

Quantitative Odor Analysis
of the Proposed
Capistrano Greenery Composting
Operation at the
Prima Deshecha Landfill

SCS ENGINEERS

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5963 La Place Court, Suite 207
Carlsbad, CA 92008
760-744-9611

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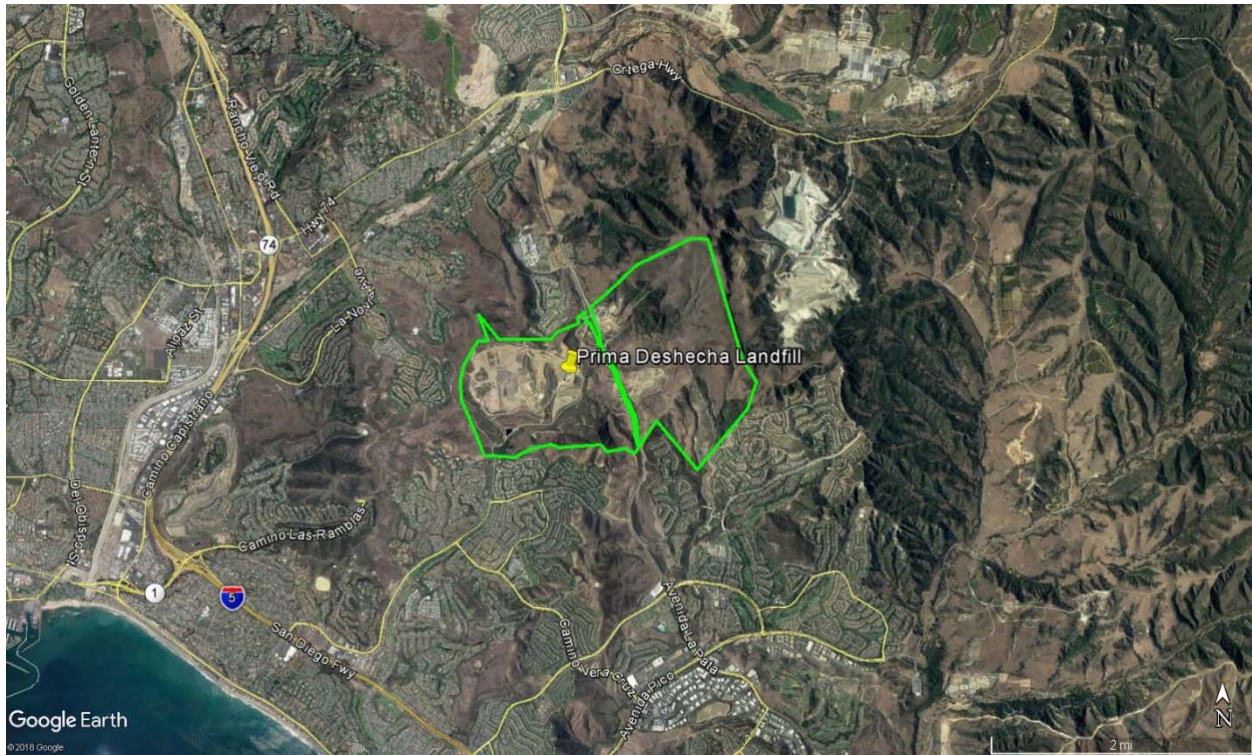
1.0 INTRODUCTION

SCS Engineers was contracted by SWT Engineering, Inc. to prepare a quantitative odor analysis (QOA) for the County of Orange OC Waste & Recycling Department (OCWR) of the proposed Capistrano Greenery Composting Operation at the Prima Deshecha Landfill. The 1,530 acre Prima Deshecha Landfill is located at 32250 Avenida La Pata in San Juan Capistrano, California (see Figure 1). The 18.6 acre Capistrano Greenery Composting Operation will receive a maximum of 204 tons per day (TPD) of processed green material, processed agricultural material, and manure (see Figure 2). The project will allow OCWR to assist Orange County in meeting State of California mandates for recycling organic waste materials. See Appendix A for the project description and site maps.

The goal of this study was to assess whether the proposed Capistrano Greenery Composting Operation will cause significant nuisance odor impacts on the area surrounding the active landfill. Representative odor concentrations and odor flow rates were used to estimate the potential emissions of odor from the proposed composting site. The AERMOD atmospheric dispersion model was then used to predict odor concentrations at locations surrounding the Prima Deshecha Landfill.

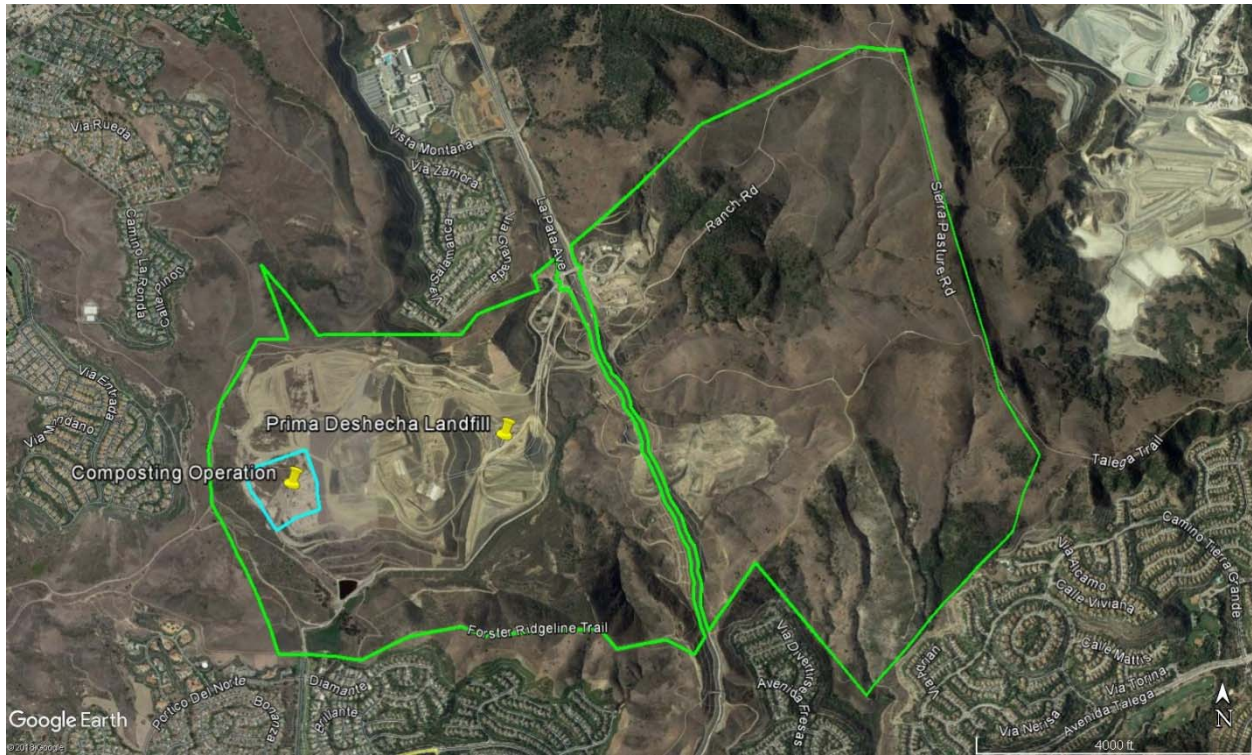
Odor concentration is defined as the dilution of an odor sample with odor-free air, at which point only 50% of an odor panel will detect the odor (ASTM 679-04 – Standard Practice for Determination of Odor and Taste Thresholds By a Forced-Choice Ascending Concentration Series Method of Limits). This point is expressed in units of “dilutions-to-threshold” or “D/T”. By definition, the odor threshold is equal to 1 D/T (i.e., the volume of odorous air after dilution divided by the volume before dilution equals one) ^[1]. Typically, odors become a nuisance at or above 7 D/T ^[2]. Note, the South Coast Air Quality Management District (SCAQMD) defines odor nuisances subjectively under SCAQMD Rule 402 Nuisance ^[3]. Therefore, the Bay Area Air Quality Management District’s (BAAQMD’s) Regulation 7 ^[4] nuisance odor standard of 4 D/T was selected as the significant risk threshold for this study since Regulation 7 is one of the most restrictive odor regulations in the country using an objective odor concentration scale. Based upon the dispersion modeling analysis of the representative odors, it was concluded that the Capistrano Greenery Composting Operation will not cause significant off-site nuisance odor impacts.

Figure 1. Prima Deshecha Landfill Location [5]



Green line: Prima Deshecha Landfill approximate boundary

Figure 2. Capistrano Greenery Composting Operation Location [5]



Green line:
Cyan line:

Prima Deshecha Landfill approximate boundary
Capistrano Greenery Composting Operation approximate boundary

2.0 METHODOLOGY

2.1 MODEL SELECTION

The most recent version of the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD Version 18081) [6] was used to model representative emissions of odor from the proposed composting site. AERMOD was initially developed in 1991 and adopted in 2005 by the United States Environmental Protection Agency (EPA). AERMOD is EPA's preferred regulatory model for both simple and complex terrain. AERMOD was selected for this study since:

- AERMOD is acceptable to the SCAQMD for dispersion modeling studies [7].
- AERMOD is preferred/recommended by the EPA for near-field dispersion of emissions for distances less than 50 km.
- AERMOD is both in the public domain and readily available.
- AERMOD can model multiple sources and multiple receptors.
- AERMOD can model the effects of aerodynamic downwash on point source emissions due to nearby buildings.
- AERMOD can use representative meteorological data to simulate the atmospheric conditions that affect the transport and dispersion of air pollution from sources.
- AERMOD can use local terrain data to model receptors in complex terrain.

Input data for AERMOD included:

- source parameters (locations, dimensions, emission rates, etc.);
- receptor locations;
- meteorological data;
- terrain data; and
- model options.

2.2 SOURCE PARAMETERS

Source parameters are used to model the release of pollutants into the atmosphere. Information regarding source location and dimensions were obtained from the project description and associated figures in Appendix A. Transport of raw feedstock into the site and transport of the finished compost out of the site were modeled using 45 line sources to depict a representative travel route through the landfill and composting operation. The remaining sources (i.e., active composting piles, curing piles, receiving area, screening/storage/loadout area, and pond) were modeled as area sources.

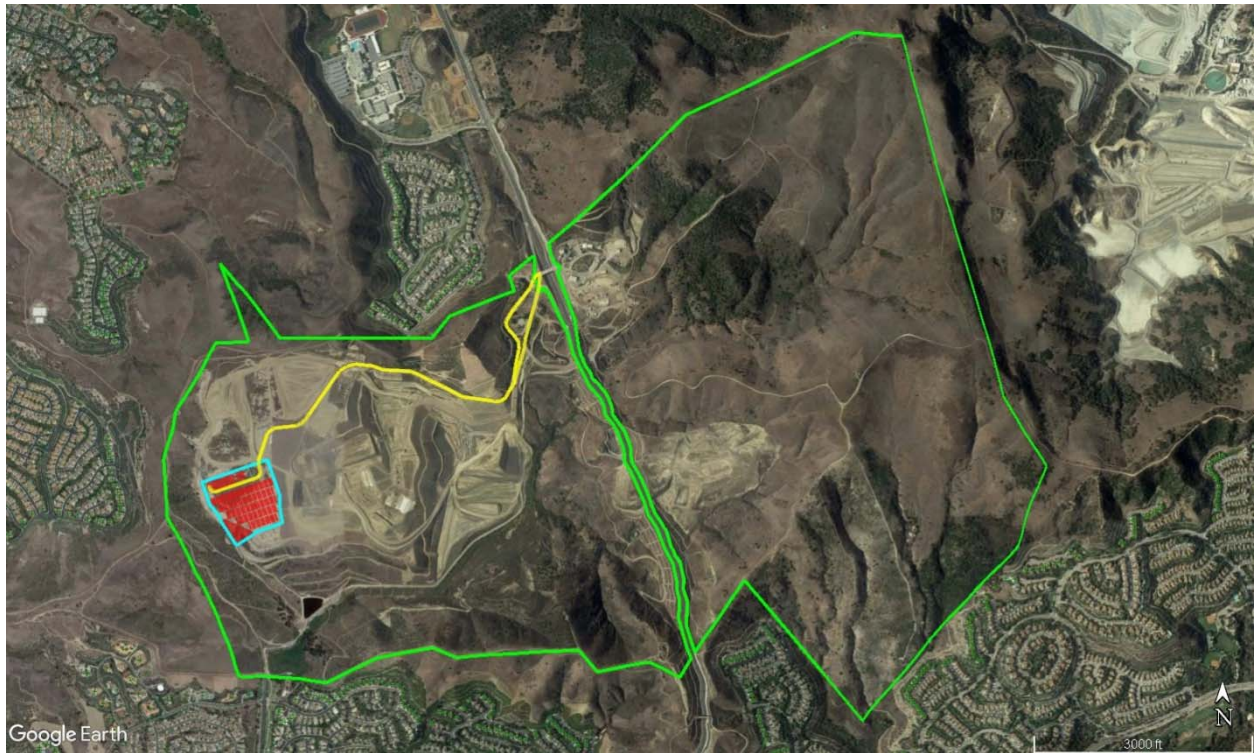
Odor emission rates in units of $(D/T) \cdot (m^3/s)$ were calculated by multiplying each source's odor concentration (D/T) times its volumetric flow rate (m^3/s) . A representative odor concentration was assigned to each source based upon prior odor studies. Volumetric flow rates were estimated by multiplying each source's surface area (m^2) times its vertical velocity (m/s) . A representative vertical velocity was assigned to each source based upon field measurements conducted at other facilities. For line and area sources, AERMOD requires odor emission rates per area in units of $(D/T) \cdot (m/s)$ be entered along with each source's dimensions (e.g., coordinates, length, width, rotation angle) so that the model can account for each source's surface area. See Appendix B for the source parameters entered into AERMOD for this study. See Table 1 for a summary of the odor emission rates per area by source category. See Figures 3 through 5 for the source locations.

Table 1. Odor Emission Rates per Area ^[8, 9]

AERMOD Source IDs	AERMOD Source Type	Source Category	Source Odor Concentration (D/T)	Vertical Velocity (m/s)	Odor Emission Rate per Area (D/T*m/s) *
1 - 45	Line	Compost Trucking	290	2.40E-05	6.96E-03
46, 72, 95, 108	Area	Compost Piles (Turning)	7,000	2.40E-05	1.68E-01
47-71, 73-94, 96-107, 109-144	Area	Compost Piles (Non-Turning)	1,100	2.40E-05	2.64E-02
145	Area	Receiving Area	350	2.40E-05	8.40E-03
146	Area	Screening, Storage, Loadout	500	2.40E-05	1.20E-02
147	Area Polygon	Pond	13	2.40E-05	3.12E-04

* For line and area sources, AERMOD requires odor emission rates per area in units of (D/T)*(m/s) be entered along with each source's dimensions (e.g., coordinates, length, width, rotation angle) so that the model can account for each source's surface area. See Appendix B for the source parameters entered into AERMOD for this study.

Figure 3. Source Locations – View 1 [5, 6]



- Green line: Prima Deshecha Landfill approximate boundary
- Cyan line: Capistrano Greenery Composting Operation approximate boundary
- Red polygon: Area sources representing receiving area, composting/curing piles, and screening/storage/loadout area
- Yellow line: Representative on-site trucking route

Figure 4. Source Locations – View 2 [5, 6]



- Green line: Prima Deshecha Landfill approximate boundary
- Cyan line: Capistrano Greenery Composting Operation approximate boundary
- Red polygon: Area sources representing receiving area, composting/curing piles, and screening/storage/loadout area
- Yellow line: Representative on-site trucking route

Figure 5. Source Locations – View 3 [5, 6]



- Green line: Prima Deshecha Landfill approximate boundary
- Cyan line: Capistrano Greenery Composting Operation approximate boundary
- Red polygon: Area sources representing receiving area, composting/curing piles, and screening/storage/loadout area
- Yellow line: Representative on-site trucking route

2.3 BUILDING DOWNWASH

Building downwash was not included since point sources were not modeled in the analysis.

2.4 RECEPTORS

AERMOD was used to generate tiered receptor grids over the proposed composting operation and surrounding area. In addition, discrete receptors were placed along the landfill's property boundary as well as at nearby residential locations. Receptor locations were modeled using:

- Multi-tier grid receptors
 - Grid origin (UTM X, Y) = 441550 m, 3705300 m
 - Tier 1 = 50 meter spacing from grid origin out to 1,000 meters
 - Tier 2 = 100 meter spacing 1,000 to 2,500 meters from grid origin
 - Tier 3 = 250 meter spacing 2,500 to 5,000 meters from grid origin
- Property boundary receptors
 - 10 meter spacing
- Discrete receptors
 - 475 nearby residential locations
- Receptor flag pole height
 - 0 meters (at ground level)

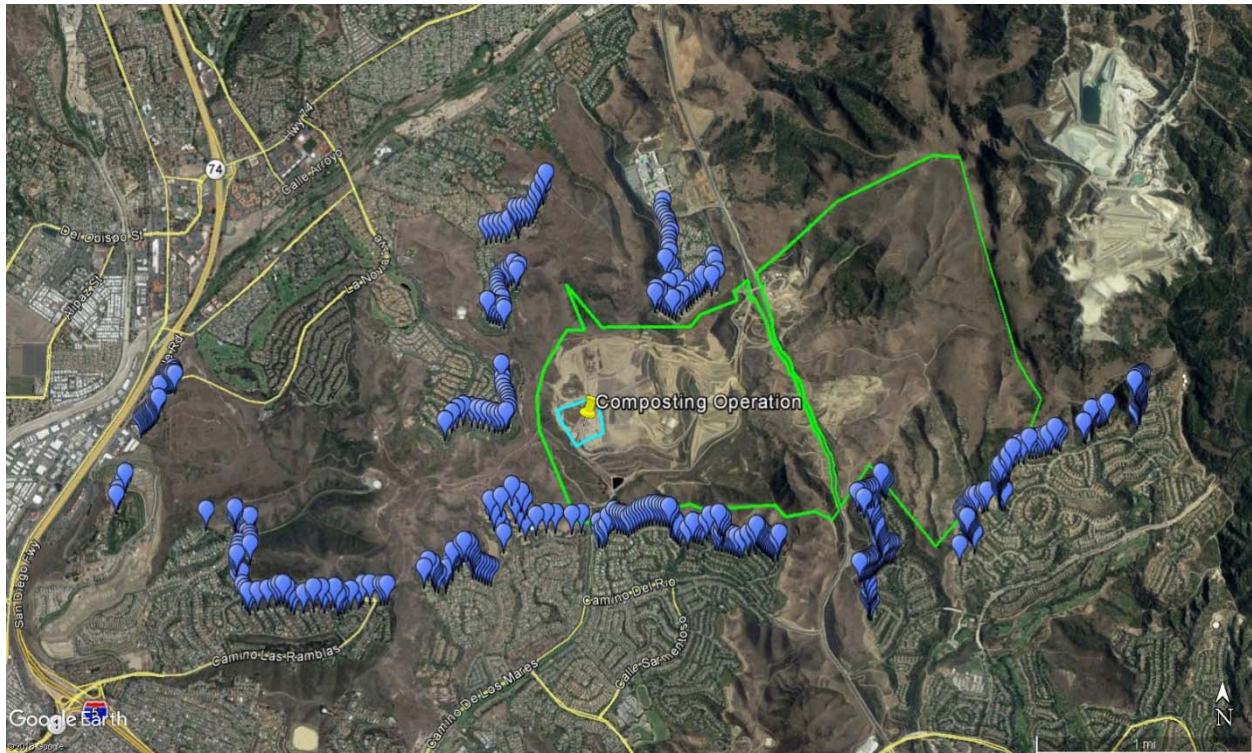
On-site receptors within the landfill's property boundary were removed from the analysis. See Figure 6 for the layout of the multi-tiered grids. See Figure 7 for the nearest residential receptors modeled in this study.

Figure 6. Multi-Tiered Grid Layout [5]



- Green line: Prima Deshecha Landfill approximate boundary
- Cyan line: Capistrano Greenery Composting Operation approximate boundary
- Purple line: 50 meter spacing grid boundary
- Orange line: 100 meter spacing grid boundary
- White line: 250 meter spacing grid boundary

Figure 7. Nearby Residential Receptors [5]



Green line: Prima Deshecha Landfill approximate boundary
Cyan line: Capistrano Greenery Composting Operation approximate boundary
Purple markers: Nearby residential locations

2.5 METEOROLOGICAL DATA

The latest five years of meteorological data from the SCAQMD's Mission Viejo station were used in the analysis. The meteorological data was pre-processed by the SCAQMD to be compatible with AERMOD. See Table 2 for details. See Appendix C for wind roses which graphically represent the wind speeds and wind directions for various time periods (i.e., five year as well as by hour of the day). In general, the dominant wind direction is from the southwest (closely followed by winds from the south-southwest and then from the south). However, as seen in Appendix C, dominant wind directions vary significantly over the course of a 24-hour day.

Table 2. Meteorological Data ^[10]

Item	Description
Station Name	Mission Viejo
Years of Data	5
Range of Data	2011-2014, 2016
Elevation (m)	170

2.6 TERRAIN DATA

The SCAQMD and EPA guidelines ^[7, 11] indicate that AERMOD can under predict concentrations at receptor elevations lower than the base elevation of a source. Therefore, modeling scenarios were conducted with and without terrain elevation data (i.e., flat and elevated terrain). Local terrain data was obtained from the United States Geological Survey (USGS) National Elevation Dataset (NED) 1/3 arc-seconds.

2.7 MODEL OPTIONS

AERMOD was used to estimate the maximum odor concentration at each receptor location for a 3 minute time period based on five years of local meteorological data. Impacts at the receptor points were then processed into contours of constant odor concentration in units of D/T and overlaid onto satellite imagery of the surrounding area.

Four scenarios (modeling runs) were evaluated for comparison to the significant risk threshold using the model options in Table 3:

- Run #1 – flat terrain using rural dispersion mode
- Run #2 – flat terrain using urban dispersion mode
- Run #3 – elevated terrain using rural dispersion model
- Run #4 - elevated terrain using urban dispersion model

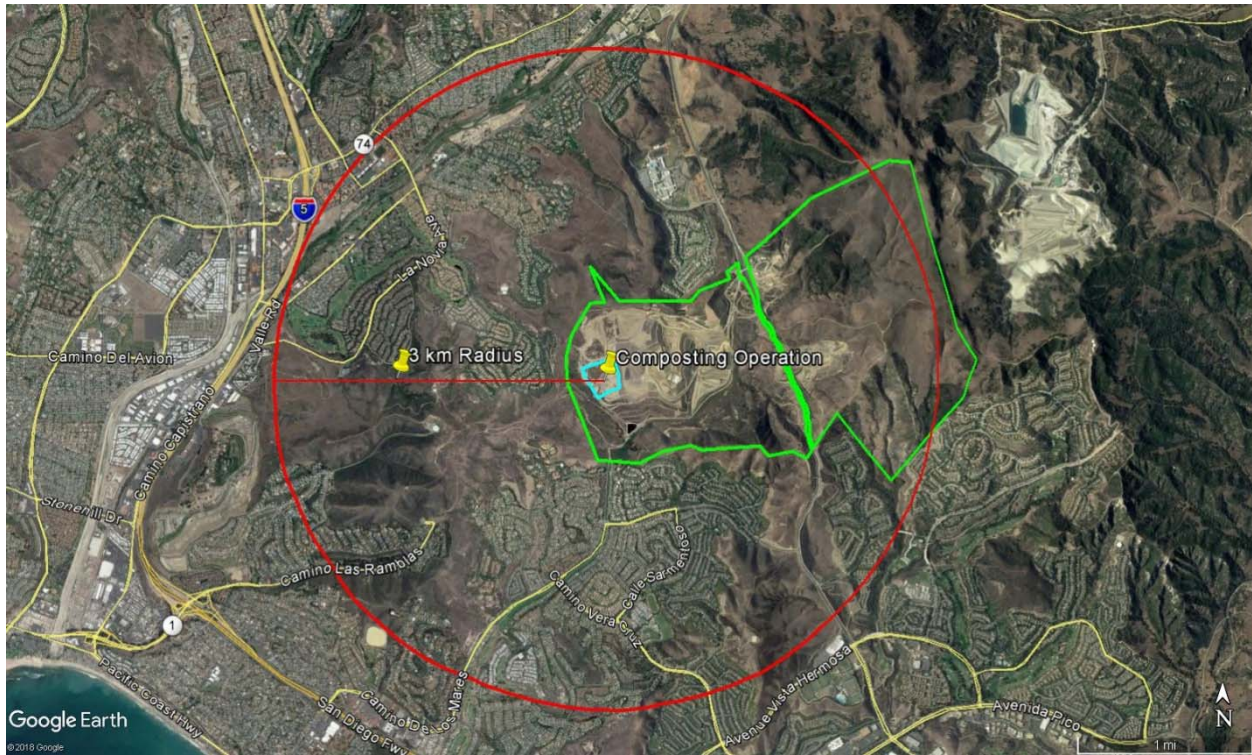
Modeling runs were conducted with and without terrain elevations since AERMOD can under predict concentrations at receptor elevations lower than the base elevation of a source. Modeling runs were also conducted using rural and urban dispersion modes since the area within three kilometers of the composting facility is somewhat more rural than urban (see Figure 8). Modeling was conducted based upon SCAQMD guidelines ^[7] and the following assumptions:

- All sources were modeled as one source group operating continuously (i.e., 24 hours per day).
- Peak one hour odor concentrations predicted by AERMOD were multiplied by a factor of 1.82 to estimate the peak three minute concentrations ^[12].

