



Midpeninsula Regional
Open Space District

R-14-126
Meeting 14-29
October 22, 2014

AGENDA ITEM 3

AGENDA ITEM

Rancho San Antonio Air Monitoring Study Final Report and Presentation

GENERAL MANAGER'S RECOMMENDATIONS

Receive the final presentation of the results from the air quality monitoring study conducted at Rancho San Antonio Open Space Preserve and accept final monitoring report.

SUMMARY

Eric Winegar, PhD, of Winegar Air Sciences, will present final results from the air quality monitoring study completed for the Rancho San Antonio Open Space Preserve (OSP). The study was initiated in January 2013 and continued until equipment was removed in mid-June, 2014. The purpose of the study was to assess perceived impacts from quarry activities on the public who regularly visit OSP and District employees who work there daily and/or live on site. The data collected during the study period shows that the air quality at Ranch San Antonio OSP reflected a low-impact environment, with some effect from the nearby industrial (Lehigh Southwest Cement Plant and Quarry) and urban areas. This is largely attributed to the overwhelming influence of a clean marine dominated air mass which typically blows into the area off of the Pacific Ocean, substantially diluting local pollution sources.

DISCUSSION

On January 9, 2013, the Midpeninsula Regional Open Space District (District) Board of Director's authorized an award of contract in the amount of \$180,552 to Winegar Air Sciences, to undertake a year-long air quality monitoring study at Rancho San Antonio Open Space Preserve (R-13-11). This study was initiated in response to public and District staff concerns regarding potential air quality impacts within the Preserve from the adjacent Lehigh Permanent quarry and cement plant.

The Board was previously briefed on the project's progress at the Board meetings of February 13, 2013, June 26, 2013, July 24, 2013 (R-13-11), February 4, 2014, and August 6, 2014. Given the widespread interest in the study, these progress reports were also distributed to interested parties, including adjacent municipalities and the management of Lehigh Quarry.

Sample Sites and Parameters Measured

Two primary air quality monitoring stations were established within Rancho San Antonio OSP; one located at the Annex (main station), and the other located adjacent to the PG&E Trail, the

Preserve trail closest to the Point of Maximum Impact (PMI) as identified in Lehigh's 2011 Health Risk Assessment. The parameters monitored at these stations included the following:

- Continuous read monitoring instruments to measure:
 - PM10 (particulate matter less than 10 micrometers in diameter),
 - PM2.5 (particulate matter less than 2.5 micrometers in diameter, at the Annex site only),
 - Black Carbon (an established surrogate for diesel exhaust).
- Shorter duration, specific sampling events to measure specific elemental constituents (e.g. metals) and different particle sizes (particle size and elemental analysis can provide a unique signature of various air masses, useful in identifying plume origin).
- 24 hour integrated filter samples were also obtained for metals.
- Short-duration sampling instruments to screen for toxics which include: volatile organic compounds (VOC's), mercury, and chromium VI.

A third monitoring site was established at the Deer Hollow Farm. This location was set up to monitor PM10 to compare the data with the other two sites. After an initial monitoring period of approximately one month, data from this site indicated an overall low concentration average, without adding appreciable value to data being collected at the PG&E and Annex sites. Therefore monitoring at this location was discontinued.

Offsite "background" monitoring was also conducted to better understand the nature (constituents) and movement of the urban air masses that interact with the air at the adjacent Rancho San Antonio OSP. One background location was the roof of the District administrative office (named OSD), and one was in a residential area, north-west and upwind of Rancho San Antonio OSP (named BLN). Parameters monitored at the background locations include: PM10, Black Carbon, elements/metals, and toxics (VOC's, mercury, and chromium VI).

Additionally, the District employee residence at Rancho San Antonio OSP was monitored for PM10. This sample site was added to collect data to compare and correlate with the nearby Annex monitoring site given the importance and sensitivity of the residential use.

All monitoring sites were outfitted with weather sensors for wind speed and direction to help understand air mass movements and potential plume movement at the Preserve.

Additionally, in February 2013, letters were sent to adjacent municipalities and interested parties to inform them of the ongoing study and to inquire if there was interest in funding/expanding the study to areas outside of Rancho San Antonio OSP. No responses were received.

Results

The data collected during the study period show that the air quality at Ranch San Antonio OSP reflects a low-impact environment, with some effect from the nearby industrial (Lehigh Southwest Cement Plant and Quarry) and urban areas. This is largely due to the overwhelming influence of a clean marine dominated air mass which typically blows into the area off of the Pacific Ocean, substantially diluting local pollution sources. The data has been evaluated against State and Federal air quality standards established to protect human health.

