

Prima Deshecha Odor Study

Summary Presentation
(10-15-2013)

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SCS Tracer Environmental

Proposed Tasks

- Source Characterization
- Wind Analysis (Local and Regional)
- Odor Complaints
- Odor Impact Modeling – VaLinda Community
- Air Transport and Dispersion Analysis
- Upgrade/Repair of Met Station
- Mitigation Strategies and Recommendations
- Community Meetings

Source Characterization

Areas of Potential Odor



Source Characterization

Other Point Sources of Odors

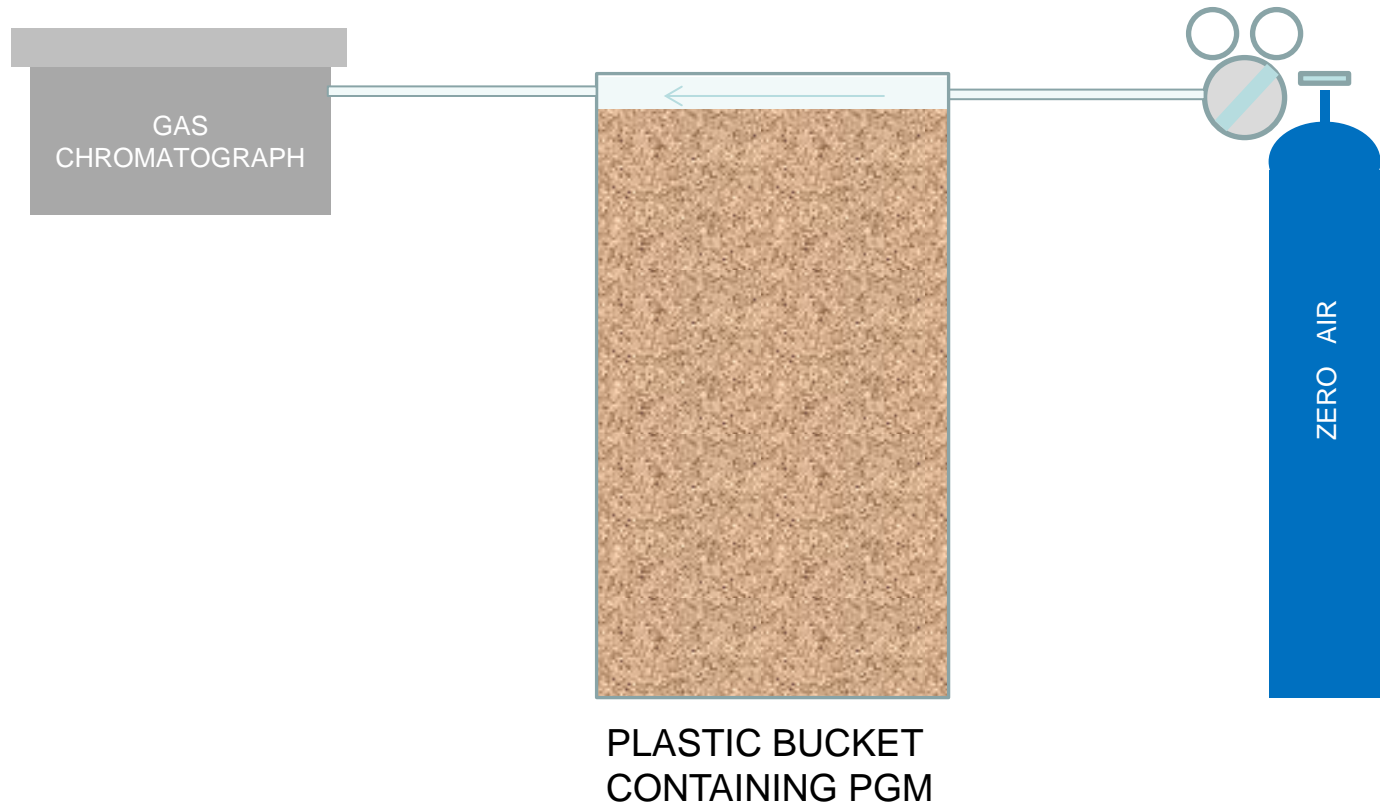


Odor Sampling of Sources



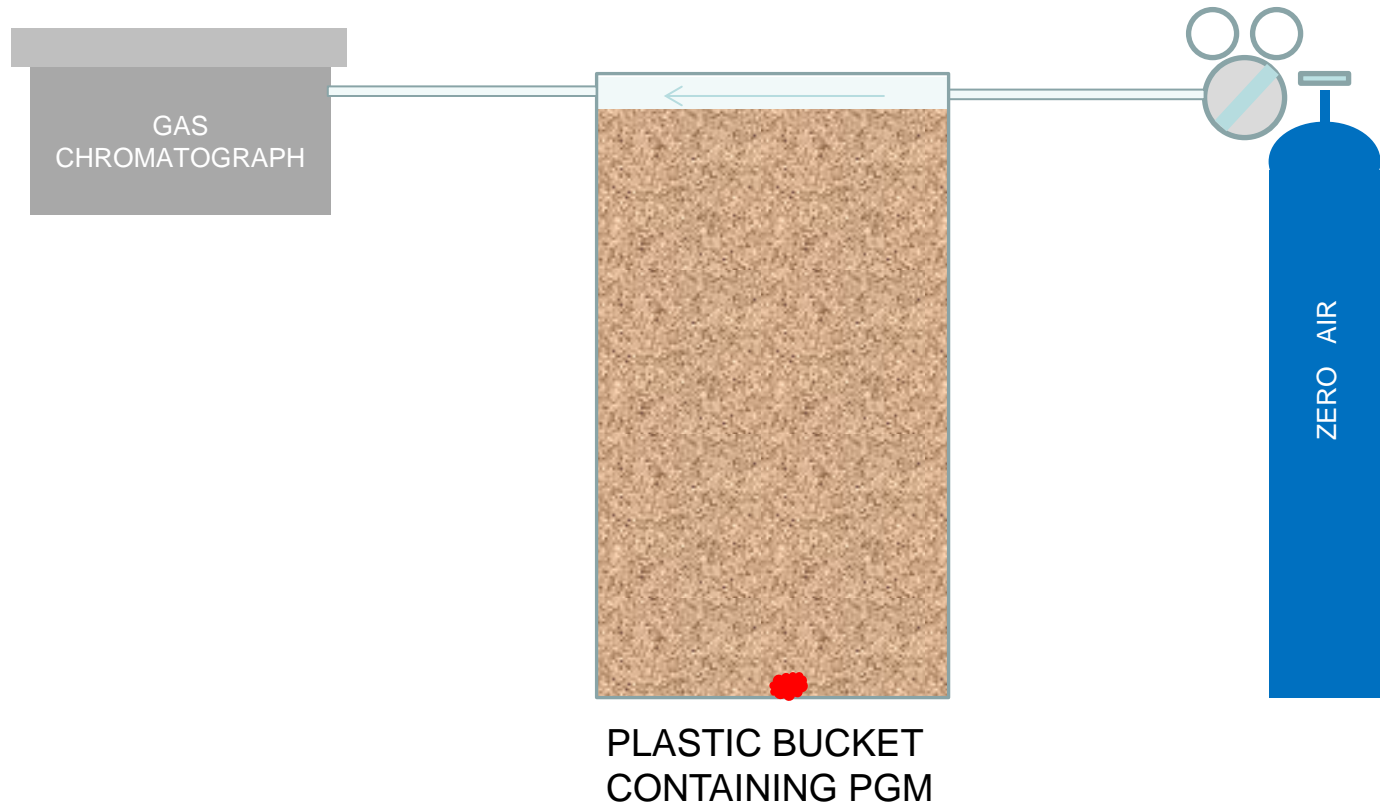
Surface Media Dispersion Tests

INITIAL CONDITIONS



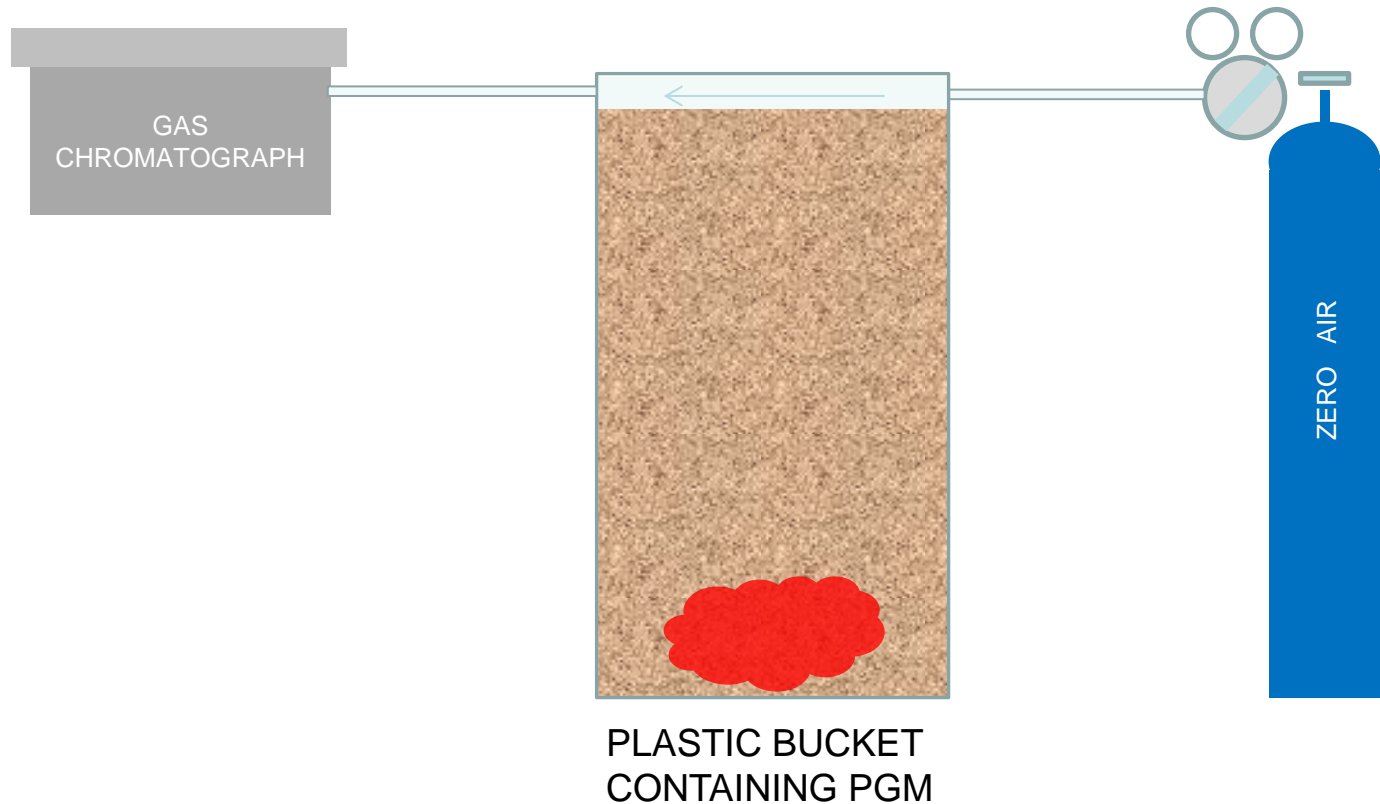
Surface Media Dispersion Tests

INTRODUCTION OF SMALL AMOUNT OF TRACER



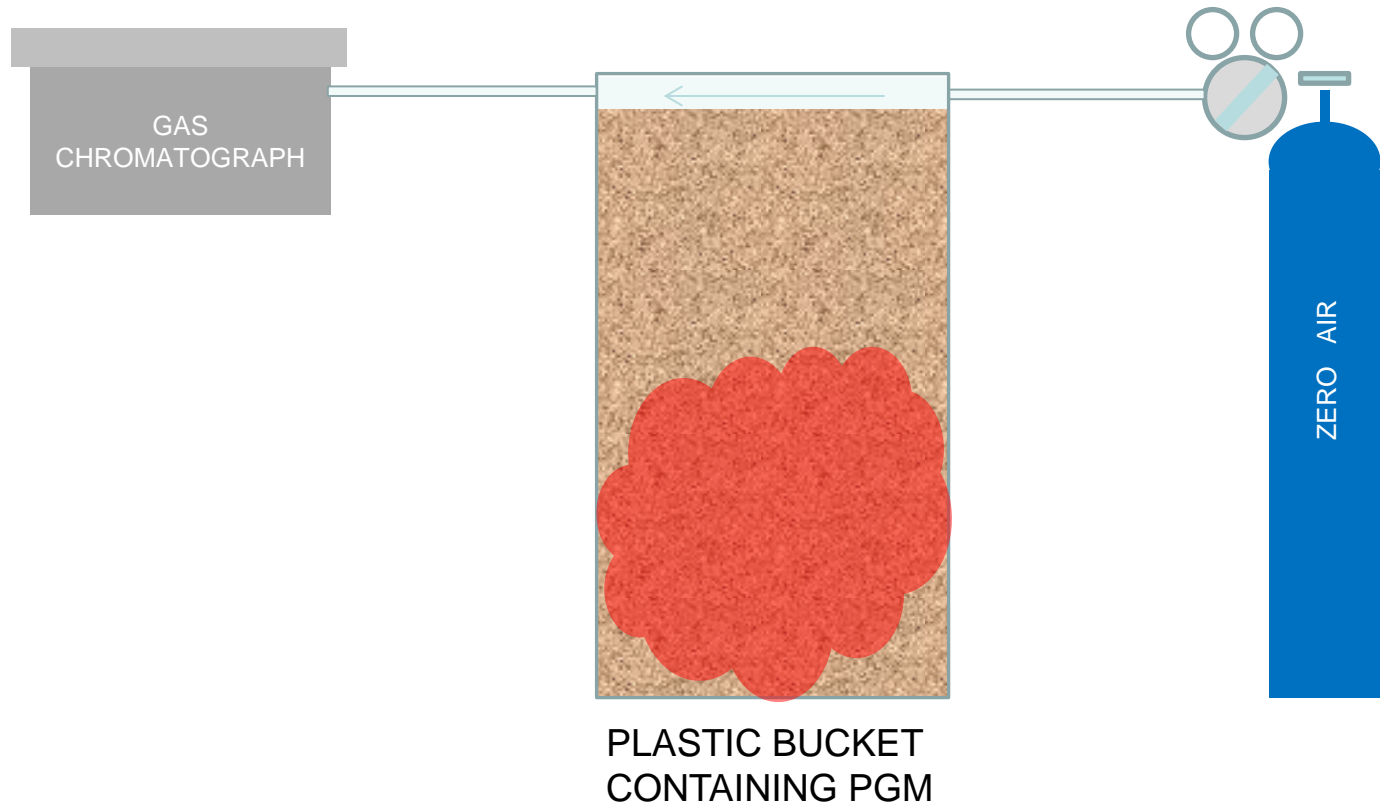
Surface Media Dispersion Tests

DISPERSION OF TRACER THROUGH MEDIA



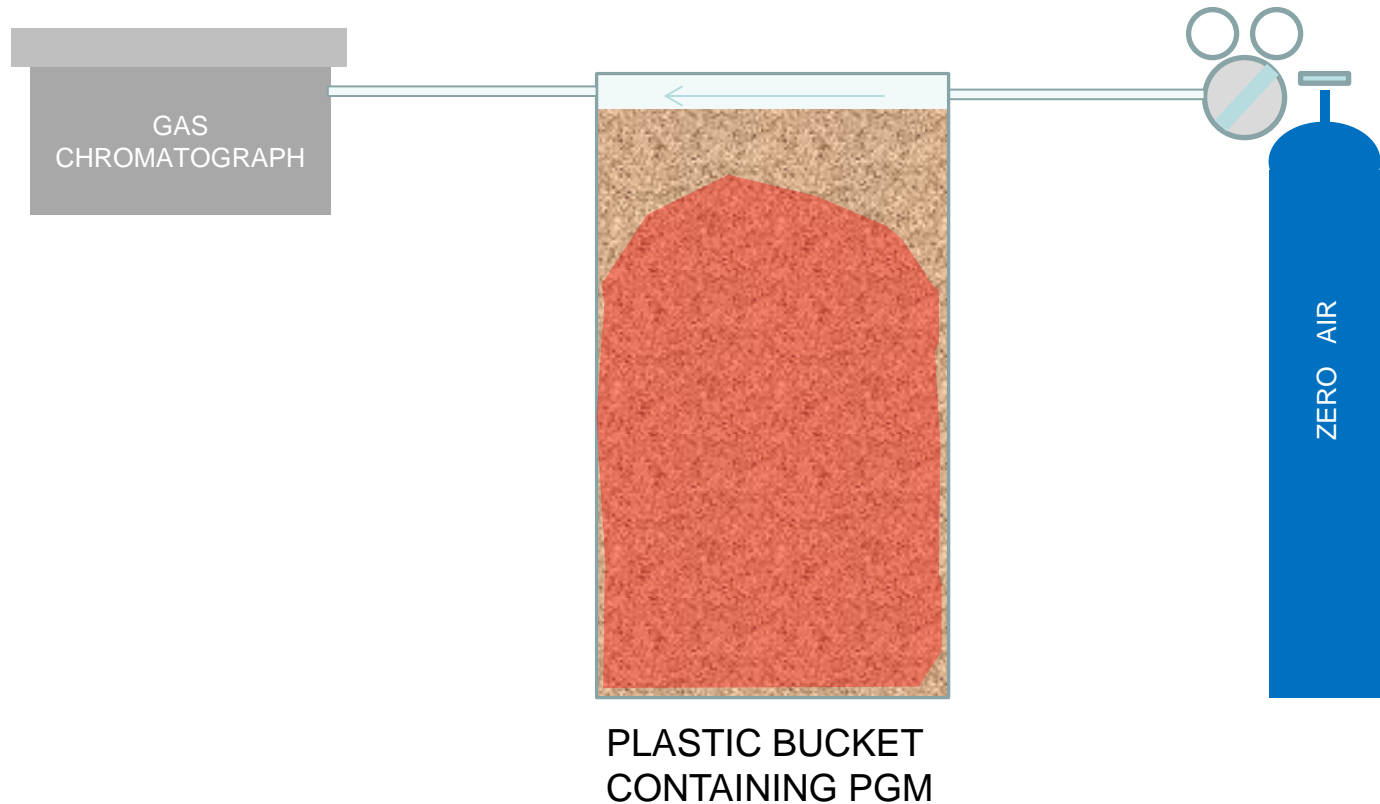
Surface Media Dispersion Tests

DISPERSION OF TRACER THROUGH MEDIA



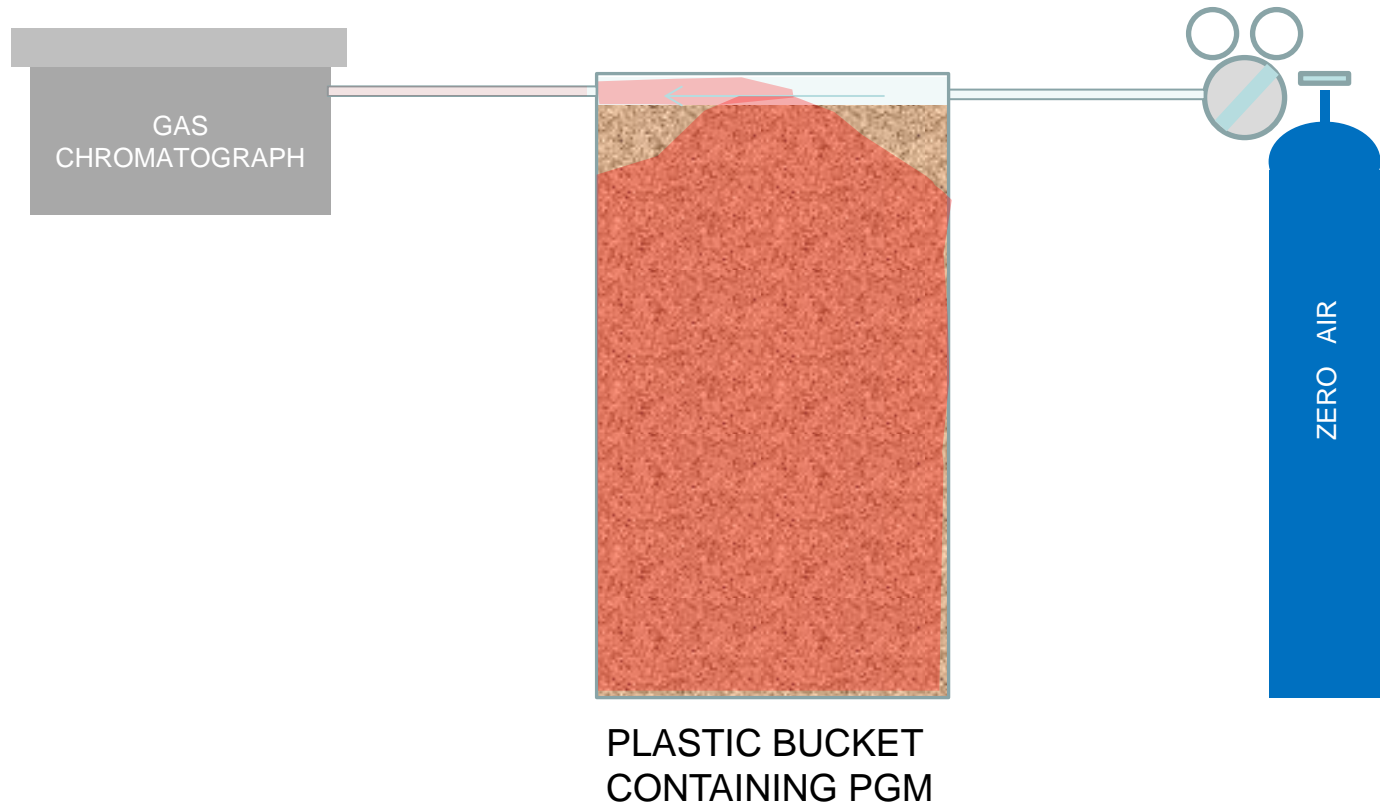
Surface Media Dispersion Tests

