35.3	38.6	38.4	37.3	53	40.3	34.1
10:39:00	10:39:00	36.6	53.6	40	35.3	39.8	38.6	37.1	54.2	41.1	34.6
10:40:00	10:40:00	36.8	62.8	44.5	35.3	44.1	38.4	36.7	63.1	48.8	33.9
10:41:00	10:41:00	36.9	64	45.4	35.3	44	39.2	37.4	64.1	49.2	34
10:42:00	10:42:00	36.9	54.9	41.5	35.3	41.1	38.5	37.6	55	43.3	35.4
10:43:00	10:43:00	37.1	54.5	40.3	35.3	40.2	39.7	37.5	54.3	41.6	34.3
10:44:00	10:44:00	35.4	51.7	36.7	35.3	36	35.5	35.8	52.1	39.6	33.7
10:45:00	10:45:00	37	54.7	40.2	35.3	40.2	39.6	37.6	54.5	42.3	34.6
10:46:00	10:46:00	38.4	55.2	42.3	35.3	42	40.2	38.6	55.4	43.8	35.6
10:47:00	10:47:00	37.8	53	38.8	35.3	38.6	38.5	37.8	53	40.4	35.1
10:48:00	10:48:00	35.7	51.4	37.9	35.3	37.7	36.9	36.3	51.7	39.2	33.5
10:49:00	10:49:00	35.3	51.1	35.8	35.3	35.6	35.4	35.5	51.5	38.3	33.2
10:50:00	10:50:00	36.6	53.2	38.9	35.3	38.7	38.4	37	53.4	41	33.8
10:51:00	10:51:00	36.5	52.3	38.6	35.3	38.5	38.4	36.9	52.5	40.2	33.5
10:52:00	10:52:00	37.2	53.4	39.6	35.3	39.3	38.7	37.4	53.3	41.5	33.9
10:53:00	10:53:00	40.2	58.1	45.1	35.3	44.8	43.8	40.4	58.3	46.9	36.3
10:54:00	10:54:00	40.3	59	45.9	35.6	45.8	43.8	40.3	59.2	47.2	35.5
10:55:00	10:55:00	37.3	54.7	40.5	35.3	40.3	39.6	37.7	54.7	42.3	34.5

10:56:00	10:56:00	38	64.5	44.8	35.3	43.9	39.7	38.3	64.3	49.4	34.3
10:57:00	10:57:00	46	64.3	48.9	38.9	48.8	48.2	46.1	64.2	50.2	39.9
10:58:00	10:58:00	47.1	66.4	52	44.2	51.2	48.8	47.1	66.4	54.1	42.1
10:59:00	10:59:00	42.5	58.7	45.4	39.7	44.9	44	42.6	58.7	47.3	38.6
11:00:00	11:00:00	39.5	60.2	46.5	35.3	45.7	43.5	39.8	60.2	48	34.9
11:01:00	11:01:00	43.9	63	47.9	40.5	47.4	46.2	44	63	50.6	39.1
11:02:00	11:02:00	38.4	58.7	44.7	35.3	43.9	41.9	38.6	58.6	47.1	35.2
11:03:00	11:03:00	40.7	62	46.4	35.3	46.1	44.1	40.8	61.9	48.1	34.8
11:04:00	11:04:00	36	55.2	40.7	35.3	40.4	37.7	35.7	55.1	42.1	32.8
11:05:00	11:05:00	40.8	63.8	48.4	35.3	46.9	44.9	40.9	63.7	50.9	33.6
11:06:00	11:06:00	41.2	63.1	49.8	35.3	49.2	46.2	41.5	63.1	51.2	35.2
11:07:00	11:07:00	42.5	61.2	47.8	38.3	47.4	46.6	42.5	61.4	48.6	37.4
11:08:00	11:08:00	41.9	67.5	51.7	35.3	51.1	46.1	41.9	67.5	54.8	34.8
11:09:00	11:09:00	37.7	55.6	41	35.3	40.5	39.8	37.8	55.3	43.3	33.8
11:10:00	11:10:00	39.1	58.2	44.8	35.3	43.9	42.2	39.4	58.1	46.6	34.4
11:11:00	11:11:00	39.2	60.8	45	35.3	44	42.1	39.1	60.7	47.1	35.2
11:12:00	11:12:00	43.3	61.7	49.3	38.4	48.4	46.7	43.5	61.9	51.1	38.8
11:13:00	11:13:00	45.2	63.6	50	41.3	49.4	47.8	45.2	63.6	51.7	40.8
11:14:00	11:14:00	40.2	57.9	44.5	36.4	44.4	42.6	40.2	58	45.5	35.9
11:15:00	11:15:00	37	54	40.1	35.3	40.2	38.7	37.5	53.8	41.5	35.1
11:16:00	11:16:00	42.6	61.3	45.5	38.7	45.1	44.5	42.7	61.3	48	38.5
11:17:00	11:17:00	44.4	63.6	48.3	38.2	47.8	47.2	44.4	63.6	50.3	36.8
11:18:00	11:18:00	45.9	65.4	51.3	38.3	51.1	50.2	45.9	65.3	52.9	38.1
11:19:00	11:19:00	43	61.6	47.1	38.9	46.8	45.9	43.1	61.6	49.6	37.8
11:20:00	11:20:00	43.1	62	46.5	39.6	46	45.2	43.2	62.1	50	38.6
11:21:00	11:21:00	46.4	70.7	49.5	40.2	49.3	48.7	46.4	70.6	53.4	39.4
11:22:00	11:22:00	37.7	55.7	41.4	35.3	41.2	40.1	37.8	55.8	43.2	34.1
11:23:00	11:23:00	38.7	58.7	45.6	35.3	45.4	42.6	38.8	58.8	47	34.7
11:24:00	11:24:00	41.6	59.9	46	36.1	45.7	44.6	41.8	59.9	48.4	35.8
11:25:00	11:25:00	40.4	57.8	44	38.1	43.4	42.3	40.4	57.7	46.3	36.5
11:26:00	11:26:00	44.1	69.9	49.7	37.8	49.4	47.8	44.1	69.9	52.4	36.3
11:27:00	11:27:00	42.4	74.2	53	35.3	52.4	50.2	42.4	74.2	55.3	34.1
11:28:00	11:28:00	41.4	63.4	47.7	35.3	46.9	45.2	41.3	63.5	50.1	35.2
11:29:00	11:29:00	36.1	53.1	39.3	35.3	38.9	38.4	36.6	52.9	41	34.3
11:30:00	11:30:00	41.4	58.1	45.9	38.3	45.4	43.8	41.7	58	47.1	38
11:31:00	11:31:00	42.8	62	50.2	39.4	49.5	48	43	62.2	52	38.4
11:32:00	11:32:00	46.1	63.7	51.4	40.6	50.1	49.1	46.1	63.7	54.1	39.6
11:33:00	11:33:00	40.8	58.5	45.1	38.3	45	42.4	41	58.7	47.2	36.8
11:34:00	11:34:00	44.8	62.2	49.1	38.6	48.4	47.1	44.9	62.2	51	38.1
11:35:00	11:35:00	40.8	63.8	46	38.3	45.2	43.1	40.8	63.7	49.2	36.7
11:36:00	11:36:00	45	64.6	49.6	38.3	49.4	48	45.1	64.6	51.6	37.5
11:37:00	11:37:00	45.6	62.3	49.8	39.9	49	47.4	45.6	62.3	51.2	38.9
11:38:00	11:38:00	40.9	58.7	44.5	38.3	44.4	43.8	41.2	58.8	45.9	37.4
11:39:00	11:39:00	43.2	62	49.5	37.7	49.1	46.2	43.2	62	50.8	36.5
11:40:00	11:40:00	39.8	60	45.8	35.3	44.5	42.9	40.1	60.1	48.4	35.2
11:41:00	11:41:00	40.3	60.5	45.7	37.8	44.4	42.4	40.4	60.5	48.5	36.4
11:42:00	11:42:00	38.1	60.8	45.4	35.3	44.8	42.7	38	60.8	48.6	34.1
11:43:00	11:43:00	37.3	55.5	40.4	35.3	40.2	39.9	37.7	55.7	42.9	35.2
11:44:00	11:44:00	38.2	56.3	43.1	35.3	43	42.2	38.5	56.2	44.4	34.5
11:45:00	11:45:00	41.7	61	46	35.8	45.7	45.1	42	60.7	47.8	35.3
11:46:00	11:46:00	40.3	58.5	45.2	38.2	44.9	44	40.3	58.5	46.2	36.7
11:47:00	11:47:00	41.5	60.4	46.4	38.3	45.1	43.3	41.7	60.2	49.4	37.9
11:48:00	11:48:00	40	60	46	35.3	45.3	44.4	39.9	60	47.5	33.9
11:49:00	11:49:00	37.3	63.6	44.8	35.3	43.9	39	37.4	63.6	48.3	33.5
11:50:00	11:50:00	36.8	55.9	41.4	35.3	40.5	38.7	37.5	56.4	43.2	34.8
11:51:00	11:51:00	40	64.1	46.1	35.3	45.7	42.9	40.1	63.9	49.4	35
11:52:00	11:52:00	38.5	59.3	45.3	35.3	45	42.6	39	59.4	48.2	34
11:53:00	11:53:00	42.8	60.7	47.3	38.3	47.1	45.7	42.9	60.8	48.4	37.7
11:54:00	11:54:00	46	63.8	50	40	49.9	48.6	45.9	63.8	51.8	38.4
11:55:00	11:55:00	44.4	62.7	50.4	40.5	49.6	48	44.5	62.7	52.1	39
11:56:00	11:56:00	44.7	62.1	49.8	39.4	49.6	47.9	44.6	62.2	50.6	38.2
11:57:00	11:57:00	43.8	61.5	47.6	38.3	47.5	46.9	44	61.7	49.4	37.8
11:58:00	11:58:00	45	62.2	48.5	42.5	47.8	46.9	45.1	62.1	50.4	41.5
11:59:00	11:59:00	44.7	62.2	49.1	41.3	48.9	47.3	44.8	62.2	50	40.7
12:00:00	12:00:00	44.1	60	46.9	41.1	46.7	46	44.2	60	48	40.2
12:01:00	12:01:00	42	58.6	46.2	38.3	46	44.4	42.1	58.8	47	36.9
12:02:00	12:02:00	42.7	63.1	46.1	38.7	45.7	44.3	42.8	63.2	49.4	38
12:03:00	12:03:00	45.4	64.8	48.5	42.2	48	46.9	45.4	64.9	51.1	41.1
12:04:00	12:04:00	44	59.8	46.9	39.8	46.8	45.8	44	60	48.1	38.9
12:05:00	12:05:00	38.4	53.7	40.3	36.5	40.2	39.3	38.5	54	41.6	35.8
12:06:00	12:06:00	39.4	57.4	43.4	35.3	42.5	41.5	39.5	57.5	45.7	35.8
12:07:00	12:07:00	40	56.1	43.1	38.3	42.5	41.5	40.1	56.3	44.5	37.6
12:08:00	12:08:00	43.9	64.6	51.7	38.3	50.8	48.2	44	64.6	53.5	38.6
12:09:00	12:09:00	39.7	59	46.6	35.3	46	43.8	39.8	58.9	47.9	34.4
12:10:00	12:10:00	41.7	64.3	48.9	38.3	48.5	45.1	41.9	64.3	52.1	37.6
12:11:00	12:11:00	40.5	63.2	46.9	36	45.6	42.9	40.4	63.4	48	35.4
12:12:00	12:12:00	37.5	57.5	43.8	35.3	43	41.3	37.6	57.6	46	33.3
12:13:00	12:13:00	39.9	62.1	46.4	35.3	45.7	43.8	39.8	61.9	48.5	34.1
12:14:00	12:14:00	39.4	59.1	46.2	35.3	45.4	42.4	39.7	58.9	47.8	35.4
12:15:00	12:15:00	43.1	60.8	47.4	39.4	47	45.5	43.2	60.8	49.7	37.9
12:16:00	12:16:00	35.7	51.7	39.4	35.3	38.4	37.8	35.7	52	39.4	33.9
12:17:00	12:17:00	36.5	53.7	39.8	35.3	39.2	38.4	36.7	53.6	42	33.9
12:18:00	12:18:00	38.1	55.1	41.5	35.3	41.4	40.7	38.2	54.8	42.6	33.1
12:19:00	12:19:00	36.8	54	40.1	35.3	40.2	39.8	36.7	54.3	42.6	32.6
12:20:00	12:20:00	39.1	63.8	44.7	35.3	44.4	40.8	39.2	63.9	49.1	35.1
12:21:00	12:21:00	36.7	63.2	44.3	35.3	43.5	38.4	36.7	63.4	48.4	33.2
12:22:00	12:22:00	35.3	50.6	35.9	35.3	35.5	35.4	34.7	50.4	38.4	32.8
12:23:00	12:23:00	39.3	58.6	45.3	35.3	45	43.2	39.8	58.7	48.1	34.3
12:24:00	12:24:00	40.9	60	44.7	38.2	44.3	42.5	41	60	45.1	36.8
12:25:00	12:25:00	39.4	59.5	43.5	35.3	43.1	41.9	39.4	59.3	44.7	33.9
12:26:00	12:26:00	35.3	50.7	35.5	35.3	35.5	35.4	34.4	51.2	37.7	32.2
12:27:00	12:27:00	37.9	61.8	47.7	35.3	45.2	43.3	37.7	61.8	50.6	32.1
12:28:00	12:28:00	41.1	63.8	48.8	35.7	47.1	43.6	41	63.9	51.5	35.8
12:29:00	12:29:00	40.4	59.1	45.9	36.8	45.8	43.8	40.5	59.2	47.4	36.1

12:30:00	12:30:00	42.9	63.2	49.1	35.3	48.9	47.4	42.9	63.2	51.4	33.7
12:31:00	12:31:00	39.7	60	46.8	35.3	46.2	43	39.8	60.1	49	33.9
12:32:00	12:32:00	37.4	57	42.3	35.3	41.5	40.2	37.5	57	45	33.9
12:33:00	12:33:00	38	64.2	44.9	35.3	44.3	41.2	38.1	64.3	49.4	33.6
12:34:00	12:34:00	41.9	63.1	48.7	35.3	48.4	46.8	42.1	63	50.7	35.6
12:35:00	12:35:00	40.5	63.4	48.1	35.3	47.5	46.3	40.6	63.2	49.2	34.5
12:36:00	12:36:00	36.7	62.8	44	35.3	43.1	38.4	37.1	62.7	48.7	34.3
12:37:00	12:37:00	37.6	54.8	41.5	35.3	41.1	39.9	38	54.8	43.2	35.1
12:38:00	12:38:00	40.6	59.7	46.7	38.3	46.4	44.1	40.8	59.7	49	37.2
12:39:00	12:39:00	39.8	60.5	46.7	37.8	46.3	42.2	39.9	60.5	48.7	36.5
12:40:00	12:40:00	40.7	58.1	43.9	38.3	43.7	42.5	40.9	58.2	46.3	37.6
12:41:00	12:41:00	42.5	68.5	50.4	35.3	49.3	46.8	42.4	68.5	53.5	35.2
12:42:00	12:42:00	37.3	59.3	43.9	35.3	42.2	40.3	37.6	59.3	47.6	33.9
12:43:00	12:43:00	38.9	57.6	42	36.7	41.5	40.3	38.9	57.7	44.8	35.4
12:44:00	12:44:00	39.1	56.1	41.6	37	41.1	40.3	39.1	56.8	44.4	35.8
12:45:00	12:45:00	42.4	63.4	46.6	39.7	46.4	44.5	42.4	63.2	48.9	38.7
12:46:00	12:46:00	41.9	58.2	44.7	39.4	44.2	43.1	42	58	46.6	38.3
12:47:00	12:47:00	41.4	57.7	43.7	39.5	43.1	42.7	41.5	57.6	45.5	38
12:48:00	12:48:00	42	59.1	44.5	40	44.5	44.1	42.1	59	46.9	39.2
12:49:00	12:49:00	45.4	60.9	49.2	39.5	48.7	47.5	45.5	60.9	50.4	38.6
12:50:00	12:50:00	43.8	62.5	48.4	37.8	48.1	46.5	43.7	62.5	50.3	35.9
12:51:00	12:51:00	38.4	56.1	41.8	35.3	41.1	40.3	38.5	56.1	43.6	35.2
12:52:00	12:52:00	41.1	58	45.6	38.8	45.4	43.9	41.3	58.2	46.7	37.8
12:53:00	12:53:00	43.7	61.2	48	39.9	47.7	46	43.8	61.1	50.3	38.6
12:54:00	12:54:00	42	63.9	45.8	39.3	45.2	43.9	42.1	63.9	48.6	38.4
12:55:00	12:55:00	39.2	63.6	44.8	35.3	44.3	41.1	39.3	63.4	48.8	35.3
12:56:00	12:56:00	37	54.2	39.7	35.3	39.4	38.9	37.8	54	41.5	35
12:57:00	12:57:00	38.5	56.9	43.2	35.3	42.1	40.6	38.8	57.1	45.2	35.9
12:58:00	12:58:00	40.5	60.1	44.4	38.3	44.2	42.7	40.7	60.2	47	37.2
12:59:00	12:59:00	38.2	55.3	41.6	35.3	41.3	40	38.5	55.2	43.2	35.5
13:00:00	13:00:00	37.8	56	39.9	35.3	39.8	38.5	37.7	56.4	41.3	35.5
13:01:00	13:01:00	36.9	56	41.5	35.3	41	38.4	37.2	56.1	43.7	34.6
13:02:00	13:02:00	35.8	51.7	38.4	35.3	38.4	37.9	36.9	51.7	39.7	35.3
13:03:00	13:03:00	38.6	55.2	41	35.3	40.7	40.2	39.1	54.9	42.5	35.7
13:04:00	13:04:00	40.9	56.7	42.4	39.9	42.1	41.7	41.1	56.6	44.2	39.1
13:05:00	13:05:00	41.9	58.8	44.2	40.2	43.2	42.8	42	58.9	46.7	39.6
13:06:00	13:06:00	39.6	56.5	41.2	38.3	40.9	40.4	39.8	56.2	42.9	37.8
13:07:00	13:07:00	38.4	54.4	39	37.9	38.8	38.6	38.4	54.5	41.5	35.8
13:08:00	13:08:00	38.4	56.1	41.4	37.3	40.7	38.8	38.2	56.2	44	36.1
13:09:00	13:09:00	39.1	58.6	43.5	37.1	42.8	41.7	39.2	58.5	46.1	35.7
13:10:00	13:10:00	40.3	65.1	46.1	38.3	45.4	42.2	40.5	65.2	50.1	37.4
13:11:00	13:11:00	42.1	62.9	44.9	39.7	44.8	44.4	42.2	62.8	48	38.8
13:12:00	13:12:00	42	58.1	44.4	38.3	44.1	43.4	42.1	58.2	45.3	37.9
13:13:00	13:13:00	40.3	58.1	42.7	38.3	42.4	41.7	40.4	57.6	45.4	37.8
13:14:00	13:14:00	41.3	60.8	45.8	38.7	45	43.8	41.4	60.8	47.3	38.2
13:15:00	13:15:00	42	58.4	45.5	40	45.2	43.8	42.2	58.3	46.5	39.8
13:16:00	13:16:00	42	60.2	45.9	39.8	44.9	44.1	42.2	60.4	48.2	39
13:17:00	13:17:00	46.1	66.7	52.2	40	51.4	49.8	46	66.7	54	39.6
13:18:00	13:18:00	41.1	58.6	45.3	39.5	44.7	42.2	41.2	58.6	46.8	38.1
13:19:00	13:19:00	38.8	61.6	42.1	38	41.2	40.2	38.8	62	44	36.4
13:20:00	13:20:00	37.1	57.4	40.8	35.3	40.4	39.4	37.5	57.2	43.2	35.7
13:21:00	13:21:00	38.1	62.5	44.5	35.3	43.6	39.5	38.2	62.4	48.5	35.1
13:22:00	13:22:00	38.6	59.9	41.3	38.2	40.7	39.2	38.5	60	43.7	36.8
13:23:00	13:23:00	40.7	67.6	44.4	38.3	44.2	41.9	41	67.4	48.7	38.1
13:24:00	13:24:00	41.4	73.3	50.9	39	47.6	42.4	41.3	73.2	57.3	38.6
13:25:00	13:25:00	38.7	54.3	40.9	38.3	40.5	40.1	39	54.2	42.1	37.3
13:26:00	13:26:00	40.2	55.5	42.9	38.3	42.6	41.9	40.5	55.7	44.3	38.1
13:27:00	13:27:00	40	57.7	41.4	38.3	41.4	40.4	40.1	57.9	42.2	38.1
13:28:00	13:28:00	40.2	56.5	41.9	39.2	41.8	41	40.4	56.4	43.3	38.4
13:29:00	13:29:00	40.7	64.3	45	40	44.7	41.9	40.9	64.4	48.9	39
13:30:00	13:30:00	40.6	63.8	44.5	38.3	44.1	41.5	40.7	63.8	49.4	38
13:31:00	13:31:00	39.6	56.8	41.3	38.3	40.8	40.3	39.8	57	43.8	37.9
13:32:00	13:32:00	39.8	55.9	42.3	38.3	42.4	41.3	40	56.1	43.9	37.3
13:33:00	13:33:00	41.5	59.7	46.6	38.3	46.4	45.1	41.7	59.8	48	37.2
13:34:00	13:34:00	41.6	58	44.1	38.3	44	43.7	41.8	57.7	45.7	37.7
13:35:00	13:35:00	40.8	56.3	44.3	38.3	44	43.4	41.1	56.4	45.5	37.7
13:36:00	13:36:00	41.5	56.4	43.2	40	43.2	42.6	41.7	56.2	43.9	39.5
13:37:00	13:37:00	42.2	57.8	44	40.1	43.7	43.2	42.4	57.8	45.1	39.4
13:38:00	13:38:00	49.8	68.6	54.1	40.9	54	53.2	49.8	68.5	55.5	39.9
13:39:00	13:39:00	41.9	64.8	52.5	38.3	51.8	44.6	41.7	64.7	53.4	38
13:40:00	13:40:00	44.1	61.4	48.4	40.1	48.1	45.3	44.3	61.3	49.6	40.1
13:41:00	13:41:00	46.3	61.4	48.8	43.7	48.4	47.8	46.3	61.4	51	43
13:42:00	13:42:00	43.8	60.4	45.4	41	45.3	44.8	43.9	60.1	46.8	40
13:43:00	13:43:00	42.2	58.9	45	40.1	44.6	43.9	42.3	58.7	45.9	39.7
13:44:00	13:44:00	43.5	60.1	45.7	40.1	45.6	45.2	43.7	60	47.1	39.8
13:45:00	13:45:00	43.8	58.4	45.4	41.3	45.4	45.2	43.9	58.6	46.4	40.5
13:46:00	13:46:00	42	59.5	46.5	38.3	45.8	44.9	42.2	59.5	47.6	38.5
13:47:00	13:47:00	45.4	64.6	49.8	41.5	49.6	48	45.4	64.5	51.6	39.6
13:48:00	13:48:00	43.9	64.8	45.7	42	45.6	45.3	44	64.6	48.4	41.1
13:49:00	13:49:00	45	62.5	50.5	41.9	50.1	47.6	45.1	62.5	52.3	40.7
13:50:00	13:50:00	45.3	63.2	48.7	42.3	48.3	47.7	45.4	63	51.6	41.1
13:51:00	13:51:00	48.8	64.1	51.4	45.7	51.1	50.5	48.9	64	52.6	45.1
13:52:00	13:52:00	51.2	69.1	54.2	47.7	54.1	53.3	51.1	69.1	55.2	47.1
13:53:00	13:53:00	48.9	66.5	52.6	45.5	52.4	51.8	48.9	66.5	54	44.7
13:54:00	13:54:00	51.8	68.2	54.9	46.1	54.8	53.7	51.8	68.2	56.9	45.3
13:55:00	13:55:00	51.5	66.8	53.6	49.5	53.5	53.2	51.4	66.7	54.2	48.5
13:56:00	13:56:00	54	71.2	57.9	49.7	57.7	56.8	53.9	71.1	58.9	48.5
13:57:00	13:57:00	52.2	69.7	55.9	48.1	55.3	54.4	52.2	69.6	57.5	46.7
13:58:00	13:58:00	54.1	71.3	56.6	51.8	56.3	55.8	54.1	71.3	57.8	50.5
13:59:00	13:59:00	50.3	67.5	54.2	47	53.7	52.6	50.2	67.4	55.1	46.1
14:00:00	14:00:00	50.3	68.6	53.1	46.8	53	52	50.3	68.5	54.3	45.9
14:01:00	14:01:00	50.3	70.1	53.2	48	52.8	52.1	50.4	70.1	54.8	47.1
14:02:00	14:02:00	51.2	66.8	54.7	47.5	54.5	53.2	51.1	66.8	55.5	46.7
14:03:00	14:03:00	47.8	65.9	51.6	44.3	51.3	49.9	47.9	65.8	53.6	43.6

14:04:00	14:04:00	46.1	62.5	51.1	43	49.3	47.5	46.1	62.6	50	42.3
14:05:00	14:05:00	49.4	65.9	51.7	46.7	51.6	50.6	49.4	65.8	52.8	46.5
14:06:00	14:06:00	48.2	64.2	50.6	46.1	50.5	50	48.2	64.2	51.5	45.1
14:07:00	14:07:00	48.1	65.1	50.4	46.2	50.3	49.8	48	65	51.5	45.3
14:08:00	14:08:00	50.5	67	54.6	46.7	54.5	53.1	50.5	67.2	55.3	46.7
14:09:00	14:09:00	47.7	63	50.3	44.3	50.2	49.2	47.7	63.1	50.9	43.4
14:10:00	14:10:00	49.9	65.1	52.2	48	52.1	51.8	49.9	65.2	53.4	46.8
14:11:00	14:11:00	51.2	70.7	55.1	47.7	54.9	54	51.2	70.7	56	47.2
14:12:00	14:12:00	48.7	64.1	51.1	45.6	50.9	49.9	48.6	64.1	52.1	44.8
14:13:00	14:13:00	46.8	65.9	50.5	44.8	50.3	49.3	46.9	65.9	51.8	43.8
14:14:00	14:14:00	49.9	69.2	56.2	46.2	55.9	52.8	49.8	69.1	59.1	45.5
14:15:00	14:15:00	45.6	64	49.8	42.2	49.3	48.1	45.6	64.1	50.7	41.7
14:16:00	14:16:00	47.9	66.6	52.7	43.8	52.6	51.6	47.9	66.6	53.4	43.3
14:17:00	14:17:00	43.9	62.7	46.6	41.9	46.5	45.5	44	62.6	49.4	41.1
14:18:00	14:18:00	45.7	63.2	49	42.9	49	48.7	45.7	63.3	50.1	42.3
14:19:00	14:19:00	44.9	60.6	48.2	43.1	48.1	47.2	45.1	60.5	49	42.8
14:20:00	14:20:00	46.5	63.8	50.2	43.6	50.1	48.7	46.5	63.7	51.1	42.7
14:21:00	14:21:00	47.9	65	52.4	43.7	52.2	50.8	48	65	53.5	43
14:22:00	14:22:00	44.6	62.6	50.2	41.3	49.3	48.2	44.5	62.4	50.5	40.7
14:23:00	14:23:00	44.1	59.8	45.8	41.3	45.8	45.5	44.2	59.7	46.8	40.8
14:24:00	14:24:00	42.8	60	45.3	41.3	45.3	44.7	42.9	60.1	46.2	40.4
14:25:00	14:25:00	46	64.6	52	42	51.8	49.6	46.1	64.7	53.2	41.3
14:26:00	14:26:00	44.9	60.6	47.1	42.8	46.8	46.3	45	60.4	48.1	42
14:27:00	14:27:00	44.8	59.6	47.4	42.2	47.3	46.6	44.9	59.9	48.7	41.7
14:28:00	14:28:00	45.3	60.1	47.3	43	47.1	46.9	45.4	60.2	48	42.4
14:29:00	14:29:00	45.4	67.2	46.7	44.5	46.5	46.1	45.5	67.2	49.5	43.5
14:30:00	14:30:00	45.4	61.9	47.4	43.7	47	46.2	45.4	61.9	49.9	42.7
14:31:00	14:31:00	43.6	58.6	45.3	42.2	44.9	44.5	43.7	58.6	46.2	41.7
14:32:00	14:32:00	42.4	60.6	46.1	40.4	44.9	43.2	42.5	60.8	47.9	39.9
14:33:00	14:33:00	43	58.2	44.7	42.1	44.5	43.9	43.2	58.3	45.7	41.5
14:34:00	14:34:00	44.6	60.6	47.5	42.7	47.3	46.6	44.7	60.4	48.7	42.1
14:35:00	14:35:00	46.1	61.9	48	44.8	47.6	46.7	46.1	62	49.8	44.4
14:36:00	14:36:00	46.2	62.6	49	44.8	48.1	47	46.3	62.5	50.9	44.4
14:37:00	14:37:00	46.5	62.6	49.3	44.3	49	47.7	46.5	62.5	51.1	43.8
14:38:00	14:38:00	45.4	60.4	46.9	44.1	46.7	46.4	45.4	60.2	48.5	43.5
14:39:00	14:39:00	46.8	63.9	49.2	44.3	48.6	48.3	46.9	63.9	52.1	43.9
14:40:00	14:40:00	48.4	64.1	51.4	46.7	50.6	49.9	48.4	64.1	53.6	46
14:41:00	14:41:00	48.6	62.9	49.9	47.6	49.6	49.3	48.7	63	50.9	47
14:42:00	14:42:00	49.8	66.7	52.2	47.9	51.9	51	49.8	66.7	55.4	47.3
14:43:00	14:43:00	53.2	67.4	54.3	51.8	54.2	53.9	53.2	67.3	55.2	51.2
14:44:00	14:44:00	53.8	69.1	55.5	52.1	55.3	55	53.8	69.1	56.2	51.4
14:45:00	14:45:00	53.4	71.1	55.5	51.6	55.3	54.8	53.3	71.1	60.1	50.9
14:46:00	14:46:00	52.6	69.3	55.5	50	55.5	54.7	52.7	69.4	56	49.2
14:47:00	14:47:00	53	67.7	54.7	50.9	54.6	54.2	53	67.7	55.7	50.2
14:48:00	14:48:00	54.2	69	55.5	52.9	55.6	55.4	54.2	69	56.2	52.3
14:49:00	14:49:00	54.8	71.2	56.9	52.9	56.9	56	54.8	71.2	58.5	52
14:50:00	14:50:00	55.4	69.8	57.1	53.1	57.1	56.8	55.3	69.8	57.7	52.4
14:51:00	14:51:00	54.6	69.3	56.4	53	56.4	55.9	54.6	69.2	57.2	52.1
14:52:00	14:52:00	54.3	69.7	56.2	52.5	56.1	55.7	54.3	69.8	57.2	52.1
14:53:00	14:53:00	51.7	67	53.6	49.8	53.6	53	51.6	66.9	54.6	49.2
14:54:00	14:54:00	51.7	66.5	53.5	50.1	53.5	52.7	51.7	66.5	54.2	49.1
14:55:00	14:55:00	50	64.1	51.8	48.8	51.6	50.9	50	64.1	52.2	48.1
14:56:00	14:56:00	49	65.5	50.9	47.6	50.8	50.4	49	65.5	52.2	47.2
14:57:00	14:57:00	49.7	64.6	51	48.2	51	50.6	49.7	64.6	51.9	47.8
14:58:00	14:58:00	48.9	63.4	50.2	47.3	50.2	49.6	48.9	63.5	51.2	46.5
14:59:00	14:59:00	47.2	61.6	48.1	46.3	48	47.8	47.2	61.7	48.6	45.5
15:00:00	15:00:00	47.3	65.3	49.7	45.5	48.8	48.3	47.4	65.3	52.1	44.9
15:01:00	15:01:00	46.4	61.8	47.8	45.6	47.4	46.9	46.4	61.9	49.8	45
15:02:00	15:02:00	47.7	63	49.5	46.1	49.2	48.9	47.7	62.8	50.7	45.5
15:03:00	15:03:00	47.9	62.8	50	46	49.7	49.4	48	62.8	50.9	45.7
15:04:00	15:04:00	49	63.5	50.6	47.2	50.5	50.2	49	63.4	51.7	46.3
15:05:00	15:05:00	49.7	65.7	51.8	47.9	51.7	50.7	49.7	65.6	53.1	46.6
15:06:00	15:06:00	48.4	62.5	50.2	46.5	50.2	49.7	48.4	62.5	51	45.9
15:07:00	15:07:00	48.4	63.5	50	46.2	50	49.7	48.5	63.5	50.9	45.5
15:08:00	15:08:00	48.5	63.2	50.2	46.7	49.9	49.4	48.5	63.1	50.9	46
15:09:00	15:09:00	48.3	63.8	51.1	45.8	50.9	50.2	48.3	63.7	52	45.1
15:10:00	15:10:00	51.6	71.3	55	48.8	54.7	53.4	51.6	71.2	56.1	48.7
15:11:00	15:11:00	50.2	65.9	54.2	47.2	54.2	52.8	50.3	66	55	46.3
15:12:00	15:12:00	50.3	65.3	53.3	48.7	53.3	51.9	50.3	65.3	54.1	47.6
15:13:00	15:13:00	51.5	66.6	54	49.6	54	52.8	51.5	66.5	55.3	48.8
15:14:00	15:14:00	52.2	66.8	54	50.5	54.1	53.6	52.2	66.9	54.9	49.9
15:15:00	15:15:00	51	66	53.8	49.2	53.6	52.8	51	66.1	54.6	48.3
15:16:00	15:16:00	52.6	68.8	55.2	50.1	55.2	54.6	52.6	68.8	56.1	49.4
15:17:00	15:17:00	52.1	67.7	55	49.7	54.7	53.9	52.1	67.7	55.7	49.1
15:18:00	15:18:00	52.9	68.8	56.3	50.3	56	55.2	52.9	68.7	57	49.8
15:19:00	15:19:00	50.8	67.1	53.3	48.8	53.2	52.4	50.8	67.1	54.2	48.1
15:20:00	15:20:00	50.5	66	51.9	48.9	51.7	51.2	50.5	66.1	52.9	48.4
15:21:00	15:21:00	51	66.8	53.3	48.8	53	52	50.9	66.9	55.2	47.9
15:22:00	15:22:00	50.2	66.4	51.8	48.4	51.7	51.3	50.2	66.3	52.8	47.5
15:23:00	15:23:00	50.5	65.2	51.9	49.3	51.7	51.3	50.5	65.2	52.8	48.6
15:24:00	15:24:00	50.4	64.4	52.4	48.6	52.3	51.8	50.3	64.6	52.9	47.8
15:25:00	15:25:00	52.7	67.4	54	50.4	54	53.8	52.7	67.4	55.1	49.6
15:26:00	15:26:00	53.6	68	54.9	51.5	54.9	54.5	53.6	67.9	56.1	50.6
15:27:00	15:27:00	53	69.2	56.1	51.5	55.8	54.4	53	69.1	57.4	50.8
15:28:00	15:28:00	52.3	66.6	53.5	51.2	53.4	53.1	52.3	66.5	54.1	50.5
15:29:00	15:29:00	52.9	69.8	54.9	51.1	54.8	54.3	52.9	69.8	57.4	50.3
15:30:00	15:30:00	54.7	71	56.5	53.3	56.2	55.8	54.7	71.1	58.7	52.6
15:31:00	15:31:00	56.6	71.6	58.8	55	58.5	57.9	56.6	71.6	60	53.9
15:32:00	15:32:00	57	75.5	59.3	54.4	59.1	58.6	56.9	75.4	60.7	53.7
15:33:00	15:33:00	55.5	70.2	57.1	54.1	56.9	56.6	55.5	70.3	57.7	53.5
15:34:00	15:34:00	53.7	73.6	55.4	51.6	55.3	54.8	53.6	73.5	56.7	51.1
15:35:00	15:35:00	51.2	65.9	52.5	49.9	52.5	52.2	51.2	65.9	53	49.2
15:36:00	15:36:00	52.7	77.7	58.1	51.1	55.9	53.8	52.6	77.6	62.9	50.5
15:37:00	15:37:00	54.5	75	58.2	51.9	57.2	56.4	54.5	75	61.3	51.4

15:38:00	15:38:00	64.9	103.4	80.6	55	78.6	73.3	64.1	103.4	86.4	54.1
15:39:00	15:39:00	56.7	71.8	58.7	54.4	58.5	58	56.6	71.8	59.4	53.4
15:40:00	15:40:00	57.8	72.1	59.6	56.3	59.3	58.7	57.8	72	60.6	55.7
15:41:00	15:41:00	59.7	74.7	61.2	57.2	61.1	60.7	59.6	74.6	62.4	56.9
15:42:00	15:42:00	59	75.6	60.9	57.2	60.9	60.4	59	75.6	62.2	56.5
15:43:00	15:43:00	58.7	73.7	61	57.4	60.9	60.2	58.6	73.6	62.1	56.3
15:44:00	15:44:00	59.7	75	63.1	56.6	63	62	59.7	75	63.9	56
15:45:00	15:45:00	61.3	82.8	65.5	59.5	63.7	62.6	61.2	82.8	69.4	58.6
15:46:00	15:46:00	60.8	75.3	63.1	58.7	62.9	62.2	60.8	75.3	64.9	57.9
15:47:00	15:47:00	58.3	75.3	60.6	55.3	60.5	59.8	58.3	75.2	61.4	54.6
15:48:00	15:48:00	58.7	74.1	61.1	56.3	60.9	60	58.6	74.1	62.3	55.6
15:49:00	15:49:00	57.6	72.1	59.2	55.2	59.1	58.8	57.5	72.1	59.9	54.5
15:50:00	15:50:00	57.6	72.9	60.4	55.7	60.3	59.4	57.5	72.9	60.9	55.1
15:51:00	15:51:00	58.7	73.6	60.9	55.5	60.9	60.5	58.6	73.5	61.9	54.8
15:52:00	15:52:00	58	73	59.6	54.9	59.6	59.4	57.9	73	60.9	54.2
15:53:00	15:53:00	57.3	73	59.2	54.9	59.2	58.8	57.3	72.9	60.7	54.4
15:54:00	15:54:00	56	70.4	58.2	54.2	58	57.6	56	70.4	58.9	53.5
15:55:00	15:55:00	55.6	72.1	57	54	57	56.7	55.6	72.1	57.8	53.4
15:56:00	15:56:00	56.4	72	58.5	53.1	58.5	58.1	56.4	72	59.1	52.5
15:57:00	15:57:00	57.2	73.7	59.9	55.2	59.8	59	57.2	73.7	60.6	54.5
15:58:00	15:58:00	57	72.8	58.9	55.1	58.7	58.3	57	72.7	60.1	54.1
15:59:00	15:59:00	56.3	70.9	58.1	55	58	57.5	56.2	70.9	59.2	54.4
16:00:00	16:00:00	55.8	71.1	58.8	54.2	58.6	57.5	55.7	71	61.1	53.7
16:01:00	16:01:00	54.9	70.1	56.6	53.6	56.6	56.4	54.9	70.1	57.3	53
16:02:00	16:02:00	55.5	70	57.3	54.1	57	56.6	55.5	69.9	58.1	53.2
16:03:00	16:03:00	55.3	70.6	57.9	53.9	57.7	56.5	55.2	70.5	58.8	53.4
16:04:00	16:04:00	54.7	71.1	58.1	52.9	56.5	56	54.6	71	61.6	52.3
16:05:00	16:05:00	54.9	70.3	56.5	53.2	56.4	56.1	54.9	70.3	57.2	52.5
16:06:00	16:06:00	55.4	72.1	57.2	53.6	56.7	56.2	55.3	72	60.7	52.9
16:07:00	16:07:00	53.6	68.9	56.1	52.4	55.8	55	53.6	68.9	58.6	51.8
16:08:00	16:08:00	52	67.4	53.7	50.7	53.7	53.2	52	67.4	54.5	50
16:09:00	16:09:00	52	80.9	54.6	50.9	53.8	53.3	52	80.9	58.9	50.4
16:10:00	16:10:00	52.5	75.4	53.5	51.7	53.3	53	52.5	75.3	54.9	51.3
16:11:00	16:11:00	51.4	67.1	52.8	50	52.8	52.6	51.3	67.1	53.6	49.4
16:12:00	16:12:00	50.8	65.2	52.4	50	52.4	52.1	50.8	65.1	53.1	49.3
16:13:00	16:13:00	51.5	66.6	52.7	49.9	52.7	52.4	51.5	66.6	53.9	49.3
16:14:00	16:14:00	51.3	67.3	52.5	50	52.4	52.1	51.3	67.3	54	49.4
16:15:00	16:15:00	50.6	67.9	53	49.6	52.3	51.2	50.6	67.8	56.3	49.2
16:16:00	16:16:00	51.3	65.2	52.6	50.6	52.5	51.8	51.3	65.2	53.6	50.2
16:17:00	16:17:00	51.1	65.6	52.1	49.7	52	51.7	51.1	65.5	53.4	49
16:18:00	16:18:00	51.4	66.6	53.2	50.2	53.2	52.7	51.4	66.5	54	49.7
16:19:00	16:19:00	52.4	66.2	53.9	51.5	53.5	53.2	52.4	66.3	55.2	50.8
16:20:00	16:20:00	53.9	68.8	55.7	52.6	55.6	55	53.9	68.8	56.7	51.9
16:21:00	16:21:00	53.8	68	55	52.8	54.9	54.7	53.8	68	56.1	52.3
16:22:00	16:22:00	53.5	70.1	55.2	52	55	54.6	53.5	70.1	57	51.3
16:23:00	16:23:00	53.1	68.2	54.5	51.7	54.5	54	53.1	68.3	56.2	50.9
16:24:00	16:24:00	52	67.5	53.7	50.8	53.5	52.8	51.9	67.4	54.7	50.2
16:25:00	16:25:00	52.4	68.4	54.8	50.7	54.6	53.7	52.4	68.3	56.9	50.2
16:26:00	16:26:00	51.9	66.5	53.4	50.5	53	52.7	51.9	66.6	54.9	49.9
16:27:00	16:27:00	53.7	68.7	55.9	51.4	55.8	55.3	53.7	68.7	56.8	51
16:28:00	16:28:00	51.1	65.8	53	49.7	52.9	52.6	51.1	65.6	53.6	49.2
16:29:00	16:29:00	55.2	75.1	60.3	50.1	60.2	59.9	55.2	75	60.9	49.2
16:30:00	16:30:00	52.3	72	58.4	49	58.2	56.4	52.1	71.9	58.5	48.4
16:31:00	16:31:00	49.6	65.3	51	48.1	50.8	50.2	49.6	65.2	51.7	47.7
16:32:00	16:32:00	50.2	68.7	52	49.1	51.6	50.9	50.2	68.5	55.3	48.3
16:33:00	16:33:00	51.5	67.3	52.6	50.1	52.6	52.3	51.5	67.3	54.2	49.5
16:34:00	16:34:00	51.1	65.6	52.2	49.9	52.2	52	51.1	65.6	53.4	49.1
16:35:00	16:35:00	51.7	67.8	53.3	50.4	53	52.7	51.7	67.8	55.7	49.7
16:36:00	16:36:00	51.2	66.7	52.8	49.9	52.6	52	51.2	66.7	53.8	49.4
16:37:00	16:37:00	51.4	65.2	52.8	49.9	52.5	52.1	51.4	65.1	54	49.1
16:38:00	16:38:00	49.5	66.1	51	48.3	50.9	50.3	49.5	66	52.8	47.5
16:39:00	16:39:00	49.3	65.6	51.8	47.7	51.5	50.3	49.3	65.6	52.7	47.2
16:40:00	16:40:00	48	64.4	49.9	47.2	49.7	48.7	48	64.3	51.5	46.4
16:41:00	16:41:00	48.2	65.7	51.2	47.1	50.7	49.3	48.2	65.7	52.4	46.5
16:42:00	16:42:00	48.7	63.4	50.5	47.3	50.5	49.7	48.7	63.4	50.9	46.6
16:43:00	16:43:00	62.1	86.3	70.4	50.5	68.5	65.9	62	86.2	73.8	50.6
16:44:00	16:44:00	50.8	71.8	54.6	48.1	54.3	53.8	50.6	71.8	56.5	47.5
16:45:00	16:45:00	48.7	64.3	49.8	47.5	49.5	49.2	48.7	64.4	51.2	46.7
16:46:00	16:46:00	47.9	63.4	50.2	46.5	49.3	48.8	47.9	63.3	53.2	45.9
16:47:00	16:47:00	47.1	63.7	47.9	46	47.9	47.7	47.1	63.5	49.5	45.3
16:48:00	16:48:00	46.9	69.3	49.9	45.7	48.6	47.5	46.9	69.3	54.5	45
16:49:00	16:49:00	46.7	61.8	47.9	45.8	47.7	47.4	46.8	61.8	49	45.2
16:50:00	16:50:00	46.5	61.5	47.1	45.6	47.1	46.9	46.5	61.5	47.9	45.1
16:51:00	16:51:00	46	61.5	47.8	45.2	47.7	46.8	46.1	61.5	49.2	44.7
16:52:00	16:52:00	46.5	67.1	50.1	45.1	48.9	47.6	46.5	67	54.7	44.3
16:53:00	16:53:00	45.9	67	48	44.3	47.9	47.1	45.9	66.9	50.4	43.4
16:54:00	16:54:00	46.7	69.4	55.4	44.8	52.5	47.4	46.6	69.5	58.9	44.1
16:55:00	16:55:00	45.6	60.4	47.4	44.5	47.2	46.6	45.6	60.4	48.2	43.7
16:56:00	16:56:00	46.1	62.4	48.2	44.7	48	47.4	46.2	62.6	49.4	44
16:57:00	16:57:00	45.3	60.3	47.9	43.7	47.7	47.2	45.4	60.4	49.4	43.4
16:58:00	16:58:00	45.8	60.6	47.2	44.7	47	46.6	45.8	60.7	48.4	44.2
16:59:00	16:59:00	47.2	65.9	49.7	45.2	49.2	48.5	47.3	65.8	52.8	44.5
17:00:00	17:00:00	48.6	64.6	51.5	46.9	50.7	50	48.7	64.6	52.4	46.2
17:01:00	17:01:00	49.4	66	51.7	46.9	51.7	51.4	49.4	65.9	52.5	46.3
17:02:00	17:02:00	48.1	62.4	50.1	46.3	49.9	49.3	48	62.4	51.5	45.8
17:03:00	17:03:00	47.9	67.4	52.4	45.4	50	49.3	48	67.4	55.6	44.7
17:04:00	17:04:00	49.5	70.4	57.5	46.4	54.9	50.9	49.2	70.3	62	45.4
17:05:00	17:05:00	50.7	73.6	56	45.1	56	54.1	50.6	73.6	58.3	44.2
17:06:00	17:06:00	45	64.5	46.2	43.9	46	45.8	45	64.4	49.2	42.7
17:07:00	17:07:00	49.2	68.7	56.7	44.6	56.7	54.3	49.4	68.6	58.3	43.8
17:08:00	17:08:00	54.2	74.6	61.8	44.5	61.7	61	54	74.5	62.4	43.8
17:09:00	17:09:00	44.7	62.9	46	43.7	45.8	45.4	44.7	63	47.2	43
17:10:00	17:10:00	44.4	63	47	43.7	46.5	44.9	44.5	63	49	43
17:11:00	17:11:00	44.4	61.8	46	43.7	45.8	45	44.5	61.7	48.4	43.1

17:12:00	17:12:00	44.7	59.7	45.5	44	45.4	45.1	44.7	59.7	46.5	43.3
17:13:00	17:13:00	45.7	63	47.5	44.3	47.3	46.9	45.7	63	50.3	43.3
17:14:00	17:14:00	48.2	64.5	51.6	45.4	51.5	50.9	48.2	64.6	52.6	44.4
17:15:00	17:15:00	47.1	62	48.7	45.2	48.6	48.1	47.1	62	49.4	44.6
17:16:00	17:16:00	45.5	62.1	47.9	43.8	47.6	47	45.4	61.9	48.9	43.3
17:17:00	17:17:00	44.4	60.3	45.7	43.6	45.5	45	44.4	60.3	47.4	42.5
17:18:00	17:18:00	43.9	59.4	45.7	43	45	44.5	43.9	59.4	48.1	42.3
17:19:00	17:19:00	44.7	63.4	48.1	42.9	47.5	46.7	44.7	63.2	51.8	42.2
17:20:00	17:20:00	46.6	65.2	49.5	44.2	48.8	48.1	46.5	65.3	52.8	43.4
17:21:00	17:21:00	49.4	67	53.4	45.3	53	51.8	49.3	66.9	55.2	44.2
17:22:00	17:22:00	52.1	74.5	60.4	44.6	60.1	58.6	52	74.5	61.5	43.7
17:23:00	17:23:00	44.5	62.8	48.8	42.2	48.4	46.6	44.4	62.8	51	41.8
17:24:00	17:24:00	43.4	58.5	45.6	42.2	45	44.5	43.5	58.5	47.5	41.3
17:25:00	17:25:00	45.8	68	51.6	43.1	49.5	47.2	45.8	68.1	54.7	42.2
17:26:00	17:26:00	53.6	69.4	57.2	48.1	57.2	56.5	53.5	69.3	58	47.6
17:27:00	17:27:00	51.1	67.5	55.7	45.2	55.4	54.6	50.9	67.5	56.7	44.2
17:28:00	17:28:00	48.2	67.8	51	45.3	50.8	49.9	48.2	67.9	54.4	44.3
17:29:00	17:29:00	48.1	68.6	51	45.7	50.2	49.2	48	68.5	54.9	44.4
17:30:00	17:30:00	48.9	69	51.7	46.4	51.4	50.5	48.8	68.9	54.4	45.1
17:31:00	17:31:00	47.8	75.5	52.4	45.3	50.9	49.1	47.7	75.4	58	43.5
17:32:00	17:32:00	45.7	63.8	47.9	43.3	47.8	47.3	45.6	63.7	50.1	42.1
17:33:00	17:33:00	45.3	62.2	50.2	43.4	48.3	47	45.3	62.1	52.9	42.4
17:34:00	17:34:00	45.8	69.2	53.1	43.5	50.1	47.1	45.6	69.2	58.4	42.3
17:35:00	17:35:00	45	60.5	48.9	43.1	48	46.3	44.9	60.6	52	42.4
17:36:00	17:36:00	45.8	62.4	51.8	43.5	50.6	47.4	45.8	62.4	54	42.4
17:37:00	17:37:00	48.2	64.8	52.2	44.3	52	51	48.1	64.8	54.4	43.7
17:38:00	17:38:00	46.8	63.8	51.9	43.7	51.1	49.9	46.8	63.8	53.3	42.9
17:39:00	17:39:00	44	59.1	47.2	42.3	46.1	45.1	44	59	48.8	41.7
17:40:00	17:40:00	42.9	58.6	43.8	42	43.8	43.5	43	58.6	45.3	41.2
17:41:00	17:41:00	43	61.4	44.7	42.1	44.5	44	43.1	61.4	47.9	41
17:42:00	17:42:00	42.7	59.4	45.5	42.1	44.6	43.3	42.8	59.5	48.2	41.4
17:43:00	17:43:00	44.1	58.2	45.7	42.3	45.4	45	44.1	58.1	47.1	41.8
17:44:00	17:44:00	42.6	60.7	44.3	41.9	44.2	43.3	42.6	60.6	45.4	40.8
17:45:00	17:45:00	42.6	57.1	44.5	41.6	44.2	43.3	42.7	57.2	45.4	41
17:46:00	17:46:00	42.3	56.9	44.4	41.2	43.9	43.2	42.3	56.7	44.8	40.3
17:47:00	17:47:00	43.5	59.4	47.9	41.1	47.7	46.7	43.6	59.1	48.7	39.9
17:48:00	17:48:00	47	62.4	54.4	42.7	53.7	49.8	47.1	62.2	55.8	41.9
17:49:00	17:49:00	54.8	67.2	59.4	49.4	58.6	57.7	54.7	67.2	60.5	44
17:50:00	17:50:00	50.8	68.1	57.9	42.2	57.8	55.5	50.5	68.1	58.5	41.2
17:51:00	17:51:00	47.8	64.5	50	45.8	49.8	49.3	47.7	64.6	50.8	44.1
17:52:00	17:52:00	49.2	63.9	51.9	45.6	51.6	50.9	49.2	63.8	54	44.7
17:53:00	17:53:00	51.7	67	54.4	44	54.2	53.2	51.6	66.8	56	42.5
17:54:00	17:54:00	49.6	68.5	52.7	45.5	52.3	51.6	49.6	68.5	54.6	44.4
17:55:00	17:55:00	48.2	67.3	52	44.4	51.6	50.5	48	67.2	53.8	43.4
17:56:00	17:56:00	47.9	70.7	50.9	45	50.6	49.9	47.9	70.7	55.4	43.3
17:57:00	17:57:00	49.5	73	54.6	46	54.4	53.7	49.4	72.9	55.9	44.5
17:58:00	17:58:00	46.6	65.3	49.7	44.2	49.1	48.1	46.5	65.3	51.4	42.6
17:59:00	17:59:00	47.6	65.1	49.6	45.8	49.3	48.8	47.5	65.1	51.2	43.7
18:00:00	18:00:00	48.7	64.6	50.9	45.7	50.6	49.9	48.6	64.5	52.1	44.7
18:01:00	18:01:00	54.6	75.2	60	46.5	59.8	58.8	54.6	75.2	61	45.3
18:02:00	18:02:00	49.6	76.3	58.4	43.6	57.9	57	49.2	76.2	59.2	42.2
18:03:00	18:03:00	45	60.9	47	43	46.6	45.9	45	60.8	49.7	42
18:04:00	18:04:00	48.2	63.7	52.4	44.9	51.7	49.9	48.1	63.7	54.8	42.6
18:05:00	18:05:00	47.6	70.9	53.9	43	53.1	50.9	47.4	70.9	58.4	42.1
18:06:00	18:06:00	47.6	64.9	53.6	42.9	53.5	50.9	47.4	64.8	55.3	42
18:07:00	18:07:00	44.3	59.5	46.4	43	46.2	45.4	44.3	59.4	47.7	41.7
18:08:00	18:08:00	44.1	75.4	55.8	41.1	52.8	45.4	43.7	75.3	60.7	40
18:09:00	18:09:00	55.1	77.1	62.6	43	62.6	62	55.1	77.1	63.3	42.2
18:10:00	18:10:00	47.8	66.3	55.9	42.5	55.4	52	47.5	66.4	55.6	41.8
18:11:00	18:11:00	43.3	57.5	45	42.2	44.6	43.9	43.4	57.6	45.7	41.3
18:12:00	18:12:00	42.5	58.1	43.9	41.2	43.9	43.2	42.5	58	44.7	40.3
18:13:00	18:13:00	43.2	57.1	46.4	41.2	46.4	45.7	43.2	57.2	48.2	39.7
18:14:00	18:14:00	43.9	59.7	47.7	41.7	47.5	46.4	43.9	59.8	49.4	40.6
18:15:00	18:15:00	44.4	64.5	47.8	41.6	47.6	46.1	44.3	64.6	49	40.9
18:16:00	18:16:00	43.2	58.1	47.5	40.9	47	45.4	43.2	58.1	48.9	39.7
18:17:00	18:17:00	45.6	63.2	49.5	42.3	49.4	48	45.6	63.1	51.1	41.1
18:18:00	18:18:00	47.3	62.7	51.9	42.9	51.7	50.6	47.3	62.7	52.6	42.1
18:19:00	18:19:00	43.7	58.5	46.4	41.2	46.3	45.8	43.7	58.6	47.4	40
18:20:00	18:20:00	42.1	59.3	43.1	41.1	43.2	43	42.2	59.5	46.4	40.2
18:21:00	18:21:00	43.9	59.9	47.4	41.6	47	46	43.9	59.8	48.5	40.6
18:22:00	18:22:00	45	60.5	48.8	43	48.5	46.7	45	60.2	50	42.4
18:23:00	18:23:00	44.3	63.5	46.4	42.9	46.2	45.3	44.3	63.5	49.9	41.4
18:24:00	18:24:00	43.6	61.3	46.9	41.7	46.3	45.4	43.6	61.2	50.4	40.2
18:25:00	18:25:00	46	67.3	48	42.3	47.9	47.4	46.1	67.3	50.5	42.1
18:26:00	18:26:00	44.6	61.7	49.7	42	49.3	47.7	44.4	61.7	51.1	40.9
18:27:00	18:27:00	43.6	63	47.3	42	45.9	45.1	43.6	62.9	50.5	40.8
18:28:00	18:28:00	45.4	74.6	59.4	41.3	56.3	47.6	44.9	74.6	65.4	40.6
18:29:00	18:29:00	45.5	72.3	55	42.2	53.4	47.1	45.4	72.3	61.2	41.6
18:30:00	18:30:00	45	62.3	50.2	42.2	48.2	46.8	45	62.4	54.7	41.5
18:31:00	18:31:00	43.7	61.5	46.8	42.1	46.7	45.2	43.6	61.4	48.5	40.4
18:32:00	18:32:00	42	59.1	46	39.9	45.2	43.9	42	58.8	47.3	38.4
18:33:00	18:33:00	42.2	56.1	45.6	40	44.7	44	42.2	56.1	47.3	38.8
18:34:00	18:34:00	42	59.2	44.2	40.1	43.9	43.4	42.2	59	46.2	39.2
18:35:00	18:35:00	41.8	57	45	40	44.9	43.9	41.8	57.1	46	38.7
18:36:00	18:36:00	46.9	63	52	40.5	51.5	50.6	46.9	63	53.2	40.4
18:37:00	18:37:00	49.8	66.3	53.7	41.2	53.3	52.8	49.7	66.2	54.9	40.3
18:38:00	18:38:00	45.7	62.1	49.4	42.8	49.1	48.1	45.6	62	51.6	42.1
18:39:00	18:39:00	45.1	62.5	50.7	41.3	50.1	48.6	45.3	62.5	51.7	40.7
18:40:00	18:40:00	53	69.6	56.9	49.3	56.7	56.1	52.9	69.5	57.6	48.3
18:41:00	18:41:00	45.3	61.4	49.8	42.1	49.7	48.5	45.2	61.4	50.5	41.2
18:42:00	18:42:00	41.5	58.7	43.8	39.9	43.6	42.5	41.6	58.5	46.1	39.1
18:43:00	18:43:00	39.5	55.1	41.7	38.3	41.6	41.1	39.8	55.2	43.4	37.8
18:44:00	18:44:00	42.5	59.5	46	38.3	45.8	44.1	42.6	59.5	49.2	38.9
18:45:00	18:45:00	42.7	60.7	45.5	41.2	45.4	44.4	42.8	60.8	48.6	40.3