Table 3. AERMOD Model Options ^[6]

Item	Description
AERMOD Version	18081
Coordinate System	WGS84, UTM Zone 11
Regulatory Defaults?	No for modeling runs #1 and #2 since flat terrain was used. Yes for modeling runs #3 and #4.
Pollutant	Odor
Averaging Times	1-Hour
Dispersion Mode	Rural mode for modeling runs #1 and #3. Urban mode for modeling runs #2 and #4.
Source Parameters	See Appendix B
Source Emission Rates	See Table 1 and Appendix B
Building Downwash?	Not applicable since point sources were not modeled.
Source Groups	All sources emitting simultaneously
Urban Groups	Not applicable for rural modeling runs #1 and #3. Single urban source group (population of 3,010,232) for modeling runs #2 and #4.
Variable Emissions	(Not applicable)
Emissions Output	Unit Factor = 1.0 Emission Unit Label = D/T*m ³ /s Concentration Unit Label = D/T
Receptors	Multi-tier grid receptors <ul style="list-style-type: none"> • Grid origin (UTM X, Y) = 441550 m, 3705300 m • Tier 1 = 50 meter spacing from grid origin out to 1,000 meters • Tier 2 = 100 meter spacing 1,000 to 2,500 meters from grid origin • Tier 3 = 250 meter spacing 2,500 to 5,000 meters from grid origin Property boundary receptors <ul style="list-style-type: none"> • 10 meter spacing Discrete receptors <ul style="list-style-type: none"> • 475 nearby residential locations Receptor flag pole height <ul style="list-style-type: none"> • 0 meters (at ground level)
Meteorological Data	Preprocessed by SCAQMD Mission Viejo Station surface data (2011-2014, 2016) NKX (WBAN ID 03190) upper air data Base elevation (MSL) = 170 meters
Terrain (Elevation) Data	Not applicable for flat terrain modeling runs #1 and #3. NED 1/3 arc-second terrain elevation data for modeling runs #2 and #4.

Figure 8. Local Land Usage ^[5]



- Green line: Prima Deshecha Landfill approximate boundary
- Cyan line: Capistrano Greenery Composting Operation approximate boundary
- Red circle: 3 kilometer radius from center of composting site

2.8 SIGNIFICANT RISK THRESHOLD

The SCAQMD has local jurisdiction over air quality issues in the region where the proposed composting operation is located. The SCAQMD has adopted Rule 402 Nuisance ^[3] which states:

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

Since SCAQMD Rule 402 Nuisance is subjective, the BAAQMD’s Regulation 7 ^[4] nuisance odor standard of 4 D/T was selected as the significant risk threshold for this study since Regulation 7 is one of the most restrictive odor regulations in the country using an objective odor concentration scale.

3.0 RESULTS

Table 4 presents the peak modeling results for receptors along the Prima Deshecha Landfill's property boundary while Table 5 presents the peak modeling results for nearby residential receptors. Figure 9 displays the peak landfill property boundary and peak residential impact locations from all four modeling runs while Figures 10 to 11 display contours of odor concentration in D/T from Run #1 which had the highest impacts for the 3 minute averaging time period.

Peak D/T odor impacts beyond the landfill's property boundary were compared to the BAAQMD's nuisance odor standard of 4 D/T. As seen from the results, peak off-site odor impacts were below the 4 D/T significant risk threshold. Based upon the dispersion modeling analysis of the representative odors, it was concluded that the Capistrano Greenery Composting Operation will not cause significant off-site nuisance odor impacts.

Table 4. Peak Odor Impacts (Landfill Property Boundary)

Run No.	Terrain	Mode	Peak Impact UTM X and Y Coordinates (m)		Peak 1-Hour Odor Concentration (D/T)	Peak 3-Minute Odor Concentration (D/T) *	Nuisance Significant Risk Threshold (D/T)	Modeled Impact Exceeds Nuisance Threshold?
1	Flat	Rural	441232	3705306	0.68	1.24	4	No
2	Flat	Urban	441232	3705306	0.14	0.25	4	No
3	Elevated	Rural	441272	3705144	0.57	1.04	4	No
4	Elevated	Urban	441261	3705172	0.14	0.26	4	No

* 1 hour concentrations were multiplied by a factor of 1.82 to determine the 3 minute concentrations.

Table 5. Peak Odor Impacts (Nearby Residential Receptors)

Run No.	Terrain	Mode	Peak Impact UTM X and Y Coordinates (m)		Peak 1-Hour Odor Concentration (D/T)	Peak 3-Minute Odor Concentration (D/T) *	Nuisance Significant Risk Threshold (D/T)	Modeled Impact Exceeds Nuisance Threshold?
1	Flat	Rural	440995	3705334	0.35	0.64	4	No
2	Flat	Urban	441008	3705263	0.07	0.12	4	No
3	Elevated	Rural	440995	3705334	0.26	0.48	4	No
4	Elevated	Urban	441008	3705263	0.06	0.11	4	No

* 1 hour concentrations were multiplied by a factor of 1.82 to determine the 3 minute concentrations.

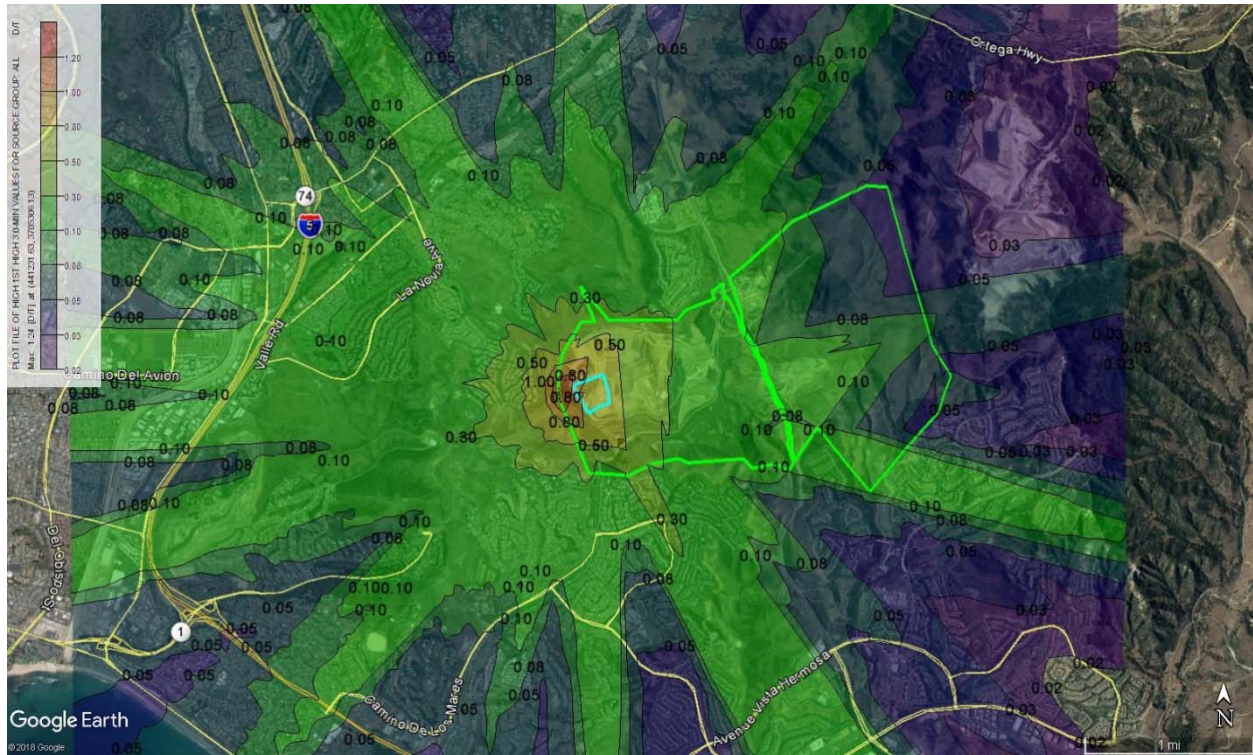
Figure 9. Peak 3 Minute Impact Locations [5, 6]



Green line:
Cyan line:

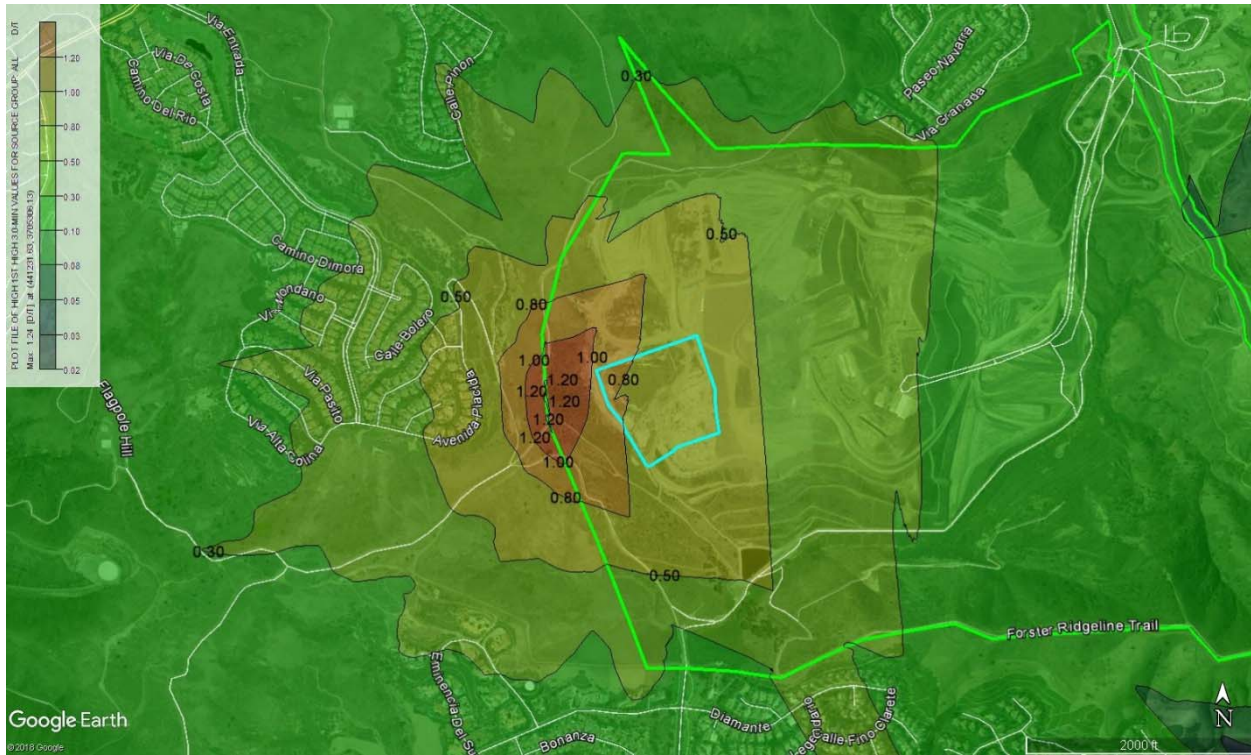
Prima Deshecha Landfill approximate boundary
Capistrano Greenery Composting Operation approximate boundary

Figure 10. Peak 3 Minute Impact Contours (D/T) for Run #1 – View #1 [5, 6]



Green line: Prima Deshecha Landfill approximate boundary
 Cyan line: Capistrano Greenery Composting Operation approximate boundary

Figure 11. Peak 3 Minute Impact Contours (D/T) for Run #1 – View #2 [5, 6]



Green line:
Cyan line:

Prima Deshecha Landfill approximate boundary
Capistrano Greenery Composting Operation approximate boundary

4.0 REFERENCES

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11. United States Environmental Protection Agency (USEPA), “AERMOD Implementation Guide”, https://www3.epa.gov/ttn/scram/models/aermod/aermod_implementation_guide.pdf, April 2018.
12. Turner, D. Bruce, “Workbook of Atmospheric Dispersion Estimates”, United States Environmental Protection Agency, Office of Air Programs, Research Triangle Park, North Carolina, Revised 1970, p. 38, Equation 5.12.



Appendix A Project Description

INITIAL ENVIRONMENTAL STUDY

ENVIRONMENTAL CHECKLIST FORM AND ENVIRONMENTAL DETERMINATION

This environmental document is an Initial Study. The Initial Study was prepared for the proposed project by the Lead Agency as a means to identify any significant environmental effects and to determine whether an Environmental Impact Report or Negative Declaration should be prepared.

The County of Orange, OC Waste & Recycling (OCWR) department is the Lead Agency for the project and is also the project proponent that will be implementing the project. The contact person for this project is John Arnau, OCWR CEQA Manager, phone: (714) 834-4107, email: john.arnau@ocwr.ocgov.com.

OCWR Project Number: 679

1.1 PROJECT TITLE

Capistrano Greenery Composting Operation at the Prima Deshecha Landfill

1.2 PURPOSE

OCWR proposes to implement a composting operation at the Prima Deshecha Landfill called the Capistrano Greenery Composting Operation. The Capistrano Greenery Composting Operation will receive a maximum of 204 tons per day (TPD) of processed green material, processed agricultural material and manure. The project will allow OCWR to assist Orange County cities and the County unincorporated area in meeting State recycling mandates for the recycling of organic waste materials.

1.3 PROJECT LOCATION AND LAND USE DESIGNATIONS

The 1,530-acre Prima Deshecha Landfill site is located in San Juan Capistrano, unincorporated Orange County and San Clemente, as shown on **Figure 1**. The street address for the Prima Deshecha Landfill is 32250 Avenida La Pata, San Juan Capistrano.

General Plan Land Use Designation: 4LS (Public Facilities; Landfill Site)

Zoning: Exempt

1.4 EXISTING CONDITIONS

The Prima Deshecha Landfill is a Class III landfill that only accepts municipal solid waste for disposal; no hazardous or liquid waste can be accepted. The landfill is currently authorized to receive a maximum daily tonnage of up to 4,000 TPD. The landfill also receives exempt wastes for beneficial reuse at the landfill which currently include processed green material (PGM), asphalt and soil. The landfill currently accepts approximately 100 TPD of processed green material. The landfill is currently scheduled to close in approximately 2102.

On-site facilities include an entrance and access road, fee stations, household hazardous waste collection center, materials recovery facility for construction and demolition wastes, administration building, crew quarters, equipment and maintenance yard, storm water collection system, leachate and groundwater collection systems, sumps and storage tanks, landfill gas renewable energy facility, LFG collection and destruction equipment including a flare station and parking lots.

1.5 PROJECT NEED

SB 1383 requires California to divert and recycle at least 50 percent of all organic waste materials currently disposed at solid waste landfills by January 1, 2020 and at least 75 percent by January 1, 2025. In addition, AB 1594 will no longer allow jurisdictions to claim recycling credits for their green waste that is ground and turned into processed green material (PGM) and then brought to a solid waste landfill where it is used for alternative daily cover. Beginning on January 1, 2020, PGM that is used as alternative daily cover at solid waste landfills will be counted as disposal, and will become part of the landfill's daily disposal tonnage.

OCWR currently accepts approximately 2,000 TPD of PGM from almost all of the 34 incorporated cities in Orange County and the County unincorporated area for beneficial reuse at its three active landfills, which are the Olinda Alpha, Frank R. Bowerman (FRB) and Prima Deshecha Landfills. Most of the PGM material comes from residential pick-up. OCWR uses the PGM for alternative daily cover, geosynthetic tarp framing (i.e., weight to hold down the geosynthetic tarps that cover refuse in the evenings) and for erosion control at all three landfills. OCWR currently accepts the PGM at no charge and the jurisdictions receive AB 939 recycling credits for OCWR's beneficial reuse of the PGM at the landfills. Beginning on January 1, 2020, per the requirements of AB 1594, OCWR's use of PGM as alternative daily cover and for geosynthetic tarp framing will be considered disposal.

The implementation of the Capistrano Greenery Composting Operation at the Prima Deshecha Landfill will allow OCWR to compost a maximum of 204 TPD of PGM, processed agricultural material and manure at the Prima Deshecha Landfill, thereby assisting the state, Orange County cities and the County unincorporated area in meeting SB 1383 and AB 1594 requirements for organic waste recycling.

1.6 PROJECT DESCRIPTION

Open Windrow Composting

Composting is a natural biological process that biodegrades organic waste and turns it into a valuable organic fertilizer. Composting is carried out under controlled aerobic conditions (i.e., requires oxygen). In this process, various microorganisms, including bacteria and fungi, break down organic material into simpler substances. The effectiveness of the composting process is dependent upon the environmental conditions present within the composting system, which include oxygen, temperature, moisture, material disturbance, organic material and the size and activity of microbial populations.

For the proposed Capistrano Greenery Composting Operation, OCWR is proposing to utilize open windrow composting. With open windrow composting, the green waste is placed in long rows called windrows. The windrows are turned (using a compost windrow turner or front-end loader) to improve porosity and oxygen content, mix in or remove moisture, and redistribute cooler and hotter portions of the pile. Open windrow composting is a commonly used composting operation method. Composting process control parameters include the initial ratios of carbon and nitrogen rich materials, the amount of bulking agent added to assure air porosity, the pile size, moisture content and turning frequency. The temperature of the windrows must be measured and logged constantly to determine the optimum time to turn them for quicker compost production.

For open windrow composting, as temperatures in the compost pile increase, thermophiles (microorganisms that function at temperatures above 105 degrees Fahrenheit) take over. The temperature in the compost pile typically increases rapidly to 122-150 degrees Fahrenheit within 24 – 72 hours of pile formation, which is maintained for several weeks. This is called the active phase of composting. In the active thermophilic phase, temperatures above 131 degrees Fahrenheit are high enough to kill pathogens and weed seeds and to break down phytotoxic compounds (organic compounds toxic to plants). Compost is considered finished when the raw feedstocks are no longer actively decomposing and are biologically and chemically stable. Finished compost is dark brown or black (almost like bagged potting soil), crumbly textured and has a rich earthy smell. Finished compost must meet California Code of Regulations Title 14 requirements for both pathogens and metals at the time of land application.

Demonstration Pilot Composting Operation at the Prima Deshecha Landfill

Beginning in March 2018, OCWR implemented demonstration pilot PGM composting operations on existing landfill areas at the Olinda Alpha, FRB and Prima Deshecha Landfills. The purpose of the demonstration pilot composting operations, which are still ongoing, was for OCWR to (1) gain a better understanding of composting design, permitting, engineering and operations; (2) determine the costs associated with composting design, permitting, engineering and operations; (3) by studying and observing on a microscale, determine the potential environmental issues that could occur at a full-scale composting operation; (4) learn how to make high quality finished compost that will meet California Code of Regulations Title 14 requirements and (5) analyze the potential uses for finished compost.

The demonstration pilot composting operation at the Prima Deshecha Landfill is located on an approximate 1-acre area within Waste Management Unit 1. This area of the landfill is not currently being used for active landfill disposal. Material feedstocks that have been composted include source separated residential curbside green waste, commercial green waste, processed green waste and wood waste. These materials were already being delivered to the landfill. The demonstration pilot composting operation does not have more than 60 tons (i.e., 92 cubic yards) of material on-site at any one time or process more than 250 tons of material per year. The feedstock is placed on top of a crushed asphalt surface for all weather access and surrounded by an earthen berm to prevent storm water run-on and run-off. Any green waste received that is noticeably contaminated with residual solid waste, or is highly odorous, is diverted and disposed at the active area of the landfill. The demonstration pilot composting operation will continue at

the landfill as a research project, so that OCWR can continue to learn about composting, until such time as the Capistrano Greenery Composting Operation is fully permitted and operational.

Proposed Project – Capistrano Greenery Composting Operation

Currently, the Prima Deshecha Landfill accepts approximately 100 TPD of PGM for beneficial reuse at the landfill, originating from incorporated cities in Orange County and the County unincorporated area. This material is grinded and screened at existing materials recovery facilities and composting operations, and then loaded into transfer trucks that carry approximately 20-ton payloads for delivery to the Prima Deshecha Landfill (i.e., approximately 5 two-way truck trips per day). This green waste material is predominately from residential sources within Orange County. For the proposed Capistrano Greenery Composting Operation, it is proposed that a maximum of 204 TPD of material be composted per day, which will include PGM, processed agricultural material and manure. Under existing regulations, green waste composting operations can receive up to 20 percent manure by volume. Therefore, the Capistrano Greenery will have the ability to accept up to 40 TPD of manure for composting, although it is anticipated that the operation will receive much lower daily tonnages of manure, possibly as little as 5 TPD of manure when the operation first opens to ensure that any odors from the manure are appropriately mitigated. The 100 TPD of PGM that is already being received at the landfill will be transferred over to the Capistrano Greenery Composting Operation.

The proposed Capistrano Greenery Composting Operation will have the ability to accept any plant material except food material and vegetative food material that is separated at the point of generation, contains no greater than 1.0 percent of physical contaminants by dry weight, and meets maximum contamination requirements. Green material includes but is not limited to tree and yard trimmings, untreated wood wastes, natural fiber product, wood waste from silviculture and manufacturing, and construction and demolition wood waste. The facility will also have the ability to accept agricultural material that is strictly of plant origin, which result from the production and processing of farm, ranch, agricultural, horticultural, aquacultural, silvicultural, floricultural, vermicultural, or vermicultural products, including orchard and vineyard prunings and crop residues. Arriving materials will already have been pre-processed (chipped and ground and contaminants removed) and will be consolidated at the material receiving area prior to deployment into windrows.

The Capistrano Greenery Composting Operation will be developed in a 18.6 acre area of the western portion of the Zone 1 landfill, as shown on **Figure 2**, immediately south of Stockpile C, in an area that is not currently being used for active landfilling. A crushed asphalt base will be placed over the entire area that will be used for PGM storage and for composting operations. The Capistrano Greenery Composting Operation will consist of a material recycling area (tipping floor), composting area, curing area, screening area, finished product load out area, storm water pond and parking. The Capistrano Greenery will accept a maximum of 204 tons per day (TPD) of PGM, agricultural material and manure, with a maximum on-site volume of materials of approximately 77,000 cubic yards on-site at any given time. Incoming materials will be brought to the Capistrano Greenery and placed in a designated unloading area. Any highly contaminated or highly odorous loads will be immediately transported to the active landfill area and disposed.

Since the PGM will have already been grinded and screened before being brought to Prima, the material will be transported by front-end loaders as soon as possible and placed into new compost piles. The layout of the compost piles is shown on **Figure 3**.

In the event of unusually high quantities of feedstock, the proposed staging area will have adequate area to stockpile the excess materials until they are able to be processed. Incoming pre-processed materials will typically be stockpiled on-site for a period of up to 72 hours. In the case of unusually high loads, the stockpile period can be extended up to a total of 120 hours, as needed, with the approval of the LEA. PGM, processed agricultural material and manure will be loaded into a dump truck by a front loader as soon as possible and delivered to the active composting area, where the material will then be placed into new compost piles by a front loader.

The feedstock materials will be formed into elongated piles/open windrows by front loaders for composting with the addition of moisture as needed by the on-site water truck. Newly constructed compost windrows will initially be covered with at least 6 inches of finished compost within 24 hours of formation as required by SCAQMD Rule 1133.3. At a maximum daily capacity of 204 TPD, there will be approximately 63 active compost windrow piles. The compost piles are shown on **Figure 3**. The active compost pile dimensions will be no greater than 12 feet in height, 20 feet wide and 100 feet in length. For the first 15 days after initial windrow formation, within six hours before turning, water will be applied as necessary to ensure the pile meets the wetness criteria described in Rule 1133.3. Active compost shall be maintained under aerobic conditions at a temperature of 55 degrees Celsius (131 degrees Fahrenheit) or higher for the Process to Further Reduce Pathogens (PFRP) period of 15-days or longer as specified in 14 CCR 17868.3(b)(3) utilizing wheeled loaders or a windrow turner. During the period when the compost is maintained at 55 degrees Celsius (131 degrees Fahrenheit) or higher, there shall be a minimum of five turnings of the windrow and the temperature of each compost pile will be taken every day. Feedstock materials will remain in stage one – active composting windrows for approximately 12 weeks on average, but may vary depending on ambient temperature, rainfall, feedstock, consistency and other factors. Once the initial composting is completed, the material will be moved into the stage two – curing piles, for approximately 8 weeks. At a maximum daily capacity of 204 TPD, there will be approximately 35 curing piles. After the curing process is complete, the proposed storage location for finished compost will contain a series of bunkers for temporary storage. Altogether, the composting process will take approximately 20 weeks, or five months.