DISPERSION OF TRACER THROUGH MEDIA



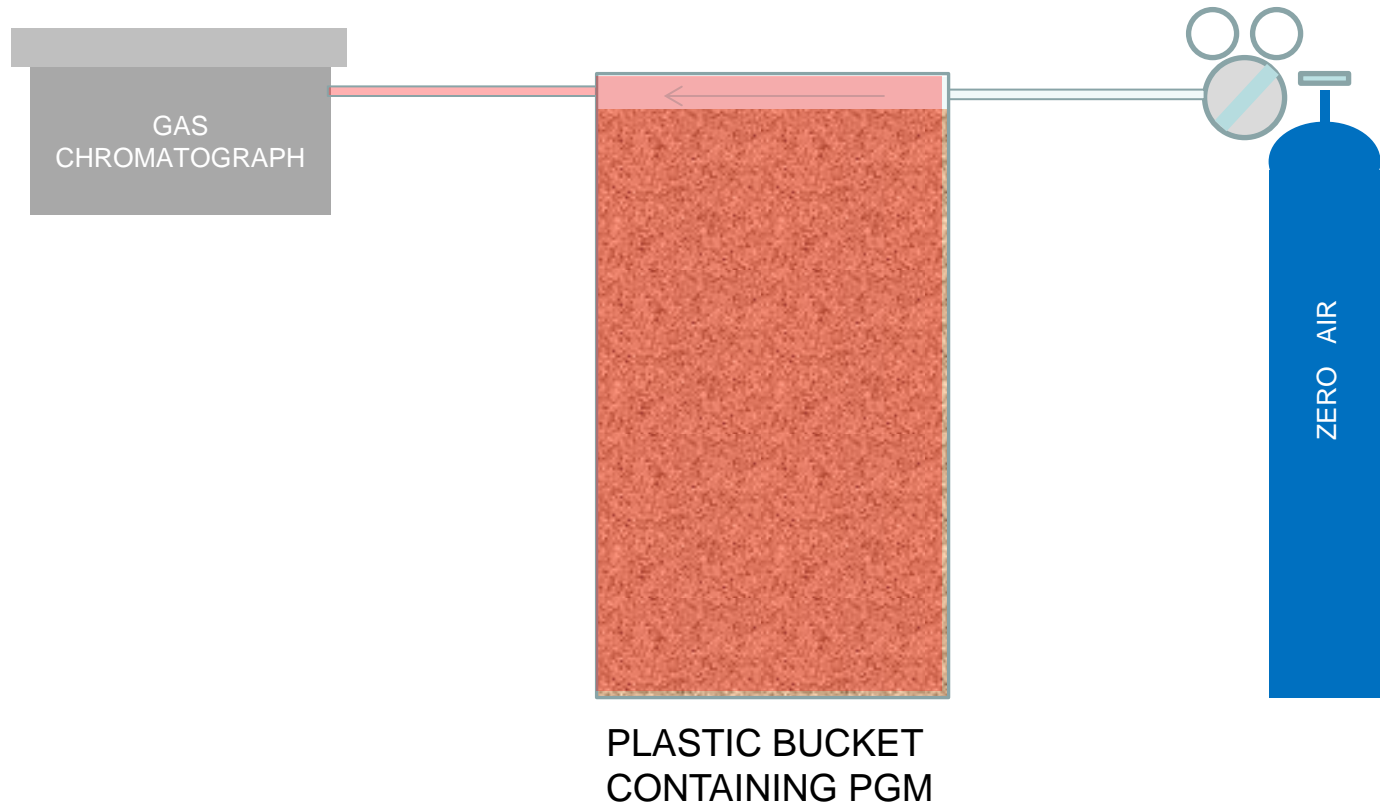
Surface Media Dispersion Tests

BREAKTHROUGH INTO HEADSPACE AND FIRST DETECTION



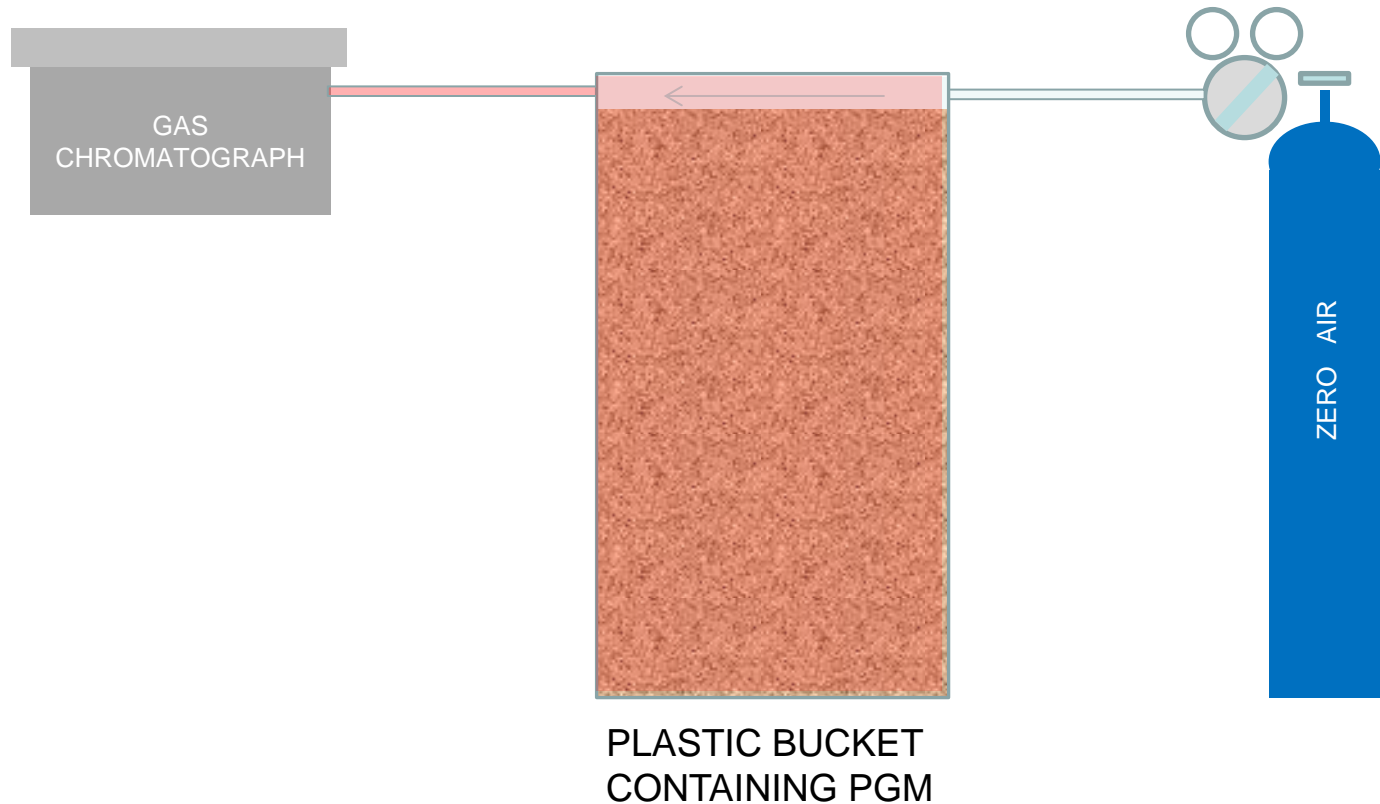
Surface Media Dispersion Tests

FULL BREAKTHROUGH AND MAXIMUM
CONCENTRATION IN HEADSPACE



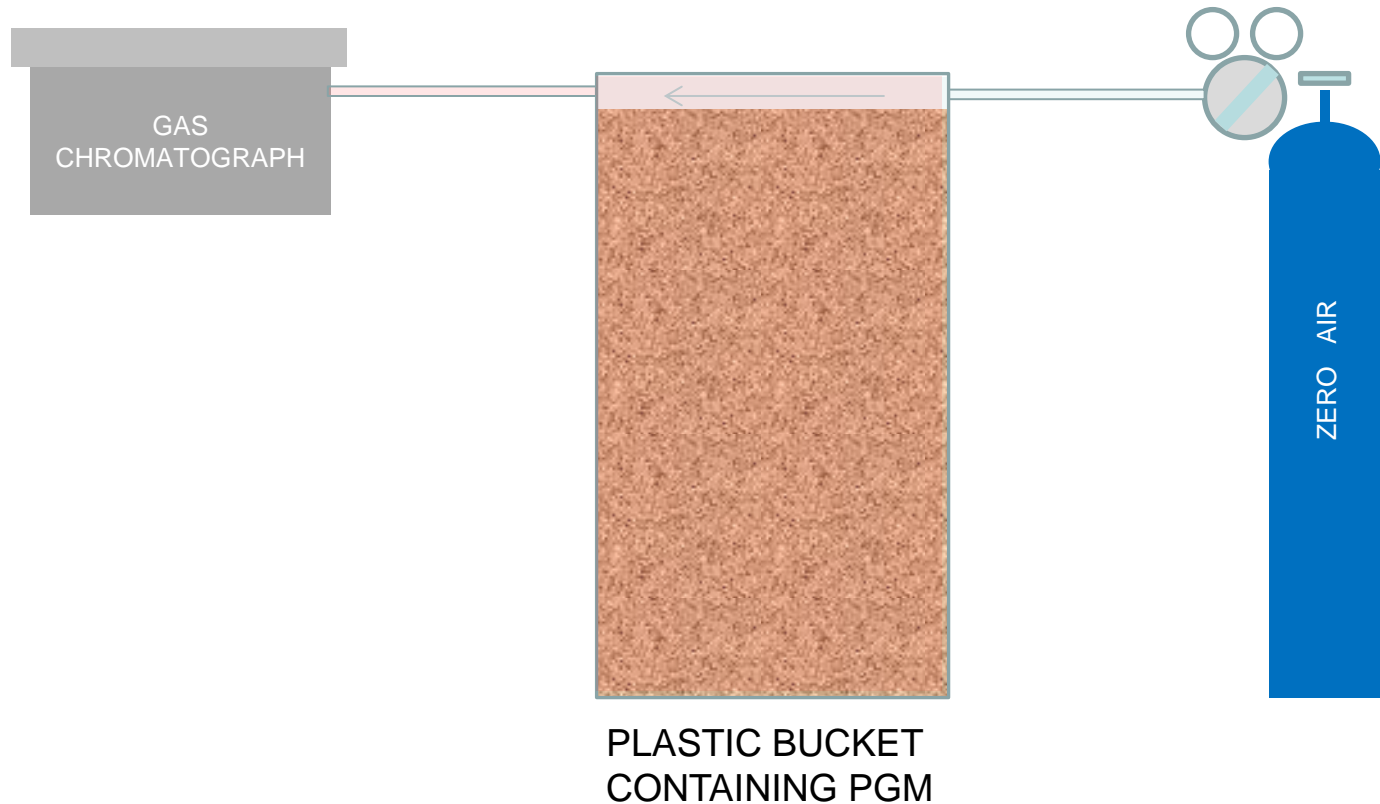
Surface Media Dispersion Tests

DECREASE IN CONCENTRATION AFTER PEAK

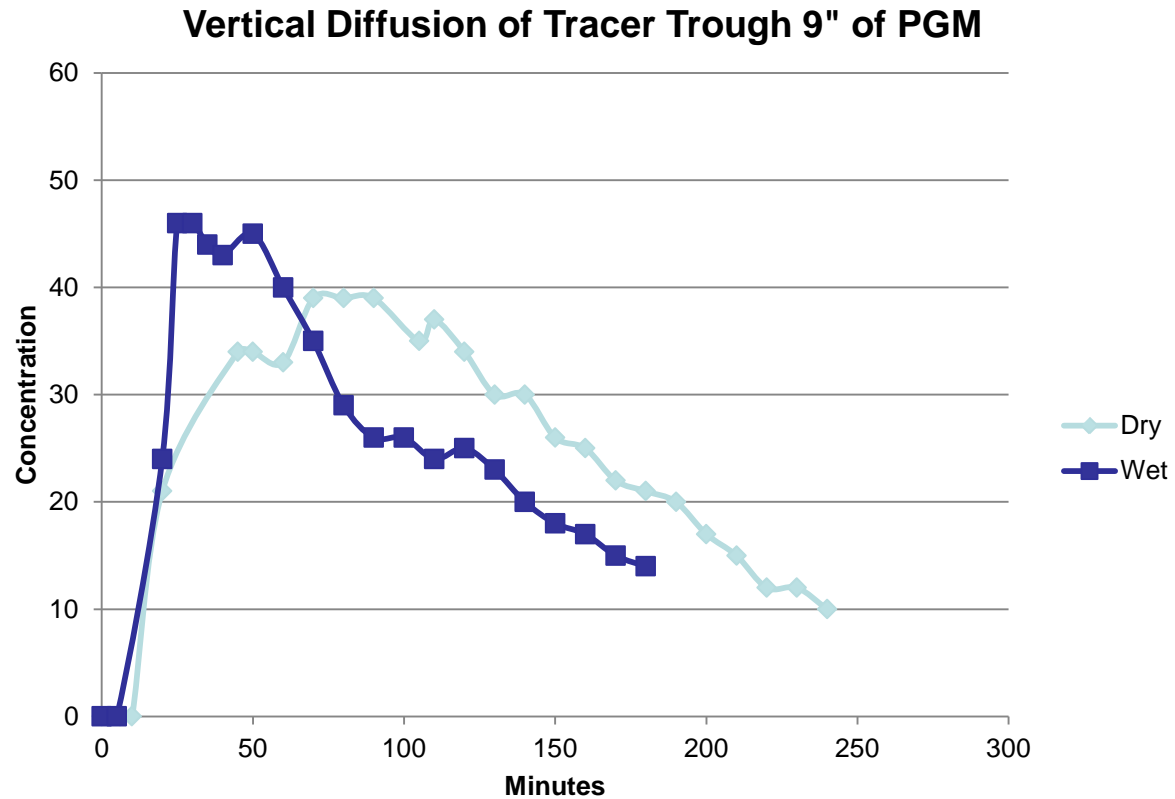


Surface Media Dispersion Tests

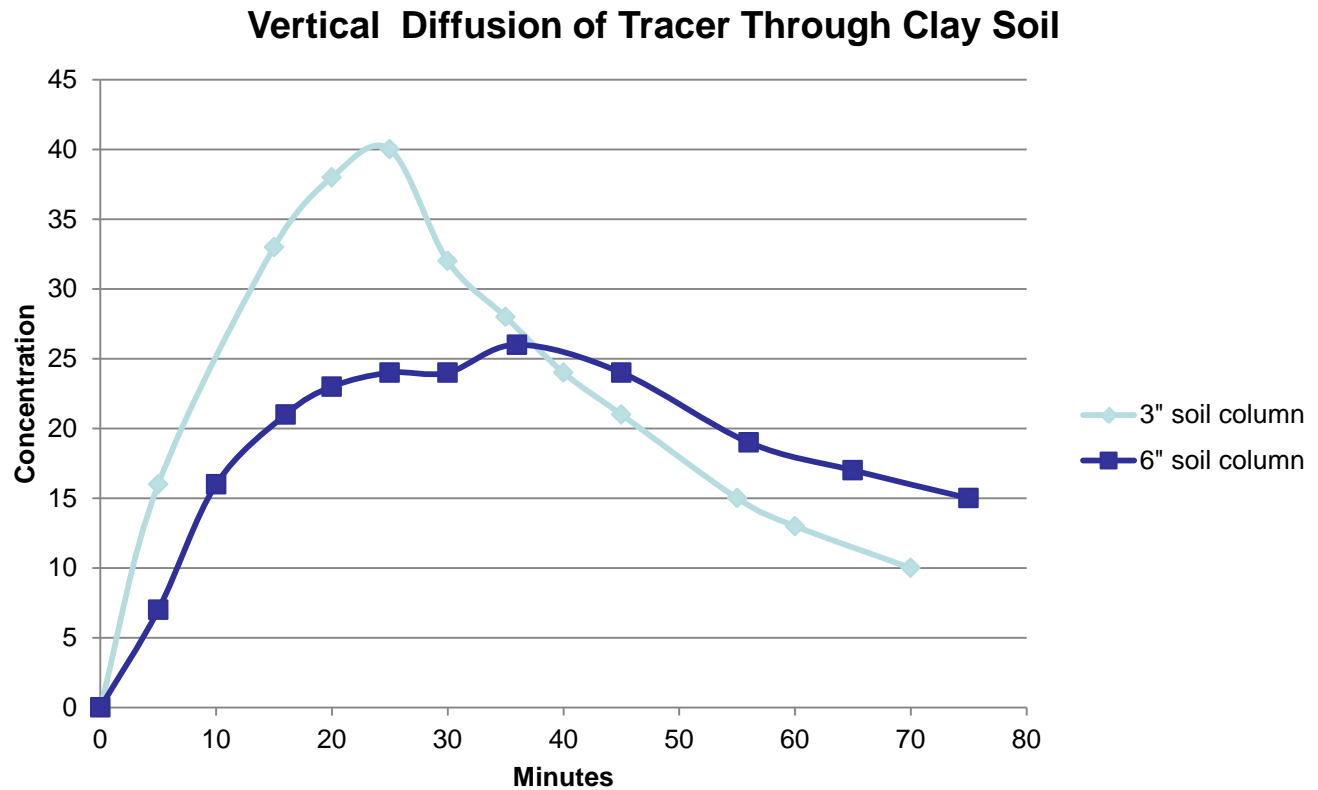
DECREASE IN CONCENTRATION AFTER PEAK