18:46:00	18:46:00	45.3	62.7	49.6	41.6	49.3	48.5	45.4	62.8	50.5	40.7
18:47:00	18:47:00	43.1	62.9	45.4	41.1	45.2	44.8	43.2	62.8	48.1	40.3
18:48:00	18:48:00	43.6	65.5	47	40.4	46.3	45.3	43.5	65.3	49.4	39.1
18:49:00	18:49:00	42.8	63	46.8	41.2	46	44.4	42.9	63	51	39.9
18:50:00	18:50:00	45.4	61.8	47.8	42.3	47.7	47.2	45.4	61.8	48.6	41
18:51:00	18:51:00	45.1	64	48.1	43.3	47.3	46.4	45	64	52.6	42.5
18:52:00	18:52:00	44.6	62.1	49.6	41.9	48.1	46.8	44.5	62	52.3	40.6
18:53:00	18:53:00	49.4	67.3	55	44.8	54.7	53.4	49.4	67.3	56.1	43.5
18:54:00	18:54:00	44.6	59.7	47.7	41.3	47.4	46.6	44.6	59.7	49.1	40
18:55:00	18:55:00	43.6	61.3	46.8	41.2	46.2	45.6	43.6	61.3	50.4	40.4
18:56:00	18:56:00	43.2	59.7	45.7	41.2	45.5	44.4	43.4	59.6	48.6	40.2
18:57:00	18:57:00	43	60.2	45.5	40.9	45	44.4	43	60.3	48.1	39.6
18:58:00	18:58:00	43.3	58.6	46.7	41	46.4	44.9	43.3	58.4	47.9	40.1
18:59:00	18:59:00	42.3	56.8	44	41.3	43.5	43.1	42.4	56.9	45.1	40.6
19:00:00	19:00:00	43.4	59.4	45.8	41.3	45.8	44.7	43.6	59.6	46.7	40.4
19:01:00	19:01:00	44.8	63.5	49.2	42.7	49.1	47.2	44.9	63.5	50.3	42.1
19:02:00	19:02:00	43.4	58.8	46.8	41.8	46.7	45.5	43.5	58.9	48.2	41.1
19:03:00	19:03:00	54.8	72.7	60.6	45.7	60.5	59.5	54.8	72.7	61.3	44.6
19:04:00	19:04:00	42.8	58.5	45.7	41.3	45.2	44.7	42.8	58.3	46.2	40.6
19:05:00	19:05:00	46.2	65	51	41.3	50.7	49.9	46.3	65	52.1	41
19:06:00	19:06:00	40.7	57.2	42.6	38.3	42.5	42.4	40.6	57.4	44.1	37.4
19:07:00	19:07:00	41.2	57.5	43	39.8	42.9	42.5	41.3	57.5	44.5	38.2
19:08:00	19:08:00	42	62.8	45.8	39.9	45.4	44.2	42.1	62.9	48.5	39
19:09:00	19:09:00	43.5	58.9	45	41.9	45	44.8	43.5	58.9	46.2	41.4
19:10:00	19:10:00	42.9	64.2	46.1	40.9	45.7	44.1	43.1	64.1	49.5	39.8
19:11:00	19:11:00	42.4	57.6	45	40.6	44.7	43.8	42.5	57.7	46.4	39.8
19:12:00	19:12:00	51.1	69.2	56.4	43.1	55.8	54.2	51.1	69.2	57.5	42.4
19:13:00	19:13:00	48.5	64.3	53.4	43.8	53.2	52.2	48.4	64.3	54.5	43.1
19:14:00	19:14:00	44.5	60.6	47.4	41.3	47	46.1	44.6	60.8	48.5	40.7
19:15:00	19:15:00	43.7	59.1	47.1	40.6	46.8	45.8	43.7	59.1	49.1	39.7
19:16:00	19:16:00	44.8	62.1	49.2	41	49.1	48	44.9	62.1	50.4	40.5
19:17:00	19:17:00	46.1	65.7	50.5	41.6	50.1	48.6	46.1	65.7	53.5	41.2
19:18:00	19:18:00	42	59.1	45.6	40	44.8	43.6	42	59.2	47.4	39.4
19:19:00	19:19:00	42.4	57.2	45.6	40	45.3	44.6	42.4	57	47.5	38.9
19:20:00	19:20:00	46.8	70.2	55.8	40	55.5	54.2	47.1	70.1	58.5	39.5
19:21:00	19:21:00	52.9	79.1	62.1	42	61.6	60.6	52.6	79.1	64.5	40.9
19:22:00	19:22:00	44	59.7	47.6	41.6	47.4	45.6	44.1	59.7	48.4	40.2
19:23:00	19:23:00	43.7	59.3	45.3	42.2	45.1	44.7	43.7	59.1	47	40.9
19:24:00	19:24:00	47.4	71	52.7	44.2	52	51.4	47.5	71	55.1	42.6
19:25:00	19:25:00	49.4	76.4	54.5	44.5	54.3	53.1	49.2	76.4	59	43.6
19:26:00	19:26:00	46	66.1	48.8	43.5	48.7	47.8	45.9	66	50.9	42.1
19:27:00	19:27:00	44.7	61.5	46.8	42.7	46.5	46.1	44.7	61.5	50	40.9
19:28:00	19:28:00	43.1	61.2	45.6	40.7	45.5	44.6	43.1	61	49.6	39.9
19:29:00	19:29:00	43.2	58.3	46	40.1	45.8	45.2	43.2	58.3	47.4	39.8
19:30:00	19:30:00	49.4	67.3	56.9	41.6	56.1	53.5	49.4	67.4	58.2	40.2
19:31:00	19:31:00	52.4	66.8	57.2	47.3	57	55.2	52.3	66.7	57.9	44.6
19:32:00	19:32:00	45	63.4	51.7	41.3	51.5	48.4	44.8	63.2	53	41.2
19:33:00	19:33:00	44.6	70	50	40	49.5	48.1	44.6	69.9	51.9	39.7
19:34:00	19:34:00	42	64.5	47.1	39.9	46.7	44.3	42.1	64.4	49	39
19:35:00	19:35:00	41.9	58.1	44.7	40	44.3	43.1	42	58.6	45.7	39.4
19:36:00	19:36:00	42.1	61.2	44.5	40	44.5	43.2	42.2	61.2	45.7	39.4
19:37:00	19:37:00	46.4	80.4	56.5	40	54.6	52.6	46.4	80.4	61.7	39.2
19:38:00	19:38:00	45.3	67.2	51.1	41.3	50.4	47.6	45.3	67.2	53.3	40.3
19:39:00	19:39:00	57.7	85.2	66.8	45.8	66.2	64.2	57.7	85.2	69.7	43.2
19:40:00	19:40:00	59.3	85.1	67.7	41.5	67.1	65.6	58.9	85	69.9	40.8
19:41:00	19:41:00	46.1	77.8	55.9	40.1	55.4	53.4	46.3	77.8	58.6	39.7
19:42:00	19:42:00	44.4	77.8	55.2	41.3	54.5	46.3	44	77.8	56.3	40.4
19:43:00	19:43:00	42.2	61.2	47.1	39.8	46.1	43.9	42.3	61.1	48.6	38.8
19:44:00	19:44:00	43.6	62.2	45.8	41.2	45.6	45	43.6	62	47.6	40.3
19:45:00	19:45:00	43.5	60	45.6	41.8	45.5	44.4	43.5	59.9	48.1	39.3
19:46:00	19:46:00	41.5	58.7	44.2	39.8	44	42.6	41.6	58.5	45.6	38.1
19:47:00	19:47:00	41.2	60.5	43.7	39.9	43.2	42.7	41.4	60.5	47.7	38.9
19:48:00	19:48:00	45	60.6	48.3	42.1	48	47.5	45.1	60.5	50	41.5
19:49:00	19:49:00	48.5	66.1	52.6	44.6	52.2	50.7	48.5	66.2	53.7	43.5
19:50:00	19:50:00	50.6	70.6	55.3	47	55.3	53.5	50.5	70.6	58.2	45.7
19:51:00	19:51:00	47.6	67.1	53.7	42.4	53.2	51.1	47.4	67	55.1	41.3
19:52:00	19:52:00	45.6	62.9	50.9	43.1	49.8	47.2	45.6	62.8	53.6	42.2
19:53:00	19:53:00	50	65.7	54.7	45.6	54.6	53.1	50	65.7	55.2	44.6
19:54:00	19:54:00	42.9	59.5	48.9	40.5	47.6	44	42.8	59.4	49	39.6
19:55:00	19:55:00	43.7	64.5	46.9	41.7	46.6	45.6	43.7	64.5	49.3	40.7
19:56:00	19:56:00	44.9	63.5	50.2	42.1	49.5	47.2	45	63.4	51.7	41.2
19:57:00	19:57:00	50.1	68.9	55.3	44.8	55	54.1	50	68.8	56.9	43.6
19:58:00	19:58:00	45.3	63.3	48.6	42.6	48.4	47.3	45.2	63.3	51.8	41.6
19:59:00	19:59:00	45.1	61	48	42.6	47.3	46.5	45	61.1	50.2	41.5
20:00:00	20:00:00	43	60.9	44.9	41.1	44.6	44.1	43	60.9	45.6	40.2
20:01:00	20:01:00	45.9	67.5	51	41.7	50.1	48.3	45.8	67.4	54.4	40.8
20:02:00	20:02:00	49.1	73.1	55.2	43.8	54	51.7	49	73.1	58.2	43.2
20:03:00	20:03:00	43.3	63	46.2	41.2	45.6	44.7	43.3	63	48.5	39.8
20:04:00	20:04:00	50.7	67.7	56.3	41.8	56	55.5	50.8	67.7	57.6	40.6
20:05:00	20:05:00	47.5	64.5	54.6	44.6	54.1	49.7	47.3	64.5	55.1	43.4
20:06:00	20:06:00	47.5	73.9	55.1	42	54.8	52.9	47.4	73.8	56.2	41.1
20:07:00	20:07:00	43.5	64.3	47.9	41.6	47.6	44.7	43.5	64.4	49.9	40.6
20:08:00	20:08:00	43.5	63.2	45.8	41.5	45.6	44.9	43.5	63.2	48.4	40.3
20:09:00	20:09:00	45.5	60.8	49.7	42.3	49.1	47.3	45.4	61	52.1	41.6
20:10:00	20:10:00	43.6	58.3	45.1	42	44.9	44.5	43.7	58.3	46.7	41.3
20:11:00	20:11:00	44.9	62.2	47.7	42.1	47.1	46.5	45	62.1	49.2	41.5
20:12:00	20:12:00	47.1	68.1	51.9	43.1	51.5	50.1	47.1	68	53.5	42.1
20:13:00	20:13:00	43	59.1	46.6	41.2	46.2	45.3	43.1	59	48.5	40.1
20:14:00	20:14:00	47.7	68.1	53.2	43.4	51.5	50.1	47.7	68.1	56.4	42.7
20:15:00	20:15:00	47.5	69	53.8	43	52.8	50	47.4	69	56	41.7
20:16:00	20:16:00	47.7	74.8	56.6	41.9	56.2	52.9	47.7	74.9	60.2	41
20:17:00	20:17:00	45	63.1	50.5	42	50	47.4	45	63.1	52.3	41.2
20:18:00	20:18:00	58.1	80.8	65.9	45.1	65.6	64.7	57.9	80.8	68.3	44.4
20:19:00	20:19:00	50.6	70	56	46.8	55.5	54.1	50.7	70	58.3	45.8

20:20:00	20:20:00	51.9	72.5	59.1	43.4	58.5	57.5	51.6	72.4	61.3	42.1
20:21:00	20:21:00	43.8	62.1	46.9	41.3	46	45	43.8	62.2	50.5	40.4
20:22:00	20:22:00	45.2	63	50.3	40.2	48.1	47.2	45.3	62.8	53.1	39.6
20:23:00	20:23:00	45.4	62	50.8	42	49.6	47.6	45.3	61.8	52.7	40.9
20:24:00	20:24:00	43.2	59.2	45.8	40.3	45.5	45	43.2	59.1	47.8	39.7
20:25:00	20:25:00	43.3	62.3	48.7	40.4	47.5	45.7	43.4	62.3	51.6	40.2
20:26:00	20:26:00	45.3	61.7	50.6	41.3	50.3	48.3	45.2	61.7	52.7	40.7
20:27:00	20:27:00	47.3	69.4	53	42	52.5	51.1	47.3	69.4	54.1	41.2
20:28:00	20:28:00	59.2	86.7	66.8	47	65.5	64.1	59.1	86.7	70.7	46.1
20:29:00	20:29:00	52.4	79.8	64.3	44.4	62.9	58	51.6	79.7	66.1	43.4
20:30:00	20:30:00	44	60.7	46.9	42	46.4	45.6	44	60.6	48.4	40.8
20:31:00	20:31:00	45.7	62.1	49.6	41.4	49.4	48.6	45.8	62	50.4	40.6
20:32:00	20:32:00	42.9	57.9	46.6	40.5	46.3	44.6	42.9	58	47.5	39.9
20:33:00	20:33:00	44.4	62.1	47.5	41.3	47.3	46.6	44.4	62.1	48.8	40.9
20:34:00	20:34:00	47.2	67.2	51.1	43	50.8	49.5	47.2	67.2	53.9	42.4
20:35:00	20:35:00	44.6	64.2	49	42.3	48.9	46.8	44.6	64.1	50.4	41.4
20:36:00	20:36:00	43.7	60.1	46.2	42.1	45.8	44.6	43.7	60.1	48	41.3
20:37:00	20:37:00	48.1	67.4	53.5	41.8	53.4	52.7	48.1	67.3	54.8	41.3
20:38:00	20:38:00	45.3	68.3	51.1	42.1	50.1	47.7	45.3	68.3	53.8	41.4
20:39:00	20:39:00	43.7	60.4	45.8	42.1	45.5	45.3	43.8	60.6	47.5	41.3
20:40:00	20:40:00	43.6	63.6	47.4	41.3	47.2	45.8	43.7	63.5	48.5	40.9
20:41:00	20:41:00	48.3	68.7	55.2	42.3	54.7	53.3	48.5	68.7	56.9	41.9
20:42:00	20:42:00	44.8	70.6	54.5	41.3	53	49	44.4	70.5	54	40.6
20:43:00	20:43:00	46.8	65.6	53.6	41.3	52.3	49.9	46.9	65.5	56.5	41.2
20:44:00	20:44:00	46	66.1	51.6	43.1	50.8	48.6	45.8	66.1	53.6	41.7
20:45:00	20:45:00	45.3	64.5	49.6	42	48.9	47.4	45.2	64.5	55.2	40.1
20:46:00	20:46:00	45.5	67.9	50.5	41.5	48.4	47.2	45.4	67.9	56.9	39.8
20:47:00	20:47:00	57.1	79.9	65.6	42.8	65	64.2	57.2	79.9	66.5	42
20:48:00	20:48:00	64.3	90.5	76	48.3	75.8	70.9	64	90.4	77	47.4
20:49:00	20:49:00	45.6	62.6	49.4	42.2	49.1	48.1	45.6	62.5	50.4	41.6
20:50:00	20:50:00	46	62.4	48.6	43.2	48.2	47.8	46	62.3	50.1	42.6
20:51:00	20:51:00	46.4	65.7	49	44.1	48.8	47.9	46.4	65.7	50	43.4
20:52:00	20:52:00	46.5	65.5	49	44.4	48.8	48.3	46.5	65.5	50.8	43.2
20:53:00	20:53:00	48	71.4	55.6	44.4	54.9	51.6	48	71.4	59.1	43.8
20:54:00	20:54:00	47.1	64.3	51.5	43.5	50.7	48.8	46.9	64.3	52.3	42.6
20:55:00	20:55:00	46.6	66.3	48.9	44.3	48.7	48.2	46.6	66.2	50.9	43.4
20:56:00	20:56:00	47.2	68.5	50.8	44.1	50	48.9	47.2	68.4	53.4	43.3
20:57:00	20:57:00	47.3	61.2	49.2	44.9	49.1	48.9	47.3	61.2	50.2	43.8
20:58:00	20:58:00	44.3	58.4	47.2	41.3	46.8	46	44.3	58.4	48	40.4
20:59:00	20:59:00	46.4	66.8	52.6	41.8	51.7	49.8	46.5	66.8	56.1	41.3
21:00:00	21:00:00	47.9	66.6	53.1	43.5	52.7	50.8	47.8	66.5	54.2	42.9
21:01:00	21:01:00	45.4	64.9	48.5	43.6	48.2	47.3	45.4	64.9	52.4	42
21:02:00	21:02:00	47.1	64.5	50.5	43.7	49.7	49	47.1	64.4	52.8	42.5
21:03:00	21:03:00	44.4	62.5	48.3	42.2	48.2	45.9	44.4	62.3	49.4	41.7
21:04:00	21:04:00	44.9	63.4	47.5	41.7	47.4	46.4	44.9	63.3	48.5	40.9
21:05:00	21:05:00	53.1	77.6	64.2	42.3	64	61.9	53	77.5	65.9	41.2
21:06:00	21:06:00	45.8	62.9	53.3	42.7	51.2	47.4	45.6	62.9	52.2	41.8
21:07:00	21:07:00	44.8	63.4	48.4	42.1	48.2	46.7	44.9	63.5	50.3	41.1
21:08:00	21:08:00	46.3	69.9	52.7	43.4	52.3	48.5	46.3	69.9	55.9	42.8
21:09:00	21:09:00	50	71.5	57.4	46.4	56.4	54.3	50.1	71.4	58.8	44.5
21:10:00	21:10:00	50	68.4	56	44.5	55.6	54.3	49.8	68.4	58.2	43
21:11:00	21:11:00	45.8	68.4	50.7	43.7	49.9	47.9	45.8	68.4	52.8	42.9
21:12:00	21:12:00	43.3	62	46.8	41.1	46.1	45.2	43.3	61.8	51.8	40.2
21:13:00	21:13:00	45.3	67.5	49.9	42.1	49.3	47.7	45.3	67.5	53.3	41.1
21:14:00	21:14:00	44	60.9	47.5	41.3	47.2	46.2	44	61	49.1	40.9
21:15:00	21:15:00	45.4	65.4	49.7	43.1	47.9	46.8	45.4	65.4	53.7	42.6
21:16:00	21:16:00	44.9	62.7	48.3	43	47.8	46.2	45	62.7	50	42.5
21:17:00	21:17:00	46.4	64.8	51.4	43.4	51	48.5	46.5	64.8	52.6	42.7
21:18:00	21:18:00	47.1	63.9	50.3	44.8	49.9	49.1	47	63.9	51.2	43.9
21:19:00	21:19:00	45.1	62.8	47.3	43.1	47.3	46.6	45.2	62.9	50.3	42.3
21:20:00	21:20:00	44.3	62.7	47.1	42.8	46.2	45.2	44.3	62.8	50.1	42
21:21:00	21:21:00	45.1	59.8	47.2	42.7	47.1	46.6	45.2	59.8	48.6	42.1
21:22:00	21:22:00	43.3	60.4	46.2	41.3	46.2	45.5	43.4	60	47.7	40.9
21:23:00	21:23:00	45	62.1	50.3	42.6	49.3	46.8	45	62.1	52.4	41.7
21:24:00	21:24:00	44.5	66.4	47.2	42.2	47	45.6	44.5	66.2	48.8	41.4
21:25:00	21:25:00	44	58.4	46.1	42.9	45.8	45.3	44.1	58.7	47.5	42
21:26:00	21:26:00	46	64	50.2	43.6	49.2	47.7	46	63.9	52.2	42.4
21:27:00	21:27:00	44.6	64.9	48	42.6	47.3	46.4	44.6	64.9	51	41.8
21:28:00	21:28:00	47.8	66	53	43	52.6	51.2	47.8	66	55	42.3
21:29:00	21:29:00	44.1	59.8	47	42.1	46.9	46	44.2	59.8	47.9	41.1
21:30:00	21:30:00	44.7	61	47.5	42.9	47.3	45.8	44.7	61	48.4	41.9
21:31:00	21:31:00	44.7	61.3	47.4	42.7	47.1	46.2	44.7	61.3	48.5	41.8
21:32:00	21:32:00	43.3	58.5	44.7	42.3	44.5	43.9	43.4	58.5	46	41.9
21:33:00	21:33:00	45.3	71.5	51.1	42	50.9	48.5	45.4	71.4	52.3	41.2
21:34:00	21:34:00	47.1	73.9	54.4	42.8	54.1	52.4	47	73.9	55.5	41.5
21:35:00	21:35:00	45.7	69.1	48	43.7	47.8	47.3	45.7	69	52	43
21:36:00	21:36:00	46.5	74.7	56	42.7	53.1	49.4	46.4	74.6	61.8	41.8
21:37:00	21:37:00	45.4	62.3	51	42.5	49.1	47.4	45.2	62.3	51.5	41.7
21:38:00	21:38:00	50.3	75.1	60.5	42.9	59.6	57.1	50.4	75.1	63.9	42
21:39:00	21:39:00	49.7	75.9	61.2	42.7	59.3	54.9	49.2	75.8	63.8	42.2
21:40:00	21:40:00	42.9	58.3	45.1	41.3	44.9	44.2	43	58.3	46.9	40.7
21:41:00	21:41:00	43	62.3	47.1	40.6	46.6	44.9	43.1	62.3	50.4	40
21:42:00	21:42:00	42.7	59.2	44.9	41.3	44.6	43.8	42.7	59.1	47.7	40.7
21:43:00	21:43:00	41.9	63.4	44.4	40.7	44	43.2	42	63.4	46	39.7
21:44:00	21:44:00	42.1	60.1	45.6	40.2	45	43.8	42.2	60.1	48.4	39.6
21:45:00	21:45:00	44.7	79.9	51.2	41.2	48.3	46.5	44.6	79.8	58.7	40.2
21:46:00	21:46:00	43.8	60.4	46.5	41.3	46.1	45.6	43.8	60	48.9	40.6
21:47:00	21:47:00	43.9	68.8	47.3	41.2	46.6	45.8	43.9	68.8	51.6	40.3
21:48:00	21:48:00	51.5	72.3	59.7	41.7	59.6	58.8	51.8	72.2	60.6	40.9
21:49:00	21:49:00	52.8	74.2	61.1	40.9	61.1	60.7	52.5	74.2	61.6	39.7
21:50:00	21:50:00	42.3	63.6	46.8	40.1	45.4	43.6	42.3	63.5	51.3	39.3
21:51:00	21:51:00	42.2	59.6	45.4	39.9	45.1	44.5	42.3	59.7	47.5	38.9
21:52:00	21:52:00	42.5	60	45.5	39.9	45.1	44.4	42.6	60	48	38.9
21:53:00	21:53:00	43.5	60.1	46.9	40	46.7	45.6	43.5	60	47.9	39.3

21:54:00	21:54:00	44	62.7	47	42	46.6	45.9	44.1	62.8	50.9	41.3
21:55:00	21:55:00	44.4	62.8	49.1	40.1	48.5	47	44.3	62.8	51.5	40
21:56:00	21:56:00	41.4	58.7	44.7	39.5	43.9	43	41.3	58.6	46.2	38.4
21:57:00	21:57:00	42.3	59.4	46.6	40	46.3	44.6	42.5	59.5	47.7	39.1
21:58:00	21:58:00	43.9	59.9	46.7	41.6	46.5	45.7	44	59.9	47.8	41.2
21:59:00	21:59:00	44.4	64.1	50.9	41.3	49.9	47.4	44.4	64.2	52.9	40.8
22:00:00	22:00:00	44.4	67.8	49.9	41.3	48.9	47.1	44.3	67.6	53.5	40.5
22:01:00	22:01:00	50.3	71.4	57.1	43.8	56.8	54	50.4	71.4	59.2	42.1
22:02:00	22:02:00	46.5	65.6	53	42.2	52.6	49.7	46.3	65.5	54.6	41.6
22:03:00	22:03:00	47.2	63.5	50.8	43.9	50.5	49	47.2	63.4	52.8	42.9
22:04:00	22:04:00	44.1	60.5	46.8	42.8	46.1	45	44.1	60.5	47	42.1
22:05:00	22:05:00	46	62.4	48.1	43.7	47.7	47.2	46.1	62.3	49.9	43
22:06:00	22:06:00	48.8	67.1	53.5	43.7	53.2	52.2	48.9	67	56	43.1
22:07:00	22:07:00	49.8	65.2	53.6	45.9	53.1	52.7	49.7	65.3	54.8	44.7
22:08:00	22:08:00	50.9	68.1	55.2	45.5	54.5	53.6	50.9	68.2	57.4	44.4
22:09:00	22:09:00	54.2	74.8	60.9	47.9	60.3	59.2	54.3	74.8	63	47
22:10:00	22:10:00	48	71.6	59.5	43.4	58.8	51.6	47.5	71.6	59.8	42.6
22:11:00	22:11:00	49.1	66	51.9	44.2	51.8	51.1	49.1	66	53.4	43.4
22:12:00	22:12:00	44.6	63.8	50.3	41.2	49.4	48.2	44.5	63.8	53	40.3
22:13:00	22:13:00	46.8	64.7	49.8	43.8	49.1	48.3	46.7	64.7	53.6	42.9
22:14:00	22:14:00	44.8	63.4	47.8	42.8	47.3	46.3	44.8	63.5	49.5	41.8
22:15:00	22:15:00	44.6	62.1	47.9	42.2	47.2	46.3	44.7	62.1	49.9	41.6
22:16:00	22:16:00	45.3	63.5	49.4	42.6	48.4	47.9	45.3	63.4	52.5	41.7
22:17:00	22:17:00	44.3	63.2	48.4	41.3	47.8	46.1	44.3	63.1	50.5	40.7
22:18:00	22:18:00	46.4	65.1	51.7	41.7	51	49.7	46.3	65	54	41.1
22:19:00	22:19:00	47.2	74.2	58.7	42.2	57.6	50.2	47.5	74.2	61.3	41.3
22:20:00	22:20:00	48.2	71.8	59	42.1	58.2	54.2	47.8	71.7	60.5	40.9
22:21:00	22:21:00	45.7	63.5	48.9	42.1	48.7	47.9	45.7	63.5	50.7	41.6
22:22:00	22:22:00	47.3	69.8	52.5	42.9	51.8	50.7	47.3	69.6	55.1	41.5
22:23:00	22:23:00	44.8	60.9	47.4	42	47	46.4	44.8	60.7	49.4	40.9
22:24:00	22:24:00	44	60.6	45.7	42.2	45.5	45	44.1	60.6	47.2	41.7
22:25:00	22:25:00	46	66.5	49	42.6	48.6	47.9	46.1	66.4	52.9	41.9
22:26:00	22:26:00	45.7	62.5	48.1	43.9	47.9	47	45.7	62.3	49.6	42.9
22:27:00	22:27:00	45.4	61.8	47.7	43.4	47.4	46.9	45.4	61.7	50.5	42.7
22:28:00	22:28:00	46.6	65	51.8	43.5	50.6	49.5	46.7	65	54.2	42
22:29:00	22:29:00	47.2	67.3	52	43.7	51.1	48.8	47	67.3	55	42.6
22:30:00	22:30:00	46.4	63.7	50.9	43.7	50.5	48.3	46.5	63.7	53	43
22:31:00	22:31:00	46.5	64.2	50.4	43.3	49.9	48.9	46.3	64.2	53.3	42.4
22:32:00	22:32:00	47.7	64.9	52.1	43.9	51.4	50.7	47.6	64.7	54.2	43.3
22:33:00	22:33:00	45.2	63.7	47.6	43.7	47.6	46.2	45.2	63.8	50.3	42.7
22:34:00	22:34:00	46	64.8	49.5	43.5	49	47.7	46.1	64.8	52.3	42.9
22:35:00	22:35:00	46.6	65.1	50.9	44.1	50.1	48	46.6	65	52.9	43.2
22:36:00	22:36:00	45.3	61	47.7	43.4	47.4	46.6	45.4	61	48.7	42.7
22:37:00	22:37:00	46.9	67.2	49.9	44.8	49.1	48.5	46.9	67.3	54.5	44
22:38:00	22:38:00	45.1	64.7	48.5	41.3	48.1	47.3	45	64.7	51.5	40.6
22:39:00	22:39:00	43.9	60.9	47	41.3	46.7	45.6	44.1	60.8	48	40.5
22:40:00	22:40:00	47.1	66.7	51.4	44.5	50.8	48.6	47.1	66.6	54.1	43.7
22:41:00	22:41:00	47.9	64.8	49.9	45.7	49.6	49	47.9	64.7	51.9	44.7
22:42:00	22:42:00	47.6	65.8	51.9	44.8	51.6	50.4	47.6	65.8	54.7	43.6
22:43:00	22:43:00	51.3	67.5	55.9	46.2	55.8	54.4	51.2	67.4	56.7	44.8
22:44:00	22:44:00	50.8	80.4	62	44.5	61.7	54.8	50.6	80.3	64.7	43.2
22:45:00	22:45:00	50.2	83.1	63.8	41.4	63.1	57	50.1	83.1	65.4	41
22:46:00	22:46:00	45	68.5	51.5	41.7	50.5	47.5	44.9	68.4	52.7	41.3
22:47:00	22:47:00	46.6	63.8	49.5	43.9	49.3	48	46.6	63.7	51.8	43
22:48:00	22:48:00	47	63.9	50.6	43.2	50	49.4	47	63.7	52.5	42.4
22:49:00	22:49:00	46	63.7	49.5	42.3	49.1	47.9	46.1	63.6	52.5	41.6
22:50:00	22:50:00	47	64.5	51.2	42.8	50.9	49.2	46.9	64.6	53.2	41.6
22:51:00	22:51:00	47	68.8	56	41.2	55.2	52.1	47.2	68.8	58.5	40.5
22:52:00	22:52:00	46	70.9	53.3	42.8	52.8	49.5	45.8	70.8	53.1	42
22:53:00	22:53:00	45.8	63.6	49.3	42.5	48.9	48.2	45.9	63.6	51.4	41.9
22:54:00	22:54:00	47.8	69.5	54.4	44	52.1	49.9	47.6	69.5	59	42.9
22:55:00	22:55:00	45.7	61.3	47.6	43.8	47.4	47.1	45.8	61.3	49.4	42.9
22:56:00	22:56:00	44.9	63.1	48.3	42.2	48.1	47.2	44.9	63	50.8	41.8
22:57:00	22:57:00	44.4	73.4	54.5	41.2	52.2	45.4	44.3	73.4	58.9	40.2
22:58:00	22:58:00	45	63.2	47.2	42.2	46.7	46.2	45	63	50.1	41.6
22:59:00	22:59:00	43	59.3	45.5	40.6	45.2	44.5	43	59.4	47.7	39.6
23:00:00	23:00:00	45	64	49	41.3	47.9	46.9	45.1	63.9	51.9	40.7
23:01:00	23:01:00	44.4	62.6	48.2	41.3	48.1	47.3	44.3	62.6	51	40.6
23:02:00	23:02:00	46.3	65.1	51.8	42.4	51.2	48.9	46.3	65.3	54.5	42.3
23:03:00	23:03:00	44.2	60.5	47.2	42	46.7	45.9	44.2	60.6	48.8	41.4
23:04:00	23:04:00	45.6	65.4	52.1	42.7	50.9	47.5	45.6	65.4	55.9	42.1
23:05:00	23:05:00	46	67.3	50.3	42.6	49.5	48	45.9	67.2	54.3	41
23:06:00	23:06:00	47.2	68	52.6	44.2	52	50.1	47.2	68	54.8	42.8
23:07:00	23:07:00	45.7	62.9	48.5	42.9	48.4	47.9	45.8	63	51	42.3
23:08:00	23:08:00	45.1	62.2	48.9	42.2	48.4	47.3	45	62.2	49.9	41.7
23:09:00	23:09:00	44.2	61	46.7	42.2	46.2	45.4	44.3	60.9	48	41.7
23:10:00	23:10:00	54.4	73.3	62.5	44.8	60.9	59.6	54.4	73.2	64.6	43.8
23:11:00	23:11:00	50.5	69.9	60.5	44.7	60.2	55	50.1	69.8	61.4	43.2
23:12:00	23:12:00	44.4	69.1	48.4	42.3	46.7	45.8	44.4	69.1	54.5	41.4
23:13:00	23:13:00	48.3	70.4	57.4	42.3	55.6	52.7	48.1	70.4	60.4	41.6
23:14:00	23:14:00	46.9	65.7	51.9	43.7	51.6	50.1	47	65.7	53.8	42.8
23:15:00	23:15:00	65	92.6	74.6	49.9	74.5	72.3	65	92.6	77	49.2
23:16:00	23:16:00	55.5	78	66.2	45	65.8	62.3	54.9	78	66	43.9
23:17:00	23:17:00	47	63.4	49.7	44.2	49.5	49	47	63.3	50.9	43.3
23:18:00	23:18:00	46.2	63.4	49.3	44.6	48.7	47.4	46.2	63.3	51.1	43.6
23:19:00	23:19:00	46.8	65	49.9	44.2	49.1	48.4	46.7	64.9	52.6	43.4
23:20:00	23:20:00	47.5	65.1	50.6	44.2	50.1	49.2	47.5	65	52.9	43.6
23:21:00	23:21:00	53.3	77.1	64.2	45.2	62.1	60	53.6	77.1	66.1	44.5
23:22:00	23:22:00	58.9	82.5	67.7	49.5	67.2	64.8	58.5	82.4	69.9	48.6
23:23:00	23:23:00	51.8	76.2	55.5	49.2	55.1	53.9	51.7	76.1	57.7	47.9
23:24:00	23:24:00	49.8	68.9	52.5	48.7	51.7	50.9	49.8	68.8	55.2	47.8
23:25:00	23:25:00	49.4	65.9	52.2	48	51.8	51.1	49.4	66	54.4	47.2
23:26:00	23:26:00	48.6	84.3	59.1	47.4	54.9	49.1	48.4	84.2	66.9	47
23:27:00	23:27:00	56.7	82.7	65.9	48	65.3	62.7	56.5	82.6	68.3	48.2

23:28:00	23:28:00	49.9	66.7	52.4	48	52.2	51.3	49.9	66.7	54.1	47.2
23:29:00	23:29:00	48.8	69	52.2	47.5	51.8	50.4	48.8	69	54.5	46.9
23:30:00	23:30:00	49	63.9	51.6	47.8	51.5	50.5	49.1	63.9	52.2	47.3
23:31:00	23:31:00	52	85.3	59.5	49.4	56.1	53.6	51.9	85.3	66.9	48.6
23:32:00	23:32:00	61.5	80.8	67.6	50.2	67.4	66.4	61.4	80.8	68.8	49.4
23:33:00	23:33:00	50.7	68.7	54.2	48.5	53.7	52.7	50.6	68.6	57.4	47.3
23:34:00	23:34:00	49	66.6	51.9	47.3	51.7	50.1	49	66.5	53.7	46.7
23:35:00	23:35:00	48.2	65	51.1	46.8	50.6	49.2	48.1	65	53.3	46.4
23:36:00	23:36:00	48.7	67.1	51.6	46.8	51	50	48.7	66.9	54	46.5
23:37:00	23:37:00	48.4	63.2	50.2	47.4	49.9	49.3	48.4	63.2	52	46.8
23:38:00	23:38:00	49.5	65.8	53	47.5	52.6	51	49.5	65.8	54.9	46.9
23:39:00	23:39:00	54	74.2	59.5	48.7	59.1	57.9	54	74.2	62.2	47.9
23:40:00	23:40:00	58.1	80.4	64.5	46.4	63.8	63.1	57.9	80.4	68.2	45.5
23:41:00	23:41:00	47.3	65.5	50.2	44	49.5	49	47.2	65.4	51.5	42.9
23:42:00	23:42:00	47.3	64.6	50.6	43.6	50.3	49.4	47.3	64.5	53.8	42.8
23:43:00	23:43:00	46.4	65.2	49.4	42.9	49.1	48.3	46.4	65.2	51.2	41.9
23:44:00	23:44:00	46.7	67	50.1	43	49.8	49.1	46.7	67	52.1	42.3
23:45:00	23:45:00	46.2	62.1	49.9	44.1	49.5	47.7	46.1	62.2	51.7	43.4
23:46:00	23:46:00	45.5	65.4	48.4	42.7	47.9	47.1	45.5	65.3	52.5	41.7
23:47:00	23:47:00	45.6	64	49.3	43.1	48.6	47.8	45.6	64	51.7	42.3
23:48:00	23:48:00	45.6	69.8	51.1	42.3	50.3	47.7	45.6	69.8	54.4	41.8
23:49:00	23:49:00	46.8	67.7	55.3	43	54.6	50.5	46.7	67.7	57.5	41.8
23:50:00	23:50:00	46	66.1	49.4	43.2	49	47.7	46	66.1	51.4	42.7
23:51:00	23:51:00	46.1	63.1	49.1	43.6	48.8	47.8	46.2	63.1	51.2	42.9
23:52:00	23:52:00	51.4	72	58.6	46.1	58.3	54.1	51.6	72	60	45.9
23:53:00	23:53:00	57.3	75.9	63.9	46.9	63.5	60.9	57.1	75.9	66	46
23:54:00	23:54:00	48.5	68.3	53.8	44.6	53.3	50.9	48.3	68.3	57.6	43.2
23:55:00	23:55:00	45	67.1	48.7	42	47.9	47	45	67	50.9	41
23:56:00	23:56:00	44.1	63	46.2	42.2	46.1	45.2	44.2	63.1	48.5	41.4
23:57:00	23:57:00	43.7	61.5	46.5	42.1	45.6	45	43.8	61.4	48.9	41.4
23:58:00	23:58:00	51.5	77.9	63.4	42.4	61.6	56.7	51.8	77.9	65.9	41.6
23:59:00	23:59:00	56.5	80.9	67.3	42.8	67.1	64.6	56.1	80.9	69.5	42.2
24:00:00	24:00:00	45.2	67	50.8	42.3	49.9	48	45.3	67	53.9	41.9

Receptor 1 (Southwest)
7/23/2016

Serial Number	BIJ090010		UNIT REV	R13B
Start Time	3:12:04 PM	7/23/2014		
Run Length	0:30:00	115200		
Stop Time	3:42:04 PM			

Microphone Information		
Description	Units	Value
Sensitivity	dB	29
Polarization	Volts	0
Meter Range	dB	120
Max Level	dB	140
Meas. Floor	dB	-20

Calibration Information			
Description		Units	Value
Pre-Cal	Level	dB	114
	Date		15:09:26 23-Jul-2014
Post-Cal	Level	dB	
	Date		
ReCert	Date		Unavailable

Configuration Information			
Description	Units	Meter 1	Meter 2
Integration Threshold	dB	OFF	OFF
Exchange Rate	dB	5	5
Criterion Level	dB	90	90
Upper Limit Level	dB	140	140
Projected Time	Hrs	8	8
Weighting		A	A
Time Response		SLOW	SLOW

Measurement	Units	Meter 1 Broadband	Meter 2 Broadband	16 Hz	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	16000 Hz
Lavg	dB	53	52.7	22.3	32.2	39.8	43.3	43.6	45.1	47.3	44.3	38.9	36.4	35.6
Lmax	dB	75.5	77.6	39.8	50.6	61.6	67.2	68.3	69.1	70.7	68.9	63.4	52.5	59.9
Lmin	dB	41.2	40.3	8.2	15.3	26.2	29.9	29.4	31.1	35.9	29.3	32.3	35.3	35.3
Lpk	dB	91.7	91.7	53.6	63.6	76.4	83.3	87	83.3	86.3	86.9	83.5	80.8	78.3
TWA	dB	33	32.7	2.3	12.2	19.8	23.3	23.6	25.1	27.3	24.3	18.9	16.4	15.6
PTWA	dB	53	52.7	22.3	32.2	39.8	43.3	43.6	45.1	47.3	44.3	38.9	36.4	35.6
DOSE	%	0.04	0.04	0	0	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0	0
PDOSE	%	0.59	0.57	0.01	0.03	0.1	0.15	0.16	0.2	0.27	0.18	0.08	0.06	0.05
SEL	dB	107	106.8	76.4	86.3	93.9	97.4	97.7	99.1	101.3	98.4	92.9	90.5	89.6
EXP	p2s	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Measurement	Units	Value
LDN	dB	N/A
CNEL	dB	N/A
TAKTMAX (5sec)	dB	N/A
LC-A	dB	N/A

Exceedence	Units	Value
L02	dB	66.9
L10	dB	57.5
L50	dB	47.5
L90	dB	43.8

Receptor 1 (Southwest)

7/23/2016

		Meter 1			Meter 2		
		Count	Percent	Time	Count	Percent	Time
Overload	(OL)	0	0	00:00:00	0	0	00:00:00
Under-Range	(UR)	0	0	00:00:00	0	0	00:00:00
Upper Limit	(UL)	0	0	00:00:00	0	0	00:00:00

Exceedence Table

	0	1	2	3	4	5	6	7	8	9
0	75.5	68.8	66.9	65.4	63.3	61.7	60.5	59.7	59	58.1
10	57.5	56.9	56.4	56	55.6	55.3	55	54.6	54.1	53.6
20	53.2	52.7	52.4	52	51.7	51.5	51.3	51.1	50.9	50.7
30	50.5	50.3	50.1	49.9	49.8	49.6	49.4	49.2	49.1	48.9
40	48.7	48.6	48.4	48.3	48.2	48	47.9	47.8	47.7	47.6
50	47.5	47.3	47.2	47	46.9	46.8	46.7	46.6	46.6	46.5
60	46.4	46.3	46.3	46.2	46.1	46.1	46	46	45.9	45.8
70	45.8	45.7	45.6	45.6	45.5	45.4	45.3	45.2	45.2	45
80	45	44.9	44.8	44.7	44.6	44.5	44.4	44.3	44.2	44
90	43.8	43.7	43.6	43.4	43.2	43	42.9	42.5	42.2	41.9

Statistics Table

	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
41			0	0.11	0.16	0.06	0.06	0.07	0.09	0.18
42	0.28	0.4	0.34	0.68	0.24	0.2	0.19	0.22	0.27	0.37
43	0.56	0.74	0.42	0.45	0.46	0.46	0.59	0.75	1.15	0.6
44	0.6	0.56	0.55	0.89	1.08	0.79	0.77	0.8	1.16	1.35
45	1.05	1.21	0.88	1.16	1.34	1.18	1.03	1.7	1.41	1.42
46	1.67	1.94	1.35	1.47	1.47	1.33	1.22	1.3	1.25	1
47	0.93	0.84	0.74	0.73	0.7	0.71	0.88	0.91	0.93	0.98
48	0.83	0.83	0.64	0.47	0.8	0.88	0.74	0.73	0.55	0.6
49	0.52	0.52	0.57	0.61	0.6	0.62	0.64	0.47	0.58	0.54
50	0.54	0.53	0.51	0.6	0.64	0.58	0.5	0.43	0.47	0.53
51	0.52	0.54	0.52	0.26	0.5	0.49	0.51	0.39	0.36	0.37
52	0.36	0.35	0.27	0.26	0.23	0.26	0.27	0.29	0.3	0.25
53	0.2	0.25	0.2	0.22	0.18	0.21	0.25	0.17	0.17	0.17
54	0.18	0.27	0.25	0.08	0.22	0.26	0.28	0.23	0.22	0.26
55	0.22	0.27	0.38	0.35	0.25	0.26	0.29	0.29	0.29	0.28
56	0.32	0.27	0.22	0.24	0.24	0.23	0.18	0.22	0.2	0.16
57	0.19	0.19	0.19	0.04	0.17	0.21	0.2	0.15	0.13	0.12
58	0.17	0.15	0.14	0.12	0.12	0.13	0.11	0.1	0.11	0.1
59	0.1	0.14	0.15	0.13	0.12	0.11	0.13	0.14	0.11	0.16
60	0.18	0.16	0.13	0.03	0.09	0.09	0.08	0.1	0.09	0.08
61	0.12	0.09	0.07	0.07	0.08	0.08	0.07	0.05	0.05	0.07
62	0.06	0.07	0.05	0.05	0.06	0.06	0.06	0.05	0.09	0.09

Raw Stat Table

dB	Count
41.2	6
41.3	130
41.4	193
41.5	72
41.6	77
41.7	86
41.8	114
41.9	217
42	326
42.1	462
42.2	398
42.3	787
42.4	277
42.5	233
42.6	228
42.7	257
42.8	312
42.9	432
43	650
43.1	859
43.2	493
43.3	524
43.4	533
43.5	532
43.6	689
43.7	872
43.8	1329
43.9	701
44	695
44.1	652
44.2	635
44.3	1036
44.4	1251
44.5	915
44.6	892
44.7	930

Receptor 1 (Southwest)
7/23/2014

Start: 3:12:00 PM
End: 3:42:00 PM

L_{eq}
55.6

Study	Study Time	Session Time	OL Status	Lavg Meter1	Lpk Meter1	Lmax Meter1	Lmin Meter1	Lavg Meter2	Lpk Meter2	Lmax Meter2	Lmin Meter2
Study 1	0:00:10	0:00:10		56.1	85.7	63.5	48	55.3	85.7	70	45.1
R1 (Southwest)	0:00:20	0:00:20		67.1	91.1	72.1	55.4	67.1	91.1	77.6	47.3
	0:00:30	0:00:30		63.9	91.7	70.8	51	61.4	91.7	75.1	45.7
	0:00:40	0:00:40		56.4	77.5	61	46.3	55	77.5	64.1	43
	0:00:50	0:00:50		51.4	74.6	56.4	45.7	51	74.5	60.3	43.1
	0:01:00	0:01:00		53.8	76.8	60	44.8	53.2	76.8	65.1	42.3
	0:01:10	0:01:10		50	72.4	54.8	44.9	48.7	72.4	60.7	43.6
	0:01:20	0:01:20		50.1	78.9	59.7	43.2	50.3	78.8	64.7	42
	0:01:30	0:01:30		58.6	86.7	66	50.3	57	86.7	71.3	43
	0:01:40	0:01:40		55.7	77.6	59.6	50.9	54.9	77.5	64.1	42.2
	0:01:50	0:01:50		55.8	79.6	62.1	48.3	54.4	79.6	67.1	42.8
	0:02:00	0:02:00		54.3	79.6	57.1	49.6	54.4	79.6	60.9	46.7
	0:02:10	0:02:10		52.6	84.3	58.2	49.2	51.7	84.3	62.6	46.2
	0:02:20	0:02:20		57.7	79.4	62	50.3	57.4	79.4	66.4	49.5
	0:02:30	0:02:30		56.8	81.6	61.2	54	56.3	81.5	65.8	48.6
	0:02:40	0:02:40		51.5	78.2	54	49.8	51.1	78.2	56.3	47
	0:02:50	0:02:50		48.6	76.1	51.4	45.2	48.1	76	53.9	44.3
	0:03:00	0:03:00		47.1	76.4	50.2	44.3	46.7	76.4	54.2	42.6
	0:03:10	0:03:10		48.5	72.1	55.9	44.1	49.5	72.1	58.2	43.2
	0:03:20	0:03:20		64.3	86.6	70.8	50.8	63.6	86.5	72.7	47.4
	0:03:30	0:03:30		47.2	65.3	51.3	42.4	46.4	65.3	52.7	41.3
	0:03:40	0:03:40		42.4	57.9	43.1	41.9	42.4	57.7	44.2	41.1
	0:03:50	0:03:50		60	84.1	67	41.9	60.2	84.1	68.5	41.4
	0:04:00	0:04:00		50.8	68.4	60.6	45.1	46.5	68.2	53	43.9
	0:04:10	0:04:10		44.9	61.8	47	43.9	45.1	61.7	49	43.1
	0:04:20	0:04:20		49.5	64.1	53.5	45	49.6	64.1	54.9	43.9
	0:04:30	0:04:30		55.7	71.6	57.6	50.4	56	71.6	58.6	51
	0:04:40	0:04:40		59	74.4	60.9	55.4	58.9	74.4	63.2	53
	0:04:50	0:04:50		56.8	73.7	59.5	54.1	56.4	73.7	62.2	52.2
	0:05:00	0:05:00		53.1	71.2	55.5	50.8	52.8	71.2	57.5	49.2
	0:05:10	0:05:10		50.9	65.8	53.8	48.6	50.4	65.8	55.1	46.8
	0:05:20	0:05:20		49.3	64.8	50.7	46.9	49.1	64.8	52.1	45.7
	0:05:30	0:05:30		48	70.6	50.3	46.4	47.9	70.6	54.6	44.9
	0:05:40	0:05:40		46.7	65	48.9	43.7	46.5	65.1	51.7	42.5
	0:05:50	0:05:50		46.7	68.5	49.1	44	46.6	68.5	53.8	42.2
	0:06:00	0:06:00		43.6	59.9	45.4	42	43.4	59.7	46.4	41.2
	0:06:10	0:06:10		42.3	56.1	43.2	41.3	42.4	56	44.3	40.3
	0:06:20	0:06:20		42.9	61.7	46	41.2	43.3	61.8	48.9	40.5
	0:06:30	0:06:30		45.3	61.8	46.9	43.8	45.2	61.8	49.2	43
	0:06:40	0:06:40		43.8	63.8	46.7	42.3	43.9	64	50.3	41.2
	0:06:50	0:06:50		44.6	61.5	45.9	43.2	44.6	61.5	47.5	42.1
	0:07:00	0:07:00		45.2	63.7	48.1	43.1	45.1	63.7	50.4	42.3
	0:07:10	0:07:10		44.5	63.5	48	43.2	44.6	63.4	51.4	42.5
	0:07:20	0:07:20		48.8	66.6	52.3	44.2	49.3	66.4	54	43.1
	0:07:30	0:07:30		59.6	83.5	67.7	50.4	60.7	83.4	69.2	48.9
	0:07:40	0:07:40		57.7	77	66.7	47.9	54.6	77	64.5	46.1
	0:07:50	0:07:50		46.7	62.2	48.4	44.8	46.4	62.2	49	44.1
	0:08:00	0:08:00		46.4	66.1	48.2	44.8	46.5	66.1	49.9	44.3
	0:08:10	0:08:10		48.2	70.5	52	44.8	48	70.5	54.6	44.1
	0:08:20	0:08:20		50	73	52.1	44.4	50.3	73	55	43.8
	0:08:30	0:08:30		48.8	67.2	50.9	47.5	48.6	67.1	51.9	46.4
	0:08:40	0:08:40		48.7	64.2	50.6	46.4	48.4	64.2	52.3	45.4
	0:08:50	0:08:50		47.4	68.7	49	45.7	47.3	68.7	51.2	44
	0:09:00	0:09:00		46.3	61.8	47.7	44.9	46.4	61.8	49	44.2
	0:09:10	0:09:10		47.8	62	49.4	46.4	48	61.9	50.8	45.7
	0:09:20	0:09:20		50	65.3	51.7	48.5	50.1	65.2	53.1	47
	0:09:30	0:09:30		48.8	63.4	51.2	46.3	48.4	63.3	52.7	45.2
	0:09:40	0:09:40		46.6	65.5	48.8	45.9	46.6	65.5	52.2	45
	0:09:50	0:09:50		46.7	62.3	47.9	45.9	46.8	62.3	48.6	45.4
	0:10:00	0:10:00		46.4	61.2	46.8	45.7	46.4	61.1	48.1	45
	0:10:10	0:10:10		46.2	61.5	46.9	45.4	46.2	61.5	49.7	44.9
	0:10:20	0:10:20		46.9	63.7	47.9	46	47	63.6	49.8	45.1
	0:10:30	0:10:30		50.8	66.1	52.9	47.7	51.2	66.1	53.6	47.1
	0:10:40	0:10:40		55.1	68.7	56.3	52.9	55.3	68.7	57	53.2
	0:10:50	0:10:50		55.4	71.1	57.2	52.8	55.3	71.1	59.5	50.3
	0:11:00	0:11:00		68.2	89.5	74.9	55.8	69.4	89.5	75.8	55.4
	0:11:10	0:11:10		69.7	87.5	75.5	56.3	68.1	87.5	76.1	52.4
	0:11:20	0:11:20		49.1	66.5	56.3	44.8	47.2	66.5	53.1	43.3
	0:11:30	0:11:30		47.4	64.6	50	45.7	47.4	64.5	52.5	44.9
	0:11:40	0:11:40		47.5	66.4	49.3	46.6	47.5	66.4	52.4	44
	0:11:50	0:11:50		46.1	60.5	47.8	45.3	46	60.5	49	44.7
	0:12:00	0:12:00		46.1	60.7	47.2	44.5	46	60.6	49	43.7
	0:12:10	0:12:10		45.5	66.7	48.6	44.6	45.5	66.7	51.9	43.5
	0:12:20	0:12:20		45.5	59.6	46.1	44.6	45.6	59.6	47	43.3
	0:12:30	0:12:30		47.3	66	50.8	45.1	47.3	66	54.1	44

0:12:40	0:12:40	47.1	64	48.7	45.2	47	64	50.5	44.2
0:12:50	0:12:50	45.2	62.3	48.7	43.6	44.9	62.3	51.7	42.4
0:13:00	0:13:00	42.5	58.4	43.8	42	42.3	58.7	45.3	41.1
0:13:10	0:13:10	42.3	56.9	43.6	41.3	42.3	56.9	46.4	40.4
0:13:20	0:13:20	46.1	73	49.3	41.3	46.1	73	54.6	40.6
0:13:30	0:13:30	47.3	64.5	50.2	45.4	47.1	64.4	52.9	42.5
0:13:40	0:13:40	44.8	61.1	47.9	43.4	44.5	61.1	49.4	42.3
0:13:50	0:13:50	46.7	64.7	48.3	44.7	46.7	64.6	52.3	43.7
0:14:00	0:14:00	47.4	66.2	48.7	45.8	47.4	66	51.9	44.8
0:14:10	0:14:10	46.4	59.7	47.6	45.8	46.6	59.8	48.5	45.3
0:14:20	0:14:20	46.3	62.2	49.4	44.5	46.1	62.1	51.5	43.7
0:14:30	0:14:30	45.3	65.6	49.7	43.9	45.7	65.5	52.9	43.1
0:14:40	0:14:40	46.7	67.6	51.7	43.3	46.8	67.4	55.8	42.4
0:14:50	0:14:50	50.5	70	53.6	47.7	50.1	70	57.4	43.8
0:15:00	0:15:00	45.7	64.7	50.5	43.6	44.7	64.8	50.7	42.1
0:15:10	0:15:10	44	60.9	45	43.1	44.2	60.9	47.4	42.4
0:15:20	0:15:20	44.9	59.3	45.7	44.3	45	59.4	47	43.2
0:15:30	0:15:30	44.3	58	45.1	43.4	44.3	58.3	46	42.7
0:15:40	0:15:40	46.5	66.5	48.7	44.5	46.8	66.4	52.3	43.9
0:15:50	0:15:50	61.1	89.1	66.7	48.8	61.2	89.1	70	50.2
0:16:00	0:16:00	53.3	70.5	59.5	50.4	51.7	70.5	55.5	48.2
0:16:10	0:16:10	47.4	63.7	50.4	44.3	46.8	63.6	49.8	43.6
0:16:20	0:16:20	43.7	61	44.9	42.8	43.7	60.9	45.9	42.1
0:16:30	0:16:30	44.7	65.8	46.8	43.1	44.7	65.7	50.1	42.4
0:16:40	0:16:40	45	60.7	46.2	43.8	45.2	60.6	48.3	43.4
0:16:50	0:16:50	45.9	62.5	46.9	45.2	46	62.3	49	44.8
0:17:00	0:17:00	46.2	60.6	46.8	45.4	46.3	60.6	48.1	44.9
0:17:10	0:17:10	46.2	60.9	46.6	45.9	46.2	60.7	47.4	45.4
0:17:20	0:17:20	48.6	68.7	50.6	45.7	49	68.7	52.1	45.4
0:17:30	0:17:30	57.5	83.8	62.9	50.6	58.4	83.8	63.8	50.7
0:17:40	0:17:40	57.6	76.6	62.9	48.2	56.3	76.5	63	46.2
0:17:50	0:17:50	46.9	68.6	50.5	44.8	46.5	68.6	55.5	43.4
0:18:00	0:18:00	46	63.4	47.2	45.1	46	63.4	50	44.2
0:18:10	0:18:10	45.1	65.3	46.5	43.6	44.9	65.2	48.3	42.9
0:18:20	0:18:20	43.7	68.3	46.8	42.9	43.6	68.3	52.1	42
0:18:30	0:18:30	43.2	56.8	43.8	42.8	43.2	56.5	45	42
0:18:40	0:18:40	45.4	62.6	48.8	43.2	45.5	62.5	51.2	42.7
0:18:50	0:18:50	45.2	58.4	45.7	44.6	45.3	58.4	46.2	43.9
0:19:00	0:19:00	45.2	59.7	45.8	44.4	45.3	59.8	46.8	44
0:19:10	0:19:10	45.8	62.2	46.6	44.8	46	62.1	48.7	44
0:19:20	0:19:20	47.9	70.3	49.3	46.3	48.1	70.3	50.8	45.9
0:19:30	0:19:30	49.7	67.4	52.7	48	49.9	67.6	55.3	46.8
0:19:40	0:19:40	53.5	71	56.8	50.3	53.8	70.9	59.1	49
0:19:50	0:19:50	64.6	87.3	69.7	56.9	64.9	87.3	71.2	59.1
0:20:00	0:20:00	56.4	74.4	65.7	46.8	52.7	74.4	63.1	43.7
0:20:10	0:20:10	43.8	60.2	46.8	42	43.3	60.1	46.6	41.1
0:20:20	0:20:20	43	60.8	45.1	41.9	43.3	61	46.8	41.3
0:20:30	0:20:30	45.5	63.2	47.4	43.7	45.4	63.5	50.7	43.1
0:20:40	0:20:40	44.7	64.2	46.3	43.7	44.8	64.1	49.8	43.4
0:20:50	0:20:50	45.8	61.2	48.2	44.3	46.2	61.3	48.9	43.9
0:21:00	0:21:00	50	65.3	52.1	48.2	50.2	65.3	53.7	48.1
0:21:10	0:21:10	48.5	62.1	51	47.5	48.2	62	51.8	46.8
0:21:20	0:21:20	51.5	65.6	52.9	48.8	51.7	65.6	53.4	48.1
0:21:30	0:21:30	55.5	70.8	56.8	52.3	55.8	70.7	58	52.9
0:21:40	0:21:40	59.3	81	67.3	55.1	60.4	80.9	69.2	53.5
0:21:50	0:21:50	66.9	83.9	69.4	61.1	66.4	83.8	70.1	60.2
0:22:00	0:22:00	54.7	78	61.4	48.8	53	78	62.2	45.7
0:22:10	0:22:10	53.9	78.5	57	47.6	53.5	78.5	61	44.6
0:22:20	0:22:20	45.5	63.3	47.9	43.1	45	63.4	50.9	41.6
0:22:30	0:22:30	44.9	63.5	46.6	43.2	45.1	63.4	48.9	42.5
0:22:40	0:22:40	46.9	67.6	50.9	43.6	46.6	67.4	55.2	42.5
0:22:50	0:22:50	45.2	68.7	49.4	43.5	45.2	68.6	54.8	43.1
0:23:00	0:23:00	44.8	61.3	46	44.2	44.9	61.4	48.9	43.1
0:23:10	0:23:10	45.7	64.7	46.8	44.9	45.7	64.7	50.2	44.2
0:23:20	0:23:20	46.6	65.8	48.5	45.7	46.8	65.7	52.1	45
0:23:30	0:23:30	51.3	72	54.8	47.8	51.2	72	59.2	46.5
0:23:40	0:23:40	59.2	90.5	68.4	47.5	58.5	90.4	73.7	46
0:23:50	0:23:50	54.3	81	61.8	45.1	52.4	81	66.2	43.4
0:24:00	0:24:00	47.2	64.8	50	45.8	47.1	64.8	54.2	44.3
0:24:10	0:24:10	50.2	68	52.6	46.9	50.4	68	55.3	45.6
0:24:20	0:24:20	49.2	66.8	51.5	47.3	49	66.8	55.2	46.4
0:24:30	0:24:30	50	65.9	51.4	48.1	49.7	65.8	53.8	46.8
0:24:40	0:24:40	48.9	64.4	50.7	45.6	48.6	64.2	51.9	44.3
0:24:50	0:24:50	46.4	63.8	48.1	44.7	46.3	63.8	51.3	43.4
0:25:00	0:25:00	46.2	61.4	47.2	44.8	46.1	61.5	49.2	43.9
0:25:10	0:25:10	46	68.3	47	44.9	46.1	68.4	50	44
0:25:20	0:25:20	46.4	64.3	47.5	45.3	46.3	64.3	49.8	44.4
0:25:30	0:25:30	47.8	69.8	50.2	45.7	47.9	69.8	55.1	45
0:25:40	0:25:40	49.5	69	53.5	47.5	49.2	68.9	57	46.6

0:25:50	0:25:50	47	62.5	49.4	45.2	46.8	62.5	51.4	43.8
0:26:00	0:26:00	45.2	58.9	46.2	44.8	45.2	58.9	46.8	44.1
0:26:10	0:26:10	45.9	59.2	47.4	44.2	45.8	59	48.7	43.1
0:26:20	0:26:20	47.3	65.1	51.4	43.9	47.1	65.1	54.5	43.2
0:26:30	0:26:30	44.7	61.5	46.1	44.3	44.8	61.5	48.3	43.5
0:26:40	0:26:40	48.5	67.9	51.8	44.6	48.8	67.7	56.6	44.2
0:26:50	0:26:50	50.5	69.1	52.5	48	50.3	69.1	54.2	44.9
0:27:00	0:27:00	49.5	65	51	47.1	49.2	65	52.7	44.2
0:27:10	0:27:10	51.6	69.7	53.1	48.5	51.7	69.7	56.1	48.2
0:27:20	0:27:20	54	69.2	55.9	51.8	54.1	69.2	57	50.5
0:27:30	0:27:30	62.5	81.3	67.5	54.2	63.2	81.2	68.9	54.4
0:27:40	0:27:40	59.8	75.9	66.2	54	58.4	75.8	65.3	52.6
0:27:50	0:27:50	53.1	67.9	57.1	49	52.3	67.9	57	48
0:28:00	0:28:00	53.8	73.5	56.3	49.3	53.3	73.4	60.5	47.4
0:28:10	0:28:10	49.2	65.4	50.5	47.8	49.1	65.2	53.6	46.7
0:28:20	0:28:20	50.2	66	51.4	49.2	50.3	66.2	53.2	48.3
0:28:30	0:28:30	55.3	73.7	60.1	51	56	73.7	61.1	49.1
0:28:40	0:28:40	59.2	76.7	61.5	57.1	59.2	76.7	63.4	56.3
0:28:50	0:28:50	65.9	82	68.3	61.5	65.8	82	70.3	60.4
0:29:00	0:29:00	57.4	73.2	62.1	55.1	56.5	73.1	60.5	54.1
0:29:10	0:29:10	51.9	74.8	55.1	48.9	51.2	74.8	55.4	46.6
0:29:20	0:29:20	48	64.3	49	46.8	47.8	64.3	51.3	45.3
0:29:30	0:29:30	47.2	63.4	49	45.3	47	63.3	51.5	43.6
0:29:40	0:29:40	46.2	60.6	47.4	44.9	46.1	60.6	49.4	42.9
0:29:50	0:29:50	43.6	59.8	45.3	42	43.3	59.6	47.2	41
0:30:00	0:30:00	42.5	57	43.4	41.8	42.6	56.7	44.6	41.2

Receptor 2 (South)

7/23/2014

Serial Number	BIJ090010		UNIT REV	R13B
Start Time	3:49:04 PM	7/23/2014		
Run Length	0:30:00	115200		
Stop Time	4:19:04 PM			

Microphone Information		
Description	Units	Value
Sensitivity	dB	29
Polarization	Volts	0
Meter Range	dB	120
Max Level	dB	140
Meas. Floor	dB	-20

Calibration Information			
Description		Units	Value
Pre-Cal	Level	dB	114
	Date		15:48:31 23-Jul-2014
Post-Cal	Level	dB	
	Date		
ReCert	Date		Unavailable

Configuration Information			
Description	Units	Meter 1	Meter 2
Integration Threshold	dB	OFF	OFF
Exchange Rate	dB	5	5
Criterion Level	dB	90	90
Upper Limit Level	dB	140	140
Projected Time	Hrs	8	8
Weighting		A	A
Time Response		SLOW	SLOW

Measurement	Units	Meter 1 Broadband	Meter 2 Broadband	16 Hz	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	16000 Hz
Lavg	dB	48.3	48.1	26.1	35.4	40.5	40.3	38.4	38.7	40.5	38.5	36.5	36.2	35.4
Lmax	dB	75.6	77.2	39	51.4	68.5	70.2	62.6	63.2	70.1	70.1	66.2	58.5	47
Lmin	dB	37.6	36.5	13.4	19.4	25.8	27.9	28.1	28.8	30.9	29.3	32.3	35.3	35.3
Lpk	dB	88.8	88.7	52.8	60.5	73	76.1	73.4	80.4	83.8	83.3	80.3	75.5	67.3
TWA	dB	28.3	28.1	6.1	15.4	20.5	20.3	18.4	18.7	20.5	18.5	16.5	16.2	15.4
PTWA	dB	48.3	48.1	26.1	35.4	40.5	40.3	38.4	38.7	40.5	38.5	36.5	36.2	35.4
DOSE	%	0.02	0.02	0	0	0.01	0.01	0	0.01	0.01	0	0	0	0
PDOSE	%	0.31	0.3	0.01	0.05	0.11	0.1	0.08	0.08	0.1	0.08	0.06	0.06	0.05
SEL	dB	102.4	102.1	80.2	89.5	94.6	94.4	92.5	92.8	94.6	92.6	90.6	90.3	89.5
EXP	p2s	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Measurement	Units	Value
LDN	dB	N/A
CNEL	dB	N/A
TAKTMAX (5sec)	dB	N/A
LC-A	dB	N/A

Exceedence	Units	Value
L02	dB	57.6
L10	dB	49.8
L50	dB	44.3
L90	dB	40.2

Receptor 2 (South)

7/23/2014

		Meter 1			Meter 2		
		Count	Percent	Time	Count	Percent	Time
Overload	(OL)	0	0	00:00:00	0	0	00:00:00
Under-Range	(UR)	7075	6.14	00:01:50	12864	11.16	00:03:21
Upper Limit	(UL)	0	0	00:00:00	0	0	00:00:00

Exceedence Table

	0	1	2	3	4	5	6	7	8	9
0	75.6	65.4	57.6	55	52.9	52	51.2	50.8	50.4	50.1
10	49.8	49.5	49.3	49	48.7	48.5	48.3	48.1	47.9	47.7
20	47.6	47.4	47.3	47.1	46.9	46.8	46.7	46.5	46.4	46.3
30	46.2	46.1	45.9	45.8	45.7	45.7	45.6	45.5	45.4	45.3
40	45.1	45	45	44.9	44.8	44.7	44.6	44.6	44.5	44.4
50	44.3	44.2	44.1	44	43.9	43.8	43.8	43.7	43.6	43.5
60	43.5	43.4	43.3	43.2	43.1	43	42.9	42.8	42.7	42.6
70	42.5	42.4	42.3	42.2	42.1	42	41.9	41.7	41.6	41.5
80	41.4	41.3	41.2	41.2	41.1	41	40.9	40.7	40.6	40.3
90	40.2	40	40	39.9	39.8	39.7	39.2	38.6	38.3	38.2

Statistics Table

	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
37							0	0.07	0.02	0.02
38	0.01	0.01	0.01	1.53	0.72	0.22	0.21	0.16	0.16	0.16
39	0.21	0.19	0.08	0.17	0.23	0.21	0.25	0.27	0.49	0.65
40	1.23	2.08	0.51	0.46	0.55	0.41	0.5	0.54	0.62	0.77
41	0.95	1.07	0.96	1.64	1.31	0.82	0.75	0.84	0.86	0.86
42	0.86	1.03	0.7	1.25	0.99	0.78	0.71	0.8	0.91	1
43	1.23	1.4	1.08	1.03	1.03	1.09	1.23	1.4	1.38	1.07
44	1.07	1.17	1.05	1.21	1.14	1.05	1.08	1.25	1.4	1.3
45	1.08	1.29	0.83	0.75	0.91	0.93	1.08	1.24	1.09	0.97
46	0.97	0.95	0.85	0.76	0.79	0.81	0.82	0.79	0.73	0.71
47	0.71	0.64	0.59	0.6	0.57	0.67	0.75	0.64	0.63	0.62
48	0.59	0.53	0.46	0.33	0.55	0.45	0.41	0.43	0.46	0.37
49	0.37	0.41	0.36	0.43	0.39	0.36	0.36	0.32	0.33	0.34
50	0.37	0.35	0.28	0.31	0.31	0.33	0.29	0.3	0.28	0.29
51	0.25	0.22	0.19	0.08	0.16	0.12	0.09	0.14	0.15	0.13
52	0.13	0.13	0.13	0.09	0.08	0.08	0.12	0.08	0.07	0.08
53	0.1	0.08	0.08	0.07	0.04	0.03	0.03	0.04	0.02	0.03
54	0.03	0.03	0.04	0.02	0.03	0.03	0.04	0.04	0.04	0.07
55	0.07	0.05	0.03	0.04	0.03	0.03	0.05	0.06	0.05	0.03
56	0.02	0.02	0.03	0.02	0.05	0.05	0.04	0.04	0.05	0.03
57	0.03	0.02	0.02	0	0.02	0.02	0.04	0.07	0.02	0.02
58	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.03

