BAAQMD -BACWA
Source Test Workshop #1
Meeting Notes

Date:	November 6, 2023
Time:	10 am-2 pm
Location:	San Jose-Santa Clara Wastewater Treatment Plant and online via Zoom

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This meeting was the first joint workshop between the Bay Area Air Quality Management District (BAAQMD) and the Bay Area Clean Water Agencies (BACWA). The intent of these periodic workshops is to improve communication and understanding around source testing requirements as relates to water resource reclamation facilities (WRRFs), also known as wastewater treatment plants (WWTPs) or publicly owned treatment works (POTWs). By promoting an improved understanding, it is anticipated that the source testing process will be improved which can result in savings of staff time and funds for the public agencies (both BAAQMD and BACWA member facilities).

Marco Hernadez (BAAQMD) presented a PowerPoint slide (attached) focusing on engine testing. Elaine Ko from BAAQMD was also in attendance. Following the presentation, the in-person group toured the San Jose-Santa Clara WWTP cogeneration engine facility.

Notes from Marco's presentation:

1) Permit conditions are "the Bible" for a facility. Non-Title V facilities are ruled by the permit conditions or BAAQMD rules, whichever are more stringent. Note that BAAQMD will not update permit conditions unless requested by the facility via the permit modification process. Be aware that if a request to update a specific permit condition is made, it could result in changes elsewhere in the permit.
2) BAAQMD recommends EPA endorsed portable analyzers, if a facility is using a portable analyzer. Portable analyzers should be calibrated before the test, on the same day the test is conducted. 15 minute portable tests should be run during the actual source test of the engine. Data should be recorded by the portable unit – not hand written. Cameron noted that the manufacturer may recommend annual calibration. Marco said to check the span gas.
3) EPA Method 7 (NOx) now requires two span gases.
4) BAAQMD recommends following EPA or CARB methods (not BAAQMD methods). The BAAQMD methods have not been updated. EPA methods are always the most stringent. A number of facilities noted that their Title V permit specifies BAAQMD methods. Marco recommended using the ST methods, but incorporate the section 8 QA/QC from EPA Method 7. Elaine
5) BAAQMD Compliances Advisories (used to communicate changes) can take over a year to issue since they are reviewed by Compliance, Enforcement, Legal, and sometimes Engineering. That is why they are infrequent.
6) For Subpart JJJJ engines (post 2008), test within 10% of 100% peak load. The test time should be 1 hour (not 30 minutes). Several facilities (with pre-2008 engines) have had their source test results returned for 30 minutes test times. Marco indicated that facilities can voluntarily test for an hour to improve the rigor of the source test.
7) For flow determination, it is acceptable to utilize EPA method 1 or determine fuel usage via EPA Method 19.

8) Digester gas should be composite sampled during the source test. Use 3 SUMMA cannisters (one for each sampling run).
9) Include manufacturer's recommendation for calibration of fuel meter. Field calibration by the manufacturer is permissible. Documentation must be included in the source test report.
10) All notifications related to source testing must go to sourcetest@baaqmd.gov. Submittals to other departments (the facility inspector, permit engineer, etc) do not satisfy the requirements and may result in a Notice of Violation (NOV).
11) Marco discussed an example source test report and highlighted the following:
    a. Long separations (stoppages) in test runs are not allowed
    b. Manually recorded data is not allowed (except for grandfathered status)
    c. Calibration range must encompass the testing conditions (for example, when calibrating thermocouples, the range of calibration must include the test conditions)
    d. Identify the equipment being calibrated (manometer, thermocouple, etc) in the report
    e. Include all field data sheets in the report
    f. Show stratification notes on the data sheets
    g. Source testing results may be used to modify Authority to Construct permit conditions prior to issuance of Permit to Operate
    h. BAAQMD Source Test does not routinely compare source test protocols to permit conditions. Comparisons are conducted randomly.
    i. There is a 10% allowance for source test results. This means a test result can be up to 10% over the limit – this would be noted as "an exceedance, but in compliance". This allowance is the result of a 1982 BAAQMD Board directive and cannot be modified without Board action.
    j. It is possible for a facility to request prioritization of a source report that might be a potential violation (and facility should report to Compliance, as well). Note that staff is limited at BAAQMD.
    k. If a retest cannot be schedule within the customary 45 days, Enforcement may grant an extension. Provide supporting documentation from the source testing company regarding unavailability.
    l. Ask the source test companies to calibrate per testing method (to make sure equipment calibrations meet requirements), otherwise they may not.