Particulate matter (PM10 and PM2.5) levels measured during the study period were relatively low or consistent with concentrations measured in adjacent urban areas, and within the region.

Parameter	Sample Location	Average Concentration (ug/m ³)	CA Standard; (ug/m ³)	San Francisco Bay Air Basin Average Concentration (ug/m ³)
PM10	Annex	16	20	26-35
	PG&E Trail	22		
	Background OSD	26		
	Background BLN	13.2		
PM2.5	Annex	13	12	13-16

The PM10 data above indicates that the air upwind of Rancho San Antonio, as measured at Background location BLN, is well below the California standard. At the Annex site in Rancho San Antonio, PM10 is slightly higher than at the Background BLN location, but is still well below the standard. PM10 near the property line with the Lehigh cement plant and quarry at the PG&E Trail location however, is degraded when compared with the above sites, with concentrations exceeding the California standards. This finding indicates that Lehigh's operation is impacting the PG&E Trail location. The average PM10 concentration of 22ug/m³ measured at the PG&E location is higher than the upwind BLN background location, and the Annex, but is consistent with, and on the low end of, average concentrations documented within the San Francisco Bay Air Basin, as shown in the table above. The background OSD monitoring site PM10 concentration is consistent with urban locations measured within the Air Basin.

The PM 2.5 average concentration measured at the Annex is above the California standard, yet is also within the range of concentrations documented for the San Francisco Bay Air Basin.

Additional regional PM data is presented and discussed in the Final Report.

The data show that black carbon and most toxic parameters of potential concern were well below human health risk levels established by the California Office of Environmental Health Hazard Assessment. A sample of data for these parameters, from the sites with the highest measured values during the study, is presented in the table below:

Parameter	Sample Location	Average Concentration (ng/m ³)	Reference Exposure Limit (REL)
Black Carbon	Annex	235	5,000 ng/m ³
	PG&E Trail	332	
	Background BLN	269	
	Background OSD	602	
Mercury (Hg)	PG&E Trail	2.9	300 ng/m ³
Chromium VI	PG&E Trail	0.4	200 ng/m ³
Benzene*	Annex	2.3	3 ug/m ³
	PG&E Trail	2.7	
	Background BLN	2.5	
	Background OSD	1.6	

* Benzene data affected by average of 0.73 mg/m³ in laboratory blank contamination. Results are therefore qualified; data is likely biased high. See report for details.

A broad suite of metals, and volatile organic compounds (VOCs) /gasses were measured and analyzed as a part of this study. The concentration levels as a whole are representative of a minimally impacted zone, adjacent to potential major sources (Lehigh, Highway 280, and urban areas). The sampling results were below health risk levels, and are presented in the Final Report.

The air quality impacts associated with the neighboring Lehigh operations are low for most of the parameters measured. There are some impacts, particularly in airborne calcium dust measured in the DRUM sampler (Davis Rotating Unit for Monitoring) data, where calcium enrichment is clearly evident. The report concludes that there are elevated levels of calcium dust at Rancho San Antonio OSP, which is attributed to the Lehigh cement plant and quarry where large amounts of calcium dust are produced as part of their industrial processes. The enriched level of calcium is also a constituent of PM10, and is represented in that data as well. These impacts at RSA are considered to be nuisance level impacts as opposed to health risk level impacts.

The District has retained a third party Certified Industrial Health (CIH) specialist to review the report and provide an additional opinion. This review is currently in process and is unavailable at this time. Staff is anticipating completion in time to present at the Board meeting.

FISCAL IMPACT

The budget to conduct the air monitoring study was approved by the Board in the FY2013-14 and FY2014-15 budgets totaling \$180,000. The study has been completed within the budget allocated.

BOARD COMMITTEE REVIEW

No Board committee review was needed for this item as this subject has been taken up by the full Board from inception.

PUBLIC NOTICE

Public notice was provided as required by the Brown Act.

CEQA COMPLIANCE

Presentation of the air quality monitoring study at Rancho San Antonio Open Space Preserve does not constitute a project under the California Environmental Quality Act (CEQA).

NEXT STEPS

When completed, the Rancho San Antonio Air Monitoring Study Final Report will be distributed to interested parties. Staff will continue to work with Lehigh, the BAAQMD, and Santa Clara County, to identify and reduce nuisance level dust impacts to Rancho San Antonio OSP, and continue to support the BAAQMD's permit requirements, regulations, and implementation of the Lehigh facility emissions and fugitive dust upgrades to improve local air quality and to achieve effective air quality monitoring of operations.

Attachment

1. Final Report of Air Monitoring at Rancho San Antonio OSP.

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