The finished compost will be delivered to end users located within and outside of Orange County. At 204 TPD, and using 20-ton per load end dump trucks, the Capistrano Greenery will generate approximately 11 two-way new truck trips per day, with these trucks taking finished compost to end markets. In addition, there will be 6 additional new two-way truck trips associated with increasing the current amount of PGM accepted at the landfill from 100 TPD to 204 TPD of PGM, processed agricultural material and manure.

The Capistrano Greenery Composting Operation may use additives. Additives are materials that are mixed with feedstock or active compost to improve composting conditions or the finished product. Additives in the future may include but are not limited to materials such as diatomaceous earth, grape lees, fertilizers and urea. Additives do not include compost feedstock.

All additives must be approved by the RWQCB and LEA prior to their application. The application for the use of each additive shall include the type of additive, any analyses that are necessary, placement methods, and control of odors, vectors and other nuisances. The Capistrano Greenery Composting Operation may also use amendments. Amendments are materials added to stabilized or cured compost to provide attributes for certain compost products, such as product bulk, product nutrient value, product pH, and soils blend. Amendments may include but are not limited to lime, gypsum, worm castings, oyster shells, soil, rice hulls, cocoa bean hulls, and corn gluten. Amendments to not include septage, biosolids or compost feedstock.

Heavy equipment will include a windrow turner, two front-end loaders, a mobile screen, a water truck and a truck. The Capistrano Greenery operation will require three employees to operate all of the heavy equipment described above for building, turning, watering and monitoring the compost piles, and to perform other miscellaneous duties. Five full-time employees will be needed to provide sufficient staffing for days off, vacations, etc.

For open-windrow composting, the windrow turner will turn each active compost pile as needed. Composting operations require significant volumes of water to facilitate the composting process, to regulate temperatures and to prevent fires. Water will also be required for dust control. As the windrows are turned, water will be added to maintain optimum moisture content of 45-60% within the piles. The temperature of each compost pile will be taken and recorded each operating day. Capistrano Greenery employees will continuously monitor the active compost piles for odor generation, vectors and potential for fire generation.

A load checking program will be implemented for the composting operation. In addition, OCWR will implement an odor impact minimization plan for the Capistrano Greenery operation. Testing of finished compost (i.e., after the curing process is complete) for pathogens and metals will be performed in accordance with California Code of Regulations Title 14 requirements.

Vector control measures will be actively conducted during operations. The primary anticipated avian nuisance is seagulls. Types of vector nuisance include, but are not limited to: flies, rodents (i.e., mice, rats, squirrels, etc.) and other animals (i.e., coyotes, racoons, opossums, etc.). Fly propagation will be limited by the prompt deployment of feedstock into windrows and the periodic turning of the windrows. Other best management practices (BMPs) to address insect, bird, rodent and other animal vectors will be implemented as-needed. In the event that birds (primarily seagulls) become a nuisance, non-lethal noise-making devices will be utilized to startle and frighten birds away from the operations area. A qualified falconer may be contracted to use falconry as a means of bird control. In the event that flies, rodents or other animals are found to be a problem, the appropriate control and/or extermination measures would be implemented.

The Capistrano Greenery will be designed and operated to meet all Orange County Fire Authority (OCFA) fire flow and fire safety requirements. This will include but not be limited to the spacing between windrows; the number, width and length of fire lanes; the distance of the windrows and material storage areas to flammable vegetation, a water line and fire hydrants.

The landfill operation currently uses both potable and reclaimed water. Landfill operations primarily uses reclaimed water. Current reclaimed water usage for landfill operations is approximately 50,000 gallons per day. Potable water is used for the landfill administrative building and crew quarters and for habitat mitigation areas. The bulk of current potable water use is for the habitat mitigation areas. Current potable water consumption is approximately 133,000 gallons per day. There is no existing water source in the immediate area of the proposed composting facility location on the landfill. There is an existing City of San Juan Capistrano Water District 24-inch domestic potable water main located along the landfill ridgeline, approximately 600 feet west of the proposed composting facility location. A minimum 8-inch waterline would need to be constructed to bring water from the 24-inch water main to the proposed composting facility location. The new waterline would connect to a water distribution system within the composting area to provide operations water throughout the facility. It is estimated that the composting operation would require a maximum of approximately 80,000 gallons of potable water per day for moistening the compost piles and for dust control. Since the landfill operation uses approximately 133,000 gallons of potable water per day for the administration building/crew quarters and for the habitat mitigation areas; altogether, the composting operation and these landfill uses will use approximately 213,000 gallons of potable water per day.

To provide the required fire flow to the composting operation, the minimum fire flow shall be no less than 500 gallons per minute (GPM) @ 20 PSIR for a minimum of two (2) hour duration. Based on conversations between Tetra Tech BAS (i.e., environmental engineering consultant under contract with OCWR) and the City of San Juan Capistrano Water District, there is sufficient capacity in the 24-inch waterline to provide both the required 500 GPM fire flow and the necessary operations water, once the minimum 8-inch new waterline is constructed that will connect the existing 24-inch waterline to the composting operation. Fire hydrants, with a 2.5-inch outlet, will be located around the perimeter of the composting operation at a spacing of approximately 1,000 feet. Fire hydrants shall be set back a minimum of 20 feet from any pile.

All compost pile areas will be surrounded by 20-foot wide fire access lanes. Perimeter roads will be a minimum width of 20 feet and expand to a minimum width of 40 feet at hydrant locations to accommodate fire response.

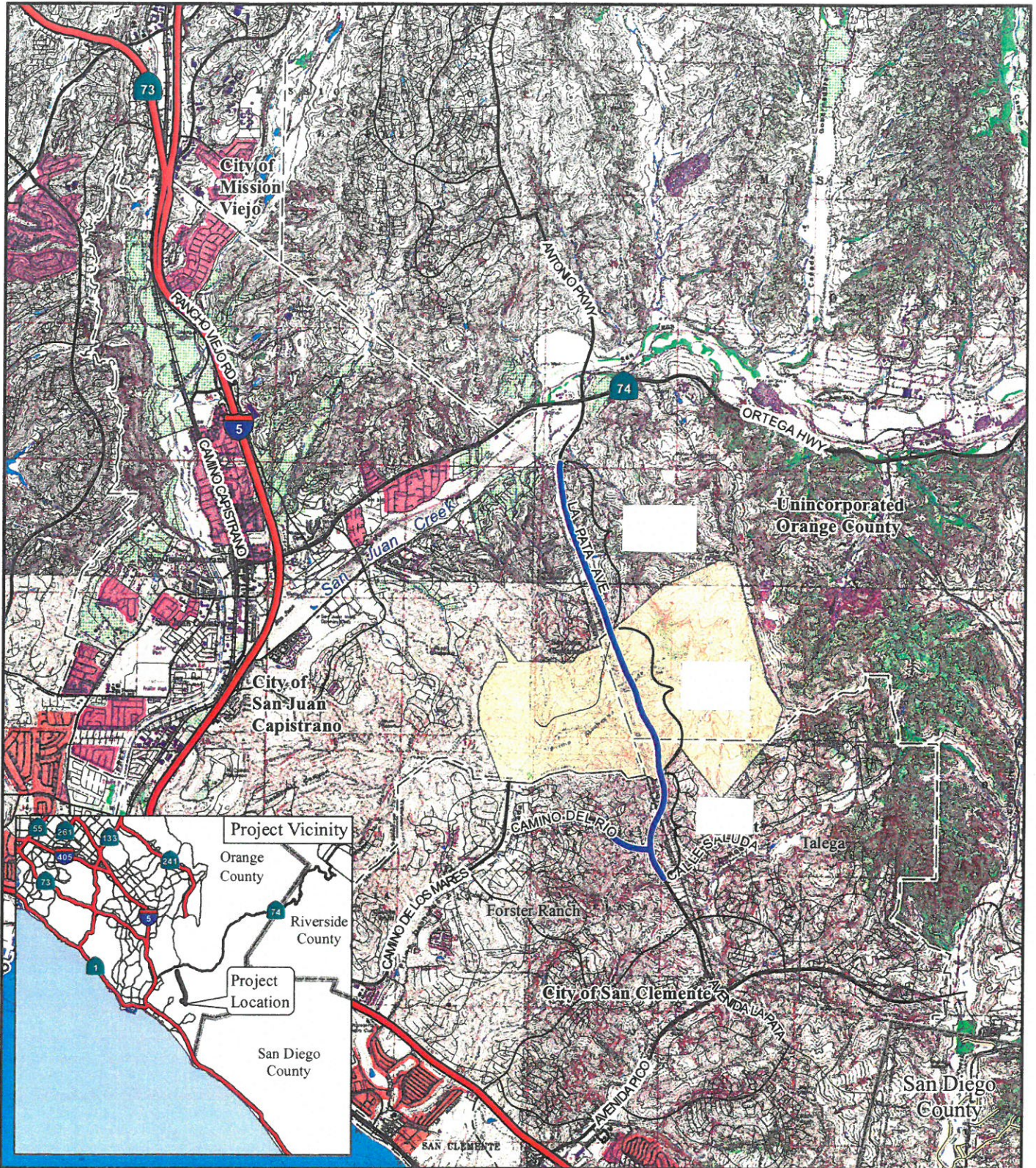
Methane generated by the underlying landfill area will not result in surface fires at the composting area through the effective maintenance and monitoring of the landfill gas collection system.

Crushed asphalt and crushed concrete material will be placed over the entire landfill area where the composting will occur so that there will be no impacts to the underlying waste prism. The design of the proposed composting operation shall account for the underlying refuse and comply with any landfill-related regulations.

For the Capistrano Greenery Composting Operation, the site will be graded such that the center of each compost pile will be located on a high point and the compost deck will be graded at 2 percent toward the access lanes which will be graded at 2 percent to the south, conveying flows to an approximate 7.85-acre feet lined composting operation pond, that will be constructed to

capture storm water runoff and leachate from the composting operation. The location of the lined composting operations pond is shown on **Figure 4**. The composting operation lined pond dimensions were determined based on National Oceanic and Atmospheric Administration (NOAA) precipitation data based for a 25-year, 24-hour storm event (per Order WQ 2015-0121-DWQ, General Waste Discharge Requirements for Composting Operations) and the appropriate tributary boundary of the compost area. The compost operating area will require perimeter berms between 2-3 feet high, depending on the location, to convey flows from a 25-year, 24-hour storm to the lined pond. In addition, in accordance with standard engineering practices, the pond will be designed to accommodate an additional two feet of freeboard above the water level of the design storm event to accommodate waves and splashing from water flows. OCWR will fully contain all surface water runoff and leachate resulting from the composting operation. Collected surface water runoff and leachate will be collected on-site from the composting operation lined pond, and reused with the composting operation. Collected surface water runoff and leachate will not be discharged to the landfill storm water drainage system.

For the acceptance of PGM, processed agricultural material and manure, the Capistrano Greenery Composting Operation will have the same hours of operation as the Prima Deshecha Landfill – Monday through Saturday, 7 AM – 5 PM. No incoming materials will be accepted on Sundays and the six major holidays. The Capistrano Greenery Composting Operation will be open on Sundays for composting operations only, primarily to monitor the compost piles. The Capistrano Greenery will not be open to the public. OCWR shall maintain accurate records of various categories of waste materials processed at the Capistrano Greenery Composting Operation, including the residual waste that will be disposed at the Prima Deshecha Landfill, as required under Title 14 Disposal Reporting System regulations.



LEGEND

FIGURE 1



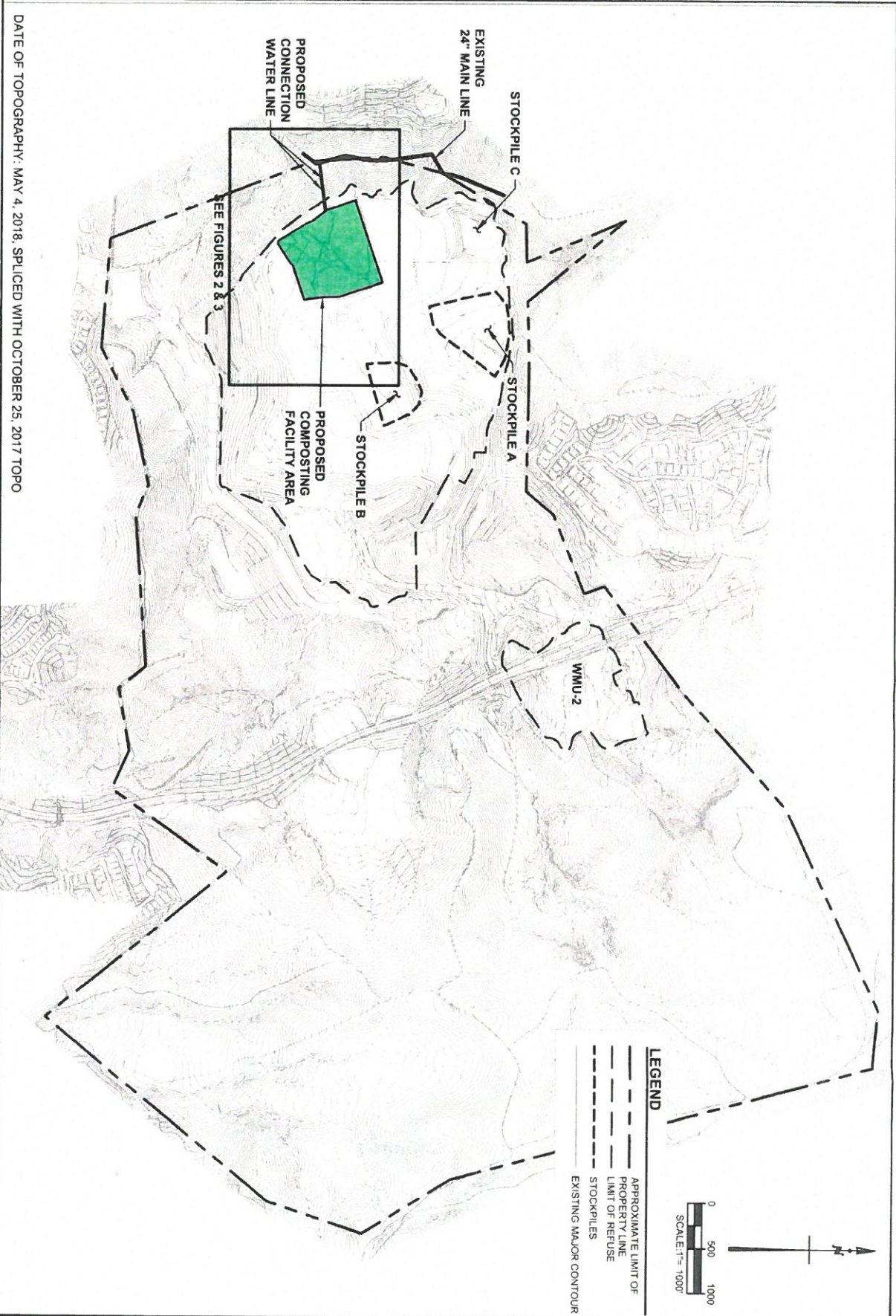
□ Prima Deshecha Landfill Boundary



Project Location and Vicinity

SOURCE: ESRI (2008); TBM (2008); RBF (4/21/09); USGS 7.5' Quad. (San Juan Capistrano, 1981; San Clemente, 1975; Canada Gobernadora, 1988; Dana Point, 1975)

I:\ORG1101\GIS\ProjectLocationAndVicinity.mxd (6/21/2013)

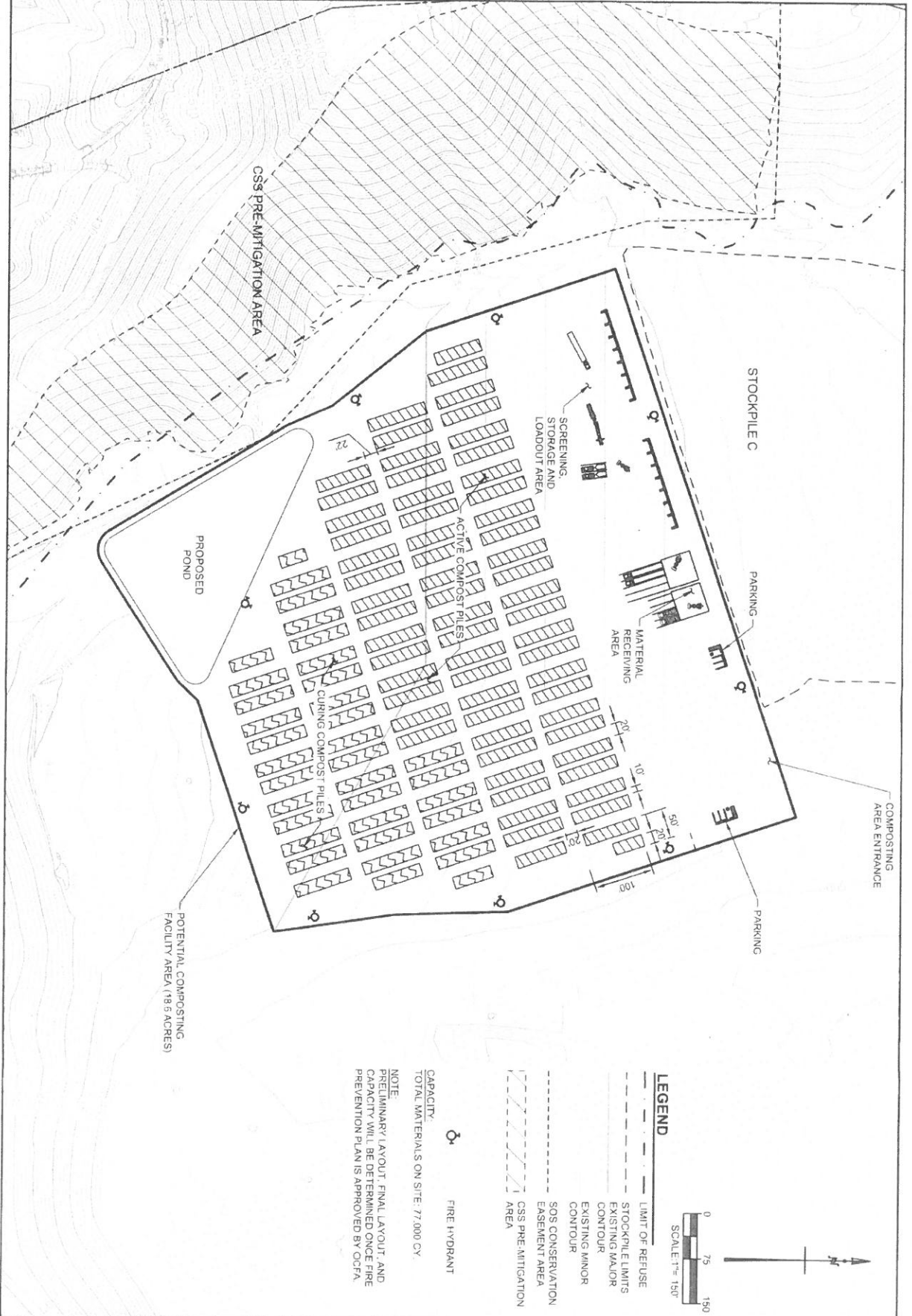


DATE OF TOPOGRAPHY: MAY 4, 2018; SPLICED WITH OCTOBER 25, 2017 TOPO

LEGEND

- APPROXIMATE LIMIT OF PROPERTY LINE
- LIMIT OF REFUSE STOCKPILES
- EXISTING MAJOR CONTOUR

<p>FIGURE 2</p>	<p>CAPISTRANO GREENERY @ PRIMA DESHECHA LANDFILL</p>		<p>OC WASTE AND RECYCLING</p>		<p>TETRA TECH BAS 1360 Valley Vista Drive, Diamond Bar, CA 91765 TEL 909.860.7777 FAX 909.860.8017</p>		
	<p>OPEN WINDROW CONCEPTUAL COMPOSTING FACILITY OVERVIEW SITE PLAN</p>		DESIGNED BY	CL		DATE	08-2018
	DRAWN BY	JLV	PROJ NO	2015-0180			
	CHECKED BY	CL					
	APPROVED BY	CHM					



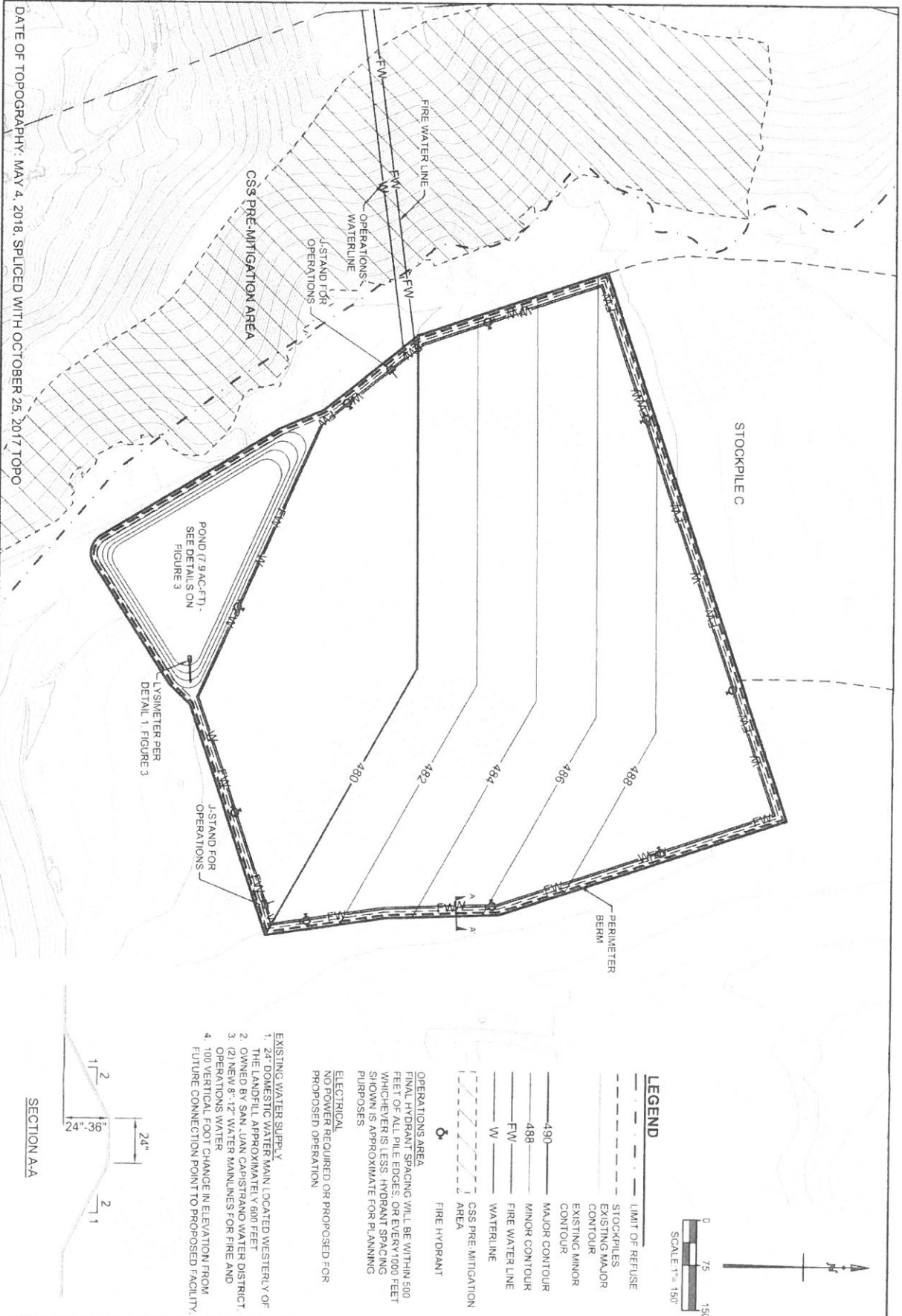
CAPACITY:
 TOTAL MATERIALS ON SITE: 77,000 CY
NOTE:
 PRELIMINARY LAYOUT. FINAL LAYOUT AND CAPACITY WILL BE DETERMINED ONCE FIRE PREVENTION PLAN IS APPROVED BY OCPA

- FIRE HYDRANT
 --- LIMIT OF REFUSE
 --- STOCKPILE LIMITS
 --- EXISTING MAJOR CONTOUR
 --- EXISTING MINOR CONTOUR
 --- SOS CONSERVATION EASEMENT AREA
 --- CSS PRE-MITIGATION AREA

LEGEND

0 75 150
 SCALE 1" = 150'


FIGURE 3	CAPISTRANO GREENERY @ PRIMA DESHECHA LANDFILL		OC WASTE AND RECYCLING	
	DESIGNED BY:	VNY	DATE:	05-2019
	DRAWN BY:	NYCP	PROJ. NO.:	2019-0180
	CHECKED BY:	PW	APPROVED BY:	GES
OPEN WINDROW CONCEPTUAL COMPOSTING FACILITY SITE PLAN		TETRA TECH BAS 1360 Valley Vista Drive, Diamond Bar, CA 91765 TEL 909.860.7777 FAX 909.860.8017		



DATE OF TOPOGRAPHY: MAY 4, 2018. SPLICED WITH OCTOBER 25, 2017 TOPO

FIGURE 4	CAPISTRANO GREENERY @ PRIMA DESHECHA LANDFILL		OC WASTE AND RECYCLING	
	DESIGNED BY	C.L.	DATE	10.2018
	DRAWN BY	N.G.P.	PROJ. NO.	2015.0180
	CHECKED BY	C.L.	APPROVED BY	C.H.M.