Action Items/Requests:

1) BACWA requests that BAAQMD prepare a FAQ. It would be helpful to have this (for both BACWA facilities and BAAQMD) to provide a central location for issues that comes up repeatedly. This would represent a repository of knowledge that would save time and money, so that similar issues do not need to be resolved over and over. Marco offered to include the EPA cyclonic test method (and to discuss the Texas method).
2) It would be helpful if the permit conditions included the reason a particular test is being conducted.
3) Schedule next Workshop. Possible dates in late March or early May 2024?

Future Workshops

1) include Compliance and Enforcement in a subsequent workshop
2) consider including source testing companies
3) include BAAQMD Engineering to reconcile source test methods required in permit conditions vs. source test methods required by BAAQMD Source Test

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

A HEALTHY BREATHING ENVIRONMENT FOR EVERY BAY AREA RESIDENT

Wastewater Facilities
Internal Combustion (IC)Engines

Meteorology and Measurement Division
Source Test Section
Marco A. Hernandez – Principal Air Quality Engineer

November 2023

I. Regulatory Issues

A.- Permit Conditions

B.- Regulation 9 Rule 8 (Reg 9-8), January 1st, 1997; IC engines output greater than 50 bhp.

- Part 301;Spark ignited fired by fossil (NG, LPG, Diesel, etc.)derived fuels
- Part 302; Spark-Ignited engine fired on derived fuel, or any combination of waste (Digester Gas, DG), and fossil derived gaseous fuels.
  - NO_x (Sum of NO + NO_2) & CO Emission standards.
  - Rich and lean burn.
- Part 304; Compression ignited engines(January 1st, 2012)
- Part 503; Quarterly Demonstration Compliance – Portable analyzer
  - Calibrated , maintained, and operated in accordance with manufacturer's specs.
  - NO_x emissions readings – averaged over consecutive 15-minute.
  - Digital format records preferable (Handwritten records are not acceptable).

- Part 600; Manual of procedures – Testing methods
  - Part 601; NO_x determination – Volume IV, ST-13A, **EPA M7E** (Preferable) or equivalent.
  - Part 602; CO & O_2 determination – Volume IV ST-6 & ST-14 , **EPA 10 & 3A** or equiv.

C. 40 CFR 60 Subpart JJJJ – Standards of Performance for Stationary Spark Ignition IC engines.

- Applicable after July 1st 2008 (60.4243).
- Each test run must be conducted within 10% of 100% peak load and last 1 hour. (60.4244)
- Emission Standards; NO_x, CO & VOC.
- Sampling Methods (Table 2);
  - Flow, oxygen, and moisture……. EPA M1 through 5 (Flow, alternatively EPA M19)
  - NOx …….. EPA M7E
  - CO …….. EPA M10
  - VOC …….. EPA M25A (THC) and 18 (Methane and/or ethane)

    Approved Alternative methods: ALT-078 (NMOC, ~~TECO 55C~~)

    ALT-096 (TECO 55I; GC & FID for CH_4 measurement)

    ALT -106 (NMEOC; VIG model 210), GC & FID)

II. Stack Sampling Ports

- EPA M1: Both sampling ports (2) MUST meet the minimum of two and one-half stack diameter distances for down (B) and upstream (A). E.g., Ø =20" , A=40" & B=10"
  - Case 1; Sampling ports with B ≥ 8 and A ≥ 2.
    - Cyclonic and stratification checks may be waved.
  - Case 2; Sampling ports located between B ≥ 2 and ≤ 8 downstream diameters.
    - Cyclonic and stratification checks are mandatory and properly documented.