Raw Stat Table

dB	Count
37.6	9
37.7	87
37.8	32
37.9	27
38	18
38.1	14
38.2	14
38.3	1765
38.4	836
38.5	254
38.6	244
38.7	185
38.8	194
38.9	191
39	246
39.1	228
39.2	97
39.3	199
39.4	269
39.5	242
39.6	293
39.7	314
39.8	568
39.9	749
40	1428
40.1	2407
40.2	592
40.3	541
40.4	642
40.5	482
40.6	581
40.7	623
40.8	724
40.9	891
41	1104
41.1	1233

Study	Study Time	Session Time	OL Status	Lavg Meter1	Lpk Meter1	Lmax Meter1	Lmin Meter1	Lavg Meter2	Lpk Meter2	Lmax Meter2	Lmin Meter2
Study 1	0:00:10	0:00:10		43.9	83.1	50.6	39.2	43.5	83.1	58.5	37.6
R2 (South)	0:00:20	0:00:20		44.9	68.1	47.8	41.1	44.5	68.1	51.1	38.4
	0:00:30	0:00:30		49.8	86.5	61.7	45.1	50.6	86.4	69.4	41.2
	0:00:40	0:00:40		52.3	83.6	60.4	46	48.8	83.6	65.7	39.9
	0:00:50	0:00:50		46.2	61.7	53.6	42	43.9	61.7	49.5	39.4
	0:01:00	0:01:00		43.3	61.7	45.6	40.5	43	61.7	50.4	37.6
	0:01:10	0:01:10		41.7	60.6	45	39	41.7	60.6	48.3	36.8
	0:01:20	0:01:20		44.4	68.8	48.2	41.3	44	68.8	54.8	38.3
	0:01:30	0:01:30		42.1	60.1	44.9	40.4	42	60.2	49.6	39.4
	0:01:40	0:01:40		45.8	69.2	48.4	42.1	45.7	69.2	51.5	40.7
	0:01:50	0:01:50		48.3	69.8	50.8	44	48.5	69.7	55.1	44.8
	0:02:00	0:02:00		45.4	67.5	49.6	41.2	44.5	67.5	54	39.3
	0:02:10	0:02:10		42.1	71.2	44.8	39.9	42.2	71.2	48.2	38.3
	0:02:20	0:02:20		44.4	64.9	46.7	42.7	44.2	64.8	49	39.4
	0:02:30	0:02:30		46.7	77.5	55	42.1	45.6	77.4	62.6	40.1
	0:02:40	0:02:40		45.5	70.2	49.6	43.5	44.9	70.1	55.4	40.9
	0:02:50	0:02:50		46.1	62.8	49.5	43.1	46.6	62.7	50.9	42.4
	0:03:00	0:03:00		52.1	68.7	54.7	49.5	52.5	68.6	55.7	48.4
	0:03:10	0:03:10		62.6	86.8	72.6	54.7	64.3	86.8	74.5	55.1
	0:03:20	0:03:20		70.8	88.8	75.6	60.7	69.9	88.7	76.4	58.5
	0:03:30	0:03:30		53.8	69.7	60.7	47.8	52	69.6	59.5	44.8
	0:03:40	0:03:40		44.3	59	47.8	42.8	43.9	58.9	48.5	41.7
	0:03:50	0:03:50		43.2	61	44.8	41.7	43	60.8	48.6	40.1
	0:04:00	0:04:00		46.2	71.4	51.5	42.1	46.3	71.4	56.4	41.2
	0:04:10	0:04:10		48.4	66.7	51.2	43.6	47.9	66.7	54.5	41.5
	0:04:20	0:04:20		47.5	68.7	50.7	44.2	47.5	68.7	54.7	42.7
	0:04:30	0:04:30		45.6	62.8	48.8	43.3	45.3	62.7	51.6	41.2
	0:04:40	0:04:40		41.6	57.1	43.6	39.9	41.5	56.9	44.5	38.9
	0:04:50	0:04:50		44.2	63	47.3	41.2	44	62.8	51.6	40.1
	0:05:00	0:05:00		44.5	62.8	47.2	41.1	44.4	62.7	49.1	40.4
	0:05:10	0:05:10		40.7	53.9	41.5	39.7	40.6	54	42.5	38.6
	0:05:20	0:05:20		40.3	54.9	41.1	39.2	40.3	54.4	42.9	38.2
	0:05:30	0:05:30		39.1	56.1	41.9	38.3	39.7	55.9	44.1	38
	0:05:40	0:05:40		46.4	64.4	48.9	41.7	46.7	64.3	51.9	41.7
	0:05:50	0:05:50		45.7	65.1	49.9	42.5	45.4	65.1	54.9	40.4
	0:06:00	0:06:00		41.6	58.4	46.5	38.3	40.9	58.6	47.2	37.7
	0:06:10	0:06:10		48.1	66.5	52.5	42.7	48.3	66.4	56.8	40.9
	0:06:20	0:06:20		43.8	61.7	50.4	40.1	42.4	61.5	50.4	39.4
	0:06:30	0:06:30		43.6	60.6	46	40.9	43.9	60.6	48.2	40.1
	0:06:40	0:06:40		44.2	71.1	50.1	40.5	43.8	71.2	56.8	39
	0:06:50	0:06:50		43.1	64.7	48.1	39.9	42.5	64.7	52.7	38.5
	0:07:00	0:07:00		45.4	64.9	50.4	40	45	65.1	53.1	39
	0:07:10	0:07:10		42.1	60.4	45.4	38.9	42.2	60.3	49.8	38.5
	0:07:20	0:07:20		43	62.9	45.4	40.1	42.5	62.8	50	38.6
	0:07:30	0:07:30		42.9	65.1	46	40	42.8	65.1	50.7	37.7
	0:07:40	0:07:40		47	70.9	51.8	42.6	46.7	70.9	56.7	40.2
	0:07:50	0:07:50		44.9	66.7	48.6	41.2	43.9	66.7	55	38.9
	0:08:00	0:08:00		51.3	70.3	55.3	42.2	51.1	70.2	59.4	43.2
	0:08:10	0:08:10		45.4	61.6	47.8	43.2	45.2	61.6	50.6	41.7
	0:08:20	0:08:20		47.6	64.9	50	43.7	47.5	64.9	52.4	42
	0:08:30	0:08:30		49.6	74.6	54.8	46.2	49.5	74.5	61.3	42.7
	0:08:40	0:08:40		52	69.7	55.3	49.6	51.8	69.6	58.1	47.2
	0:08:50	0:08:50		48.4	68.5	53.1	44.4	47.5	68.5	57.2	41.9
	0:09:00	0:09:00		45.9	66.7	47.8	44.4	45.9	66.5	53.3	41.8
	0:09:10	0:09:10		44.8	61.6	47.6	41.8	44.3	61.4	50.7	39.9
	0:09:20	0:09:20		40.5	57.7	42.1	39.9	40.7	57.6	45	38.6
	0:09:30	0:09:30		46.6	65.9	51	41.1	47.1	65.9	54.7	38.9
	0:09:40	0:09:40		47.1	69.7	52.5	42.4	47	69.6	55.7	40.8
	0:09:50	0:09:50		46.7	65.1	52.4	42.9	45.7	65.1	53.9	41
	0:10:00	0:10:00		42.5	58.5	45.7	40.9	41.9	58.3	45.9	38.9
	0:10:10	0:10:10		44.1	61.3	47.7	39.8	44.1	61.3	50.3	38.7
	0:10:20	0:10:20		41	58.1	43.9	39.6	40.9	58	45.9	38.7
	0:10:30	0:10:30		44.4	59.8	45.6	42.8	44.5	59.8	47.6	39.9
	0:10:40	0:10:40		44.5	61.9	46.4	41	44.3	61.7	47.5	39.1
	0:10:50	0:10:50		39.4	55	41.4	38.3	39.2	55.1	43.3	37.3
	0:11:00	0:11:00		39.1	60.2	44	38.3	39.8	60.2	49.5	37.6
	0:11:10	0:11:10		44.5	62.8	46.5	41.2	44.6	62.8	48.6	38.2
	0:11:20	0:11:20		43.2	57.5	45.4	41.3	42.9	57.2	45.4	40
	0:11:30	0:11:30		43.3	62.3	46.3	41.1	43.4	62.4	48.5	40
	0:11:40	0:11:40		42.2	59.4	44.7	40.3	42.1	59.3	46.5	40
	0:11:50	0:11:50		40.2	55.5	41.9	38.3	40.2	55.5	43.9	38.3
	0:12:00	0:12:00		41.9	60.4	45.8	38.3	42.6	60.1	47.9	38.8
	0:12:10	0:12:10		43.9	62.6	46.9	41.2	43.6	62.5	50.2	39.8
	0:12:20	0:12:20		40.7	58.4	42.1	39.6	40.6	58.2	45.9	38.9
	0:12:30	0:12:30		40.6	57.5	42.5	39.5	40.8	57.4	45.2	38.5

Start: 3:49:00 PM
End: 4:19:00 PM

L_{eq}
52.6

0:12:40	0:12:40	43.8	64.6	47.7	40	43.5	64.6	51.5	38.9
0:12:50	0:12:50	39	54.6	40.2	38.3	38.8	54.5	43.5	37.2
0:13:00	0:13:00	38.3	52.2	38.5	38.3	38.2	52.3	39.7	37.2
0:13:10	0:13:10	38.5	54.3	40.1	37.6	38.5	54.2	43.1	36.5
0:13:20	0:13:20	39.8	56.2	42.4	38.3	40.4	56.3	44.2	38
0:13:30	0:13:30	42.5	62.6	44.3	40.4	42.5	62.6	48.8	38.9
0:13:40	0:13:40	43.6	61	46.9	39.3	43.2	61	49.9	38.2
0:13:50	0:13:50	40.5	58.2	41.4	39.8	40.6	58.1	44.2	38.4
0:14:00	0:14:00	47.6	69.6	52.3	39.4	47.6	69.6	56.9	38.5
0:14:10	0:14:10	49	69.9	51.2	44.4	49	69.9	57.1	42.1
0:14:20	0:14:20	47.4	63	50.9	45	46.7	63	52.1	42.6
0:14:30	0:14:30	46.5	71.3	51.6	42.4	46.3	71.3	57.5	40.3
0:14:40	0:14:40	44.4	63	47.9	41.3	44.1	63	50.8	40.1
0:14:50	0:14:50	45.8	65.1	49.4	43.8	45.3	65.2	52.4	41.6
0:15:00	0:15:00	42.5	62.1	46.8	40.8	42.7	62.1	50.8	40
0:15:10	0:15:10	46.3	67.3	48	44.2	46.1	67.4	51.9	41.2
0:15:20	0:15:20	47	62.6	48.9	44.8	47.1	62.6	50	43.3
0:15:30	0:15:30	50.9	71.3	55.8	46.5	51.6	71.3	58	44.7
0:15:40	0:15:40	56.2	72.2	57.7	54.8	56	72.2	59.1	52.7
0:15:50	0:15:50	50.7	66.2	54.9	46.1	49.6	66.4	53.6	44.2
0:16:00	0:16:00	44.8	62.1	46.4	42.5	44.5	61.9	49	41.3
0:16:10	0:16:10	45.1	62.5	46.6	42.5	45.3	62.4	48.5	41.1
0:16:20	0:16:20	42.8	57.9	45.3	40.7	42.7	58.5	46.9	39.5
0:16:30	0:16:30	44	65.5	48.2	41.6	43.8	65.5	52.5	39.2
0:16:40	0:16:40	50.1	68.2	53.5	44.1	50	68.1	55.5	42.4
0:16:50	0:16:50	46.2	69.5	51.2	42.2	45.6	69.5	56.7	41
0:17:00	0:17:00	47.6	66.8	50.4	43	47.6	66.8	56.3	41.1
0:17:10	0:17:10	43.4	60.4	48.1	40	42.6	60.4	47.9	38.9
0:17:20	0:17:20	40.9	57.1	42.3	40	40.9	57	44.7	38.9
0:17:30	0:17:30	46	63.2	48	40.1	46.3	63.3	51	39.9
0:17:40	0:17:40	43	60.2	46.6	41.5	42.7	60.2	48	40.4
0:17:50	0:17:50	45	66.7	49.6	42.9	44.7	66.7	54.9	41.2
0:18:00	0:18:00	50.2	65.4	53.3	45.1	50.8	65.3	54.2	45.1
0:18:10	0:18:10	68.2	88.8	75.6	53.3	69.2	88.7	77.2	54.1
0:18:20	0:18:20	67	82.1	74.4	54.9	64.7	82	72.6	52.7
0:18:30	0:18:30	49.8	64	54.9	45.7	48.6	64.1	53.6	44.7
0:18:40	0:18:40	45.1	59.7	45.9	44.1	44.9	59.8	47.7	42.9
0:18:50	0:18:50	48.5	64.9	51.4	43.7	48.7	64.8	53.5	42.9
0:19:00	0:19:00	45.8	62.9	48.4	43.5	45.2	62.9	52.3	41.8
0:19:10	0:19:10	46.3	64.2	48	43.3	46.4	64.1	50.4	41.3
0:19:20	0:19:20	47.5	66.8	51	43.5	47	66.9	53.5	41.6
0:19:30	0:19:30	49.6	69.4	53.3	43.7	49.6	69.4	57.4	42.6
0:19:40	0:19:40	47.2	64.4	50.4	44.2	46.5	64.3	51.8	41.7
0:19:50	0:19:50	44.3	62.3	46.8	42.1	44.4	62.5	49.1	39.8
0:20:00	0:20:00	43.2	58.6	45.6	40.1	42.7	58.6	46.9	39.2
0:20:10	0:20:10	45	67	50.5	39.8	45.2	66.9	55.1	38.7
0:20:20	0:20:20	45.4	62.1	47.2	42.8	45.1	62.1	50	40.1
0:20:30	0:20:30	43.5	59.5	45.2	40.6	43.3	59.4	48.6	39.3
0:20:40	0:20:40	41.8	58.6	44.2	40.1	42	58.6	47.6	39
0:20:50	0:20:50	44	60.4	46.2	41.7	44	60.4	48.3	39.9
0:21:00	0:21:00	43.8	62.2	47.4	41.2	44	62.3	51.1	39.7
0:21:10	0:21:10	43.2	59.5	46.4	40.9	42.8	59.6	48.1	39.9
0:21:20	0:21:20	41.8	57.5	43.1	39.8	41.6	57.5	45.5	38.7
0:21:30	0:21:30	40.1	55	40.5	39.7	40	54.9	42.2	38.9
0:21:40	0:21:40	42.6	63.9	45.5	40.1	43	64	50.4	39.5
0:21:50	0:21:50	48.4	64.9	51.1	43.7	48.3	64.8	53.2	41.7
0:22:00	0:22:00	42.8	59.7	46.2	40.1	42.2	59.6	47	39.2
0:22:10	0:22:10	45	67.8	50.9	39.9	45.7	67.8	55.3	39.1
0:22:20	0:22:20	47	64.7	51	43.3	46.3	64.5	52.4	40.6
0:22:30	0:22:30	42.8	63.1	46.9	39.9	42.2	63.1	50.8	38.6
0:22:40	0:22:40	39.5	56.8	40.4	38.3	39.4	56.5	44.3	37.8
0:22:50	0:22:50	42.3	59.4	44.9	40.4	42.7	59.2	47.7	39.7
0:23:00	0:23:00	44.2	60	45.6	42.4	44	60	48.5	40.2
0:23:10	0:23:10	44.8	63.7	48.6	39.8	45.1	63.8	51.4	38.4
0:23:20	0:23:20	45.4	62.8	48	43.1	45	62.8	50.4	40.8
0:23:30	0:23:30	47.3	68.4	51.9	42.8	47.4	68.3	57.1	40.3
0:23:40	0:23:40	47.3	65.1	50.9	41	46.4	65.1	53.7	38.6
0:23:50	0:23:50	44.8	64.1	49.2	41.1	44.7	64.3	52.8	39.9
0:24:00	0:24:00	40.7	56.3	43.7	39.1	40.2	56.5	43	38.2
0:24:10	0:24:10	40.7	63.1	42.7	38.3	41	62.9	47.1	37.8
0:24:20	0:24:20	40.7	57.4	42.3	39.1	40.7	57.2	45	38.2
0:24:30	0:24:30	43.7	65.6	48	40.1	43.7	65.7	49.9	39.3
0:24:40	0:24:40	43.3	61	46.3	40.5	43.1	60.7	48.7	39.7
0:24:50	0:24:50	42.3	59.9	45.6	40	42.1	59.7	49.1	39.1
0:25:00	0:25:00	43	63.1	45.8	40.2	43.1	62.9	48.7	38.7
0:25:10	0:25:10	49.5	70	52.6	42.8	49.6	69.9	56.5	42.2
0:25:20	0:25:20	50.2	66.5	52.3	47.6	50	66.4	55.5	45.8
0:25:30	0:25:30	45	61.8	48	41.9	44.4	61.8	48.7	41.1
0:25:40	0:25:40	45.9	63.9	48.9	41.7	46.1	63.9	51.1	40.9

Receptor 2 (South)
7/23/2014

0:25:50	0:25:50	47.6	66.8	50.6	45.1	47.4	66.9	54.3	42.8
0:26:00	0:26:00	45.4	62.8	48.8	43	45.2	63	51.2	41
0:26:10	0:26:10	48.8	67.7	51.1	45.7	48.6	67.8	54.6	41.5
0:26:20	0:26:20	47.5	67.6	51.2	44.1	47.3	67.5	56.6	41.1
0:26:30	0:26:30	43.9	61.9	47.3	41.3	43.4	61.9	48.8	40.3
0:26:40	0:26:40	44.3	63.6	48.1	41.7	44.7	63.7	51.7	40.2
0:26:50	0:26:50	46.6	63.2	48.8	44.6	46.3	63.2	51.1	42.1
0:27:00	0:27:00	45.4	71	51.1	42	44.8	70.9	57.2	40.5
0:27:10	0:27:10	45.2	64.6	50.2	41.4	45.3	64.6	53.2	40.8
0:27:20	0:27:20	46.8	66.4	50.7	43.1	46.8	66.2	54.1	41.6
0:27:30	0:27:30	47.4	65.1	50.1	44.8	47.1	64.9	52	42.5
0:27:40	0:27:40	47.1	69.7	51.1	44.2	46.8	69.6	55.2	42.5
0:27:50	0:27:50	43.6	59.9	45.6	41.9	43.3	60	49.4	40.1
0:28:00	0:28:00	42.1	59.5	44	41	42	59.3	47.4	39.6
0:28:10	0:28:10	43.3	63.5	47.4	40.9	43.7	63.5	49.7	39.1
0:28:20	0:28:20	43.2	58.7	46.5	41.9	42.7	58.7	47.2	40.4
0:28:30	0:28:30	45.7	65.6	50.8	40.7	46.3	65.4	53.4	39.4
0:28:40	0:28:40	47.7	64.5	50.7	44.2	47	64.5	51.2	41.9
0:28:50	0:28:50	44.8	61.1	47	42.3	45	61.1	49.5	40.9
0:29:00	0:29:00	44.6	60.6	46.9	40.3	44.1	60.4	48.7	38.6
0:29:10	0:29:10	42	61	45.7	39.8	42.4	61.2	48.4	38.5
0:29:20	0:29:20	44.9	61.5	46.6	42	44.7	61.4	48.7	40.8
0:29:30	0:29:30	44.6	60.5	46.7	42.3	44.9	60.5	48.3	41.7
0:29:40	0:29:40	45.5	60	47.1	42.6	45.5	60	48.3	40.4
0:29:50	0:29:50	44.2	61.2	46.5	42.8	43.9	60.9	47.7	40.6
0:30:00	0:30:00	43.5	59.9	45.9	40.9	43.3	59.8	48	39.5

Receptor 3 (Southeast)

7/23/2014

Serial Number	BIJ090010		UNIT REV	R13B
Start Time	4:27:47 PM	7/23/2014		
Run Length	0:30:00	115200		
Stop Time	4:57:47 PM			

Microphone Information		
Description	Units	Value
Sensitivity	dB	29
Polarization	Volts	0
Meter Range	dB	120
Max Level	dB	140
Meas. Floor	dB	-20

Calibration Information			
Description		Units	Value
Pre-Cal	Level	dB	114
	Date		16:26:51 23-Jul-2014
Post-Cal	Level	dB	
	Date		
ReCert	Date		Unavailable

Configuration Information			
Description	Units	Meter 1	Meter 2
Integration Threshold	dB	OFF	OFF
Exchange Rate	dB	5	5
Criterion Level	dB	90	90
Upper Limit Level	dB	140	140
Projected Time	Hrs	8	8
Weighting		A	A
Time Response		SLOW	SLOW

Measurement	Units	Meter 1 Broadband	Meter 2 Broadband	16 Hz	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	16000 Hz
Lavg	dB	46.9	46.7	9.7	19.3	30.4	35.8	37.4	40.9	41.2	38.2	35.9	36.1	35.4
Lmax	dB	81.8	83.9	26.1	41.6	54.5	67.9	69.9	76.4	76.9	75.2	70.2	60.2	50.7
Lmin	dB	38.3	37.2	8.2	11.2	23.5	27	27.3	30.8	32.1	29.3	32.3	35.3	35.3
Lpk	dB	96.7	96.6	37.7	57.2	67.9	81.1	81.3	88.6	89.7	91.1	85.1	75.1	67.8
TWA	dB	26.9	26.7	-10.2	-0.6	10.4	15.8	17.4	20.9	21.2	18.2	15.9	16.1	15.4
PTWA	dB	46.9	46.7	9.7	19.3	30.4	35.8	37.4	40.9	41.2	38.2	35.9	36.1	35.4
DOSE	%	0.02	0.02	0	0	0	0	0	0.01	0.01	0	0	0	0
PDOSE	%	0.25	0.25	0	0.01	0.03	0.05	0.07	0.11	0.11	0.08	0.06	0.06	0.05
SEL	dB	101	100.7	63.8	73.4	84.5	89.9	91.5	94.9	95.2	92.3	90	90.1	89.5
EXP	p2s	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Measurement	Units	Value
LDN	dB	N/A
CNEL	dB	N/A
TAKTMAX (5sec)	dB	N/A
LC-A	dB	N/A

Exceedence	Units	Value
L02	dB	54.2
L10	dB	46.6
L50	dB	40.7
L90	dB	38.5

Receptor 3 (Southeast)

7/23/2014

		Meter 1			Meter 2		
		Count	Percent	Time	Count	Percent	Time
Overload	(OL)	0	0	00:00:00	0	0	00:00:00
Under-Range	(UR)	23101	20.05	00:06:00	35875	31.14	00:09:20
Upper Limit	(UL)	0	0	00:00:00	0	0	00:00:00

Exceedence Table

	0	1	2	3	4	5	6	7	8	9
0	81.8	57.7	54.2	52.9	51.8	50.4	49.4	48.2	47.6	47.1
10	46.6	46.1	45.8	45.5	45.2	44.9	44.6	44.3	44.1	43.8
20	43.5	43.2	43	43	42.8	42.7	42.5	42.4	42.2	42.2
30	42.2	42	41.9	41.8	41.6	41.5	41.4	41.3	41.3	41.3
40	41.2	41.2	41.2	41.2	41.2	41.1	41.1	41	40.9	40.8
50	40.7	40.6	40.5	40.3	40.2	40.2	40.1	40	40	40
60	40	40	40	40	40	40	40	40	40	40
70	40	40	40	40	40	40	39.9	39.9	39.9	39.9
80	39.8	39.8	39.8	39.7	39.6	39.5	39.3	39.1	38.9	38.7
90	38.5	38.3	38.3	38.3	38.3	38.2	38.2	38.2	38.2	38.2

Statistics Table

	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
38				5.22	3.9	0.85	0.45	0.38	0.46	0.52
39	0.43	0.5	0.25	0.5	0.69	0.75	0.74	0.96	1.22	2.15
40	4.29	18.72	1.82	1.27	0.88	0.8	0.73	0.8	0.77	0.89
41	1.1	1.26	1.78	4.79	3.96	0.83	0.7	0.69	0.64	0.7
42	0.66	0.83	0.59	2.5	0.72	0.57	0.54	0.58	0.77	0.7
43	0.82	1.22	0.53	0.48	0.33	0.27	0.37	0.4	0.36	0.37
44	0.3	0.4	0.35	0.46	0.42	0.27	0.27	0.34	0.4	0.39
45	0.32	0.36	0.31	0.47	0.31	0.21	0.23	0.36	0.23	0.21
46	0.24	0.59	0.26	0.18	0.2	0.2	0.2	0.25	0.21	0.19
47	0.22	0.17	0.15	0.15	0.22	0.19	0.17	0.15	0.21	0.21
48	0.19	0.12	0.12	0.09	0.16	0.22	0.09	0.06	0.05	0.08
49	0.05	0.05	0.05	0.05	0.04	0.07	0.08	0.07	0.07	0.12
50	0.08	0.1	0.17	0.11	0.07	0.08	0.07	0.08	0.07	0.06
51	0.08	0.07	0.04	0.03	0.08	0.06	0.04	0.05	0.08	0.08
52	0.12	0.08	0.07	0.06	0.1	0.05	0.07	0.13	0.1	0.13
53	0.12	0.13	0.13	0.1	0.06	0.07	0.08	0.05	0.03	0.03
54	0.03	0.05	0.07	0.04	0.06	0.03	0.02	0.02	0.02	0.03
55	0.06	0.04	0.01	0.02	0.01	0.02	0.05	0.05	0.04	0.07
56	0.03	0.04	0.06	0.02	0.03	0.03	0.02	0	0	0
57	0.01	0	0	0	0	0	0	0	0	0
58	0	0	0	0	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0	0	0

Raw Stat Table

dB	Count
38.3	6020
38.4	4497
38.5	989
38.6	520
38.7	444
38.8	537
38.9	602
39	502
39.1	582
39.2	299
39.3	583
39.4	796
39.5	864
39.6	859
39.7	1111
39.8	1409
39.9	2478
40	4952
40.1	21570
40.2	2101
40.3	1470
40.4	1024
40.5	926
40.6	844
40.7	933
40.8	890
40.9	1027
41	1272
41.1	1454
41.2	2051
41.3	5523
41.4	4571
41.5	964
41.6	815
41.7	801
41.8	740

Study	Study Time	Session Time	OL Status	Lavg Meter1	Lpk Meter1	Lmax Meter1	Lmin Meter1	Lavg Meter2	Lpk Meter2	Lmax Meter2	Lmin Meter2
Study 1	0:00:10	0:00:10		46.4	73	47.7	44.9	46.2	72.9	51	43.9
R3 (Southeast)	0:00:20	0:00:20		45.2	62.1	46.7	44	45.3	61.9	50.3	43.4
	0:00:30	0:00:30		47.7	76.2	51	45.7	47.6	76.2	58.1	44.6
	0:00:40	0:00:40		46.2	61.1	47.9	44.9	46	61	47.9	44.6
	0:00:50	0:00:50		44.2	58.4	45.8	41.6	44.1	58.3	46.5	40.8
	0:01:00	0:01:00		42.1	64.5	46.4	40.8	41.9	64.5	51.4	40.2
	0:01:10	0:01:10		41.3	56.4	41.7	41	41.3	56.3	43.4	40.4
	0:01:20	0:01:20		41.3	55.2	41.5	41.1	41.2	54.9	42.1	40.3
	0:01:30	0:01:30		41.3	55.5	41.4	40.2	41.1	55.3	42.2	39.5
	0:01:40	0:01:40		40.1	54.6	40.3	39.9	39.9	54.5	41.8	39
	0:01:50	0:01:50		44.1	74	50.8	40	43.2	73.9	57.4	39.4
	0:02:00	0:02:00		43.1	70.1	46.5	41.3	43.1	70.1	51.1	40.9
	0:02:10	0:02:10		46.9	84.9	54.6	42.4	45.9	84.9	62.7	40.9
	0:02:20	0:02:20		43.6	78	48.3	41.3	43.4	78	55.6	40.8
	0:02:30	0:02:30		44.7	78.9	50.4	42.7	44.1	78.9	57.5	40.6
	0:02:40	0:02:40		45.5	79.5	53.1	41.7	44.5	79.5	60.4	41.3
	0:02:50	0:02:50		50.2	67	55	42.7	50.9	67	56.3	42
	0:03:00	0:03:00		48.4	66.3	54.2	42.8	47.8	66.3	55.7	42.1
	0:03:10	0:03:10		51.4	66.4	53.7	47.6	50.8	66.4	54.9	45.2
	0:03:20	0:03:20		43.5	60.7	47.6	41.3	42.9	60.6	47.5	40.9
	0:03:30	0:03:30		41.8	67.8	47.5	41.3	42.4	67.8	52.3	41
	0:03:40	0:03:40		48.7	63.9	50.3	45.8	48.6	63.8	52.4	44.2
	0:03:50	0:03:50		42.8	58.9	45.8	41.3	42.8	58.9	46	41
	0:04:00	0:04:00		43.4	59.5	44.4	42.7	43.4	59.7	47	42
	0:04:10	0:04:10		42.9	60.5	46.1	41.4	43.3	60.7	47.2	41
	0:04:20	0:04:20		46.4	61.5	47.9	45.1	46.3	61.4	49.8	44.2
	0:04:30	0:04:30		44.5	58.1	45.7	42.8	44.5	58.3	47.9	42.2
	0:04:40	0:04:40		42.8	59.2	47.1	41.2	42.3	59.1	50.1	40.5
	0:04:50	0:04:50		41.3	55.1	41.4	40.9	41.1	54.9	42.1	40.3
	0:05:00	0:05:00		42.1	67.6	45.6	41.3	42	67.7	52.1	40.6
	0:05:10	0:05:10		41.3	56.5	41.9	41.2	41.3	56.2	43.5	40.5
	0:05:20	0:05:20		41.4	58.1	42.5	40.8	41.5	58.2	45.4	40.3
	0:05:30	0:05:30		40.4	58.4	41.7	40	40.3	58.3	45.4	39.5
	0:05:40	0:05:40		40.1	53.8	40.1	40	40	53.8	40.9	39.4
	0:05:50	0:05:50		40.5	63.8	44.5	38.3	40.3	63.9	49.8	38.5
	0:06:00	0:06:00		40	62.2	44.1	38.3	40.2	62	50.2	38.5
	0:06:10	0:06:10		39.7	53.8	40.2	39.1	39.7	53.8	41.1	38.7
	0:06:20	0:06:20		38.8	53.2	40	38.3	39.1	53.3	40.8	38.1
	0:06:30	0:06:30		38.6	54.1	39.6	38.3	39.3	54.2	42	38.1
	0:06:40	0:06:40		38.5	52.9	39.4	38.3	39	53	40.9	38.2
	0:06:50	0:06:50		40.2	55.3	41.3	38.4	40.4	54.9	42.6	38.3
	0:07:00	0:07:00		39.5	55.9	40.8	38.3	39.6	55.9	43.6	38.2
	0:07:10	0:07:10		39.6	54	40.2	38.9	39.8	53.8	41.2	38.6
	0:07:20	0:07:20		40.1	54.8	40.3	40	40	54.8	41.5	39.3
	0:07:30	0:07:30		40.6	55	42.6	39.9	40.9	55.1	43.6	39
	0:07:40	0:07:40		42.1	55.6	43	39.3	41.9	55.7	43.7	38.4
	0:07:50	0:07:50		38.9	58	40.4	38.3	39.6	58	42.4	38.1
	0:08:00	0:08:00		40	54.7	40.1	39.8	39.8	54.5	41	39
	0:08:10	0:08:10		41	55.7	41.5	40.1	41.3	55.8	42.4	40.2
	0:08:20	0:08:20		41.3	54.2	41.5	41	41.2	54.2	42.4	40.4
	0:08:30	0:08:30		40.7	53.9	41.3	40.1	40.7	54.5	41.5	39.8
	0:08:40	0:08:40		40.1	54.9	40.3	40	40.2	54.8	41.5	39.3
	0:08:50	0:08:50		40.3	55.8	41.8	39.5	40.6	56.1	42.9	38.9
	0:09:00	0:09:00		41.6	55.7	42.3	41.2	41.7	55.5	42.8	40.4
	0:09:10	0:09:10		40.6	59.9	41.5	40.1	40.6	59.8	45.6	39.4
	0:09:20	0:09:20		40.3	57	40.8	40	40.7	57.2	42.9	39.4
	0:09:30	0:09:30		40.6	57.1	44	40	41	57.1	45.7	39.2
	0:09:40	0:09:40		42.9	57.9	44.7	41	42.7	57.6	46.1	39.9
	0:09:50	0:09:50		42.9	60.4	44.9	41.4	43.3	60.1	46.6	41.7
	0:10:00	0:10:00		47.7	64.2	51.7	44.6	48.3	64.3	52.9	43.6
	0:10:10	0:10:10		66.7	88.6	75.3	51.7	68.2	88.6	76.6	52.2
	0:10:20	0:10:20		76.6	96.7	81.8	61.2	75.6	96.6	83.9	53.2
	0:10:30	0:10:30		53.4	80.7	61.2	45.4	49.8	80.6	64.2	43.1
	0:10:40	0:10:40		42.3	69.2	45.4	40	41.7	69.2	49.9	39.1
	0:10:50	0:10:50		40.6	57.9	41.4	40	40.8	57.9	43.2	39.4
	0:11:00	0:11:00		41.5	64	43.2	40.1	41.5	64	47.8	39.6
	0:11:10	0:11:10		48.4	84	59.3	40.8	45.7	84	67	39
	0:11:20	0:11:20		40.4	54.7	41.9	39.9	40.2	54.7	42.5	39
	0:11:30	0:11:30		40.3	55.6	41	39.9	40.5	55.5	43.2	39.1
	0:11:40	0:11:40		41.3	56.4	41.5	40.9	41.3	56.2	42.6	40.3
	0:11:50	0:11:50		43.3	63.5	46.2	41.3	43.4	63.4	49.4	41.2
	0:12:00	0:12:00		42.9	67.3	44.3	42.2	43.2	67.3	46.5	41.7
	0:12:10	0:12:10		42	58.8	43.8	41	41.7	58.6	44.8	40.4
	0:12:20	0:12:20		41.1	54.2	41.5	40.6	41.2	54.5	42.5	40
	0:12:30	0:12:30		42.4	58.8	43.1	41.3	42.7	59.1	44.9	41.1

Start: 4:28:00 PM
End: 4:58:00 PM

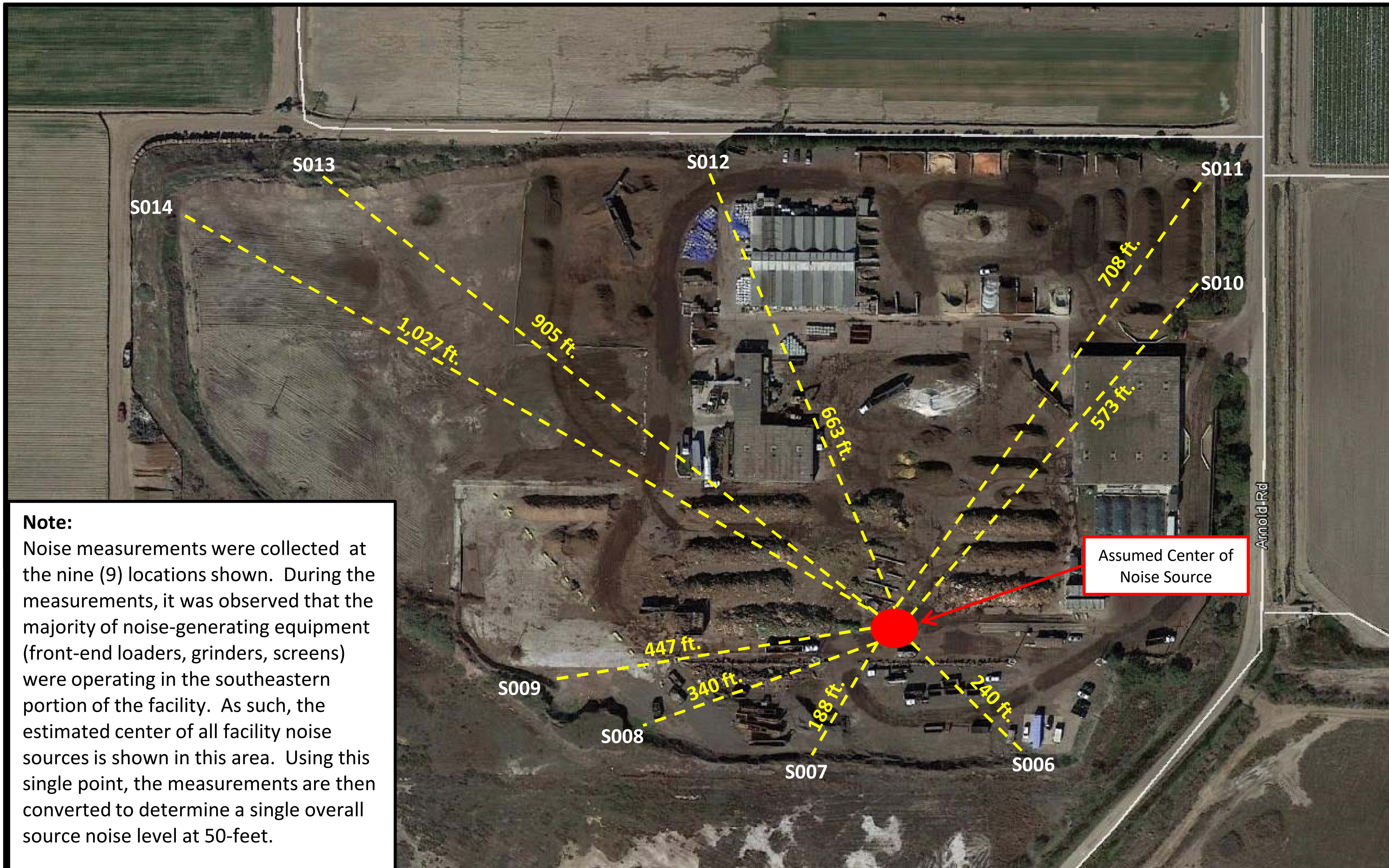
L_{eq}
54.8

0:12:40	0:12:40	43.2	63	44.8	42.2	43.2	63.1	49.3	41.6
0:12:50	0:12:50	42.2	60.1	42.6	41.6	42.1	60.2	43.8	41
0:13:00	0:13:00	40.4	57.1	42	39.9	40	57.1	41.3	39
0:13:10	0:13:10	39.4	55.9	41.8	38.3	40	55.7	43.5	38.5
0:13:20	0:13:20	41.1	62.7	41.8	40.1	41.1	63	42.9	40
0:13:30	0:13:30	41.9	56.8	43.2	40.1	42.5	57.1	44.1	40.6
0:13:40	0:13:40	45.5	64.5	48.1	43.2	45.5	64.3	50.6	43.3
0:13:50	0:13:50	42.7	56.1	43.9	42.2	42.7	56	43.8	41.7
0:14:00	0:14:00	42.6	57.7	43.4	42.2	42.8	57.6	44.4	41.7
0:14:10	0:14:10	44.4	58	46.1	42.3	44.8	58	47	42.1
0:14:20	0:14:20	48.3	62.5	50.8	46.1	48.7	62.5	52.2	46.9
0:14:30	0:14:30	52.7	68.4	54.4	50.7	52.9	68.3	56.5	50.5
0:14:40	0:14:40	55.7	71.6	56.6	54.1	55.8	71.6	58	53.3
0:14:50	0:14:50	52.8	67.4	55.2	50.1	52.3	67.4	55.7	49
0:15:00	0:15:00	48.8	63.6	50.3	47	48.5	63.6	51.2	46.3
0:15:10	0:15:10	47	63.5	48	45.7	46.9	63.5	49	45.2
0:15:20	0:15:20	45.6	65.8	47.4	44.8	45.6	65.8	50.5	44
0:15:30	0:15:30	44.1	61.4	45.4	43	44	61.2	46.2	42.6
0:15:40	0:15:40	42.6	58	43.4	42.3	42.8	58.1	44.1	42
0:15:50	0:15:50	41.6	54.9	42.4	40.8	41.4	54.9	42.8	40.1
0:16:00	0:16:00	40.2	53.1	40.9	40	40.1	53.2	40.7	39.2
0:16:10	0:16:10	40.1	53.8	40.2	40	40.1	54.1	41.4	39.2
0:16:20	0:16:20	40.1	54.5	40.4	39.9	40.5	54.4	41.6	39
0:16:30	0:16:30	41.2	55.5	42.3	40.2	41.3	55.8	44.4	40.5
0:16:40	0:16:40	42	56.8	43.3	40.9	42.1	56.3	45	40.2
0:16:50	0:16:50	42.6	57	44.5	41	43	57	46	40.9
0:17:00	0:17:00	45.3	59.5	47.5	43.5	45.5	59.7	48.6	42.9
0:17:10	0:17:10	48.2	64.6	51.7	44.7	48.6	64.5	53.8	43.8
0:17:20	0:17:20	52.8	67.4	53.6	51.7	52.9	67.4	54.6	50.9
0:17:30	0:17:30	49.5	63.5	52.6	46.2	48.8	63.3	51.2	45.2
0:17:40	0:17:40	45.4	59.1	47.1	43.6	45.3	59.1	47.7	43
0:17:50	0:17:50	43.5	57.5	44.6	42.6	43.6	57.2	46	41.9
0:18:00	0:18:00	42.3	57.2	44.8	40.1	42	57.2	45.6	39.7
0:18:10	0:18:10	40.1	54.1	40.2	40	40.2	54	41.4	39.3
0:18:20	0:18:20	40.9	54.7	41.5	40	41.3	54.9	42.3	39.6
0:18:30	0:18:30	41.5	55.6	42.3	41.3	41.8	55.6	42.8	40.7
0:18:40	0:18:40	42.3	57.4	42.6	42.2	42.5	57.7	43.5	41.8
0:18:50	0:18:50	40.7	54	42.3	40.1	40.7	54.1	42.2	39.6
0:19:00	0:19:00	40.1	54.2	40.8	39.3	40	54.2	42.4	38.4
0:19:10	0:19:10	39.1	53.5	39.9	38.3	39.4	53.3	41	38.5
0:19:20	0:19:20	38.4	52.5	38.6	38.3	39.2	52.3	40.2	38.3
0:19:30	0:19:30	39.6	53.2	40.1	38.3	40	53.2	40.7	39
0:19:40	0:19:40	40.3	54.7	40.7	40.1	40.8	54.5	41.8	40
0:19:50	0:19:50	40.1	54.1	40.1	39.9	40.1	54.2	40.8	39
0:20:00	0:20:00	40.1	53.6	40.1	39.8	39.9	53.3	40.5	39
0:20:10	0:20:10	40.2	53.7	40.6	40.1	40.5	53.6	42	39.7
0:20:20	0:20:20	40.3	54.6	40.7	40.1	40.9	54.6	41.6	40.1
0:20:30	0:20:30	40.2	54.7	40.4	40.1	40.8	54.5	41.6	39.9
0:20:40	0:20:40	39.7	53.2	40.1	38.3	39.5	53	40.4	38.5
0:20:50	0:20:50	38.4	53.7	39.1	38.3	39	53.9	41.6	38.2
0:21:00	0:21:00	39.6	61.2	41.9	38.3	39.9	60.9	46.7	38.2
0:21:10	0:21:10	38.8	53.6	41.2	38.3	39	53.6	43.3	38
0:21:20	0:21:20	39.1	58.7	41.1	38.3	39.5	58.8	45.1	38.3
0:21:30	0:21:30	38.5	52.7	39	38.3	39.3	52.2	40.6	38.5
0:21:40	0:21:40	38.5	53.7	39.7	38.3	39.4	54.1	41	38.5
0:21:50	0:21:50	40.1	53.6	40.2	39.7	39.9	54	41.1	39.1
0:22:00	0:22:00	40.3	54.3	41.4	40	40.3	54.5	43.3	39.2
0:22:10	0:22:10	40.2	54.2	40.5	39.9	40.3	54.2	41.7	39
0:22:20	0:22:20	40.8	55.3	42.8	39.5	40.8	55.3	44.5	38.8
0:22:30	0:22:30	40.2	57.4	41.1	39.7	40.2	57.1	43.5	38.8
0:22:40	0:22:40	39.5	55.4	40.5	38.3	39.7	55.1	42.3	38.5
0:22:50	0:22:50	40.4	56.1	41.3	40	40.7	56.3	44.1	39.6
0:23:00	0:23:00	40.1	54.1	40.4	40	40.4	54.4	41.8	39.5
0:23:10	0:23:10	40	56.9	40.1	39.8	39.7	56.5	40.8	38.8
0:23:20	0:23:20	40.4	60.4	41.9	40	40.4	60.4	44.9	39.1
0:23:30	0:23:30	40.3	59.5	41.7	39.9	40.5	59.5	45.5	38.9
0:23:40	0:23:40	42.2	64.3	46.3	40	42.2	64.4	50.6	39.4
0:23:50	0:23:50	42.6	63	46.4	41.3	42.5	63	51.2	40.7
0:24:00	0:24:00	41.8	60.9	44	41.2	42	61.2	48.8	40.3
0:24:10	0:24:10	41	59.1	43.1	39.9	40.6	58.9	45.2	39
0:24:20	0:24:20	39.6	56.3	40.3	38.3	39.5	56	41.4	38.1
0:24:30	0:24:30	38.6	57.6	39.7	38.3	39.3	57.5	43.9	38.1
0:24:40	0:24:40	38.5	58.6	40.2	38.3	39.2	58.7	44.9	38.5
0:24:50	0:24:50	38.6	56.3	39.7	38.3	39.2	56.4	41.6	38.3
0:25:00	0:25:00	39	60	40.7	38.3	39.6	59.7	44.5	38.4
0:25:10	0:25:10	40.1	53.7	40.1	39.9	39.9	53.6	40.5	39.1
0:25:20	0:25:20	40	54.6	40.1	39.6	39.7	54.5	40.5	39
0:25:30	0:25:30	40	57	40.3	39.7	39.7	56.6	42	38.8
0:25:40	0:25:40	40.1	55.9	40.4	39.8	40.2	55.7	42.1	39

0:25:50	0:25:50	40.2	54	40.4	40.1	40.9	54.2	41.5	40.2
0:26:00	0:26:00	40	52.9	40.1	39.7	39.8	52.9	40.7	39
0:26:10	0:26:10	40.2	60.9	42.5	38.3	40.1	60.9	46.6	38.1
0:26:20	0:26:20	39.5	63.5	44.4	38.3	39.4	63.5	50.5	38
0:26:30	0:26:30	40.1	61.8	44	38.3	40.1	61.9	49.9	38.2
0:26:40	0:26:40	40.1	55.4	40.3	39.8	39.9	55.1	41.5	39
0:26:50	0:26:50	40.1	53.1	40.1	40	40	53.3	40.7	39.4
0:27:00	0:27:00	41.6	66.7	47	40	41.2	66.8	53.9	39.2
0:27:10	0:27:10	40.6	62.3	43.7	39.7	40.3	62.3	48.8	38.6
0:27:20	0:27:20	40.4	61.7	43.4	38.3	40.2	61.5	48.7	37.9
0:27:30	0:27:30	39.7	62.1	43.4	38.3	39.6	62.1	49.2	38
0:27:40	0:27:40	38.3	52.5	38.5	38.3	38.8	52.1	39.8	37.9
0:27:50	0:27:50	38.7	60.4	40.4	38.3	39.3	60.1	45.3	38.3
0:28:00	0:28:00	39.9	60.5	42.7	38.3	39.9	60.2	47.9	37.8
0:28:10	0:28:10	39.5	59.8	41.6	38.3	39.6	59.8	46.5	37.8
0:28:20	0:28:20	38.9	60.9	41.6	38.3	39.2	60.5	46.2	37.9
0:28:30	0:28:30	39.2	60.3	41.6	38.3	39.5	60.2	46.9	37.2
0:28:40	0:28:40	38.5	52.7	39.8	38.3	38.7	52.8	39.9	37.7
0:28:50	0:28:50	39.9	58.1	41.9	38.3	40.4	58.1	45.5	38.5
0:29:00	0:29:00	40.4	56.9	42	40	40.4	56.2	44	38.9
0:29:10	0:29:10	39.9	57.6	41.2	38.3	39.7	57.6	44.5	38.4
0:29:20	0:29:20	39.7	60.5	41.5	38.3	39.9	60.6	45.1	38.2
0:29:30	0:29:30	40.8	57.9	41.4	40	40.9	57.5	44.2	39.3
0:29:40	0:29:40	40.8	60.2	42.8	40	40.9	60.4	47.2	39.3
0:29:50	0:29:50	40.4	56.2	41.5	39.5	40.2	56	43.5	38.4
0:30:00	0:30:00	40.1	61	42.9	39.1	39.8	61.2	48	38.5

APPENDIX D

OXNARD-SHORELINE OPERATIONS NOISE SOURCE CHARACTERIZATION



Note:
Noise measurements were collected at the nine (9) locations shown. During the measurements, it was observed that the majority of noise-generating equipment (front-end loaders, grinders, screens) were operating in the southeastern portion of the facility. As such, the estimated center of all facility noise sources is shown in this area. Using this single point, the measurements are then converted to determine a single overall source noise level at 50-feet.

Source: Google Earth 2016

N

SESPE CONSULTING, INC.

FIGURE	OXNARD SOURCE CHARACTERIZATION Oxnard-Shoreline Organics Operation 6859 Arnold Road Oxnard, California 93033		
PROJECT #:	AG01.11.02	DATE:	1/7/17
SCALE:	N/A	DRAWN BY:	GPS

Oxnard-Shoreline Facility

Industrial Source Noise Monitoring + Noise Level Determination

Project Increment Determination (Baseline vs. Project)	
Facility	**Total Throughput (tons/year)[A]**
Oxnard-Shoreline	55,243
Biogenic Energy Park	295,000
Increment (%)[B]	534%

Oxnard-Shoreline Processes & Equipment Operating[C]		
Process	**Location**	**Equipment Operating**
Feedstock Receiving	Outdoors	Front-End Loader
Chipping/Grinding	Outdoors	Front-End Loader
		Grinder
		Screen
Windrow Composting	Outdoors	Pile Turner
		Front-End Loader
		Front-End Loader
		Front-End Loader
		Water Truck
		Screen
CASP	Outdoors	Front-End Loader
		Screen
Bagging Operations	Indoors	Front-End Loader
		Forklift
		Screen

Footnotes:

A - Oxnard-Shoreline yearly throughput based on actual data gathered during the 2014 operating year. Commercial Organics Processing Operation (i.e. Project) throughput is based on the estimated feedstock processing capacity once the Facility is fully operational.

B - The increment (%) shown is utilized to scale up the measured Oxnard-Shoreline source noise level (see below) to more accurately reflect the expanded operations at the proposed Facility. This accounts for the increased number of equipment operating to accommodate the expanded open windrow composting operations at the new Facility.

C - The Oxnard-Shoreline equipment shown was assumed to be operating while source measurements were collected. As similar equipment will be utilized for open windrow composting operations at the proposed Facility, the measured source noise levels (see below) from Oxnard-Shoreline will be utilized to predict certain Facility noise impacts (i.e. open windrow composting) within the SoundPLAN model.

Oxnard-Shoreline Facility Source Noise Measurements & Calculations						
Measurement #	**Measured**		**Converted**		**Arithmetic SPL ($10^{(Lavg/10)}$)**	
	Measured L_{avg}	**Distance (ft.)**	**Distance (ft.)**	**L_{avg} @ 50-feet**		
S006	64.9	240	50	78.5	71,200,407	
S007	66.6	188	50	78.1	64,621,300	
S008	64.4	340	50	81.1	127,355,535	
S009	67.2	447	50	86.2	419,445,015	
S010	64.9	573	50	86.1	405,853,444	
S011	54.3	708	50	77.3	53,966,780	
S012	55.6	663	50	78.1	63,839,143	
S013	52.0	905	50	77.2	51,922,686	
S014	52.5	1,027	50	78.8	75,024,115	
				Average:	148,136,492	
				Oxnard-Shoreline L_{avg} @ 50-feet:	81.7	**dBA**
				Expected Project L_{avg} @ 50-feet:	**89.0**	**dBA**

Note: Noise measurements were collected at nine (9) locations surrounding the Oxnard-Shoreline facility (see attached meter output files). Measurements were collected while the site was fully operational and within line-of-sight of noise sources (on/off-road equipment, portable equipment, compost pile turner, etc.). Based on the observed location of equipment operating during the measurements, an assumed center point was chosen (see previous Figure) and noise measurements combined to determine a total source noise level at 50-feet (i.e. 81.7 dBA). This combined source noise level is then scaled up based on the Project increment shown above (534%) to more accurately reflect expanded operations at the new Facility. The adjusted noise level shown is utilized within the SoundPLAN Essential model to represent "open windrow composting" operations.

Oxnard Source Measurements - S006

7/24/2014

Study	Study Time	Session Time	OL Status	Lavg Meter1	Lpk Meter1	Lmax Meter1	Lmin Meter1	Lavg Meter2	Lpk Meter2	Lmax Meter2	Lmin Meter2
Study 1	0:00:10	0:00:10		59.9	86.1	61.1	58.5	59.8	86.1	62.6	57.8
(S006)	0:00:20	0:00:20		59.6	72.8	60.5	58.5	59.5	72.8	61	57.4
	0:00:30	0:00:30		60.1	95.4	64.1	58.5	59.9	95.4	70.6	57.8
	0:00:40	0:00:40		78.4	110.4	89.5	58.7	75.1	110.3	94.2	57.8
	0:00:50	0:00:50		66.2	81.4	69.1	62.6	66.4	81.3	70.1	62.4
	0:01:00	0:01:00		64.4	79.8	66.9	61.5	63.9	79.7	67.6	60.1
	0:01:10	0:01:10		61.9	77.3	63.5	60.1	61.9	77.2	65.4	58.8
	0:01:20	0:01:20		75.3	105.8	85.9	62.3	72.8	105.8	90.6	58.2
	0:01:30	0:01:30		60.9	74	66.4	58.9	59.7	73.9	62	57.8
	0:01:40	0:01:40		75.6	105.6	86.2	60.2	73.5	105.6	90.6	59.6
	0:01:50	0:01:50		64.9	103.1	80.6	61.2	65.3	103.1	87.1	60.1
	0:02:00	0:02:00		77.1	107.2	87.9	62.1	73.7	107.1	91.3	60.4
	0:02:10	0:02:10		61.6	76.2	63.6	60.4	61.6	76.1	64.7	59.4
	0:02:20	0:02:20		63	80	64.8	62.4	63	80	67.1	61
	0:02:30	0:02:30		63.3	77.3	64.5	62.2	63	77.3	65	60.2
	0:02:40	0:02:40		62.5	76.9	63.3	61	62.3	76.8	64	60.2
	0:02:50	0:02:50		61.1	75	62.8	60.1	61.2	74.9	63.7	59.2
	0:03:00	0:03:00		63	77.9	64.4	62.3	62.9	77.8	65.6	60.9
	0:03:10	0:03:10		61.2	79.3	62.6	60	60.9	79.2	64.2	58.7
	0:03:20	0:03:20		61.4	76.6	62.6	60	61.4	76.6	63.4	59.6
	0:03:30	0:03:30		63.8	77.9	65.6	60.5	63.8	77.9	66.5	60.4
	0:03:40	0:03:40		61.3	76.3	62.7	60	61.2	76.3	64	58.1
	0:03:50	0:03:50		63.1	78.3	65.8	60.6	63.1	78.3	67	59.9
	0:04:00	0:04:00		61.7	75.7	63.1	59.5	61.5	75.6	63.8	58.3
	0:04:10	0:04:10		60.9	79.3	62.4	59.5	60.8	79.2	63.4	58.6
	0:04:20	0:04:20		62.1	78.1	62.9	60.4	62	78.1	65.7	58.9
	0:04:30	0:04:30		60.6	74.3	62.4	59.4	60.3	74.2	62.9	58.5
	0:04:40	0:04:40		60.4	77.7	61.2	59.6	60.4	77.7	63.9	58.8
	0:04:50	0:04:50		59.7	73.9	61.3	58.5	59.6	73.8	62.7	57.7
	0:05:00	0:05:00		60.3	97.7	73.5	58.8	61.4	97.7	79.8	58
	0:05:10	0:05:10		66.1	92.5	75.9	59.4	63.6	92.5	80.4	58.3
	0:05:20	0:05:20		68	100.9	78.2	58	66	100.8	83.2	57
	0:05:30	0:05:30		59.7	72.4	61.8	58.8	59.4	72.3	60.7	58.1
	0:05:40	0:05:40		67.9	97	78	59.6	66.3	97	82.2	58.6
	0:05:50	0:05:50		60.6	75	65.8	58.3	59.4	75	62.4	57.4
	0:06:00	0:06:00		60.1	73.9	61.5	57.9	60.3	73.9	62.6	57.1
	0:06:10	0:06:10		60.4	74.4	61.6	58.4	60.1	74.3	62.1	57.7
	0:06:20	0:06:20		60	74.3	61.4	58.9	60	74.3	62.9	58.6
	0:06:30	0:06:30		59.2	72.4	60	58	59	72.3	60.6	57.5
	0:06:40	0:06:40		58.9	73.8	60.8	57.9	59.1	73.7	61.6	57.2
	0:06:50	0:06:50		59.8	74.3	60.5	59.2	59.6	74.2	60.9	58
	0:07:00	0:07:00		60.7	78.2	62.2	59.7	60.7	78.2	64.7	58.6
	0:07:10	0:07:10		67.9	97.9	77.5	60.4	66.2	97.9	82.4	59.5
	0:07:20	0:07:20		59.7	73.6	60.3	59	59.6	73.6	61.2	58.1
	0:07:30	0:07:30		60.3	74.1	61.2	59.4	60.3	74.1	62.5	58.5
	0:07:40	0:07:40		60.6	83.3	63.3	59.5	60.4	83.3	66.9	58.7
	0:07:50	0:07:50		60.2	73	60.7	59.7	60.2	73	61.6	59.1
	0:08:00	0:08:00		60.6	73.7	61.1	60.1	60.5	73.7	62	59
	0:08:10	0:08:10		61	78.7	62.7	60.1	61.2	78.7	63.8	59.4
	0:08:20	0:08:20		62.5	88.5	65.5	60.7	62.1	88.4	71.7	59.5
	0:08:30	0:08:30		61.4	77.4	63	60.4	61.5	77.4	64.2	59.2
	0:08:40	0:08:40		61.8	77	62.9	60.2	61.6	77	63.4	59.5
	0:08:50	0:08:50		60.9	75.8	61.9	59.5	60.8	75.7	62.6	58.3
	0:09:00	0:09:00		60.7	76.9	62.8	59.3	60.6	76.9	64.6	58.4
	0:09:10	0:09:10		61.1	75.9	62.8	59.2	61.2	75.8	63.6	58.6
	0:09:20	0:09:20		63.4	81.1	66.7	61.2	63.6	81.1	68.9	60.5
	0:09:30	0:09:30		62.3	75.8	65.2	61	61.9	75.8	64.3	60.1
	0:09:40	0:09:40		61.3	75.3	62.1	60.2	61.1	75.3	63.3	59.3
	0:09:50	0:09:50		59.9	73.8	61.4	58.9	59.8	73.8	62.6	58
	0:10:00	0:10:00		68.9	97.9	78.9	59.9	67	97.8	83.7	59.2

L_{avg}
64.9

Oxnard Source Measurements - S007

7/24/2014

Study	Study Time	Session Time	OL Status	Lavg Meter1	Lpk Meter1	Lmax Meter1	Lmin Meter1	Lavg Meter2	Lpk Meter2	Lmax Meter2	Lmin Meter2
Study 1	0:00:10	0:00:10		64.4	80.3	66.6	62.8	64.2	80.3	67.6	60.2
(S007)	0:00:20	0:00:20		63	77.3	64	62.1	62.9	77.2	64.6	60.6
	0:00:30	0:00:30		66.6	89.3	71.5	63.1	66.2	89.3	76.1	60.7
	0:00:40	0:00:40		65.2	80.8	66.9	63.8	65.2	80.8	68.4	61.1
	0:00:50	0:00:50		65.6	81	67.7	63	65.6	81	68.9	61.4
	0:01:00	0:01:00		63.9	78.1	66.5	62.2	63.5	78.1	67	59.7
	0:01:10	0:01:10		65.9	82	68	63.2	65.9	82	69.3	62.8
	0:01:20	0:01:20		66.2	81.5	68.1	63.8	66.1	81.5	69.6	61.8
	0:01:30	0:01:30		64.2	78.9	65.4	62.6	63.9	78.9	66.5	60.9
	0:01:40	0:01:40		64.8	85.8	67	62.4	64.9	85.8	69.5	61.4
	0:01:50	0:01:50		65.5	81.5	67.1	63	65.3	81.5	69.1	61.6
	0:02:00	0:02:00		66	81.9	67.8	63.8	66	81.9	68.6	62.5
	0:02:10	0:02:10		65.9	82.3	67.7	64.3	65.8	82.2	69.8	63
	0:02:20	0:02:20		64.5	79.4	65.9	63.1	64.2	79.3	66.9	61.6
	0:02:30	0:02:30		66.1	83.3	68.5	63.6	66.1	83.3	70.9	62.1
	0:02:40	0:02:40		66.9	83.1	68.5	65.6	66.8	83	70.4	63.8
	0:02:50	0:02:50		64.3	79	65.8	63.1	63.9	79	67	61.7
	0:03:00	0:03:00		67.8	93.7	75	63.8	67	93.7	79.7	62.5
	0:03:10	0:03:10		64.6	82.9	66.6	62.6	64.4	82.9	67.7	60.5
	0:03:20	0:03:20		66.7	93.1	73.3	62.5	66.2	93	79.2	61.1
	0:03:30	0:03:30		66	82.1	68.3	64.2	65.9	82	69.9	62.4
	0:03:40	0:03:40		64.2	83.7	65.7	62.4	63.9	83.7	67.7	60.5
	0:03:50	0:03:50		62.3	77.7	63.9	60.1	62.1	77.7	65.3	58.1
	0:04:00	0:04:00		63	80.5	64.5	60.5	62.9	80.5	66.9	58.4
	0:04:10	0:04:10		64.9	81	67.9	63.2	64.9	81	69.6	59.9
	0:04:20	0:04:20		65.2	79.4	66.2	62.5	65	79.3	67.3	59.2
	0:04:30	0:04:30		63.8	77.7	64.9	61.8	63.6	77.7	65.7	60.9
	0:04:40	0:04:40		63.5	79.1	65	62.1	63.4	79.1	67.1	60.7
	0:04:50	0:04:50		65.1	82.2	66.2	63.9	65.1	82.1	67.9	62.1
	0:05:00	0:05:00		65.4	81.8	67.6	63.5	65.4	81.8	69.6	61.6
	0:05:10	0:05:10		66.4	85.9	68	64.7	66.2	85.8	69.4	62.8
	0:05:20	0:05:20		71.9	109.4	82.5	64	69.7	109.4	90.1	61.7
	0:05:30	0:05:30		65.9	80.7	67.7	64.1	65.7	80.7	69	62.7
	0:05:40	0:05:40		66	84.6	68	64	65.8	84.6	70.1	61.9
	0:05:50	0:05:50		65.8	83	68	62.9	65.6	83	69.2	61
	0:06:00	0:06:00		65	82	66.9	62.7	64.9	82	69.2	61.2
	0:06:10	0:06:10		63.7	78.7	65.4	61.2	63.4	78.7	67.3	59.4
	0:06:20	0:06:20		60.2	75.3	61.8	58.8	60	75.2	63.7	57.4
	0:06:30	0:06:30		71.7	105.2	82.8	60.2	68.9	105.1	89	58.3
	0:06:40	0:06:40		63.5	102.5	77.1	59.3	64.4	102.4	84.3	57.4
	0:06:50	0:06:50		72.3	108.8	82.6	63	69.8	108.7	88	61.2
	0:07:00	0:07:00		72.7	104.2	82.8	62.9	70.7	104.2	88	60.8
	0:07:10	0:07:10		63.5	82.2	64.4	61.6	63.3	82.2	65.9	60.6
	0:07:20	0:07:20		67.2	88.2	69.9	61.8	67.3	88.2	71.5	61.4
	0:07:30	0:07:30		68.4	89.6	71.6	65.1	68.1	89.5	75.2	62
	0:07:40	0:07:40		67.2	84	69.1	65.2	67.1	84	71.3	63.6
	0:07:50	0:07:50		77	108.3	88.5	62.9	74.4	108.3	94.4	60.7
	0:08:00	0:08:00		66.6	84.8	73.1	62.5	65	84.7	70.7	60.5
	0:08:10	0:08:10		64.6	80.7	67	62.1	64.6	80.7	68.7	59.6
	0:08:20	0:08:20		64.9	80.6	67	62.4	64.6	80.6	68.1	60.6
	0:08:30	0:08:30		64	81	66	61.3	64	80.9	68.2	60
	0:08:40	0:08:40		65.4	83.9	68.3	62.9	65.3	83.9	71.9	59.5
	0:08:50	0:08:50		65.9	81.2	67.3	64.4	65.7	81.2	68.2	62.9
	0:09:00	0:09:00		65.5	82.5	66.6	64	65.6	82.5	67.8	62.6
	0:09:10	0:09:10		67.9	94	76	63.8	67.8	94	80.3	61.7
	0:09:20	0:09:20		66.6	87.1	71.9	64.3	65.4	87.1	73.3	63
	0:09:30	0:09:30		66.5	85.4	68.7	63.5	66.1	85.4	71.6	62.2
	0:09:40	0:09:40		65.4	80.9	67.6	62.6	65.1	80.9	69	60.1
	0:09:50	0:09:50		66.7	92.3	70	62.8	67.2	92.2	72.3	62.1
	0:10:00	0:10:00		68.3	85	70.1	66.7	68	84.9	71.3	63.8