TETRA TECH BAS
 1360 Valley Vista Drive, Diamond Bar, CA 91765
 TEL 909.860.7777 FAX 909.860.8017



Appendix B
AERMOD Source Parameters

AERMOD View - Source Parameters
MS Excel - Lakes Format: Version 3.0
Supported Source Types: Point, Rectangular Area, Circular Area, Polygon Area, Volume, Open Pit, Line Volume, Line Area

Parameters	Units	Description
Type		POINT, AREA, AREA_CIRC, AREA_POLY, VOLUME, OPEN_PIT, LINE, LINE_VOLUME, LINE_AREA, BUOYLINE
ID		Source ID up to 12 characters
Desc		Optional description
SourceID_Prefix		Text prefix up to 4 characters long for generated LINE_VOLUME and LINE_AREA sources
Base_Elev	[m]	Source base elevation above mean sea level
Height	[m]	Release height above ground
Diam	[m]	Inner stack diameter (POINT) or circular area radius (AREA_CIRC)
Exit_Vel	[m/s]	Exit velocity (POINT only)
Exit_Temp	[K]	Exit temperature (POINT only)
Release_Type		VERTICAL, HORIZONTAL, CAPPED (POINT only) - HORIZONTAL and CAPPED are non-default beta options
SigmaY	[m]	Initial sigma Y (VOLUME only)
SigmaZ	[m]	Initial sigma Z (AREA, AREA_CIRC, AREA_POLY, VOLUME, LINE, and LINE_AREA only; optional for AREA, AREA_CIRC, AREA_POLY, and LINE)
Length_X	[m]	X side length (AREA, VOLUME, OPEN PIT, and LINE_AREA only; optional for VOLUME, will be used to calculate SigmaY)
Length_Y	[m]	Y side length (AREA and OPEN PIT only); width for LINE sources
Rotation_Angle	[degrees]	Clockwise rotation from North of Y side (AREA and OPEN PIT only)
Pit_Volume	[m^3]	Volume of the open pit (OPEN PIT only)
Emission_Rate	[g/s or g/s/m2]	Emission rate (g/s for POINT, VOLUME, and LINE_VOLUME; g/s/m2 for AREA, AREA_CIRC, AREA_POLY, OPENPIT, LINE, and LINE_AREA)
Configuration		LINE_VOLUME configuration: Separated, Adjacent or Separated2W
LineVolumeHeight	[m]	Plume Height or Building Height for LINE_VOLUME source
PlumeWidth	[m]	Plume width for LINE_VOLUME source
LineVolumeType		LINE_VOLUME type: None, Surface-Based, Elevated, Elevated Building
LineArea_Ratio1		Ratio 1 for LINE_AREA sources
Line_FPRIMEL =	[m**4/s**3]	Average buoyance parameter (BUOYLINE source only)
Line_L =	[m]	Building Length (BUOYLINE source only)
Line_HB =	[m]	Building Height (BUOYLINE source only)
Line_WB =	[m]	Building Width (BUOYLINE source only)
Line_WM =	[m]	Line Source Width (BUOYLINE source only)
Line_DX =	[m]	Separation between buildings (BUOYLINE source only)
Num_Coords		Number of coordinate pairs (POINT, AREA, AREA_CIRC, VOLUME, OPENPIT = 1; AREA_POLY >= 3; LINE = 2; LINE_AREA, LINE_VOLUME >= 2)
X1	[m]	X coordinate of source location [m]
Y1	[m]	Y coordinate of source location [m]
X2	[m]	Secondary X coordinate of source location [m] (AREA_POLY, LINE, LINE_VOLUME, LINE_AREA, BUOYLINE sources only)
Y2	[m]	Secondary Y coordinate of source location [m] (AREA_POLY, LINE, LINE_VOLUME, LINE_AREA, BUOYLINE sources only)
X3	[m]	Additional X coordinate of source location [m] (AREA_POLY, LINE_VOLUME, LINE_AREA only)
Y3	[m]	Additional Y coordinate of source location [m] (AREA_POLY, LINE_VOLUME, LINE_AREA only)
X4	[m]	Additional X coordinate of source location [m] (AREA_POLY, LINE_VOLUME, LINE_AREA only)
Y4	[m]	Additional Y coordinate of source location [m] (AREA_POLY, LINE_VOLUME, LINE_AREA only)
Base_Elev_m	[m]	Base Elevation for LINE_VOLUME, LINE_AREA Nodes
Rel_Height_m	[m]	Release height for LINE_VOLUME, LINE_AREA Nodes

NOTE: you may keep adding additional coordinate pairs for an AREA_POLY or LINE_VOLUME sources, be sure to add the headers as well (eg. X5, Y5, etc)

Type	ID	Desc	SourceID_Prefix	Base_Elev	Height	Length_X	Length_Y	Rotation_Angle	Emission_Rate	Num_Coords	X1	Y1	X2	Y2
				[m]	[m]	[m]	[m]	[deg]			[m]	[m]	[m]	[m]
LINE	1	Line Source 1 (1-2)		176.68	1.5			2.5	0.00696	2	442804.00	3706243.00	442789.00	3706236.00
LINE	2	Line Source 2 (2-3)		176.24	1.5			2.5	0.00696	2	442789.00	3706236.00	442776.00	3706217.00
LINE	3	Line Source 3 (3-4)		175.5	1.5			2.5	0.00696	2	442776.00	3706217.00	442764.00	3706186.00
LINE	4	Line Source 4 (4-5)		174.86	1.5			2.5	0.00696	2	442764.00	3706186.00	442729.00	3706139.00
LINE	5	Line Source 5 (5-6)		174.29	1.5			2.5	0.00696	2	442729.00	3706139.00	442695.00	3706099.00
LINE	6	Line Source 6 (6-7)		174.22	1.5			2.5	0.00696	2	442695.00	3706099.00	442662.00	3706045.00
LINE	7	Line Source 7 (7-8)		172.85	1.5			2.5	0.00696	2	442662.00	3706045.00	442660.00	3706030.00
LINE	8	Line Source 8 (8-9)		172.39	1.5			2.5	0.00696	2	442660.00	3706030.00	442667.00	370615.00
LINE	9	Line Source 9 (9-10)		170.77	1.5			2.5	0.00696	2	442667.00	370615.00	442695.00	3705982.00
LINE	10	Line Source 10 (10-11)		167.13	1.5			2.5	0.00696	2	442695.00	3705982.00	442712.00	3705957.00
LINE	11	Line Source 11 (11-12)		164.6	1.5			2.5	0.00696	2	442712.00	3705957.00	442712.00	3705927.00
LINE	12	Line Source 12 (12-13)		161.68	1.5			2.5	0.00696	2	442712.00	3705927.00	442694.00	3705842.00
LINE	13	Line Source 13 (13-14)		154.02	1.5			2.5	0.00696	2	442694.00	3705842.00	442690.00	3705786.00
LINE	14	Line Source 14 (14-15)		149.63	1.5			2.5	0.00696	2	442690.00	3705786.00	442665.00	3705745.00
LINE	15	Line Source 15 (15-16)		147.38	1.5			2.5	0.00696	2	442665.00	3705745.00	442653.00	3705723.00
LINE	16	Line Source 16 (16-17)		153.68	1.5			2.5	0.00696	2	442653.00	3705723.00	442631.00	3705710.00

Type	ID	Desc	SourceID_Prefix	Base Elev [m]	Height [m]	Length_X [m]	Length_Y [m]	Rotation_Angle [deg]	Emission_Rate	Num_Coords	X1 [m]	Y1 [m]	X2 [m]	Y2 [m]
LINE	17	Line Source 17 (17-18)		162.97	1.5			2.5	0.00696	2	442631.00	3705710.00	442606.00	3705710.00
LINE	18	Line Source 18 (18-19)		168.22	1.5			2.5	0.00696	2	442606.00	3705710.00	442473.00	3705730.00
LINE	19	Line Source 19 (19-20)		175.91	1.5			2.5	0.00696	2	442473.00	3705730.00	442394.00	3705773.00
LINE	20	Line Source 20 (20-21)		181.41	1.5			2.5	0.00696	2	442394.00	3705773.00	442339.00	3705798.00
LINE	21	Line Source 21 (21-22)		170.58	1.5			2.5	0.00696	2	442339.00	3705798.00	442294.00	3705823.00
LINE	22	Line Source 22 (22-23)		172.02	1.5			2.5	0.00696	2	442294.00	3705823.00	442256.00	3705838.00
LINE	23	Line Source 23 (23-24)		162.07	1.5			2.5	0.00696	2	442256.00	3705838.00	442141.00	3705845.00
LINE	24	Line Source 24 (24-25)		172.65	1.5			2.5	0.00696	2	442141.00	3705845.00	442099.00	3705861.00
LINE	25	Line Source 25 (25-26)		175.1	1.5			2.5	0.00696	2	442099.00	3705861.00	442026.00	3705869.00
LINE	26	Line Source 26 (26-27)		171.34	1.5			2.5	0.00696	2	442026.00	3705869.00	441991.00	3705860.00
LINE	27	Line Source 27 (27-28)		171.54	1.5			2.5	0.00696	2	441991.00	3705860.00	441959.00	3705841.00
LINE	28	Line Source 28 (28-29)		171.24	1.5			2.5	0.00696	2	441959.00	3705841.00	441813.00	3705639.00
LINE	29	Line Source 29 (29-30)		162.44	1.5			2.5	0.00696	2	441813.00	3705639.00	441798.00	3705625.00
LINE	30	Line Source 30 (30-31)		160.95	1.5			2.5	0.00696	2	441798.00	3705625.00	441775.00	3705613.00
LINE	31	Line Source 31 (31-32)		160.5	1.5			2.5	0.00696	2	441775.00	3705613.00	441676.00	3705602.00
LINE	32	Line Source 32 (32-33)		155.06	1.5			2.5	0.00696	2	441676.00	3705602.00	441649.00	3705583.00
LINE	33	Line Source 33 (33-34)		153.79	1.5			2.5	0.00696	2	441649.00	3705583.00	441607.00	3705463.00
LINE	34	Line Source 34 (34-35)		151.77	1.5			2.5	0.00696	2	441607.00	3705463.00	441617.00	3705415.00
LINE	35	Line Source 35 (35-36)		150.07	1.5			2.5	0.00696	2	441617.00	3705415.00	441605.00	3705396.00
LINE	36	Line Source 36 (36-37)		149.48	1.5			2.5	0.00696	2	441605.00	3705396.00	441423.00	3705336.00
LINE	37	Line Source 37 (37-38)		148.05	1.5			2.5	0.00696	2	441423.00	3705336.00	441404.00	3705345.00
LINE	38	Line Source 38 (38-39)		148.6	1.5			2.5	0.00696	2	441404.00	3705345.00	441399.00	3705360.00
LINE	39	Line Source 39 (14-40)		149.63	1.5			2.5	0.00696	2	442690.00	3705786.00	442716.00	3705870.00
LINE	40	Line Source 40 (40-41)		155.64	1.5			2.5	0.00696	2	442716.00	3705870.00	442734.00	3705926.00
LINE	41	Line Source 41 (41-42)		159.73	1.5			2.5	0.00696	2	442734.00	3705926.00	442741.00	3705974.00
LINE	42	Line Source 42 (42-43)		162.01	1.5			2.5	0.00696	2	442741.00	3705974.00	442767.00	3706068.00
LINE	43	Line Source 43 (43-44)		167.46	1.5			2.5	0.00696	2	442767.00	3706068.00	442797.00	3706172.00
LINE	44	Line Source 44 (44-45)		173.71	1.5			2.5	0.00696	2	442797.00	3706172.00	442801.00	3706200.00
LINE	45	Line Source 45 (45-1)		175.55	1.5			2.5	0.00696	2	442801.00	3706200.00	442804.00	3706243.00
AREA	46	Pile 1		146.82	3.5	6.096	30.48	-18.6	0.168	1	441414.40	3705277.70		
AREA	47	Pile 2		146.53	3.5	6.096	30.48	-18.6	0.264	1	441423.10	3705280.60		
AREA	48	Pile 3		146.42	3.5	6.096	30.48	-18.6	0.264	1	441434.70	3705284.50		
AREA	49	Pile 4		146.47	3.5	6.096	30.48	-18.6	0.264	1	441443.30	3705287.40		
AREA	50	Pile 5		146.8	3.5	6.096	30.48	-18.6	0.264	1	441454.90	3705291.30		
AREA	51	Pile 6		147.12	3.5	6.096	30.48	-18.6	0.264	1	441463.60	3705294.20		
AREA	52	Pile 7		147.53	3.5	6.096	30.48	-18.6	0.264	1	441475.10	3705298.10		
AREA	53	Pile 8		147.73	3.5	6.096	30.48	-18.6	0.264	1	441483.80	3705301.00		
AREA	54	Pile 9		147.88	3.5	6.096	30.48	-18.6	0.264	1	441495.30	3705304.90		
AREA	55	Pile 10		147.97	3.5	6.096	30.48	-18.6	0.264	1	441504.00	3705307.30		
AREA	56	Pile 11		147.96	3.5	6.096	30.48	-18.6	0.264	1	441515.60	3705311.70		
AREA	57	Pile 12		148.19	3.5	6.096	30.48	-18.6	0.264	1	441524.20	3705314.60		
AREA	58	Pile 13		148.39	3.5	6.096	30.48	-18.6	0.264	1	441535.80	3705318.50		
AREA	59	Pile 14		148.44	3.5	6.096	30.48	-18.6	0.264	1	441544.40	3705321.40		
AREA	60	Pile 15		148.53	3.5	6.096	30.48	-18.6	0.264	1	441556.00	3705325.30		
AREA	61	Pile 16		148.59	3.5	6.096	30.48	-18.6	0.264	1	441564.70	3705328.20		
AREA	62	Pile 17		148.62	3.5	6.096	30.48	-18.6	0.264	1	441576.20	3705332.10		
AREA	63	Pile 18		148.59	3.5	6.096	30.48	-18.6	0.264	1	441584.90	3705335.00		
AREA	64	Pile 19		148.48	3.5	6.096	30.48	-18.6	0.264	1	441596.40	3705338.90		
AREA	65	Pile 20		148.43	3.5	6.096	30.48	-18.6	0.264	1	441605.10	3705341.90		
AREA	66	Pile 21		148.43	3.5	6.096	30.48	-18.6	0.264	1	441616.70	3705345.70		
AREA	67	Pile 22		148.32	3.5	6.096	30.48	-18.6	0.264	1	441625.30	3705348.70		
AREA	68	Pile 23		148.31	3.5	6.096	30.48	-18.6	0.264	1	441636.90	3705352.50		
AREA	69	Pile 24		148.4	3.5	6.096	30.48	-18.6	0.264	1	441645.50	3705355.50		
AREA	70	Pile 25		148.54	3.5	6.096	30.48	-18.6	0.264	1	441657.10	3705359.40		
AREA	71	Pile 26		148.71	3.5	6.096	30.48	-18.6	0.264	1	441665.80	3705362.30		
AREA	72	Pile 27		145.96	3.5	6.096	30.48	-18.6	0.168	1	441446.20	3705250.10		
AREA	73	Pile 28		145.8	3.5	6.096	30.48	-18.6	0.264	1	441454.90	3705253.00		
AREA	74	Pile 29		145.65	3.5	6.096	30.48	-18.6	0.264	1	441466.40	3705256.90		
AREA	75	Pile 30		145.6	3.5	6.096	30.48	-18.6	0.264	1	441475.10	3705259.80		
AREA	76	Pile 31		145.79	3.5	6.096	30.48	-18.6	0.264	1	441486.70	3705263.70		
AREA	77	Pile 32		146.1	3.5	6.096	30.48	-18.6	0.264	1	441495.30	3705266.60		
AREA	78	Pile 33		146.72	3.5	6.096	30.48	-18.6	0.264	1	441506.90	3705270.50		
AREA	79	Pile 34		146.75	3.5	6.096	30.48	-18.6	0.264	1	441515.50	3705273.40		
AREA	80	Pile 35		146.68	3.5	6.096	30.48	-18.6	0.264	1	441526.90	3705277.40		

Type	ID	Desc	SourceID_Prefix	Base Elev [m]	Height [m]	Length_X [m]	Length_Y [m]	Rotation_Angle [deg]	Emission_Rate	Num_Coords	X1 [m]	Y1 [m]	X2 [m]	Y2 [m]
AREA	81	Pile 36		146.79	3.5	6.096	30.48	-18.6	0.0264	1	441535.80	3705280.20		
AREA	82	Pile 37		147.05	3.5	6.096	30.48	-18.6	0.0264	1	441547.30	3705284.10		
AREA	83	Pile 38		147.18	3.5	6.096	30.48	-18.6	0.0264	1	441556.00	3705287.00		
AREA	84	Pile 39		147.36	3.5	6.096	30.48	-18.6	0.0264	1	441567.50	3705290.90		
AREA	85	Pile 40		147.56	3.5	6.096	30.48	-18.6	0.0264	1	441576.20	3705293.80		
AREA	86	Pile 41		147.87	3.5	6.096	30.48	-18.6	0.0264	1	441587.80	3705297.70		
AREA	87	Pile 42		147.98	3.5	6.096	30.48	-18.6	0.0264	1	441596.40	3705300.60		
AREA	88	Pile 43		147.83	3.5	6.096	30.48	-18.6	0.0264	1	441608.00	3705304.50		
AREA	89	Pile 44		147.56	3.5	6.096	30.48	-18.6	0.0264	1	441616.70	3705307.40		
AREA	90	Pile 45		147.35	3.5	6.096	30.48	-18.6	0.0264	1	441628.20	3705311.10		
AREA	91	Pile 46		147.39	3.5	6.096	30.48	-18.6	0.0264	1	441636.90	3705314.20		
AREA	92	Pile 47		147.46	3.5	6.096	30.48	-18.6	0.0264	1	441648.40	3705318.10		
AREA	93	Pile 48		147.59	3.5	6.096	30.48	-18.6	0.0264	1	441657.10	3705321.00		
AREA	94	Pile 49		147.77	3.5	6.096	30.48	-18.6	0.0264	1	441668.70	3705324.90		
AREA	95	Pile 50		145.17	3.5	6.096	30.48	-18.6	0.168	1	441478.30	3705222.20		
AREA	96	Pile 51		145.3	3.5	6.096	30.48	-18.6	0.0264	1	441486.90	3705225.10		
AREA	97	Pile 52		144.72	3.5	6.096	30.48	-18.6	0.0264	1	441498.50	3705229.00		
AREA	98	Pile 53		144.62	3.5	6.096	30.48	-18.6	0.0264	1	441507.20	3705231.90		
AREA	99	Pile 54		144.9	3.5	6.096	30.48	-18.6	0.0264	1	441518.70	3705235.80		
AREA	100	Pile 55		144.97	3.5	6.096	30.48	-18.6	0.0264	1	441527.40	3705238.70		
AREA	101	Pile 56		144.86	3.5	6.096	30.48	-18.6	0.0264	1	441538.90	3705242.60		
AREA	102	Pile 57		145.14	3.5	6.096	30.48	-18.6	0.0264	1	441547.60	3705245.50		
AREA	103	Pile 58		145.5	3.5	6.096	30.48	-18.6	0.0264	1	441559.20	3705249.40		
AREA	104	Pile 59		145.87	3.5	6.096	30.48	-18.6	0.0264	1	441567.80	3705252.30		
AREA	105	Pile 60		146.41	3.5	6.096	30.48	-18.6	0.0264	1	441579.40	3705256.20		
AREA	106	Pile 61		146.73	3.5	6.096	30.48	-18.6	0.0264	1	441588.00	3705259.10		
AREA	107	Pile 62		147.01	3.5	6.096	30.48	-18.6	0.0264	1	441598.40	3705263.10		
AREA	108	Pile 63		147.04	3.5	6.096	30.48	-18.6	0.168	1	441608.30	3705265.90		
AREA	109	Pile 64		146.94	3.5	6.096	30.48	-18.6	0.0264	1	441619.80	3705269.80		
AREA	110	Pile 65		146.83	3.5	6.096	30.48	-18.6	0.0264	1	441628.50	3705272.70		
AREA	111	Pile 66		146.8	3.5	6.096	30.48	-18.6	0.0264	1	441640.00	3705276.60		
AREA	112	Pile 67		146.87	3.5	6.096	30.48	-18.6	0.0264	1	441648.70	3705279.50		
AREA	113	Pile 68		146.78	3.5	6.096	30.48	-18.6	0.0264	1	441660.30	3705283.40		
AREA	114	Pile 69		146.86	3.5	6.096	30.48	-18.6	0.0264	1	441668.90	3705286.30		
AREA	115	Pile 70		147.06	3.5	6.096	30.48	-18.6	0.0264	1	441680.50	3705290.20		
AREA	116	Pile 71		142.96	3.5	6.096	30.48	-18.6	0.0264	1	441518.80	3705197.30		
AREA	117	Pile 72		143.73	3.5	6.096	30.48	-18.6	0.0264	1	441530.30	3705201.20		
AREA	118	Pile 73		143.98	3.5	6.096	30.48	-18.6	0.0264	1	441539.00	3705204.10		
AREA	119	Pile 74		143.94	3.5	6.096	30.48	-18.6	0.0264	1	441550.60	3705208.00		
AREA	120	Pile 75		143.72	3.5	6.096	30.48	-18.6	0.0264	1	441559.20	3705210.90		
AREA	121	Pile 76		143.86	3.5	6.096	30.48	-18.6	0.0264	1	441570.80	3705214.80		
AREA	122	Pile 77		144.17	3.5	6.096	30.48	-18.6	0.0264	1	441579.40	3705217.70		
AREA	123	Pile 78		144.82	3.5	6.096	30.48	-18.6	0.0264	1	441591.00	3705221.60		
AREA	124	Pile 79		145.22	3.5	6.096	30.48	-18.6	0.0264	1	441599.70	3705224.50		
AREA	125	Pile 80		145.35	3.5	6.096	30.48	-18.6	0.0264	1	441611.20	3705228.40		
AREA	126	Pile 81		145.37	3.5	6.096	30.48	-18.6	0.0264	1	441619.90	3705231.30		
AREA	127	Pile 82		145.45	3.5	6.096	30.48	-18.6	0.0264	1	441631.40	3705235.20		
AREA	128	Pile 83		145.6	3.5	6.096	30.48	-18.6	0.0264	1	441640.10	3705238.10		
AREA	129	Pile 84		145.85	3.5	6.096	30.48	-18.6	0.0264	1	441651.70	3705242.00		
AREA	130	Pile 85		146.06	3.5	6.096	30.48	-18.6	0.0264	1	441660.30	3705244.90		
AREA	131	Pile 86		145.96	3.5	6.096	30.48	-18.6	0.0264	1	441671.90	3705248.80		
AREA	132	Pile 87		145.94	3.5	6.096	30.48	-18.6	0.0264	1	441680.60	3705251.70		
AREA	133	Pile 88		142.38	3.5	6.096	30.48	-18.6	0.0264	1	441571.00	3705176.10		
AREA	134	Pile 89		142.54	3.5	6.096	30.48	-18.6	0.0264	1	441582.50	3705180.00		
AREA	135	Pile 90		142.54	3.5	6.096	30.48	-18.6	0.0264	1	441591.20	3705182.90		
AREA	136	Pile 91		142.59	3.5	6.096	30.48	-18.6	0.0264	1	441602.70	3705186.80		
AREA	137	Pile 92		142.83	3.5	6.096	30.48	-18.6	0.0264	1	441611.40	3705189.70		
AREA	138	Pile 93		142.95	3.5	6.096	30.48	-18.6	0.0264	1	441623.00	3705193.60		
AREA	139	Pile 94		143.02	3.5	6.096	30.48	-18.6	0.0264	1	441631.60	3705196.50		
AREA	140	Pile 95		143.41	3.5	6.096	30.48	-18.6	0.0264	1	441643.20	3705200.40		
AREA	141	Pile 96		143.52	3.5	6.096	30.48	-18.6	0.0264	1	441651.90	3705203.30		
AREA	142	Pile 97		143.81	3.5	6.096	30.48	-18.6	0.0264	1	441663.40	3705207.20		
AREA	143	Pile 98		144.06	3.5	6.096	30.48	-18.6	0.0264	1	441672.10	3705210.10		
AREA	144	Pile 99		144.55	3.5	6.096	30.48	-18.6	0.0264	1	441683.60	3705214.00		