III. Flow Determination using EPA M19

- Fuel gas meter must be properly calibrated according to manufacture specs and provide supporting documents.
- Fuel flow rates must be from digital format records.
- Fuel gas characterization (DG or Blend), one composite sample per test run. ASTM D1945 or equivalent.

IV. Other Sampling Methods

Ammonia (NH_3)	Formaldehydes	Particulate Matter
• ST-1B (District Method)	• CARB M430, preferable. Include in the appendix planned sampling runs to avoid ND. • EPA M323 or equivalent .	• Case 1, $PM_{2.5\ \&\ 10}$; EPA M201A & 202 (Requires 6" sampling ports) • Case 2, $PM_{2.5\ \&\ 10}$ deviation; EPA M5 & 202 (4" sampling ports) • Case 3, TSP (Total Suspended Particulate or Filterable Particulate); EPA M5 • Equivalent promulgated method - preapproved by the District.

Compliance Report Assembling

- Clean Air Act National Stack Testing Guidance – April 27, 2009
- GD-043; Preparation and Review of Emission Test Reports – December 1998

VI. Test Notifications and Reports Submission

- Official test notifications and submissions of compliance test reports MUST be addressed to:
  - Sourcetest@baaqmd.gov
  - gespena@baaqmd.gov Gloria Espena, and cc
  - mhernandez@BAAQMD.gov Marco Hernandez

- Notifications and Reports submitted elsewhere are not considered officially received by the Source Test Section.

VII. Report Reviewing Examples

Questions and Concerns

01

What are the differences between what is in the permit conditions with regard to testing and what ST is requiring for testing? When are retests required?

02

Concerns about receiving feedback from ST in time to make adjustments to testing protocols

03

What can the treatment plants communicate to the sources testers prior to testing and what can they specifically look for in the testing results?

Questions and Concerns Cont.

01

Does gas flow meter calibration/verification information need to be included in every report?

02

What process data for a typical cogen engine is required to be in every report (e.g. gas flow, electricity produced (net or gross?), etc.)?

03

If a POTW wants to use data in a source test to establish emission factors for a source (e.g. for toxics or criteria pollutants), what, if any, approval or guidelines must be followed?

Questions and Concerns Cont.

Can source test review of new or modified stacks be incorporated into the BAAQMD permitting process under New Source Review? This is instead of requiring the permit applicant to solicit independent feedback from Source Test folks.

How often does BAAQMD observe source testing companies in the field performing their sampling?

IV. Other Sampling Methods

- Ammonia (NH_3)
  - ST-1B (District Method)
- Formaldehydes
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  - EPA M323 or equivalent .
- Particulate Matter
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VII. Report Reviewing Examples.

Page 10 in the presentation; answers

01 Checking current permit conditions, applicability of Reg 9-8 and Subpart JJJJ (Synthetic Minor & Title V facilities). …….. RETEST….. Failures, and denials or invalidated measurements.
02 Currently and due to limited resources not all protocols can be reviewed, protocols are being reviewed under RANDOM situation. In addition, most permit conditions require 7 days notification.
03 Follow:
   a. Permit conditions
   b. Reg 9-8 and Subpart JJJJ as applicable,
   c. Closely observing of the testing methodologies requirements
   d. DATA validation

Page 11 in the presentation; answers

04 Every DATA in the report MUST be validated for every single report.
05 See Permit Conditions : No pattern (No template)
   a. Stack flow & Temperature
   b. Pollutants concentrations and mass emissions in lbs./hr., lbs./MMBtu, g/bhp-hr., etc.
   c. Ammonia usage
   d. Source load in kW
   e. Fuel usage and kind
06 Contact Permit engineer for guidance --- The Source Test Section MUST be notified.

Page 12 in the presentation; answers

07 Contact Permit engineer for guidance
08 Randomly (Special request from the Engineering or C&E Divisions, or Source Test Section due to previous issues in the report).