L_{avg}
66.6

Oxnard Source Measurements - S008

7/24/2014

Study	Study Time	Session Time	OL Status	Lavg Meter1	Lpk Meter1	Lmax Meter1	Lmin Meter1	Lavg Meter2	Lpk Meter2	Lmax Meter2	Lmin Meter2
Study 1	0:00:10	0:00:10		64.8	84.3	66.5	62.6	64.4	84.3	70.3	60.7
(S008)	0:00:20	0:00:20		60.1	79.1	63.8	59	59.5	79.1	63.5	57.6
	0:00:30	0:00:30		61.9	84.8	64	60	62.1	84.8	66.2	58.2
	0:00:40	0:00:40		65.7	86.5	69.9	61.2	65.6	86.5	72.3	59.1
	0:00:50	0:00:50		68.8	87.8	71.5	65.8	69	87.7	74.3	64.5
	0:01:00	0:01:00		70	87.2	72.1	68.3	69.6	87.2	73.5	64
	0:01:10	0:01:10		67.1	85	69.6	63	66.8	84.9	73.1	62
	0:01:20	0:01:20		69.5	89.6	72.9	66.9	69.2	89.5	75.1	63.8
	0:01:30	0:01:30		65.4	90	69.4	61.9	64.9	90	73.8	60.7
	0:01:40	0:01:40		69.6	90.4	72.9	65.1	69.6	90.3	76.3	64
	0:01:50	0:01:50		70	97.3	74.8	68	69.5	97.3	80	63
	0:02:00	0:02:00		66.2	83.5	68.4	64.7	65.7	83.5	68.9	62.3
	0:02:10	0:02:10		64.6	85.3	66.3	63.5	64.6	85.2	70	60.8
	0:02:20	0:02:20		68.3	98.5	72.4	66	68.1	98.5	75.6	63.5
	0:02:30	0:02:30		66.7	86.3	68.1	64.6	66.3	86.2	72	62.4
	0:02:40	0:02:40		66.6	88	69.1	65	66.5	88	73.3	63.2
	0:02:50	0:02:50		62.4	77.3	66.5	60.6	61.9	77.3	67.4	59.1
	0:03:00	0:03:00		63.8	78.2	65	61.7	63.6	78.2	65.7	59.7
	0:03:10	0:03:10		61.2	77.4	62.8	59.9	61.1	77.4	63.8	58.6
	0:03:20	0:03:20		64.9	81.1	66.9	61	64.9	81.1	69.2	60.8
	0:03:30	0:03:30		62.4	79.1	63.7	61.6	62.2	79.1	64.8	60.1
	0:03:40	0:03:40		64.7	81	66.8	62.6	64.7	81	68.3	61.8
	0:03:50	0:03:50		63.3	80.4	64.7	61.5	62.9	80.3	66.2	60
	0:04:00	0:04:00		62.1	78.9	64.7	60.4	62.1	78.9	66.5	58.9
	0:04:10	0:04:10		61.5	79.2	62.6	60.7	61.3	79.2	64.3	59.6
	0:04:20	0:04:20		60.7	77	61.9	59.8	60.7	77	63.1	58.1
	0:04:30	0:04:30		64.1	84.2	66	61.4	64.1	84.2	68.2	61.1
	0:04:40	0:04:40		63.4	79.6	65.8	61.6	63.4	79.5	67	60.1
	0:04:50	0:04:50		61.1	78.2	63.8	58.8	60.5	78.2	64.6	57.6
	0:05:00	0:05:00		60.8	82	62.5	59.2	60.8	81.9	65.8	58.2
	0:05:10	0:05:10		60.7	77	61.4	59.2	60.7	77	62.2	56.8
	0:05:20	0:05:20		62	76.8	63.1	60	62	76.8	64.1	58.1
	0:05:30	0:05:30		65.8	100.7	78.8	61.4	67.1	100.7	85.7	60.4
	0:05:40	0:05:40		67.8	82.2	76.8	62.8	64.4	82.2	70.1	61.3
	0:05:50	0:05:50		63.5	81.7	66.6	61.3	63.4	81.6	68.5	60.1
	0:06:00	0:06:00		61.8	79.1	64.2	59.9	61.8	79	66.7	58.6
	0:06:10	0:06:10		63.8	80.8	65	62.9	63.7	80.8	65.9	61.5
	0:06:20	0:06:20		64.7	79.4	65.8	62.7	64.5	79.4	67.7	61.8
	0:06:30	0:06:30		65	87.8	69.4	62.9	64.7	87.8	73.1	59.7
	0:06:40	0:06:40		63.6	79.1	65	61.8	63.4	79	66.5	59.9
	0:06:50	0:06:50		62.9	81	64.5	61.2	62.8	81	68.1	59.8
	0:07:00	0:07:00		65.2	92.7	73.6	59.4	64	92.7	78.5	56.9
	0:07:10	0:07:10		64.4	88.1	68	60.7	64.1	88	70.9	58.7
	0:07:20	0:07:20		61.6	81.1	62.5	60.6	61.6	81	64.1	59.1
	0:07:30	0:07:30		61.9	76.4	63.1	60.4	61.7	76.3	64.1	59.4
	0:07:40	0:07:40		62.6	100.3	77.5	60	64.3	100.3	82.9	58.9
	0:07:50	0:07:50		67.7	87.5	77.5	61.2	64.5	87.3	82.4	58.4
	0:08:00	0:08:00		60.6	77	61.8	59.3	60.3	77	63.2	57.9
	0:08:10	0:08:10		60.3	78.9	62.3	58.9	60.3	78.9	63.9	57.9
	0:08:20	0:08:20		62.5	81.1	64.1	60	62.4	81	66.4	58.6
	0:08:30	0:08:30		62.2	80.6	64.6	60.4	62.3	80.5	67	58.7
	0:08:40	0:08:40		62.7	80.9	64.4	61.3	62.5	80.9	67.2	59.4
	0:08:50	0:08:50		62.5	85.5	64.7	61.1	62.5	85.5	67.9	59.7
	0:09:00	0:09:00		60.9	78.9	64	58.4	60.2	78.9	64.5	57.8
	0:09:10	0:09:10		61	90.7	68.3	57.5	60.1	90.6	75	55.9
	0:09:20	0:09:20		58.9	75.3	59.8	58.1	58.9	75.3	60.7	57.1
	0:09:30	0:09:30		61.2	75.8	63.1	58.8	61.3	75.8	64.1	57.8
	0:09:40	0:09:40		60.8	77.2	63.7	59.5	60.9	77.2	65.9	58.6
	0:09:50	0:09:50		64.6	83.7	67.1	61.4	64.8	83.7	68.6	59.5
	0:10:00	0:10:00		64.2	85.2	66.8	60.5	63.5	85.1	70.2	58.9

L_{avg}
64.4

Oxnard Source Measurements - S009

7/24/2014

Study	Study Time	Session Time	OL Status	Lavg Meter1	Lpk Meter1	Lmax Meter1	Lmin Meter1	Lavg Meter2	Lpk Meter2	Lmax Meter2	Lmin Meter2
Study 1	0:00:10	0:00:10		67.9	87.5	69.7	65.6	67.5	87.5	71.4	63.4
(S009)	0:00:20	0:00:20		66.2	82.9	68.5	63.9	66	82.9	70.8	63
	0:00:30	0:00:30		65.8	82.8	67.5	62.8	65.6	82.8	68.6	61.7
	0:00:40	0:00:40		66.3	83.1	67.4	63	66.5	83.1	68.9	63.1
	0:00:50	0:00:50		67.8	85.4	69.5	65.8	67.7	85.4	71	63.6
	0:01:00	0:01:00		68.7	86.9	69.9	67.2	68.8	86.8	71.4	66.8
	0:01:10	0:01:10		66.3	85	68.9	64.3	65.7	84.9	70.1	62.8
	0:01:20	0:01:20		64.6	86.1	66.3	62.7	64.4	86.1	69.5	60.9
	0:01:30	0:01:30		64.4	83.2	66.2	62	64.2	83.1	68.6	59.7
	0:01:40	0:01:40		65	84.7	66.2	63.9	64.9	84.6	68.6	60.4
	0:01:50	0:01:50		63.9	79.4	65.9	62.7	63.6	79.4	67	61.1
	0:02:00	0:02:00		66.2	82.4	68	64.2	66.1	82.3	69.8	63.1
	0:02:10	0:02:10		64.2	81.1	66	62.4	64	81.1	67.6	61
	0:02:20	0:02:20		64.3	82	65.5	62	64.3	81.9	67.2	60.7
	0:02:30	0:02:30		63.9	86.7	65.8	62.4	63.7	86.6	67.7	59.7
	0:02:40	0:02:40		69	86.1	71	63.8	69.4	86.1	72.4	63.5
	0:02:50	0:02:50		70.5	101.4	74	65.7	69.7	101.3	81.1	63.5
	0:03:00	0:03:00		66.2	84	67.7	63.8	65.9	83.9	68.7	61.8
	0:03:10	0:03:10		66.6	93.8	74.9	61.7	65.4	93.7	79.2	58.9
	0:03:20	0:03:20		60	76.7	64	58.2	59.3	76.6	64.6	57
	0:03:30	0:03:30		60.8	88.7	63.4	58.3	61	88.7	64.9	56.8
	0:03:40	0:03:40		67.5	95.1	74	62.7	66.8	95	78.3	60.6
	0:03:50	0:03:50		69.4	94.2	75.4	66.1	68.9	94.2	81.5	64.4
	0:04:00	0:04:00		68.7	89.5	72.3	65.4	68.4	89.5	74.5	62.1
	0:04:10	0:04:10		68.3	95.5	75.8	64.7	67.4	95.5	80.9	61.4
	0:04:20	0:04:20		68.2	88.7	71.7	65	68.7	88.6	74.4	63.7
	0:04:30	0:04:30		71.6	89.8	73.8	68.3	71.3	89.7	75.8	66.5
	0:04:40	0:04:40		65.4	82.8	68.3	62.7	64.7	82.7	69	61.2
	0:04:50	0:04:50		61.3	80	63.2	59	61	79.9	65.3	57.6
	0:05:00	0:05:00		60.3	76.4	61.9	59.1	60	76.4	63.4	58.1
	0:05:10	0:05:10		76.6	110.3	86.5	59.7	73.8	110.3	91.2	59
	0:05:20	0:05:20		76.2	110	87.2	62.4	74.7	110	91.2	60.2
	0:05:30	0:05:30		67.9	80.6	78	61.1	63.4	80.6	67.9	59.5
	0:05:40	0:05:40		63.6	85.1	65.4	62.2	63.5	85	67.3	60.3
	0:05:50	0:05:50		63.4	87.5	67	60.6	63.1	87.5	69.2	59.1
	0:06:00	0:06:00		63.2	82.2	64.8	61.8	63.3	82.1	66.7	60.7
	0:06:10	0:06:10		62.5	86.2	65.1	59.9	62.3	86.1	70.4	59
	0:06:20	0:06:20		74.4	106.3	83.8	63.9	72.3	106.2	88.3	61.4
	0:06:30	0:06:30		65.2	84	66.5	63.7	65.2	84	68.3	62.3
	0:06:40	0:06:40		67.8	89.3	71	64.3	67.7	89.3	74	60.9
	0:06:50	0:06:50		68.2	92.6	73	64.2	68.1	92.5	76.1	61.6
	0:07:00	0:07:00		66.4	84.8	68.6	65	66.2	84.8	71.4	62
	0:07:10	0:07:10		68.4	94.6	76	62.6	68.2	94.5	80.7	60.5
	0:07:20	0:07:20		66.2	82.9	72.6	62.9	64.3	82.9	68.3	60.1
	0:07:30	0:07:30		66.7	89.8	70.7	62.6	67.1	89.8	74.7	61.5
	0:07:40	0:07:40		73.3	98.4	78.6	69.7	73.9	98.3	81.5	67.3
	0:07:50	0:07:50		70.7	90.3	77.4	66.6	68.8	90.2	76.5	64.5
	0:08:00	0:08:00		71	94.8	77.7	65.3	70	94.7	82.1	62.5
	0:08:10	0:08:10		66.7	85.2	69.4	64.3	66.6	85.2	71.7	62.2
	0:08:20	0:08:20		63.9	82.8	66.8	61.7	63.3	82.8	66.8	59.1
	0:08:30	0:08:30		63.8	86.2	66.8	61.2	63.8	86.2	68.4	59.3
	0:08:40	0:08:40		63.8	86.5	66.3	61.3	63.7	86.4	70.6	59
	0:08:50	0:08:50		63.5	79.8	65.7	61.4	63.3	79.8	67.5	60.5
	0:09:00	0:09:00		64.6	82.1	66.6	62.6	64.5	82	69.1	60.1
	0:09:10	0:09:10		67.5	88.7	70.5	64.5	67.2	88.7	73.5	61
	0:09:20	0:09:20		62.7	82.8	67.8	57.2	61.8	82.8	70.7	55.8
	0:09:30	0:09:30		57.3	78	64.3	54	57.7	77.9	68.5	51.9
	0:09:40	0:09:40		58.1	79.4	64	55.2	56.7	79.3	64.3	52.5
	0:09:50	0:09:50		56.4	71.8	57.2	55.7	56.4	71.8	59.3	54
	0:10:00	0:10:00		56.5	70.7	57.6	55.1	56.4	70.7	58.5	53.7

L_{avg}
67.2

Oxnard Source Measurements - S010

7/24/2014

Study	Study Time	Session Time	OL Status	Lavg Meter1	Lpk Meter1	Lmax Meter1	Lmin Meter1	Lavg Meter2	Lpk Meter2	Lmax Meter2	Lmin Meter2
Study 1	0:00:10	0:00:10		66.9	83.8	69.5	64.5	67	83.8	71.2	63.4
(S010)	0:00:20	0:00:20		71.5	90.2	75.9	61.9	70.9	90.2	77.6	59.6
	0:00:30	0:00:30		61	77	62.6	57.6	60.6	77	63.4	56.1
	0:00:40	0:00:40		56.7	80	59.3	54.8	56.3	80	65.4	52.1
	0:00:50	0:00:50		54.2	72	56	52.1	54	72	57.7	50.1
	0:01:00	0:01:00		51.8	66.4	54.9	49.8	51.5	66.4	57.2	49
	0:01:10	0:01:10		60.3	87.2	68.8	52	58.5	87.1	72.9	50.1
	0:01:20	0:01:20		53.4	67.9	54.5	51.5	53.2	67.8	55.5	49.1
	0:01:30	0:01:30		58	71.2	61.4	49.6	57.9	71.2	64.2	48.2
	0:01:40	0:01:40		62.6	94.1	73.8	49.2	58.9	94.1	80.5	47.3
	0:01:50	0:01:50		62.4	97.1	74.7	48.9	60.3	97	81.8	48.1
	0:02:00	0:02:00		55.8	69.5	63.7	50.9	53.3	69.5	57.5	49.4
	0:02:10	0:02:10		62.8	92.6	74	52.3	60.6	92.5	80	50.3
	0:02:20	0:02:20		65.1	91.8	74.8	55.1	62.8	91.8	79.8	53
	0:02:30	0:02:30		65.1	94.3	75.4	55.9	62.8	94.3	81.2	53.1
	0:02:40	0:02:40		65.3	95.8	77.4	55.6	64	95.7	83.2	54.1
	0:02:50	0:02:50		60.9	74.2	69.9	54.7	57.8	74.2	66.8	53.2
	0:03:00	0:03:00		60	81.8	64.2	54.6	59.2	81.7	66.4	52.6
	0:03:10	0:03:10		56.9	72.5	58.6	54.4	56.6	72.5	59.7	53.3
	0:03:20	0:03:20		55.8	74	58.5	54.1	55.6	73.9	62	53.1
	0:03:30	0:03:30		55.8	71.9	59.3	52.6	55.4	71.8	61	51.3
	0:03:40	0:03:40		64	86	71.3	51.9	63.6	85.9	73.5	50.9
	0:03:50	0:03:50		71.8	104.9	84	52.4	69.4	104.9	89.5	51.4
	0:04:00	0:04:00		62.1	70.3	73.5	53.2	54.3	70.2	58.3	51.8
	0:04:10	0:04:10		77.2	108.8	88.4	55	73.9	108.7	93.2	52.7
	0:04:20	0:04:20		72.9	107.1	86.2	55	72.7	107	90.5	53.4
	0:04:30	0:04:30		69.1	73.4	81.4	54.1	57.4	73.3	65.6	51.7
	0:04:40	0:04:40		67.6	112.9	90.9	53.2	72.6	112.8	96.2	52.2
	0:04:50	0:04:50		79.5	109.8	91.8	54.2	71.9	109.7	96.9	50.6
	0:05:00	0:05:00		77.7	107.8	89.6	53.1	75.2	107.8	93	51.3
	0:05:10	0:05:10		65.6	71.9	77.4	55.2	56.2	71.9	60.1	52.9
	0:05:20	0:05:20		57.8	74.4	59.6	55.1	57.8	74.5	61.7	54.1
	0:05:30	0:05:30		63	89.4	71.8	57.1	64.3	89.3	75	56.4
	0:05:40	0:05:40		70.1	88.8	72.2	62.3	69.3	88.7	74.5	56.6
	0:05:50	0:05:50		58.8	73.6	63.5	54.2	57.9	73.6	65.6	52.4
	0:06:00	0:06:00		68.2	100	82.8	53.7	69.3	100	87.1	51.4
	0:06:10	0:06:10		67.6	72.4	79.7	54.6	57.3	72.4	65	51.6
	0:06:20	0:06:20		56	70.9	57.6	52	55.6	70.9	59.7	50.9
	0:06:30	0:06:30		53.4	70.2	57.5	51.4	53.8	70.1	60.2	50.3
	0:06:40	0:06:40		56.7	70.3	58	55	56.4	70.2	59.9	53.1
	0:06:50	0:06:50		56.4	68.8	58	52.9	56.4	68.8	59.2	51.5
	0:07:00	0:07:00		53	70.8	56.7	51.1	52.5	70.8	57.9	50.2
	0:07:10	0:07:10		66.6	99.2	77.2	53.1	64	99.2	81.5	51.2
	0:07:20	0:07:20		56.1	70.6	57.8	54.9	56.1	70.5	59.1	54
	0:07:30	0:07:30		56.5	72.7	58.5	54.7	56.3	72.7	59.7	53.1
	0:07:40	0:07:40		54.8	71.3	57.1	53.2	55	71.3	58	52
	0:07:50	0:07:50		62.9	97	76.7	53	63.9	97	80.6	51.9
	0:08:00	0:08:00		62.6	73.5	73.9	52.8	55.3	73.5	61.8	51.2
	0:08:10	0:08:10		54.6	69.8	57.6	51.9	54.5	69.9	58.9	50.7
	0:08:20	0:08:20		53.2	69	55.2	51.8	53.3	69	56.5	51.2
	0:08:30	0:08:30		52.3	66.8	54.6	50.8	52	66.8	54.4	49.6
	0:08:40	0:08:40		53.5	71.9	54.5	51.3	53.5	71.9	55.8	49.9
	0:08:50	0:08:50		60.5	80	65.6	52.8	61.3	80	66.7	52.3
	0:09:00	0:09:00		68.2	100.2	78.2	53.4	65.7	100.2	83.2	52
	0:09:10	0:09:10		52.9	69.2	55.2	51.2	52.7	69.2	56.6	49.9
	0:09:20	0:09:20		53	68	54.8	51.6	52.9	68.1	56.2	50.8
	0:09:30	0:09:30		51.3	67.8	52.3	49.8	51.2	67.7	54.3	48.7
	0:09:40	0:09:40		52	67.7	53.5	51.1	52	67.5	54.9	50.2
	0:09:50	0:09:50		53.3	69.9	56.3	51.2	53.3	69.8	57.9	49.5
	0:10:00	0:10:00		52.6	66.7	53.6	51.5	52.5	66.6	54.7	50.7

L_{avg}
64.9

Oxnard Source Measurements - S011

7/24/2014

Study	Study Time	Session Time	OL Status	Lavg Meter1	Lpk Meter1	Lmax Meter1	Lmin Meter1	Lavg Meter2	Lpk Meter2	Lmax Meter2	Lmin Meter2
Study 1	0:00:10	0:00:10		52.8	73.3	54.2	51.2	52.6	73.3	55.5	50.2
(S011)	0:00:20	0:00:20		51.5	65.8	52.8	50.2	51.4	65.8	53.2	49.3
	0:00:30	0:00:30		52.3	76	54.2	51.1	52.2	76	59.2	50
	0:00:40	0:00:40		57.5	85.5	69.6	51.6	59.2	85.4	72.8	51.6
	0:00:50	0:00:50		61.7	83.3	70	51	59.1	83.2	72.2	49.4
	0:01:00	0:01:00		51.1	66	51.8	49.9	51.1	65.9	52.8	48.7
	0:01:10	0:01:10		51.9	80.9	56.4	49.8	51.6	80.8	62.9	47.6
	0:01:20	0:01:20		53.7	74.9	55.8	51.9	53.8	74.9	60.2	50.4
	0:01:30	0:01:30		52.3	68.9	55.2	50.1	51.7	68.8	57.3	49.3
	0:01:40	0:01:40		50.6	65.3	51.2	49.8	50.5	65.2	52.1	48.3
	0:01:50	0:01:50		49.8	64.1	50.4	48.5	49.8	63.9	52.3	47.5
	0:02:00	0:02:00		58.6	79.2	64.5	50.3	58.5	79.1	65.8	50.2
	0:02:10	0:02:10		55.1	70.5	58.5	49.9	54.5	70.4	59.5	49
	0:02:20	0:02:20		50.9	65.9	52.2	49.6	50.9	66	53.1	48.4
	0:02:30	0:02:30		51.6	71.5	53.3	50.9	51.7	71.6	56.3	49.1
	0:02:40	0:02:40		57.2	86.7	66.6	51	55.8	86.7	70.6	48.9
	0:02:50	0:02:50		51.8	65.9	54.7	49.6	51.3	65.9	54	48.5
	0:03:00	0:03:00		50.6	69.2	51.9	49.6	50.6	69.1	54.2	48.8
	0:03:10	0:03:10		51	65	52.8	49.9	51	65	54.2	48.9
	0:03:20	0:03:20		50	63.9	51.3	48.1	49.9	63.7	52	47.2
	0:03:30	0:03:30		51.1	73.4	56.2	47.8	51.5	73.5	58.3	46.5
	0:03:40	0:03:40		52.2	67.5	54.4	50.8	51.8	67.6	55.1	48.4
	0:03:50	0:03:50		52.6	76	55.9	50.2	52.7	76	60.2	49.4
	0:04:00	0:04:00		62.6	91	71.8	54.4	61.7	91	76.5	50.9
	0:04:10	0:04:10		55.6	79.1	63.5	50.5	52.4	79.1	63.6	48.4
	0:04:20	0:04:20		54.6	82.3	59	50.3	54.7	82.3	62.5	48.6
	0:04:30	0:04:30		57.4	78.1	62	52	57	78	64.7	49.8
	0:04:40	0:04:40		52.7	71.1	58.4	50.1	51.5	71.2	57.7	48.9
	0:04:50	0:04:50		54.5	74.8	59.3	49.8	54.1	74.7	62.9	48.8
	0:05:00	0:05:00		51.1	68.4	52.9	50	51.1	68.3	55.3	49.1
	0:05:10	0:05:10		50.2	71.2	51.5	48.6	50.1	71.1	56.1	47.7
	0:05:20	0:05:20		52.9	79.6	57.4	50.5	52.6	79.5	63.6	49.6
	0:05:30	0:05:30		52.3	66.8	54.9	50.8	52.1	66.9	57.6	48.4
	0:05:40	0:05:40		50.9	71.9	53.9	48.5	50.5	71.9	57.2	46.4
	0:05:50	0:05:50		50.4	76.1	55.1	47.7	50.5	76	59.9	46.6
	0:06:00	0:06:00		53.6	74.9	58.3	48.9	52.9	74.8	61.7	47.4
	0:06:10	0:06:10		50.5	71.6	52.5	48.8	50.5	71.5	55.3	47.2
	0:06:20	0:06:20		51.4	74.6	55.2	49.2	51	74.5	58.9	47.6
	0:06:30	0:06:30		51.4	68	54.1	49.2	51.6	68	57.5	48.3
	0:06:40	0:06:40		53	69.4	57.5	50.4	52.5	69.4	60.9	49
	0:06:50	0:06:50		52	76.1	56.8	49.8	51.9	76.1	61.1	48.6
	0:07:00	0:07:00		54.4	75.8	58.2	51.2	53.9	75.7	62	49.3
	0:07:10	0:07:10		51	68.7	52.8	50.1	51	68.7	55.5	49.2
	0:07:20	0:07:20		51.3	84.5	52.1	49.7	51.2	84.4	57.4	48.3
	0:07:30	0:07:30		59.1	90.8	69.8	49.9	56.6	90.8	75.5	48.4
	0:07:40	0:07:40		56.4	83.5	64.9	50.4	55.2	83.4	71.4	48.3
	0:07:50	0:07:50		56.3	87	67.1	49.4	56	87	73.3	47.8
	0:08:00	0:08:00		54.2	68.7	62.1	49.6	51.4	68.6	57.1	48.2
	0:08:10	0:08:10		54.5	75.7	58.4	49.2	54.6	75.7	62.3	47.9
	0:08:20	0:08:20		54.7	74.1	58.5	49.2	54.3	74.1	61.6	47.7
	0:08:30	0:08:30		52	71.5	56	49.3	51.3	71.5	56.5	47.3
	0:08:40	0:08:40		54.1	83.3	62.1	48.1	54.7	83.3	65.1	47.2
	0:08:50	0:08:50		55	78.9	61.5	50.4	53.5	78.8	59.8	48.6
	0:09:00	0:09:00		55	79.7	63.1	49.8	54.6	79.6	67.5	48.1
	0:09:10	0:09:10		55.1	73.4	58.5	51	53.9	73.4	63.1	47.7
	0:09:20	0:09:20		52.7	69	54.6	50.2	52.2	69	57.6	47.6
	0:09:30	0:09:30		54	80.1	60.2	50.2	53.5	80	65.8	48
	0:09:40	0:09:40		58	90.9	64.4	51.4	57.6	90.9	72.6	49.1
	0:09:50	0:09:50		61.4	82.6	66.4	55.5	60.7	82.6	68.7	50.1
	0:10:00	0:10:00		53.7	75.4	59.2	49.4	52.4	75.3	64.6	47.8

L_{avg}
54.3

Oxnard Source Measurements - S012

7/24/2014

L_{avg}
55.6

Study	Study Time	Session Time	OL Status	Lavg Meter1	Lpk Meter1	Lmax Meter1	Lmin Meter1	Lavg Meter2	Lpk Meter2	Lmax Meter2	Lmin Meter2
Study 1	0:00:10	0:00:10		51.4	73.1	52.2	50	51.3	73.1	53.5	49.3
(S012)	0:00:20	0:00:20		53.2	70.1	54.9	51.1	53.5	70	55.9	50.9
	0:00:30	0:00:30		54.4	78.4	55.4	53.3	54.3	78.4	59.9	52.1
	0:00:40	0:00:40		56.2	73.4	58.5	54.5	56.5	73.4	60.5	54.4
	0:00:50	0:00:50		60.7	74.8	63.1	58	61	74.8	64.1	57.4
	0:01:00	0:01:00		59.7	74.8	61.9	56.2	59.1	74.7	62.1	54.2
	0:01:10	0:01:10		56	71.6	57.9	54.6	55.8	71.5	58.7	53.2
	0:01:20	0:01:20		53.3	72.6	55.5	52	52.9	72.5	57.2	51.3
	0:01:30	0:01:30		53.1	67.1	54	52.5	53.1	67	55.6	51.6
	0:01:40	0:01:40		54	69.3	55.3	52.9	54.1	69.2	56.6	51.4
	0:01:50	0:01:50		55.2	70	56.6	53.6	55.1	69.9	57.8	52.6
	0:02:00	0:02:00		53.7	67	55.1	52.8	53.5	67	56.3	52
	0:02:10	0:02:10		52.8	70.9	54.4	51.8	52.6	70.9	57.7	50.7
	0:02:20	0:02:20		52.3	66.5	53	51.5	52.2	66.5	54.4	50.3
	0:02:30	0:02:30		53	67.2	54.5	51.8	53	67.1	56.1	51
	0:02:40	0:02:40		52.7	68.9	54.1	51.4	52.5	68.9	55.9	50.2
	0:02:50	0:02:50		52.9	71.3	54.7	50.6	52.9	71.3	58.6	49.1
	0:03:00	0:03:00		52.8	68.5	53.9	51.1	52.6	68.4	55.5	49.9
	0:03:10	0:03:10		53	67.9	54.4	51.2	53.2	67.8	55.6	51
	0:03:20	0:03:20		52.2	65.7	54.1	50.7	51.8	65.7	54.3	49.1
	0:03:30	0:03:30		51.1	67.4	52	50.3	51.2	67.4	53.3	49.2
	0:03:40	0:03:40		52.8	68.2	54.4	50.7	53	68.2	56	49.9
	0:03:50	0:03:50		53.6	68.6	55.5	52.3	53.4	68.6	56.5	50.8
	0:04:00	0:04:00		53.6	67.1	54.4	52.5	53.6	67.1	55.5	52.1
	0:04:10	0:04:10		53.6	69.4	55.9	52.4	53.8	69.4	57.2	51.3
	0:04:20	0:04:20		57.5	71.8	59	55.7	57.7	71.8	59.6	55
	0:04:30	0:04:30		57.5	70.6	59.6	55.8	57.3	70.6	60.6	54
	0:04:40	0:04:40		58.6	74	61.5	56.4	58.8	74	62.6	55.4
	0:04:50	0:04:50		64.5	79.3	66.5	59.8	64.6	79.3	68.2	59.2
	0:05:00	0:05:00		65.5	80.1	70.5	59.8	65.1	80.1	73	58.9
	0:05:10	0:05:10		58.6	73.6	64.6	54.4	57.1	73.5	63.1	53.1
	0:05:20	0:05:20		57.1	72.2	59.5	54.6	57.1	72.2	61.1	53.4
	0:05:30	0:05:30		58	71.2	58.8	56.6	58	71.2	59.7	55.8
	0:05:40	0:05:40		58	80.8	59.3	56.8	57.9	80.8	61.6	55.5
	0:05:50	0:05:50		57.4	72.6	58.6	56.3	57.4	72.5	60.5	55.3
	0:06:00	0:06:00		58.2	74.1	60.6	56.8	58	74.1	62.9	54.9
	0:06:10	0:06:10		56.5	69.3	58.5	55.1	56.3	69.2	58.9	54.1
	0:06:20	0:06:20		55.6	68.1	57.2	54.4	55.4	68.1	57.9	53.4
	0:06:30	0:06:30		54.2	72.4	54.9	53.1	54	72.5	56.2	51.5
	0:06:40	0:06:40		53.3	70.2	55.1	52.1	53.4	70.1	56.8	51
	0:06:50	0:06:50		53	69.5	54.9	51.5	52.8	69.5	56.2	50
	0:07:00	0:07:00		52.3	67.7	53.6	51.2	52.1	67.7	55.9	50.2
	0:07:10	0:07:10		53.4	69.6	55.9	51.2	53.3	69.5	57.5	49.9
	0:07:20	0:07:20		53	72.5	55.3	51.5	53.1	72.4	59.6	50.6
	0:07:30	0:07:30		54.3	69.4	55.6	52.7	54.4	69.4	56.7	51.7
	0:07:40	0:07:40		55.1	70.6	57	53.6	54.9	70.5	58.2	52
	0:07:50	0:07:50		53.2	67.9	54.6	51.7	53.1	67.8	55.6	50.7
	0:08:00	0:08:00		54.1	69.1	55.4	52.1	54.1	69.1	56.6	51.4
	0:08:10	0:08:10		54.9	69.9	55.9	53.7	54.9	69.9	57.4	52.2
	0:08:20	0:08:20		54.8	69.8	55.8	53.9	54.6	69.7	57.7	52.3
	0:08:30	0:08:30		55.2	76.4	57.6	54	55.1	76.4	63.2	53
	0:08:40	0:08:40		54	69.1	55.6	52.7	53.6	69.1	56.8	50.9
	0:08:50	0:08:50		54.1	70.6	56.8	51.8	54.3	70.5	58.8	50.2
	0:09:00	0:09:00		54.8	70.9	55.9	53.3	54.6	70.8	58.4	52.4
	0:09:10	0:09:10		53.2	70.8	54.2	52.4	53	70.8	57.6	51.1
	0:09:20	0:09:20		53	68.8	54.4	51.5	52.8	68.8	57.1	50.4
	0:09:30	0:09:30		53	68.8	54.3	51.3	53	68.8	55.5	49.6
	0:09:40	0:09:40		53.7	69	54.8	52.1	53.6	69	56.4	50.7
	0:09:50	0:09:50		53.6	74.1	56.6	51.6	53.6	74	60.4	50.7
	0:10:00	0:10:00		53.2	68.4	54.1	52.2	53.1	68.3	55.7	51

Oxnard Source Measurements - S013

7/24/2014

Study	Study Time	Session Time	OL Status	Lavg Meter1	Lpk Meter1	Lmax Meter1	Lmin Meter1	Lavg Meter2	Lpk Meter2	Lmax Meter2	Lmin Meter2
Study 1	0:00:10	0:00:10		55.9	81.3	58.1	53.7	56.1	81.3	59.4	53.6
(S013)	0:00:20	0:00:20		55.9	81.8	57.1	54.5	55.8	81.8	58.8	53.3
	0:00:30	0:00:30		55.4	70.9	56.7	54.2	55.3	70.9	57.5	52.6
	0:00:40	0:00:40		52.6	66.4	54.5	51.1	52.3	66.2	55.1	50.1
	0:00:50	0:00:50		49.8	65.4	52.3	47	49.3	65.2	53	46.3
	0:01:00	0:01:00		49.4	65.5	50.7	47.3	49.7	65.4	52.1	47.2
	0:01:10	0:01:10		52.9	70.8	57.5	50	53.6	70.8	58.5	49.1
	0:01:20	0:01:20		56.3	76.8	57.9	52.4	55.7	76.8	60.7	50.1
	0:01:30	0:01:30		52.9	67.8	54	51.8	52.8	67.7	55.6	50.5
	0:01:40	0:01:40		52.7	67.7	54.1	51.4	52.7	67.7	56	50.6
	0:01:50	0:01:50		53.1	67.3	55.1	51.7	53.1	67.2	56.4	50.8
	0:02:00	0:02:00		54.2	71.3	56	53	54.1	71.3	58.4	51.5
	0:02:10	0:02:10		52.1	67.3	54.5	50.2	51.8	67.4	56.2	49.2
	0:02:20	0:02:20		54.2	70.5	58.1	50.2	54.8	70.4	59.8	50.1
	0:02:30	0:02:30		54.4	68.8	58.2	48.4	53.5	68.8	59.1	47.1
	0:02:40	0:02:40		48	62.1	49	47	48	62	49.7	46.2
	0:02:50	0:02:50		48.6	62.2	49.7	47.4	48.6	62.1	50.3	46.4
	0:03:00	0:03:00		56.4	87.9	66.9	47.7	54.1	87.8	73.8	47.4
	0:03:10	0:03:10		47.8	63.5	50.2	46.5	47.6	63.5	51.9	45.1
	0:03:20	0:03:20		48.6	62.8	49.8	47.1	48.7	62.7	51.7	46.5
	0:03:30	0:03:30		51.6	67.5	54.6	48.5	52.1	67.6	56.1	47.9
	0:03:40	0:03:40		52.9	70.1	55.9	50.3	52.6	70	57.2	49
	0:03:50	0:03:50		52.7	66.2	53.9	51.1	52.7	66.1	54.9	49.7
	0:04:00	0:04:00		52.6	68.6	55.7	50.1	52.3	68.6	57.1	48.9
	0:04:10	0:04:10		49	63.5	50.1	48.2	48.8	63.4	51.6	46.1
	0:04:20	0:04:20		50.4	65.3	51.6	49	50.4	65.2	54	47.5
	0:04:30	0:04:30		49.5	64.1	51	48.5	49.4	64	52.4	47.8
	0:04:40	0:04:40		48.7	62.9	50.8	47.5	48.9	62.9	52.4	46.5
	0:04:50	0:04:50		53.2	69.4	55.9	50.7	53.1	69.3	59	49.1
	0:05:00	0:05:00		52.7	67.6	54.1	50.5	52.8	67.6	55.5	49.1
	0:05:10	0:05:10		53	65.9	53.9	51.8	52.9	65.9	55.2	50.4
	0:05:20	0:05:20		49.9	65.7	52.2	47.2	49.5	65.5	53	46.2
	0:05:30	0:05:30		47.9	61.9	49	47.3	47.9	61.9	51.2	45.9
	0:05:40	0:05:40		47.3	60.9	48.1	46.8	47.2	60.8	48.6	46.1
	0:05:50	0:05:50		47	60.9	47.6	46.4	47.1	60.9	48.6	45.8
	0:06:00	0:06:00		48.1	62.3	49	47.3	48.1	62.2	50.2	46.6
	0:06:10	0:06:10		48.9	63.5	50	47.8	49	63.3	51.9	46.2
	0:06:20	0:06:20		47.7	62	49.4	46.6	47.5	62.1	51.9	46
	0:06:30	0:06:30		46.4	60.5	47.1	45.6	46.4	60.4	48.2	44.9
	0:06:40	0:06:40		45.6	60	46.2	44.9	45.6	60	47.2	44.1
	0:06:50	0:06:50		47.9	63.7	49.4	46	48	63.7	52.7	45.6
	0:07:00	0:07:00		49	62.8	50.6	47.5	49.1	62.7	51.8	47
	0:07:10	0:07:10		49.9	67.2	50.7	48.8	49.9	67.2	52.2	48.2
	0:07:20	0:07:20		49.3	62.8	50.1	48.3	49.3	62.9	51.7	47.5
	0:07:30	0:07:30		51	68.8	54.1	49.1	51	68.8	57.7	47.6
	0:07:40	0:07:40		49.8	71.4	54.7	48.6	50.1	71.4	59.7	47.6
	0:07:50	0:07:50		50.3	67.1	54.6	47.2	49.7	67	55.4	46.4
	0:08:00	0:08:00		51.3	68	53.7	48	51.1	67.9	56.6	46.4
	0:08:10	0:08:10		50.4	64.4	51.7	48.7	50.1	64.4	54.1	46.7
	0:08:20	0:08:20		50.8	67.4	53	48.6	50.8	67.4	54.8	45.8
	0:08:30	0:08:30		49.9	66.5	52.8	48.4	49.6	66.4	55.1	47.4
	0:08:40	0:08:40		50.1	67.3	52.7	47.7	50	67.3	55.6	46.4
	0:08:50	0:08:50		48.6	63	50.2	47.6	48.4	62.9	51.6	46.6
	0:09:00	0:09:00		50.9	67.5	55.5	48	51.5	67.6	56.7	46.8
	0:09:10	0:09:10		56.9	73.9	60.5	53.1	56.8	73.9	62.6	49.8
	0:09:20	0:09:20		56.2	77.3	62.8	52.8	56.4	77.3	66	50.8
	0:09:30	0:09:30		55.5	71.6	60.6	53.6	54.4	71.6	60.1	51.5
	0:09:40	0:09:40		56.3	73.7	58	53.4	56.3	73.7	61	51.6
	0:09:50	0:09:50		57.5	73.4	59.9	53.9	57.2	73.3	62.4	52.6
	0:10:00	0:10:00		55.3	70.9	58.3	53.3	55.5	70.9	60.8	52.2

L_{avg}
52.0

Oxnard Source Measurements - S014

7/24/2014

Study	Study Time	Session Time	OL Status	Lavg Meter1	Lpk Meter1	Lmax Meter1	Lmin Meter1	Lavg Meter2	Lpk Meter2	Lmax Meter2	Lmin Meter2
Study 1	0:00:10	0:00:10		54.5	70.4	56	51.4	54.6	70.5	57.4	50.9
(S014)	0:00:20	0:00:20		51.7	66.2	54.5	49.7	51.1	66.1	54.4	48.7
	0:00:30	0:00:30		50.5	70.1	51.1	49.8	50.5	70.1	52	49.2
	0:00:40	0:00:40		50.7	64.5	51.2	50.1	50.6	64.4	52.3	48.4
	0:00:50	0:00:50		50	64.5	51.5	47.9	49.9	64.4	52.9	47.2
	0:01:00	0:01:00		54.6	69	56.6	51	54.6	69	58.5	49.8
	0:01:10	0:01:10		52.4	67.1	54.6	50.6	52.2	67.1	56.9	49
	0:01:20	0:01:20		52.5	67.2	54.1	48.2	52.2	67.2	56.3	46.5
	0:01:30	0:01:30		50	66.4	52.5	47.9	49.9	66.3	54.2	46.5
	0:01:40	0:01:40		47.8	60.8	48.6	47.1	47.7	60.9	49.2	46.2
	0:01:50	0:01:50		50.6	67.4	53.3	47	50.8	67.3	55	46.5
	0:02:00	0:02:00		49.8	64.9	51.6	48.5	49.5	64.9	53.7	46.5
	0:02:10	0:02:10		49.9	63	51.1	49	49.8	63	53.2	47.8
	0:02:20	0:02:20		49.1	63.2	50.1	47.6	49	63.2	52	46.5
	0:02:30	0:02:30		50.6	69.3	52.4	48.4	50.4	69.2	54.9	46.7
	0:02:40	0:02:40		49.5	65.4	50.6	47.9	49.4	65.4	52.6	46.7
	0:02:50	0:02:50		52.6	71.9	57.4	47.8	53	71.9	59.5	46.5
	0:03:00	0:03:00		54.3	69	56.5	51	53.8	69.1	58.6	47.9
	0:03:10	0:03:10		54.6	71.9	58.1	50.8	54.3	71.9	60.2	49.5
	0:03:20	0:03:20		51	65.9	53.9	49	51.1	65.9	56.5	48
	0:03:30	0:03:30		53	68.4	54.8	49.8	52.6	68.3	56.8	47
	0:03:40	0:03:40		52.3	67.2	55.5	48.1	52.1	67.2	57.7	46.5
	0:03:50	0:03:50		48.5	64.3	51.7	47.6	48.8	64.3	54.4	46.6
	0:04:00	0:04:00		54.6	70.3	58.2	49.2	54.8	70.2	59.7	45.6
	0:04:10	0:04:10		54.9	70.2	57.7	50.5	54.3	70.2	59.5	47.6
	0:04:20	0:04:20		52.8	71.4	58.4	48.9	53.4	71.3	60.9	46.8
	0:04:30	0:04:30		53	71.2	59	48.2	51.9	71.1	60.6	46.9
	0:04:40	0:04:40		56.5	74.3	61	50.2	56.6	74.2	63.2	48.7
	0:04:50	0:04:50		55.8	69.7	57.9	54.7	55.6	69.7	59.4	50.7
	0:05:00	0:05:00		55.7	71.7	57.2	52.5	55.5	71.7	59.3	50.4
	0:05:10	0:05:10		55.6	70.5	58	52	55.4	70.6	60.2	49.8
	0:05:20	0:05:20		57.2	76.1	62.2	49.6	57.4	76	65.6	47.2
	0:05:30	0:05:30		58.1	73.2	60.8	56.4	57.6	73.1	61.8	53.1
	0:05:40	0:05:40		55.3	69.6	58.8	52.3	54.6	69.5	60.1	49.4
	0:05:50	0:05:50		52.6	67.6	55.4	49.6	52.2	67.6	57	48.3
	0:06:00	0:06:00		53.1	68.7	55.8	50.9	53.5	68.6	58.2	49.8
	0:06:10	0:06:10		54.4	69.5	56.1	52.2	54	69.4	57.6	51.2
	0:06:20	0:06:20		51.1	64.7	52.3	49.8	50.9	64.6	52.9	48.7
	0:06:30	0:06:30		50.3	66.2	54.1	49.3	50.6	66.2	56	48.6
	0:06:40	0:06:40		51.9	69	54.8	48.9	51.4	68.9	56.3	47.9
	0:06:50	0:06:50		51.2	68.8	53.1	49	51.2	68.6	56.7	48.7
	0:07:00	0:07:00		49.1	63	50.6	47.7	48.9	63	52.2	46.2
	0:07:10	0:07:10		49.6	66	52	47.9	49.5	65.9	54.8	46.3
	0:07:20	0:07:20		49.1	63.4	50.1	48.1	49.1	63.4	51.9	46.7
	0:07:30	0:07:30		48.8	64.1	49.5	47.9	48.8	64.1	50.6	46.8
	0:07:40	0:07:40		49.9	64.5	51.7	48.5	50.1	64.4	52.6	47.8
	0:07:50	0:07:50		53.1	68.1	54.5	50.6	53.3	68.2	55.2	49.2
	0:08:00	0:08:00		53.9	67.5	54.8	52.9	53.7	67.4	56	50.9
	0:08:10	0:08:10		55.2	81.2	63.5	49.8	53.9	81.2	69.2	46.2
	0:08:20	0:08:20		50.4	65.1	52.4	48.2	50.2	65.1	54	46.9
	0:08:30	0:08:30		49.7	64	51.2	48	49.3	63.9	54	46.1
	0:08:40	0:08:40		51.9	72.5	58	47.1	52.5	72.5	62.4	46.2
	0:08:50	0:08:50		53.5	69.9	58.7	49	52.6	69.8	60.8	47.1
	0:09:00	0:09:00		48.6	66	52.1	46.2	48.3	65.9	53.9	44.8
	0:09:10	0:09:10		51.5	68.4	54	48.6	51.5	68.3	57.1	47.8
	0:09:20	0:09:20		50.7	69.1	52.2	48.4	50.6	68.9	55	45.7
	0:09:30	0:09:30		50.3	69.9	56.5	46	51	69.9	58	45.2
	0:09:40	0:09:40		54	67.5	56.6	50.7	53.6	67.5	57.5	47.8
	0:09:50	0:09:50		49.1	64.2	54.1	45.9	48	64.1	54.5	44.6
	0:10:00	0:10:00		49.7	71.1	54.9	45.9	50.2	71.1	59.9	44.9

L_{avg}
52.5

APPENDIX E

CONSTRUCTION SOURCE NOISE LEVEL DETERMINATION

Construction Noise Sources

Controlled Noise Levels

Construction Equipment Noise Data			
Equipment	Dominant Noise Components[A]	L_{eq} @ 50-feet (dBA)[B]	Mitigated L_{eq} @ 50-feet (dBA)[B]
Air Compressor	E, C, H, I	81	75
Concrete Mixer	E, C, F, W, T	85	75
Crane, Mobile	E, C, F, I, T	83	75
Dozer	E, C, F, I, H	80	75
Generator	E, C	78	75
Grader	E, C, F, I, W	85	75
Loader	E, C, F, I, H	79	75
Paver	E, D, F, I	89	80
Pneumatic Tool	P, W, E, C	85	80
Roller	E, C, F, I, W	74	74
Saw, Electric	W	78	75
Scraper	E, C, F, I, W	88	80
Shovel	E, C, F, I, W	82	75

Footnotes:

A - Ranked noisy components. C = Casing, E = Exhaust, F = Fan, H = Hydraulics, I = Intake air, P = Pneumatic exhaust, T = Transmission, W = Work tool. Source is the Ventura County *Construction Noise Threshold Criteria and Control Plan.*

B - Unmitigated and mitigated L_{eq} data for each piece of construction equipment taken from Figure A-4 in Appendix A within Ventura County's *Construction Noise Threshold Criteria and Control Plan* .

Construction Noise Prediction

Receptor R1 (Southwest)

Demolition Phase (~14 days expected)								
Construction Phase Equipment[A]	**# of Items[A]**	**L_{eq} @ 50-ft. (dBA)[B]**	**Distance to Receptor (ft)[C]**	**Item Usage Percent %[D]**	**Distance Correction[E]**	**Usage Adjustment (dB)[E]**	**Receptor Item L_{max} (dBA)**	**Receptor Item L_{eq} (dBA)**
Dozer	1	75	990	4	-25.9	-14.0	49.1	35.1
Excavator	1	75	990	16	-25.9	-8.0	49.1	41.1
						Total:	52.1	42.1
						Reduction from Shielding[F]:	0.0	0.0
						Expected Noise Level at R1:	**52.1**	**42.1**

Site Preparation (~21 days)								
Construction Phase Equipment[A]	**# of Items[A]**	**L_{eq} @ 50-ft. (dBA)[B]**	**Distance to Receptor (ft)[C]**	**Item Usage Percent %[D]**	**Distance Correction[E]**	**Usage Adjustment (dB)[E]**	**Receptor Item L_{max} (dBA)**	**Receptor Item L_{eq} (dBA)**
Dozers	1	75	400	4	-18.1	-14.0	56.9	43.0
Tractors/Loaders/Backhoes	1	75	400	16	-18.1	-8.0	56.9	49.0
						Total:	59.9	49.9
						Reduction from Shielding[F]:	0.0	0.0
						Expected Noise Level at R1:	**59.9**	**49.9**

Grading (~28 days)								
Construction Phase Equipment[A]	**# of Items[A]**	**L_{eq} @ 50-ft. (dBA)[B]**	**Distance to Receptor (ft)[C]**	**Item Usage Percent %[D]**	**Distance Correction[E]**	**Usage Adjustment (dB)[E]**	**Receptor Item L_{max} (dBA)**	**Receptor Item L_{eq} (dBA)**
Excavator	1	75	400	16	-18.1	-8.0	56.9	49.0
Dozer	1	75	400	16	-18.1	-8.0	56.9	49.0
Grader	1	75	400	4	-18.1	-14.0	56.9	43.0
Tractors/Loaders/Backhoes	1	75	400	16	-18.1	-8.0	56.9	49.0
						Total:	63.0	54.1
						Reduction from Shielding[F]:	0.0	0.0
						Expected Noise Level at R1:	**63.0**	**54.1**

Construction Noise Prediction

Receptor R1 (Southwest)

Building Construction (~90 days)

Construction Phase Equipment[A]	# of Items[A]	L_{eq} @ 50-ft. (dBA)[B]	Distance to Receptor (ft)[C]	Item Usage Percent %[D]	Distance Correction[E]	Usage Adjustment (dB)[E]	Receptor Item L_{max} (dBA)	Receptor Item L_{eq} (dBA)
Crane	1	75	450	8	-19.1	-11.0	55.9	44.9
Generator	1	75	450	40	-19.1	-4.0	55.9	51.9
Welders (Welder/Torch)	1	74	450	20	-19.1	-7.0	54.9	47.9
Tractors/Loader/Backhoe	1	75	450	16	-19.1	-8.0	55.9	48.0
						Total:	61.7	54.9
						Reduction from Shielding[F]:	0.0	0.0
						Expected Noise Level at R1:	**61.7**	**54.9**

Architectural Coatings (~60 days)

Construction Phase Equipment[A]	# of Items[A]	L_{eq} @ 50-ft. (dBA)[B]	Distance to Receptor (ft)[C]	Item Usage Percent %[D]	Distance Correction[E]	Usage Adjustment (dB)[E]	Receptor Item L_{max} (dBA)	Receptor Item L_{eq} (dBA)
Air Compressor	1	75	430	40	-18.7	-4.0	56.3	52.3
						Total:	56.3	52.3
						Reduction from Shielding[F]:	0.0	0.0
						Expected Noise Level at R1:	**56.3**	**52.3**

Paving & Landscaping (~21 days)

Construction Phase Equipment[A]	# of Items[A]	L_{eq} @ 50-ft. (dBA)[B]	Distance to Receptor (ft)[C]	Item Usage Percent %[D]	Distance Correction[E]	Usage Adjustment (dB)[E]	Receptor Item L_{max} (dBA)	Receptor Item L_{eq} (dBA)
Paver	1	80	430	12	-18.7	-9.2	61.3	52.1
Concrete Mixer Truck	1	75	430	16	-18.7	-8.0	56.3	48.4
Roller	1	74	430	10	-18.7	-10.0	55.3	45.3
						Total:	63.3	54.2
						Reduction from Shielding[F]:	0.0	0.0
						Expected Noise Level at R1:	**63.3**	**54.2**

Construction Noise Prediction

Receptor R1 (Southwest)

Footnotes:

Duration of each construction phase based on estimates provided by Agromin.

A - Equipment type required for each construction phase based on CalEEMod and RS Means data, adjusted to represent the appropriate scope of Project. For each phases, it is assumed that only one of each construction equipment type would be operating simultaneously. This approach remains conservative, as it assumes all noise generating equipment would be operating simultaneously in the area closest to the receptor, when in reality equipment will be operating intermittently and at greater distances that those assessed.

B - Equipment noise levels (L_{eq}) based on Ventura County's *Construction Noise Threshold Criteria and Control Plan* . See Figure A-4 in Appendix A of the Construction Guidance document for the mitigated equipment noise levels (L_{eq}). Agromin has committed to purchasing all new equipment that is expected to incorporate modern noise-controls (upgraded mufflers, acoustical engine lining, etc.) by design. The mitigated equipment noise levels (L_{eq}) represent "estimated level obtainable by quieter methods or equipment and implementing feasible noise controls."

C - Represents closest distance (ft.) between each construction activity/phase and receptor location, estimated using Google Earth.

D - Equipment usage percent (%) based on Ventura County's *Construction Noise Threshold Criteria and Control Plan* , adjusted based on the expected construction methods.

E - Distance correction and usage adjustment (dB) factors based on applicable equations provided in the Federal Highway Administration's *Roadway Construction Noise Model* .

F - No shielding/attenuation is expected between construction noise sources and Receptor 1 (R1).

Construction Noise Prediction

Receptor R2 (South)

Demolition Phase (~14 days expected)								
Construction Phase Equipment[A]	**# of Items[A]**	**Mitigated L_{eq} @ 50-ft. (dBA)[B]**	**Distance to Receptor (ft)[C]**	**Item Usage Percent %[D]**	**Distance Correction[E]**	**Usage Adjustment (dB)[E]**	**Receptor Item L_{max} (dBA)**	**Receptor Item L_{eq} (dBA)**
Dozer	1	75	910	4	-25.2	-14.0	49.8	35.8
Excavator	1	75	910	16	-25.2	-8.0	49.8	41.8
						Total:	52.8	42.8
						Reduction from Shielding[F]:	0.0	0.0
						Expected Noise Level at R2:	**52.8**	**42.8**

Site Preparation (~21 days)								
Construction Phase Equipment[A]	**# of Items[A]**	**Mitigated L_{eq} @ 50-ft. (dBA)[B]**	**Distance to Receptor (ft)[C]**	**Item Usage Percent %[D]**	**Distance Correction[E]**	**Usage Adjustment (dB)[E]**	**Receptor Item L_{max} (dBA)**	**Receptor Item L_{eq} (dBA)**
Dozers	1	75	90	4	-5.1	-14.0	69.9	55.9
Tractors/Loaders/Backhoes	1	75	90	16	-5.1	-8.0	69.9	61.9
						Total:	72.9	62.9
						Reduction from Shielding[F]:	0.0	0.0
						Expected Noise Level at R2:	**72.9**	**62.9**

Grading (~28 days)								
Construction Phase Equipment[A]	**# of Items[A]**	**Mitigated L_{eq} @ 50-ft. (dBA)[B]**	**Distance to Receptor (ft)[C]**	**Item Usage Percent %[D]**	**Distance Correction[E]**	**Usage Adjustment (dB)[E]**	**Receptor Item L_{max} (dBA)**	**Receptor Item L_{eq} (dBA)**
Excavator	1	75	100	16	-6.0	-8.0	69.0	61.0
Dozer	1	75	100	16	-6.0	-8.0	69.0	61.0
Grader	1	75	100	4	-6.0	-14.0	69.0	55.0
Tractors/Loaders/Backhoes	1	75	100	16	-6.0	-8.0	69.0	61.0
						Total:	75.0	66.1
						Reduction from Shielding[F]:	0.0	0.0
						Expected Noise Level at R2:	**75.0**	**66.1**

Construction Noise Prediction

Receptor R2 (South)

Building Construction (~90 days)								
Construction Phase Equipment[A]	**# of Items[A]**	**Mitigated L_{eq} @ 50-ft. (dBA)[B]**	**Distance to Receptor (ft)[C]**	**Item Usage Percent %[D]**	**Distance Correction[E]**	**Usage Adjustment (dB)[E]**	**Receptor Item L_{max} (dBA)**	**Receptor Item L_{eq} (dBA)**
Crane	1	75	270	8	-14.6	-11.0	60.4	49.4
Generator	1	75	270	40	-14.6	-4.0	60.4	56.4
Welders (Welder/Torch)	1	74	270	20	-14.6	-7.0	59.4	52.4
Tractors/Loader/Backhoe	1	75	270	16	-14.6	-8.0	60.4	52.4
						Total:	66.1	59.4
						Reduction from Shielding[F]:	0.0	0.0
						Expected Noise Level at R2:	**66.1**	**59.4**

Architectural Coatings (~60 days)								
Construction Phase Equipment[A]	**# of Items[A]**	**Mitigated L_{eq} @ 50-ft. (dBA)[B]**	**Distance to Receptor (ft)[C]**	**Item Usage Percent %[D]**	**Distance Correction[E]**	**Usage Adjustment (dB)[E]**	**Receptor Item L_{max} (dBA)**	**Receptor Item L_{eq} (dBA)**
Air Compressor	1	75	680	40	-22.7	-4.0	52.3	48.3
						Total:	52.3	48.3
						Reduction from Shielding[F]:	0.0	0.0
						Expected Noise Level at R2:	**52.3**	**48.3**

Paving & Landscaping (~21 days)								
Construction Phase Equipment[A]	**# of Items[A]**	**Mitigated L_{eq} @ 50-ft. (dBA)[B]**	**Distance to Receptor (ft)[C]**	**Item Usage Percent %[D]**	**Distance Correction[E]**	**Usage Adjustment (dB)[E]**	**Receptor Item L_{max} (dBA)**	**Receptor Item L_{eq} (dBA)**
Paver	1	80	230	12	-13.3	-9.2	66.7	57.5
Concrete Mixer Truck	1	75	230	16	-13.3	-8.0	61.7	53.8
Roller	1	74	230	10	-13.3	-10.0	60.7	50.7
						Total:	68.7	59.7
						Reduction from Shielding[F]:	0.0	0.0
						Expected Noise Level at R2:	**68.7**	**59.7**

Construction Noise Prediction

Receptor R2 (South)

Footnotes:

Duration of each construction phase based on estimates provided by Agromin.

A - Equipment type required for each construction phase based on CalEEMod and RS Means data, adjusted to represent the appropriate scope of Project. For each phases, it is assumed that only one of each construction equipment type would be operating simultaneously. This approach remains conservative, as it assumes all noise generating equipment would be operating simultaneously in the area closest to the receptor, when in reality equipment will be operating intermittently and at greater distances that those assessed.

B - Equipment noise levels (L_{eq}) based on Ventura County's *Construction Noise Threshold Criteria and Control Plan* . See Figure A-4 in Appendix A of the Construction Guidance document for the mitigated equipment noise levels (L_{eq}). Agromin has committed to purchasing all new equipment that is expected to incorporate modern noise-controls (upgraded mufflers, acoustical engine lining, etc.) by design. The mitigated equipment noise levels (L_{eq}) represent "estimated level obtainable by quieter methods or equipment and implementing feasible noise controls."

C - Represents closest distance (ft.) between each construction activity/phase and receptor location, estimated using Google Earth.

D - Equipment usage percent (%) based on Ventura County's *Construction Noise Threshold Criteria and Control Plan* , adjusted based on the expected construction methods.

E - Distance correction and usage adjustment (dB) factors based on applicable equations provided in the Federal Highway Administration's *Roadway Construction Noise Model* .

F - No shielding/attenuation is expected between construction noise sources and Receptor 2 (R2).