Type	ID	Desc	SourceID_Prefix	Base_Elev [m]	Height [m]	Length_X [m]	Length_Y [m]	Rotation_Angle [deg]	Emission_Rate	Num_Coords	X1 [m]	Y1 [m]	X2 [m]	Y2 [m]
AREA	145	Receiving Area		149.58	1.5	32	32	-18.6	0.0084	1	441521.70	3705384.70		
AREA	146	Screening Storage Loadout		148.6	1.5	116	36	-18.6	0.012	1	441401.10	3705338.10		
AREA_POLY	147	Pond		144.95	0				0.000312	23	441451.20	3705212.20	441450.40	3705214.60

Additional Pond Coordinates:

X3, Y3 [m]	441451.00	3705217.50
X4, Y4 [m]	441451.80	3705219.70
X5, Y5 [m]	441453.40	3705221.60
X6, Y6 [m]	441456.40	3705222.70
X7, Y7 [m]	441459.70	3705222.80
X8, Y8 [m]	441461.80	3705221.90
X9, Y9 [m]	441577.00	3705170.20
X10, Y10 [m]	441579.20	3705168.80
X11, Y11 [m]	441580.60	3705166.40
X12, Y12 [m]	441581.10	3705164.20
X13, Y13 [m]	441581.20	3705162.00
X14, Y14 [m]	441580.40	3705159.60
X15, Y15 [m]	441579.20	3705157.90
X16, Y16 [m]	441576.80	3705156.10
X17, Y17 [m]	441517.20	3705118.10
X18, Y18 [m]	441515.50	3705117.10
X19, Y19 [m]	441513.00	3705116.80
X20, Y20 [m]	441510.90	3705117.10
X21, Y21 [m]	441509.20	3705117.90
X22, Y22 [m]	441507.60	3705119.20
X23, Y23 [m]	441506.30	3705120.90

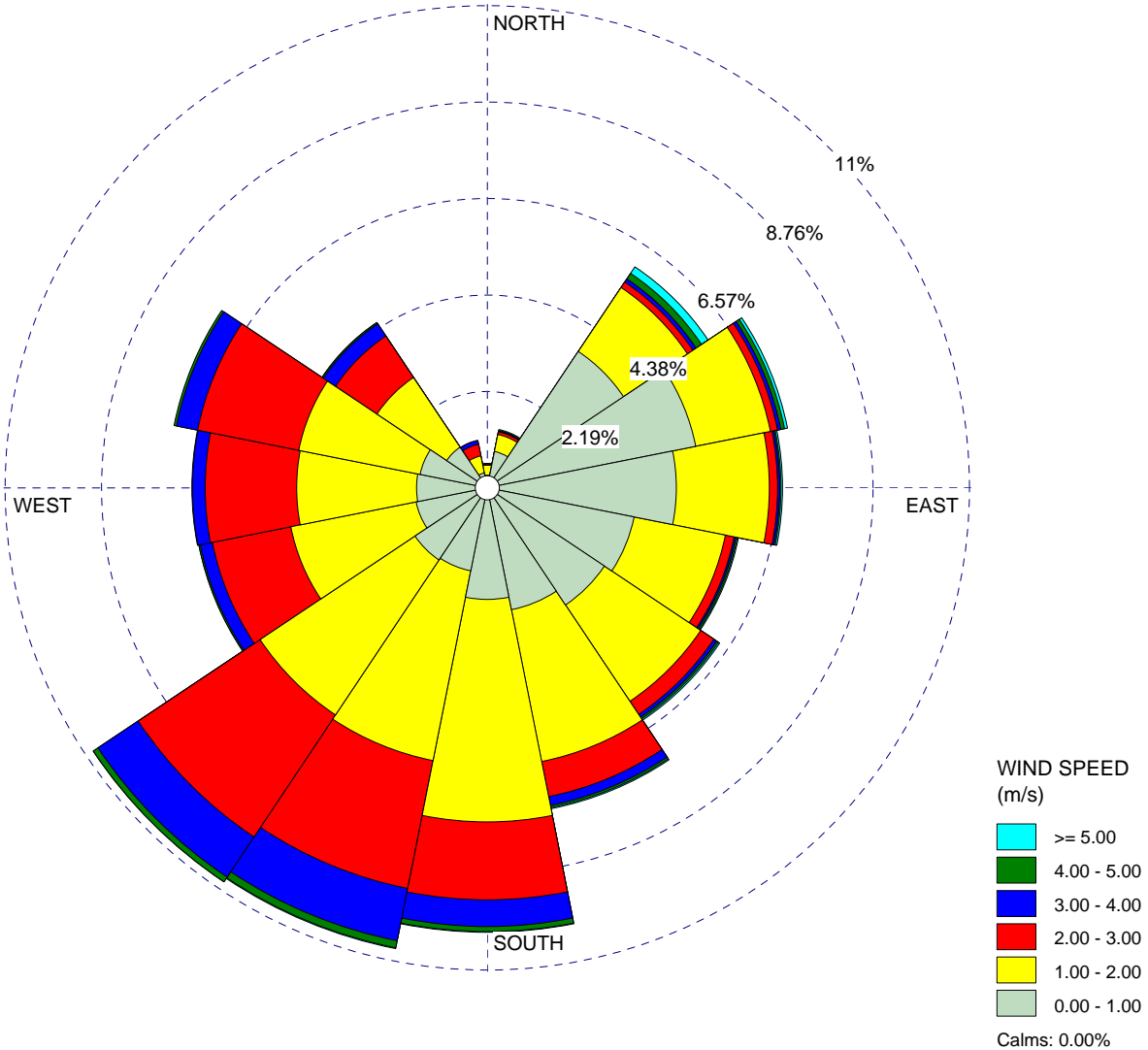
Appendix C Wind Roses

WIND ROSE PLOT:

SCAQMD MISSION VIEJO STATION
5 YEAR WIND ROSE (2011-2014, 2016 00:00 TO 23:00)

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS:

DATA PERIOD:

Start Date: 1/1/2011 - 00:00
End Date: 12/31/2016 - 23:59

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

43290 hrs.

AVG. WIND SPEED:

1.54 m/s

DATE:

8/27/2019

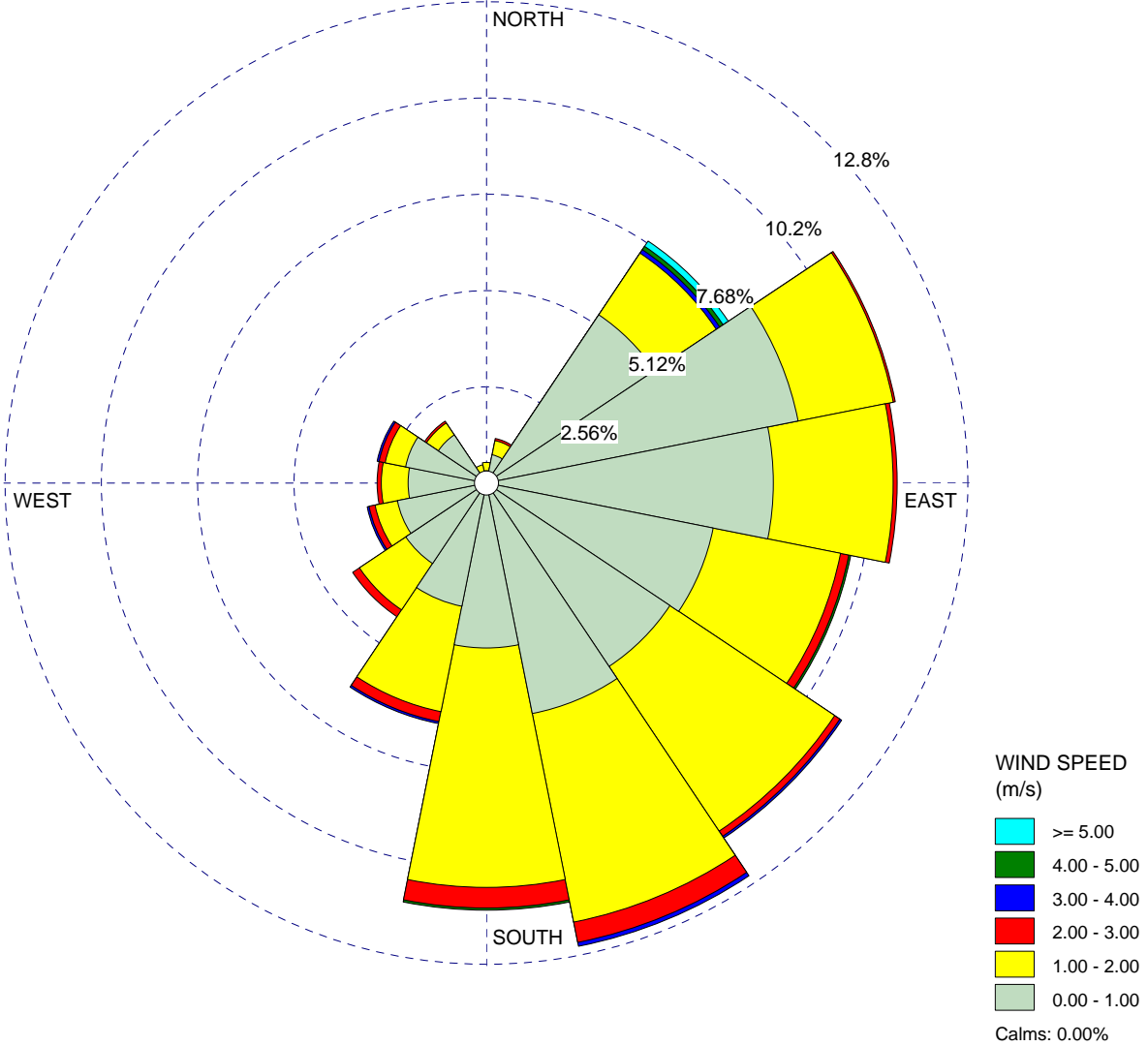
PROJECT NO.:

WIND ROSE PLOT:

SCAQMD MISSION VIEJO STATION
5 YEAR HOUR 0 WIND ROSE (2011-2014, 2016 00:00)

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS:

DATA PERIOD:

Start Date: 1/1/2011 - 00:00
End Date: 12/31/2016 - 23:59

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

1805 hrs.

AVG. WIND SPEED:

1.10 m/s

DATE:

8/27/2019

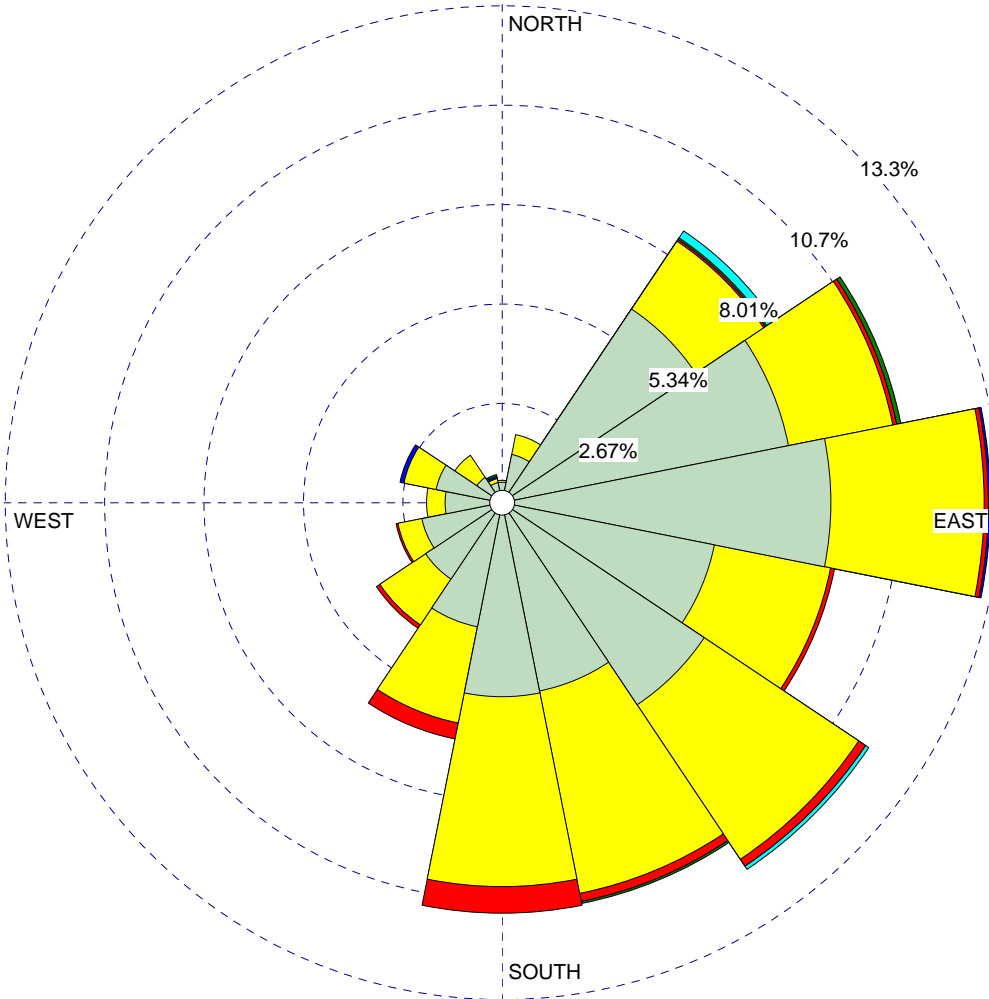
PROJECT NO.:

WIND ROSE PLOT:

SCAQMD MISSION VIEJO STATION
5 YEAR HOUR 1 WIND ROSE (2011-2014, 2016 01:00)

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(m/s)

- >= 5.00
 - 4.00 - 5.00
 - 3.00 - 4.00
 - 2.00 - 3.00
 - 1.00 - 2.00
 - 0.00 - 1.00
- Calms: 0.00%

COMMENTS:

DATA PERIOD:

Start Date: 1/1/2011 - 01:00
End Date: 12/31/2016 - 01:00

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

1801 hrs.

AVG. WIND SPEED:

1.09 m/s

DATE:

8/27/2019

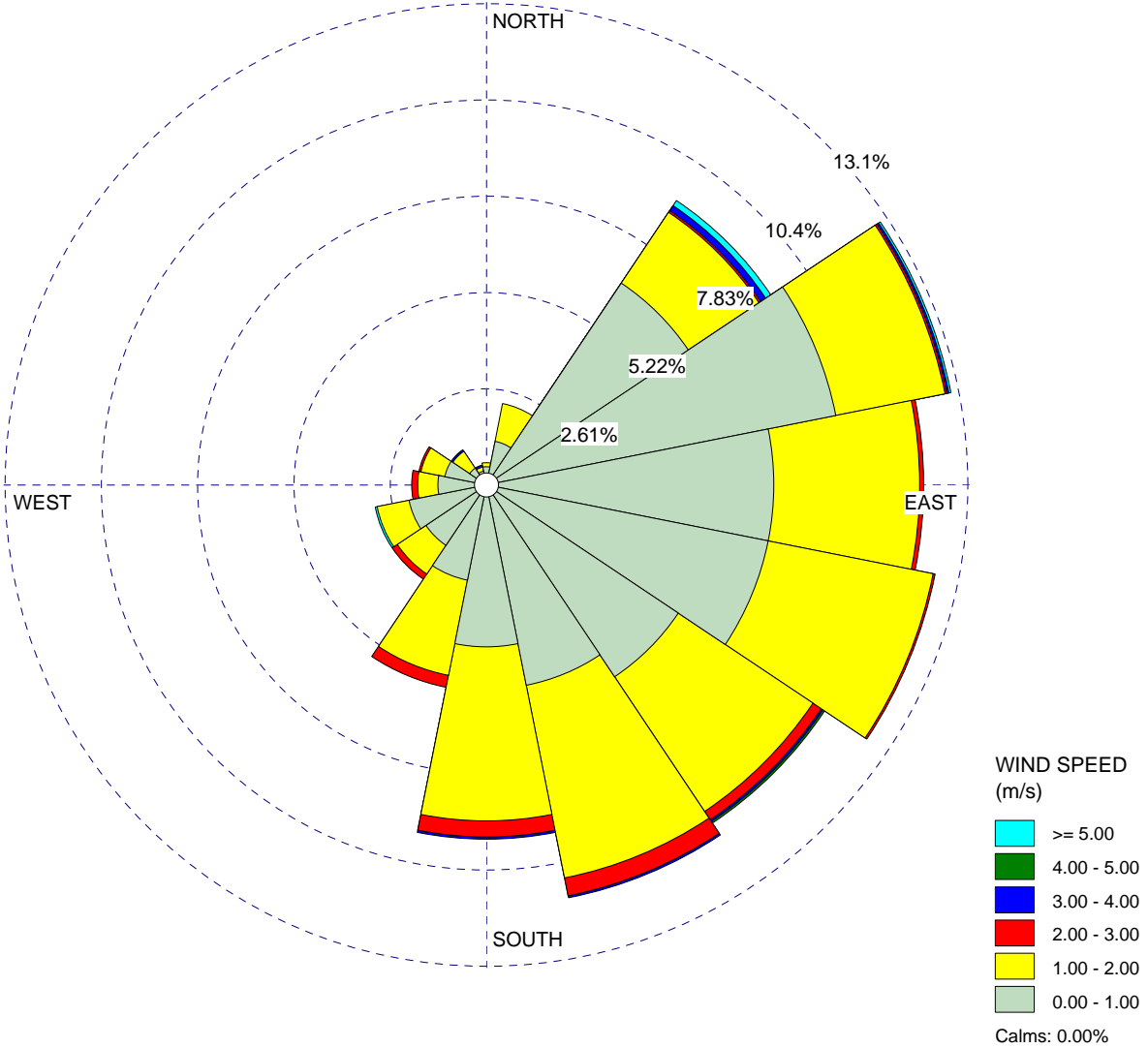
PROJECT NO.:

WIND ROSE PLOT:

SCAQMD MISSION VIEJO STATION
5 YEAR HOUR 2 WIND ROSE (2011-2014, 2016 02:00)

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS:

DATA PERIOD:

Start Date: 1/1/2011 - 02:00
End Date: 12/31/2016 - 02:00

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

1797 hrs.

AVG. WIND SPEED:

1.08 m/s

DATE:

8/27/2019

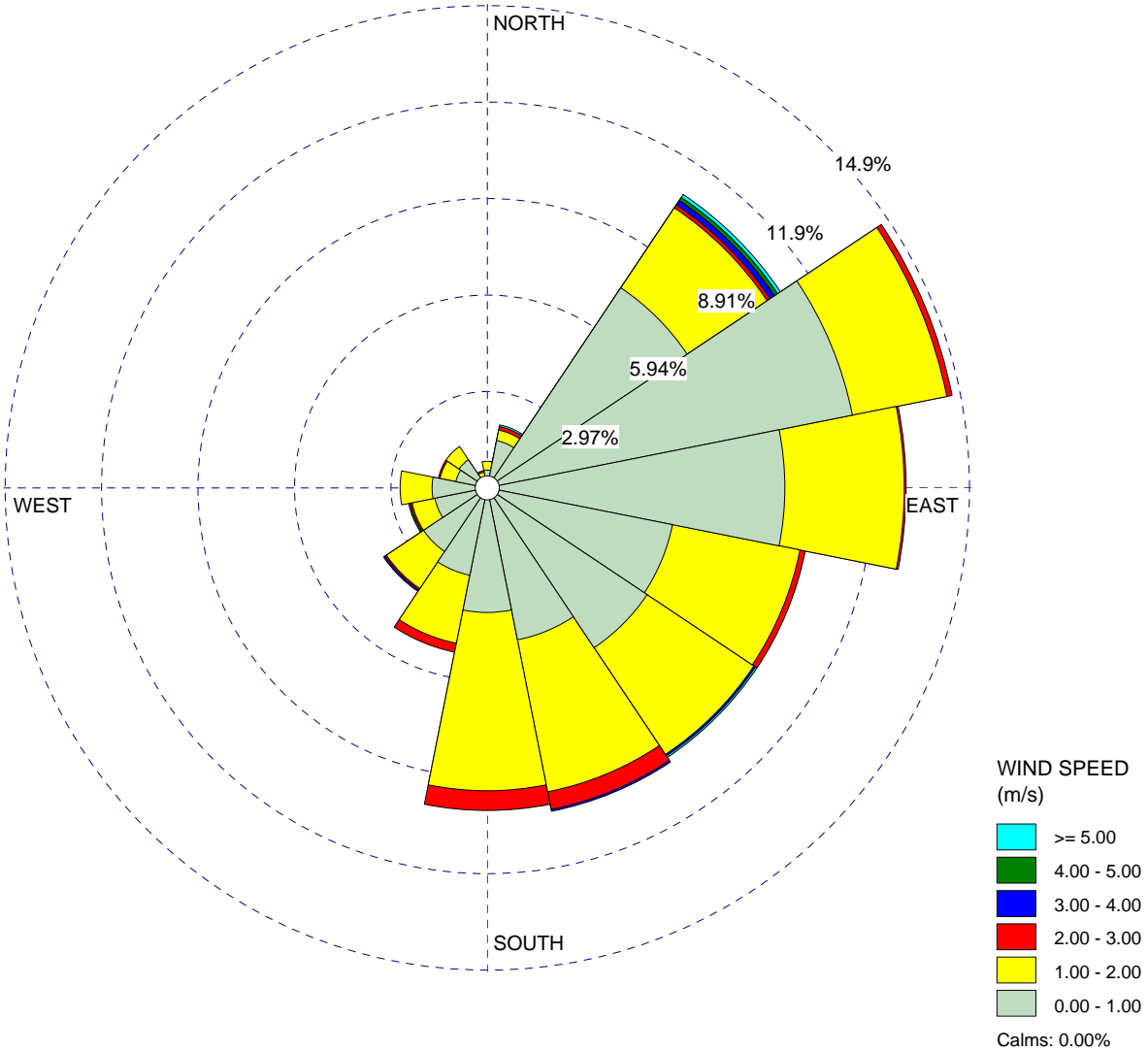
PROJECT NO.:

WIND ROSE PLOT:

SCAQMD MISSION VIEJO STATION
5 YEAR HOUR 3 WIND ROSE (2011-2014, 2016 03:00)

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS:

DATA PERIOD:

Start Date: 1/1/2011 - 03:00
End Date: 12/31/2016 - 03:00

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

1804 hrs.

AVG. WIND SPEED:

1.08 m/s

DATE:

8/27/2019

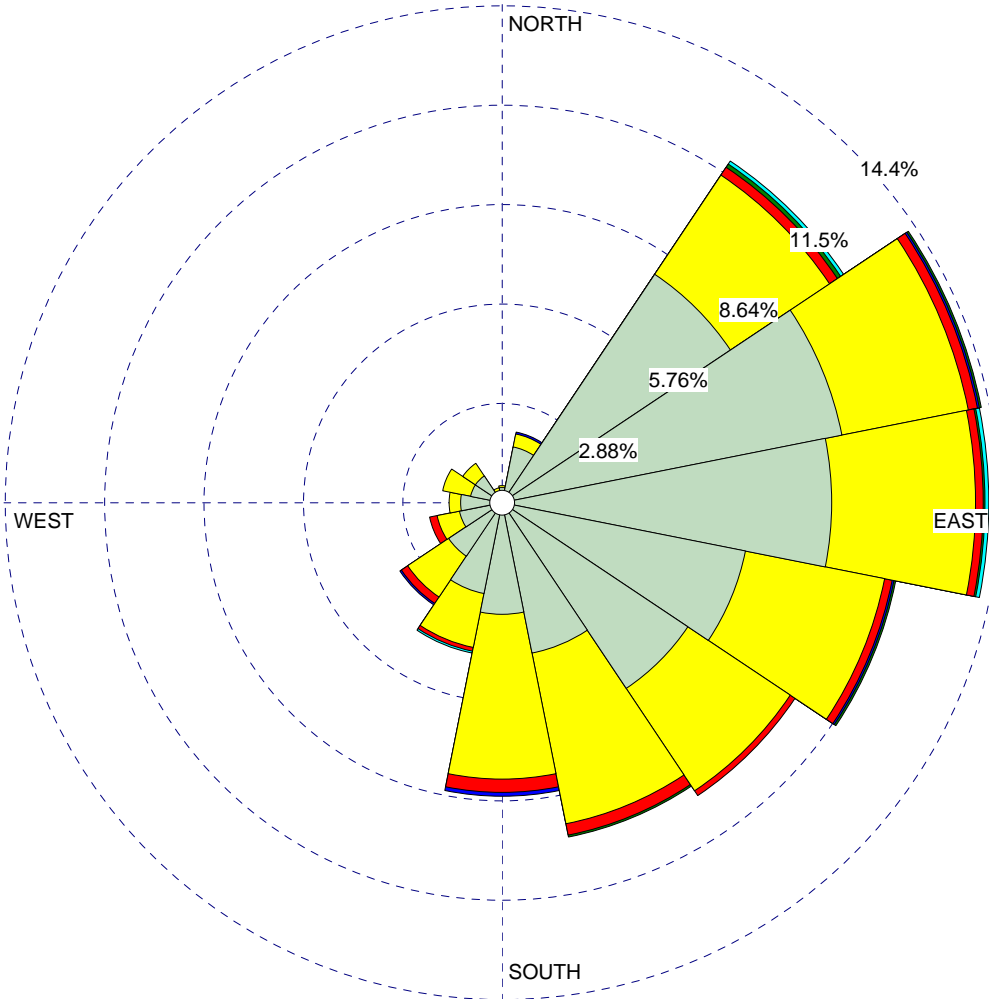
PROJECT NO.:

WIND ROSE PLOT:

SCAQMD MISSION VIEJO STATION
5 YEAR HOUR 4 WIND ROSE (2011-2014, 2016 04:00)

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(m/s)

- >= 5.00
 - 4.00 - 5.00
 - 3.00 - 4.00
 - 2.00 - 3.00
 - 1.00 - 2.00
 - 0.00 - 1.00
- Calms: 0.00%

COMMENTS:

DATA PERIOD:

Start Date: 1/1/2011 - 04:00
End Date: 12/31/2016 - 04:00

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

1790 hrs.