CONCENTRATION vs TIME PLOT OF VERTICAL DIFFUSION THROUGH WET AND DRY PGM



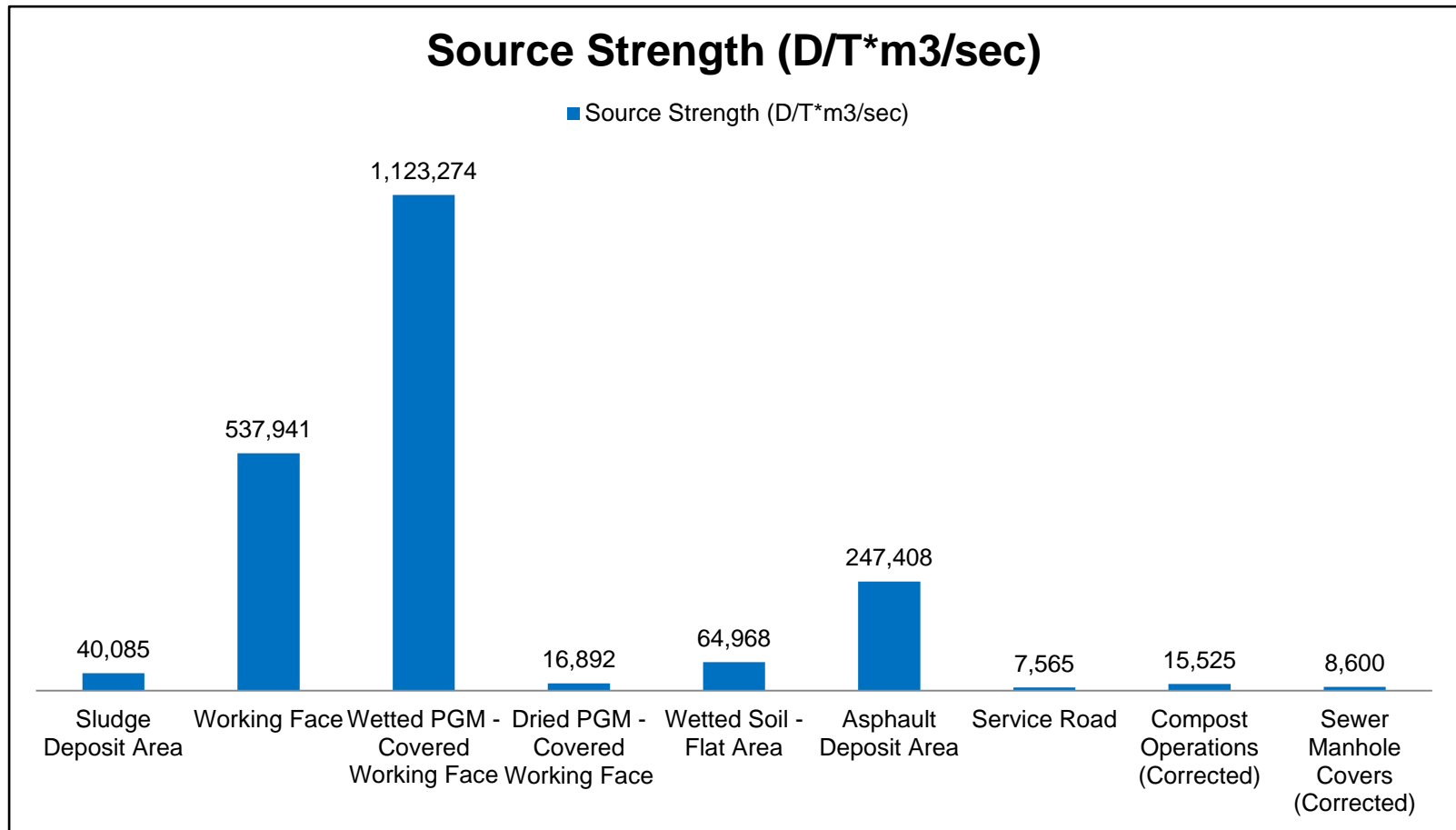
CONCENTRATION vs TIME PLOT OF VERTICAL DIFFUSION THROUGH TWO DEPTHS OF CLAY CAP SOIL



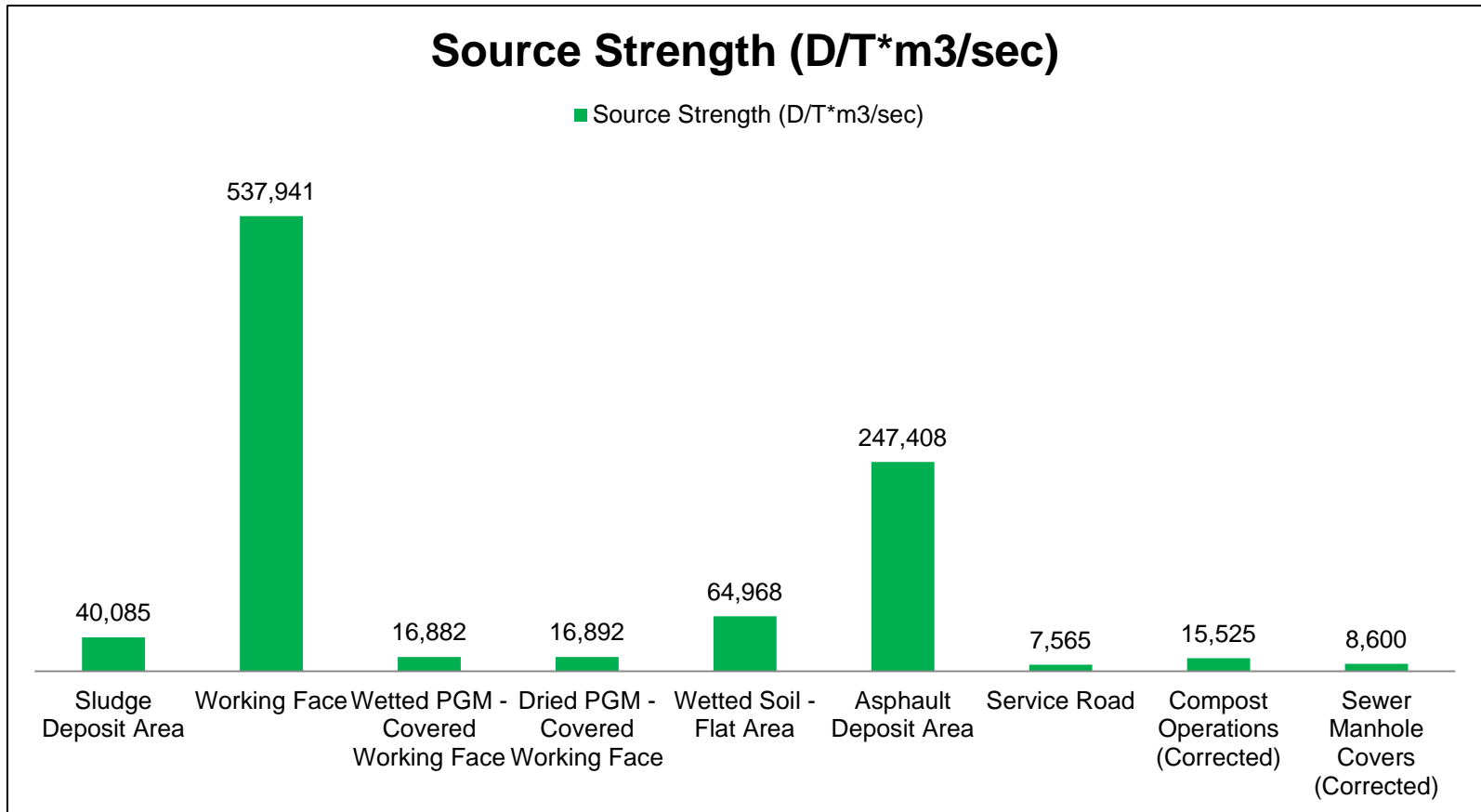
SUMMARY OF ESTIMATED VERTICAL DIFFUSION THROUGH THREE LANDFILL CAP MATERIALS

Material	Velocity (m/sec)
Dry PGM	0.005
Wet PGM	0.015
Cap Soil	0.006
Solid Waste	0.500

Odor Source Strength Profile

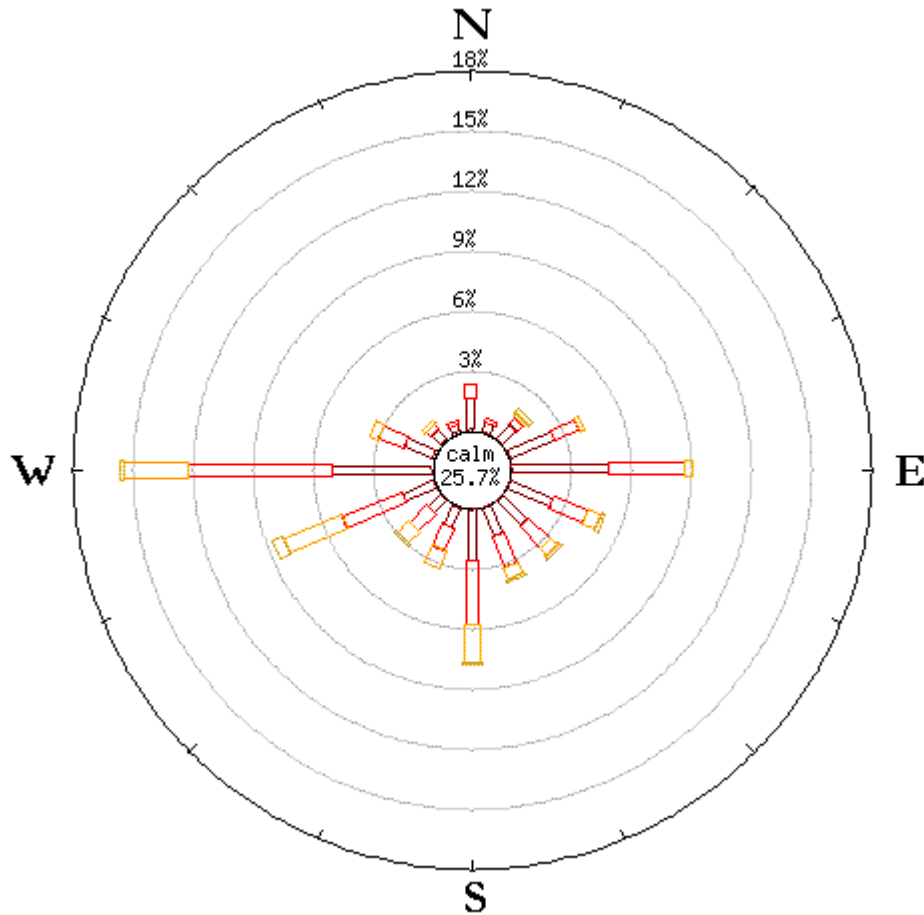


Odor Source Strength Profile (Omit Wet PGM)