Construction Noise Prediction

Receptor R3 (Southeast)

Demolition Phase (~14 days expected)								
Construction Phase Equipment[A]	# of Items[A]	Mitigated L_{eq} @ 50-ft. (dBA)[B]	Distance to Receptor (ft)[C]	Item Usage Percent %[D]	Distance Correction[E]	Usage Adjustment (dB)[E]	Receptor Item L_{max} (dBA)	Receptor Item L_{eq} (dBA)
Dozer	1	75	1,080	4	-26.7	-14.0	48.3	34.3
Excavator	1	75	1,080	16	-26.7	-8.0	48.3	40.4
						Total:	51.3	41.3
						Reduction from Shielding[F]:	1.0	1.0
						Expected Noise Level at R3:	**50.3**	**40.3**

Site Preparation (~21 days)								
Construction Phase Equipment[A]	# of Items[A]	Mitigated L_{eq} @ 50-ft. (dBA)[B]	Distance to Receptor (ft)[C]	Item Usage Percent %[D]	Distance Correction[E]	Usage Adjustment (dB)[E]	Receptor Item L_{max} (dBA)	Receptor Item L_{eq} (dBA)
Dozers	1	75	190	4	-11.6	-14.0	63.4	49.4
Tractors/Loaders/Backhoes	1	75	190	16	-11.6	-8.0	63.4	55.4
						Total:	66.4	56.4
						Reduction from Shielding[F]:	1.0	1.0
						Expected Noise Level at R3:	**65.4**	**55.4**

Grading (~28 days)								
Construction Phase Equipment[A]	# of Items[A]	Mitigated L_{eq} @ 50-ft. (dBA)[B]	Distance to Receptor (ft)[C]	Item Usage Percent %[D]	Distance Correction[E]	Usage Adjustment (dB)[E]	Receptor Item L_{max} (dBA)	Receptor Item L_{eq} (dBA)
Excavator	1	75	210	16	-12.5	-8.0	62.5	54.6
Dozer	1	75	210	16	-12.5	-8.0	62.5	54.6
Grader	1	75	210	4	-12.5	-14.0	62.5	48.6
Tractors/Loaders/Backhoes	1	75	210	16	-12.5	-8.0	62.5	54.6
						Total:	68.6	59.7
						Reduction from Shielding[F]:	1.0	1.0
						Expected Noise Level at R3:	**67.6**	**58.7**

Construction Noise Prediction

Receptor R3 (Southeast)

Building Construction (~90 days)

Construction Phase Equipment[A]	# of Items[A]	Mitigated L_{eq} @ 50-ft. (dBA)[B]	Distance to Receptor (ft)[C]	Item Usage Percent %[D]	Distance Correction[E]	Usage Adjustment (dB)[E]	Receptor Item L_{max} (dBA)	Receptor Item L_{eq} (dBA)
Crane	1	75	450	8	-19.1	-11.0	55.9	44.9
Generator	1	75	450	40	-19.1	-4.0	55.9	51.9
Welders (Welder/Torch)	1	74	450	20	-19.1	-7.0	54.9	47.9
Tractors/Loader/Backhoe	1	75	450	16	-19.1	-8.0	55.9	48.0
						Total:	61.7	54.9
						Reduction from Shielding[F]:	1.0	1.0
						Expected Noise Level at R3:	**60.7**	**53.9**

Architectural Coatings (~60 days)

Construction Phase Equipment[A]	# of Items[A]	Mitigated L_{eq} @ 50-ft. (dBA)[B]	Distance to Receptor (ft)[C]	Item Usage Percent %[D]	Distance Correction[E]	Usage Adjustment (dB)[E]	Receptor Item L_{max} (dBA)	Receptor Item L_{eq} (dBA)
Air Compressor	1	75	450	40	-19.1	-4.0	55.9	51.9
						Total:	55.9	51.9
						Reduction from Shielding[F]:	1.0	1.0
						Expected Noise Level at R3:	**54.9**	**50.9**

Paving & Landscaping (~21 days)

Construction Phase Equipment[A]	# of Items[A]	Mitigated L_{eq} @ 50-ft. (dBA)[B]	Distance to Receptor (ft)[C]	Item Usage Percent %[D]	Distance Correction[E]	Usage Adjustment (dB)[E]	Receptor Item L_{max} (dBA)	Receptor Item L_{eq} (dBA)
Paver	1	80	230	12	-13.3	-9.2	66.7	57.5
Concrete Mixer Truck	1	75	230	16	-13.3	-8.0	61.7	53.8
Roller	1	74	230	10	-13.3	-10.0	60.7	50.7
						Total:	68.7	59.7
						Reduction from Shielding[F]:	1.0	1.0
						Expected Noise Level at R3:	**67.7**	**58.7**

Construction Noise Prediction

Receptor R3 (Southeast)

Footnotes:

Duration of each construction phase based on estimates provided by Agromin.

A - Equipment type required for each construction phase based on CalEEMod and RS Means data, adjusted to represent the appropriate scope of Project. For each phases, it is assumed that only one of each construction equipment type would be operating simultaneously. This approach remains conservative, as it assumes all noise generating equipment would be operating simultaneously in the area closest to the receptor, when in reality equipment will be operating intermittently and at greater distances that those assessed.

B - Equipment noise levels (L_{eq}) based on Ventura County's *Construction Noise Threshold Criteria and Control Plan* . See Figure A-4 in Appendix A of the Construction Guidance document for the mitigated equipment noise levels (L_{eq}). Agromin has committed to purchasing all new equipment that is expected to incorporate modern noise-controls (upgraded mufflers, acoustical engine lining, etc.) by design. The mitigated equipment noise levels (L_{eq}) represent "estimated level obtainable by quieter methods or equipment and implementing feasible noise controls."

C - Represents closest distance (ft.) between each construction activity/phase and receptor location, estimated using Google Earth.

D - Equipment usage percent (%) based on Ventura County's *Construction Noise Threshold Criteria and Control Plan* , adjusted based on the expected construction methods.

E - Distance correction and usage adjustment (dB) factors based on applicable equations provided in the Federal Highway Administration's *Roadway Construction Noise Model* .

F - Minimal attentuation is provided by the row of windbreak trees along the Facility's eastern boundary. This tree row will be preserved and is anticipated to provide -1 dBA of attenuation at R3.

APPENDIX F

PROJECT INDUSTRIAL SOURCE NOISE IMPACT DETERMINATION

SoundPLAN Essential 3.0 - Model Settings & Data

Noise Standards Utilized	
Noise Source	**Noise Standard**
Traffic/Road	Traffic Noise Model - FHWA; 1998 (TNM)
Industrial	ISO 9613-2: 1996

Environmental/Meteorological Settings		
Parameter	**Setting**	**Unit**
Temperature	61	F°
	16.1	C°
Humidity	79	%
Air Pressure	1013	mbar (SoundPLAN default)

Note: Average temperature and humidity data for Santa Paula taken from the Western Regional Climate Center (WRCC).

Calculation Settings		
Grid Noise Map		
Height above ground:	1.5	meters
	4.9	feet
Grid distance:	5.0	meters
	16.4	feet
Limit Lines		
Height above ground:	1.5	meters
	4.9	feet

Receiver Settings		
Height above ground for free field receivers:	1.5	meters
	4.9	feet
Height above ground floor for building receivers:	2	meters
	6.6	feet
Floor height:	3.7	meters
	12.1	feet

Volume Attenuation Areas			
Type	**Description**	**Height**	
Foliage	Windbreak trees along eastern Facility boundary	9.1	meters
		30	feet

Facility Building Data		
Name	**Height**	
Administration Building	9.4	meters
	31	feet
Maintenance Building	11.9	meters
	39	feet
Production Building	11.9	meters
	39	feet
Dry Organics (Green / Wood)	11.9	meters
	39	feet
Wet Organics (Food)	11.9	meters
	39	feet

Industrial Noise Sources

Facility Noise Sources + Significance Determination

Facility Industrial Noise Source Summary					
Source Description		Noise Level (dBA)		Model Parameters	
Name	Noise Sources	L_{eq} @ 50-feet	Basis	Source Type	Reference Spectrum
Open Windrow Composting	Off-road equipment (loaders, tractors, etc.), On-road equipment (water trucks), Portable equipment (grinders, screens, etc.), Bagging operations, Vehicles, etc.	89.0	Oxnard-Shoreline Source Calculations	Area Source	Averaged Industry
CASP System	Blower/Fan Group	67.0	Manufacturer Information	Point Source	Centrifugal Blower
AD System	Internal Combustion Engine & Exhaust	61.3	Manufacturer Information	Point Source	Axial-Flow Fan

Industrial Noise Impacts @ Facility Receptors (R1, R2, and R3)									
Receptor	Ambient Noise Levels (dBA)			Facility Noise Levels (dBA)[A]			Total Noise Level (dBA)[B]		
	Daytime (L_{eq})	Evening (L_{eq})	Nighttime (L_{eq})	Daytime (L_{eq})	Evening (L_{eq})	Nighttime (L_{eq})	Daytime (L_{eq})	Evening (L_{eq})	Nighttime (L_{eq})
R1 (southwest)	51.8	43.0	45.1	24.9	0.0	0.0	51.9	43.0	45.1
R2 (south)	46.4	37.6	39.7	30.7	17.0	17.0	46.6	37.6	39.7
R3 (southeast)	44.0	35.2	37.3	23.0	7.1	7.1	44.1	35.2	37.3

A - Facility noise levels at nearby receptors were modeled in SoundPLAN Essential software. Please note that open windrow equipment (i.e. Oxnard-Shoreline Facility Sources) will operate during the daytime only. The CASP and AD systems equipment will operate 24-hours/day, and therefore evening and nighttime noise levels were input into the model See the model results presented in Appendix E and Figure 5 for more detail.

B - The total noise level at each receptor was determined by combining the ambient noise level with the noise level generated by Facility industrial operations, as modeled in SoundPLAN Essential. The total noise level is utilized to determine the significance of noise impacts to Facility receptors (R1, R2, R3).

Total Noise Level & Ventura County Significance Determination									
Parameter	Receptor 1 (R1)			Receptor 2 (R2)			Receptor 3 (R3)		
	Daytime (L_{eq})	Evening (L_{eq})	Nighttime (L_{eq})	Daytime (L_{eq})	Evening (L_{eq})	Nighttime (L_{eq})	Daytime (L_{eq})	Evening (L_{eq})	Nighttime (L_{eq})
Total Noise Level (dBA)[B]	51.9	43.0	45.1	46.6	37.6	39.7	44.1	35.2	37.3
Significance Threshold[C]	55.0	50.0	48.1	55.0	50.0	45.0	55.0	50.0	45.0
Significant?	No	No	No	No	No	No	No	No	No

C - Significance thresholds shown for daytime (6:00 AM-7:00 PM), evening (7:00 PM-10:00 PM), and nighttime (10:00 PM-6:00 AM) are from the Ventura County *General Plan Noise Element* . Per Ventura County guidance, if the ambient noise level exceeds the "fixed" threshold, then the "ambient +3 dBA" was utilized as the significance threshold. See Appendix C for more detail.

Covered Aerated Static Pile (CASP)

CASP Noise Source Data

Noise Source	Manufacturer/ Model	Noisy Component	Manufacturer Information		Converted		Arithmetic SPL ($10^{(X/10)}$)
			Measured Distance (ft.)	Measured Noise Level (dBA)	Reference Distance (ft.)	Converted Noise Level (dBA)	
Aeration Fan #1	TS272-008	Outlet Duct	5	84	50	64	2511886.4
Aeration Fan #2	TS272-008	Outlet Duct	5	84	50	64	2511886.4
						Total CASP Noise Level @ 50-feet:	**67.0** dBA

Note: The noise information shown above was provided by GORE™ Creative Technologies Worldwide (GORE). GORE confirmed that two (2) fans would be required to aerated the proposed 75,000 ton/year CASP system. The noise level shown is based on GORE field measurements collected 5-feet from the fan outlet duct.

Anaerobic Digester (AD)

AD Noise Source Data (SMARTFERM®)						
Noise Source	Noisy Component	Manufacturer Information		Converted		Arithemetic SPL ($10^{(X/10)}$)
		Measured Distance (ft.)	Measured Noise Level (dBA)	Reference Distance (ft.)	Converted Noise Level (dBA)	
Internal Combustion Engine	Exhaust	32.8	65	50	61.3	1361505.825
					Total AD Noise Level @ 50-feet:	**61.3** dBA

Note: The noise information shown above was provided by Zero Waste Energy (ZWE). ZWE confirmed that the primary noise generating component of their SMARTFERM® AD system is the engine exhaust. ZWE confirmed that one 100 kW internal combustion engine would power each AD system. The noise level shown above is based on ZWE field measurements collected 10 meters (32.8 feet) from the engine exhaust outlet.

Noise Emissions of Industry Sources

Source name	Reference	Level		Frequency spectrum [dB(A)]								Corrections		
				63	125	250	500	1	2	4	8	Kwall	CI	CT
			dB(A)	Hz	Hz	Hz	Hz	kHz	kHz	kHz	kHz	dB(A)	dB(A)	dB(A)
AD Engine	Unit	Leq1	61.3	28.8	46.4	55.4	54.8	53.0	54.2	51.5	47.9	-	-	-
		Leq2	61.3	28.8	46.4	55.4	54.8	53.0	54.2	51.5	47.9	-	-	-
		Leq3	61.3	28.8	46.4	55.4	54.8	53.0	54.2	51.5	47.9	-	-	-
CASP System 2	Unit	Leq1	67.0	25.2	43.3	63.3	58.2	58.4	59.1	57.4	51.3	-	-	-
		Leq2	67.0	25.2	43.3	63.3	58.2	58.4	59.1	57.4	51.3	-	-	-
		Leq3	67.0	25.2	43.3	63.3	58.2	58.4	59.1	57.4	51.3	-	-	-
CASP System 1	Unit	Leq1	67.0	25.2	43.3	63.3	58.2	58.4	59.1	57.4	51.3	-	-	-
		Leq2	67.0	25.2	43.3	63.3	58.2	58.4	59.1	57.4	51.3	-	-	-
		Leq3	67.0	25.2	43.3	63.3	58.2	58.4	59.1	57.4	51.3	-	-	-
Windrows 1	Unit	Leq1	89.0	72.1	77.1	81.2	82.3	82.9	81.2	78.8	74.8	-	-	-
		Leq2	-	-	-	-	-	-	-	-	-	-	-	-
		Leq3	-	-	-	-	-	-	-	-	-	-	-	-
Windrows 2	Unit	Leq1	89.0	72.1	77.1	81.2	82.3	82.9	81.2	78.8	74.8	-	-	-
		Leq2	-	-	-	-	-	-	-	-	-	-	-	-
		Leq3	-	-	-	-	-	-	-	-	-	-	-	-
Windrows 3	Unit	Leq1	89.0	72.1	77.1	81.2	82.3	82.9	81.2	78.8	74.8	-	-	-
		Leq2	-	-	-	-	-	-	-	-	-	-	-	-
		Leq3	-	-	-	-	-	-	-	-	-	-	-	-

Receiver List

No.	Receiver name	Coordinates X (in meter)	Coordinates Y (in meter)	Building side	Floor	Heigh m	Limit Leq1 dB(A)	Limit Leq2 dB(A)	Limit Leq3 dB(A)	Level Leq1 dB(A)	Level Leq2 dB(A)	Level Leq3 dB(A)	Conflict Leq1 dB(A)	Conflict Leq2 dB(A)	Conflict Leq3 dB(A)
1	R1 (southwest)	304169.21	3797362.6		1.Fl	0.56	-	-	-	24.9	-0.1	-0.1	-	-	-
2	R2 (south)	304674.78	3797437.9		1.Fl	1.40	-	-	-	30.7	17.0	17.0	-	-	-
3	R3 (southeast)	304929.52	3797623.1		1.Fl	1.19	-	-	-	22.5	6.8	6.8	-	-	-
					2.Fl	4.89	-	-	-	23.0	7.1	7.1	-	-	-

Contribution Levels of the Receivers

Source name		Level Leq1	Leq2 dB(A)	Leq3
R1 (southwest)	1.Fl	24.9	-0.1	-0.1
AD Engine		-12.4	-12.4	-12.4
CASP System 1		-5.2	-5.2	-5.2
CASP System 2		-2.1	-2.1	-2.1
Windrows 1		21.5	0.0	0.0
Windrows 2		16.4	0.0	0.0
Windrows 3		20.9	0.0	0.0
R2 (south)	1.Fl	30.7	17.0	17.0
AD Engine		11.4	11.4	11.4
CASP System 1		14.6	14.6	14.6
CASP System 2		9.0	9.0	9.0
Windrows 1		29.6	0.0	0.0
Windrows 2		14.3	0.0	0.0
Windrows 3		22.7	0.0	0.0
R3 (southeast)	1.Fl	22.5	6.8	6.8
AD Engine		-4.4	-4.4	-4.4
CASP System 1		4.4	4.4	4.4
CASP System 2		2.3	2.3	2.3
Windrows 1		20.7	0.0	0.0
Windrows 2		13.9	0.0	0.0
Windrows 3		15.1	0.0	0.0
R3 (southeast)	2.Fl	23.0	7.1	7.1
AD Engine		-4.3	-4.3	-4.3
CASP System 1		4.6	4.6	4.6
CASP System 2		2.5	2.5	2.5
Windrows 1		20.9	0.0	0.0
Windrows 2		14.4	0.0	0.0
Windrows 3		16.5	0.0	0.0

Spectra of the Receivers

No.	Name	Floor	Time slice	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
1	R1 (southwest)	1.Fl	Leq1	10.3	15.0	18.7	19.0	18.7	15.2	6.5	-18.3
			Leq2	-35.6	-18.7	-2.0	-8.1	-9.6	-11.5	-21.3	-57.5
			Leq3	-35.6	-18.7	-2.0	-8.1	-9.6	-11.5	-21.3	-57.5
2	R2 (south)	1.Fl	Leq1	14.9	19.8	24.1	24.6	24.7	22.2	17.0	4.0
			Leq2	-19.4	-1.7	13.3	9.3	8.7	9.1	5.7	-4.6
			Leq3	-19.4	-1.7	13.3	9.3	8.7	9.1	5.7	-4.6
3	R3 (southeast)	1.Fl	Leq1	9.8	14.0	16.6	16.4	15.7	12.0	2.7	-23.9
			Leq2	-31.3	-13.5	4.0	-1.1	-1.6	-2.1	-8.4	-31.0
			Leq3	-31.3	-13.5	4.0	-1.1	-1.6	-2.1	-8.4	-31.0
		2.Fl	Leq1	10.1	14.4	17.1	16.9	16.2	12.4	3.0	-23.7
			Leq2	-31.1	-13.3	4.3	-0.9	-1.4	-1.8	-8.2	-30.7
			Leq3	-31.1	-13.3	4.3	-0.9	-1.4	-1.8	-8.2	-30.7

APPENDIX G

PROJECT TRAFFIC SOURCE NOISE IMPACT DETERMINATION

Traffic Model Data Summary + Inputs

BASELINE - Limoneira/Agromin Agricultural Composting Operation (Santa Paula)

Trip Type	Vehicle Type	Vehicle Category	Yearly Loads[A]	Daily Loads[B]	Avg. Daily Trips[C]	Operation Hours[D]	% Distribution Throughout Operating Day[D]	Trips During Peak Hour[E]
Incoming Waste	Front Loader	HHD	0	0	0	7AM-5PM, Mon.-Fri.	9 AM-11 AM (40%), 1 PM-3 PM (35%), rest throughout day (25%)	0
	Side Loader	HHD	3,496	14	28	7AM-5PM, Mon.-Fri.	9 AM-11 AM (40%), 1 PM-3 PM (35%), rest throughout day (25%)	6
	Transfer Trailer	HHD	1,547	6	12	7AM-5PM, Mon.-Fri.	9 AM-3 PM (90%), rest throughout day (10%)	3
	Business Haul	LDT	1,410	6	12	7AM-5PM, Mon.-Fri.	10 AM-4 PM (90%), rest throughout day (10%)	2
	Self Haul	LDT	1,081	5	10	7AM-5PM, Mon.-Fri.	10 AM-4 PM (90%), rest throughout day (10%)	2
	Roll Off	HHD	772	3	6	7AM-5PM, Mon.-Fri.	Evenly throughout day	1
Incoming Deliveries	Transfer Trailer	HHD	0	0	0	7AM-5PM, Mon.-Fri.	10 AM-4 PM (90%), rest throughout day (10%)	0
Outgoing Sales	Roll Off	HHD	47	1	2	7AM-5PM, Mon.-Fri.	Evenly throughout day	1
	Transfer Trailer	HHD	1140	5	10	7AM-5PM, Mon.-Fri.	Evenly throughout day	1
	Dump Truck	HHD	393	2	4	7AM-5PM, Mon.-Fri.	Evenly throughout day	1
	Self Pickup/Trailer	LDT	1572	7	14	7AM-5PM, Mon.-Fri.	10 AM-3 PM (85%), rest throughout day (15%)	3
Employees	Employees	LDA	11	1	2	7AM-5PM, Mon.-Sat.	Arrive between 6AM-7AM. Depart between 5PM-6PM.	1
	Visitors	LDA	2	1	2	7AM-5PM, Mon.-Sat.	Evenly throughout day	1
			Totals:	51	102			

Baseline Operating Days: 260 days/year

PROJECT - Biogenic Energy Park (Santa Paula)

Trip Type	Vehicle Type	Vehicle Category	Yearly Loads[A]	Daily Loads[B]	Avg. Daily Trips[C]	Operation Hours[D]	% Distribution Throughout Operating Day[D]	Trips During Peak Hour[E]
Incoming Waste	Front Loader	HHD	8,823	34	68	7AM-5PM, Mon.-Fri.	9 AM-11 AM (40%), 1 PM-3 PM (35%), rest throughout day (25%)	14
	Side Loader	HHD	10,177	40	80	7AM-5PM, Mon.-Fri.	9 AM-11 AM (40%), 1 PM-3 PM (35%), rest throughout day (25%)	16
	Transfer Trailer	HHD	6,225	25	50	7AM-5PM, Mon.-Fri.	9 AM-3 PM (90%), rest throughout day (10%)	12
	Business Haul	LDT	5,457	21	42	7AM-5PM, Mon.-Fri.	10 AM-4 PM (90%), rest throughout day (10%)	7
	Self Haul	LDT	26,702	103	206	7AM-5PM, Mon.-Fri.	10 AM-4 PM (90%), rest throughout day (10%)	31
	Roll Off	HHD	1,439	6	12	7AM-5PM, Mon.-Fri.	Evenly throughout day	2
Incoming Deliveries	Transfer Trailer	HHD	1,788	9	18	7AM-5PM, Mon.-Fri.	10 AM-4 PM (90%), rest throughout day (10%)	3
Outgoing Sales	Roll Off	HHD	1,163	4	8	7AM-5PM, Mon.-Fri.	Evenly throughout day	1
	Transfer Trailer	HHD	5,713	22	44	7AM-5PM, Mon.-Fri.	Evenly throughout day	5
	Dump Truck	HHD	7,232	28	56	7AM-5PM, Mon.-Fri.	Evenly throughout day	6
	Self Pickup/Trailer	LDT	5,627	22	44	7AM-5PM, Mon.-Fri.	10 AM-3 PM (85%), rest throughout day (15%)	8
Employees	Employees	LDA	13,520	52	104	7AM-5PM, Mon.-Sat.	Arrive between 6AM-7AM. Depart between 5PM-6PM.	52
	Visitors	LDA	2,600	10	20	7AM-5PM, Mon.-Sat.	Evenly throughout day	2
			Totals:	376	752			

Project Operating Days: 260 days/year

Footnotes:

A - Baseline yearly loads based on actual data collected at the existing 15-acre Santa Paula facility during the 2014 operating year. Estimated Project yearly loads were calculated by scaling up the baseline loads to reflect the expanded feedstock storage and processing capacity of the new 70-acre Facility.

B - Daily loads equals the yearly loads divided by the number of operating days per year.

C - Average daily trips is the number of daily loads doubled, based on the assumption that each vehicle will make a round trip (1 inbound, 1 outbound) each time they travel to the facility.

D - Operating hours and distribution % throughout the day is based on information provided by Agromin.

E - Based on the trip distribution % throughout the day, the expect peak hour for traffic is between 10:00 AM - 11:00 AM. The peak hour trips shown represent the number of vehicle trips expected during this peak hour.

Total Trip Distribution on Local Roadways

Route	Distribution %	Total Baseline Facility Trips	Total Project Trips	Increment
Northbound SR 118 to Telegraph Road	12%	13	91	78
Eastbound SR 126, exit Wells Road to Telegraph Road	68%	70	512	442
Ventura side streets to Telegraph Road	6%	7	46	39
Santa Paula side streets to Telegraph Road	4%	5	31	26
Westbound SR 126, exit Briggs Road to Telegraph Road	10%	11	76	65

Traffic Model Data Summary + Inputs

Average Hour Trips by Vehicle Type				
Vehicle Type	**Baseline Facility Trips**	**Project Trips**	**Increment**	**Average Hour % of Total Trips**
Haul Truck (HHD)	7	34	27	4%
Light-Duty Truck (LDT)	4	30	26	3%
Passenger (LDA)	1	13	12	2%
Totals:	12	77	65	9%

Note: Referring to the trip distribution shown on the previous sheet, vehicle activity may occur anytime between the Facility's operation hours of 7:00 AM-5:00 PM. Average vehicle trips are determined by taking the daily trips and dividing them by the total number of operating hours in a single day (i.e. 10 hours).

Peak Hour Trips by Vehicle Type				
Vehicle Type	**Baseline Facility Trips**	**Project Trips**	**Increment**	**Peak Hour % of Total Trips**
Haul Truck (HHD)	13	59	46	8%
Light-Duty Truck (LDT)	7	46	39	6%
Passenger (LDA)	2	54	52	7%
Totals:	22	159	137	21%

Note: Based on the trip distribution shown on the previous sheet, it is assumed that peak vehicle activity will occur between 10:00 AM - 11:00 AM. Although employees are not expected to arrive during this peak hour (see employee trip distribution % on previous sheet), conservatively it is assumed 50% of the employee trips will also occur during the peak hour (10:00 AM - 11:00 AM).

Haul Road Model Inputs & Peak Hour Trip Data								
Road	**Speed Limit (km/h)**	**Road Width (m)**	**Road Material[A]**	**Truck Type**	**Baseline Trips[B]**	**% of Trips**	**Total Trips (Baseline + Project)**	**% of Trips**
Briggs Road	41 (25 MPH)	8	PCC	Haul Truck (HHD)	2	50%	6	35%
				Light-Duty Truck (LDT)	1	25%	5	29%
				Passenger (LDA)	1	25%	6	35%
Santa Paula side streets	81 (50 MPH)	8	PCC	Haul Truck (HHD)	1	33%	3	38%
				Light-Duty Truck (LDT)	1	33%	2	25%
				Passenger (LDA)	1	33%	3	38%
Telegraph Road (eastside)	81 (50 MPH)	8	PCC	Haul Truck (HHD)	3	1%	9	3%
				Light-Duty Truck (LDT)	2	1%	7	2%
				Passenger (LDA)	261	98%	268	94%
Edwards Ranch Road	41 (25 MPH)	6	Averaged (of DGAC and PCC)	Haul Truck (HHD)	15	52%	61	37%
				Light-Duty Truck (LDT)	9	31%	47	28%
				Passenger (LDA)	5	17%	57	35%
Olive Road	41 (25 MPH)	6	PCC	Haul Truck (HHD)	0	0%	0	0%
				Light-Duty Truck (LDT)	0	0%	0	0%
				Passenger (LDA)	23	100%	23	100%
Telegraph Road (westside)	81 (50 MPH)	8	PCC	Haul Truck (HHD)	12	4%	52	13%
				Light-Duty Truck (LDT)	7	3%	40	10%
				Passenger (LDA)	260	93%	305	77%
Ventura side streets	81 (50 MPH)	8	PCC	Haul Truck (HHD)	1	33%	4	36%
				Light-Duty Truck (LDT)	1	33%	3	27%
				Passenger (LDA)	1	33%	4	36%
Wells Road	73 (45 MPH)	19	PCC	Haul Truck (HHD)	11	58%	48	37%
				Light-Duty Truck (LDT)	6	32%	37	29%
				Passenger (LDA)	2	11%	44	34%

Footnotes:

Note: Each road segment shown above was modeled within SoundPLAN Essential 3.0. Both baseline and Project traffic was modeled to determine the incremental noise impacts to haul route receptors due to increased traffic on local roadways resulting from the Project.

A - Road Material: PCC = Portland cement concrete, DGAC = dense-graded asphaltic concrete

B - Baseline trips are based on actual vehicle counts collected by ATE on 1/21/2016 (see follow sheet) as well as actual data collected at the existing 15-acre Santa Paula facility during the 2014 operating year. Because the ATE traffic count does not distinguish between vehicle types, it is assumed that these trips were passenger vehicles (LDA). This represents the most conservative approach as passenger vehicles generate the lowest noise levels within SoundPLAN (i.e. lower baseline = larger Project haul truck impacts).

ATE Traffic Volumes

Collected 1/21/2016

Road Segment	Direction	Peak Hour Traffic Count
Edwards Ranch Road/Olive Road (north of Facility)	Northbound	11
	Southbound	12
	Eastbound	---
	Westbound	---

Road Segment	Direction	Peak Hour Traffic Count
Telegraph Road (west of Facility)	Northbound	---
	Southbound	---
	Eastbound	124
	Westbound	135

Road Segment	Direction	Peak Hour Traffic Count
Telegraph Road (east of Facility)	Northbound	---
	Southbound	---
	Eastbound	133
	Westbound	124

Note: Based on the trip distribution shown on the previous sheet, it is assumed that peak vehicle activity will occur between 10:00 AM - 11:00 AM. The data shown represents the actual vehicle count measured during this peak hour (10:00 AM-11:00 AM) on 1/21/2016 by Associated Traffic Engineer's (ATE). As the traffic count provided by ATE doesn't distinguish between vehicle types, each vehicle is assumed to be a passenger car (LDA) when modeled in SoundPLAN. This represents the most conservative approach as passenger vehicles generate the lowest noise levels within SoundPLAN (i.e. lower baseline = larger Project haul truck impacts).

Haul Route Noise Model

Model Results + Impact Determination

Haul Route Receptors			
Receptor	**Description**	**# of Floors**	**Existing Barriers**
R4	Briggs School	1	None
R5	Residential Dwelling	1	None
R6	Residential Dwelling	1	None
R7	Residential Dwelling	1	None
R8	Residential Housing Tract	1	4-Foot Wall along Telegraph Road
R9	Palms at Bonaventure Assisted Living & Memory Care	3	None

Baseline & Project Traffic Noise Levels @ Haul Route Receptors				
Receptor	**Baseline (dBA)**	**Applicable L_{eq}(1hr)**	**Project (dBA)**	**Noise Level Change (dBA)**
	Daytime Outdoor L_{eq}(1hr)	**Significance Threshold[A]**	**Daytime Outdoor L_{eq}(1hr)**	**Daytime Outdoor L_{eq}(1hr)**
R4	49.1	65.0	53.5	4.4
R5	55.8	65.0	57.7	1.9
R6	57.0	65.0	61.3	4.3
R7	49.7	65.0	54.8	5.1
R8	58.9	65.0	63.4	4.5
R9	56.8	65.0	62.3	5.5

Note: Both the baseline and Project traffic noise levels at haul route receptors were modeled in SoundPLAN Essential. See previous sheet which describes the methodologies and traffic counts input into both the baseline and Project traffic noise models. Please see Figure 6 (Appendix A) for the baseline mode results and Figure 7 (Appendix A) for the Project traffic model results.

A - Per Ventura County guidance, the traffic significance threshold is either the "fixed" threshold of 65 dBA L_{eq}(1hr) or, if background noise levels exceed or are within 3 decibels of the fixed threshold, then the "ambient noise level +3 dBA" is utilized as the significance threshold.

Total Traffic Noise Levels & Significance Determination			
Receptor	**Total Traffic Noise Level (L_{eq}1H)**	**Significance Threshold (L_{eq}1H)**	**Significant?**
R4	54.8	65.0	No
R5	59.9	65.0	No
R6	62.7	65.0	No
R7	56.0	65.0	No
R8	64.7	65.0	No
R9	63.4	65.0	No

Noise Emissions of Road Traffic

Station km	ADT Veh/24	Vehicles type	Traffic values Vehicle name	day Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradien Min / Ma %
Edwards Ranch Rd (southbound)				Traffic direction: In entry direction						
0+000	696	Total	-	29	-	Stop sign	0.0	100.0	Average (of DGAC and PCC)	0.0
		Automobiles	-	5	41					
		Medium trucks	-	9	41					
		Heavy trucks	-	15	41					
		Buses	-	-	41					
		Motorcycles	-	-	41					
		Auxiliary Vehicle	-	-	41					
1+144	-					-	-	-	-	-
Edwards Ranch Rd (northbound)				Traffic direction: In entry direction						
0+000	696	Total	-	29	-	none	-	-	Average (of DGAC and PCC)	0.0
		Automobiles	-	5	41					
		Medium trucks	-	9	41					
		Heavy trucks	-	15	41					
		Buses	-	-	41					
		Motorcycles	-	-	41					
		Auxiliary Vehicle	-	-	41					
1+138	-					-	-	-	-	-
Telegraph Rd east (eastbound)				Traffic direction: In entry direction						
0+000	6384	Total	-	266	-	Stop sign	0.0	100.0	PCC (Portland cement concrete)	0.0
		Automobiles	-	261	81					
		Medium trucks	-	2	81					
		Heavy trucks	-	3	81					
		Buses	-	-	81					
		Motorcycles	-	-	81					
		Auxiliary Vehicle	-	-	81					
3+119	-					-	-	-	-	-
Telegraph Rd east (westbound)				Traffic direction: In entry direction						
0+000	6384	Total	-	266	-	none	-	-	PCC (Portland cement concrete)	0.0
		Automobiles	-	261	81					
		Medium trucks	-	2	81					
		Heavy trucks	-	3	81					
		Buses	-	-	81					
		Motorcycles	-	-	81					
		Auxiliary Vehicle	-	-	81					
3+118	-					-	-	-	-	-
SP Side Streets (eastbound)				Traffic direction: In entry direction						
0+000	72	Total	-	3	-	none	-	-	PCC (Portland cement concrete)	0.0
		Automobiles	-	1	81					
		Medium trucks	-	1	81					
		Heavy trucks	-	1	81					
		Buses	-	-	81					
		Motorcycles	-	-	81					
		Auxiliary Vehicle	-	-	81					
0+504	-					-	-	-	-	-
SP Side Streets (westbound)				Traffic direction: In entry direction						
0+000	72	Total	-	3	-	none	-	-	PCC (Portland cement concrete)	0.0
		Automobiles	-	1	81					
		Medium trucks	-	1	81					
		Heavy trucks	-	1	81					
		Buses	-	-	81					
		Motorcycles	-	-	81					
		Auxiliary Vehicle	-	-	81					
0+502	-					-	-	-	-	-

Noise Emissions of Road Traffic

Station km	ADT Veh/24	Traffic values: Vehicles type	Vehicle name	day Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradien Min / Ma %
Briggs Rd (southbound)			Traffic direction: In entry direction							
0+000	96	Total	-	4	-	Stop sign	0.0	100.0	PCC (Portland cement concrete)	0.0
		Automobiles	-	1	41					
		Medium trucks	-	1	41					
		Heavy trucks	-	2	41					
		Buses	-	-	41					
		Motorcycles	-	-	41					
		Auxiliary Vehicle	-	-	41					
0+647	-					-	-	-	-	-
Briggs Rd (northbound)			Traffic direction: In entry direction							
0+000	96	Total	-	4	-	On ramp	0.0	100.0	PCC (Portland cement concrete)	0.0
		Automobiles	-	1	41					
		Medium trucks	-	1	41					
		Heavy trucks	-	2	41					
		Buses	-	-	41					
		Motorcycles	-	-	41					
		Auxiliary Vehicle	-	-	41					
0+647	-					-	-	-	-	-
Telegraph Rd west (westbound)			Traffic direction: In entry direction							
0+000	6696	Total	-	279	-	Stop sign	0.0	100.0	PCC (Portland cement concrete)	0.0
		Automobiles	-	260	81					
		Medium trucks	-	7	81					
		Heavy trucks	-	12	81					
		Buses	-	-	81					
		Motorcycles	-	-	81					
		Auxiliary Vehicle	-	-	81					
3+117	-					-	-	-	-	-
Telegraph Rd west (eastbound)			Traffic direction: In entry direction							
0+000	6696	Total	-	279	-	Traffic light	0.0	50.0	PCC (Portland cement concrete)	0.0
		Automobiles	-	260	81					
		Medium trucks	-	7	81					
		Heavy trucks	-	12	81					
		Buses	-	-	81					
		Motorcycles	-	-	81					
		Auxiliary Vehicle	-	-	81					
3+117	-					-	-	-	-	-
VTA Side Streets (westbound)			Traffic direction: In entry direction							
0+000	72	Total	-	3	-	Traffic light	0.0	50.0	PCC (Portland cement concrete)	0.0
		Automobiles	-	1	81					
		Medium trucks	-	1	81					
		Heavy trucks	-	1	81					
		Buses	-	-	81					
		Motorcycles	-	-	81					
		Auxiliary Vehicle	-	-	81					
0+935	-					-	-	-	-	-
VTA Side Streets (eastbound)			Traffic direction: In entry direction							
0+000	72	Total	-	3	-	none	-	-	PCC (Portland cement concrete)	0.0
		Automobiles	-	1	81					
		Medium trucks	-	1	81					
		Heavy trucks	-	1	81					
		Buses	-	-	81					
		Motorcycles	-	-	81					
		Auxiliary Vehicle	-	-	81					
0+934	-					-	-	-	-	-

Noise Emissions of Road Traffic

Station km	ADT Veh/24	Traffic values: Vehicles type	Vehicle name	day Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradien Min / Ma %
Wells Rd (southbound)		Traffic direction: In entry direction								
0+000	456	Total	-	19	-	Traffic light	0.0	50.0	PCC (Portland cement concrete)	0.0
		Automobiles	-	2	73					
		Medium trucks	-	6	73					
		Heavy trucks	-	11	73					
		Buses	-	-	73					
		Motorcycles	-	-	73					
		Auxiliary Vehicle	-	-	73					
0+744	-					-	-	-	-	-
Wells Rd (northbound)		Traffic direction: In entry direction								
0+000	456	Total	-	19	-	none	-	-	PCC (Portland cement concrete)	0.0
		Automobiles	-	2	73					
		Medium trucks	-	6	73					
		Heavy trucks	-	11	73					
		Buses	-	-	73					
		Motorcycles	-	-	73					
		Auxiliary Vehicle	-	-	73					
0+744	-					-	-	-	-	-
Olive Rd (north)		Traffic direction: In entry direction								
0+000	552	Total	-	23	-	Stop sign	0.0	100.0	PCC (Portland cement concrete)	0.0
		Automobiles	-	23	41					
		Medium trucks	-	-	41					
		Heavy trucks	-	-	41					
		Buses	-	-	41					
		Motorcycles	-	-	41					
		Auxiliary Vehicle	-	-	41					
0+767	-					-	-	-	-	-
Olive Rd (south)		Traffic direction: In entry direction								
0+000	552	Total	-	23	-	none	-	-	PCC (Portland cement concrete)	0.0
		Automobiles	-	23	41					
		Medium trucks	-	-	41					
		Heavy trucks	-	-	41					
		Buses	-	-	41					
		Motorcycles	-	-	41					
		Auxiliary Vehicle	-	-	41					
0+767	-					-	-	-	-	-

Receiver List

No.	Receiver name	Coordinates X in meter	Coordinates Y in meter	Building side	Floor	Height m	Limit L(Aeq1h) dB(A)	Level L(Aeq1h) dB(A)	Conflict L(Aeq1h) dB(A)
1	R4 - Briggs School	306357.78	3800531.03		1.Fl	1.50	-	49.1	-
2	R5 - Residence	304744.36	3799441.67		1.Fl	1.50	-	55.8	-
3	R6 - Residence	303807.74	3798782.93		1.Fl	1.50	-	57.0	-
4	R7 - Residence	303689.07	3798964.46		1.Fl	1.50	-	49.7	-
5	R8 - Residence	301230.19	3797032.41		1.Fl	1.50	-	58.9	-
6	R9 - Retirement Home	301019.62	3797015.88		1.Fl	1.50	-	54.0	-
					2.Fl	5.20	-	55.5	-
					3.Fl	8.90	-	56.8	-

Contribution Levels of the Receivers

Source name		Lane	Level L(Aeq1h) dB(A)
R4 - Briggs School	1.Fl		49.1
Briggs Rd (northbound)			40.9
Briggs Rd (southbound)			45.2
Edwards Ranch Rd (northbound)			14.0
Edwards Ranch Rd (southbound)			21.0
Olive Rd (north)			1.2
Olive Rd (south)			-6.3
SP Side Streets (eastbound)			39.5
SP Side Streets (westbound)			38.9
Telegraph Rd east (eastbound)			40.0
Telegraph Rd east (westbound)			39.6
Telegraph Rd west (eastbound)			16.2
Telegraph Rd west (westbound)			20.0
VTA Side Streets (eastbound)			0.0
VTA Side Streets (westbound)			0.0
Wells Rd (northbound)			0.0
Wells Rd (southbound)			0.0
R5 - Residence	1.Fl		55.8
Briggs Rd (northbound)			16.5
Briggs Rd (southbound)			16.6
Edwards Ranch Rd (northbound)			22.2
Edwards Ranch Rd (southbound)			29.9
Olive Rd (north)			10.1
Olive Rd (south)			2.2
SP Side Streets (eastbound)			2.7
SP Side Streets (westbound)			3.1
Telegraph Rd east (eastbound)			52.4
Telegraph Rd east (westbound)			53.1
Telegraph Rd west (eastbound)			24.2
Telegraph Rd west (westbound)			28.8
VTA Side Streets (eastbound)			-5.9
VTA Side Streets (westbound)			0.3
Wells Rd (northbound)			6.5
Wells Rd (southbound)			13.0
R6 - Residence	1.Fl		57.0
Briggs Rd (northbound)			11.6
Briggs Rd (southbound)			11.7
Edwards Ranch Rd (northbound)			40.6
Edwards Ranch Rd (southbound)			50.5
Olive Rd (north)			29.6
Olive Rd (south)			18.5
SP Side Streets (eastbound)			-1.7
SP Side Streets (westbound)			-1.7
Telegraph Rd east (eastbound)			53.2
Telegraph Rd east (westbound)			50.5
Telegraph Rd west (eastbound)			39.5
Telegraph Rd west (westbound)			47.0
VTA Side Streets (eastbound)			0.0
VTA Side Streets (westbound)			5.5
Wells Rd (northbound)			9.6
Wells Rd (southbound)			16.1
R7 - Residence	1.Fl		49.7
Briggs Rd (northbound)			11.5
Briggs Rd (southbound)			11.5
Edwards Ranch Rd (northbound)			33.2
Edwards Ranch Rd (southbound)			43.7
Olive Rd (north)			31.3
Olive Rd (south)			22.2
SP Side Streets (eastbound)			-1.7
SP Side Streets (westbound)			-1.6
Telegraph Rd east (eastbound)			44.2
Telegraph Rd east (westbound)			39.6

Contribution Levels of the Receivers

Source name	Lane	Level L(Aeq1h) dB(A)
Telegraph Rd west (eastbound)		36.8
Telegraph Rd west (westbound)		44.1
VTA Side Streets (eastbound)		-0.4
VTA Side Streets (westbound)		5.7
Wells Rd (northbound)		9.5
Wells Rd (southbound)		16.3
R8 - Residence 1.Fl		58.9
Briggs Rd (northbound)		0.0
Briggs Rd (southbound)		0.0
Edwards Ranch Rd (northbound)		17.7
Edwards Ranch Rd (southbound)		24.0
Olive Rd (north)		2.3
Olive Rd (south)		-5.6
SP Side Streets (eastbound)		0.0
SP Side Streets (westbound)		0.0
Telegraph Rd east (eastbound)		16.6
Telegraph Rd east (westbound)		12.8
Telegraph Rd west (eastbound)		56.6
Telegraph Rd west (westbound)		54.1
VTA Side Streets (eastbound)		25.4
VTA Side Streets (westbound)		32.4
Wells Rd (northbound)		40.7
Wells Rd (southbound)		46.2
R9 - Retirement Home 1.Fl		54.0
Briggs Rd (northbound)		0.0
Briggs Rd (southbound)		0.0
Edwards Ranch Rd (northbound)		14.8
Edwards Ranch Rd (southbound)		21.8
Olive Rd (north)		1.4
Olive Rd (south)		-6.0
SP Side Streets (eastbound)		0.0
SP Side Streets (westbound)		0.0
Telegraph Rd east (eastbound)		16.0
Telegraph Rd east (westbound)		12.3
Telegraph Rd west (eastbound)		50.2
Telegraph Rd west (westbound)		46.4
VTA Side Streets (eastbound)		36.3
VTA Side Streets (westbound)		43.1
Wells Rd (northbound)		41.5
Wells Rd (southbound)		48.2
R9 - Retirement Home 2.Fl		55.5
Briggs Rd (northbound)		0.0
Briggs Rd (southbound)		0.0
Edwards Ranch Rd (northbound)		13.2
Edwards Ranch Rd (southbound)		20.5
Olive Rd (north)		1.1
Olive Rd (south)		-6.4
SP Side Streets (eastbound)		0.0
SP Side Streets (westbound)		0.0
Telegraph Rd east (eastbound)		15.7
Telegraph Rd east (westbound)		11.9
Telegraph Rd west (eastbound)		51.6
Telegraph Rd west (westbound)		49.2
VTA Side Streets (eastbound)		38.3
VTA Side Streets (westbound)		43.7
Wells Rd (northbound)		43.3
Wells Rd (southbound)		48.8
R9 - Retirement Home 3.Fl		56.8
Briggs Rd (northbound)		0.0
Briggs Rd (southbound)		0.0
Edwards Ranch Rd (northbound)		12.5
Edwards Ranch Rd (southbound)		19.9

Contribution Levels of the Receivers

Source name	Lane	Level L(Aeq1h) dB(A)
Olive Rd (north)		0.8
Olive Rd (south)		-6.7
SP Side Streets (eastbound)		0.0
SP Side Streets (westbound)		0.0
Telegraph Rd east (eastbound)		15.4
Telegraph Rd east (westbound)		11.6
Telegraph Rd west (eastbound)		53.0
Telegraph Rd west (westbound)		50.5
VTA Side Streets (eastbound)		39.7
VTA Side Streets (westbound)		45.0
Wells Rd (northbound)		44.8
Wells Rd (southbound)		49.8

Spectra of the Receivers

No	Name	Floor	Time	50 H	63 H	80 H	100	125	160	200	250	315	400	500	630	800	1 kH	1 kH	2 kH	2 kH	2 kH	3 kH	4 kH	5 kH	6 kH	8 kH	10 k
1	R4 - Briggs School	1.Fl	L(Ae	17.	26.	32.	35.	37.	38.	39.	38.	35.	31.	31.	33.	35.	37.	38.	38.	37.	36.	34.	34.	31.	29.	25.	20.
2	R5 - Residence	1.Fl	L(Ae	23.	30.	35.	38.	40.	41.	42.	42.	42.	41.	41.	43.	44.	46.	46.	47.	45.	42.	40.	37.	34.	32.	28.	25.
4	R7 - Residence	1.Fl	L(Ae	22.	30.	35.	38.	40.	41.	41.	37.	32.	27.	27.	29.	30.	32.	33.	35.	36.	37.	38.	34.	29.	30.	26.	22.
3	R6 - Residence	1.Fl	L(Ae	27.	34.	40.	43.	45.	46.	47.	46.	43.	40.	40.	41.	42.	44.	44.	46.	45.	45.	44.	39.	35.	35.	32.	27.
5	R8 - Residence	1.Fl	L(Ae	26.	35.	41.	44.	46.	47.	48.	47.	45.	41.	42.	45.	47.	48.	48.	48.	47.	45.	45.	42.	39.	38.	35.	30.
6	R9 - Retirement Ho	1.Fl	L(Ae	22.	31.	37.	40.	42.	43.	44.	44.	40.	36.	36.	38.	39.	41.	42.	42.	41.	41.	40.	38.	35.	34.	30.	25.
		2.Fl	L(Ae	22.	31.	37.	40.	42.	43.	43.	41.	40.	41.	43.	45.	44.	45.	44.	44.	42.	41.	41.	38.	36.	34.	31.	26.
		3.Fl	L(Ae	22.	31.	36.	40.	42.	43.	43.	43.	44.	43.	45.	46.	46.	47.	45.	45.	44.	43.	42.	39.	36.	35.	31.	27.

Noise Emissions of Road Traffic

Station km	ADT Veh/24	Traffic values: Vehicles type	Vehicle name	day Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradien Min / Ma %
Edwards Ranch Rd (south)			Traffic direction: In entry direction							
0+000	3960	Total	-	165	-	Stop sign	0.0	100.0	Average (of DGAC and PCC)	0.0
		Automobiles	-	57	41					
		Medium trucks	-	47	41					
		Heavy trucks	-	61	41					
		Buses	-	-	41					
		Motorcycles	-	-	41					
		Auxiliary Vehicle	-	-	41					
1+144	-					-	-	-	-	-
Edwards Ranch Rd (north)			Traffic direction: In entry direction							
0+000	3960	Total	-	165	-	none	-	-	Average (of DGAC and PCC)	0.0
		Automobiles	-	57	41					
		Medium trucks	-	47	41					
		Heavy trucks	-	61	41					
		Buses	-	-	41					
		Motorcycles	-	-	41					
		Auxiliary Vehicle	-	-	41					
1+138	-					-	-	-	-	-
Telegraph Rd east (eastbound)			Traffic direction: In entry direction							
0+000	6816	Total	-	284	-	Stop sign	0.0	100.0	PCC (Portland cement concrete)	0.0
		Automobiles	-	268	81					
		Medium trucks	-	7	81					
		Heavy trucks	-	9	81					
		Buses	-	-	81					
		Motorcycles	-	-	81					
		Auxiliary Vehicle	-	-	81					
3+119	-					-	-	-	-	-
Telegraph Rd east (westbound)			Traffic direction: In entry direction							
0+000	6816	Total	-	284	-	none	-	-	PCC (Portland cement concrete)	0.0
		Automobiles	-	268	81					
		Medium trucks	-	7	81					
		Heavy trucks	-	9	81					
		Buses	-	-	81					
		Motorcycles	-	-	81					
		Auxiliary Vehicle	-	-	81					
3+118	-					-	-	-	-	-
SP Side Streets (eastbound)			Traffic direction: In entry direction							
0+000	192	Total	-	8	-	none	-	-	PCC (Portland cement concrete)	0.0
		Automobiles	-	3	81					
		Medium trucks	-	2	81					
		Heavy trucks	-	3	81					
		Buses	-	-	81					
		Motorcycles	-	-	81					
		Auxiliary Vehicle	-	-	81					
0+504	-					-	-	-	-	-
SP Side Streets (westbound)			Traffic direction: In entry direction							
0+000	192	Total	-	8	-	none	-	-	PCC (Portland cement concrete)	0.0
		Automobiles	-	3	81					
		Medium trucks	-	2	81					
		Heavy trucks	-	3	81					
		Buses	-	-	81					
		Motorcycles	-	-	81					
		Auxiliary Vehicle	-	-	81					
0+502	-					-	-	-	-	-

Noise Emissions of Road Traffic

Station km	ADT Veh/24	Traffic values: Vehicles type	Vehicle name	day Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradien Min / Ma %
Briggs Rd (southbound)			Traffic direction: In entry direction							
0+000	408	Total	-	17	-	Stop sign	0.0	100.0	PCC (Portland cement concrete)	0.0
		Automobiles	-	6	41					
		Medium trucks	-	5	41					
		Heavy trucks	-	6	41					
		Buses	-	-	41					
		Motorcycles	-	-	41					
		Auxiliary Vehicle	-	-	41					
0+647	-					-	-	-	-	-
Briggs Rd (northbound)			Traffic direction: In entry direction							
0+000	408	Total	-	17	-	On ramp	0.0	100.0	PCC (Portland cement concrete)	0.0
		Automobiles	-	6	41					
		Medium trucks	-	5	41					
		Heavy trucks	-	6	41					
		Buses	-	-	41					
		Motorcycles	-	-	41					
		Auxiliary Vehicle	-	-	41					
0+647	-					-	-	-	-	-
Telegraph Rd west (westbound)			Traffic direction: In entry direction							
0+000	9528	Total	-	397	-	Stop sign	0.0	100.0	PCC (Portland cement concrete)	0.0
		Automobiles	-	305	81					
		Medium trucks	-	40	81					
		Heavy trucks	-	52	81					
		Buses	-	-	81					
		Motorcycles	-	-	81					
		Auxiliary Vehicle	-	-	81					
3+120	-					-	-	-	-	-
Telegraph Rd west (eastbound)			Traffic direction: In entry direction							
0+000	9528	Total	-	397	-	Traffic light	0.0	50.0	PCC (Portland cement concrete)	0.0
		Automobiles	-	305	81					
		Medium trucks	-	40	81					
		Heavy trucks	-	52	81					
		Buses	-	-	81					
		Motorcycles	-	-	81					
		Auxiliary Vehicle	-	-	81					
3+118	-					-	-	-	-	-
VTA Side Streets (westbound)			Traffic direction: In entry direction							
0+000	264	Total	-	11	-	Traffic light	0.0	50.0	PCC (Portland cement concrete)	0.0
		Automobiles	-	4	81					
		Medium trucks	-	3	81					
		Heavy trucks	-	4	81					
		Buses	-	-	81					
		Motorcycles	-	-	81					
		Auxiliary Vehicle	-	-	81					
0+935	-					-	-	-	-	-
VTA Side Streets (eastbound)			Traffic direction: In entry direction							
0+000	264	Total	-	11	-	none	-	-	PCC (Portland cement concrete)	0.0
		Automobiles	-	4	81					
		Medium trucks	-	3	81					
		Heavy trucks	-	4	81					
		Buses	-	-	81					
		Motorcycles	-	-	81					
		Auxiliary Vehicle	-	-	81					
0+934	-					-	-	-	-	-

Noise Emissions of Road Traffic

Station km	ADT Veh/24	Traffic values: Vehicles type	Vehicle name	day Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradien Min / Ma %
Wells Rd (southbound)			Traffic direction: In entry direction							
0+000	3096	Total	-	129	-	Traffic light	0.0	50.0	PCC (Portland cement concrete)	0.0
		Automobiles	-	44	73					
		Medium trucks	-	37	73					
		Heavy trucks	-	48	73					
		Buses	-	-	73					
		Motorcycles	-	-	73					
		Auxiliary Vehicle	-	-	73					
0+744	-					-	-	-	-	-
Wells Rd (northbound)			Traffic direction: In entry direction							
0+000	3096	Total	-	129	-	none	-	-	PCC (Portland cement concrete)	0.0
		Automobiles	-	44	73					
		Medium trucks	-	37	73					
		Heavy trucks	-	48	73					
		Buses	-	-	73					
		Motorcycles	-	-	73					
		Auxiliary Vehicle	-	-	73					
0+744	-					-	-	-	-	-
Olive Rd (north)			Traffic direction: In entry direction							
0+000	552	Total	-	23	-	Stop sign	0.0	100.0	PCC (Portland cement concrete)	0.0
		Automobiles	-	23	41					
		Medium trucks	-	-	41					
		Heavy trucks	-	-	41					
		Buses	-	-	41					
		Motorcycles	-	-	41					
		Auxiliary Vehicle	-	-	41					
0+773	-					-	-	-	-	-
Olive Rd (south)			Traffic direction: In entry direction							
0+000	552	Total	-	23	-	none	-	-	PCC (Portland cement concrete)	0.0
		Automobiles	-	23	41					
		Medium trucks	-	-	41					
		Heavy trucks	-	-	41					
		Buses	-	-	41					
		Motorcycles	-	-	41					
		Auxiliary Vehicle	-	-	41					
0+773	-					-	-	-	-	-

Receiver List

No.	Receiver name	Coordinates X (in meter)	Coordinates Y (in meter)	Building side	Floor	Height m	Limit L(Aeq1h) dB(A)	Level L(Aeq1h) dB(A)	Conflict L(Aeq1h) dB(A)
1	R4 - Briggs School	306357.78	3800531.03		1.Fl	1.50	-	53.5	-
2	R5 - Residence	304744.36	3799441.67		1.Fl	1.50	-	57.7	-
3	R6 - Residence	303807.74	3798782.93		1.Fl	1.50	-	61.3	-
4	R7 - Residence	303689.88	3798964.09		1.Fl	1.50	-	54.8	-
5	R8 - Residence	301237.52	3797030.09		1.Fl	1.50	-	63.4	-
6	R9 - Retirement Home	301019.62	3797015.88		1.Fl	1.50	-	60.0	-
					2.Fl	5.20	-	61.1	-
					3.Fl	8.90	-	62.3	-

Contribution Levels of the Receivers

Source name		Lane	Level L(Aeq1h) dB(A)
R4 - Briggs School	1.Fl		53.5
Briggs Rd (northbound)			45.8
Briggs Rd (southbound)			50.2
Edwards Ranch Rd (north)			20.3
Edwards Ranch Rd (south)			27.2
Olive Rd (north)			1.2
Olive Rd (south)			-6.3
SP Side Streets (eastbound)			43.9
SP Side Streets (westbound)			43.3
Telegraph Rd east (eastbound)			42.4
Telegraph Rd east (westbound)			41.5
Telegraph Rd west (eastbound)			21.7
Telegraph Rd west (westbound)			26.0
VTA Side Streets (eastbound)			0.0
VTA Side Streets (westbound)			0.0
Wells Rd (northbound)			0.0
Wells Rd (southbound)			0.0
R5 - Residence	1.Fl		57.7
Briggs Rd (northbound)			21.4
Briggs Rd (southbound)			21.6
Edwards Ranch Rd (north)			28.5
Edwards Ranch Rd (south)			36.1
Olive Rd (north)			10.2
Olive Rd (south)			2.2
SP Side Streets (eastbound)			7.1
SP Side Streets (westbound)			7.5
Telegraph Rd east (eastbound)			54.7
Telegraph Rd east (westbound)			54.5
Telegraph Rd west (eastbound)			29.7
Telegraph Rd west (westbound)			34.7
VTA Side Streets (eastbound)			-0.2
VTA Side Streets (westbound)			6.2
Wells Rd (northbound)			13.3
Wells Rd (southbound)			19.5
R6 - Residence	1.Fl		61.3
Briggs Rd (northbound)			16.6
Briggs Rd (southbound)			16.6
Edwards Ranch Rd (north)			46.9
Edwards Ranch Rd (south)			56.7
Olive Rd (north)			29.7
Olive Rd (south)			18.5
SP Side Streets (eastbound)			2.7
SP Side Streets (westbound)			2.7
Telegraph Rd east (eastbound)			56.4
Telegraph Rd east (westbound)			52.0
Telegraph Rd west (eastbound)			44.9
Telegraph Rd west (westbound)			53.0
VTA Side Streets (eastbound)			5.8
VTA Side Streets (westbound)			11.2
Wells Rd (northbound)			16.4
Wells Rd (southbound)			22.7
R7 - Residence	1.Fl		54.8
Briggs Rd (northbound)			16.4
Briggs Rd (southbound)			16.5
Edwards Ranch Rd (north)			39.4
Edwards Ranch Rd (south)			49.9
Olive Rd (north)			31.2
Olive Rd (south)			22.1
SP Side Streets (eastbound)			2.7
SP Side Streets (westbound)			2.8
Telegraph Rd east (eastbound)			47.8
Telegraph Rd east (westbound)			42.0

Contribution Levels of the Receivers

Source name		Lane	Level L(Aeq1h) dB(A)
Telegraph Rd west (eastbound)			42.2
Telegraph Rd west (westbound)			50.0
VTA Side Streets (eastbound)			5.3
VTA Side Streets (westbound)			11.5
Wells Rd (northbound)			16.3
Wells Rd (southbound)			22.9
R8 - Residence	1.Fl		63.4
Briggs Rd (northbound)			0.0
Briggs Rd (southbound)			0.0
Edwards Ranch Rd (north)			24.0
Edwards Ranch Rd (south)			30.3
Olive Rd (north)			2.7
Olive Rd (south)			-5.5
SP Side Streets (eastbound)			0.0
SP Side Streets (westbound)			0.0
Telegraph Rd east (eastbound)			20.0
Telegraph Rd east (westbound)			14.6
Telegraph Rd west (eastbound)			61.2
Telegraph Rd west (westbound)			57.9
VTA Side Streets (eastbound)			30.9
VTA Side Streets (westbound)			37.9
Wells Rd (northbound)			47.7
Wells Rd (southbound)			52.8
R9 - Retirement Home	1.Fl		60.0
Briggs Rd (northbound)			0.0
Briggs Rd (southbound)			0.0
Edwards Ranch Rd (north)			21.1
Edwards Ranch Rd (south)			28.0
Olive Rd (north)			1.5
Olive Rd (south)			-6.0
SP Side Streets (eastbound)			0.0
SP Side Streets (westbound)			0.0
Telegraph Rd east (eastbound)			19.4
Telegraph Rd east (westbound)			14.1
Telegraph Rd west (eastbound)			56.0
Telegraph Rd west (westbound)			51.7
VTA Side Streets (eastbound)			42.1
VTA Side Streets (westbound)			49.0
Wells Rd (northbound)			48.3
Wells Rd (southbound)			54.7
R9 - Retirement Home	2.Fl		61.1
Briggs Rd (northbound)			0.0
Briggs Rd (southbound)			0.0
Edwards Ranch Rd (north)			19.4
Edwards Ranch Rd (south)			26.7
Olive Rd (north)			1.1
Olive Rd (south)			-6.3
SP Side Streets (eastbound)			0.0
SP Side Streets (westbound)			0.0
Telegraph Rd east (eastbound)			19.0
Telegraph Rd east (westbound)			13.8
Telegraph Rd west (eastbound)			56.9
Telegraph Rd west (westbound)			53.5
VTA Side Streets (eastbound)			44.0
VTA Side Streets (westbound)			49.5
Wells Rd (northbound)			50.3
Wells Rd (southbound)			55.5
R9 - Retirement Home	3.Fl		62.3
Briggs Rd (northbound)			0.0
Briggs Rd (southbound)			0.0
Edwards Ranch Rd (north)			18.7
Edwards Ranch Rd (south)			26.1

Contribution Levels of the Receivers

Source name	Lane	Level L(Aeq1h) dB(A)
Olive Rd (north)		0.8
Olive Rd (south)		-6.6
SP Side Streets (eastbound)		0.0
SP Side Streets (westbound)		0.0
Telegraph Rd east (eastbound)		18.8
Telegraph Rd east (westbound)		13.5
Telegraph Rd west (eastbound)		58.1
Telegraph Rd west (westbound)		54.5
VTA Side Streets (eastbound)		45.4
VTA Side Streets (westbound)		50.8
Wells Rd (northbound)		51.9
Wells Rd (southbound)		56.5

Spectra of the Receivers

No	Name	Floor	Time	50 H	63 H	80 H	100	125	160	200	250	315	400	500	630	800	1 kH	1 kH	2 kH	2 kH	2 kH	3 kH	4 kH	5 kH	6 kH	8 kH	10 k
1	R4 - Briggs Schoo	1.Fl	L(Ae	21.	30.	36.	39.	41.	43.	43.	43.	39.	35.	35.	37.	39.	41.	42.	42.	41.	40.	39.	39.	35.	33.	30.	25.
2	R5 - Residence	1.Fl	L(Ae	25.	33.	38.	41.	43.	44.	45.	45.	44.	43.	43.	44.	46.	48.	47.	48.	46.	44.	43.	40.	37.	35.	32.	28.
4	R7 - Residence	1.Fl	L(Ae	25.	34.	40.	43.	45.	46.	46.	42.	37.	31.	32.	33.	35.	37.	38.	39.	41.	42.	43.	40.	34.	36.	32.	27.
3	R6 - Residence	1.Fl	L(Ae	30.	39.	44.	48.	50.	51.	52.	50.	47.	43.	42.	43.	45.	47.	48.	49.	49.	49.	49.	44.	40.	40.	37.	32.
5	R8 - Residence	1.Fl	L(Ae	30.	40.	46.	49.	51.	52.	53.	52.	49.	45.	46.	48.	51.	52.	52.	51.	50.	51.	50.	48.	45.	44.	40.	35.
6	R9 - Retirement H	1.Fl	L(Ae	27.	37.	43.	46.	48.	50.	50.	50.	46.	42.	42.	43.	45.	47.	47.	48.	47.	47.	46.	45.	41.	40.	36.	31.
		2.Fl	L(Ae	27.	36.	42.	46.	48.	49.	49.	47.	46.	46.	49.	50.	50.	50.	49.	48.	47.	47.	47.	44.	42.	41.	37.	32.
		3.Fl	L(Ae	27.	36.	42.	46.	48.	49.	50.	49.	50.	49.	51.	51.	51.	51.	50.	49.	49.	48.	47.	45.	42.	41.	38.	33.

