SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

ENHANCED OZONE MONITORING PLAN

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INTRODUCTION

An Enhanced Ozone Monitoring Plan (EMP) is required by Federal Regulation for States and local agencies with moderate and above eight-hour ozone nonattainment. Local agencies shall develop and implement an EMP detailing enhanced ozone and precursor monitoring activities important to understanding localized ozone challenges. This report describes monitoring activities within the South Coast Air Quality Management District (South Coast AQMD) boundaries. It includes a review of actions taken during the 2019-2020 fiscal year and plans for action in the year ahead. This plan addresses the requirement for an EMP as listed in Title 40, Part 58, Appendix D 5(h) of the Code of Federal Regulations (40 CFR 58). Regulations require the report be submitted to the U.S. Environmental Protection Agency (U.S. EPA) by October 1, 2019 and at a minimum be reassessed and approved as part of the 5-year network assessments required under 40 CFR 58.10(d).

Public Comments

Pursuant to Federal regulations, a draft plan was made available for public inspection from August 28 through September 27, 2019 for a comment period of 30 days. Copies of the document are available at the South Coast AQMD's Public Information Desk in Diamond Bar, CA. The documents are also available on the South Coast AQMD website beginning August, 28, 2019 in the drop down menu under the "Air Quality", "Clean Air Plans" and "Air Monitoring Network Plan". (http://www.aqmd.gov/home/air-quality/clean-air-plans/monitoring-network-plan). The final document is available October 1, 2019 and provided to U.S. EPA in both electronic and hardcopy format.

Network Review

South Coast AQMD is currently classified as extreme nonattainment for the eight-hour ozone standard. Guidance suggests enhanced monitoring activities may include:

1. Additional ozone monitors beyond those minimally required.
2. Additional NOx or NOy monitors beyond those required.
3. Additional speciated VOC measurements including data gathered during different periods other than required or locations other than those required; and
4. Enhanced upper air measurements of meteorology or pollution concentrations.

South Coast AQMD operates a robust network of ozone and chemiluminescent NO/NO2/NOx monitors beyond the minimum monitoring requirements. Tables 1 and 2 show all ozone and NO/NO2/NOx within the South Coast AQMD monitoring network which operate continuously January 1 through December 31 collecting hourly averages.

Table 1 Minimum Monitoring Requirements for Ozone

(Note: Refer to section 4.1 and Table D-2 of Appendix D of 40 CFR Part 58.)

MSA	Counties	Population and Census Year	8-hr Design Value (ppb) DV, Years[1]	Design Value Site (name AQS ID)	Monitors Required	Monitors Active	Monitors Needed
31080	Los Angeles Orange	13,291,486 2018	103 2016-2018	Glendora 060370016	4	15	0
40140	San Bernardino Riverside	4,622,361 2018	111 2016-2018	Central San Bernardino Mountains 060710005	3	13	0

[1]DV Years – The three years over which the design value was calculated.

Table 2 Minimum Monitoring Requirements for NO/NO2/NOx

(Note: Refer to section 4.3 of Appendix D of 40 CFR Part 58.)

CBSA	Population and Census Year	Max AADT Counts (2017)	# Required Near Road Monitors	#Active Near Road Monitors	#Additional Near Road Monitors Needed	#Required Area Wide Monitors	#Active Area Wide Monitors	#Additional Area wide Monitors Needed
31080	13,291,486 2018	461,000 2017	2	2	0	2	14	0
40140	4,622,361 2018	278,000 2017	2	2	0	2	8	0

Starting June 1, 2019 South Coast AQMD PAMS ozone and precursor monitoring activities included collocation with NCore sites located at Los Angeles (Main St.) and Rubidoux, both measure the following parameters described below.

Auto GC - Volatile Organic Compounds (VOCs)

A complete list of the targeted compounds are found in Table 3. South Coast AQMD measures hourly speciated VOC measurements with an auto-gas chromatograph (GC) using an Agilent/Markes model 7890A/Unity Air Server 2.

Meteorology Measurements

South Coast AQMD measures wind direction, wind speed, temperature, humidity, atmospheric pressure, solar radiation, ultraviolet radiation, and mixing height. South Coast AQMD has elected to use the following instrumentation to measure the parameters described above: RM Young 5305VP anemometer, Rotronic HC2-S3 ambient temperature/humidity, Vaisala PTB 110 barometer, Kipp and Zonen CMP6 Pyranometer, Eppley TUVR Total Ultraviolet Radiometer, and Vaisala CL51 Ceilometers.

Other Measurements

Carbonyls – South Coast AQMD monitors carbonyls at a frequency of three 8-hour samples on a one in-three day basis during the months of June, July, August, and September (~120 samples per PAMS sampling season) using ATEC model 8000 Automated Sampler. A complete list of the target carbonyl compounds may be found in Table 3. The TO-11A test method, as used in the National Air Toxics Trends (NATTS) program is used.