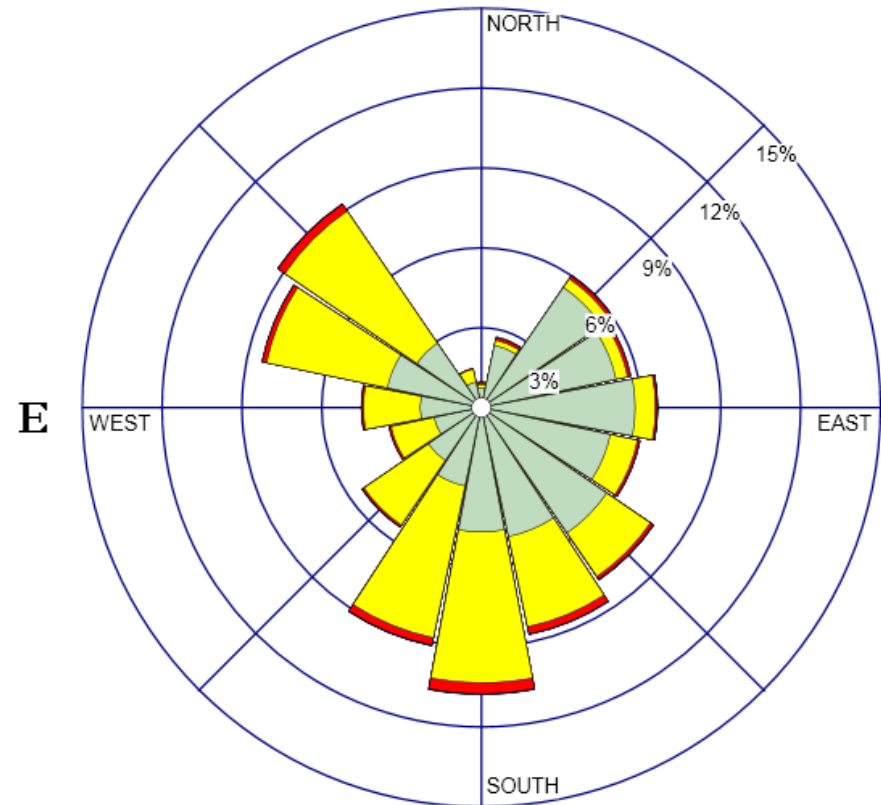


Annual Wind Rose Plots

El Toro

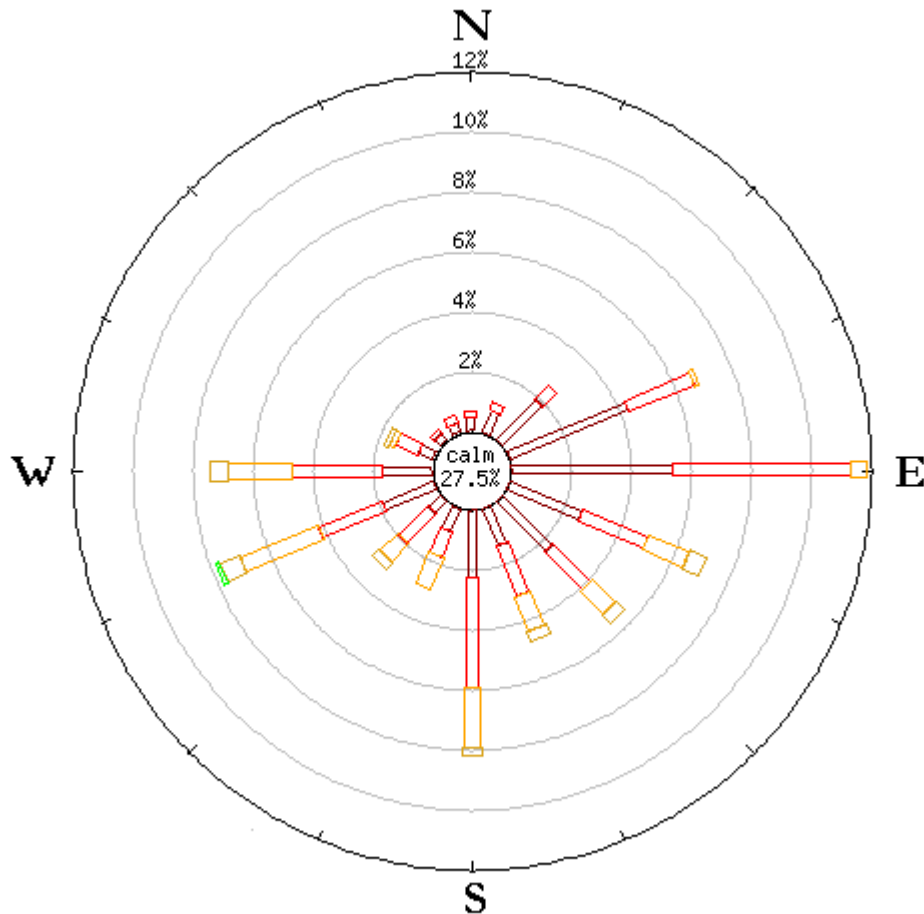


Mission Viejo

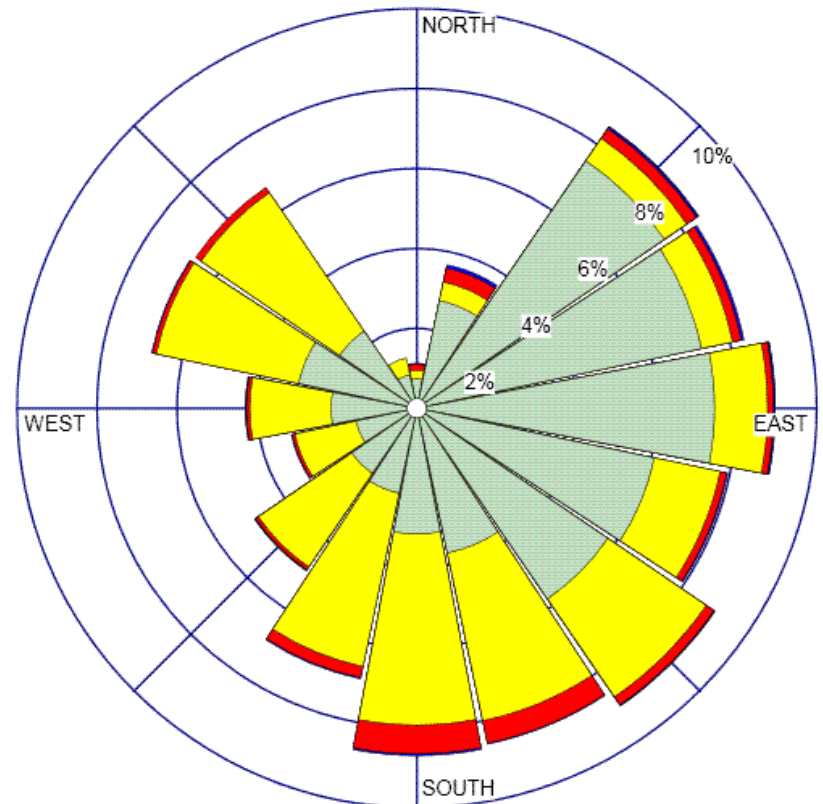


1st Quarter Wind Rose Plots

El Toro

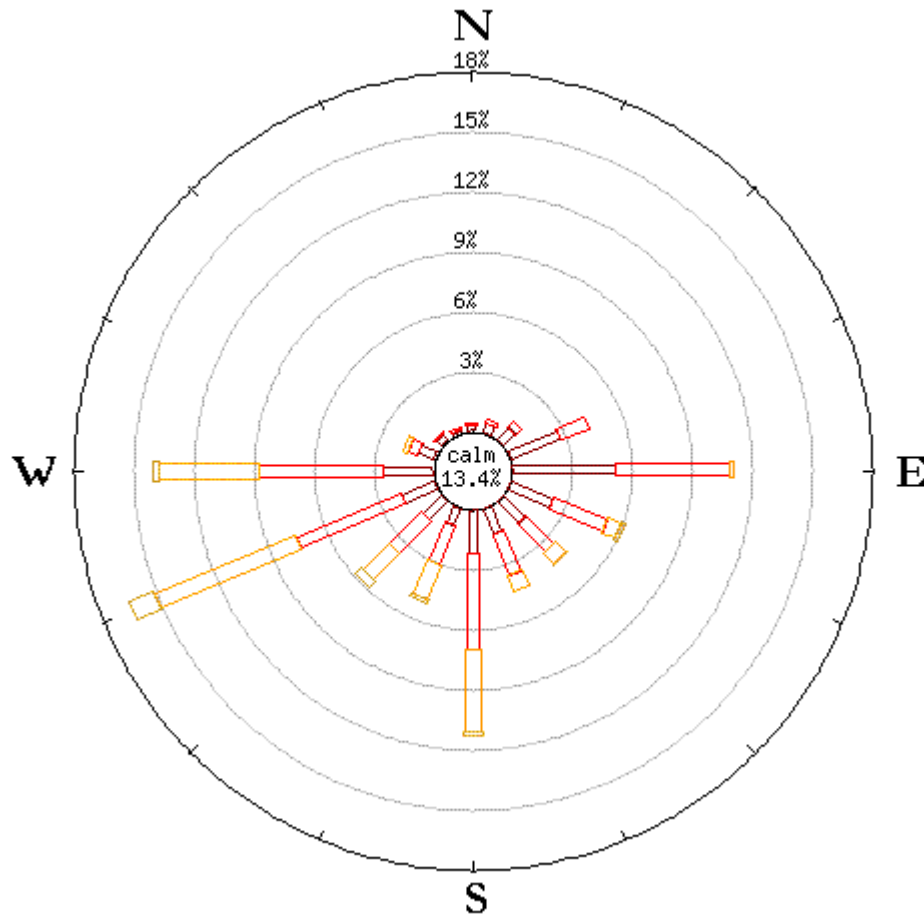


Mission Viejo

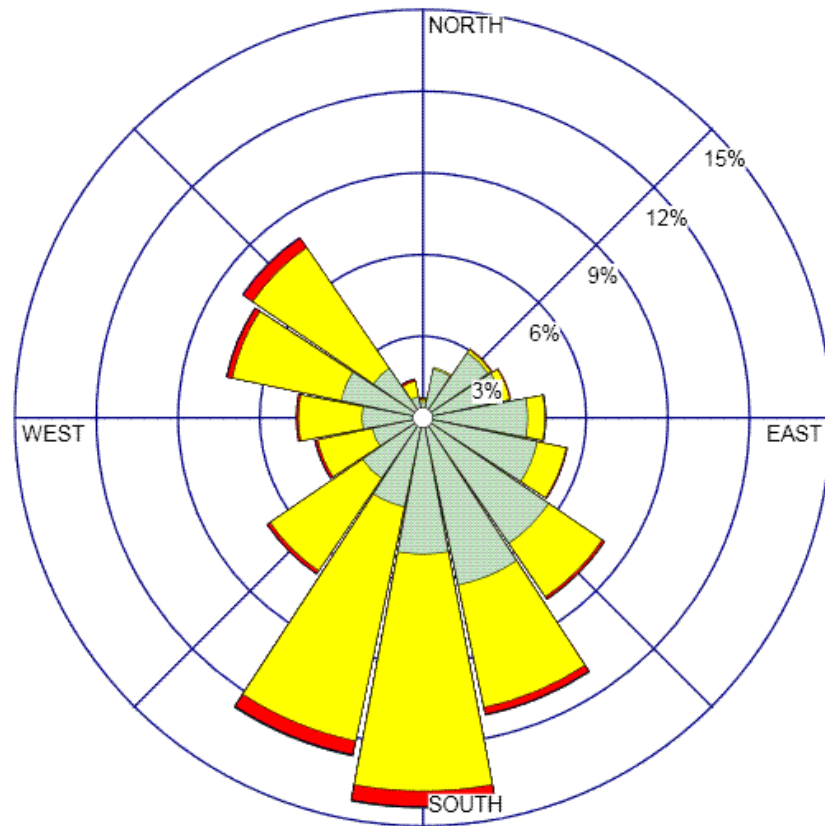


2nd Quarter Wind Rose Plots

El Toro

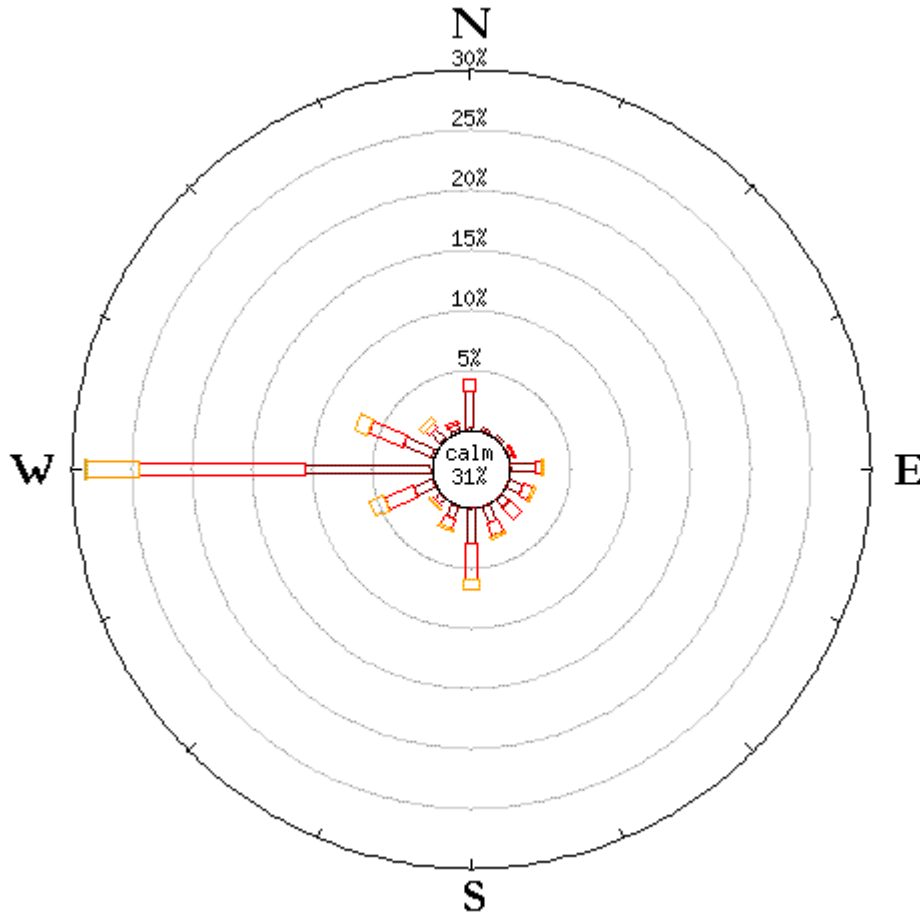


Mission Viejo

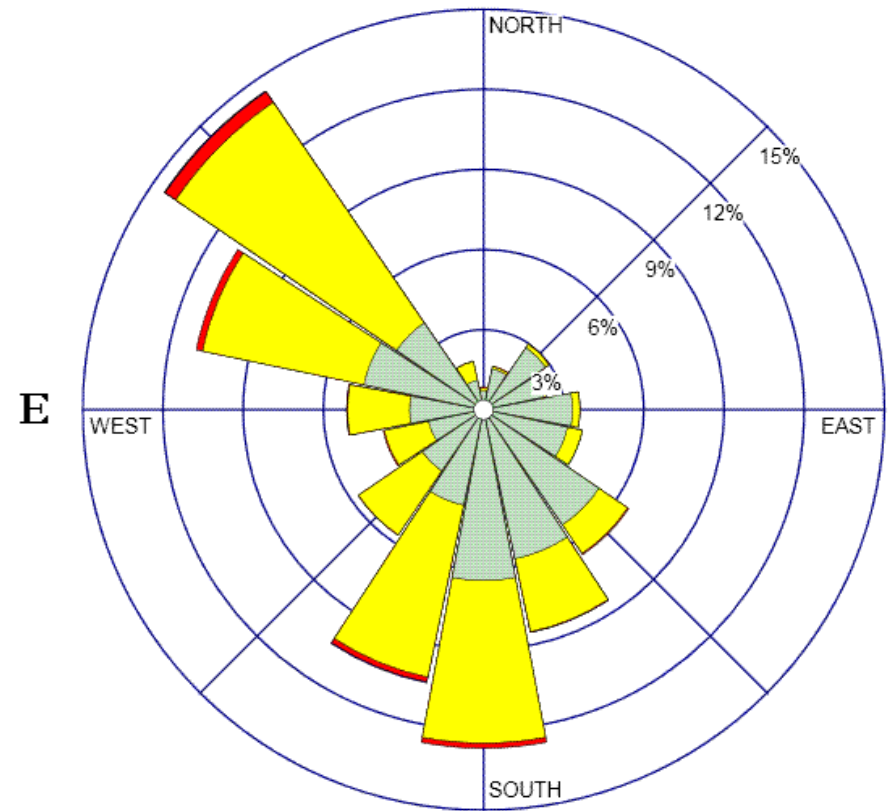


3rd Quarter Wind Rose Plots

El Toro

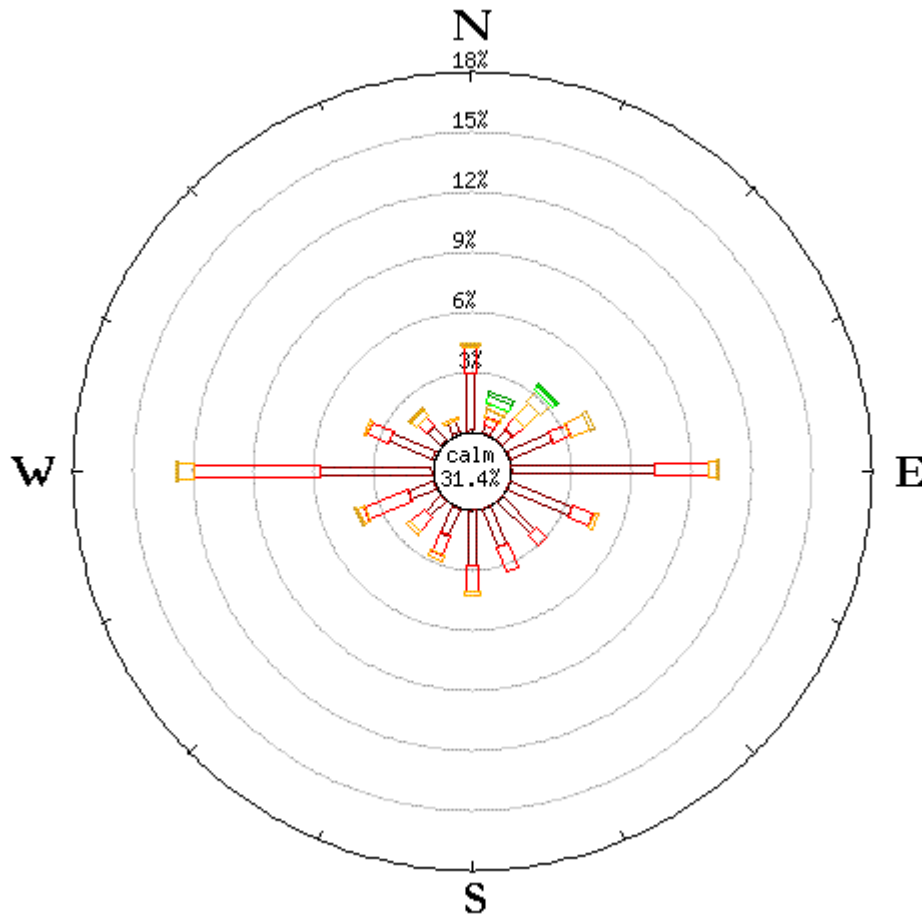


Mission Viejo

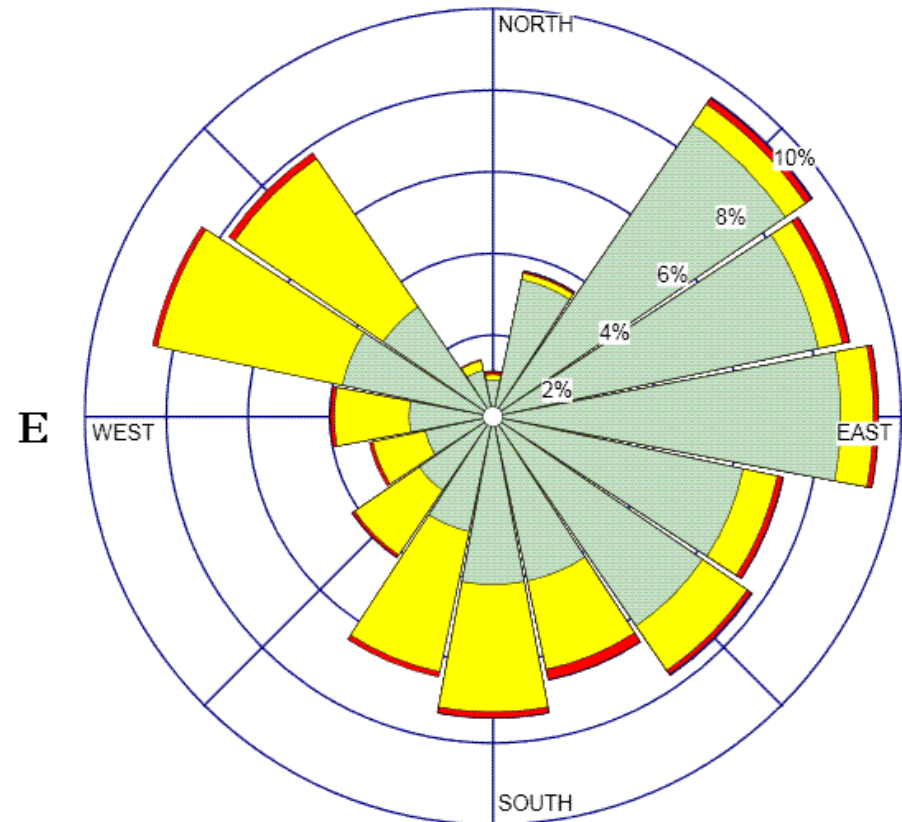


4th Quarter Wind Rose Plots

El Toro



Mission Viejo



Meteorological Monitoring Summary



Existing Weather Station:

- Installed New WS And WD Sensors And Sensor Cables At Existing Weather Station.