Soil Products for a Greener World ®

VECTOR CONTROL PLAN

for the

Agromin – Commercial Organics Processing Operation

Edwards Ranch Road
Santa Paula, California 93060

Submitted to:

County of Ventura Resource Management Agency
Environmental Health Division
800 S Victoria Ave
Ventura, CA 93009-1740

February 2017

County of Ventura
Notice of Preparation of an EIR
PL17-0154
Attachment 16 - Vector Control Plan

VECTOR CONTROL PLAN

Agromin – Commercial Organics Processing Operation
Edwards Ranch Road
Santa Paula, California

February 2017

CONTENTS

1.0 INTRODUCTION & OBJECTIVES

This Vector Control Plan is meant to serve as a supplement to Agromin's Odor Impact Minimization Plan (OIMP) and Dust Control Plan. Together, these plans will help ensure that odors, dust, and vectors are properly monitored and remain under control throughout operations at the proposed Agromin Biogenic Energy Park Facility.

The proposed facility will be located at the south end of Edwards Ranch Road, near the City of Santa Paula in the unincorporated portion of Ventura County, CA (APN: 090-0-180-085). The proposed facility will receive and process up to 295,000 tons of food and green material annually, using open windrow composting, Anaerobic Digesters (AD), and Covered Aerated Static Pile (CASP) systems to convert organic materials into useable compost. For an overview of the proposed site location and facility layout, please refer to Figures 1 and 2 in Attachment A.

1.1 Definitions and Regulations

The California Department of Resources Recycling and Recovery (CalRecycle) defines a "vector" as the following:

> *"Vector includes any insect or other arthropod, rodent, or other animal capable of transmitting the causative agents of human disease, or disrupting the normal enjoyment of life by adversely affecting the public health and well being."* (Title 14 § 17225.73)

CalRecycle's General Operating Standards require compost facility operators to take measures to control vectors. Specifically, Title 14 regulations provides the following guidance with respect to vector control activities:

> *"(3) All handling activities shall be conducted in a manner that minimizes vectors, odor impacts, litter, hazards, nuisances, and noise impacts; and minimizes human contact with, inhalation, ingestion, and transportation of dust, particulates, and pathogenic organisms."* (Title 14 § 17867 (a)(2))

Additionally, the Ventura County Non-Coastal Zoning Ordinance (NCZO) requires the following standard be applied to Organics Processing Operations with over 5,000 square feet of open beds:

> *"Pests - All operations must implement management practices to prevent and control vectors, such as flies, rodents and scavenging birds."* (VCNCZO, Section 8107-36.4.1)

1.2 Plan Objectives

The acceptance of green and food materials as part of ongoing composting operations at the proposed facility provides an environment conducive to vector attraction and proliferation. Additionally, the installation of two large drainage ponds on the southern portion of the facility has the potential to create a breeding ground for mosquitoes.

Birds and other vectors attracted to the proposed facility could pose a health hazard to onsite personnel as well as neighboring residents and agricultural operations, as they are capable of transmitting diseases to humans, pets and crops. In addition to disease transmittal, vectors can also disrupt site operations, damage equipment, and create aesthetic visual impacts to the site and surrounding areas.

Due to these potential issues, the recommendations within this plan aim to achieve the following objectives related to vector control:

- Monitor onsite conditions to ensure potential vector issues are indentified and assessed in a timely manner;
- Minimize the amount of exposed food material available that could serve to attract birds (including gulls), rats/mice, flies, mosquitoes, or other vectors;
- Implement measures that will minimize the population of rats/mice, flies, mosquitoes, or other vectors living and/or breeding at the facility;
- To the greatest extent possible, minimize the amount of standing water within the drainage ponds that could serve as a breeding ground for mosquitoes.

2.0 COMPOSTING OPERATIONS & VECTOR ATTRACTORS

Food material collected and processed at the proposed facility will have the greatest potential to attract vectors, specifically flies, mosquitoes, birds and certain mammalian species such as rats/mice, raccoons and coyotes. Vectors are attracted to composting facilities as the organic materials stored there represent an easy food source for opportunistic feeders and insect larvae.

The following composting operations proposed at the facility have the potential to attract vectors.

2.1 Receiving Compost Feedstocks

The proposed compost operations will accept compostable material including green material, woody material, agricultural waste, food material, and compost blending amendments such as fertilizer, peat moss, and gypsum. Green material will be received in an open building (i.e. no walls) while food material will be received in an enclosed building subject to negative pressure with biofilters to control odor emissions, which also deters vector attraction. Fertilizers and other amendments will be received at the Packaging Building and then blended with other compost products for resale to customers. During the receiving/tipping process, unprocessed organic materials and amendments have the potential to attract vectors.

2.2 Open Windrows

Active composting of green materials will occur in large, open windrows located in the central portion of the proposed facility (Figure 2, Attachment A). It should be noted that open windrows will be used to compost only green material and already digested food material. This greatly diminishes the potential for open windrows to attract vectors, but small quantities of rotting organic material within piles and standing water in between rows could serve as attractors.

2.3 CASP Composting

The covered aerated static pile (CASP) method of composting will be utilized for the processing of food material, which is blended with green material to no more than 40% food material. The proposed CASP system will be in conformance with all applicable regulations, operations and monitoring reports required by the Ventura County Environmental Health, who is the Lead Enforcement Agency (LEA).

Food material will be delivered from commercial packing trucks and received in two tipping areas within the food materials processing building. The building is fully enclosed which serves to deter vector attraction. It is also subject to negative pressure. Before discharging to the outside, air from the building is passed through external bio-filters to control odor and air emissions. Food material will be processed and placed into the CASP within 48-hours of receiving to minimize exposure time which could serve to attract vectors. Prior to being transferred from the building, food material is mixed with processed green material which helps to control odors and deter vector attraction during transport from the enclosed building to the either CASP. The combined material is then transferred to the CASP via front-end loaders for treatment.

Once material is placed inside the CASP bunker, it is anticipated that the material will be covered with the "GORE™ Cover". The GORE™ Cover is a multi-layer laminate cover that can achieve up to 97% reduction in odor concentrations and greater than 99% containment of bio-aerosols and particulate matter. It also serves as a barrier to vector attraction while in the active composting phase. Materials placed in the CASP will be retained for 21 days before it is then transferred to open windrows for final curing.

The CASP system is also designed to collect moisture runoff for re-use, eliminating standing water which helps to prevent vector attraction.

2.4 AD Composting

Agromin is also proposing to install SMARTFERM Anaerobic Digestion (AD) technology systems to process food and green material in an oxygen-free environment. Agromin will divert green and food material already being received at the compost facility and place it into the AD system for composting.

The feedstocks are delivered to the site by commercial green material collection vehicles and by food material collection and transfer vehicles. The material will be handled in the same way as the CASP material, received within the appropriate processing building depending on the material. Materials placed in the AD system will also be retained for 21 days.

Each basic SMARTFERM AD system design features four (4) steel fabricated and insulated tunnels, each 12 feet in width, 12 feet in height and 40 feet in length. Each tunnel has a specially designed hatch that provides a gas-tight seal to ensure anaerobic conditions are properly maintained during processing. The system also contains a partially below-grade concrete percolate tank which collects percolate for reuse. The enclosed nature of the system will mostly eliminate vector attraction during processing.

3.0 VECTOR CONTROL MEASURES

The following sections outline specific measures to be implemented at the proposed facility to minimize impacts resulting from the following vectors:

- Insects (flies, mosquitoes);
- Birds;
- Rodents (mice, rats); and
- Mesopredators (coyotes, feral dogs/cats, raccoons).

Each day, the operator will determine if significant populations of onsite vectors are present as well as evaluate existing site conditions and planned operations for the potential to attract vectors. If the operator detects a significant vector population, he/she will take the following actions:

- Investigate and determine the likely source of attraction;

- Determine if specific onsite management practices (described below) could alleviate the problem and immediately take steps to remedy the situation; and
- Determine whether or not the vector attraction event is significant enough to warrant contacting a licensed vector specialist.

The primary onsite deterrent for vector control shall be the prompt processing of feedstock materials, with a special emphasis on food material, in accordance with the Agromin's quality control protocol. Generally, this protocol requires load checking to ensure contaminants of less than 1%, the initial sorting and mixing of raw feedstocks within 24-48 hours of delivery, prompt size reduction through grinding, final mixing, moisture control, temperature monitoring, final screening, continuous trash collection with regular trash hauling, and segregated storage of finished materials. In addition, the processing of food material feedstock and co-collected food material will be delivered to the enclosed processing building, which is subject to negative pressure with exhaust through bio-filters to control odors and emissions that could potentially attract vectors. The maximum storage time shall be 7 days for incoming green material feedstock and 48 hours for food material feedstock. At no time should raw food material feedstock be stored outside the enclosed processing building.

The following sections describe more detailed control measures for each specific vector.

3.1 Insect Controls

The primary insects of concern at the proposed facility are flies and mosquitoes, both of which are attracted to decaying organic material and have the potential to transmit pathogens and communicable diseases to humans.

Flies: Flies are both a nuisance and a vector. They can pick up dangerous organisms with their mouths and other body parts, and pass them to humans and animals through their feces and vomitus. Flies that breed and feed on damp and decaying organic matter include: Fruit flies, Phorid flies, Sphaerocerid flies, House flies, Blow flies, Bottle flies, and cluster flies. The goal is to eliminate the potential feeding and breeding sites for flies within the compost feedstocks and windrows as well as the CASP and AD systems. The following measures shall be implemented to accomplish this goal:

- Maintain sufficient windrow/pile structure and temperature to eliminate fly feeding and breeding sites within the facility. This shall be accomplished by blending all food material and green material together to achieve a carbon to nitrogen (C:N) ratio between 25:1-40:1 or higher prior to active composting, and by maintaining a temperature between 131° and 160° F during active composting.
- All green and food material feedstock deliveries received shall be mixed and ground to a size of 3" or less within 48 hours of delivery to the facility. Prior to transfer from the enclosed processing building, food material shall be mixed with green material. No raw food material shall leave the building without being either mixed with green material or properly covered to prevent vector attraction.
- If observed, all windrow or pile spillage shall be collected using an onsite vacuum truck and incorporated back into the pile or windrow processes.
- All spaces between processing piles and/or windrows shall be kept free of waste, and site drainage shall be directed away from compost piles.

- To the extent feasible, screens shall be placed on all the doors and windows of buildings proposed to provide human habitation to keep unwanted insects out.
- Sticky flytraps shall be placed in all structures housing employees, and shall be inspected and replaced on a regular basis.

Mosquitoes: Mosquitoes are responsible for more human deaths than any other living creature. Every year, over one million people die from mosquito-borne diseases. Mosquitoes can carry many different kinds of serious diseases, including malaria, heartworm, dengue fever, encephalitis, yellow fever, and West Nile Virus. All Mosquitoes need water to complete their life cycle. Therefore, the goal of Agromin's mosquito control program is to eliminate standing water on-site through proper drainage and good housekeeping.

Runoff from the AD and CASP systems is self-contained within each system and reused in those processes.

Smaller quantities of surface runoff may pond in a few localized low areas throughout the facility. Greater quantities of surface runoff will be collected in two detention basins located on the southern portion of the facility through a system of surface drainage channels and subsurface storm drains see Figure 2 (Attachment A) for the location of the drainage ponds. These ponds are lined to prevent water from infiltrating into the ground. The drainage ponds could potentially store large quantities of water for extended periods of time.

Agromin shall implement the following measures to prevent mosquito breeding throughout the proposed facility:

- Onsite personnel shall survey the site daily for standing water.
- Unsealed containers holding water will be turned over.
- Ditches and/or drainage facilities will be cleared of dirt and debris.
- Small quantities of ponded/pooled water will either be absorbed using onsite supplies of mulch and placed back into compost piles, or pumped into water trucks and used in the processing of compost piles. Smaller pools also tend to naturally evaporate.
- Standing water in the detention ponds will be visually inspected on a daily basis for evidence of mosquito larvae (called "wigglers") and pupa (called "tumblers"). The perimeter of the ponds will have the greatest potential to harbor larvae/pupa, and shall be inspected thoroughly. If water is murky, onsite personnel shall collect water from the perimeter of the pond in a clear container for easier inspection. If larvae and/or pupa are observed within either pond, Agromin staff shall contact Ventura County Environmental Health Division (VCEHD) to assess the use of mosquito fish as a vector control. The mosquito fish are available for free upon request from Ventura County's Vector Control Program and can be directly introduced to the detention basins. If used, mosquito fish shall be applied to the ponds within 5 days following the discovery of larvae/pupas.
- If the use of mosquito fish is not feasible as determined by the VCEHD, then larvicides (e.g. VectoBac, VectoLex, etc.) shall be applied to the ponds. The larvicide operation shall only be

applied by a licensed pesticide applicator. If used, larvicides shall be applied to the ponds within 5 days following the discovery of larvae/pupas by onsite staff.

- Vegetation conducive to mosquito production, such as water hyacinth (*Eichhomia spp.*), duckweed (*Lemna* and *Spirodela spp.*) and filamentous algal mats shall be prohibited from establishment within the drainage ponds. The ponds shall be inspected regularly and monitored for vegetation growth, and any growth found shall be immediately removed.
- Personal protective equipment, such as mosquito repellent, shall be kept onsite for use by facility personnel in the event that a high concentration of mosquitoes are identified. If unusually high concentrations of mosquitoes are observed, personnel shall immediately alert the onsite manager and nearby staff.
- Sticky fly straps shall be placed near the retention ponds and inspected on a monthly basis for evidence of adult mosquitoes.

3.2 Bird Controls

The facility has four operational components with the greatest potential to attract birds (including gulls). These operational components include:

- Initial receiving and tipping of green and food materials;
- Initial processing and storage of green and food materials;
- Blending and storage of food and green material within the processing buildings; and
- Active composting in windrows and the CASP systems.

The primary bird attraction event is the initial tipping of food material. To the greatest extent possible, onsite personnel shall direct trucks containing food material *completely* into the enclosed processing building. After initial tipping, food material will immediately be pushed through the processing system which involves grinding, sorting and screening the material within the enclosed building. Once processed, materials will then be immediately transferred to either the CASP or AD systems to minimize exposure time.

If for any reason piles of unprocessed or processed food materials need to be stored inside the processing building for longer than 24 hours, a textile cover, mulch or layer of finished compost will be used to cover the piles. Since the green material needs to be mixed with food material to achieve optimum efficiency during active composting and/or anaerobic digestion, the covering of food material is a natural step in the Agromin's overall process and should therefore not inhibit normal facility operations. All food material received will need to be processed and placed into either the CASP or AD systems within 48-hours of being received.

Bird deterrents proposed for use at the facility may include the following:

- Bird wires with mylar flagging may be strung over exposed active windrow piles and the food material processing building to eliminate places for seagulls to roost;

- Bird wires with mylar flagging may also be strung over the entrance to the food material processing building and the green material tipping areas so that seagulls cannot fly into these areas from above;
- Employ guns (“bird scarers”) including “canons” and “screamers”, around the food materials processing building to deter bird activity;
- Broadcast distress recordings of birds to deter attraction;
- Maintain a daily litter clean-up program around the site; and
- Practice good housekeeping and regularly sanitize the tipping areas.

3.3 Rodent Controls

Rodents are attracted to compost sites, as they can provide an easily accessible source of food. Rodents can carry and spread diseases such as the hanta virus and bubonic plague and they can also cause fires or electrical shorts by chewing through electrical wires in structures and equipment. They can proliferate in a number of spaces, including engine compartments, old vehicles, storage sheds, brush piles and under buildings or other structures. Therefore, the goal of Agromin’s rodent control program is to eliminate the three basic environmental factors conducive to rodent proliferation: (1) Food, (2) Water, and (3) Harborage. The following measures shall be implemented to accomplish this goal:

- All garbage shall be removed from the site perimeter and from within buildings on a daily basis. All garbage shall be placed in trash receptacles with tight-fitting covers. Damaged garbage receptacles shall be replaced in a timely manner.
- Incoming food material trucks shall be directed into the enclosed processing building for immediate processing.
- Remove all old vehicles, and other rubble from the site that could harbor rodents.
- Sweep up and remove excess compost and/or green and food material feedstocks from along the walls of buildings.
- Building materials (lumber, roofing, cement blocks, bricks, buckets) shall not be stacked within on-site buildings or structures.
- Within all structures, finished products shall be stored on palettes.
- All site landscaping shall be trimmed and/or thinned periodically to minimize potential rat habitation. All trees and/or shrubs located adjacent to existing structures shall be thinned so that approximately two feet of separation exists between each tree/shrub to minimize the potential for rodents to freely move between them.
- If the above described sanitation and building construction control measures are ineffective in controlling rodent populations on-site, traps can be utilized as necessary to control the rodent population. If implemented, inspection of all traps shall occur on a weekly basis to ensure proper baiting. No rodenticides (anti-coagulants) shall be used as trap bait. All dead animals shall be disposed and removed from the site immediately to prevent further vector attraction.

3.4 Mesopredators

A mesopredator is a medium-sized predator in the middle of a trophic level, which typically preys on smaller animals, but often displays an opportunistic diet and high toleration for close contact with humans. Examples of mesopredators include opossums, feral cats and dogs, coyotes and raccoons. Due to their opportunist diet tendencies, these mesopredators may be attracted to the facility as a source of food. The goal of Agromin's mesopredator control activities is to avoid significant impacts during operations by limiting the attraction of mesopredators to the facility and ensuring no increase in the number of mesopredators. The following measures shall be implemented to accomplish this goal:

- California Department of Fish and Wildlife (CDFW) approved trapping of mesopredators as an abatement strategy. Traps shall be placed at regular intervals around the perimeter of the proposed Conditional Use Permit (CUP) boundary, and will have large enough mesh to avoid trapping non-target small mammals. All trapping procedures shall follow CDFW regulations. Inspection of traps, removal of nuisance animals, and release of non-targeted species will occur within 12 hours of trap deployment. No poisoning of mesopredators or any other trapped animal is permitted, unless approval is granted by the CDFW and the Ventura County Planning Division.
- Use of registered repellents, to ensure mesopredators are not attracted to the site. These repellents shall be used in a manner that is consistent with CDFW regulations and will be placed along the perimeter of the CUP boundary.

4.0 SUCCESS REPORTING

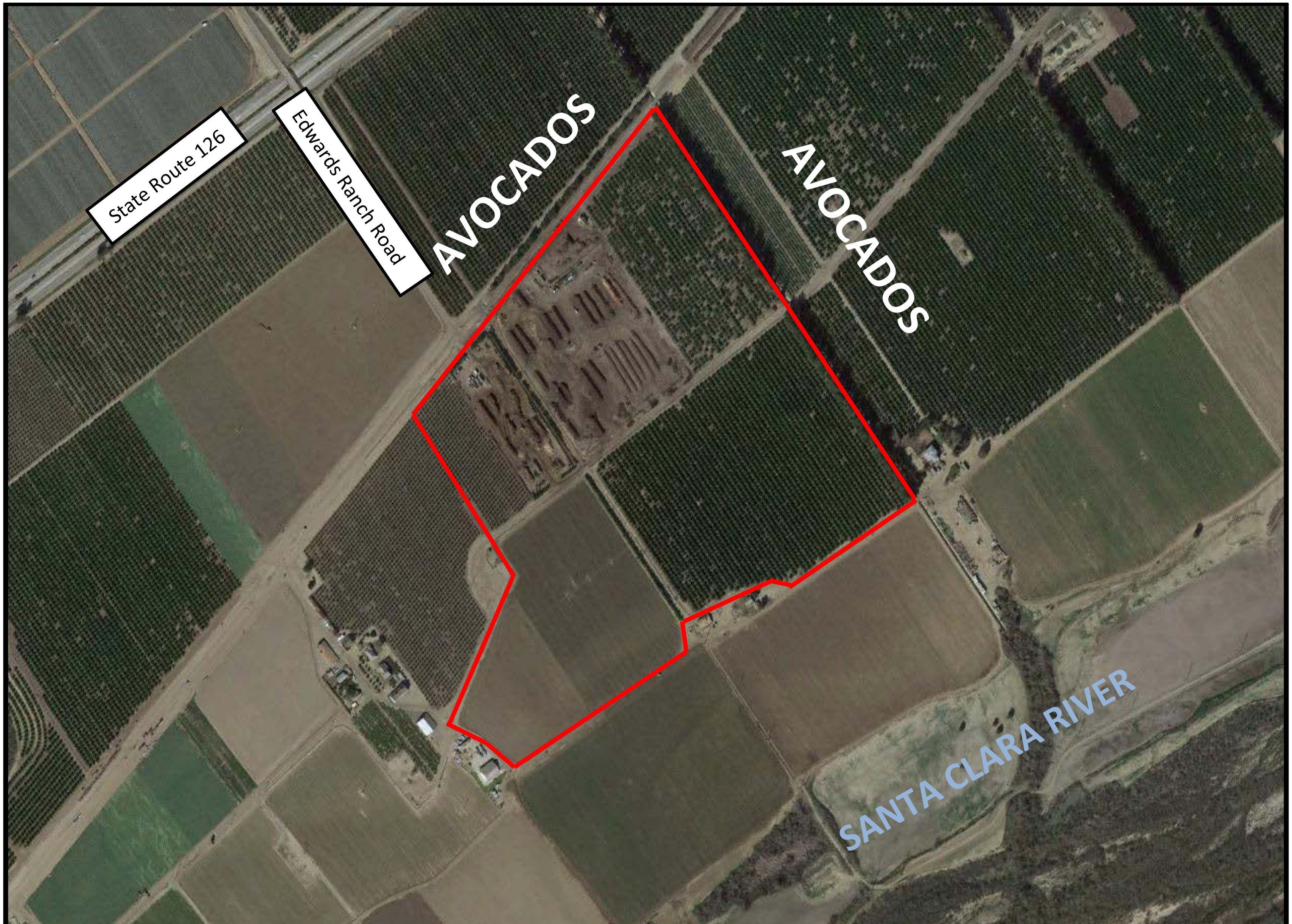
To gauge the success of this vector control program and the procedures outlined within this plan, assessments of onsite vector activity shall be conducted on a monthly basis at minimum, by a designated onsite employee who is familiar with the potential vectors in the area and control policies. Records of these assessments shall be maintained onsite and available to the LEA by request.

Metrics that may be used to gauge the success of this vector control program and track vector issues at the facility include:

- The increase/decrease in the number of gulls present in the tipping area and the general population of gulls around the facility.
- The increase/decrease in fly populations, mosquito populations, and rodent populations.
- Mesopredator monitoring reports conducted by a CDFW licensed trapper can be reviewed to track the number of mesopredators captured and the effectiveness of the control measures utilized.

ATTACHMENT A

FIGURES



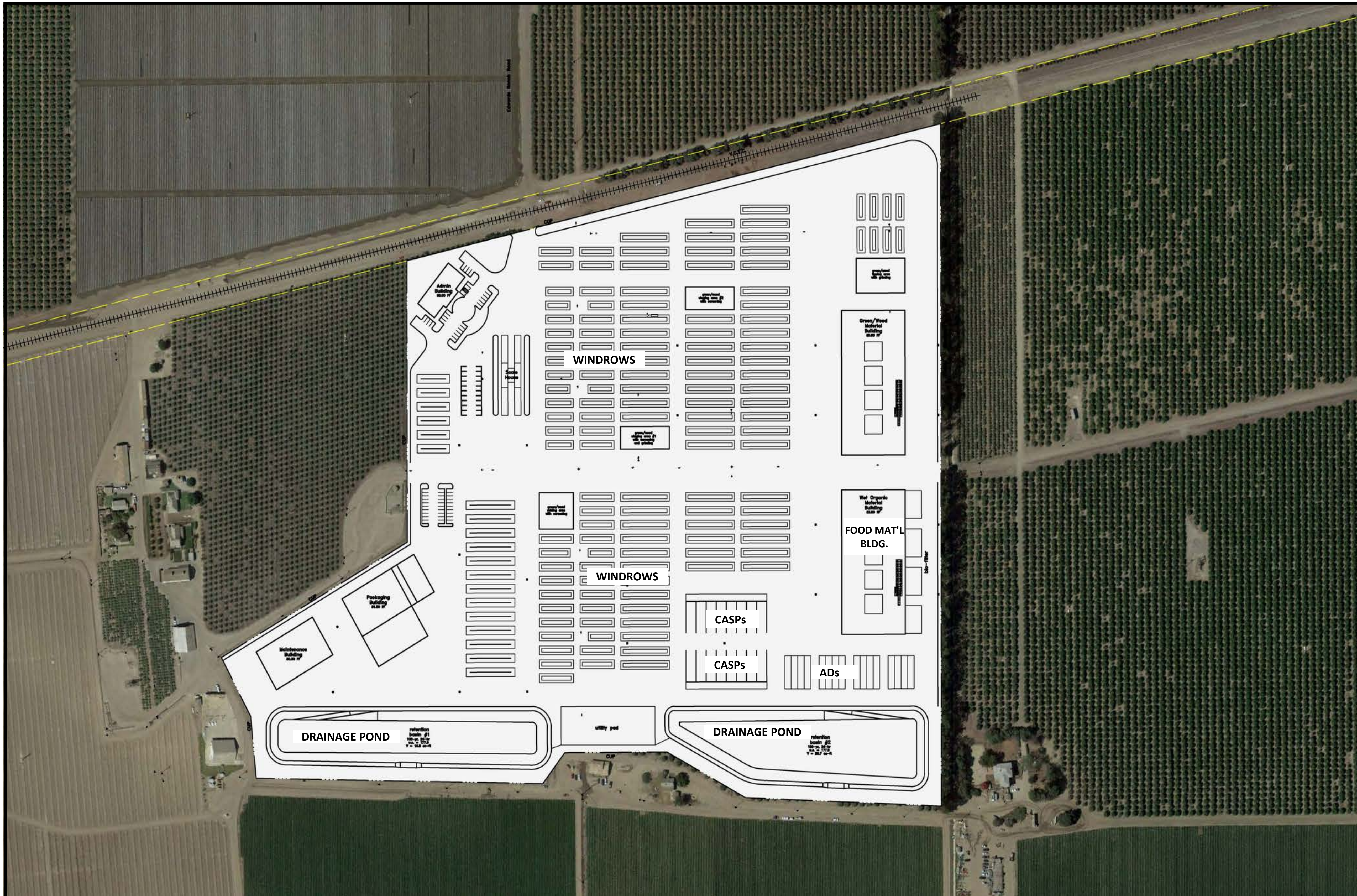
Google Maps 2015

Approximate Site Boundaries

N

SESPE CONSULTING, INC.

FIGURE	SITE LOCATION MAP Agromin - Biogenic Energy Park Santa Paula, California		
1			
PROJECT #:	AG01.11.02	DATE:	4/25/16
SCALE:	as shown	DRAWN BY:	GPS



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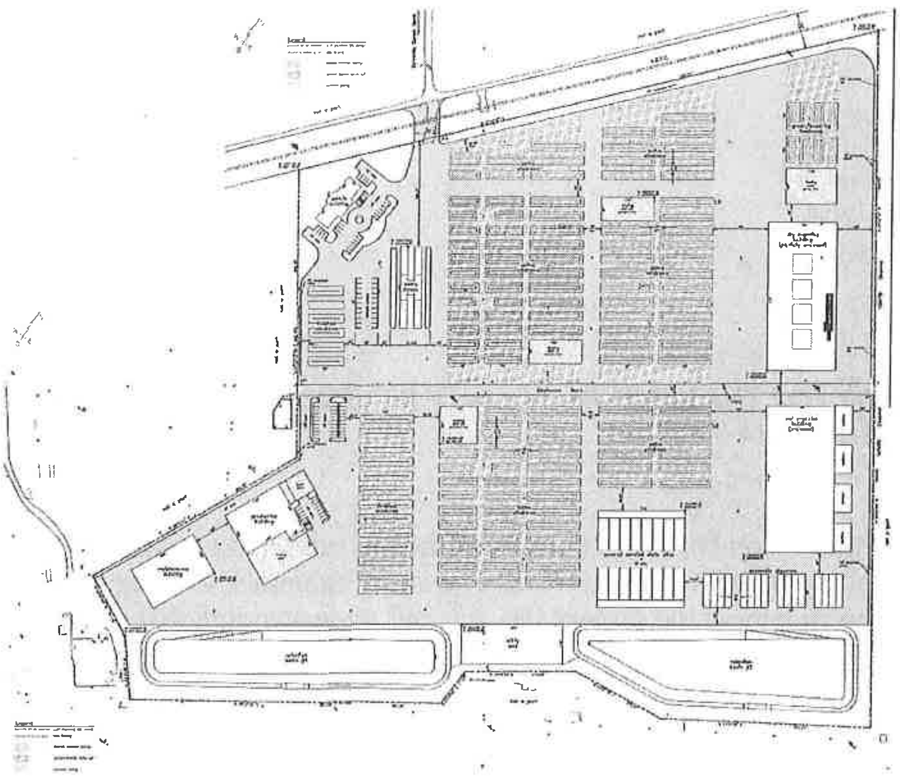
SESPE CONSULTING, INC.

FIGURE	FACILITY SITE PLAN Agromin - Biogenic Energy Park Santa Paula, California 93060		
2			
PROJECT #:	AG01.11.02	DATE:	2/28/17
SCALE:	as shown	DRAWN BY:	RDF

VENTURA BIOGENIC ENERGY PARK
VENTURA COUNTY, CALIFORNIA

TRAFFIC STUDY



February 23, 2017 **ATE Project #14050**

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County of Ventura
Notice of Preparation of an EIR
PL17-0154
Attachment 17 – Traffic Study

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Since 1978

Richard L. Pool, P.E.
Scott A. Schell, AICP, PTP

February 23, 2017

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Ventura, CA 93001

TRAFFIC STUDY FOR THE VENTURA COUNTY BIOGENIC ENERGY PARK - VENTURA COUNTY, CALIFORNIA

Associated Transportation Engineers (ATE) is pleased to submit the following traffic study for the Ventura County Biogenic Energy Park. The study examines existing and future traffic conditions in the vicinity of the project site. It is our understanding that the contents of this study will be incorporated into the environmental documents prepared for the project by Ventura County.

We appreciate the opportunity to assist Sespe Consulting, Inc. with this project.

Associated Transportation Engineers

Richard L. Pool, P.E.
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
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INTRODUCTION

The following study contains an analysis of the potential traffic impacts associated with the proposed Ventura County Biogenic Energy Park, located at the southern end of Edwards Ranch Road in unincorporated Ventura County, east of Saticoy and west of the City of Santa Paula. The study provides information relative to existing, existing + project, cumulative and cumulative + project traffic conditions within the project study-area. A review of the access to the site also presented.

PROJECT DESCRIPTION

Agromin is requesting a CUP to expand the current 60,000 ton per year agricultural compost facility into a 295,000 ton per year commercial compost facility with energy production components. The proposed project will convert the existing 15-area agricultural compost operation into a 70 area Biogenic Energy Park. Figure 1, illustrates the project site location. Agromin currently operates a commercial composting facility (Oxnard-Shoreline) at 6859 Arnold Road in Oxnard. Agromin will relocate the existing commercial composting operation to the Edward Ranch Road location. The Biogenic Energy Park will operate 7 days a week and employee 52 people. All truck trips and the majority of employees however will work from 7 A.M. to 5 P.M. Monday through Friday.

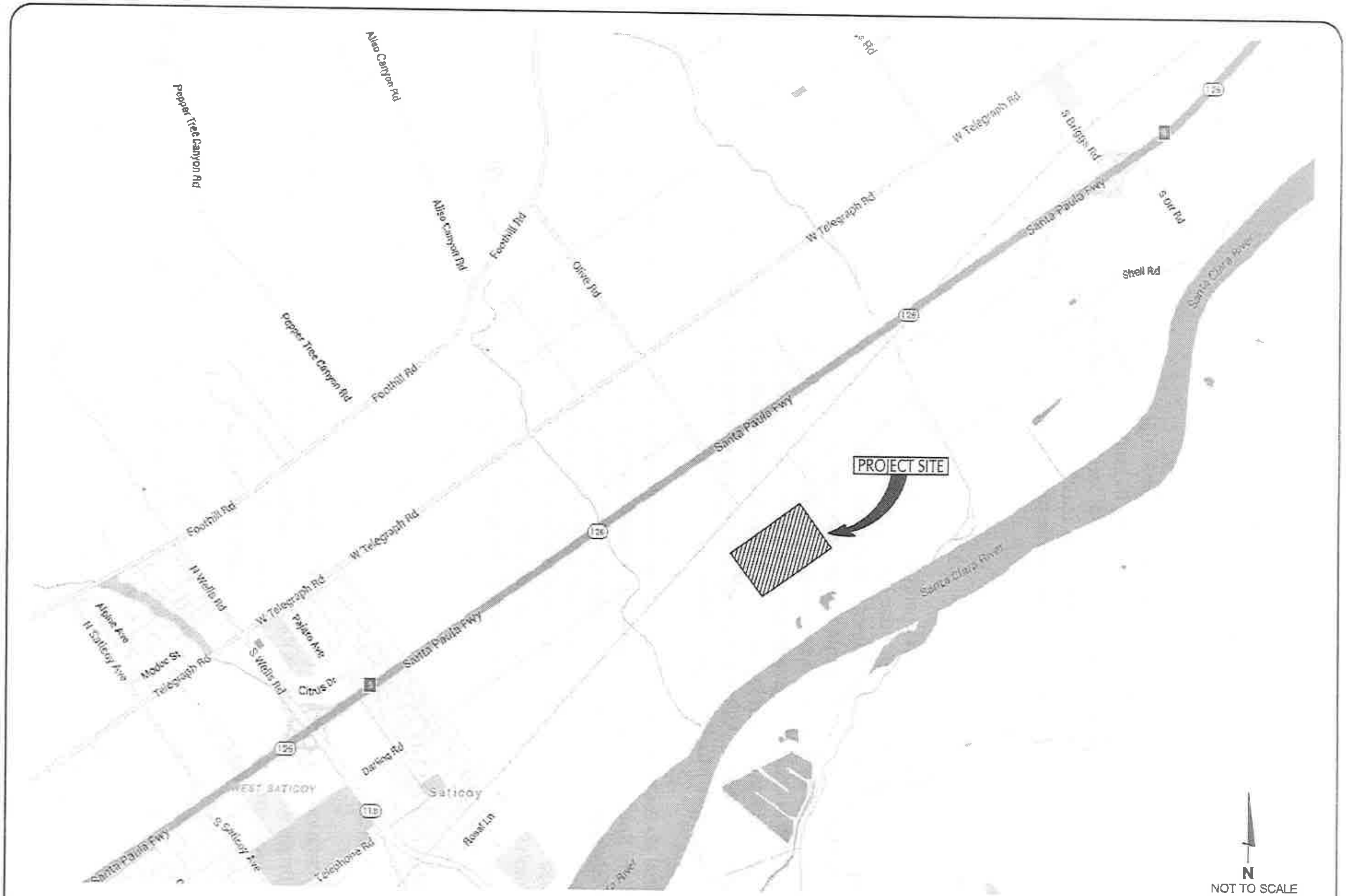
Regional access to the Edward Ranch Road site is provided by the State Route 126/Wells Road and State Route 126/Briggs Road interchanges. Direct access is provided via the Telegraph Road/Edwards Ranch Road intersection. Edwards Ranch Road is a privately maintained road. Edwards Ranch Road serves the Limoneira agricultural land use and the existing agricultural compost facility south of Telegraph Road and State Route 126. The project would improve the Telegraph Road/Edwards Ranch Road intersection by lengthening the westbound left-turn lane from 40 feet to 150 feet and provide a 150 foot eastbound right-turn lane. Figure 2 illustrates the project site plan.

EXISTING CONDITIONS

Street Network

The circulation system is comprised of State Route 126, Wells Road, Telegraph Road, Todd Road, Briggs Road and Edwards Ranch Road which serve as the major arterials, collectors and private local streets, as illustrated in Figure 1. The following text provides a brief discussion of the primary components of the study-area street network.

State Route 126, (Santa Paula Freeway) is a 4-lane east-west arterial. This facility provides regional access to Santa Paula. State Route 126 connects Santa Paula to the City of Ventura and U.S. Highway 101 on the west and the City of Fillmore and Interstate 5 to the east. The State Route 126/Los Angeles Avenue-Wells Road and State Route 126Briggs Road interchanges provide regional access to the project site.



ASSOCIATED
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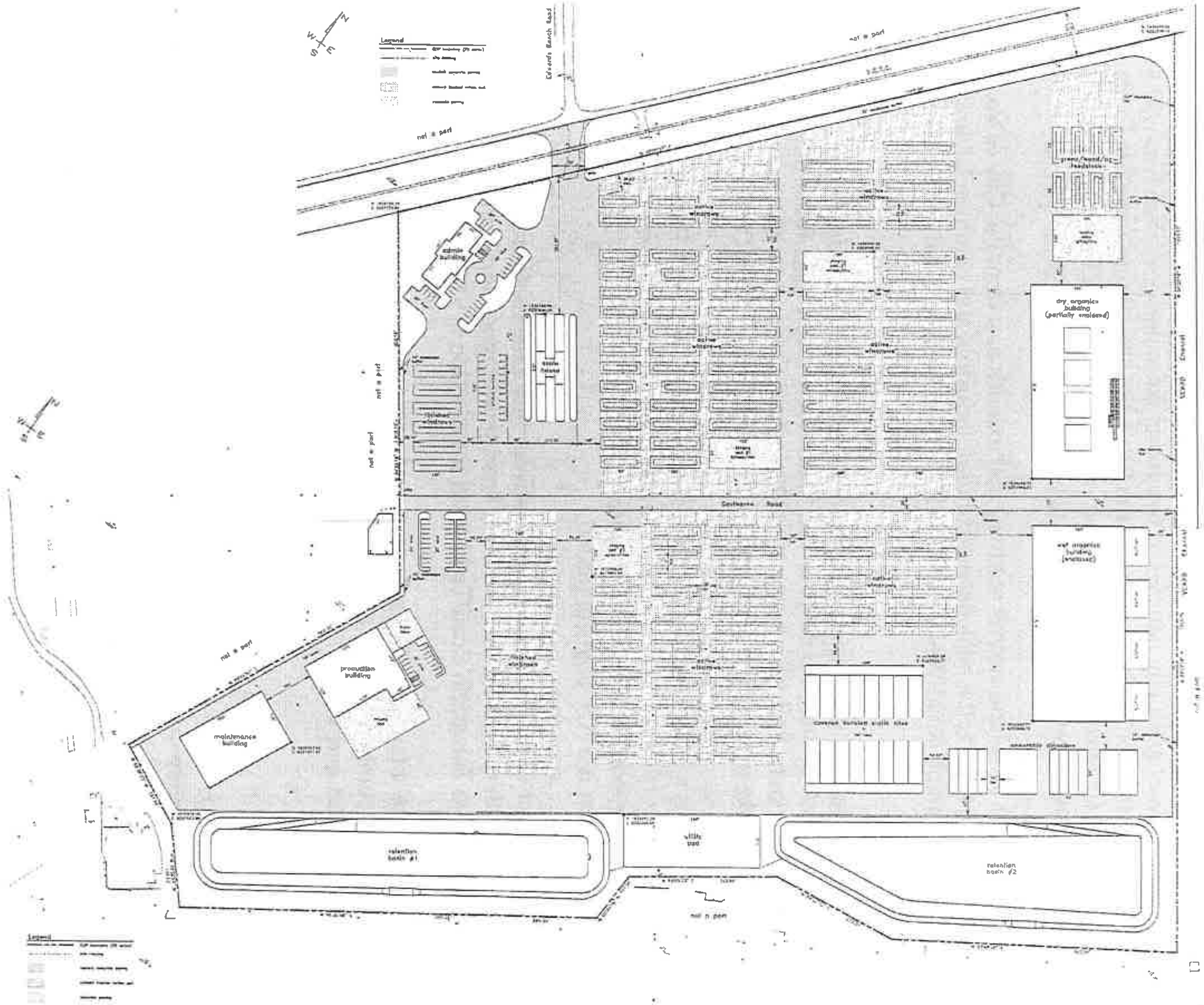
PROJECT SITE LOCATION/EXISTING STREET NETWORK

FIGURE 1

MMF - #14050



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PROJECT SITE PLAN

FIGURE 2

EKM - #14050

Wells Road, is a 2- to 4-lane arterial roadway extends south from Foothill Road until it becomes Los Angeles Avenue at a point south of Telephone Road in the County of Ventura. South of State Route 126 the roadway is also a state facility (State Route 118). The roadway contains five travel lanes and a raised median from State Route 126 to Carlos Street. North of Carlos Street the roadway gradually narrows to two travel lanes and a median two-way left-turn lane. The intersections of Wells Road/Telegraph Road and State Route 126 eastbound off-ramp/Wells Road are signalized. The Wells Road interchange would be the primary route project trucks would use to serve western Ventura County.

Telegraph Road, is a 2- to 4-lane arterial roadway that extends east from the City of Ventura through to Santa Paula serving the adjacent agricultural, industrial and commercial land uses in the area. The Telegraph Road/Wells Road and Telegraph/Briggs Road intersections are signalized.

Briggs Road, located east of the site, is a 2-lane roadway that extends south from Foothill Road to Pinkerton Road south of State Route 126. The State Route 126/Briggs Road interchange ramps are STOP-sign controlled. The Briggs Road interchange would be the primary route project trucks would use to serve Los Angeles County to eastern Ventura County.

Edwards Ranch Road, is a 2-lane private roadway that extends south from Telegraph Road to the project site south of State Route 126. Edwards Ranch Road serves the Limoneira agricultural uses and the existing agricultural composting facility. The Telegraph Road/Edwards Ranch Road intersection is STOP-Sign controlled.

Todd Road, located east of the site, is a 2-lane roadway that extends south from Telegraph Road to Shell Road south of State Route 126. Todd Road serves agricultural land uses and the Ventura County jail. The Telegraph Road/Todd Road intersection is STOP-Sign controlled.

Faulkner Road, is a 2- to 4-lane arterial roadway that extends west from Peck Road through the adjacent industrial/commercial and agricultural area past Briggs Road. There are gaps in link between Peck Road and Briggs Road. The Briggs Road/Faulkner Road intersection is STOP-Sign controlled.

Roadway Operations

The following section reviews average daily traffic (ADT) volumes and roadway operations in the study-area. The operational characteristics of the study-area roadways are analyzed based on a set of standard Ventura County roadway design capacities which are summarized in the Technical Appendix. In rating a roadway's operating condition, "Levels of Service" (LOS) "A" through "F" are used. LOS "A" and LOS "B" represent primarily free-flow operations, LOS "C" represents stable conditions, LOS "D" nears unstable operations with restrictions on maneuverability within traffic streams, LOS "E" represents unstable operations with maneuverability very limited, and LOS "F" represents breakdown or forced flow conditions. LOS "D" is considered acceptable for County thoroughfares in the unincorporated areas of the

County and LOS "C" for all County maintained local roads.

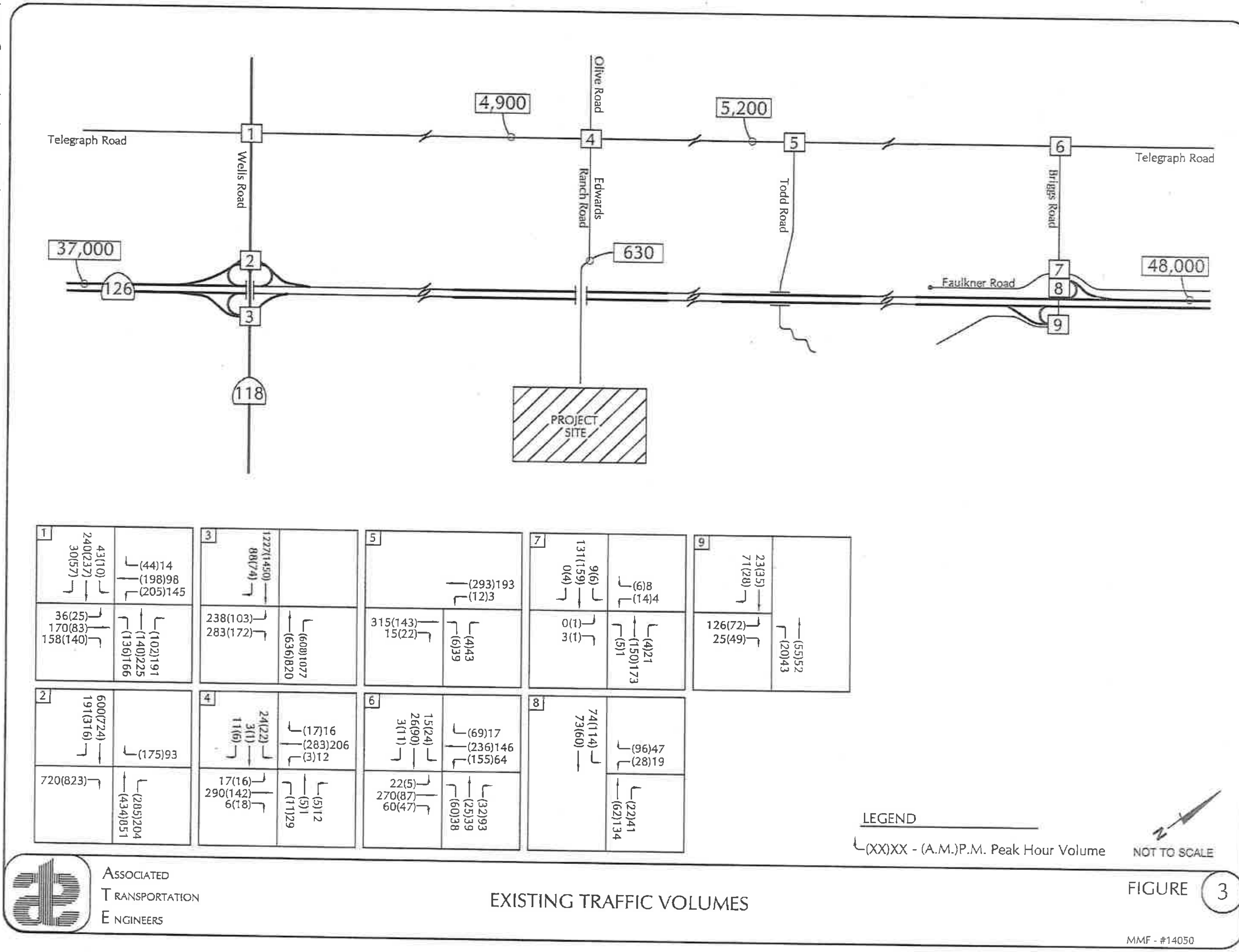
Existing ADT volumes for the street segments in the vicinity of the project site were obtained from data collected by Caltrans[1] and by ATE. Table 1 lists the existing ADT for study-area roadways and summarizes their operations. Figure 3 illustrates the existing ADT volumes.

Table 1
Existing Roadway Operations

Roadway	Roadway Type	ADT	LOS
State Route 126			
- east of Briggs Road	4-Lane Freeway	48,000	LOS B
- west of Wells Road	4-Lane Freeway	37,000	LOS B
Telegraph Road			
- east of Edwards Ranch Road	2-Lane Roadway	5,200	LOS B
- west of Edwards Ranch Road	2-Lane Roadway	4,900	LOS B
Edwards Ranch Road			
- south of Telegraph Road	2-Lane Roadway	630	LOS A

The data presented in Table 1 indicate that the study-area freeway and local roadway segments currently operate in the LOS "A" - "B" range based on Ventura County roadway design capacities.

[1] 2015 Traffic Volumes on California State Highways, California Department of Transportation, June 2016.


Telegraph Road
Telegraph Road
Wells Road
Olive Road
Edwards Ranch Road
Todd Road
Briggs Road
Faulkner Road
4,900
5,200
37,000
630
48,000
126
118
PROJECT SITE
1
43(10)
240(237)
30(57)
(44)14
(198)98
(205)145
36(25)
170(83)
158(140)
(102)191
(140)225
(136)166
2
600(724)
191(316)
(175)93
720(823)
(285)204
(434)851
3
1227(1450)
88(74)
238(103)
283(172)
(608)1077
(636)820
4
24(22)
3(1)
11(6)
(17)16
(283)206
(3)12
17(16)
290(142)
6(18)
(5)12
(5)1
(11)29
5
(293)193
(12)3
315(143)
15(22)
(4)43
(6)39
6
15(24)
26(90)
3(11)
(69)17
(236)146
(155)64
22(5)
270(87)
60(47)
(32)93
(25)39
(60)38
7
9(6)
131(159)
0(4)
(6)8
(14)4
0(1)
3(1)
(4)21
(150)173
(5)1
8
74(114)
73(60)
(96)47
(28)19
(22)41
(62)134
9
23(35)
71(28)
126(72)
25(49)
(55)52
(20)43
LEGEND
(XX)XX - (A.M.)P.M. Peak Hour Volume
N
NOT TO SCALE
ASSOCIATED TRANSPORTATION ENGINEERS
EXISTING TRAFFIC VOLUMES
FIGURE 3
MMF - #14050

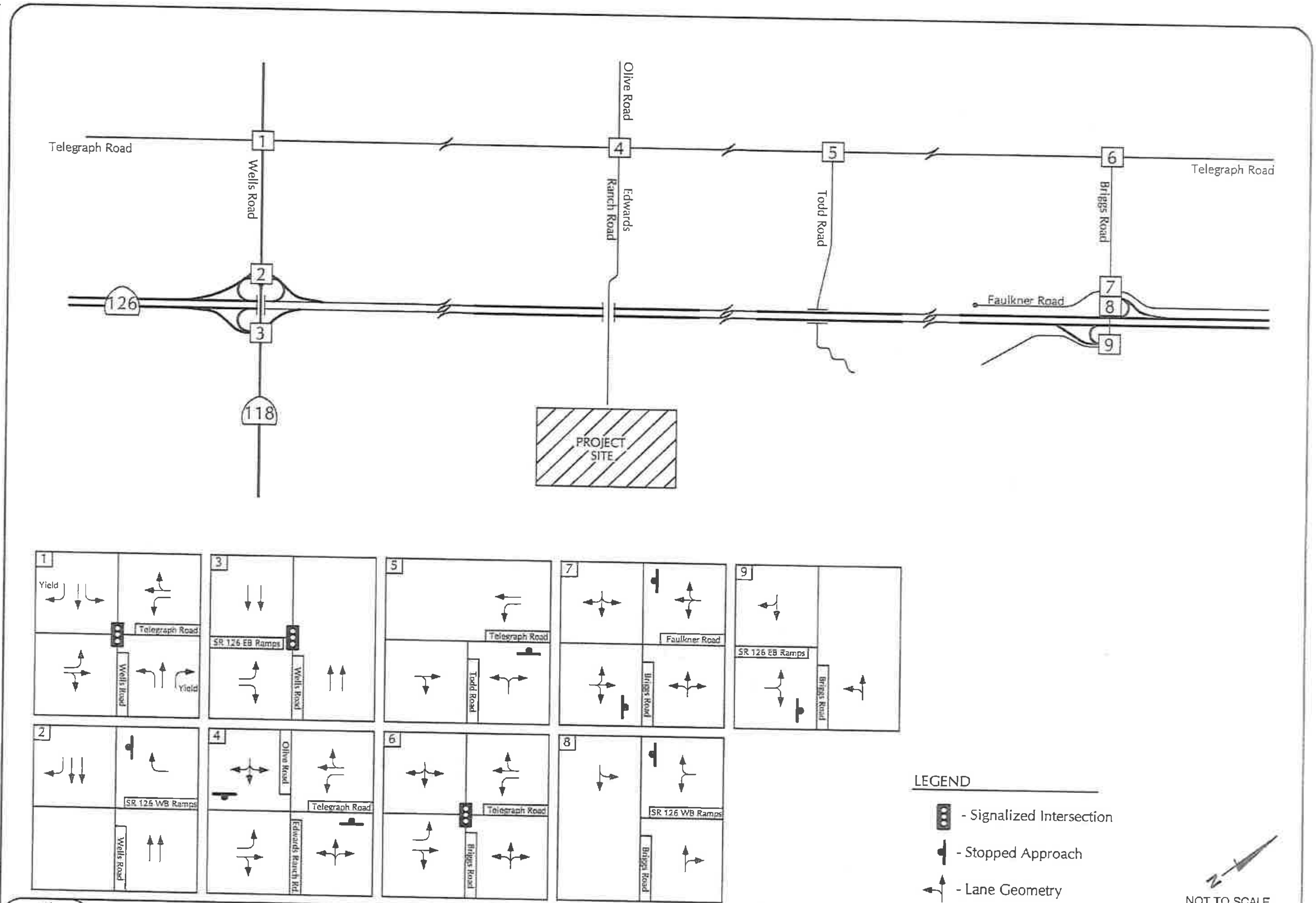
Intersections Operations

Existing levels of service for the study-area intersection were calculated using the Intersection Capacity Utilization methodology for signalized intersections and the Highway Capacity Manual unsignalized methodology as required by Ventura County. Worksheets illustrating the level of service calculations are contained in the Technical Appendix for reference. Table 2 lists the existing intersection level of service for the study-area intersections. Figure 3 illustrates the existing A.M. and P.M. peak hour traffic volumes. The existing lane geometries and traffic controls for the study-area intersections are illustrated on Figure 4.

Table 2
Existing Intersection Operations

Intersection	Control	Existing Conditions	
		A.M. Peak Hour	P.M. Peak Hour
		Delay/ICU-LOS	Delay/ICU-LOS
Telegraph Road/Wells Road	Signal	0.50- LOS A	0.52-LOS A
State Route 126 EB Ramp/Wells Road	Signal	0.56-LOS A	0.56-LOS A
Telegraph Road/Edwards Ranch Road	STOP-Sign	11.4 sec./LOS B	12.3 sec./LOS B
Telegraph Road/Todd Road	STOP-Sign	9.2 sec./LOS A	12.3 sec./LOS B
Telegraph Road/Briggs Road	Signal	0.34-LOS A	0.38-LOS A
Briggs Road/Faulkner Road	STOP-Sign	9.6 sec./LOS A	8.9 sec./LOS A
State Route 126 WB Ramps/Briggs Road	STOP-Sign	8.6 sec./LOS A	8.6 sec./LOS A
State Route 126 EB Ramps/Briggs Road	STOP-Sign	8.9 sec./LOS A	9.5 sec./LOS A

The delayed movements at the study-area intersections operate in the LOS "A"-"B" range during the A.M. and P.M. peak hour period as indicated in Table 2.



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EXISTING LANE GEOMETRIES AND TRAFFIC CONTROLS

FIGURE 4

MMF - #14050

VENTURA COUNTY IMPACT THRESHOLDS

The County of Ventura has established LOS "D" as the design criteria for all County thoroughfares in the unincorporated areas of the County and LOS "C" for all County maintained local roads. In the immediate vicinity of the project site, no roadways have been designated as an impacted location on the Ventura County regional roadway system.

The thresholds outlined below were used to assess the significance of the impacts associated with the traffic generated by the project. The County of Ventura has adopted these thresholds.

Table 3
Minimum Acceptable Level of Service For Roadway Segments

County of Ventura - Minimum Acceptable Level of Service		
Case	**Minimum LOS**	**Description**
a.	LOS D	All County thoroughfares and state highways within the unincorporated area of the County, except as provided in case b.
b.	LOS E	State Route 33 between the end of the freeway and the City of Ojai.
c.	LOS C	All County maintained local roads.
d.	Varies	The LOS prescribed by the applicable city for all state highways, city thoroughfares, and city maintained local roads located within that city, if the city has formerly adopted General Plan policies, ordinances or a reciprocal agreement with the County, pertaining to development in the city that would individually or cumulatively affect the LOS of state highways, county thoroughfares and county-maintained local roads in the unincorporated are of the County.
e.		County LOS standards are applicable for any City that has not adopted its own standards.
At any intersection between two roads, each of which has a prescribed minimum acceptable LOS, the less stringent LOS of the two shall be the minimum acceptable LOS of that intersection.		

Changes in Level of Service - Potentially Significant changes in LOS at intersections on the Regional Road Network is shown in the following Table 4:

Table 4
Threshold of Significance for Changes in Levels of Service at Intersections

SIGNIFICANT CHANGES IN LOS	
Intersection LOS (including project)	Increase in V/C or Trips greater than
LOS A	0.20
LOS B	0.15
LOS C	0.10
LOS D	10 trips
LOS E	5 trips
LOS F	1 trip

The County's Environmental Assessment Guidelines provide the following standards for determining project-specific and cumulative impacts to the County Regional Road Network:

Project-Specific Impact - A significant adverse project-specific traffic impact is assumed to occur on any intersections if the project will change the V/C ratio or add PHT to impacted intersections that exceed the thresholds established in Table 4.

Cumulative Impacts - A significant adverse cumulative traffic impact is assumed to occur at any intersection if any one of the following results from the project:

a. If the project will add one or more PHT to the critical movements at an intersection that is part of the regional road network and is projected to cause a LOS change greater than the thresholds defined in Table 4 by the year 2020.

b. If the project will add 10 or more PHT to an intersection which is on the regional road network projected to operate at an acceptable LOS by the year 2020, but when considered with other approved proposed and reasonably foreseeable future projects, will cause the V/C or trip thresholds in Table 4 to be exceeded.

All projects that generate traffic contribute to cumulative traffic impact. The analysis of cumulative traffic impacts as contained in the Final Subsequent EIR prepared for the County General Plan Update (2005) and subsequent addendum (2007), would normally be considered sufficient cumulative analysis of traffic impacts. In such cases, payment of TIMF's is intended to mitigate the projects contribution to the cumulative traffic impacts of intersections outside of the Ojai Valley.

If the project involves County General Plan land use designation changes, zone changes or intensification of use, such that the projects impacts could not have been anticipated and were not included in either analysis for the current General plan or TIMF Program, or the project is located within the boundaries of the Ojai Area Plan, additional cumulative impact analysis and mitigation measures may be required at the discretion of the Director, County PWA - Transportation Department.

PROJECT-GENERATED TRAFFIC

Project Trip Generation

For the purpose of estimating the number of trips which would be generated by the "project", ATE used operation data supplied by the applicant. The proposed project will convert the existing 15-area agricultural compost operation into a 70 area Biogenic Energy Park. Agromin currently operates a commercial composting facility (Oxnard-Shoreline) at 6859 Arnold Road in Oxnard. Agromin will relocate the existing commercial composting operation to the Edward Ranch Road location. The Biogenic Energy Park will operate 7 days a week and employee 52 people. All truck trips and the majority of employees however will work from 7 A.M. to 5 P.M. Monday through Friday. The facility will operate with 10 office employees on day shift, 8 waste and maintenance employees on day shift, 20 material processing employees on two shifts, 10 packaging employees on two shifts and 4 outdoor processing employees on day shift. The operation level assumed for this "project" is based upon the following criteria. During a **peak** operational day, there could be up to 628 truck trips to/from the facility. Approximately 6 percent of the daily truck trips will occur during the typical peak one hour commute period between **7:00 - 9:00 A.M.** and 4 percent will occur during the **4:00 - 6:00 P.M. period.** The following represents the maximum daily operations that potentially could occur:

Truck Trips: 323 in and 323 out
Employees: 52 employees
- 10 Office - scheduled to work 7:00 A.M. - 5:00 P.M.
- 8 Waste and Maintenance - scheduled to work 7:00 A.M. - 5:00 P.M.
- 20 Material Processing on two shifts all in place prior to the 7:00 - 9:00 A.M. peak hour period and the 4:00 - 6:00 P.M. peak hour period.
- 10 Packaging on two shifts all in place prior to the 7:00 - 9:00 A.M. peak hour period and the 4:00 - 6:00 P.M. peak hour period.
- 4 Outdoor Processing - scheduled to work Sunrise to Sunset

Visitors: 10 in and 10 out

During the typical peak one hour commute period between **7:00 - 9:00 A.M. and 4:00 - 6:00 P.M.** the project's trip generation is presented in Table 5.

Table 5
Project Trip Generation

Project Land Use	PDT*	A.M. Peak Hour			P.M. Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Existing Use: Compost Facility	114	2	2	4	2	13	15
Proposed Use: Biogenic Energy Park	770	20	17	37	12	36	48
Net Change	+656	+18	+15	+33	+10	+23	+33

* PDT: Peak Daily Trips

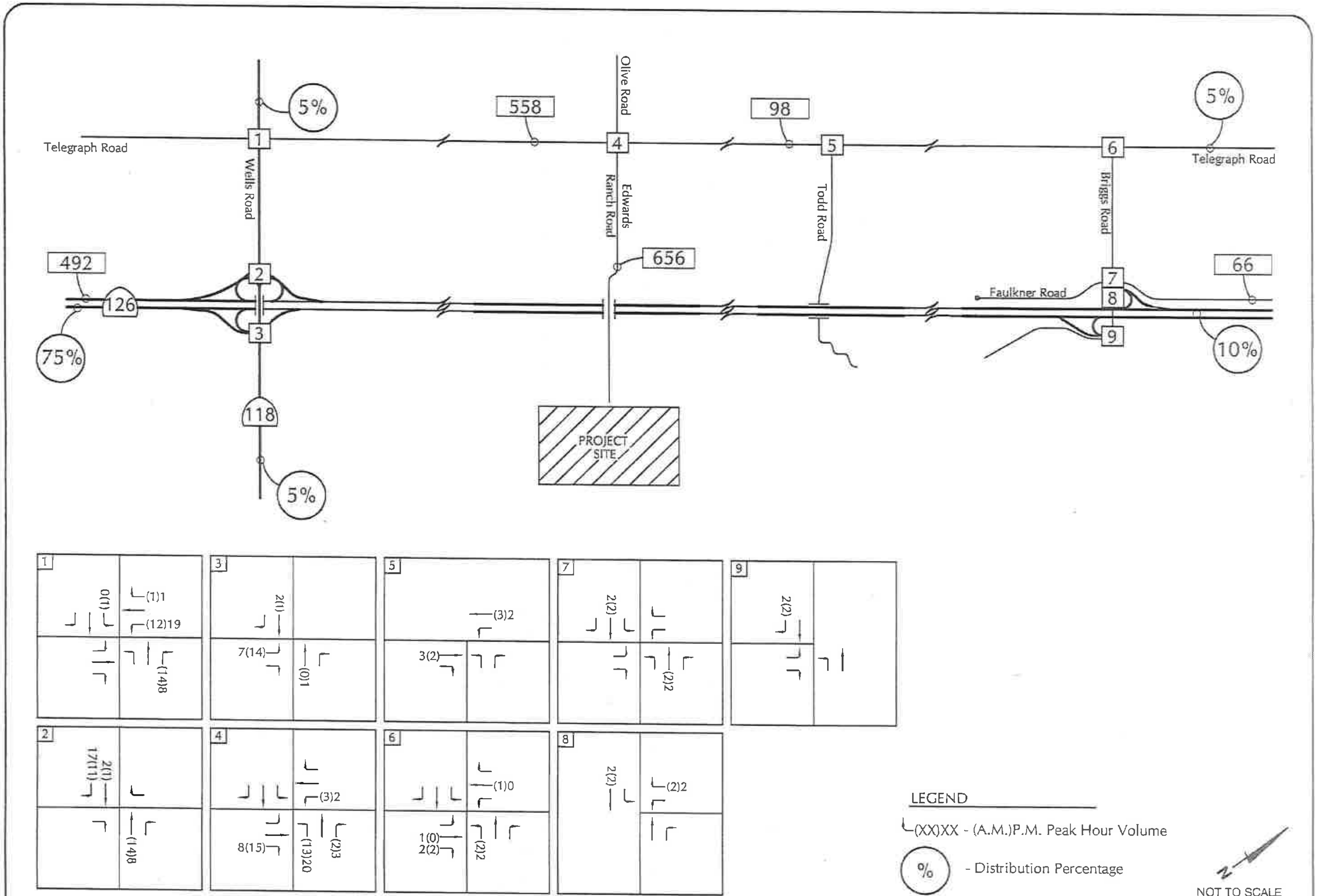
The proposed Biogenic Energy Park would result in a net increase of 656 average daily trips, 33 A.M. peak hour trips and 33 P.M. peak hour trips.