Nitrogen Oxides – South Coast AQMD monitors NO and NOy (total oxides of nitrogen) in addition to true NO2. The true NO2 is measured with a direct reading NO2 analyzer, cavity attenuated phase shift (CAPS) spectroscopy. South Coast AQMD utilizes Teledyne CAPS T500U for the true NO2 measurement. NO and NOy are measured using a Thermo 42i or Thermo 42i-Y.

Table 3 PAMS Target Compound List

Priority Compounds				Optional Compounds			
1	1,2,3-trimethylbenzene[a]	19	n-hexane [b]	1	1,3,5-trimethylbenzene	19	m-diethlybenzene
2	1,2,4-trimethylbenzene[a]	20	n-pentane	2	1-pentene	20	methylcyclohexane
3	1-butene	21	o-ethyltoluene [a]	3	2,2-dimethylbutane	21	methylcyclopentane
4	2,2,4-trimethylpentane[b]	22	o-xylene [a,b]	4	2,3,4-trimethylpentane	22	n-decane
5	Acetaldehyde[b,c]	23	p-ethyltoluene [a]	5	2,3-dimethylbutane	23	n-heptane
6	acetone [c,d]	24	Propane	6	2,3-dimethylpentane	24	n-nonane
7	benzene [a,b]	25	propylene	7	2,4-dimethylpentane	25	n-octane
8	c-2-butene	26	styrene [a,b]	8	2-methylheptane	26	n-propylbenzene [a]
9	ethane [d]	27	toluene [a,b]	9	2-methylhexane	27	n-undecane
10	ethylbenzene [a,b]	28	t-2-butene	10	2-methylpentane	28	p-diethylbenzene
11	Ethylene			11	3-methylheptane	29	t-2-pentene
12	formaldehyde [b,c]			12	3-methylhexane	30	α/β-pinene
13	Isobutane			13	3-methylpentane	31	1,3 butadiene [b]
14	Isopentane			14	Acetylene	32	benzaldehyde [c]
15	Isoprene			15	c-2-pentene	33	carbon tetrachloride [b]
16	m&p-xylenes [a,b]			16	cyclohexane	34	Ethanol
17	m-ethyltoluene [a]			17	cyclopentane	35	Tetrachloroethylene [b]
18	n-butane			18	isopropylbenzene [b]		

Source: Revisions to the Photochemical Assessment Monitoring Stations Compound Target List.U.S. EPA, November 20, 2013

[a] Important SOAP (Secondary Organic Aerosols Precursor) Compounds

[b] HAP (Hazardous Air Pollutant) Compounds

[c] Carbonyl compounds

[d] Non-reactive compounds, not considered to be VOC for regulatory purposes

Enhanced Measurements

South Coast AQMD will continue to operate an ozone and NO/NO2/NOx network beyond minimum requirements as shown in Tables 1 and 2.

South Coast AQMD evaluated PAMS requirements and has elected to extend the intensive monitoring season from June 1 through September 30, 2019.

Beginning October 1, 2019 PAMS seasons will be:

		Non – Intensive Monitoring Schedule October 1 to April 31[1]		**Intensive Monitoring Schedule May 1 to September 30**[2]	
Date Established as PAMS site	**Site / AQS ID#**	**VOC**	**Carbonyl**	**VOC**	**Carbonyl**
06/01/2009	Los Angeles (Main St) 060371103	Auto GC hourly averages (24) every 6rd day	24 hr. sample every 6th day	Auto GC daily hourly averages	3 x 8 hr. sample every 3rd day
06/09/2009	Rubidoux 060658001	Auto GC hourly averages (24) every 6rd day	24 hr. sample every 6th day	Auto GC daily hourly averages	3 x 8 hr. sample every 3rd day

[1] Non – Intensive Monitoring Schedule equals approximately 5 sample days per month.
[2] Intensive Monitoring Schedule equals approximately 30 sample days per month.

Enhanced upper air meteorological measurements will continue which include radar acoustic sounding system wind profilers (RASS) and mini Sodar acoustic wind profilers located at Los Angeles International Airport, Moreno Valley, and Irvine.

Enhanced Measurements under consideration

If funding allows, the following enhanced ozone and precursor monitoring activities are proposed:

- Addition of LIDAR to provide time/height ozone measurements from near surface through the troposphere to characterize the spatial-temporal distribution at a fixed location.
- Addition of measurements for Intermediate and (Semi Volatile Organic Compounds IVOC/SVOC) to better characterize their contribution to ozone formation.
- Addition of LIDAR or radiometer instruments for improved wind and temperature profile measurements.

Summary

South Coast AQMD exceeds PAMS requirement for ozone and NO/NO2/NOx measurements. Additionally, South Coast AQMD exceeds the minimum requirement for PAMS sample schedule during intensive and non-intensive seasons. The addition of these measurements beyond the minimum requirement will continue to provide data to understand ozone challenges within the South Coast Air Basin.