- Reprogrammed Data Logger To Operate With New Sensors.
- Reprogrammed Data Logger To Record 5-min Averages.
- Calibrated Sensors And Verified Proper Operation Of Data Logger.

Temporary Weather Station:

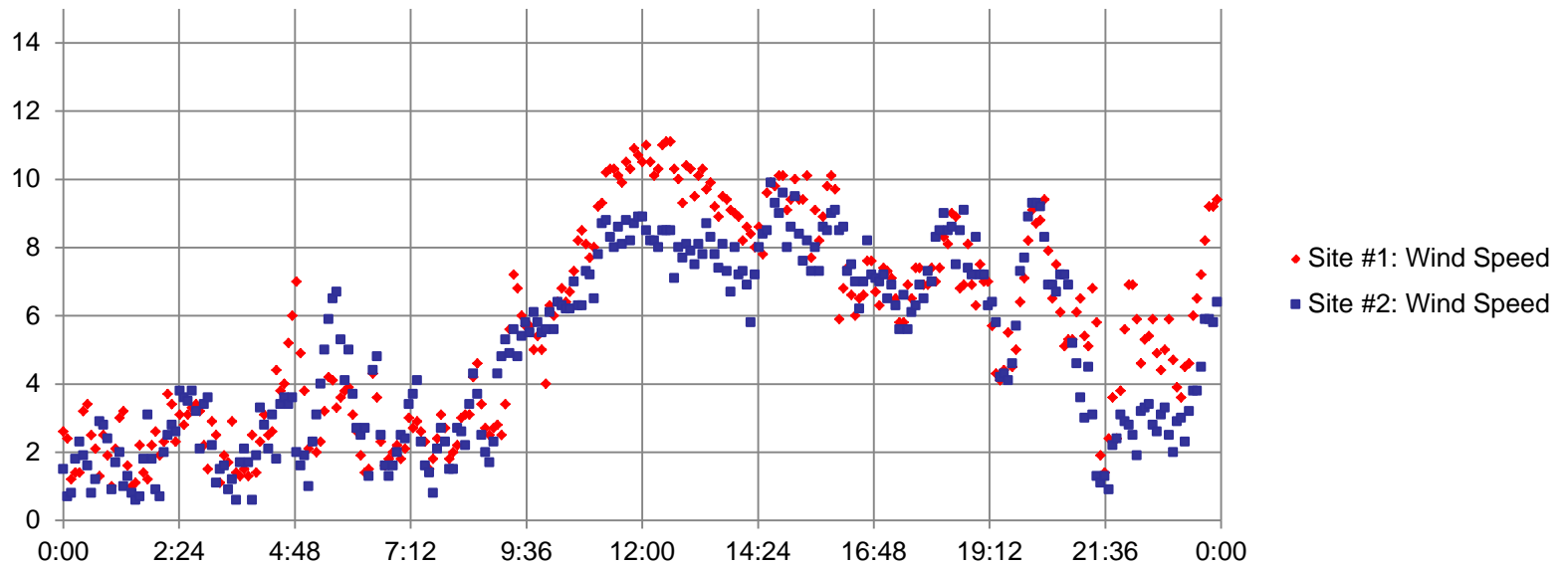
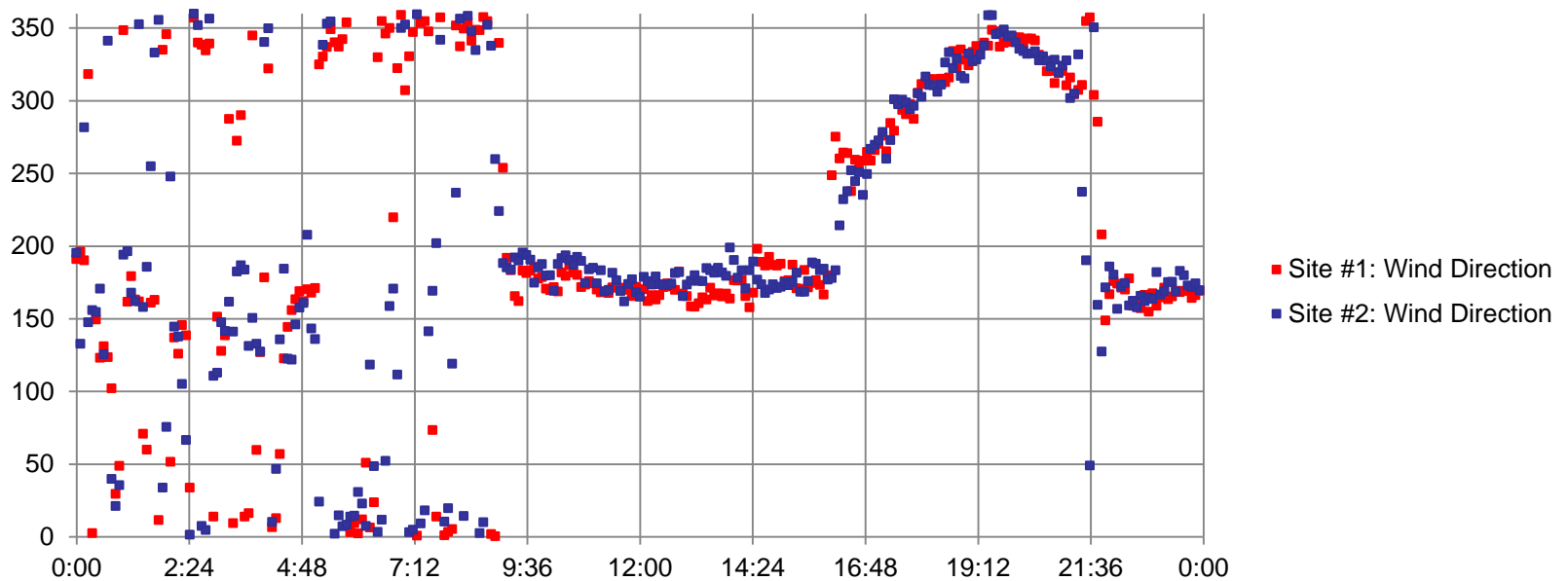
- Installed Temporary Weather Station In “The Saddle” For The Purpose Of Comparing The Existing Locations Weather Parameters To That In The Saddle As Well As To Better Understand Transport Characteristics From The Landfill To The Community.
- SCS Tracer and OCWR Determined That The Existing Weather Station Is Not Adequate For Describing Transport From The Facility To The Community.

Weather Station Relocation

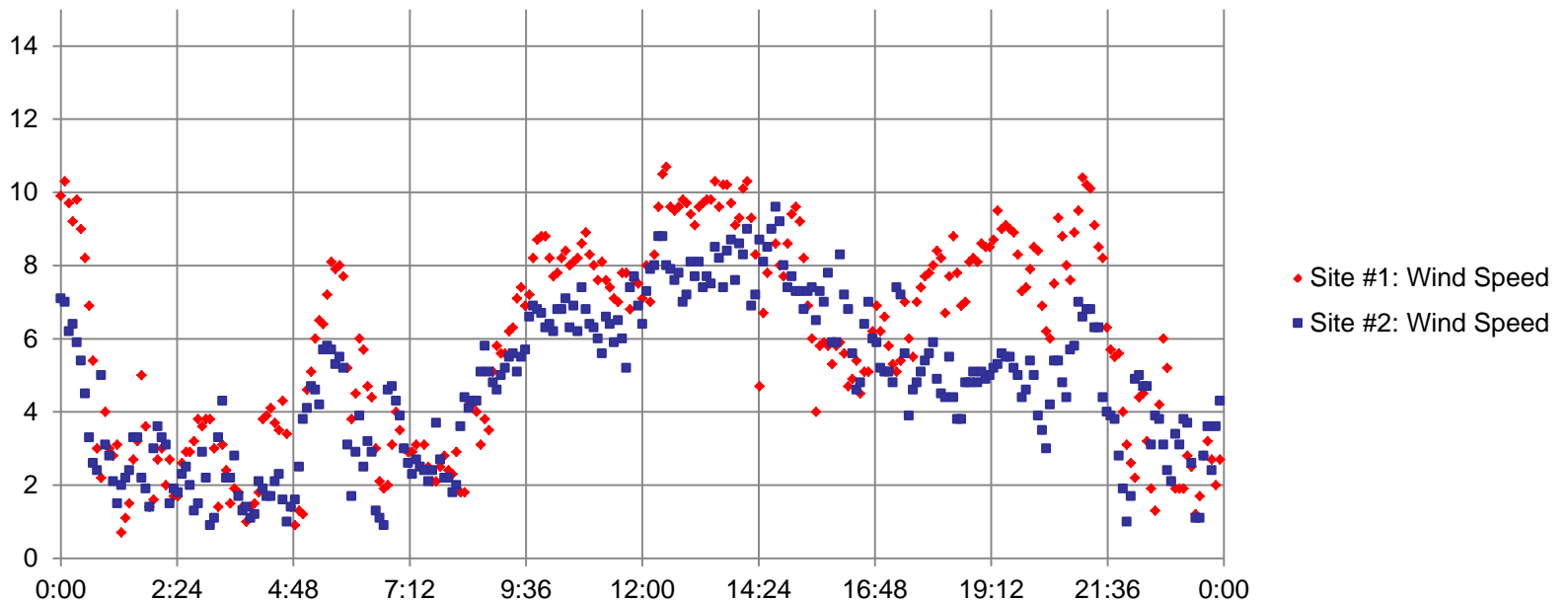
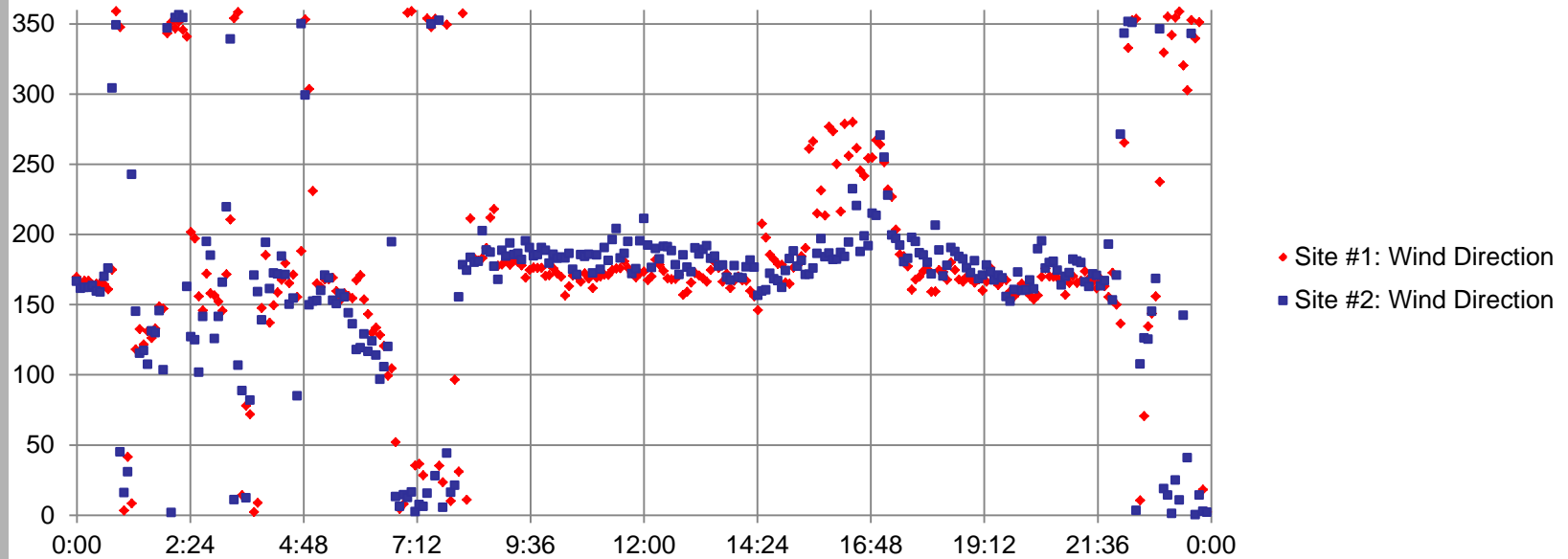