Project Trip Distribution and Assignment

Trip distribution for the project was developed based on peak hour operational data provided by the applicant to ATE for use in this traffic study. The project will make and receive deliveries primarily to the east and west via State Route 126. Project-generated traffic was distributed and assigned to the study-area street system as presented in Table 6. Figure 5 illustrates the distribution and assignment of project-generated **peak day** traffic volumes.

Table 6
Project Trip Distribution

Route	Origin/Destination	Percent
State Route 126	East West	10% 75%
Wells Road/Los Angeles Avenue	North South	5% 5%
Telegraph Road	East	5%
	Total:	**100%**



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PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

FIGURE 5

EKM - #14050

POTENTIAL TRAFFIC IMPACTS

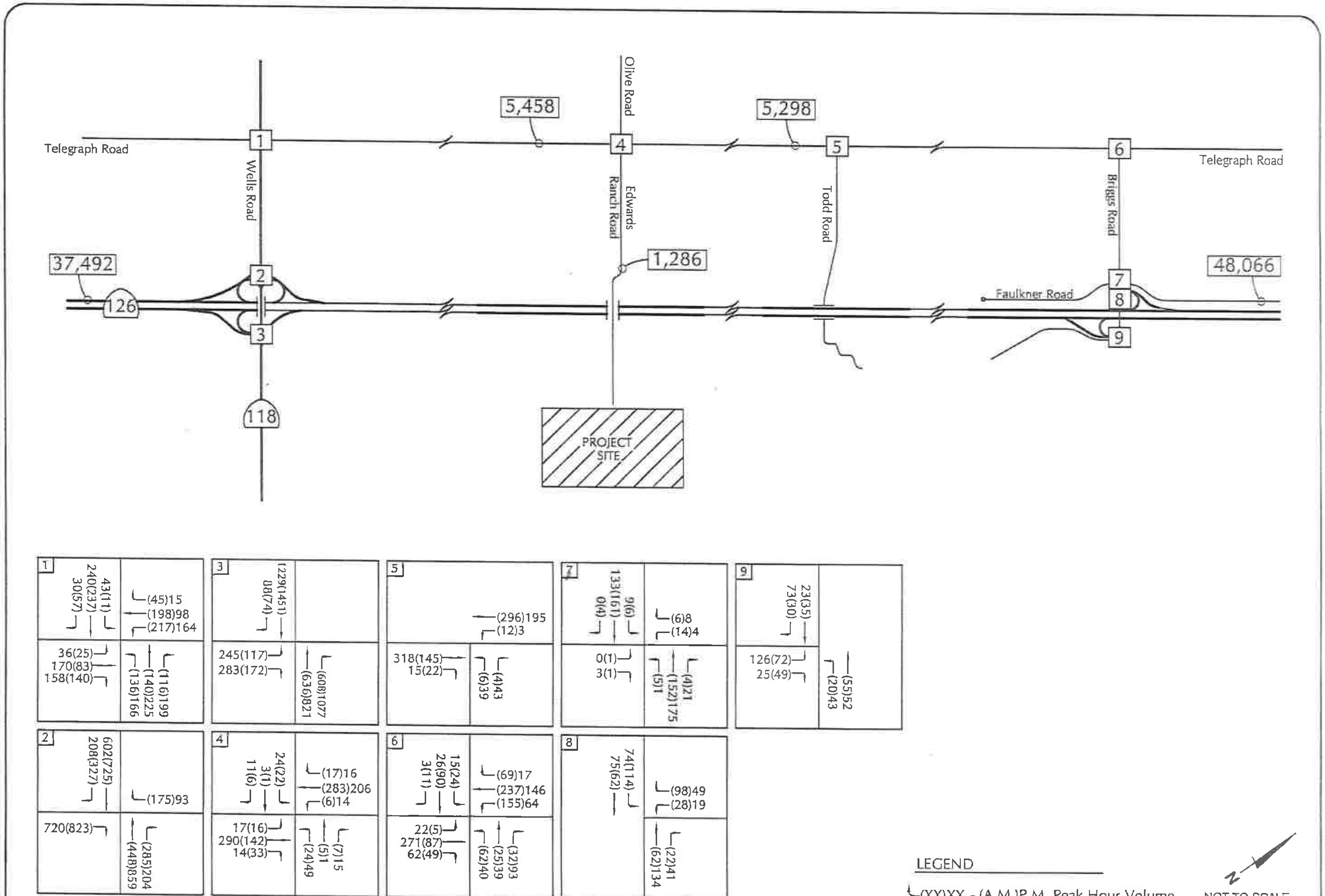
Project-Specific Impacts

Roadway. Roadway volumes and level of service for the existing and existing + project conditions are listed in Table 7. The existing + project roadway volumes are illustrated in Figure 6.

Table 7
Existing + Project Daily Roadway Operations

Roadway Segment	Roadway Type	ADT			
		Existing	Existing+ Project	LOS	Impact
State Route 126 - east of Briggs Road - west of Wells Road	 4-Lane Freeway 4-Lane Freeway	 48,000 37,000	 48,066 37,492	 LOS B LOS B	 No No
Telegraph Road - east of Edwards Ranch Road - west of Edwards Ranch Road	 2-Lane Roadway 2-Lane Roadway	 5,200 4,900	 5,298 5,458	 LOS B LOS B	 No No
Edwards Ranch Road - south of Telegraph Road	 2-Lane Roadway	 630	 1,286	 LOS A	 No

The data in Table 6 show that the addition of project traffic to the State Route 126 and the adjacent roadways would not significantly impact the study-area roadway segments based on Ventura County impact criteria.



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ENGINEERS

EXISTING +PROJECT TRAFFIC VOLUMES

FIGURE 6

EKM - #14050

Intersection. Intersection operations of the existing and existing + project conditions during the A.M. and P.M. peak hours are listed in Tables 8 and 9. Figure 6 illustrates the A.M. and P.M. peak hour existing + project traffic volumes. As stated previously, both the project peak day and project average day peak hour volumes are the same. The project would improve the Telegraph Road/Edwards Ranch Road intersection by lengthening the westbound left-turn lane from 40 feet to 150 feet and provide a 150 foot eastbound right-turn lane.

Table 8
Existing + Project A.M. Peak Hour Intersection Operations

		A.M. Peak Hour	
		Existing	Existing + Project
Intersection	Control	Delay/ICU-LOS	Delay/ICU-LOS
Telegraph Road/Wells Road	Signal	0.50-LOS A	0.51-LOS A
State Route 126 EB Ramps/Wells Road	Signal	0.56-LOS A	0.56-LOS A
Telegraph Road/Edwards Ranch Road	STOP-Sign	11.4 sec/LOS B	11.7 sec/LOS B
Telegraph Road/Todd Road	STOP-Sign	9.2 sec./LOS A	9.2 sec./LOS A
Telegraph Road/Briggs Road	Signal	0.34-LOS A	0.35-LOS A
Briggs Road/Faulkner Road	STOP-Sign	9.6 sec./LOS A	9.6 sec./LOS A
State Route 126 WB Ramps/Briggs Road	STOP-Sign	8.6 sec./LOS A	8.6 sec./LOS A
State Route 126 EB Ramps/Briggs Road	STOP-Sign	8.9 sec./LOS A	8.9 sec./LOS A

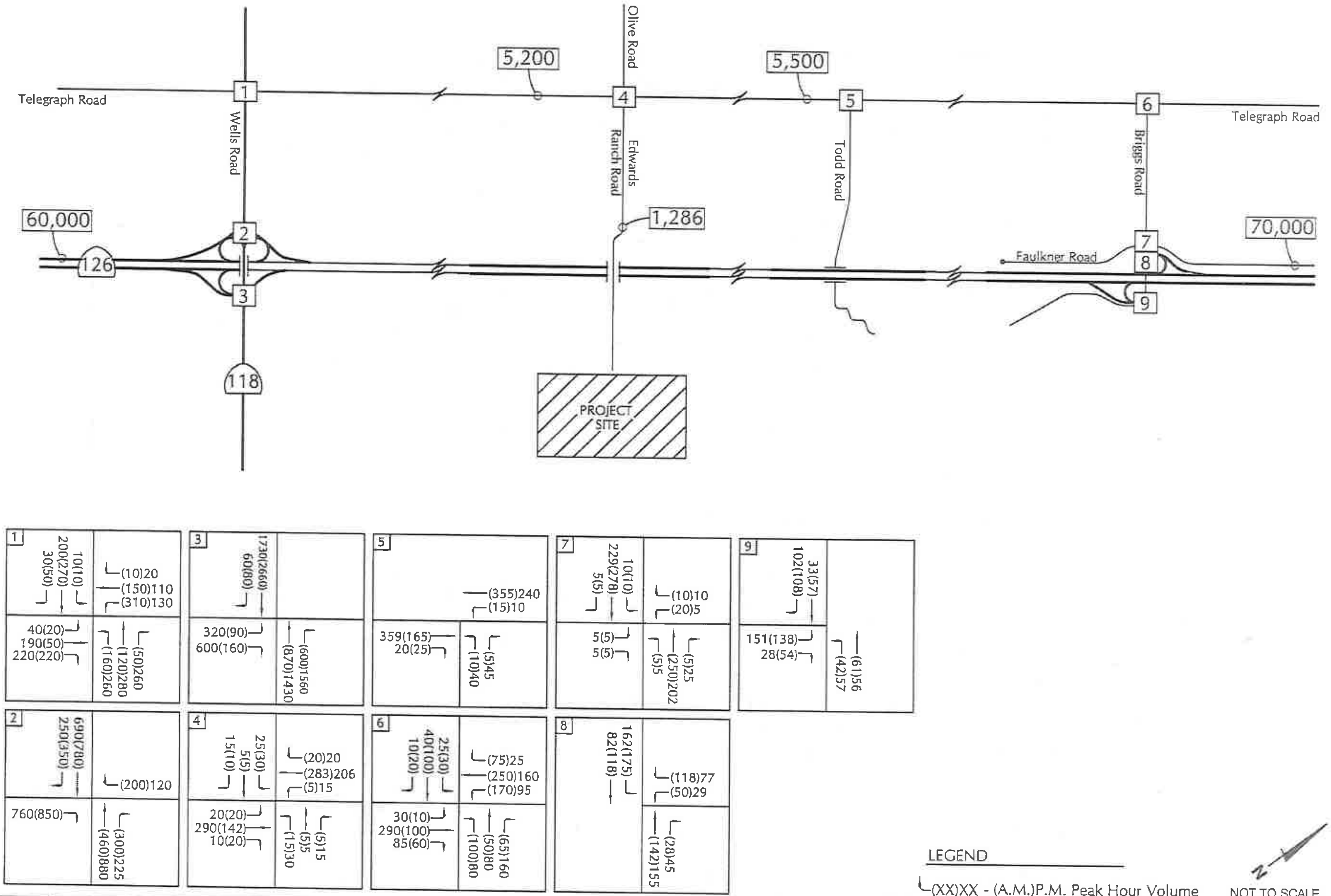
Table 9
Existing + Project P.M. Peak Hour Intersection Operations

Intersection	Control	P.M. Peak Hour Existing Delay/ICU-LOS	P.M. Peak Hour Existing + Project Delay/ICU-LOS
Telegraph Road/Wells Road	Signal	0.52-LOS A	0.53-LOS A
State Route 126 EB Ramps/Wells Road	Signal	0.56-LOS A	0.56-LOS A
Telegraph Road/Edwards Ranch Road	STOP-Sign	12.3 sec./LOS B	13.2 sec./LOS B
Telegraph Road/Todd Road	STOP-Sign	12.3 sec./LOS B	0.0 sec/LOS A
Telegraph Road/Briggs Road	Signal	0.38-LOS A	0.38-LOS A
Briggs Road/Faulkner Road	STOP-Sign	8.9 sec./LOS A	8.9 sec./LOS A
State Route 126 WB Ramps/Briggs Road	STOP-Sign	8.6 sec./LOS A	8.6 sec./LOS A
State Route 126 EB Ramps/Briggs Road	STOP-Sign	9.5 sec./LOS A	9.6 sec./LOS A

The data in Tables 8 and 9 shows that the addition of project traffic would not significantly impact the study-area intersections during the A.M. and P.M. peak hour periods.

CUMULATIVE (YEAR 2025) ANALYSIS

The following section discusses the cumulative (Year 2025) scenario which includes the traffic generated by the project. The General Plan Buildout traffic volumes used in the City of Ventura General Plan Final EIR and the City of Santa Paula Fee Program Update were used to generate the cumulative traffic volumes for the following cumulative analysis. The cumulative traffic analysis assumes that State Route 126 is widened to 6-lanes in each direction as planned by the Ventura County Transportation Commission. The cumulative traffic volumes are illustrated on Figure 7.



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CUMULATIVE TRAFFIC VOLUMES

FIGURE 7

EKM - #14050

Cumulative Impacts

Levels of service were calculated for the study-area roadway and intersection and discussed in the following text. Intersection LOS worksheets are contained in the Technical Appendix.

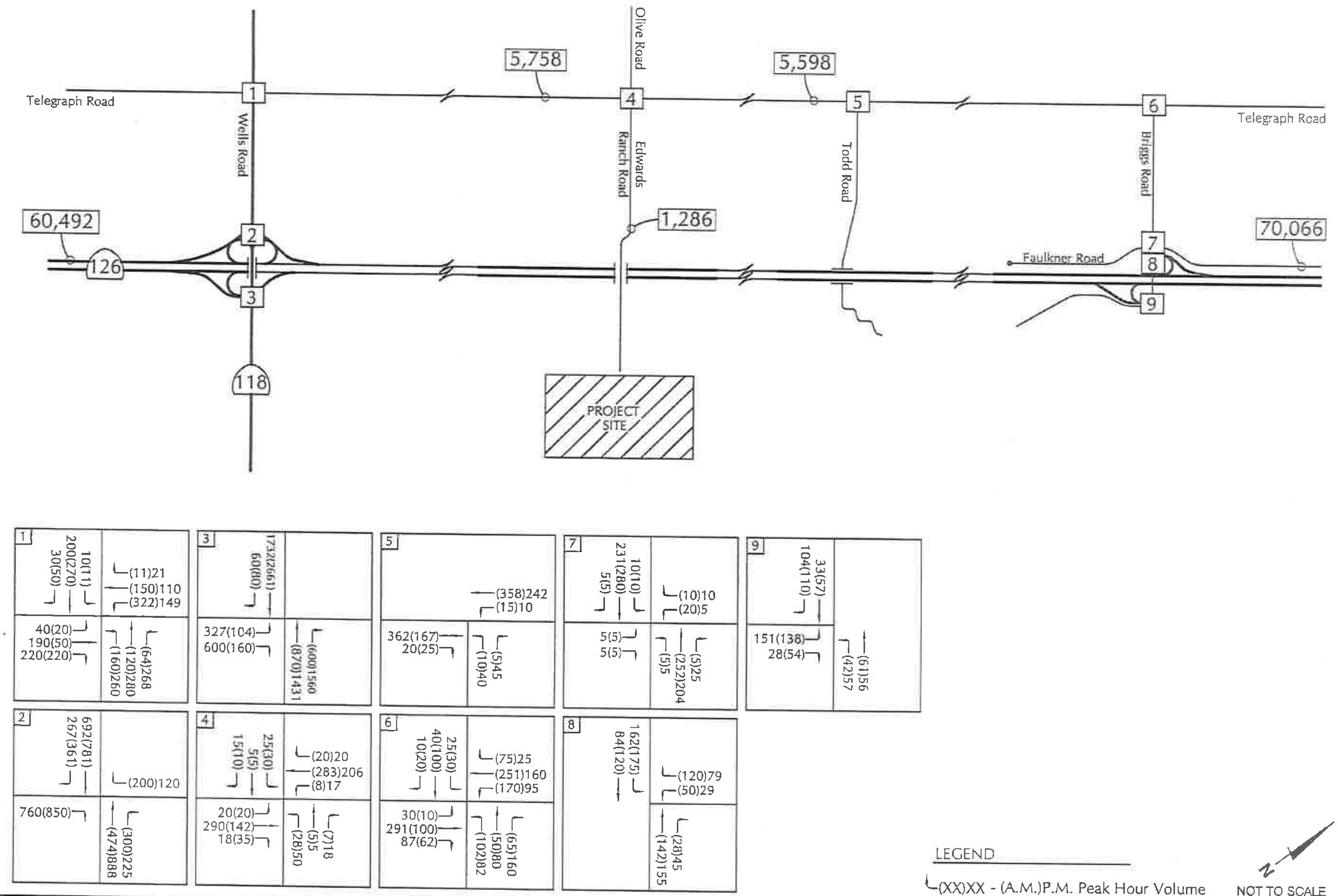
Roadways. Roadway volumes and LOS for the cumulative and cumulative + project conditions are listed in Table 10 and illustrated in Figure 8.

Table 10
Cumulative + Project Daily Roadway Operations

Roadway Segment	Roadway Type	ADT			
		Cumulative	Cumulative + Project	LOS	Impact
State Route 126					
- east of Briggs Road	6-Lane Freeway	70,000	70,066	LOS B	No
- west of Wells Road	6-Lane Freeway	60,000	60,492	LOS B	No
Telegraph Road					
- east of Edwards Ranch Road	2-Lane Roadway	5,500	5,598	LOS B	No
- west of Edwards Ranch Road	2-Lane Roadway	5,200	5,758	LOS C	No
Edwards Ranch Road					
- south of Telegraph Road	2-Lane Roadway	630	1,286	LOS B	No

The data in Table 10 show that the addition of project traffic to the State Route 126 and the adjacent roadways would not significantly impact the study-area roadway segments based on Ventura County impact criteria.

Intersections. Intersection operations of the cumulative and cumulative + project conditions during the A.M. and P.M. peak hours are listed in Tables 11 and 12. Figure 8 illustrates the A.M. and P.M. peak hour cumulative + project traffic volumes.



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CUMULATIVE + PROJECT TRAFFIC VOLUMES

FIGURE 8

EKM - #14050

Table 11
Cumulative + Project A.M. Peak Hour Intersection Operations

Intersection	Control	A.M. Peak Hour Cumulative Delay/ICU-LOS	A.M. Peak Hour Cumulative + Project Delay/ICU-LOS
Telegraph Road/Wells Road	Signal	0.61-LOS B	0.61-LOS B
State Route 126 EB Off-Ramps/Wells Road	Signal	0.65-LOS B	0.65-LOS B
Telegraph Road/Edwards Ranch Road	STOP-Sign	11.8 sec./LOS B	12.2 sec./LOS B
Telegraph Road/Todd Road	STOP-Sign	9.9 sec./LOS A	9.9 sec./LOS A
Telegraph Road/Briggs Road	Signal	0.39-LOS A	0.39-LOS A
Briggs Road/Faulkner Road	STOP-Sign	11.6 sec./LOS B	11.6 sec./LOS AB
State Route 126 WB Ramps/Briggs Road	STOP-Sign	9.9 sec./LOS A	10.0 sec./LOS A
State Route 126 EB Ramps/Briggs Road	STOP-Sign	10.4 sec./LOS B	10.4 sec./LOS B

Table 12
Cumulative + Project P.M. Peak Hour Intersection Operations

Intersection	Control	P.M. Peak Hour Cumulative Delay/ICU-LOS	P.M. Peak Hour Cumulative + Project Delay/ICU-LOS
Telegraph Road/Wells Road	Signal	0.52-LOS A	0.53-LOS A
State Route 126 EB Off-Ramps/Wells Road	Signal	0.74-LOS C	0.74-LOS C
Telegraph Road/Edwards Ranch Road	STOP-Sign	12.6 sec./LOS B	13.4 sec./LOS B
Telegraph Road/Todd Road	STOP-Sign	13.0 sec./LOS B	13.1 sec./LOS B
Telegraph Road/Briggs Road	Signal	0.54-LOS A	0.54-LOS A
Briggs Road/Faulkner Road	STOP-Sign	6.9 sec./LOS A	9.8 sec./LOS A
State Route 126 WB Ramps/Briggs Road	STOP-Sign	9.3 sec./LOS A	9.3 sec./LOS A
State Route 126 EB Ramps/Briggs Road	STOP-Sign	10.2 sec./LOS B	10.3 sec./LOS B

The data in Tables 11 and 12 show that the addition of project traffic would not significantly impact the study-area intersection during the A.M. and P.M. peak hour periods.

SITE ACCESS

Regional access to the Biogenic Energy Park is provided by the State Route 126/Wells Road and State Route/Briggs Road interchanges with direct access via the Telegraph Road/Edwards Ranch Road intersection. These facilities currently serve truck traffic similar to the type used by the Agromin Biogenic Energy Park. The segment of Telegraph Road adjacent to the site access is relatively straight and level, providing good sight distance. Both Telegraph Road and Edward Ranch Road are capable of carrying the type of trucks and increased traffic generated by the proposed project. The project would improve the Telegraph Road/Edwards Ranch Road intersection by lengthening the westbound left-turn lane from 40 feet to 150 feet and provide a 150 foot eastbound right-turn lane. The project will also participate in the maintenance of the Edwards Ranch Road roadway surface.

VENTURA COUNTY GENERAL PLAN CONSISTENCY

The County has adopted a Traffic Improvement Fee Program to offset the capital improvement cost required to implement traffic mitigation measures to accommodate cumulative developments within the County. The project would be consistent with the Ventura County General Plan by paying the "Traffic Impact Mitigation Fee".

VENTURA COUNTY CONGESTION MANAGEMENT PROGRAM

According to the County's Congestion Management Program (CMP), the minimum acceptable standard for traffic operations is LOS "E". [2] However, so that local jurisdictions are not unfairly penalized for existing congestion, CMP locations currently operating in the LOS "F" range are considered acceptable. State Route 126 is contained in the County's CMP. The project would add less than 50 peak hour trips to State Route 126, thus no impacts based on CMP criteria.

Intersection Operation

The study-area intersections are included in the County's CMP. The intersections are all expected to operate at LOS "C" or better with the addition of cumulative + project peak hour volumes, and thus would not exceed the CMP LOS "E" standard.

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[2] Traffic Monitoring for Ventura County Congestion Management Program, Ventura County Transportation Commission, 2009.

STUDY PARTICIPANTS AND REFERENCES

Associated Transportation Engineers

Richard L. Pool, Principal Engineer
Darryl F. Nelson, PTP, Senior Transportation Planner
Erica K. Monson, Traffic Technician I

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Persons Contacted

Ben Emami, Ventura County Public Works Department

TECHNICAL APPENDIX

CONTENTS:

LEVEL OF SERVICE DEFINITIONS

LEVEL OF SERVICE DEFINITIONS

"Levels of Service" (LOS) A through F are used to rate roadway and intersection operating conditions, with LOS A indicating very good operations and LOS F indicating poor operations. More complete level of service definitions are:

LOS	Definition
A	Low volumes; primarily free flow operations. Density is low and vehicles can freely maneuver within traffic stream. Drivers can maintain their desired speeds with little or no delay.
B	Stable flow with potential for some restriction of operating speeds due to traffic conditions. Maneuvering is only slightly restricted. Stopped delays are not bothersome and drivers are not subject to appreciable tension.
C	Stable operations, however the ability to maneuver is more restricted by the increase in traffic volumes. Relatively satisfactory operating speeds prevail but adverse signal coordination or longer queues cause delays.
D	Approaching unstable traffic flow where small increases in volume could cause substantial delays. Most drivers are restricted in their ability to maneuver and their selection of travel speeds. Comfort and convenience are low but tolerable.
E	Operations characterized by significant approach delays and average travel speeds of one-half to one-third of free flow speed. Flow is unstable and potential for stoppages of brief duration. High signal density, extensive queuing, or signal progression/timing are the typical causes of delays.
F	Forced flow operations with high approach delays at critical signalized intersections. Speeds are reduced substantially and stoppages may occur for short or long periods of time because of downstream congestion.

Signalized Intersection Level of Service Definitions

LOS	Delay[a]	V/C Ratio	Definition
A	< 10.0	< 0.60	Progression is extremely favorable. Most vehicles arrive during the green phase. Many vehicles do not stop at all.
B	10.1 - 20.0	0.61 - 0.70	Good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.
C	20.1 - 35.0	0.71 - 0.80	Only fair progression, longer cycle lengths, or both, result in higher cycle lengths. Cycle lengths may fail to serve queued vehicles, and overflow occurs. Number of vehicles stopped is significant, though many still pass through intersection without stopping.
D	35.1 - 55.0	0.81 - 0.90	Congestion becomes more noticeable. Unfavorable progression, long cycle lengths and high v/c ratios result in longer delays. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	55.1 - 80.0	0.91 - 1.00	High delay values indicate poor progression, long cycle lengths and high v/c ratios. Individual cycle failures are frequent
F	> 80.0	> 1.00	Considered unacceptable for most drivers, this level occurs when arrival flow rates exceed the capacity of lane groups, resulting in many individual cycle failures. Poor progression and long cycle lengths may also contribute to high delay levels.

[a] Average control delay per vehicle in seconds.

Unsignalized Intersection Level of Service Definitions

The HCM[1] uses *control delay* to determine the level of service at unsignalized intersections. Control delay is the difference between the travel time actually experienced at the control device and the travel time that would occur in the absence of the traffic control device. Control delay includes deceleration from free flow speed, queue move-up time, stopped delay and acceleration back to free flow speed.

LOS	Control Delay Seconds per Vehicle
A	< 10.0
B	10.1 - 15.0
C	15.1 - 25.0
D	25.1 - 35.0
E	35.1 - 50.0
F	> 50.0

[1] Highway Capacity Manual, National Research Board, 2000

ENGINEERING ROADWAY DESIGN CAPACITIES

FIGURE 4.2.2

AVERAGE DAILY TRAFFIC (ADT) LEVEL OF SERVICE (LOS) THRESHOLDS COUNTY ROADS AND CONVENTIONAL STATE HIGHWAYS					
	CLASS I			CLASS II	CLASS III
LOS	2 LANES	4 LANES	6 LANES	2 LANES	2 LANES
A	2,400	19,000	29,000	1,500	350
B	5,600	28,000	42,000	3,900	2,000
C	10,000	38,000	57,000	7,000	3,300
D	16,000	47,000	70,000	11,000	5,900
E	27,000	58,000	87,000	21,000	16,000

ADT/LOS THRESHOLDS FREEWAYS				
LOS	4 LANES	6 LANES	8 LANES	10 LANES
A	31,000	46,000	62,000	77,000
B	48,000	71,000	95,000	119,000
C	68,000	102,000	136,000	169,000
D	82,000	123,000	164,000	205,000
E	88,000	132,000	176,000	220,000

SOURCE: VENTURA COUNTY PUBLIC WORKS AGENCY 9/94

R. 12/20/94

STANDARD ENGINEERING ROADWAY DESIGN CAPACITIES

Roadway Type	# of Lanes	LOS A		LOS B		LOS C		LOS D		LOS E	
		Low	High	Low	High	Low	High	Low	High	Low	High
Arterial	2 Lanes	8,100	12,000	9,400	14,000	10,800	16,000	12,100	18,000	13,500	20,000
Arterial	4 Lanes	16,100	23,900	18,900	27,900	21,600	31,900	24,300	35,900	27,000	39,900
Major	2 Lanes	6,500	9,600	7,500	11,200	8,600	12,800	9,700	14,400	10,800	16,000
Major	4 Lanes	12,900	19,200	15,100	22,300	17,200	25,500	19,400	28,700	21,600	31,900
Collector	2 Lanes	4,600	7,100	5,400	8,200	6,200	9,400	6,900	10,600	7,700	11,800

The roadway capacities listed above are "rule of thumb." Some factors which affect these capacities are intersections (numbers and configuration), degrees of access control, roadway grades, design geometries (horizontal and vertical alignment standards), sight distance, level of truck and bus traffic and level of pedestrian and bicycle traffic.

ROADWAY SEGMENT AND INTERSECTION COUNT DATA

2015 Traffic Volumes on California State Highways

Dist	Route	County		Postmile	Description	Back Peak Hour	Back Peak Month	Back AADT	Ahead Peak Hour	Ahead Peak Month	Ahead AADT
11	125	SD		10.622	JAMACHA ROAD UC	7600	102000	101000	9200	124000	122000
11	125	SD		12.967	EAST JCT. RTE. 94	9200	124000	122000	13000	170000	169000
11	125	SD		14.738	LEMON AVENUE	13000	170000	169000	13600	167000	165000
11	125	SD	R	15.094	LA MESA, GROSSMONT BOULEVARD	13600	167000	165000	12600	158000	156000
11	125	SD	R	15.409	JCT. RTE. 8	12600	158000	156000	7900	99000	98000
11	125	SD		18.663	LA MESA, AMAYA DRIVE	7900	99000	98000	8100	91000	86000
11	125	SD		19.53	NAVAJO ROAD	8100	91000	86000	6800	77000	75000
11	125	SD		20.393	GROSSMONT COLLEGE DRIVE	6800	77000	75000	6200	71000	68000
11	125	SD		22.172	JCT. RTE. 52, SANTEE	6200	71000	68000	3150	33000	31000
11	125	SD		22.301	MISSION GORGE ROAD	3150	33000	31000			
07	126	VEN		0	JCT. RTE. 101				4850	53000	47000
07	126	VEN		1.448	VENTURA, VICTORIA AVENUE	4850	53000	47000	4700	50000	46000
07	126	VEN		2.799	VENTURA, KIMBALL ROAD	4700	49000	46000	3750	41000	37000
07	126	VEN	R	5.031	VENTURA, JCT. RTE. 118	3750	41000	37000	4450	54000	50000
07	126	VEN	R	8.912	BRIGGS ROAD	4450	54000	50000	4200	52000	48000
07	126	VEN	R	10.38	SANTA PAULA, PECK ROAD	4200	52000	48000	3500	43500	40500
07	126	VEN	R	11.365	SANTA PAULA, PALM AVENUE	3500	43500	40500	3800	47000	36500
07	126	VEN	R	12.042	SANTA PAULA, JCT. RTE. 150	3800	47000	36500	2650	32500	29500
07	126	VEN	R	13.248	HALLOCK DRIVE	2650	32500	29500	3500	37000	33500
07	126	VEN	T	16.73	SESPE RANCH UC	3500	37000	33500	3100	32500	29000
07	126	VEN		20.331	FILLMORE, WEST CITY LIMITS, LOS SERENOS RD	3100	32500	29000	2750	31500	29000
07	126	VEN		21.137	FILLMORE, JCT. RTE. 23	2800	32000	29500	2550	28500	26500
07	126	VEN		22.48	FILLMORE, EAST CITY LIMITS	2550	28500	26000	2550	28500	26000
07	126	VEN	R	29.296	CENTER STREET	2500	26500	22500	2650	27500	23500
07	126	VEN	R	36.64	VENTURA/LOS ANGELES COUNTY LINE	2500	25000	22600			
07	126	LA	R	0	VENTURA/LOS ANGELES COUNTY LINE				2500	25000	22600
07	126	LA	R	3.564	WOLCOTT WAY	2500	25000	22600	2650	27000	24400
07	126	LA	R	4.885	COMMERCE CENTER DRIVE	2650	27000	24400	4000	40500	36500
07	126	LA	R	5.46	THE OLD ROAD	4000	40500	36500	4000	40500	36500
07	126	LA	R	5.801	SANTA CLARITA, NORTH JCT. RTE. 5	4000	40500	36500	2700	30500	28000
07	126	LA	R	5.85	SANTA CLARITA, SOUTH JCT. RTE. 5	2700	30500	28000	2700	30500	28000
07	126	LA		6.036	SANTA CLARITA, TOURNEY ROAD	2700	30500	28000			
08	127	SBD	L	0	JCT. RTE. 15				960	8000	6700
08	127	SBD	L	.17	BAKER, JCT. HIGHWAY	960	8000	6700	330	2600	2050
08	127	SBD		.642	SCHOOL ROAD	330	2600	2050	210	1350	1050
08	127	SBD		29.708	SARATOGA SPRINGS ROAD	210	1350	1050	170	960	730
08	127	SBD		41.473	SAN BERNARDINO/INYO COUNTY LINE	150	730	720			
09	127	INY		0	SAN BERNARDINO/INYO COUNTY LINE				150	730	720
09	127	INY		6.51	OLD SPANISH TRAIL HWY	170	1000	750	120	850	670

Prepared by NDS/ATD

Prepared by National Data & Surveying Services

VOLUME

Edwards Ranch Rd n/o Telegraph Rd

Day: Thursday
Date: 1/21/2016

City: Santa Paula
Project #: CA16_5018_001

DAILY TOTALS	NB	SB	EB	WB	Total
	276	316	0	0	592

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	0		0		0	0			12:00	6		4		0	0	10	
00:15	0		0		0	0			12:15	3		9		0	0	12	
00:30	0		1		0	0	1		12:30	3		5		0	0	8	
00:45	1	1	0	1	0	0	1	2	12:45	5	17	15	33	0	0	20	50
01:00	0		0		0	0			13:00	5		9		0	0	14	
01:15	1		0		0	0	1		13:15	4		5		0	0	9	
01:30	0		0		0	0			13:30	3		4		0	0	7	
01:45	1	2	0		0	0	1	2	13:45	2	14	5	23	0	0	7	37
02:00	0		0		0	0			14:00	4		6		0	0	10	
02:15	0		0		0	0			14:15	5		8		0	0	13	
02:30	0		1		0	0	1		14:30	2		5		0	0	7	
02:45	1	1	1	2	0	0	2	3	14:45	7	18	9	28	0	0	16	46
03:00	0		1		0	0	1		15:00	5		6		0	0	11	
03:15	0		0		0	0			15:15	6		8		0	0	14	
03:30	0		0		0	0			15:30	3		6		0	0	9	
03:45	0		0	1	0	0		1	15:45	12	26	5	25	0	0	17	51
04:00	1		0		0	0	1		16:00	7		15		0	0	22	
04:15	0		1		0	0	1		16:15	8		12		0	0	20	
04:30	0		0		0	0			16:30	12		4		0	0	16	
04:45	0	1	1	2	0	0	1	3	16:45	8	35	4	35	0	0	12	70
05:00	0		2		0	0	2		17:00	4		6		0	0	10	
05:15	0		0		0	0			17:15	8		5		0	0	13	
05:30	1		0		0	0	1		17:30	8		5		0	0	13	
05:45	0	1	3	5	0	0	3	6	17:45	4	24	2	18	0	0	6	42
06:00	1		3		0	0	4		18:00	3		5		0	0	8	
06:15	2		8		0	0	10		18:15	3		1		0	0	4	
06:30	2		7		0	0	9		18:30	4		0		0	0	4	
06:45	5	10	9	27	0	0	14	37	18:45	4	14	0	6	0	0	4	20
07:00	5		6		0	0	11		19:00	2		2		0	0	4	
07:15	7		11		0	0	18		19:15	1		1		0	0	2	
07:30	6		8		0	0	14		19:30	3		2		0	0	5	
07:45	12	30	6	31	0	0	18	61	19:45	0	6	2	7	0	0	2	13
08:00	11		4		0	0	15		20:00	4		0		0	0	4	
08:15	5		2		0	0	7		20:15	3		2		0	0	5	
08:30	0		6		0	0	6		20:30	2		4		0	0	6	
08:45	5	21	6	18	0	0	11	39	20:45	1	10	0	6	0	0	1	16
09:00	2		1		0	0	3		21:00	5		1		0	0	6	
09:15	3		1		0	0	4		21:15	1		4		0	0	5	
09:30	2		0		0	0	2		21:30	5		0		0	0	5	
09:45	2	9	5	7	0	0	7	16	21:45	3	14	0	5	0	0	3	19
10:00	3		4		0	0	7		22:00	1		0		0	0	1	
10:15	1		4		0	0	5		22:15	0		0		0	0		
10:30	3		2		0	0	5		22:30	0		1		0	0	1	
10:45	4	11	2	12	0	0	6	23	22:45	1	2	0	1	0	0	1	3
11:00	0		8		0	0	8		23:00	0		0		0	0		
11:15	2		2		0	0	4		23:15	0		0		0	0		
11:30	5		5		0	0	10		23:30	1		0		0	0	1	
11:45	1	8	7	22	0	0	8	30	23:45	0	1	1	1	0	0	1	2
TOTALS		95		128				223	TOTALS		181		188				369
SPLIT %		42.6%		57.4%				37.7%	SPLIT %		49.1%		50.9%				62.3%

DAILY TOTALS	NB	SB	EB	WB	Total
	276	316	0	0	592

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour	07:15	06:45			07:15	PM Peak Hour	15:45	12:15			15:45
AM Pk Volume	36	34			65	PM Pk Volume	39	38			75
Pk Hr Factor	0.750	0.773			0.903	Pk Hr Factor	0.667	0.550			0.852
7 - 9 Volume	51	49	0	0	100	4 - 6 Volume	59	53	0	0	112
7 - 9 Peak Hour	07:15	07:00			07:15	4 - 6 Peak Hour	16:00	16:00			16:00
7 - 9 Pk Volume	36	31	0	0	65	4 - 6 Pk Volume	35	35	0	0	70
Pk Hr Factor	0.750	0.705	0.000	0.000	0.903	Pk Hr Factor	0.729	0.583	0.000	0.000	0.795

Prepared by NDS/ATD

Prepared by National Data & Surveying Services

VOLUME

Telegraph Rd e/o Edwards Ranch Rd

Day: Thursday
Date: 1/21/2016

City: Santa Paula
Project #: CA16_5018_002

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	2,761	2,441	5,202

AM Period	NB	SB	EB		WB		TOTAL	
00:00	0	0	2		2		4	
00:15	0	0	8		2		10	
00:30	0	0	2		7		9	
00:45	0	0	0	12	3	14	3	26
01:00	0	0	3		0		3	
01:15	0	0	3		2		5	
01:30	0	0	0		1		1	
01:45	0	0	0	6	1	4	1	10
02:00	0	0	1		2		3	
02:15	0	0	1		1		2	
02:30	0	0	0		1		1	
02:45	0	0	3	5	0	4	3	9
03:00	0	0	1		0		1	
03:15	0	0	1		3		4	
03:30	0	0	4		4		8	
03:45	0	0	2	8	3	10	5	18
04:00	0	0	1		7		8	
04:15	0	0	8		5		13	
04:30	0	0	4		3		7	
04:45	0	0	8	21	4	19	12	40
05:00	0	0	9		18		27	
05:15	0	0	8		20		28	
05:30	0	0	6		28		34	
05:45	0	0	14	37	28	94	42	131
06:00	0	0	22		34		56	
06:15	0	0	27		40		67	
06:30	0	0	39		44		83	
06:45	0	0	56	144	39	157	95	301
07:00	0	0	34		52		86	
07:15	0	0	37		67		104	
07:30	0	0	43		100		143	
07:45	0	0	56	170	68	287	124	457
08:00	0	0	37		64		101	
08:15	0	0	34		42		76	
08:30	0	0	41		34		75	
08:45	0	0	44	156	48	188	92	344
09:00	0	0	33		48		81	
09:15	0	0	24		35		59	
09:30	0	0	31		42		73	
09:45	0	0	26	114	32	157	58	271
10:00	0	0	23		36		59	
10:15	0	0	30		34		64	
10:30	0	0	32		36		68	
10:45	0	0	39	124	29	135	68	259
11:00	0	0	30		32		62	
11:15	0	0	35		26		61	
11:30	0	0	38		36		74	
11:45	0	0	33	136	38	132	71	268
TOTALS				933		1201		2134
SPLIT %				43.7%		56.3%		41.0%

PM Period	NB	SB	EB		WB		TOTAL	
12:00	0	0	49		32		81	
12:15	0	0	39		41		80	
12:30	0	0	55		23		78	
12:45	0	0	48	191	39	135	87	326
13:00	0	0	44		31		75	
13:15	0	0	49		47		96	
13:30	0	0	43		33		76	
13:45	0	0	53	189	31	142	84	331
14:00	0	0	39		38		77	
14:15	0	0	59		37		96	
14:30	0	0	49		45		94	
14:45	0	0	45	192	40	160	85	352
15:00	0	0	52		45		97	
15:15	0	0	61		37		98	
15:30	0	0	63		44		107	
15:45	0	0	64	240	43	169	107	409
16:00	0	0	85		48		133	
16:15	0	0	68		57		125	
16:30	0	0	87		72		159	
16:45	0	0	91	331	54	231	145	562
17:00	0	0	69		47		116	
17:15	0	0	83		34		117	
17:30	0	0	58		33		91	
17:45	0	0	50	260	30	144	80	404
18:00	0	0	40		28		68	
18:15	0	0	26		30		56	
18:30	0	0	41		20		61	
18:45	0	0	30	137	13	91	43	228
19:00	0	0	29		17		46	
19:15	0	0	25		13		38	
19:30	0	0	25		13		38	
19:45	0	0	21	100	15	58	36	158
20:00	0	0	19		11		30	
20:15	0	0	18		14		32	
20:30	0	0	19		15		34	
20:45	0	0	15	71	10	50	25	121
21:00	0	0	15		10		25	
21:15	0	0	17		10		27	
21:30	0	0	17		6		23	
21:45	0	0	10	59	4	30	14	89
22:00	0	0	11		6		17	
22:15	0	0	9		6		15	
22:30	0	0	11		3		14	
22:45	0	0	4	35	2	17	6	52
23:00	0	0	10		0		10	
23:15	0	0	4		1		5	
23:30	0	0	5		10		15	
23:45	0	0	4	23	2	13	6	36
TOTALS				1828		1240		3068
SPLIT %				59.6%		40.4%		59.0%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	2,761	2,441	5,202

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour			11:45	07:15	07:15	PM Peak Hour			16:00	16:00	16:00
AM Pk Volume			176	299	472	PM Pk Volume			330	231	562
Pk Hr Factor			0.418	0.748	0.825	Pk Hr Factor			0.907	0.719	0.884
7 - 9 Volume	0	0	326	475	801	4 - 6 Volume	0	0	591	375	966
7 - 9 Peak Hour			07:15	07:15	07:15	4 - 6 Peak Hour			16:00	16:00	16:00
7 - 9 Pk Volume	0	0	173	299	472	4 - 6 Pk Volume	0	0	331	231	562
Pk Hr Factor	0.000	0.000	0.772	0.748	0.825	Pk Hr Factor	0.000	0.000	0.909	0.802	0.884

Prepared by NDS/ATD
Prepared by National Data & Surveying Services

VOLUME

Telegraph Rd w/o Edwards Ranch Rd

Day: Thursday
Date: 1/21/2016

City: Santa Paula
Project #: CA16_5018_004

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	2,628	2,255	4,883

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00	0	0	2		0		2		12:00	0	0	49		27		76	
00:15	0	0	8		2		10		12:15	0	0	39		38		77	
00:30	0	0	4		7		11		12:30	0	0	50		25		75	
00:45	0	0	0	14	3	12	3	26	12:45	0	0	44	182	37	127	81	309
01:00	0	0	3		0		3		13:00	0	0	47		28		75	
01:15	0	0	5		2		7		13:15	0	0	47		38		85	
01:30	0	0	0		1		1		13:30	0	0	45		33		78	
01:45	0	0	0	8	0	3		11	13:45	0	0	51	190	31	130	82	320
02:00	0	0	1		2		3		14:00	0	0	44		34		78	
02:15	0	0	1		0		1		14:15	0	0	51		42		93	
02:30	0	0	0		1		1		14:30	0	0	48		44		92	
02:45	0	0	2	4	0	3	2	7	14:45	0	0	40	183	38	158	78	341
03:00	0	0	1		0		1		15:00	0	0	49		41		90	
03:15	0	0	0		2		2		15:15	0	0	58		41		99	
03:30	0	0	3		6		9		15:30	0	0	55		62		117	
03:45	0	0	2	6	4	12	6	18	15:45	0	0	62	224	36	180	98	404
04:00	0	0	1		5		6		16:00	0	0	58		44		102	
04:15	0	0	5		3		8		16:15	0	0	60		58		118	
04:30	0	0	4		2		6		16:30	0	0	71		71		142	
04:45	0	0	6	16	6	16	12	32	16:45	0	0	70	259	53	226	123	485
05:00	0	0	8		15		23		17:00	0	0	54		42		96	
05:15	0	0	7		19		26		17:15	0	0	71		34		105	
05:30	0	0	6		25		31		17:30	0	0	50		20		70	
05:45	0	0	15	36	25	84	40	120	17:45	0	0	49	224	28	124	77	348
06:00	0	0	33		29		62		18:00	0	0	35		27		62	
06:15	0	0	34		42		76		18:15	0	0	27		24		51	
06:30	0	0	49		41		90		18:30	0	0	42		18		60	
06:45	0	0	58	174	35	147	93	321	18:45	0	0	30	134	13	82	43	216
07:00	0	0	30		43		73		19:00	0	0	31		14		45	
07:15	0	0	31		79		110		19:15	0	0	25		10		35	
07:30	0	0	35		92		127		19:30	0	0	23		10		33	
07:45	0	0	64	160	57	271	121	431	19:45	0	0	17	96	13	47	30	143
08:00	0	0	38		53		91		20:00	0	0	19		6		25	
08:15	0	0	31		34		65		20:15	0	0	17		8		25	
08:30	0	0	35		32		67		20:30	0	0	16		14		30	
08:45	0	0	41	145	38	157	79	302	20:45	0	0	15	67	8	36	23	103
09:00	0	0	37		48		85		21:00	0	0	17		6		23	
09:15	0	0	39		32		71		21:15	0	0	13		11		24	
09:30	0	0	35		41		76		21:30	0	0	19		2		21	
09:45	0	0	23	134	29	150	52	284	21:45	0	0	9	58	2	21	11	79
10:00	0	0	23		31		54		22:00	0	0	10		5		15	
10:15	0	0	30		29		59		22:15	0	0	9		5		14	
10:30	0	0	43		36		79		22:30	0	0	11		2		13	
10:45	0	0	37	133	28	124	65	257	22:45	0	0	5	35	2	14	7	49
11:00	0	0	26		33		59		23:00	0	0	8		0		8	
11:15	0	0	36		26		62		23:15	0	0	3		0		3	
11:30	0	0	40		29		69		23:30	0	0	4		9		13	
11:45	0	0	27	129	32	120	59	249	23:45	0	0	2	17	2	11	4	28
TOTALS				959		1099		2058	TOTALS				1669		1156		2825
SPLIT %				46.6%		53.4%		42.1%	SPLIT %				59.1%		40.9%		57.9%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	2,628	2,255	4,883

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour			06:00	07:15	07:15	PM Peak Hour			16:30	16:00	16:00
AM Pk Volume			174	281	449	PM Pk Volume			224	226	485
Pk Hr Factor			0.750	0.764	0.884	Pk Hr Factor			0.789	0.704	0.854
7 - 9 Volume	0	0	305	428	733	4 - 6 Volume	0	0	483	350	833
7 - 9 Peak Hour			07:15	07:15	07:15	4 - 6 Peak Hour			16:30	16:00	16:00
7 - 9 Pk Volume	0	0	168	281	449	4 - 6 Pk Volume	0	0	266	226	485
Pk Hr Factor	0.000	0.000	0.656	0.764	0.884	Pk Hr Factor	0.000	0.000	0.937	0.796	0.854

ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

Wells Rd and Telegraph Rd , Santa Paula

Date: 1/21/2016

Day: Thursday

Project #: 16-5019-003

City: Santa Paula

AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	430 PM

N

Peak Hour Summary

Wells Rd

Telegraph Rd

CONTROL

Southbound Approach

Lanes	Left (SB)	Through (SB)	Right (SB)	Northbound out
AM	57	237	10	209
NOON	0	0	0	0
PM	30	240	43	275

Eastbound Approach

	AM	NOON	PM
Westbound out	391	0	294
Left	25	0	36
Through	83	0	170
Right	140	0	158

Lanes

Westbound Approach

	AM	NOON	PM
Right	44	0	14
Through	198	0	98
Left	205	0	145
Eastbound out	195	0	404

Lanes

Northbound Approach

	Southbound out	Left	Through	Right
AM	582	136	140	102
NOON	0	0	0	0
PM	543	166	225	191

Lanes

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

North Leg

	In	Out
AM	304	209
NOON	0	0
PM	313	275

West Leg

	AM	NOON	PM
Out	391	0	294
In	248	0	364

East Leg

	AM	NOON	PM
In	447	0	257
Out	195	0	404

South Leg

	Out	In
AM	582	378
NOON	0	0
PM	543	582

Total Volume Per Leg

Leg	AM	NOON	PM
North Leg	513	0	588
West Leg	639	0	658
East Leg	642	0	661
South Leg	960	0	1125

ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

Wells Rd and SR 126 EB Ramps , Santa Paula

Date:	1/21/2016
Day:	Thursday

Project #:	16-5019-002
City:	Santa Paula

AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	430 PM

N

Peak Hour Summary

Wells Rd

SR 126 EB Ramps

CONTROL

Southbound Approach

Lanes	Right	Thru	Left	Out (departing)
AM	74	1450	0	739
NOON	0	0	0	0
PM	88	1227	0	1058

Eastbound Approach

	AM	NOON	PM
Out (departing)	74	0	88
Left	103	0	238
Thru	0	0	0
Right	172	0	283

Westbound Approach

	AM	NOON	PM
Left	0	0	0
Thru	0	0	0
Right	0	0	0
Out (departing)	608	0	1077

Northbound Approach

Lanes	Out (departing)	Left	Thru	Right
AM	1622	0	636	608
NOON	0	0	0	0
PM	1510	0	820	1077

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

North Leg	In	Out
AM	1524	739
NOON	0	0
PM	1315	1058

West Leg	AM	NOON	PM
Out	74	0	88
In	275	0	521

East Leg	AM	NOON	PM
In	0	0	0
Out	608	0	1077

South Leg	Out	In
AM	1622	1244
NOON	0	0
PM	1510	1897

Total Volume Per Leg

	AM	NOON	PM
North Leg	2263	0	2373
West Leg	349	0	609
East Leg	608	0	1077
South Leg	2866	0	3407

ITM Peak Hour Summary

Prepared by:

NDS

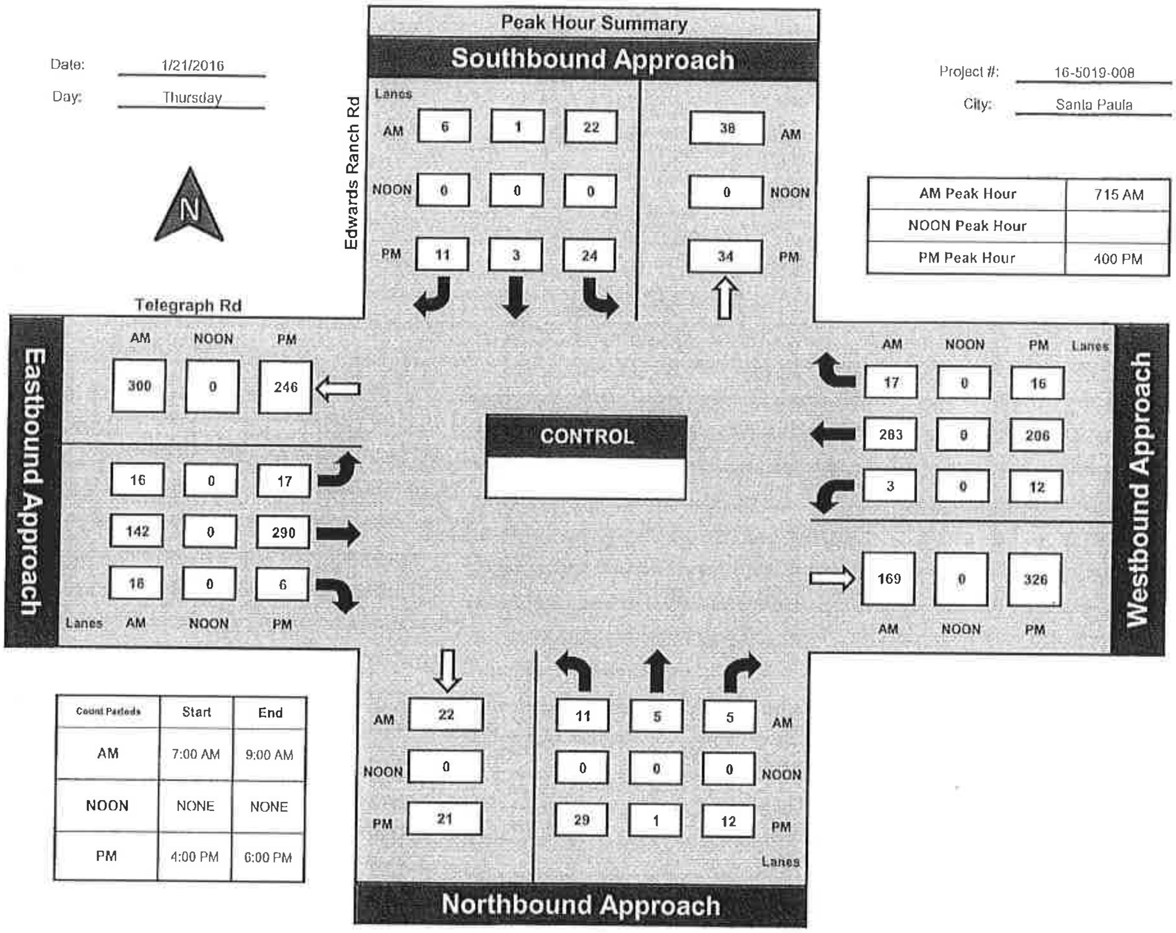
National Data & Surveying Services

Edwards Ranch Rd and Telegraph Rd , Santa Paula

Date:	1/21/2016
Day:	Thursday

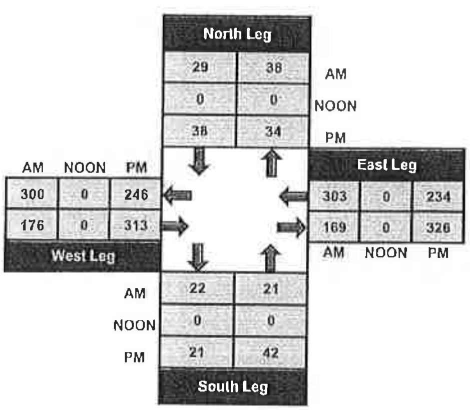
Project #:	16-5019-008
City:	Santa Paula

AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	400 PM

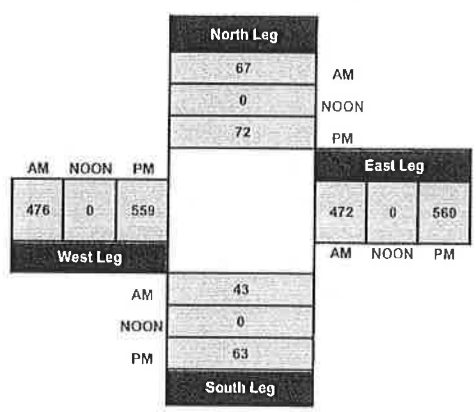


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

Todd Rd and Telegraph Rd , Santa Paula

Date: 1/21/2016

Day: Thursday

Project #: 16-5019-004

City: Santa Paula

AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	400 PM

Peak Hour Summary

N

Todd Rd

Telegraph Rd

CONTROL

Southbound Approach

Lanes

	Right	Through	Left	Out
AM	0	0	0	0
NOON	0	0	0	0
PM	0	0	0	0

Eastbound Approach

	AM	NOON	PM
Out	299	0	232
Left	0	0	0
Through	143	0	315
Right	22	0	15

Lanes

Westbound Approach

Lanes

	AM	NOON	PM
Left	0	0	0
Through	293	0	193
Right	12	0	3
In	147	0	358

Northbound Approach

	Out	Left	Through	Right
AM	34	6	0	4
NOON	0	0	0	0
PM	18	39	0	43

Lanes

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

North Leg

AM	0	0
NOON	0	0
PM	0	0

West Leg

AM	NOON	PM
299	0	232
165	0	330

East Leg

AM	NOON	PM
305	0	196
147	0	358

South Leg

AM	34	10
NOON	0	0
PM	18	82

Total Volume Per Leg

North Leg

AM	0
NOON	0
PM	0

West Leg

AM	NOON	PM
464	0	562

East Leg

AM	NOON	PM
452	0	554

South Leg

AM	44
NOON	0
PM	100

ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

Briggs Rd and Telegraph Rd , Santa Paula

Date:	1/21/2016
Day:	Thursday

Project #:	16-5019-009
City:	Santa Paula

AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	430 PM

N

Briggs Rd

Telegraph Rd

Peak Hour Summary

CONTROL

Southbound Approach (Lanes)

	Left	Through	Right	Departing
AM	11	90	24	99
NOON	0	0	0	0
PM	3	26	15	78

Eastbound Approach (Lanes)

	AM	NOON	PM
Departing	307	0	187
Left	5	0	22
Through	87	0	270
Right	47	0	60

Westbound Approach (Lanes)

	AM	NOON	PM
Right	69	0	17
Through	236	0	146
Left	155	0	64
Departing	143	0	378

Northbound Approach (Lanes)

	Departing	Left	Through	Right
AM	292	60	25	32
NOON	0	0	0	0
PM	150	38	39	93

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

Leg		AM	NOON	PM
North Leg	In	125	0	44
North Leg	Out	99	0	78
East Leg	In	460	0	227
East Leg	Out	143	0	378
South Leg	Out	292	0	150
South Leg	In	117	0	170
West Leg	Out	307	0	187
West Leg	In	139	0	352

Total Volume Per Leg

Leg	AM	NOON	PM
North Leg	224	0	122
East Leg	603	0	605
South Leg	409	0	320
West Leg	446	0	539

ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

Briggs Rd and Faulkner Rd , Santa Paula

Date: 1/21/2016

Day: Thursday

Project #: 16-5019-005

City: Santa Paula

AM Peak Hour	700 AM
NOON Peak Hour	
PM Peak Hour	430 PM

Peak Hour Summary

Southbound Approach (Briggs Rd)

	Right	Thru	Left	Out
AM	4	159	6	157
NOON	0	0	0	0
PM	0	131	9	181

Eastbound Approach (Faulkner Rd)

	AM	NOON	PM
Out	9	0	1
Left	1	0	0
Thru	0	0	0
Right	1	0	3

Westbound Approach

	AM	NOON	PM
Right	6	0	8
Thru	0	0	0
Left	14	0	4
Out	10	0	30

Northbound Approach

	Out	Left	Thru	Right
AM	174	5	150	4
NOON	0	0	0	0
PM	138	1	173	21

CONTROL

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

North Leg	In	Out
AM	169	157
NOON	0	0
PM	140	181

West Leg	AM	NOON	PM
Out	9	0	1
In	2	0	3

East Leg	AM	NOON	PM
In	20	0	12
Out	10	0	30

South Leg	Out	In
AM	174	159
NOON	0	0
PM	138	195

Total Volume Per Leg

	North Leg	South Leg
AM	326	333
NOON	0	0
PM	321	333

	AM	NOON	PM
West Leg	11	0	4
East Leg	30	0	42

ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

Briggs Rd and SR 126 WB Ramps , Santa Paula

Date: 1/21/2016

Day: Thursday

Project #: 16-5019-006

City: Santa Paula

AM Peak Hour	700 AM
NOON Peak Hour	
PM Peak Hour	400 PM

Peak Hour Summary

Briggs Rd

SR 126 WB Ramps

CONTROL

Southbound Approach

	Right	Through	Left	Out
AM	0	60	114	158
NOON	0	0	0	0
PM	0	73	74	181

Lanes

Eastbound Approach

	AM	NOON	PM
Out	0	0	0
Left	0	0	0
Through	0	0	0
Right	0	0	0

Lanes

Westbound Approach

	AM	NOON	PM
Right	96	0	47
Through	0	0	0
Left	28	0	19
Out	136	0	115

Lanes

Northbound Approach

	Out	Left	Through	Right
AM	88	0	62	22
NOON	0	0	0	0
PM	92	0	134	41

Lanes

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

Leg		AM	NOON	PM
North Leg	In	174	0	147
North Leg	Out	158	0	181
East Leg	In	124	0	66
East Leg	Out	136	0	115
South Leg	In	88	0	92
South Leg	Out	84	0	175
West Leg	In	0	0	0
West Leg	Out	0	0	0

Total Volume Per Leg

Leg	AM	NOON	PM
North Leg	332	0	328
East Leg	260	0	181
South Leg	172	0	267
West Leg	0	0	0

ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

Briggs Rd and SR 126 EB Ramps , Santa Paula

Date:	1/21/2016
Day:	Thursday
Project #:	16-5019-001
City:	Santa Paula

AM Peak Hour	800 AM
NOON Peak Hour	
PM Peak Hour	400 PM

Peak Hour Summary

N

Briggs Rd

SR 126 EB Ramps

CONTROL

Southbound Approach

Lanes	Right	Thru	Left	Exiting (northbound)
AM	28	35	0	127
NOON	0	0	0	0
PM	71	23	0	178

Eastbound Approach

	AM	NOON	PM
Exiting (westbound)	48	0	114
Left	72	0	126
Thru	0	0	0
Right	49	0	25

Lanes

Westbound Approach

	AM	NOON	PM
Right	0	0	0
Thru	0	0	0
Left	0	0	0
Exiting (eastbound)	0	0	0

Lanes

Northbound Approach

	Exiting (southbound)	Left	Thru	Right
AM	84	20	55	0
NOON	0	0	0	0
PM	48	43	52	0

Lanes

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

Leg	Period	In	Out
North Leg	AM	63	127
North Leg	NOON	0	0
North Leg	PM	94	178
West Leg	AM	121	48
West Leg	NOON	0	0
West Leg	PM	151	114
East Leg	AM	0	0
East Leg	NOON	0	0
East Leg	PM	0	0
South Leg	AM	75	84
South Leg	NOON	0	0
South Leg	PM	95	48

Total Volume Per Leg

	AM	NOON	PM
North Leg	190	0	272
West Leg	169	0	265
East Leg	0	0	0
South Leg	159	0	143

LEVEL OF SERVICE CALCULATION WORKSHEETS

Reference 1 - Telegraph Road/Wells Road
Reference 2 - State Route 126 Eastbound Off-Ramp/Briggs Road
Reference 3 - Telegraph Road/Edwards Ranch Road
Reference 4 - Telegraph Road/Todd Road
Reference 5 - Telegraph Road/Briggs Road
Reference 6 - Briggs Road/Faulkner Road
Reference 7 - State Route 126 Westbound Ramps/Wells Road
Reference 8 - State Route 126 Eastbound Ramps/Briggs Road

#14050 - AGROMIN PROJECT REF: 01 AM

INTERSECTION CAPACITY UTILIZATION WORKSHEET

COUNT DATE: *FEBRUARY 2, 2016*

TIME PERIOD: *A.M. PEAK HOUR*

N/S STREET: *WELLS ROAD*

E/W STREET: *TELEGRAPGH ROAD*

CONTROL TYPE: *SIGNAL*

TRAFFIC VOLUME SUMMARY

VOLUMES	NORTH BOUND L	T	R	SOUTH BOUND L	T	R	EAST BOUND L	T	R	WEST BOUND L	T	R
(A) EXISTING:	136	140	102	10	237	57	25	83	140	205	198	44
(B) PROJECT-ADDED:	0	0	14	1	0	0	0	0	0	12	0	1
(C) CUMULATIVE:	160	120	50	10	270	50	20	50	220	310	150	10