AVG. WIND SPEED:

1.08 m/s

DATE:

8/27/2019

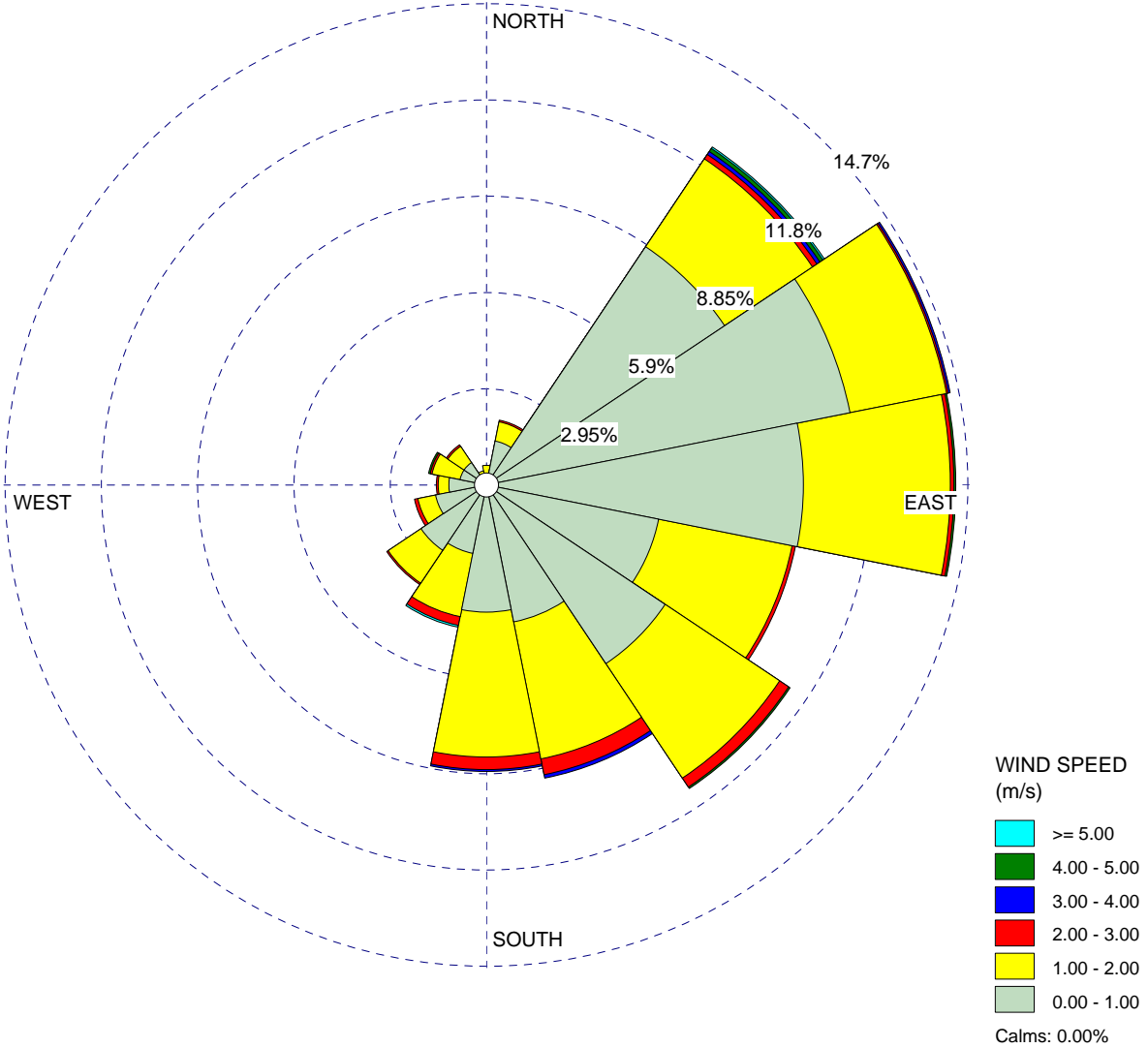
PROJECT NO.:

WIND ROSE PLOT:

SCAQMD MISSION VIEJO STATION
5 YEAR HOUR 5 WIND ROSE (2011-2014, 2016 05:00)

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS:

DATA PERIOD:

Start Date: 1/1/2011 - 05:00
End Date: 12/31/2016 - 05:00

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

1793 hrs.

AVG. WIND SPEED:

1.08 m/s

DATE:

8/27/2019

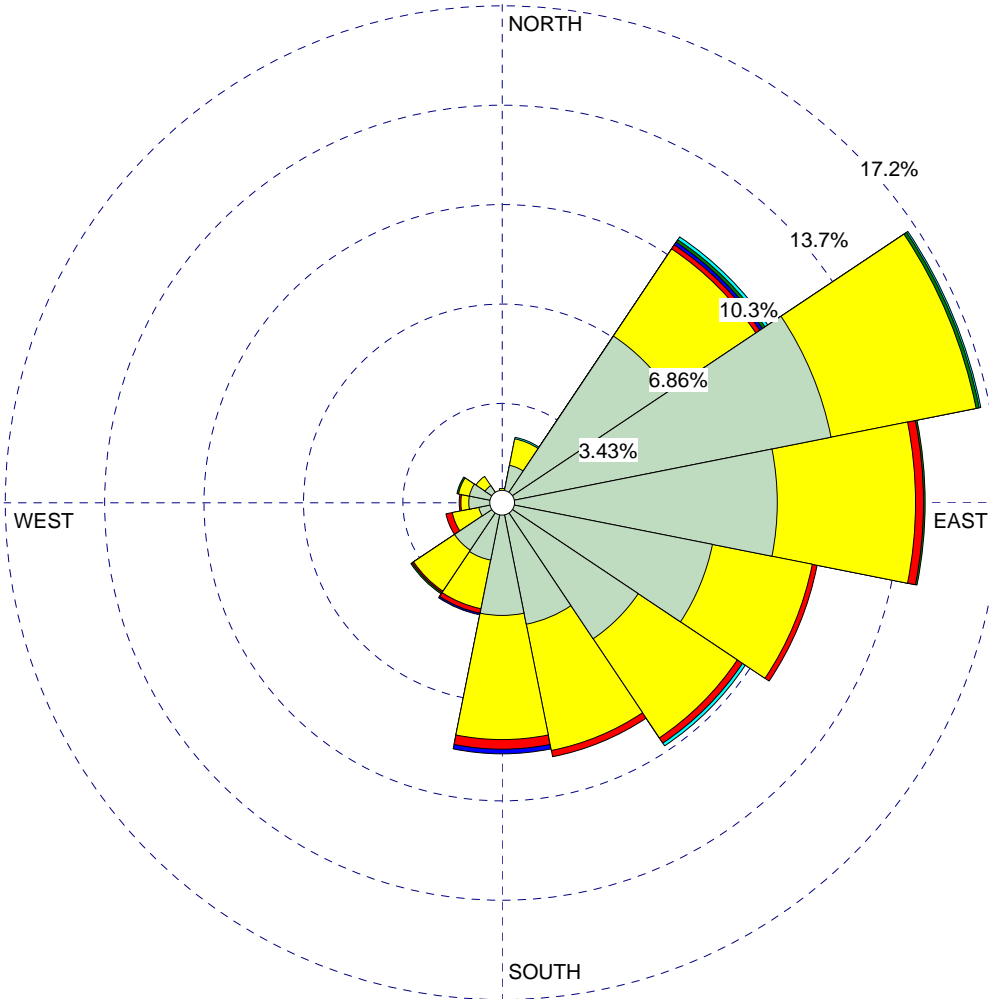
PROJECT NO.:

WIND ROSE PLOT:

SCAQMD MISSION VIEJO STATION
5 YEAR HOUR 6 WIND ROSE (2011-2014, 2016 06:00)

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(m/s)

- >= 5.00
- 4.00 - 5.00
- 3.00 - 4.00
- 2.00 - 3.00
- 1.00 - 2.00
- 0.00 - 1.00
- Calms: 0.00%

COMMENTS:

DATA PERIOD:

Start Date: 1/1/2011 - 06:00
End Date: 12/31/2016 - 06:00

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

1792 hrs.

AVG. WIND SPEED:

1.10 m/s

DATE:

8/27/2019

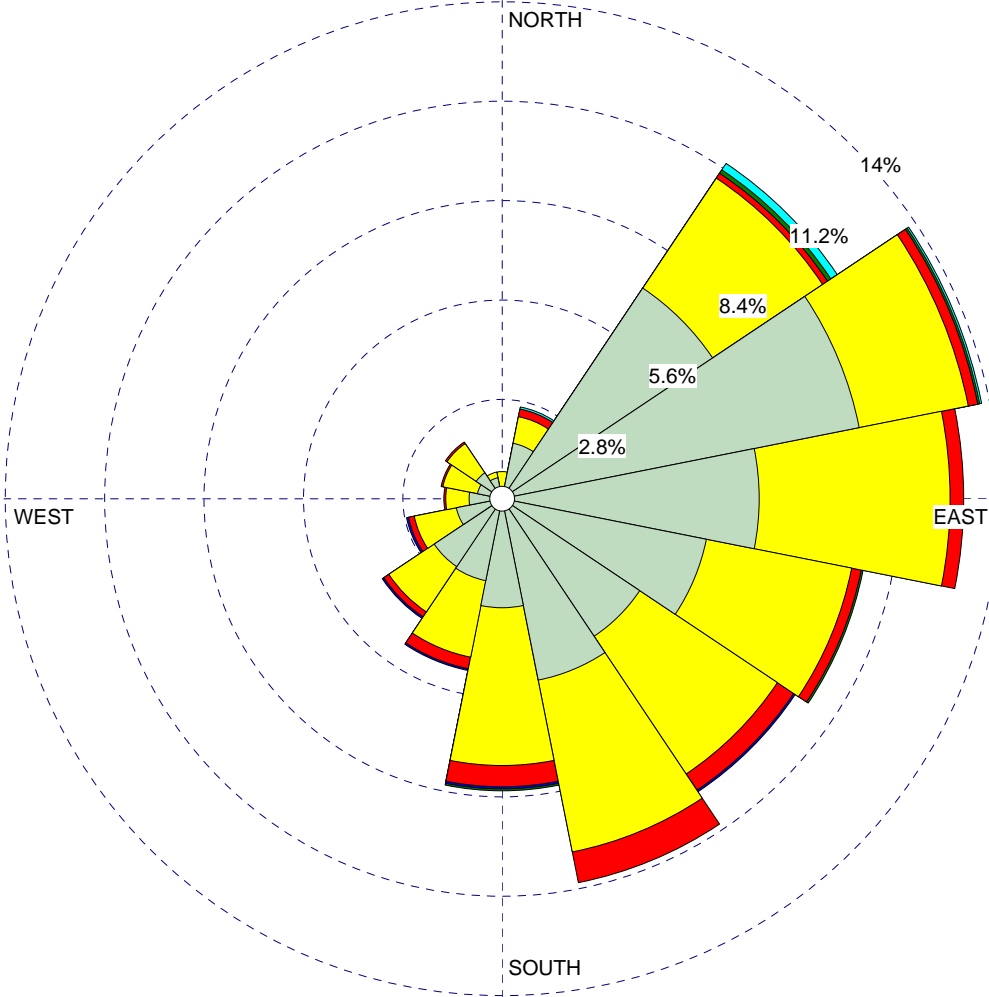
PROJECT NO.:

WIND ROSE PLOT:

SCAQMD MISSION VIEJO STATION
5 YEAR HOUR 7 WIND ROSE (2011-2014, 2016 07:00)

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(m/s)

- >= 5.00
 - 4.00 - 5.00
 - 3.00 - 4.00
 - 2.00 - 3.00
 - 1.00 - 2.00
 - 0.00 - 1.00
- Calms: 0.00%

COMMENTS:

DATA PERIOD:

Start Date: 1/1/2011 - 07:00
End Date: 12/31/2016 - 07:00

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

1803 hrs.

AVG. WIND SPEED:

1.15 m/s

DATE:

8/27/2019

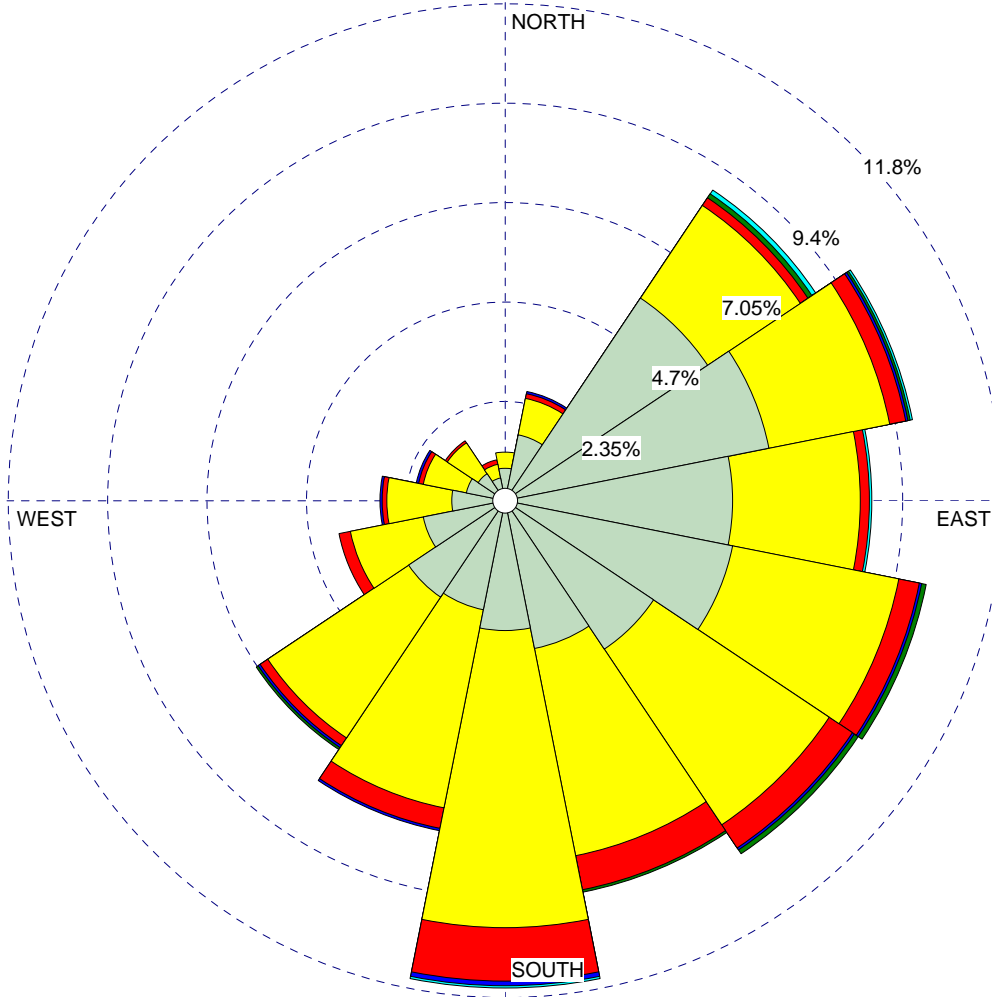
PROJECT NO.:

WIND ROSE PLOT:

SCAQMD MISSION VIEJO STATION
5 YEAR HOUR 8 WIND ROSE (2011-2014, 2016 08:00)

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(m/s)

- >= 5.00
 - 4.00 - 5.00
 - 3.00 - 4.00
 - 2.00 - 3.00
 - 1.00 - 2.00
 - 0.00 - 1.00
- Calms: 0.00%

COMMENTS:

DATA PERIOD:

Start Date: 1/1/2011 - 08:00
End Date: 12/31/2016 - 08:00

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

1806 hrs.

AVG. WIND SPEED:

1.24 m/s

DATE:

8/27/2019

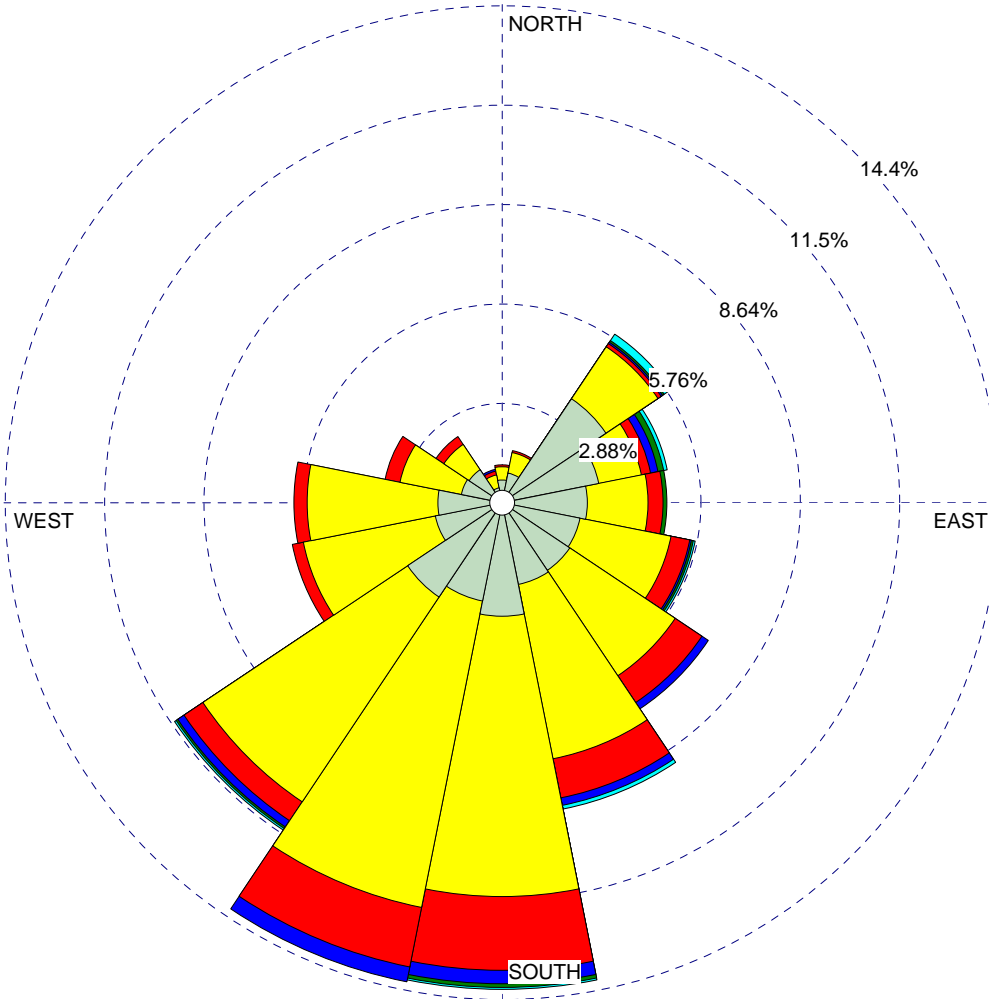
PROJECT NO.:

WIND ROSE PLOT:

SCAQMD MISSION VIEJO STATION
5 YEAR HOUR 9 WIND ROSE (2011-2014, 2016 09:00)

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(m/s)

- >= 5.00
- 4.00 - 5.00
- 3.00 - 4.00
- 2.00 - 3.00
- 1.00 - 2.00
- 0.00 - 1.00

Calms: 0.00%

COMMENTS:

DATA PERIOD:

Start Date: 1/1/2011 - 09:00
End Date: 12/31/2016 - 09:00

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

1800 hrs.

AVG. WIND SPEED:

1.41 m/s

DATE:

8/27/2019

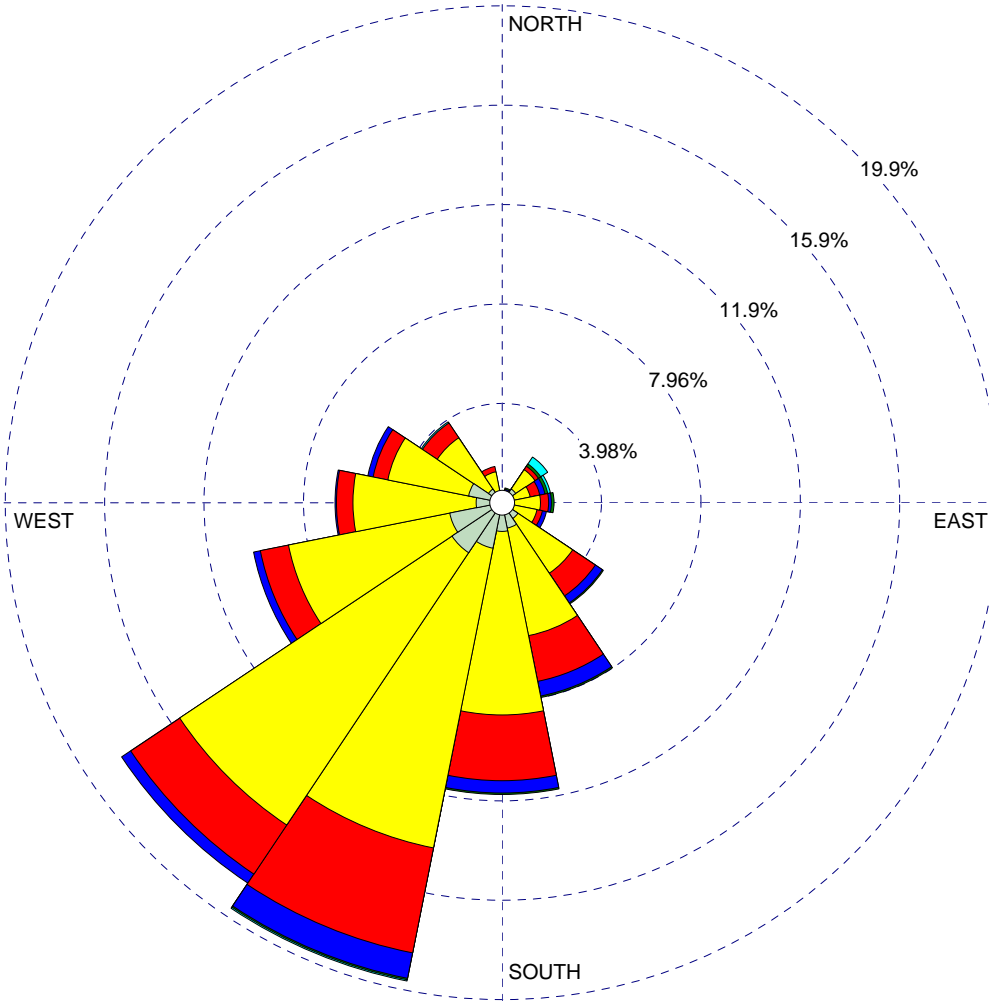
PROJECT NO.:

WIND ROSE PLOT:

SCAQMD MISSION VIEJO STATION
5 YEAR HOUR 10 WIND ROSE (2011-2014, 2016 10:00)

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(m/s)

- >= 5.00
- 4.00 - 5.00
- 3.00 - 4.00
- 2.00 - 3.00
- 1.00 - 2.00
- 0.00 - 1.00

Calms: 0.00%

COMMENTS:

DATA PERIOD:

Start Date: 1/1/2011 - 10:00
End Date: 12/31/2016 - 10:00

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

1806 hrs.