- The Sensors/Data Loggers/Solar Power Assembly/Cables From The Current Fixed Weather Station Have Been Removed From The Existing Tower Following An “As Is” Calibration.
- SCS Tracer Will Re-install And Calibrate The System Following Re-installation Of The Tower In “The Saddle” by OCWR. At That Point, The Temporary Weather Station Will Be Removed.

Data Comparisons: 9/4/13

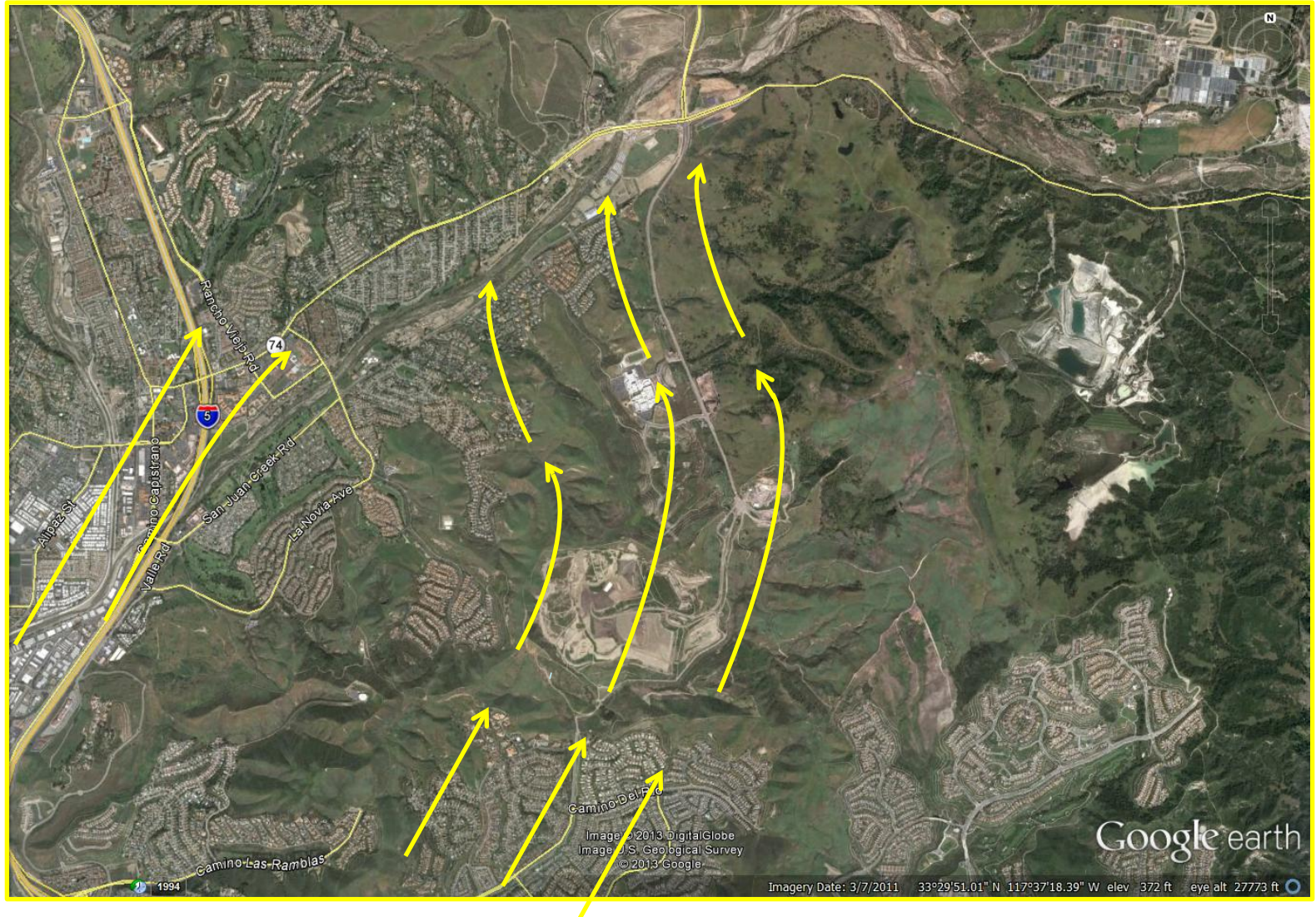


Data Comparisons: 9/5/13



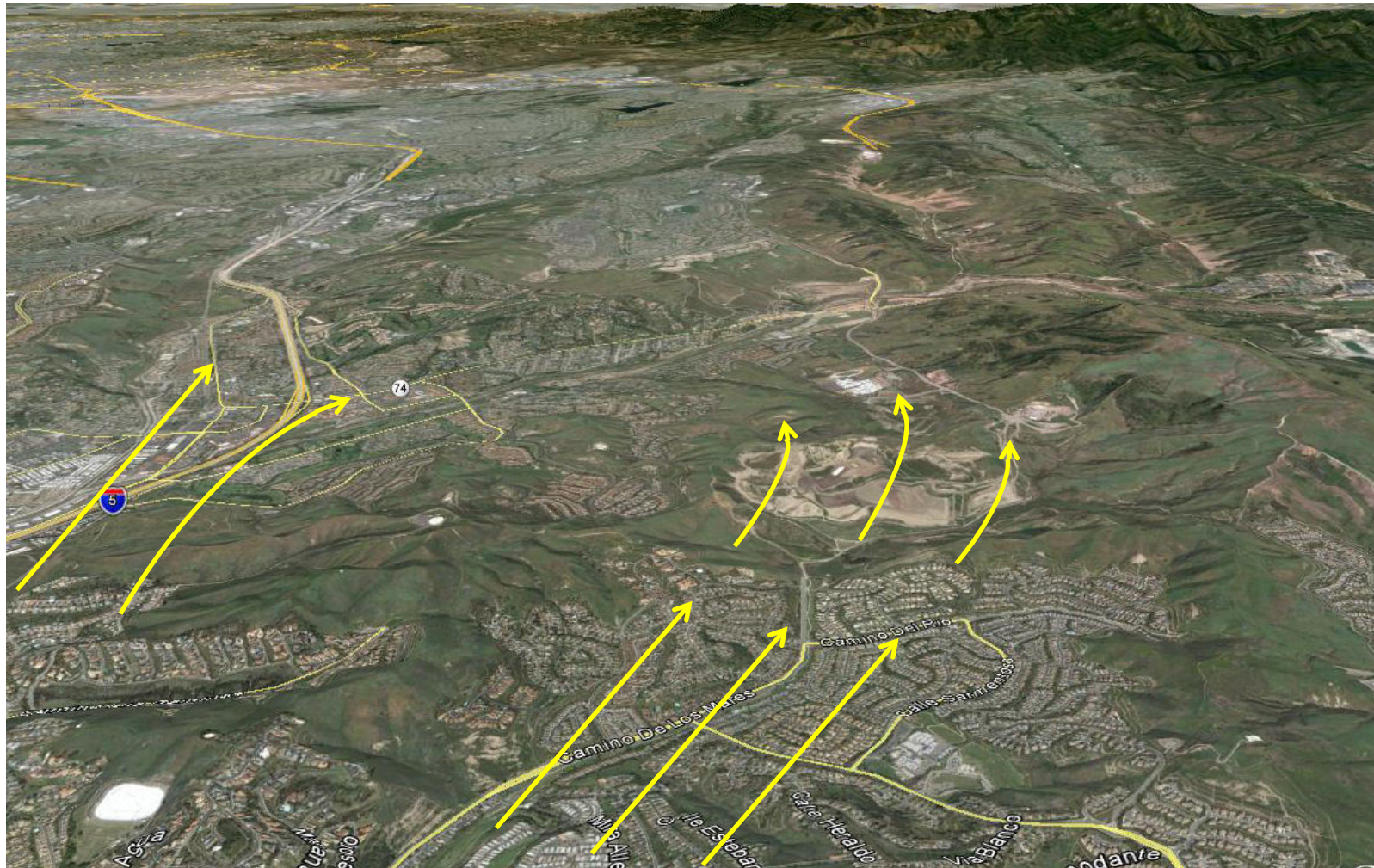
Estimated Trajectories

Sea Breeze Regime

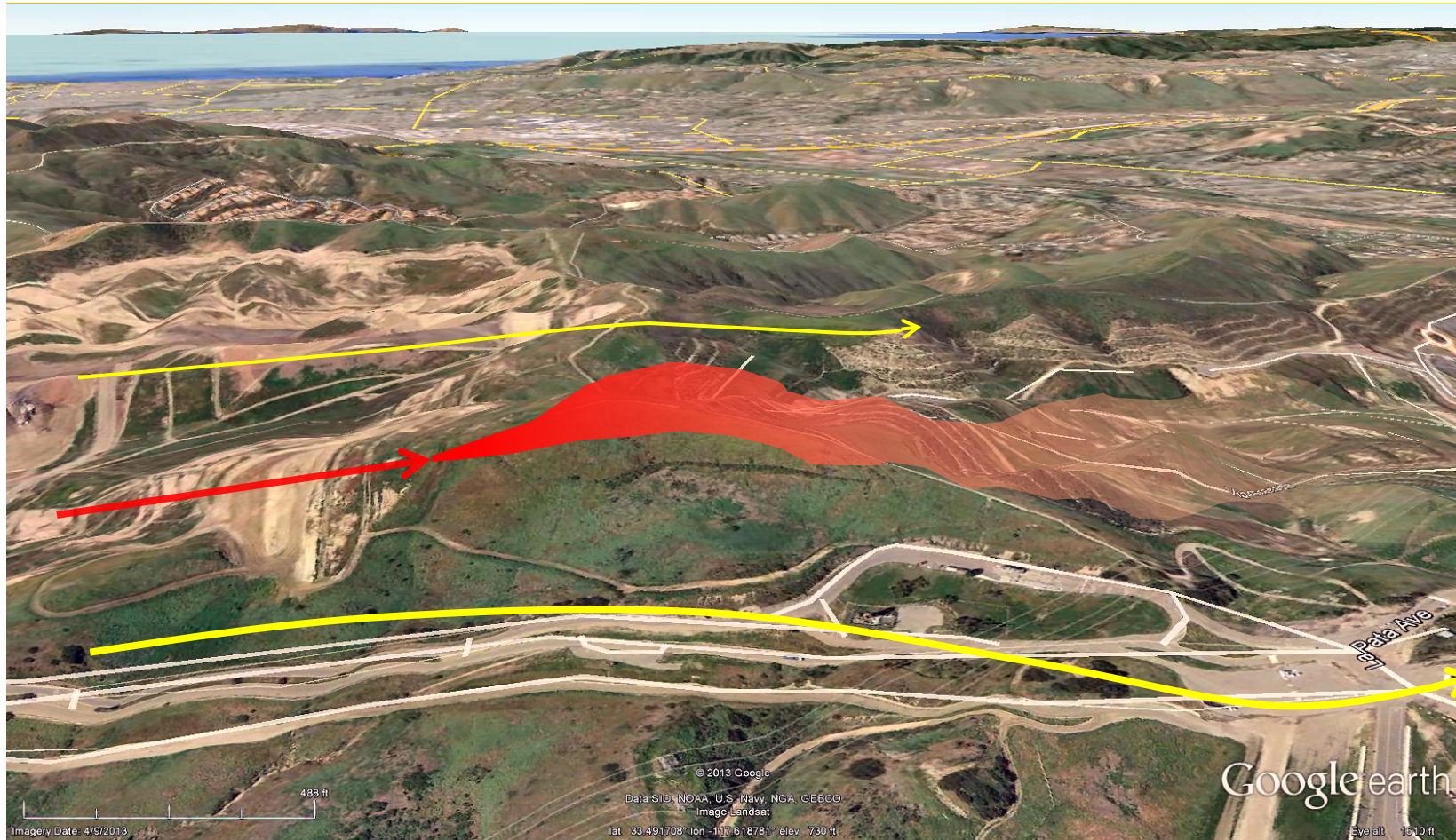


Estimated Trajectories

Sea Breeze Regime



Terrain Influences on Turbulence



Tracer Gas Release Locations

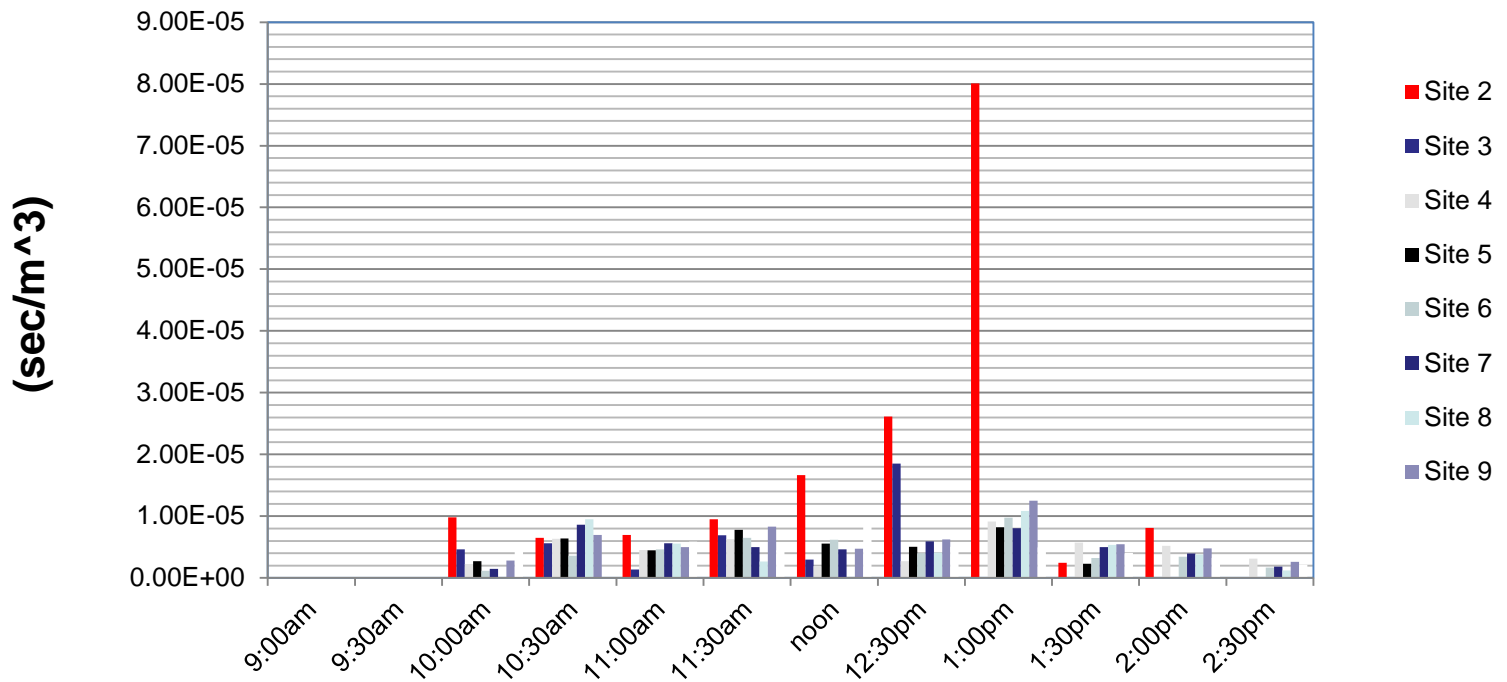


Sampling Locations



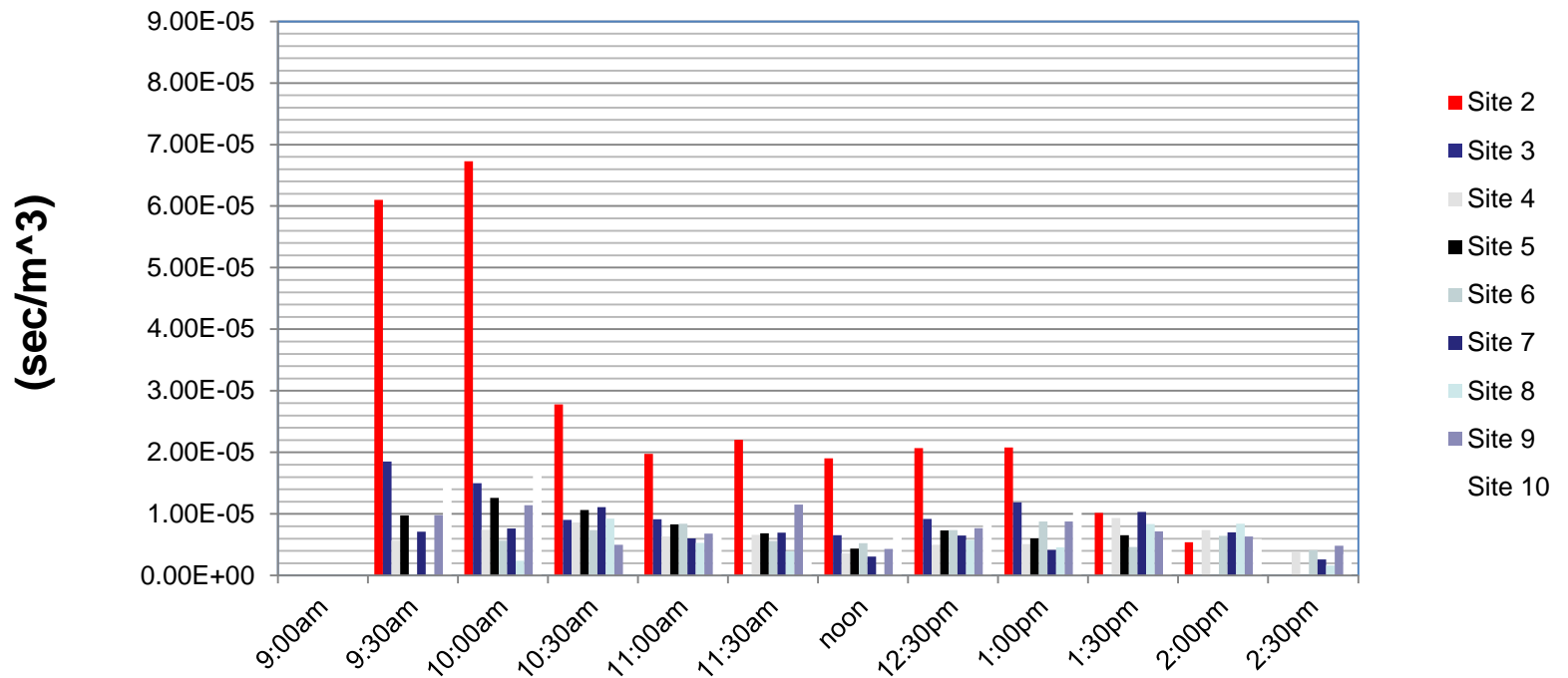
Tracer Study Results

Site Impacts
Working Face Emissions
Sept 5, 2013



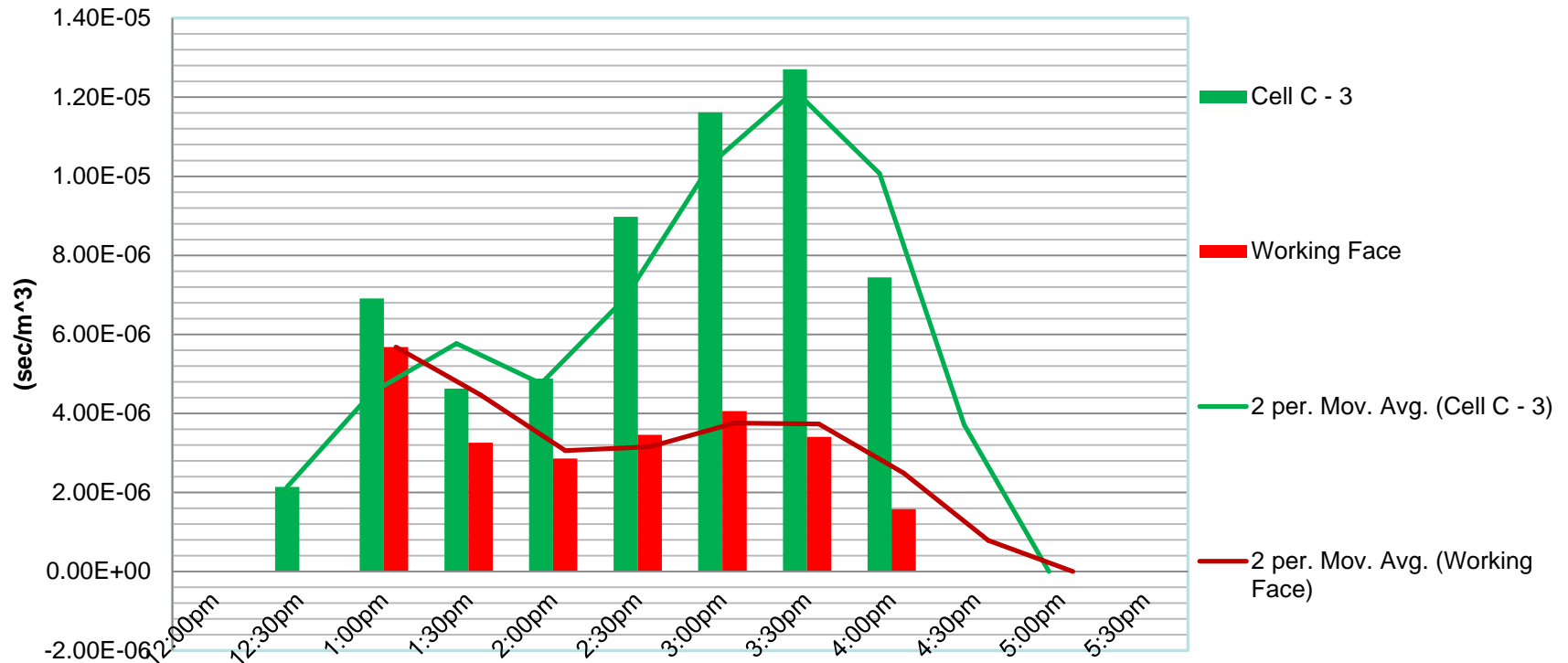
Tracer Study Results

Site Impacts
Cell C -1 Emissions
Sept 5, 2013



Tracer Study Results

Chi/Q (sec/m³)
Averages of All Sites Except #2
Sept 4, 2013



Tracer Study Results

- Dispersion increases as a function of distance – as expected.
- Impacts at the Saddle are at Maximum
- Once Airflow Breaches Saddle then Mixing is Enhanced – helps lower impacts.
- Odors from Gate Area do not Impact Community
- Odors from the Compost Facility do not Impact the Community.
- Modeled Dispersion Rates are Slightly Lower than the Tracer Data Indicate – Models Over-predict.

Odor Modeling Summary

- AERMOD Model
 - Developed by the U.S. EPA
 - Approved by the SCAQMD
- Source Information
 - Locations and Dimensions
 - Odor Emission Rates (Odor Concentration * Flow Rate)