GEOMETRICS

LANE GEOMETRICS	NORTH BOUND	SOUTH BOUND	EAST BOUND	WEST BOUND
	L T R	L T R	L TR	L TR

TRAFFIC SCENARIOS

SCENARIO 1 = EXISTING VOLUMES (A)

SCENARIO 2 = EXISTING + PROJECT VOLUMES (A+B)

SCENARIO 3 = CUMULATIVE (C)

SCENARIO 4 = CUMULATIVE + PROJECT VOLUMES (B+C)

LEVEL OF SERVICE CALCULATIONS

MOVE-MENTS	# OF LANES	CAPACITY	SCENARIO VOLUMES 1	2	3	4	SCENARIO V/C RATIOS 1	2	3	4
NBL	1	1600	136	136	160	160	0.09 *	0.09 *	0.10	0.10
NBT	1	1600	140	140	120	120	0.088	0.088	0.075 *	0.075 *
NBR	1	1600	102	116	50	64	0.064	0.073	0.031	0.040
SBL	1	1600	10	11	10	11	0.006	0.007	0.006	0.007
SBT	1	1600	237	237	270	270	0.148 *	0.148 *	0.169 *	0.169 *
SBR	1	1600	57	57	50	50	0.04	0.04	0.03	0.03
EBL	1	1600	25	25	20	20	0.02	0.02	0.01	0.01
EBT	1	1600	83	83	50	50	0.139 *	0.139 *	0.169 *	0.169 *
EBR	0	0	140	140	220	220	-	-	-	-
WBL	1	1600	205	217	310	322	0.13 *	0.14 *	0.19 *	0.20 *
WBT	1	1600	198	198	150	150	0.151	0.152	0.100	0.101
WBR	0	0	44	45	10	11	-	-	-	-
						LOST TIME:	0.00	0.00	0.00	0.00
						TOTAL INTERSECTION CAPACITY UTILIZATION:	0.500	0.508	0.607	0.614
						SCENARIO LEVEL OF SERVICE:	A	A	B	B

NOTES:

Printed: 02/20/17

#14050 - AGROMIN PROJECT

REF: 01 PM

INTERSECTION CAPACITY UTILIZATION WORKSHEET

COUNT DATE: *FEBRUARY 2, 2016*

TIME PERIOD: *P.M. PEAK HOUR*

N/S STREET: *WELLS ROAD*

E/W STREET: *TELEGRAPGH ROAD*

CONTROL TYPE: *SIGNAL*

TRAFFIC VOLUME SUMMARY

VOLUMES	NORTH BOUND L	T	R	SOUTH BOUND L	T	R	EAST BOUND L	T	R	WEST BOUND L	T	R
(A) EXISTING:	116	225	191	43	240	30	36	170	158	145	98	14
(B) PROJECT-ADDED:	0	0	8	0	0	0	0	0	0	19	0	1
(C) CUMULATIVE:	260	280	260	10	200	30	40	190	220	130	110	20

GEOMETRICS

	NORTH BOUND	SOUTH BOUND	EAST BOUND	WEST BOUND
LANE GEOMETRICS	L T R	L T R	L TR	L TR

TRAFFIC SCENARIOS

SCENARIO 1 = EXISTING VOLUMES (A)

SCENARIO 2 = EXISTING + PROJECT VOLUMES (A+B)

SCENARIO 3 = CUMULATIVE (C)

SCENARIO 4 = CUMULATIVE + PROJECT VOLUMES (B+C)

LEVEL OF SERVICE CALCULATIONS

MOVE-MENTS	# OF LANES	CAPACITY	SCENARIO VOLUMES 1	2	3	4	SCENARIO V/C RATIOS 1	2	3	4
NBL	1	1600	116	116	260	260	0.07 *	0.07 *	0.16	0.16
NBT	1	1600	225	225	280	280	0.141	0.141	0.175 *	0.175 *
NBR	1	1600	191	199	260	268	0.119	0.124	0.163	0.168
SBL	1	1600	43	43	10	10	0.027	0.027	0.006 *	0.006 *
SBT	1	1600	240	240	200	200	0.150 *	0.150 *	0.125	0.125
SBR	1	1600	30	30	30	30	0.02	0.02	0.02	0.02
EBL	1	1600	36	36	40	40	0.02	0.02	0.03	0.03
EBT	1	1600	170	170	190	190	0.205 *	0.205 *	0.256 *	0.256 *
EBR	0	0	158	158	220	220	-	-	-	-
WBL	1	1600	145	164	130	149	0.09 *	0.10 *	0.08 *	0.09 *
WBT	1	1600	98	98	110	110	0.070	0.071	0.081	0.082
WBR	0	0	14	15	20	21	-	-	-	-
						LOST TIME:	0.00	0.00	0.00	0.00
						TOTAL INTERSECTION CAPACITY UTILIZATION:	0.519	0.531	0.518	0.530
						SCENARIO LEVEL OF SERVICE:	A	A	A	A

NOTES:

Printed: 02/20/17

#14050 - AGROMIN PROJECT REF: 03 AM

INTERSECTION CAPACITY UTILIZATION WORKSHEET

COUNT DATE: *FEBRUARY 2, 2016*

TIME PERIOD: *A.M. PEAK HOUR*

N/S STREET: *WELLS ROAD*

E/W STREET: *STATE ROUTE 126 EASTBOUND OFF-RAMP*

CONTROL TYPE: *SIGNAL*

TRAFFIC VOLUME SUMMARY

VOLUMES	NORTH BOUND L	T	R	SOUTH BOUND L	T	R	EAST BOUND L	T	R	WEST BOUND L	T	R
(A) EXISTING:	0	636	0	0	1450	0	103	0	172	0	0	0
(B) PROJECT-ADDED:	0	0	0	0	1	0	14	0	0	0	0	0
(C) CUMULATIVE:	0	870	0	0	2660	0	90	0	160	0	0	0

GEOMETRICS

	NORTH BOUND	SOUTH BOUND	EAST BOUND	WEST BOUND
LANE GEOMETRICS	TT	TT	L R	

TRAFFIC SCENARIOS

SCENARIO 1 = EXISTING VOLUMES (A)

SCENARIO 2 = EXISTING + PROJECT VOLUMES (A+B)

SCENARIO 3 = CUMULATIVE (C)

SCENARIO 4 = CUMULATIVE + PROJECT VOLUMES (B+C)

LEVEL OF SERVICE CALCULATIONS

MOVE-MENTS	# OF LANES	CAPACITY	SCENARIO VOLUMES 1	2	3	4	SCENARIO V/C RATIOS 1	2	3	4
NBL	0	0	0	0	0	0	-	-		
NBT	2	3200	636	636	870	870	0.199	0.199		
NBR	0	0	0	0	0	0	-	-		
SBL	0	0	0	0	0	0	-	-		
SBT	2	3200	1450	1451	2660	2661	0.453 *	0.453 *		
SBR	0	0	0	0	0	0	-	-		
EBL	1	1600	103	117	90	104	0.06	0.07		
EBT	0	0	0	0	0	0	-	-		
EBR	1	1600	172	172	160	160	0.11 *	0.11 *		
WBL	0	0	0	0	0	0	-	-		
WBT	0	0	0	0	0	0	-	-		
WBR	0	0	0	0	0	0	-	-		
						LOST TIME:	0.00	0.00		
						TOTAL INTERSECTION CAPACITY UTILIZATION:	0.561	0.561		
						SCENARIO LEVEL OF SERVICE:	A	A		

NOTES:

Printed: 02/21/17

#14050 - AGROMIN PROJECT REF: 03 PM

INTERSECTION CAPACITY UTILIZATION WORKSHEET

COUNT DATE:	*FEBRUARY 2, 2016*
TIME PERIOD:	*P.M. PEAK HOUR*
N/S STREET:	*WELLS ROAD*
E/W STREET:	*STATE ROUTE 126 EASTBOUND OFF-RAMP*
CONTROL TYPE:	*SIGNAL*

TRAFFIC VOLUME SUMMARY

VOLUMES	NORTH BOUND L	T	R	SOUTH BOUND L	T	R	EAST BOUND L	T	R	WEST BOUND L	T	R
(A) EXISTING:	0	820	0	0	1227	0	238	0	283	0	0	0
(B) PROJECT-ADDED:	0	1	0	0	2	0	7	0	0	0	0	0
(C) CUMULATIVE:	0	1430	0	0	1730	0	320	0	600	0	0	0

GEOMETRICS

	NORTH BOUND	SOUTH BOUND	EAST BOUND	WEST BOUND
LANE GEOMETRICS	TT	TT	L R	

TRAFFIC SCENARIOS

SCENARIO 1 = EXISTING VOLUMES (A)
SCENARIO 2 = EXISTING + PROJECT VOLUMES (A+B)
SCENARIO 3 = CUMULATIVE (C)
SCENARIO 4 = CUMULATIVE + PROJECT VOLUMES (B+C)

LEVEL OF SERVICE CALCULATIONS

MOVE-MENTS	# OF LANES	CAPACITY	SCENARIO VOLUMES 1	2	3	4	SCENARIO V/C RATIOS 1	2	3	4
NBL	0	0	0	0	0	0	-	-		
NBT	2	3200	820	821	1430	1431	0.256	0.257		
NBR	0	0	0	0	0	0	-	-		
SBL	0	0	0	0	0	0	-	-		
SBT	2	3200	1227	1229	1730	1732	0.383 *	0.384 *		
SBR	0	0	0	0	0	0	-	-		
EBL	1	1600	238	245	320	327	0.15	0.15		
EBT	0	0	0	0	0	0	-	-		
EBR	1	1600	283	283	600	600	0.18 *	0.18 *		
WBL	0	0	0	0	0	0	-	-		
WBT	0	0	0	0	0	0	-	-		
WBR	0	0	0	0	0	0	-	-		
						LOST TIME:	0.00	0.00		
						TOTAL INTERSECTION CAPACITY UTILIZATION:	0.560	0.561		
						SCENARIO LEVEL OF SERVICE:	A	A		

NOTES:

Printed: 02/21/17

#14050 - AGROMIN PROJECT

REF: 03 AM

INTERSECTION CAPACITY UTILIZATION WORKSHEET

COUNT DATE: *FEBRUARY 2, 2016*

TIME PERIOD: *A.M. PEAK HOUR*

N/S STREET: *WELLS ROAD*

E/W STREET: *STATE ROUTE 126 EASTBOUND OFF-RAMP*

CONTROL TYPE: *SIGNAL*

TRAFFIC VOLUME SUMMARY

VOLUMES	NORTH BOUND L	T	R	SOUTH BOUND L	T	R	EAST BOUND L	T	R	WEST BOUND L	T	R
(A) EXISTING:	0	636	0	0	1450	0	103	0	172	0	0	0
(B) PROJECT-ADDED:	0	0	0	0	1	0	14	0	0	0	0	0
(C) CUMULATIVE:	0	870	0	0	2660	0	90	0	160	0	0	0

GEOMETRICS

	NORTH BOUND	SOUTH BOUND	EAST BOUND	WEST BOUND
LANE GEOMETRICS	TTT	TTT	L R	

TRAFFIC SCENARIOS

SCENARIO 1 = EXISTING VOLUMES (A)
SCENARIO 2 = EXISTING + PROJECT VOLUMES (A+B)
SCENARIO 3 = CUMULATIVE (C)
SCENARIO 4 = CUMULATIVE + PROJECT VOLUMES (B+C)

LEVEL OF SERVICE CALCULATIONS

MOVE-MENTS	# OF LANES	CAPACITY	SCENARIO VOLUMES 1	2	3	4	SCENARIO V/C RATIOS 1	2	3	4
NBL	0	0	0	0	0	0			-	-
NBT	3	4800	636	636	870	870			0.181	0.181
NBR	0	0	0	0	0	0			-	-
SBL	0	0	0	0	0	0			-	-
SBT	3	4800	1450	1451	2660	2661			0.554 *	0.554 *
SBR	0	0	0	0	0	0			-	-
EBL	1	1600	103	117	90	104			0.06	0.07
EBT	0	0	0	0	0	0			-	-
EBR	1	1600	172	172	160	160			0.10 *	0.10 *
WBL	0	0	0	0	0	0			-	-
WBT	0	0	0	0	0	0			-	-
WBR	0	0	0	0	0	0			-	-
						LOST TIME:			0.00	0.00
						TOTAL INTERSECTION CAPACITY UTILIZATION:			0.654	0.654
						SCENARIO LEVEL OF SERVICE:			B	B

NOTES:

Printed: 02/21/17

#14050 - AGROMIN PROJECT

REF: 03 PM

INTERSECTION CAPACITY UTILIZATION WORKSHEET

COUNT DATE: *FEBRUARY 2, 2016*

TIME PERIOD: *P.M. PEAK HOUR*

N/S STREET: *WELLS ROAD*

E/W STREET: *STATE ROUTE 126 EASTBOUND OFF-RAMP*

CONTROL TYPE: *SIGNAL*

TRAFFIC VOLUME SUMMARY

VOLUMES	NORTH BOUND L	T	R	SOUTH BOUND L	T	R	EAST BOUND L	T	R	WEST BOUND L	T	R
(A) EXISTING:	0	820	0	0	1227	0	238	0	283	0	0	0
(B) PROJECT-ADDED:	0	1	0	0	2	0	7	0	0	0	0	0
(C) CUMULATIVE:	0	1430	0	0	1730	0	320	0	600	0	0	0

GEOMETRICS

LANE GEOMETRICS	NORTH BOUND	SOUTH BOUND	EAST BOUND	WEST BOUND
	TTT	TTT	L R	

TRAFFIC SCENARIOS

SCENARIO 1 = EXISTING VOLUMES (A)

SCENARIO 2 = EXISTING + PROJECT VOLUMES (A+B)

SCENARIO 3 = CUMULATIVE (C)

SCENARIO 4 = CUMULATIVE + PROJECT VOLUMES (B+C)

LEVEL OF SERVICE CALCULATIONS

MOVE-MENTS	# OF LANES	CAPACITY	SCENARIO VOLUMES 1	2	3	4	SCENARIO V/C RATIOS 1	2	3	4
NBL	0	0	0	0	0	0			-	-
NBT	3	4800	820	821	1430	1431			0.298	0.298
NBR	0	0	0	0	0	0			-	-
SBL	0	0	0	0	0	0			-	-
SBT	3	4800	1227	1229	1730	1732			0.360 *	0.361 *
SBR	0	0	0	0	0	0			-	-
EBL	1	1600	238	245	320	327			0.20	0.20
EBT	0	0	0	0	0	0			-	-
EBR	1	1600	283	283	600	600			0.38 *	0.38 *
WBL	0	0	0	0	0	0			-	-
WBT	0	0	0	0	0	0			-	-
WBR	0	0	0	0	0	0			-	-
LOST TIME:									0.00	0.00
TOTAL INTERSECTION CAPACITY UTILIZATION:									0.735	0.736
SCENARIO LEVEL OF SERVICE:									C	C

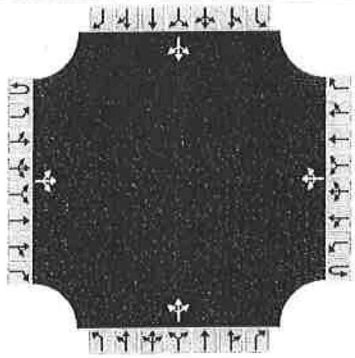
NOTES:

Printed: 02/21/17

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	Telegraph Road/Olive Road
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	Telegraph Road
Analysis Year	2016	North/South Street	Olive Road
Time Analyzed	A.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		16	142	18		3	283	17		11	5	5		22	1	6
Percent Heavy Vehicles		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

	EB U	EB L	EB T	EB R	WB U	WB L	WB T	WB R	NB U	NB L	NB T	NB R	SB U	SB L	SB T	SB R
Flow Rate (veh/h)		17				3					22				32	
Capacity		1227				1395					504				488	
v/c Ratio		0.01				0.00					0.04				0.07	
95% Queue Length		0.0				0.0					0.1				0.2	
Control Delay (s/veh)		8.0				7.6					12.5				12.9	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.8				0.1				12.5				12.9			
Approach LOS	A				A				B				B			

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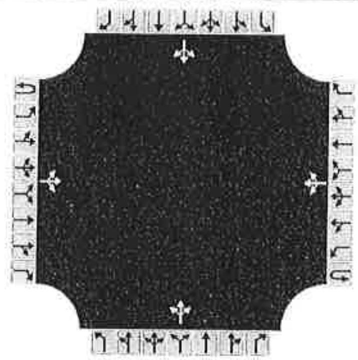
HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	Telegraph Road/Olive Road
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	Telegraph Road
Analysis Year	2016	North/South Street	Olive Road
Time Analyzed	P.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		17	290	6		12	206	16		29	1	12		24	3	11
Percent Heavy Vehicles		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		18				13					46				41	
Capacity		1318				1231					441				453	
v/c Ratio		0.01				0.01					0.10				0.09	
95% Queue Length		0.0				0.0					0.3				0.3	
Control Delay (s/veh)		7.8				8.0					14.1				13.7	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.5				0.5				14.1				13.7			
Approach LOS	A				A				B				B			

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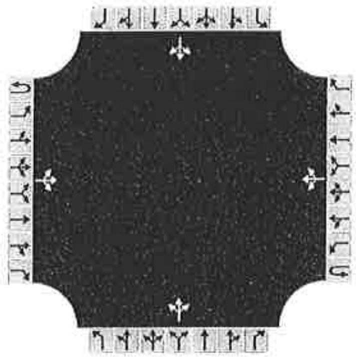
AWD = 12.3 sec / LOS B

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	Telegraph Road/Olive Road
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	Telegraph Road
Analysis Year	2016	North/South Street	Olive Road
Time Analyzed	A.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		16	142	33		6	283	17		24	5	7		22	1	6
Percent Heavy Vehicles		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		17				7					39				32	
Capacity		1227				1376					487				474	
v/c Ratio		0.01				0.01					0.08				0.07	
95% Queue Length		0.0				0.0					0.3				0.2	
Control Delay (s/veh)		8.0				7.6					13.0				13.1	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.8				0.2				13.0				13.1			
Approach LOS	A				A				B				B			

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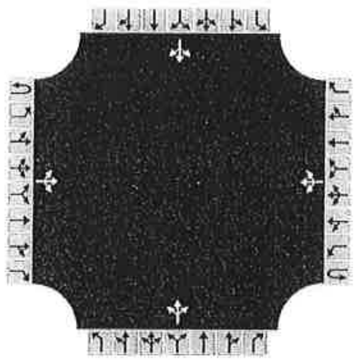
AWD = 11.7 sec / LOS B

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	Telegraph Road/Olive Road
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	Telegraph Road
Analysis Year	2016	North/South Street	Olive Road
Time Analyzed	P.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		17	290	14		14	206	16		49	1	15		24	3	11
Percent Heavy Vehicles		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		18				15					70				41	
Capacity		1318				1223					423				445	
v/c Ratio		0.01				0.01					0.17				0.09	
95% Queue Length		0.0				0.0					0.6				0.3	
Control Delay (s/veh)		7.8				8.0					15.2				13.9	
Level of Service (LOS)		A				A					C				B	
Approach Delay (s/veh)	0.5				0.6				15.2				13.9			
Approach LOS	A				A				C				B			

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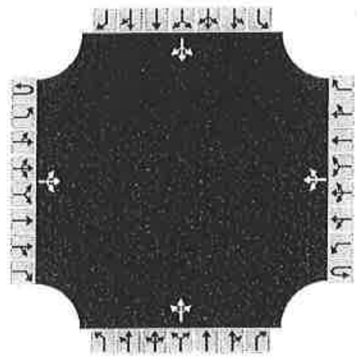
AWD: 13.2 sec/ LOS B

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	Telegraph Road/Olive Road
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	Telegraph Road
Analysis Year	2016	North/South Street	Olive Road
Time Analyzed	A.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		20	142	20		5	283	20		15	5	5		30	5	10
Percent Heavy Vehicles		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		22				5					26				49	
Capacity		1223				1393					475				476	
v/c Ratio		0.02				0.00					0.05				0.10	
95% Queue Length		0.1				0.0					0.2				0.3	
Control Delay (s/veh)		8.0				7.6					13.0				13.4	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	1.0				0.1				13.0				13.4			
Approach LOS	A				A				B				B			

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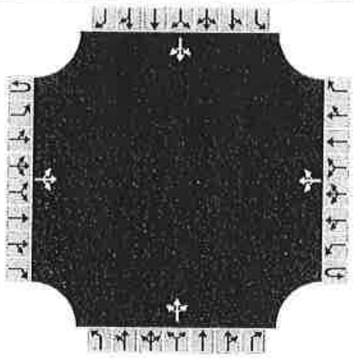
AWD = 11.8 sec / LOS B

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	Telegraph Road/Olive Road
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	Telegraph Road
Analysis Year	2016	North/South Street	Olive Road
Time Analyzed	P.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		20	290	10		15	206	20		30	5	15		25	5	15
Percent Heavy Vehicles		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		22				16					54				48	
Capacity		1313				1227					428				446	
v/c Ratio		0.02				0.01					0.13				0.11	
95% Queue Length		0.1				0.0					0.4				0.4	
Control Delay (s/veh)		7.8				8.0					14.6				14.0	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.6				0.6				14.6				14.0			
Approach LOS	A				A				B				B			

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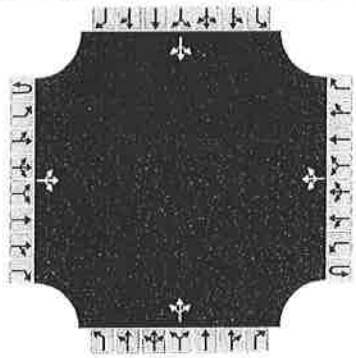
AWD: 12.6 sec / LOS B

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	Telegraph Road/Olive Road
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	Telegraph Road
Analysis Year	2016	North/South Street	Olive Road
Time Analyzed	A.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		20	142	35		8	283	20		28	5	7		30	5	10
Percent Heavy Vehicles		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		22				9					43				49	
Capacity		1223				1374					461				463	
v/c Ratio		0.02				0.01					0.09				0.11	
95% Queue Length		0.1				0.0					0.3				0.4	
Control Delay (s/veh)		8.0				7.6					13.6				13.7	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	1.0				0.3				13.6				13.7			
Approach LOS	A				A				B				B			

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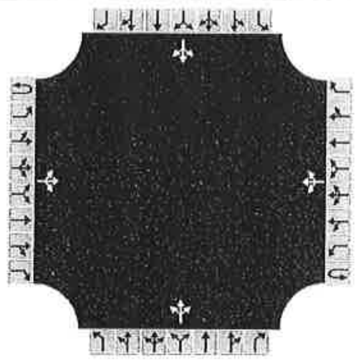
AWD = 12.2 sec/LOS B

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	Telegraph Road/Olive Road
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	Telegraph Road
Analysis Year	2016	North/South Street	Olive Road
Time Analyzed	P.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		20	290	18		17	206	20		50	5	18		25	5	15
Percent Heavy Vehicles		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		22				18					79				48	
Capacity		1313				1217					411				438	
v/c Ratio		0.02				0.01					0.19				0.11	
95% Queue Length		0.1				0.0					0.7				0.4	
Control Delay (s/veh)		7.8				8.0					15.8				14.2	
Level of Service (LOS)		A				A					C				B	
Approach Delay (s/veh)	0.6				0.7				15.8				14.2			
Approach LOS	A				A				C				B			

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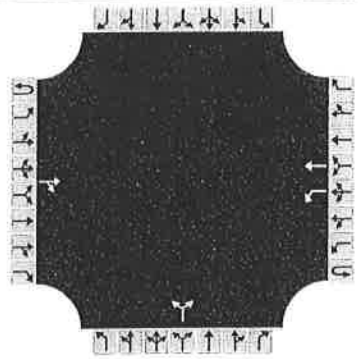
AWD = 13.4 sec / LOS B

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	Telegraph Road/Todd Road
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	Telegraph Road
Analysis Year	2016	North/South Street	Todd Road
Time Analyzed	A.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	0	0		0	0	0
Configuration				TR		L	T				LR					
Volume (veh/h)			143	22		12	293			6		4				
Percent Heavy Vehicles						3				3		3				
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)						13					11					
Capacity						1389					606					
v/c Ratio						0.01					0.02					
95% Queue Length						0.0					0.1					
Control Delay (s/veh)						7.6					11.0					
Level of Service (LOS)						A					B					
Approach Delay (s/veh)					0.3				11.0							
Approach LOS					A				B							

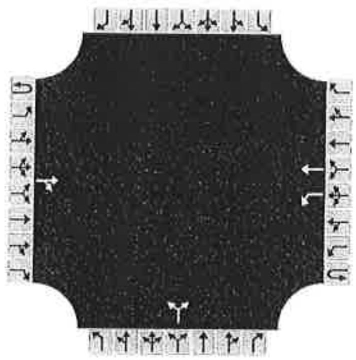
HCS 2010™ TWSC Version 6.70
EX05AMTWSC4.xtw
Generated: 2/20/2017 4:21:42 PM

AWD = 9.2 sec/ LOS A

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	Telegraph Road/Todd Road
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	Telegraph Road
Analysis Year	2016	North/South Street	Todd Road
Time Analyzed	P.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	0	0		0	0	0
Configuration				TR		L	T				LR					
Volume (veh/h)			315	15		3	193			39		43				
Percent Heavy Vehicles						3				3		3				
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)						3					89					
Capacity						1194					574					
v/c Ratio						0.00					0.16					
95% Queue Length						0.0					0.5					
Control Delay (s/veh)						8.0					12.4					
Level of Service (LOS)						A					B					
Approach Delay (s/veh)					0.1				12.4							
Approach LOS					A				B							

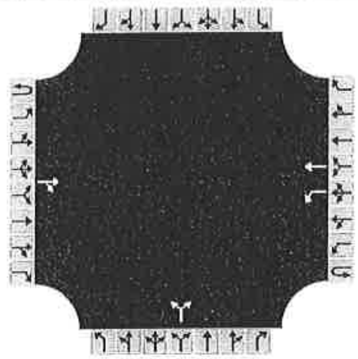
 HCS 2010™ TWSC Version 6.70 EX05PMTWSC4.xtw Generated: 2/20/2017 4:21:51 PM

AWD: 12.3 sec / LOS B

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	Telegraph Road/Todd Road
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	Telegraph Road
Analysis Year	2016	North/South Street	Todd Road
Time Analyzed	A.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	0	0		0	0	0
Configuration				TR		L	T				LR					
Volume (veh/h)			145	22		12	296			6		4				
Percent Heavy Vehicles						3				3		3				
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)						13					11					
Capacity						1386					601					
v/c Ratio						0.01					0.02					
95% Queue Length						0.0					0.1					
Control Delay (s/veh)						7.6					11.1					
Level of Service (LOS)						A					B					
Approach Delay (s/veh)					0.3				11.1							
Approach LOS					A				B							

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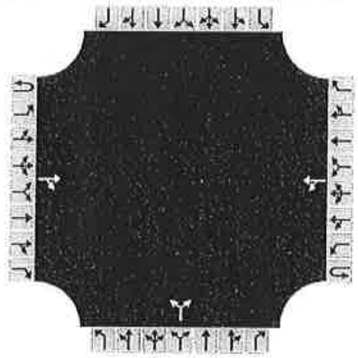
Generated: 2/20/2017 4:22:00 PM

AWD= 9.2 sec / LOS A

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	Telegraph Road/Todd Road
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	Telegraph Road
Analysis Year	2016	North/South Street	Todd Road
Time Analyzed	P.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			318	15		3	195			39		43				
Percent Heavy Vehicles						3				3		3				
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)						215					89					
Capacity						1190					570					
v/c Ratio						0.18					0.16					
95% Queue Length						0.0					0.6					
Control Delay (s/veh)						8.0					12.5					
Level of Service (LOS)						A					B					
Approach Delay (s/veh)					0.1				12.5							
Approach LOS					A				B							

HCS 2010™ TWSC Version 6.70
EXPJ05PMTWSC4.xtw

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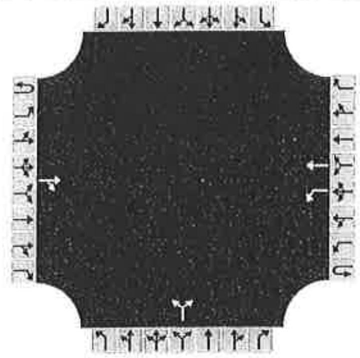
AWD = 9.3 sec / LOS A

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	Telegraph Road/Todd Road
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	Telegraph Road
Analysis Year	2016	North/South Street	Todd Road
Time Analyzed	A.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	0	0		0	0	0
Configuration				TR		L	T				LR					
Volume (veh/h)			165	25		15	355			10		5				
Percent Heavy Vehicles						3				3		3				
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)						16					16					
Capacity						1358					528					
v/c Ratio						0.01					0.03					
95% Queue Length						0.0					0.1					
Control Delay (s/veh)						7.7					12.0					
Level of Service (LOS)						A					B					
Approach Delay (s/veh)					0.3				12.0							
Approach LOS					A				B							

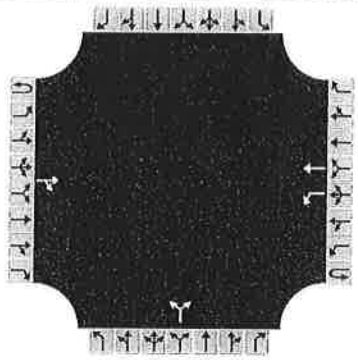
 HCS 2010™ TWSC Version 6.70 CUM05AMTWSC4.xtw Generated: 2/20/2017 4:22:15 PM

AWD = 9.9 sec/LOS A

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	Telegraph Road/Todd Road
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	Telegraph Road
Analysis Year	2016	North/South Street	Todd Road
Time Analyzed	P.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	0	0		0	0	0
Configuration				TR		L	T				LR					
Volume (veh/h)			359	20		10	240			40		45				
Percent Heavy Vehicles						3				3		3				
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)						11					92					
Capacity						1140					508					
v/c Ratio						0.01					0.18					
95% Queue Length						0.0					0.7					
Control Delay (s/veh)						8.2					13.6					
Level of Service (LOS)						A					B					
Approach Delay (s/veh)					0.3				13.6							
Approach LOS					A				B							

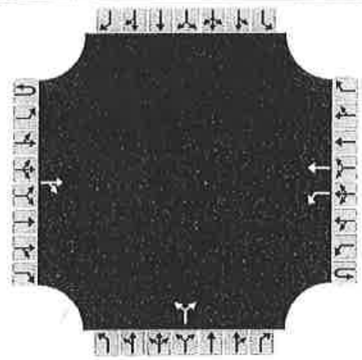
 HCS 2010™ TWSC Version 6.70 CUM05PMTWSC4.xtw Generated: 2/20/2017 4:22:23 PM

AWD = 13.0 sec / LOS B

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	Telegraph Road/Todd Road
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	Telegraph Road
Analysis Year	2016	North/South Street	Todd Road
Time Analyzed	A.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	0	0		0	0	0
Configuration				TR		L	T				LR					
Volume (veh/h)			167	25		15	358			10		5				
Percent Heavy Vehicles						3				3		3				
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)						16					16					
Capacity						1354					524					
v/c Ratio						0.01					0.03					
95% Queue Length						0.0					0.1					
Control Delay (s/veh)						7.7					12.1					
Level of Service (LOS)						A					B					
Approach Delay (s/veh)					0.3				12.1							
Approach LOS					A				B							

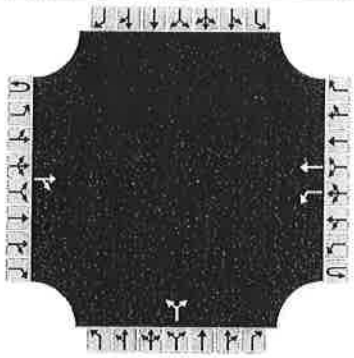
 HCS 2010™ TWSC Version 6.70 CUMPJ05AMTWSC4.xtw Generated: 2/20/2017 4:22:33 PM

AWD = 9.9 sec / LOS A

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	Telegraph Road/Todd Road
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	Telegraph Road
Analysis Year	2016	North/South Street	Todd Road
Time Analyzed	P.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	0	0		0	0	0
Configuration				TR		L	T				LR					
Volume (veh/h)			362	20		10	242			40		45				
Percent Heavy Vehicles						3				3		3				
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)						11					92					
Capacity						1137					505					
v/c Ratio						0.01					0.18					
95% Queue Length						0.0					0.7					
Control Delay (s/veh)						8.2					13.7					
Level of Service (LOS)						A					B					
Approach Delay (s/veh)					0.3				13.7							
Approach LOS					A				B							

 HCS 2010™ TWSC Version 6.70 CUMPJ05PMTWSC4.xtw Generated: 2/20/2017 4:22:40 PM

AWD = 13.1 sec/LOS B

#14050 - AGROMIN PROJECT

REF: 5 AM

INTERSECTION CAPACITY UTILIZATION WORKSHEET

COUNT DATE: *FEBRUARY 2, 2016*
TIME PERIOD: *A.M. PEAK HOUR*
N/S STREET: *BRIGGS ROAD*
E/W STREET: *TELEGRAPH ROAD*
CONTROL TYPE: *SIGNAL*

TRAFFIC VOLUME SUMMARY

VOLUMES	NORTH BOUND L	T	R	SOUTH BOUND L	T	R	EAST BOUND L	T	R	WEST BOUND L	T	R
(A) EXISTING:	60	25	32	24	90	11	5	87	47	155	236	69
(B) PROJECT-ADDED:	2	0	0	0	0	0	0	0	2	0	1	0
(C) CUMULATIVE:	100	50	65	25	40	10	10	100	60	170	250	75

GEOMETRICS

	NORTH BOUND	SOUTH BOUND	EAST BOUND	WEST BOUND
LANE GEOMETRICS	LTR	LTR	L TR	L TR

TRAFFIC SCENARIOS

SCENARIO 1 = EXISTING VOLUMES (A)
SCENARIO 2 = EXISTING + PROJECT VOLUMES (A+B)
SCENARIO 3 = CUMULATIVE (C)
SCENARIO 4 = CUMULATIVE + PROJECT VOLUMES (B+C)

LEVEL OF SERVICE CALCULATIONS

MOVE-MENTS	# OF LANES	CAPACITY	SCENARIO VOLUMES 1	2	3	4	SCENARIO V/C RATIOS 1	2	3	4
NBL	0	0	60	62	100	102	-	-	-	-
NBT	1	1600	25	25	50	50	0.073 *	0.074 *	0.134 *	0.136 *
NBR	0	0	32	32	65	65	-	-	-	-
SBL	0	0	24	24	25	25	-	-	-	-
SBT	1	1600	90	90	40	40	0.078 *	0.078 *	0.047 *	0.047 *
SBR	0	0	11	11	10	10	-	-	-	-
EBL	1	1600	5	5	10	10	0.00 *	0.00 *	0.01 *	0.01 *
EBT	1	1600	87	87	100	100	0.084	0.085	0.100	0.101
EBR	0	0	47	49	60	62	-	-	-	-
WBL	1	1600	155	155	170	170	0.10	0.10	0.11	0.11
WBT	1	1600	236	237	250	251	0.191 *	0.191 *	0.203 *	0.204 *
WBR	0	0	69	69	75	75	-	-	-	-
						LOST TIME:	0.00	0.00	0.00	0.00
						TOTAL INTERSECTION CAPACITY UTILIZATION:	0.345	0.346	0.390	0.393
						SCENARIO LEVEL OF SERVICE:	A	A	A	A

NOTES:

Printed: 02/21/17

#14050 - AGROMIN PROJECT

REF: PM

INTERSECTION CAPACITY UTILIZATION WORKSHEET

COUNT DATE: *FEBRUARY 2, 2016*

TIME PERIOD: *P.M. PEAK HOUR*

N/S STREET: *BRIGGS ROAD*

E/W STREET: *TELEGRAPH ROAD*

CONTROL TYPE: *SIGNAL*

TRAFFIC VOLUME SUMMARY

VOLUMES	NORTH BOUND L	T	R	SOUTH BOUND L	T	R	EAST BOUND L	T	R	WEST BOUND L	T	R
(A) EXISTING:	38	39	93	15	26	3	22	270	60	64	146	17
(B) PROJECT ADDED:	2	0	0	0	0	0	0	1	2	0	0	0
(C) CUMULATIVE:	80	80	160	25	40	10	30	290	85	95	160	25

GEOMETRICS

LANE GEOMETRICS	NORTH BOUND	SOUTH BOUND	EAST BOUND	WEST BOUND
	LTR	LTR	L TR	L TR

TRAFFIC SCENARIOS

SCENARIO 1 = EXISTING VOLUMES (A)
SCENARIO 2 = EXISTING + PROJECT VOLUMES (A+B)
SCENARIO 3 = CUMULATIVE (C)
SCENARIO 4 = CUMULATIVE + PROJECT VOLUMES (B+C)

LEVEL OF SERVICE CALCULATIONS

MOVEMENTS	# OF LANES	CAPACITY	SCENARIO VOLUMES 1	2	3	4	SCENARIO V/C RATIOS 1	2	3	4
NBL	0	0	38	40	80	82	-	-	-	-
NBT	1	1600	39	39	80	80	0.106 *	0.108 *	0.200 *	0.201 *
NBR	0	0	93	93	160	160	-	-	-	-
SBL	0	0	15	15	25	25	-	-	-	-
SBT	1	1600	26	26	40	40	0.028 *	0.028 *	0.047 *	0.047 *
SBR	0	0	3	3	10	10	-	-	-	-
EBL	1	1600	22	22	30	30	0.01	0.01	0.02	0.02
EBT	1	1600	270	271	290	291	0.206 *	0.208 *	0.234 *	0.236 *
EBR	0	0	60	62	85	87	-	-	-	-
WBL	1	1600	64	64	95	95	0.04 *	0.04 *	0.06 *	0.06 *
WBT	1	1600	146	146	160	160	0.102	0.102	0.116	0.116
WBR	0	0	17	17	25	25	-	-	-	-
						LOST TIME:	0.00	0.00	0.00	0.00
						TOTAL INTERSECTION CAPACITY UTILIZATION:	0.380	0.384	0.540	0.543
						SCENARIO LEVEL OF SERVICE:	A	A	A	A

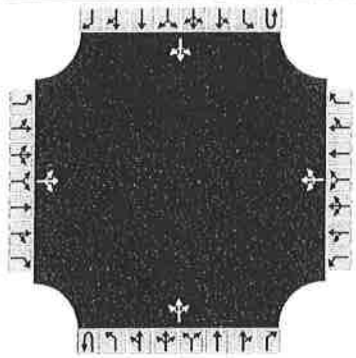
NOTES:

Printed: 02/21/17

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	Briggs Rd/Faulkner Rd
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	Faulkner Road
Analysis Year	2016	North/South Street	Briggs Road
Time Analyzed	A.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		1	0	1		14	0	6		5	150	4		6	159	4
Percent Heavy Vehicles		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

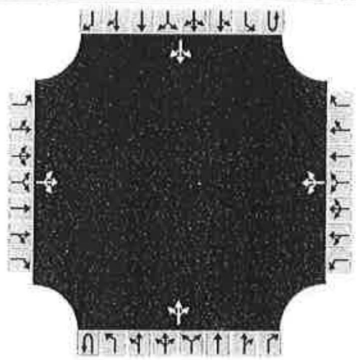
Flow Rate (veh/h)			2				22			5				7		
Capacity			693				654			1391				1403		
v/c Ratio			0.00				0.03			0.00				0.00		
95% Queue Length			0.0				0.1			0.0				0.0		
Control Delay (s/veh)			10.2				10.7			7.6				7.6		
Level of Service (LOS)			B				B			A				A		
Approach Delay (s/veh)	10.2				10.7				0.3				0.3			
Approach LOS	B				B				A				A			

AWD = 9.6 sec / LOS A

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	Briggs Rd/Faulkner Rd
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	Faulkner Road
Analysis Year	2016	North/South Street	Briggs Road
Time Analyzed	P.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		0	0	3		4	0	8		1	173	21		9	131	0
Percent Heavy Vehicles		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)			3				13			1				10		
Capacity			902				739			1433				1352		
v/c Ratio			0.00				0.02			0.00				0.01		
95% Queue Length			0.0				0.1			0.0				0.0		
Control Delay (s/veh)			9.0				10.0			7.5				7.7		
Level of Service (LOS)			A				A			A				A		
Approach Delay (s/veh)	9.0				10.0				0.0				0.6			
Approach LOS	A				A				A				A			

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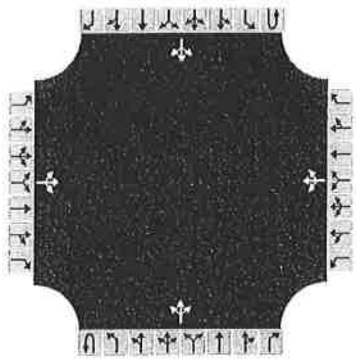
AWD: 8.9 sec/LOS A

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	Briggs Rd/Faulkner Rd
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	Faulkner Road
Analysis Year	2016	North/South Street	Briggs Road
Time Analyzed	A.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		1	0	1		14	0	6		5	152	4		6	161	4
Percent Heavy Vehicles		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

	Eastbound				Westbound				Northbound				Southbound			
Flow Rate (veh/h)			2				22			5				7		
Capacity			689				651			1389				1401		
v/c Ratio			0.00				0.03			0.00				0.00		
95% Queue Length			0.0				0.1			0.0				0.0		
Control Delay (s/veh)			10.2				10.7			7.6				7.6		
Level of Service (LOS)			B				B			A				A		
Approach Delay (s/veh)	10.2				10.7				0.2				0.3			
Approach LOS	B				B				A				A			

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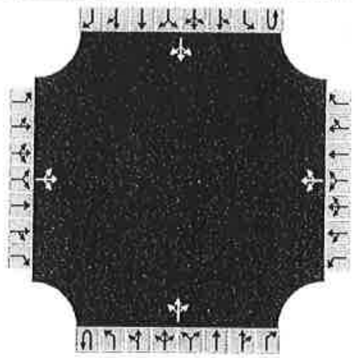
AWD: 9.6 sec/ LOS A

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	Briggs Rd/Faulkner Rd
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	Faulkner Road
Analysis Year	2016	North/South Street	Briggs Road
Time Analyzed	P.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		0	0	3		4	0	8		1	175	21		9	133	0
Percent Heavy Vehicles		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

	Eastbound				Westbound				Northbound				Southbound			
Flow Rate (veh/h)			3				13			1				10		
Capacity			899				735			1429				1350		
v/c Ratio			0.00				0.02			0.00				0.01		
95% Queue Length			0.0				0.1			0.0				0.0		
Control Delay (s/veh)			9.0				10.0			7.5				7.7		
Level of Service (LOS)			A				A			A				A		
Approach Delay (s/veh)	9.0				10.0				0.0				0.6			
Approach LOS	A				A				A				A			

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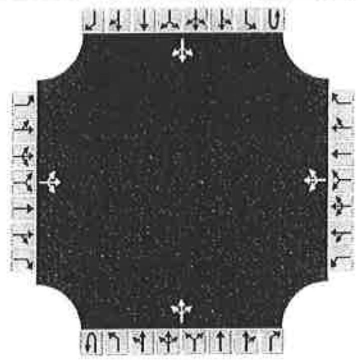
AWD = 8.9 sec/LOS A

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	Briggs Rd/Faulkner Rd
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	Faulkner Road
Analysis Year	2016	North/South Street	Briggs Road
Time Analyzed	A.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		5	0	5		20	0	10		5	250	5		10	278	5
Percent Heavy Vehicles		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)			10				33			5				11		
Capacity			510				471			1247				1279		
v/c Ratio			0.02				0.07			0.00				0.01		
95% Queue Length			0.1				0.2			0.0				0.0		
Control Delay (s/veh)			12.2				13.2			7.9				7.8		
Level of Service (LOS)			B				B			A				A		
Approach Delay (s/veh)	12.2				13.2				0.2				0.3			
Approach LOS	B				B				A				A			

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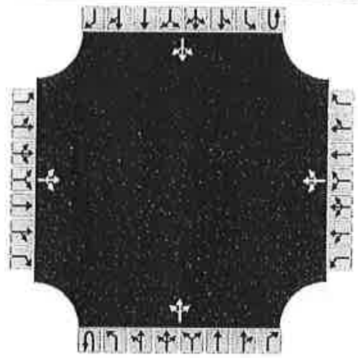
AWD: 11.6 sec / LOS B

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	Briggs Rd/Faulkner Rd
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	Faulkner Road
Analysis Year	2016	North/South Street	Briggs Road
Time Analyzed	P.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: North South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		5	0	5		5	0	10		5	202	25		10	229	5
Percent Heavy Vehicles		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

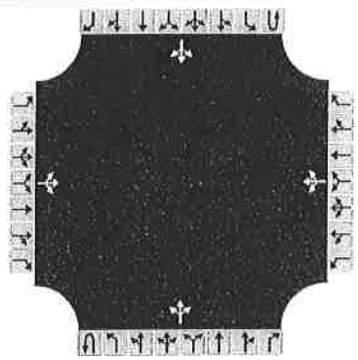
Flow Rate (veh/h)			10				16		5			11	
Capacity			573				649		1304			1312	
v/c Ratio			0.02				0.02		0.00			0.01	
95% Queue Length			0.1				0.1		0.0			0.0	
Control Delay (s/veh)			11.4				10.7		7.8			7.8	
Level of Service (LOS)			B				B		A			A	
Approach Delay (s/veh)	11.4				10.7				0.2			0.4	
Approach LOS	B				B								

AWD = 9.8 sec/LOS A

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	Briggs Rd/Faulkner Rd
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	Faulkner Road
Analysis Year	2016	North/South Street	Briggs Road
Time Analyzed	A.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		5	0	5		20	0	10		5	252	5		10	280	5
Percent Heavy Vehicles		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)			10				33			5				11		
Capacity			507				468			1245				1277		
v/c Ratio			0.02				0.07			0.00				0.01		
95% Queue Length			0.1				0.2			0.0				0.0		
Control Delay (s/veh)			12.2				13.3			7.9				7.8		
Level of Service (LOS)			B				B			A				A		
Approach Delay (s/veh)	12.2				13.3				0.2				0.3			
Approach LOS	B				B				A				A			

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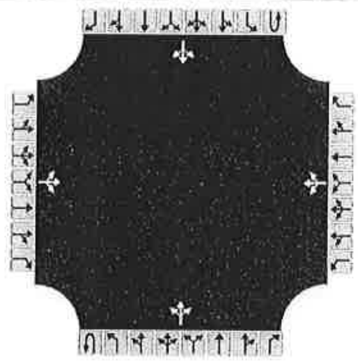
AWD = 11.6 sec/LOS B

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	Briggs Rd/Faulkner Rd
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	Faulkner Road
Analysis Year	2016	North/South Street	Briggs Road
Time Analyzed	P.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		5	0	5		5	0	10		5	204	25		10	231	5
Percent Heavy Vehicles		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

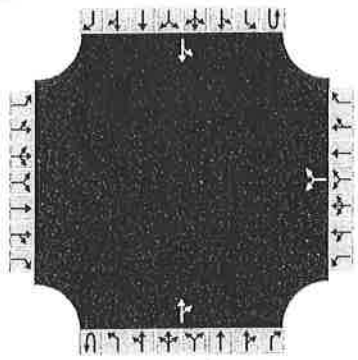
	Eastbound				Westbound				Northbound				Southbound			
Flow Rate (veh/h)			10				16			5				11		
Capacity			571				646			1302				1309		
v/c Ratio			0.02				0.02			0.00				0.01		
95% Queue Length			0.1				0.1			0.0				0.0		
Control Delay (s/veh)			11.4				10.7			7.8				7.8		
Level of Service (LOS)			B				B			A				A		
Approach Delay (s/veh)	11.4				10.7				0.2				0.4			
Approach LOS	B				B											

AWD = 9.8 sec. / LOS A

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	State Route 126/Briggs Rd
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	State Route 126 WB Ramps
Analysis Year	2016	North/South Street	Briggs Road
Time Analyzed	A.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						28		96			62	22		114	60	
Percent Heavy Vehicles						3		3						3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)							134							189		
Capacity							838							1496		
v/c Ratio							0.16							0.13		
95% Queue Length							0.6							0.3		
Control Delay (s/veh)							10.1							7.6		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)					10.1								5.2			
Approach LOS					B								A			

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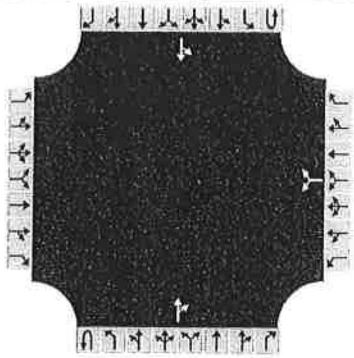
AWD = 8.6 sec / LOS A

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	State Route 126/Briggs Rd
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	State Route 126 WB Ramps
Analysis Year	2016	North/South Street	Briggs Road
Time Analyzed	P.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						19		47			134	41		74	73	
Percent Heavy Vehicles						3		3						3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)							72							159		
Capacity							752							1375		
v/c Ratio							0.10							0.12		
95% Queue Length							0.3							0.2		
Control Delay (s/veh)							10.3							7.8		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)					10.3								4.1			
Approach LOS					B								A			

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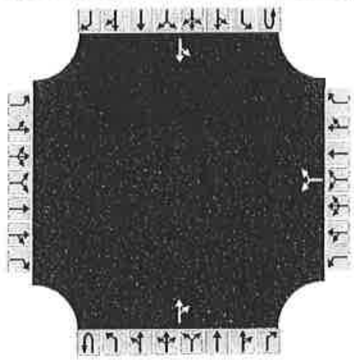
AWD = 8.6 sec / LOS A

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	State Route 126/Briggs Rd
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	State Route 126 WB Ramps
Analysis Year	2016	North/South Street	Briggs Road
Time Analyzed	A.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						28		98			62	22		114	62	
Percent Heavy Vehicles						3		3						3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

	Eastbound				Westbound				Northbound				Southbound			
Flow Rate (veh/h)							137							191		
Capacity							840							1496		
v/c Ratio							0.16							0.13		
95% Queue Length							0.6							0.3		
Control Delay (s/veh)							10.1							7.6		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)					10.1								5.2			
Approach LOS					B								A			

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AWD = 8.6 sec / LOS A

HCS 2010 Two-Way Stop Control Summary Report

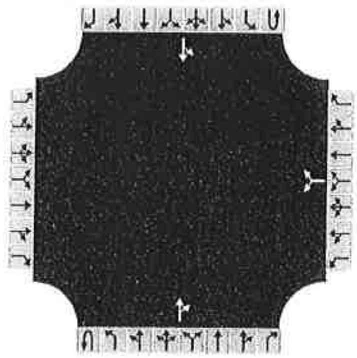
General Information

Analyst	Darryl F. Nelson
Agency/Co.	ATE
Date Performed	2/2/2016
Analysis Year	2016
Time Analyzed	P.M. Peak Hour
Intersection Orientation	North-South
Project Description	Agromin

Site Information

Intersection	State Route 126/Briggs Rd
Jurisdiction	Ventura County
East/West Street	State Route 126 WB Ramps
North/South Street	Briggs Road
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						19		49			134	41		74	75	
Percent Heavy Vehicles						3		3						3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)							74							162		
Capacity							754							1375		
v/c Ratio							0.10							0.12		
95% Queue Length							0.3							0.2		
Control Delay (s/veh)							10.3							7.8		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)					10.3								4.1			
Approach LOS					B								A			

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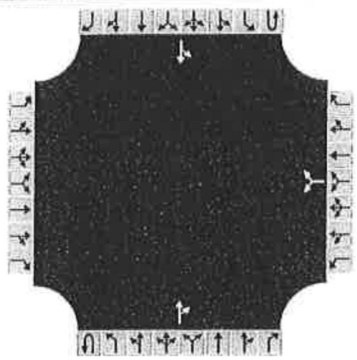
AWD: 8.6 sec / LOS A

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	State Route 126/Briggs Rd
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	State Route 126 WB Ramps
Analysis Year	2016	North/South Street	Briggs Road
Time Analyzed	A.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						50		118			142	28		175	118	
Percent Heavy Vehicles						3		3						3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)							182							318		
Capacity							613							1383		
v/c Ratio							0.30							0.23		
95% Queue Length							1.2							0.5		
Control Delay (s/veh)							13.3							8.0		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)					13.3								5.3			
Approach LOS					B								A			

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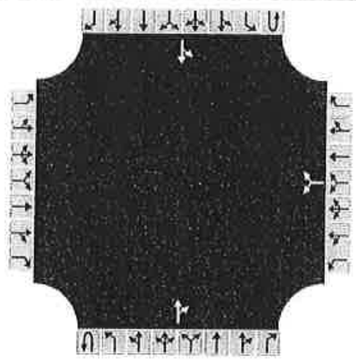
AWD: 9.9 sec/LOS A

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	State Route 126/Briggs Rd
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	State Route 126 WB Ramps
Analysis Year	2016	North/South Street	Briggs Road
Time Analyzed	P.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						29		77			155	45		162	82	
Percent Heavy Vehicles						3		3						3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)							116							265		
Capacity							635							1345		
v/c Ratio							0.18							0.20		
95% Queue Length							0.7							0.5		
Control Delay (s/veh)							11.9							8.1		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)					11.9								5.7			
Approach LOS					B								A			

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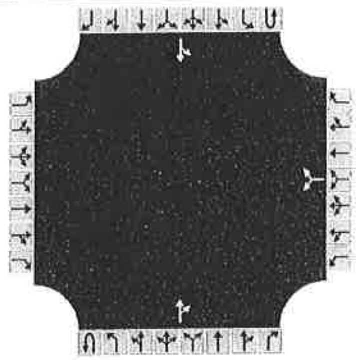
AWD = 9.3 sec/LOS A

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	State Route 126/Briggs Rd
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	State Route 126 WB Ramps
Analysis Year	2016	North/South Street	Briggs Road
Time Analyzed	A.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						50		120			142	28		175	120	
Percent Heavy Vehicles						3		3						3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

	Eastbound				Westbound				Northbound				Southbound			
Flow Rate (veh/h)							184							320		
Capacity							614							1383		
v/c Ratio							0.30							0.23		
95% Queue Length							1.3							0.5		
Control Delay (s/veh)							13.4							8.0		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)					13.4								5.2			
Approach LOS					B								A			

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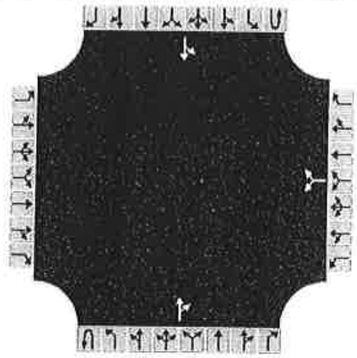
AWD = 10.0 sec / LOS A

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl F. Nelson	Intersection	State Route 126/Briggs Rd
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	State Route 126 WB Ramps
Analysis Year	2016	North/South Street	Briggs Road
Time Analyzed	P.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						29		79			155	45		162	84	
Percent Heavy Vehicles						3		3						3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)							118							267		
Capacity							637							1345		
v/c Ratio							0.19							0.20		
95% Queue Length							0.7							0.5		
Control Delay (s/veh)							11.9							8.1		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)					11.9								5.7			
Approach LOS					B								A			

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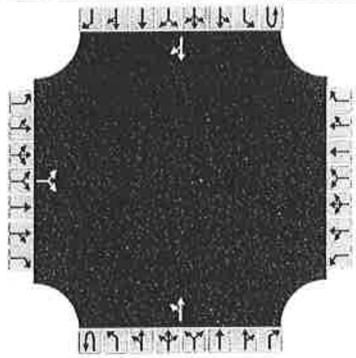
AWD = 9.3 sec/ LOS A

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl Nelson	Intersection	State Route 126/Briggs Rd
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	State Route 126
Analysis Year	2016	North/South Street	Briggs Road
Time Analyzed	A.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		72		49						20	55				35	28
Percent Heavy Vehicles		3		3						3						
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

	EB U	EB L	EB T	EB R	WB U	WB L	WB T	WB R	NB U	NB L	NB T	NB R	SB U	SB L	SB T	SB R
Flow Rate (veh/h)			131							82						
Capacity			887							1525						
v/c Ratio			0.15							0.05						
95% Queue Length			0.5							0.0						
Control Delay (s/veh)			9.8							7.4						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)	9.8								2.1							
Approach LOS	A								A							

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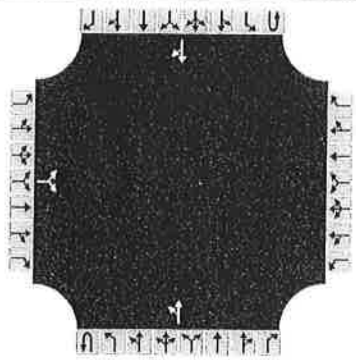
AWD= 8.9 sec/LOS A

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl Nelson	Intersection	State Route 126/Briggs Rd
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	State Route 126
Analysis Year	2016	North/South Street	Briggs Road
Time Analyzed	P.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		126		25						43	52				23	71
Percent Heavy Vehicles		3		3						3						
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)			164							104						
Capacity			779							1482						
v/c Ratio			0.21							0.07						
95% Queue Length			0.8							0.1						
Control Delay (s/veh)			10.8							7.5						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)	10.8								3.5							
Approach LOS	B								A							

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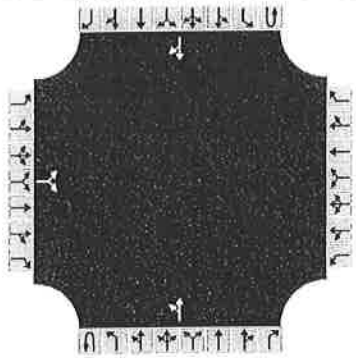
AWD - 9.5 sec/LOS A

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl Nelson	Intersection	State Route 126/Briggs Rd
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	State Route 126
Analysis Year	2016	North/South Street	Briggs Road
Time Analyzed	A.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		72		49						20	55				35	30
Percent Heavy Vehicles		3		3						3						
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)			131							82						
Capacity			886							1521						
v/c Ratio			0.15							0.05						
95% Queue Length			0.5							0.0						
Control Delay (s/veh)			9.8							7.4						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)	9.8								2.1							
Approach LOS	A								A							

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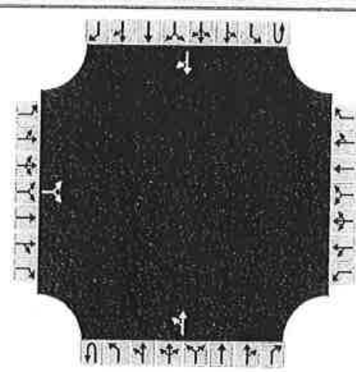
AWD: 8.9 sec/ LOS A

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl Nelson	Intersection	State Route 126/Briggs Rd
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	State Route 126
Analysis Year	2016	North/South Street	Briggs Road
Time Analyzed	P.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		126		25						43	52				23	73
Percent Heavy Vehicles		3		3						3						
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)			164							104						
Capacity			777							1480						
v/c Ratio			0.21							0.07						
95% Queue Length			0.8							0.1						
Control Delay (s/veh)			10.9							7.5						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)	10.9								3.5							
Approach LOS	B								A							

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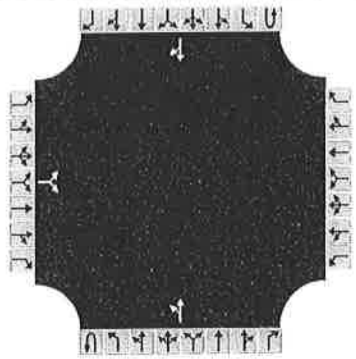
AWD = 9.6 sec / LOS A

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl Nelson	Intersection	State Route 126/Briggs Rd
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	State Route 126
Analysis Year	2016	North/South Street	Briggs Road
Time Analyzed	A.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		138		54						42	61				57	108
Percent Heavy Vehicles		3		3						3						
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

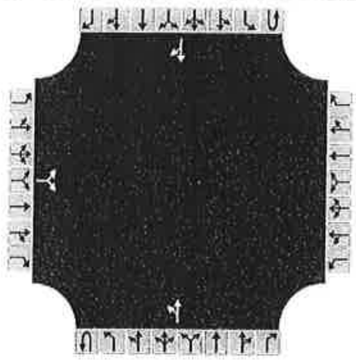
	Eastbound				Westbound				Northbound				Southbound			
Flow Rate (veh/h)			209							112						
Capacity			740							1389						
v/c Ratio			0.28							0.08						
95% Queue Length			1.2							0.1						
Control Delay (s/veh)			11.8							7.7						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)	11.8								3.3							
Approach LOS	B								A							

AWD = 10.4 sec / LOS B

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl Nelson	Intersection	State Route 126/Briggs Rd
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	State Route 126
Analysis Year	2016	North/South Street	Briggs Road
Time Analyzed	P.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		151		28						57	56				33	102
Percent Heavy Vehicles		3		3						3						
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

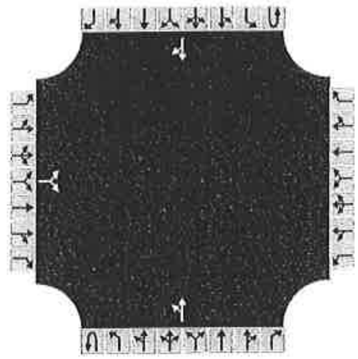
Flow Rate (veh/h)			194							123						
Capacity			712							1427						
v/c Ratio			0.27							0.09						
95% Queue Length			1.1							0.1						
Control Delay (s/veh)			11.9							7.6						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)	11.9								4.0							
Approach LOS	B								A							

AWD= 10.2 sec/LOS B

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl Nelson	Intersection	State Route 126/Briggs Rd
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	State Route 126
Analysis Year	2016	North/South Street	Briggs Road
Time Analyzed	A.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		138		54						42	61				57	110
Percent Heavy Vehicles		3		3						3						
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)			209							112						
Capacity			738							1386						
v/c Ratio			0.28							0.08						
95% Queue Length			1.2							0.1						
Control Delay (s/veh)			11.8							7.7						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)	11.8								3.3							
Approach LOS	B								A							

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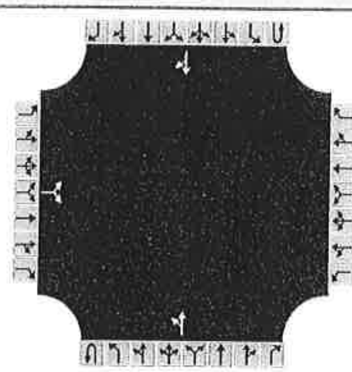
AWD = 10.4 sec / LOS B

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl Nelson	Intersection	State Route 126/Briggs Rd
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	2/2/2016	East/West Street	State Route 126
Analysis Year	2016	North/South Street	Briggs Road
Time Analyzed	P.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Agromin		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		151		28						57	56				33	104
Percent Heavy Vehicles		3		3						3						
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

	EB U	EB L	EB T	EB R	WB U	WB L	WB T	WB R	NB U	NB L	NB T	NB R	SB U	SB L	SB T	SB R
Flow Rate (veh/h)			194							123						
Capacity			711							1425						
v/c Ratio			0.27							0.09						
95% Queue Length			1.1							0.1						
Control Delay (s/veh)			12.0							7.6						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)	12.0								4.0							
Approach LOS	B								A							

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AWD = 10.3 sec / LOS B

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