AVG. WIND SPEED:

1.68 m/s

DATE:

8/27/2019

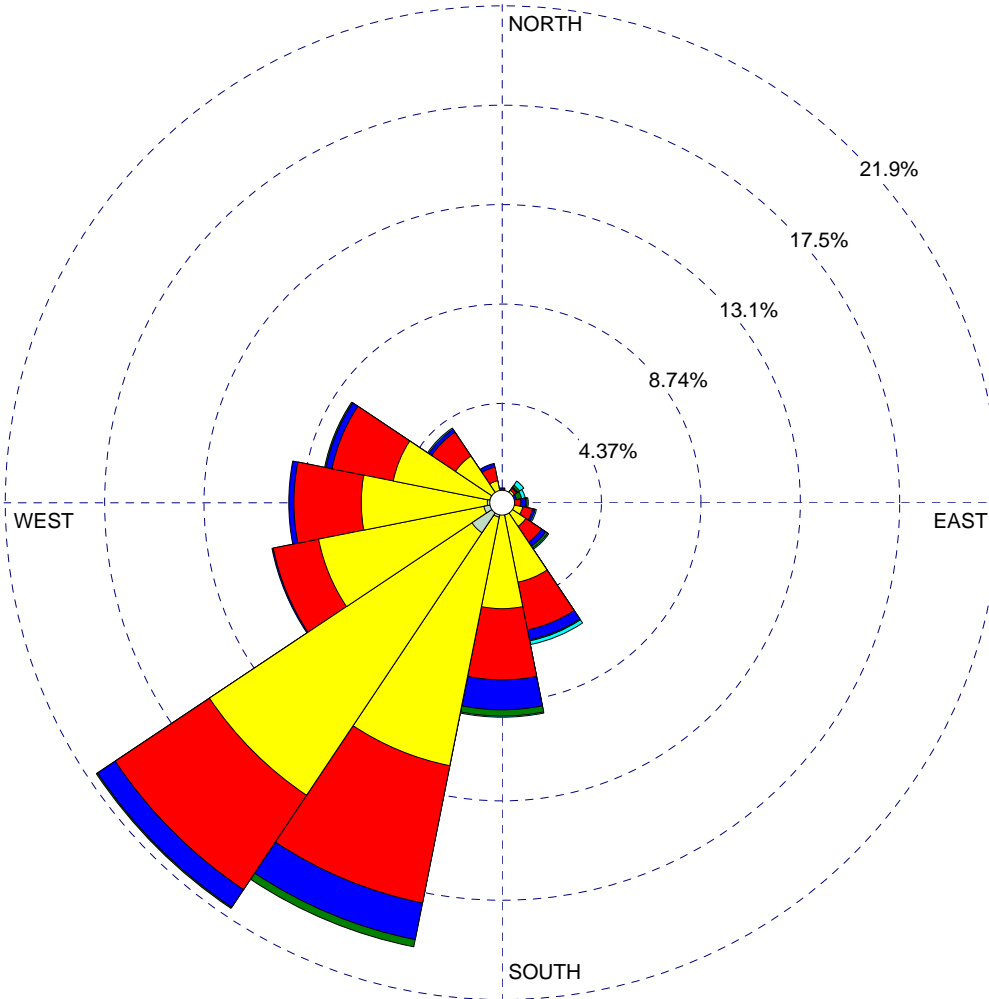
PROJECT NO.:

WIND ROSE PLOT:

SCAQMD MISSION VIEJO STATION
5 YEAR HOUR 11 WIND ROSE (2011-2014, 2016 11:00)

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(m/s)

- >= 5.00
- 4.00 - 5.00
- 3.00 - 4.00
- 2.00 - 3.00
- 1.00 - 2.00
- 0.00 - 1.00

Calms: 0.00%

COMMENTS:

DATA PERIOD:

Start Date: 1/1/2011 - 11:00
End Date: 12/31/2016 - 11:00

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

1803 hrs.

AVG. WIND SPEED:

1.93 m/s

DATE:

8/27/2019

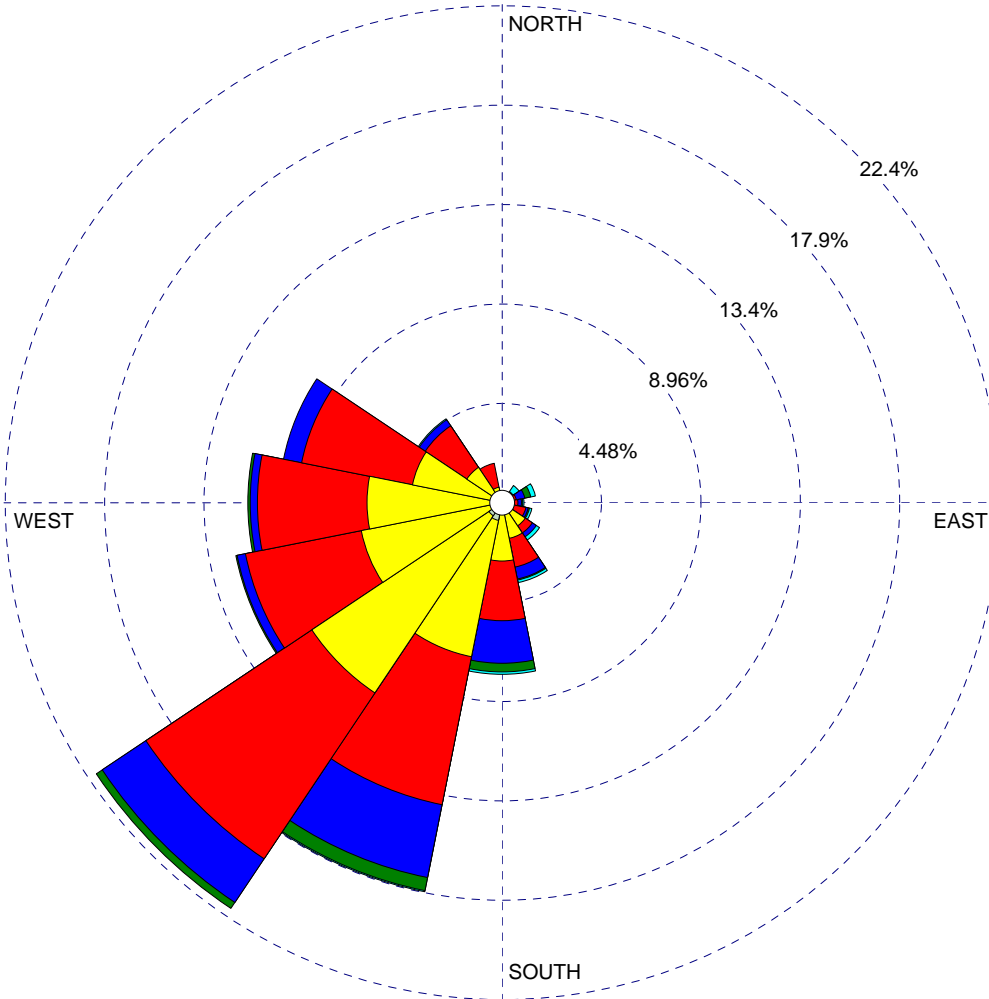
PROJECT NO.:

WIND ROSE PLOT:

SCAQMD MISSION VIEJO STATION
5 YEAR HOUR 12 WIND ROSE (2011-2014, 2016 12:00)

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(m/s)

- >= 5.00
- 4.00 - 5.00
- 3.00 - 4.00
- 2.00 - 3.00
- 1.00 - 2.00
- 0.00 - 1.00

Calms: 0.00%

COMMENTS:

DATA PERIOD:

Start Date: 1/1/2011 - 12:00
End Date: 12/31/2016 - 12:00

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

1804 hrs.

AVG. WIND SPEED:

2.21 m/s

DATE:

8/27/2019

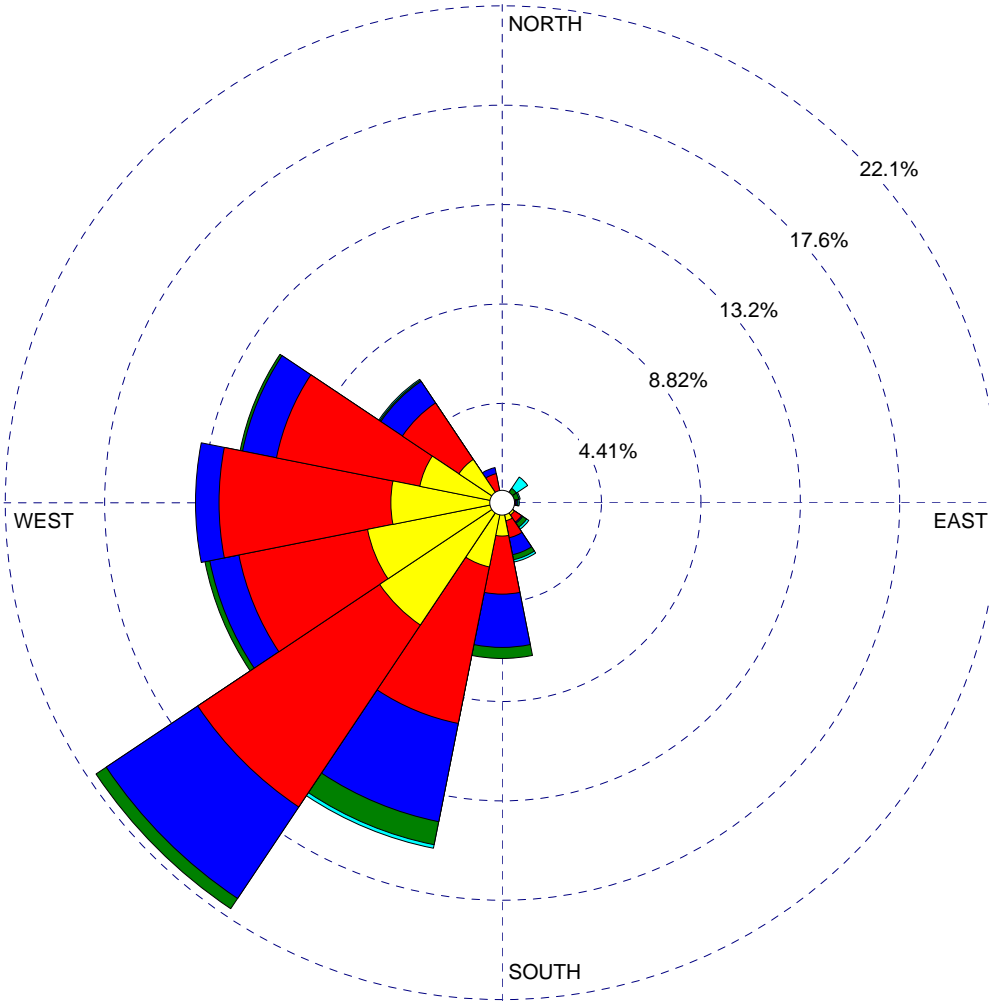
PROJECT NO.:

WIND ROSE PLOT:

SCAQMD MISSION VIEJO STATION
5 YEAR HOUR 13 WIND ROSE (2011-2014, 2016 13:00)

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(m/s)

- >= 5.00
- 4.00 - 5.00
- 3.00 - 4.00
- 2.00 - 3.00
- 1.00 - 2.00
- 0.00 - 1.00

Calms: 0.00%

COMMENTS:

DATA PERIOD:

Start Date: 1/1/2011 - 13:00
End Date: 12/31/2016 - 13:00

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

1806 hrs.

AVG. WIND SPEED:

2.43 m/s

DATE:

8/27/2019

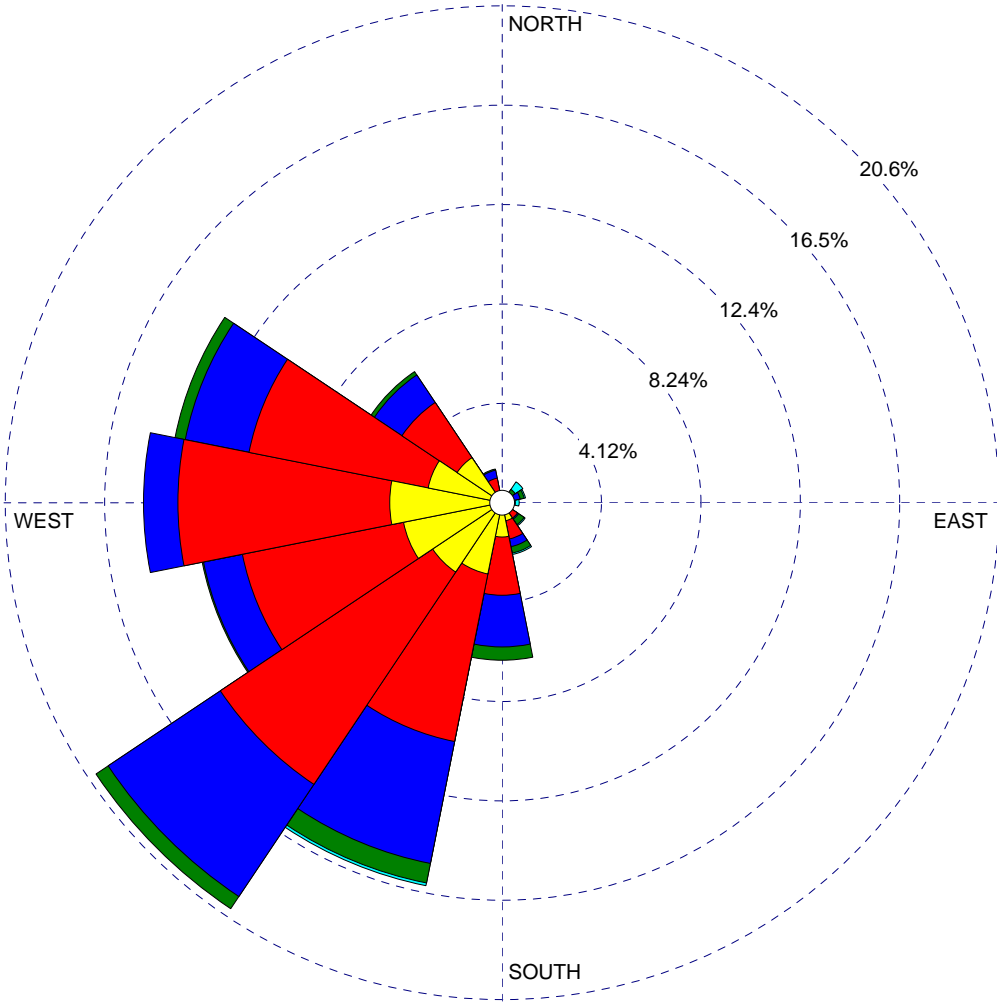
PROJECT NO.:

WIND ROSE PLOT:

SCAQMD MISSION VIEJO STATION
5 YEAR HOUR 14 WIND ROSE (2011-2014, 2016 14:00)

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(m/s)

- >= 5.00
- 4.00 - 5.00
- 3.00 - 4.00
- 2.00 - 3.00
- 1.00 - 2.00
- 0.00 - 1.00

Calms: 0.00%

COMMENTS:

DATA PERIOD:

Start Date: 1/1/2011 - 14:00
End Date: 12/31/2016 - 14:00

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

1809 hrs.

AVG. WIND SPEED:

2.51 m/s

DATE:

8/27/2019

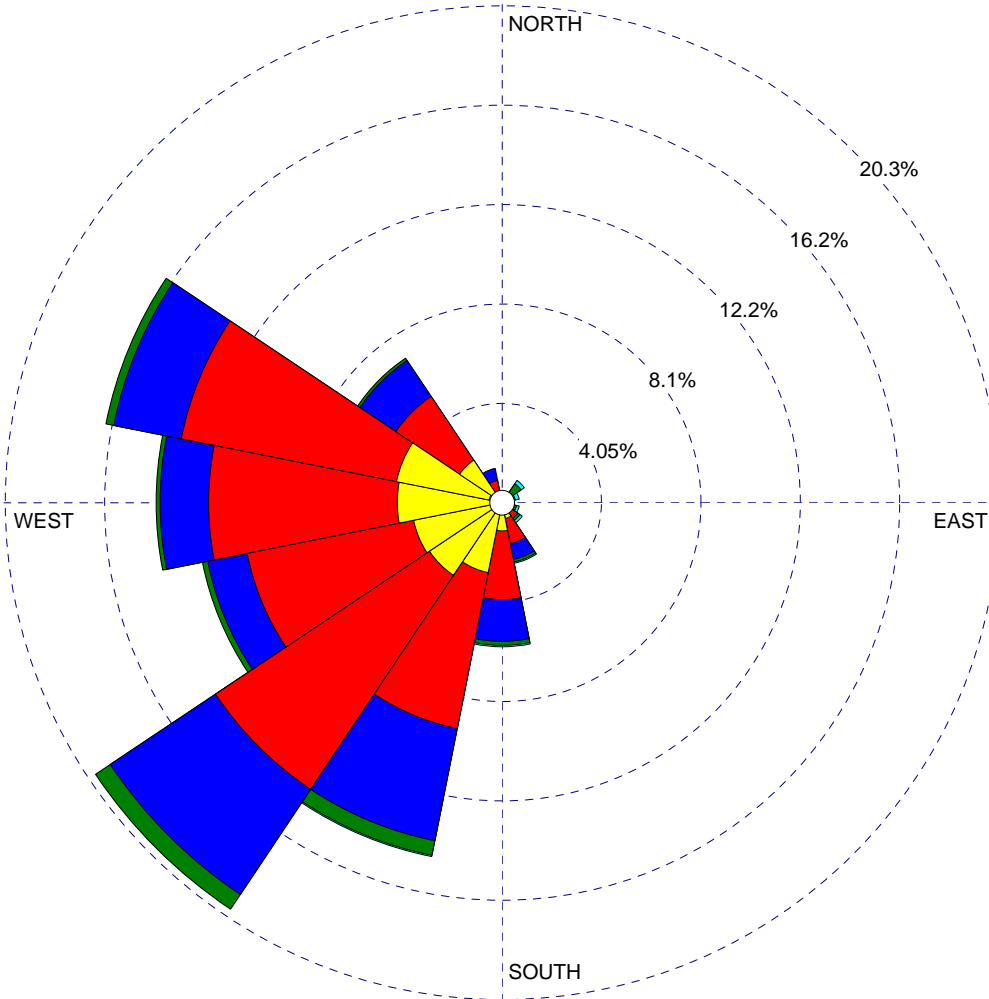
PROJECT NO.:

WIND ROSE PLOT:

SCAQMD MISSION VIEJO STATION
5 YEAR HOUR 15 WIND ROSE (2011-2014, 2016 15:00)

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(m/s)

- >= 5.00
- 4.00 - 5.00
- 3.00 - 4.00
- 2.00 - 3.00
- 1.00 - 2.00
- 0.00 - 1.00

Calms: 0.00%

COMMENTS:

DATA PERIOD:

Start Date: 1/1/2011 - 15:00
End Date: 12/31/2016 - 15:00

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

1807 hrs.

AVG. WIND SPEED:

2.49 m/s

DATE:

8/27/2019

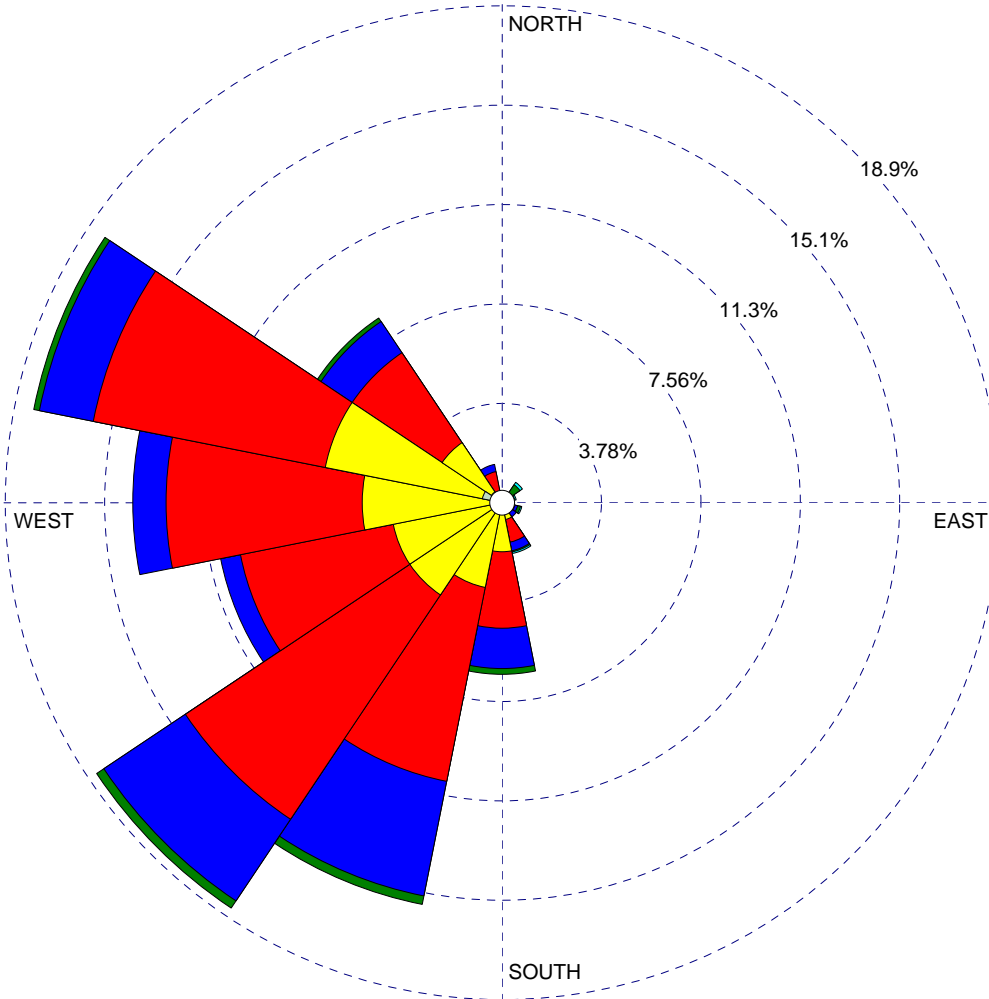
PROJECT NO.:

WIND ROSE PLOT:

**SCAQMD MISSION VIEJO STATION
5 YEAR HOUR 16 WIND ROSE (2011-2014, 2016 16:00)**

DISPLAY:

**Wind Speed
Direction (blowing from)**



WIND SPEED
(m/s)

- >= 5.00
- 4.00 - 5.00
- 3.00 - 4.00
- 2.00 - 3.00
- 1.00 - 2.00
- 0.00 - 1.00

Calms: 0.00%

COMMENTS:

DATA PERIOD:

**Start Date: 1/1/2011 - 16:00
End Date: 12/31/2016 - 16:00**

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

1809 hrs.

AVG. WIND SPEED:

2.36 m/s

DATE:

8/27/2019

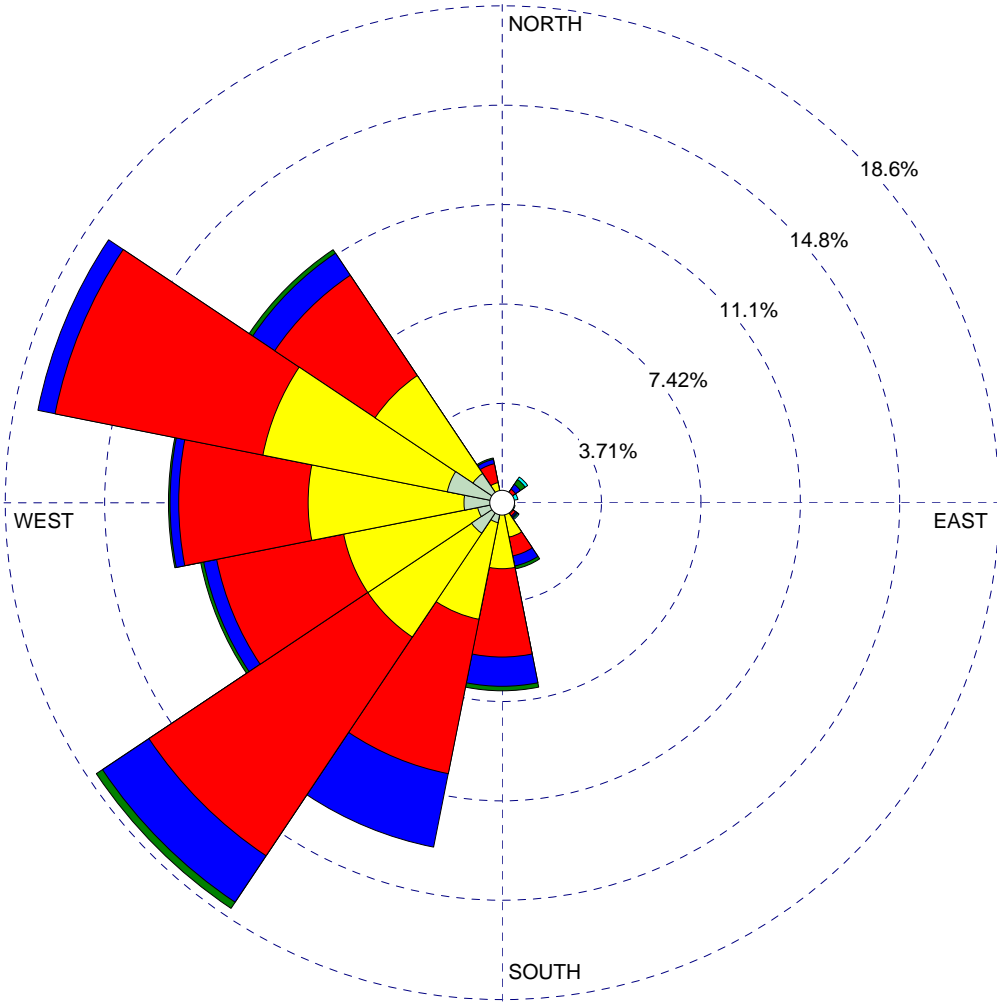
PROJECT NO.:

WIND ROSE PLOT:

SCAQMD MISSION VIEJO STATION
5 YEAR HOUR 17 WIND ROSE (2011-2014, 2016 17:00)

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(m/s)

- >= 5.00
- 4.00 - 5.00
- 3.00 - 4.00
- 2.00 - 3.00
- 1.00 - 2.00
- 0.00 - 1.00

Calms: 0.00%

COMMENTS:

DATA PERIOD:

Start Date: 1/1/2011 - 17:00
End Date: 12/31/2016 - 17:00

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

1810 hrs.