 - Total of 17 Sources Modeled
- 5 Years of Meteorological Data (SCAQMD Mission Viejo Station 2005-2009)
- Shuttle Radar Topography Mission (SRTM) Terrain Data
- Modeling Predicted the Worst Case Odor Impacts at the Key Residential Area North of the Facility

Modeled Scenarios

- Scenarios Examined:
 1. Entire facility with wet PGM on the working area
 2. Same as #1 except switched from wet PGM to dry PGM on the working area
 3. Same as #2 except reduced the area of the working face by 50%
 4. Same as #2 except relocated the working area & working face to the east
 5. Same as #3 except reduced the dry PGM odor concentration by about 50%
 6. Same as #2 except completely eliminated the working face odors

Modeled Results Summary

Maximum Potential Impacts – 5 years

Scenario	Scenario	Notch	Residential
No.	Description	(%)	Ave Max. (%)
1	All sources (Wet PGM) – Present Status	100	100
2	All sources (Dry PGM)	74	52
3	All sources (50% Working Face Area, Dry PGM)	69	28
4	All sources (Relocated Full Working Face/Areas, Dry PGM)	81	45
5	All sources (50% Working Face Area, 50 D/T Dry PGM)	69	28
6	All sources (Dry PGM, No Working Face)	69	5

Note: Highest Measured Odor Concentration at Notch is 10 D/T

Recommendations

- Dry vs Wet PGM
- Lay-down Area for New PGM in Eastern areas of the Landfill.
- Reduce the Exposed Size of the Working Face – Garbage Placement Area.
- Increase Thickness of the Cover Material – Dried PGM or multiple layers.
- Some Timing Considerations to Waste Handling, but may not provide net benefits.
- Use Some Type of Air Stripping Systems to Slow Venting of Working Face.
- Reduce the Amount of Bio-Solid Sludges Deposited into the landfill (minimal effect).