AVG. WIND SPEED:

2.07 m/s

DATE:

8/27/2019

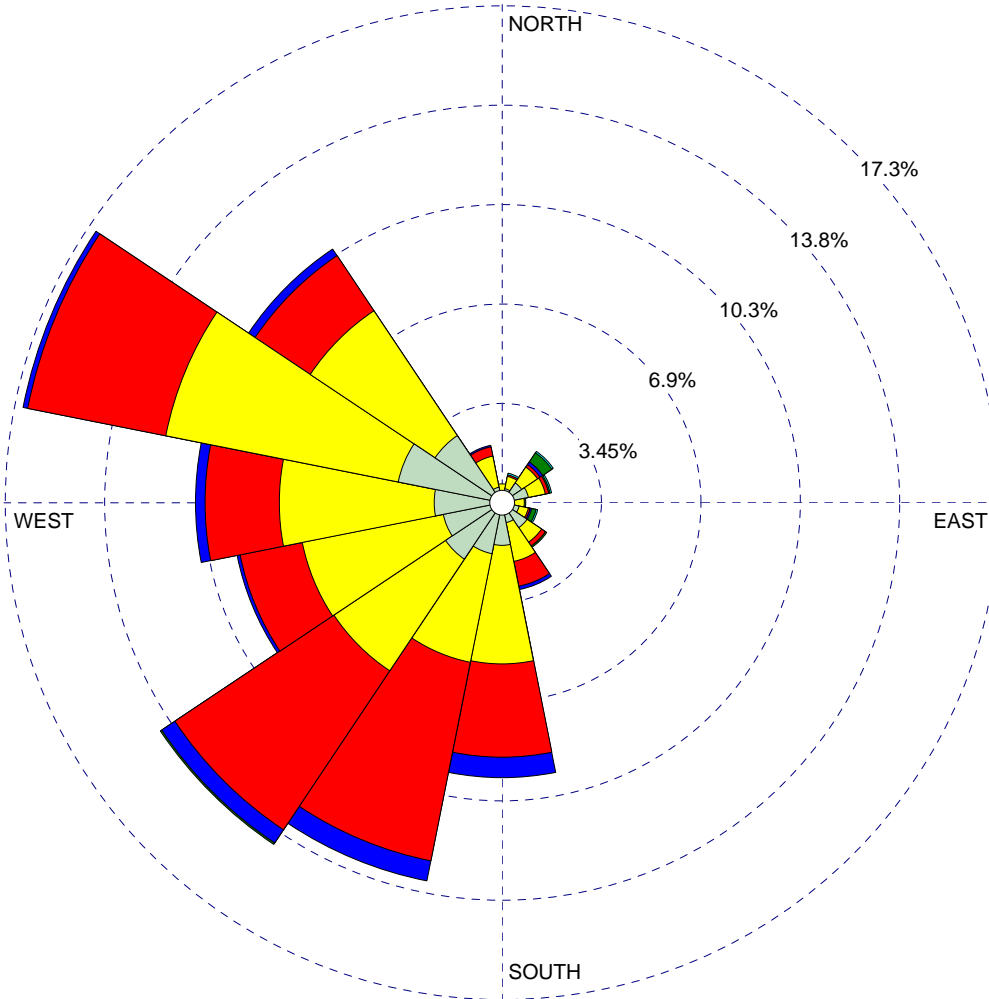
PROJECT NO.:

WIND ROSE PLOT:

SCAQMD MISSION VIEJO STATION
5 YEAR HOUR 18 WIND ROSE (2011-2014, 2016 18:00)

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(m/s)

- >= 5.00
- 4.00 - 5.00
- 3.00 - 4.00
- 2.00 - 3.00
- 1.00 - 2.00
- 0.00 - 1.00

Calms: 0.00%

COMMENTS:

DATA PERIOD:

Start Date: 1/1/2011 - 18:00
End Date: 12/31/2016 - 18:00

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

1812 hrs.

AVG. WIND SPEED:

1.73 m/s

DATE:

8/27/2019

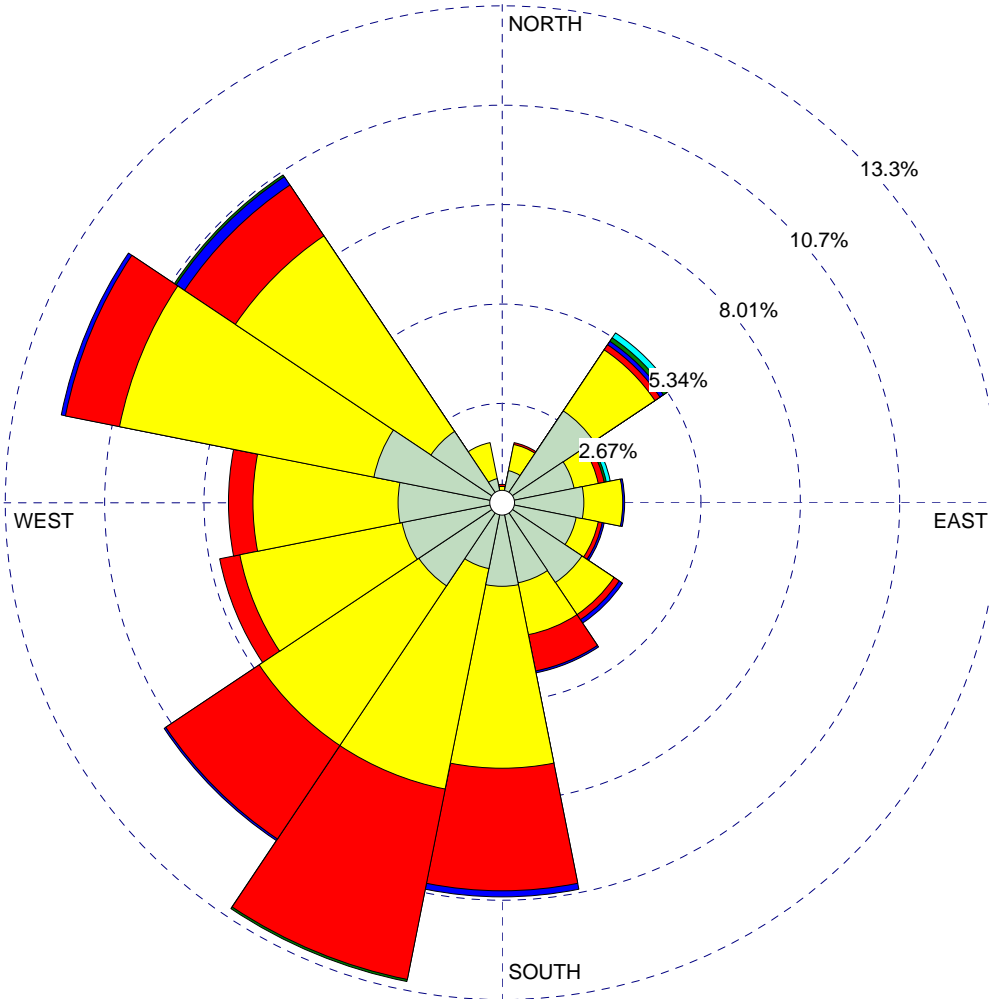
PROJECT NO.:

WIND ROSE PLOT:

**SCAQMD MISSION VIEJO STATION
5 YEAR HOUR 19 WIND ROSE (2011-2014, 2016 19:00)**

DISPLAY:

**Wind Speed
Direction (blowing from)**



WIND SPEED
(m/s)

- >= 5.00
 - 4.00 - 5.00
 - 3.00 - 4.00
 - 2.00 - 3.00
 - 1.00 - 2.00
 - 0.00 - 1.00
- Calms: 0.00%

COMMENTS:

DATA PERIOD:

**Start Date: 1/1/2011 - 19:00
End Date: 12/31/2016 - 19:00**

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

1809 hrs.

AVG. WIND SPEED:

1.46 m/s

DATE:

8/27/2019

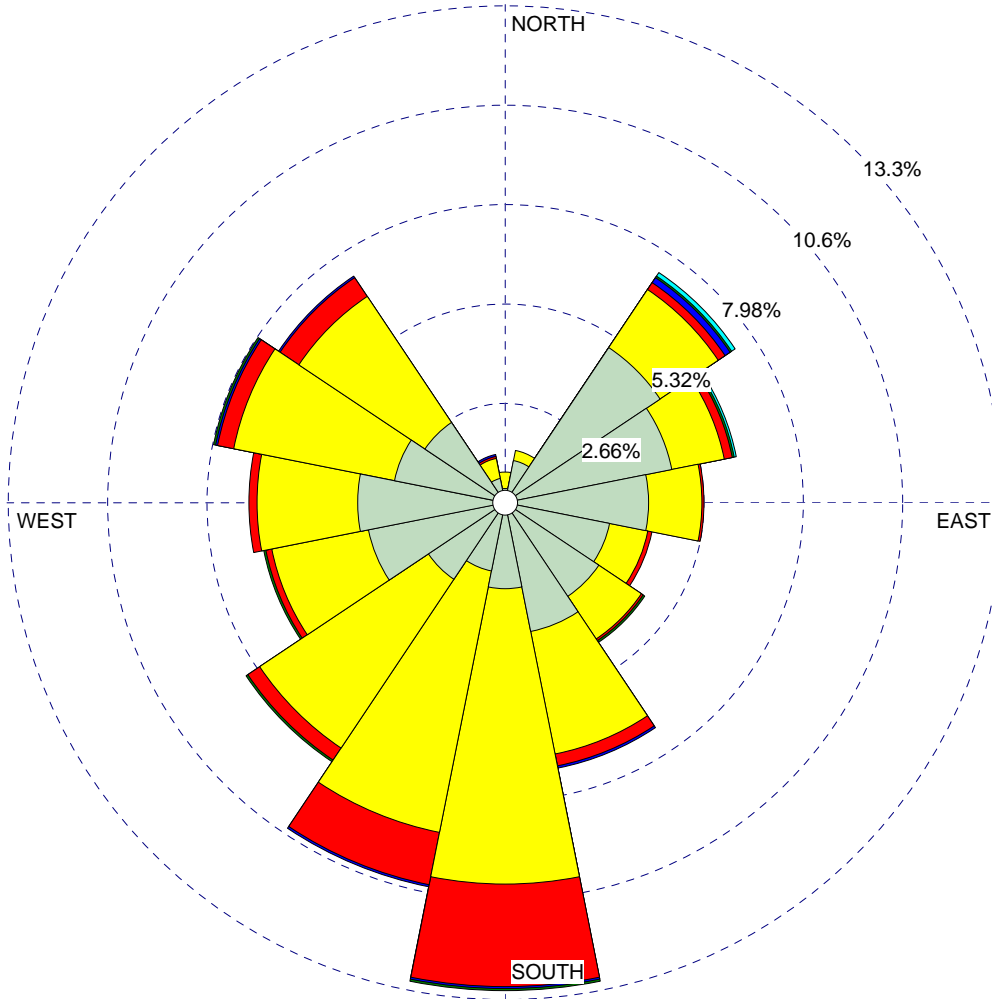
PROJECT NO.:

WIND ROSE PLOT:

SCAQMD MISSION VIEJO STATION
5 YEAR HOUR 20 WIND ROSE (2011-2014, 2016 20:00)

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(m/s)

- >= 5.00
 - 4.00 - 5.00
 - 3.00 - 4.00
 - 2.00 - 3.00
 - 1.00 - 2.00
 - 0.00 - 1.00
- Calms: 0.00%

COMMENTS:

DATA PERIOD:

Start Date: 1/1/2011 - 20:00
End Date: 12/31/2016 - 20:00

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

1803 hrs.

AVG. WIND SPEED:

1.27 m/s

DATE:

8/27/2019

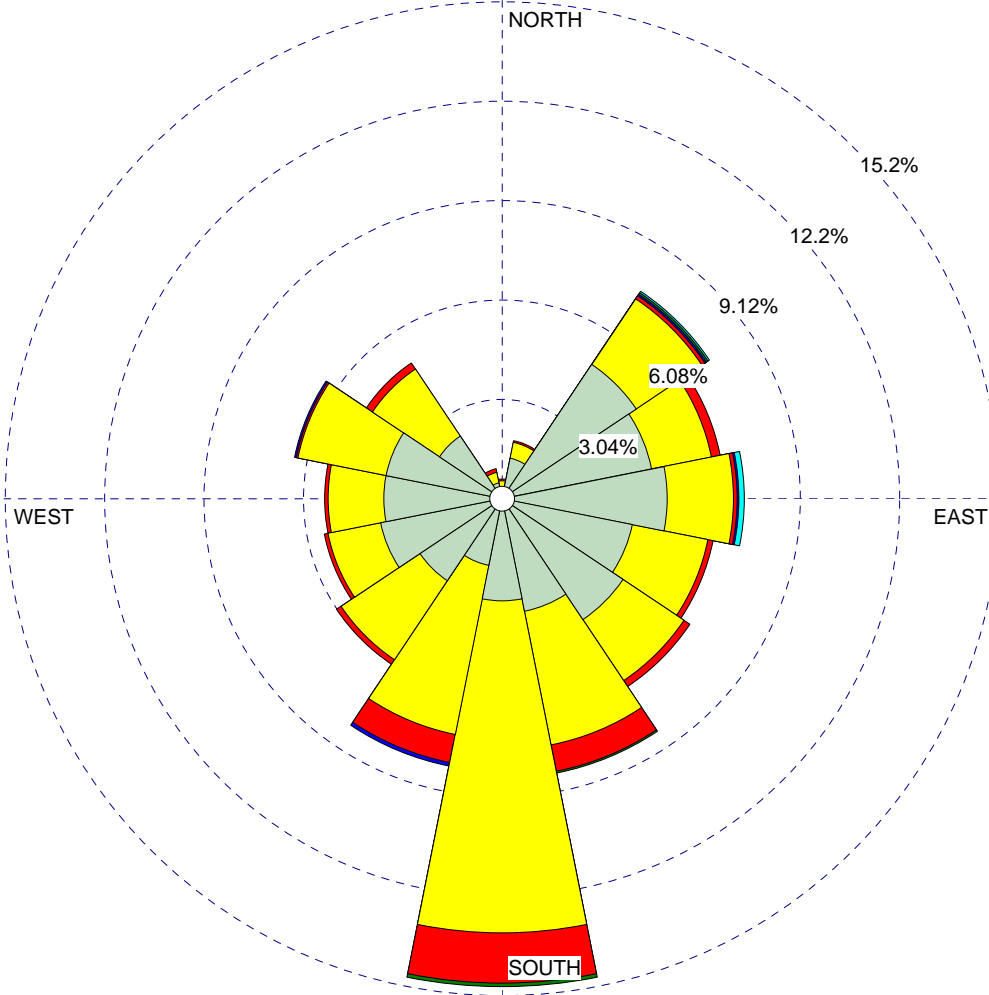
PROJECT NO.:

WIND ROSE PLOT:

SCAQMD MISSION VIEJO STATION
5 YEAR HOUR 21 WIND ROSE (2011-2014, 2016 21:00)

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(m/s)

- >= 5.00
 - 4.00 - 5.00
 - 3.00 - 4.00
 - 2.00 - 3.00
 - 1.00 - 2.00
 - 0.00 - 1.00
- Calms: 0.00%

COMMENTS:

DATA PERIOD:

Start Date: 1/1/2011 - 21:00
End Date: 12/31/2016 - 21:00

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

1805 hrs.

AVG. WIND SPEED:

1.20 m/s

DATE:

8/27/2019

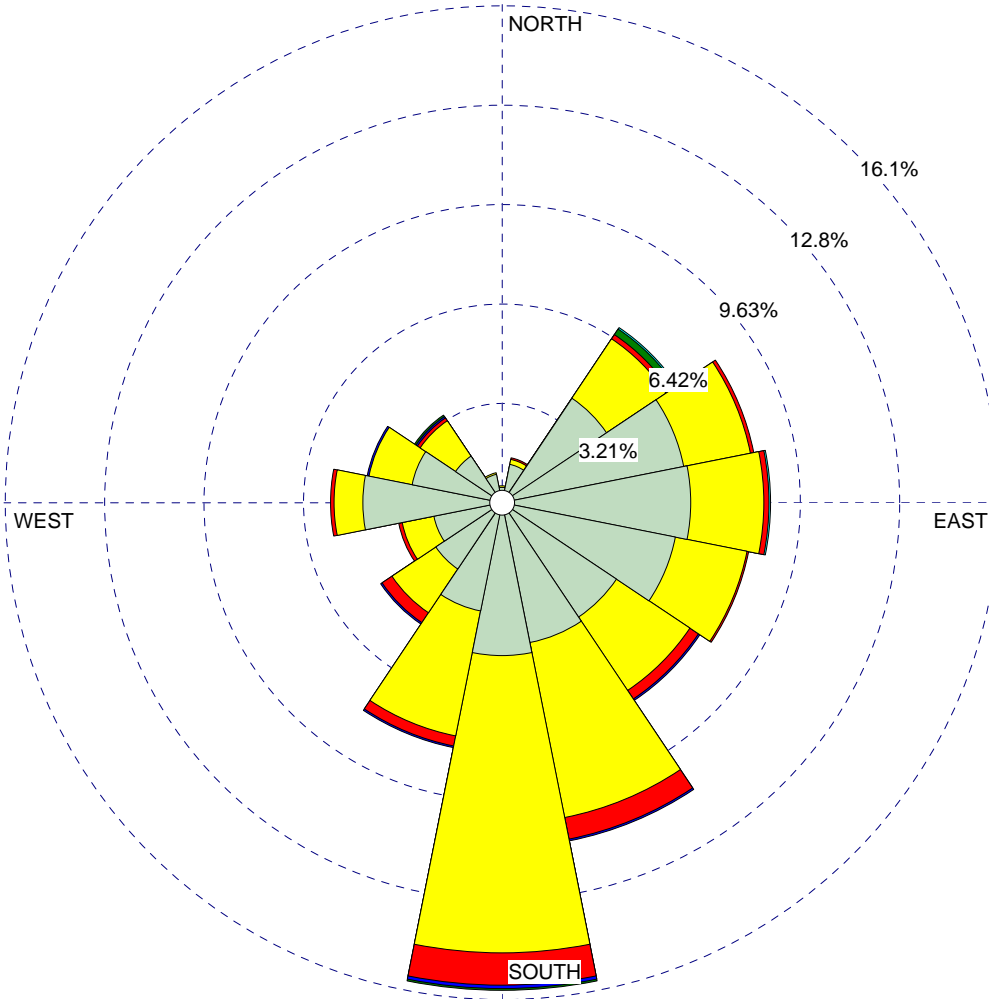
PROJECT NO.:

WIND ROSE PLOT:

SCAQMD MISSION VIEJO STATION
5 YEAR HOUR 22 WIND ROSE (2011-2014, 2016 22:00)

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(m/s)

- >= 5.00
- 4.00 - 5.00
- 3.00 - 4.00
- 2.00 - 3.00
- 1.00 - 2.00
- 0.00 - 1.00

Calms: 0.00%

COMMENTS:

DATA PERIOD:

Start Date: 1/1/2011 - 22:00
End Date: 12/31/2016 - 22:00

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

1805 hrs.

AVG. WIND SPEED:

1.14 m/s

DATE:

8/27/2019

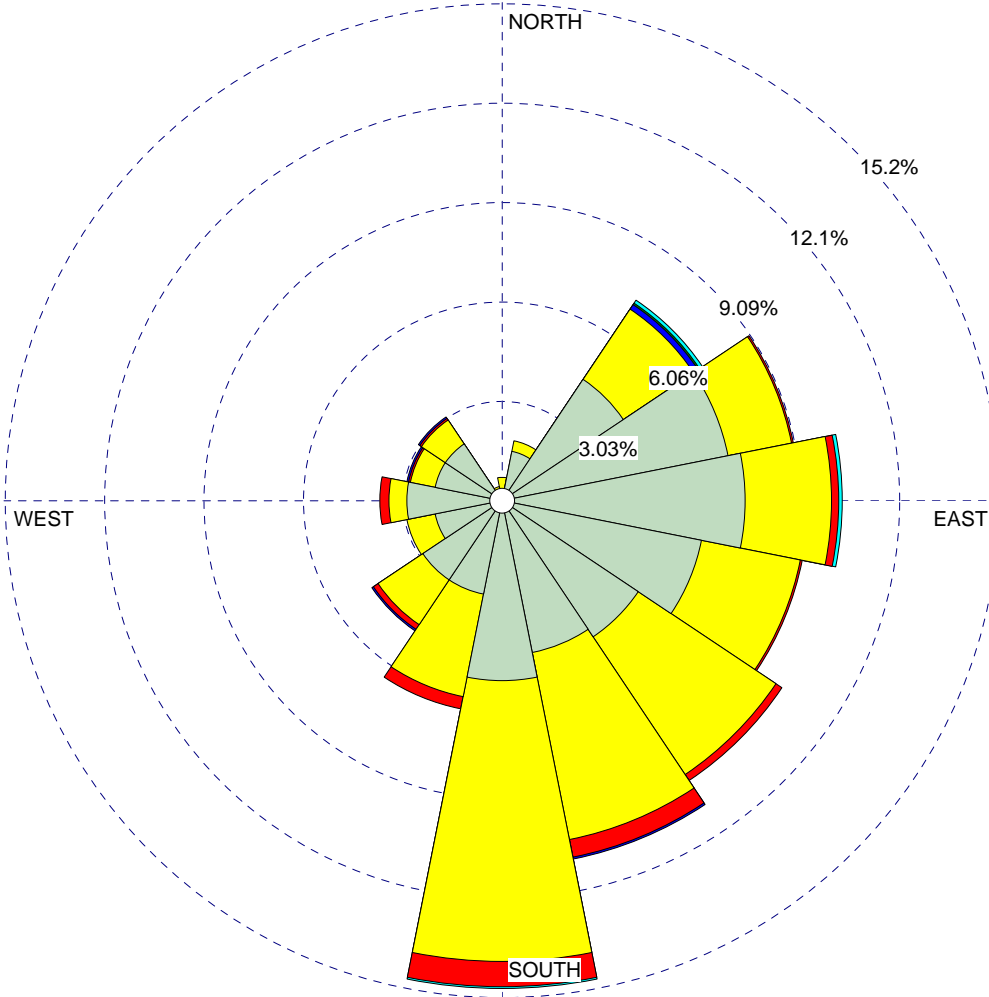
PROJECT NO.:

WIND ROSE PLOT:

SCAQMD MISSION VIEJO STATION
5 YEAR HOUR 23 WIND ROSE (2011-2014, 2016 23:00)

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(m/s)

- >= 5.00
 - 4.00 - 5.00
 - 3.00 - 4.00
 - 2.00 - 3.00
 - 1.00 - 2.00
 - 0.00 - 1.00
- Calms: 0.00%

COMMENTS:

DATA PERIOD:

Start Date: 1/1/2011 - 23:00
End Date: 12/31/2016 - 23:00

COMPANY NAME:

MODELER:

CALM WINDS:

0.00%

TOTAL COUNT:

1811 hrs.

AVG. WIND SPEED:

1.12 m/s

DATE:

8/27/2019

PROJECT NO.: