EPA OAQPS updated the NATTS Technical Assistance Document (TAD) to prepare Revision 4 to clarify processes, procedures, and acceptance criteria in addition to update information for new pollutants (ethylene oxide) and information based on best practices and recommendations derived from the latest research (TO-11A) and updated methods (TO-15A).

EPA solicited input for Revision 4 of the NATTS TAD from stakeholders in 2021 and evaluated the received comments for reasonability, technical veracity, and compliance with overall goals of the NATTS program. The following table includes the received comments and a response to each comment including the rationale for adjudication of each. Note that similar comments were combined, where appropriate, and comments were edited for brevity or clarity.

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
1	ODEQ-NM	2.1.5/14 & 4.1/48 4.1.4/61	Update MDL discussions and references for 40 CFR Part 136 App B Revision 2. TAD Rev 3 was published before the MUR was finalized therefore current text reads as “proposed” and “pending”.	Reference documents and language revised to account for publications, revisions, etc. since TAD Revision 3.	Throughout

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
2	ODEQ-NM	2.1.5/14	"….. While all measured concentrations (even those less than the MDL) must be reported to AQS, the confidence associated with each reported concentration is correlated to its relationship to the corresponding MDL and SQL." Concern about meeting this requirement. ODEQ does not report concentrations < MDL due to the increased uncertainly in the results. Reported concentrations between MDL and MRL are considered estimates (J flag). What data quality level would be associated with concentrations < MDL and how are they flagged in AQS?	The policy to report data below the MDL will remain in effect and monitoring agencies are expected to comply (this is required in Section 5 of the NATTS workplan template). EPA recognizes that many laboratories are not comfortable reporting concentrations measured less than the MDL as these concentrations are outside of the calibrated range of the instrument and are associated with an unknown and potentially large uncertainty. However, actual values reported at less than the MDL are more valuable from a data analyst/user's standpoint and superior to censored or substituted values, even with the potentially large uncertainty. Data below the MDL are qualified as MD per current TAD guidance. If an analyte is detected (i.e., meets the qualitative identification criteria), the measured concentration must be reported. Qualifiers MD and SQ indicate to the data user that the uncertainty in the value is potentially much greater than that allowed for measurements within the calibration range (as defined by positive control QC check sample criteria such as LCS and CCV). TAD Revision 4 will update AQS qualifiers, reporting conventions, and guidance on qualifying data for upload to AQS, where needed.	4.1 page ~55 3.3.1.3.15.1 AQS qualifiers listed throughout where applicable and in Section 7
3	IDEM	2.4.2 / Page 18	Add 1 meter minimum distance from inlet to any low volume inlet including criteria gas inlet	Will include the minimum distance from low (1 m) and high-volume (2 m) samplers to all sampling inlets in the text and an associated table. Additional revision will discuss measuring from the edge of the inlet for determining distance for collocations, obstructions, and interferences. Clarify that sampling unit/sampling pump exhaust must be plumbed to avoid re-entrainment by (exhausts located minimally 2 meters, preferably 3 meters from) other monitors and instruments.	Section 2.4.1

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
4	IDEM	3.3.1.3.4 / Page 29	Table 3.3-1; Thermometers must be <±2.1 deg C for field check on sampler and <±0.51 deg C for lab certification. Should BP be tighter for comparing to certified standard during lab certification? The 10 mmHg is the field check limit. For Flow Controllers and Meters – Laboratory, change limit to <±2.1%. For VOCs sampling unit, change limit <±10.1%. For Carbonyls Sampling Units, change flow limit <±10.1%. The two columns referring to "Required Calibration Check Frequency and Tolerance" and Required Calibration Frequency" seem redundant and should be combined or better clarified.	Tolerances and acceptance criteria will adopt the QA Handbook (Volume II – 2017) validation table convention to include the next significant digit in the calculation to alleviate concerns about rounding. For example, TO-15A CCVs must be within ±30.1% of the theoretical nominal or corrective steps are needed. This will apply to field and laboratory instruments and their associated acceptance criteria. Distinctions for tolerances for the standards (e.g., certification tolerance) vs. calibration verification check tolerance will be clarified. Tables prescribing calibration and calibration verification frequency will be revised to eliminate redundancy in practical application (i.e., a calibration (adjustment) will only be needed initially, when calibration verifications indicate an out-of-tolerance condition, or if changes to the instrument are made that would reasonably be expected to alter the calibration response). Calibration verification frequency requirements will be clear and concise.	Section 3.3.1.3.4.1 and Table 3.3-1 Throughout where acceptance criteria are listed.
5	IDEM	3.3.1.3.4 / Page 30	Table 3.3-1. PM10 Metals Sampling Units change flow limits to <±4.1%, design <±5.1%, high volume <±7.1%, <±10.1% design. For PAHs Sampling Units change flow limit <±10.1%.	Tolerances and acceptance criteria will adopt the QA Handbook (Volume II – 2017) validation table convention (as commenter indicates) to include the next significant digit in the calculation to alleviate concerns about rounding.	Section 3.3.1.3.4.1 and Table 3.3-1 Throughout where acceptance criteria are listed

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
6	South Carolina	TABLE 3.3-1	Certified Weights – The table requires annual certification of weights in a metrology lab. Several other EPA program areas allow 5 years for weight recertification since the weights are maintained in a laboratory setting. Is annual recertification required for NATTS or would every five years be acceptable for NIST-traceable laboratory weights? In SC, the weights are used for pipette accuracy verification and reagent weighing.	The laboratory must have at least one set of certified weights that is certified annually at an accredited metrology laboratory. A working set need not be certified annually if a primary set is available that is certified annually. Such a working set will be checked against a primary set quarterly and be shown to be within the tolerance specified for the class of weights.	Section 3.3.1.3.4.1 and Table 3.3-1
7	South Carolina	TABLE 3.3-1	Thermometers Meteorological – Is this referring to digital thermometers or thermocouples? The temperature data we use is from the PM2.5 and PM10 samplers when calculating flow. The Validation Tables in the QA Handbook require PM10 HiVol thermometer calibration checks annually: "Field Thermometer every 365 days and once a calendar year; + 0.1^{o} C resolution, + 0.5^{o} C accuracy; 1, 2 and 3) Method 2.11 Sec. 1.1.2" It is requested that these requirements align. Having different requirements for the same equipment becomes burdensome and can create confusion for data validation.	Specification will be revised to indicate thermometers, thermistors, and/or thermocouples employed for measuring environmental conditions for determining sampling flow rates (non-meteorological). The 0.1°C resolution and ±0.5°C tolerance will also be specified for sampling units. QA Handbook (Volume II – 2017) specifies thermometers for this purpose undergo annual calibration checks, therefore the TAD revision will specify the frequency as annual and will recommend quarterly checks.	Section 3.3.1.3.4.1 and Table 3.3-1

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
8	CARB	3.3.1.3.2	Corrective Action process, binder/database. Follow up with AUDIT to ensure corrective action done, why doesn't a QC cal/verification suffice?	The corrective action process will clarify the return to conformance condition must be demonstrated (which a QC calibration verification may demonstrate) and that a follow-up audit by an internal QA staff member is recommended to ensure that the situation was remediated for closing out the corrective action. Such may be the case when the out of tolerance/nonconformance was identified in an audit. Note that simply failing a QC check does not require a formal corrective action process, which may be rectified by recalibration. The corrective action process is more suitable for systematic or procedural problems than for routine QC exceedances.	Section 3.3.1.3.2
9	South Carolina	SECTION 4.1	Further clarification of the requirement for MDL determinations is requested. Are there two options: • One for using the method described in 40 CFR Part 136 Appendix B • One for using the method as described in the TAD? If it is intended that there be only one method used, revisions to clarify the MDL method to be used is requested.	EPA anticipates wholesale changes to the MDL process codified in Revision 4, specifically how they are to be determined based on the formal promulgation of the MDL Method Update Rule (MUR) process in 2016. There will remain options for determining the MDL and the preferred method will be to follow the CFR procedure, but that the FACA procedure remains valid (much of the FACA calculation overlaps with the CFR). Most laboratories have adopted the revised CFR process for their routine water analyses, therefore this will add consistency to the MDL determination processes. The MDL process prescribed will retain the recommendation to perform the reasonability check on the determined MDL_{sp} (this was omitted from the CFR procedure).	Section 4.1
10	Terri Kuhn, MI	4.1.3 page 52	As stated, "The first procedure in Section 4.1.3.1 is adopted from updates pending at the time this document was revised, an update to the MDL procedure described in 40 CFR Part 136 Appendix B, the MUR". Language should be removed as the update to the Part 136 MDL procedure was made and released as of December 2016.	Reference documents and their citations will be updated throughout the revised TAD.	Section 4.1 and throughout

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
11	Terri Kuhn, MI	4.1.3.1 page 55, item c. after Table 4.1.2	Evaluating the resulting MDLsp (spike level must be greater than the MDLsp and less than 10x the MDLsp or MDLsp must be repeated), seems more stringent than what is provided in 40 CFR Part 136 Appendix B.	The MDL procedure will be revised to harmonize with the updated CFR procedure with some additional recommendations and specifics for the methods performed.	Section 4.1 and throughout
12	Terri Kuhn, MI	4.1.3.1 page 53	40 CFR Part 136 Appendix B Revision 2 requires ongoing data collection on a quarterly basis, with an ongoing annual verification using that data. Could not find in this TAD MDL section about performing quarterly ongoing data collection, or the frequency in which data is to be collected. Section 4.1.1 on page 51 just states, "MDLs must be determined minimally annually or when changes to instrument…"	The MDL procedure will be revised to harmonize with the updated CFR procedure with some additional recommendations and specifics for the methods performed.	Section 4.1 and throughout
13	Los Angeles County Sanitation Districts Laboratory	4.1.3	TAD should have the option of distributing MDL runs across all applicable instruments for 1 shared MDL. See EPA MDL Procedure Rev 2 (EPA 821-R-16-006) Section 2b: *If there are multiple instruments that will be assigned the same MDL, then the sample analyses must be distributed across all of the instruments.*	The MDL procedure will be revised to harmonize with the updated CFR procedure with some additional recommendations and specifics for the methods performed. This will address the use of multiple instruments and the convention for determining the MDL in such cases.	Section 4.1 and throughout

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
14	ODEQ- EB	4.2 VOC for TO-15A	The most difficult part of TO-15a, aside from ETO (ethylene oxide), is attaining < 20pptv for all compounds. Part of this problem exists, for me, with the fact that values below the reporting limit are not real (real meaning concentrations are between the high and low points of the calibration) and have no true value. These are approximate values due to calibration intercepts, which change with every calibration. The MDL values for that reason are just statistical data manipulation and indicate only that the compound is present at a value below the reporting limit with a 90% certainty, and the numbers reported have no true value or meaning. Also having to hit a hard value such as < 20pptv which may be less than the MDL, renders the 20pptv number meaningless since any value below the MDL is a non-detect. In addition, the intercept of any particular curve may be greater than 20pptv. When trying to address this by forcing the curve through zero, may (probably will) cause the curve to fail the r or r^2 value. Analyzing the curve down to 20pptv poses the problem of calibrating below the MDL. In addition, if there is an issue of low (5-10pptv) contamination, this will skew the curve at the low end which will have the same result of failing r or r^2 and/or the +/- 30% each point of the ICAL must be within, for the curve to be valid.	The MDL requirements will remain based on the MDL MQO established for NATTS and specified in the NATTS workplan template for Tier I required analytes. An MDL of 20 pptv will not apply unless specified in the most recent NATTS workplan template. Compounds without an MDL MQO, cancer risk, or HQ will not have a required MDL. The canister cleanliness will ideally show target compounds are ≤20 pptv, but must be ≤ the MDL MQO (where applicable) and the lesser of 0.03 ppbv or 3-fold MDL. The calibration range (20 to 5000 pptv) will be recommended, but not prescribed/required in the TAD. Laboratories will be strongly encouraged to include low level (e.g., 25 pptv) standards when establishing the calibration. Inclusion of the analyzed standard concentration levels in the calibration curve will depend on the background level and ability to sufficiently detect the compound at the low concentration. E.g., the analyst will prepare a 20 pptv standard for all compounds; however, may not include this level for all compounds. For benzene, a 20 pptv calibration standard level might be appropriate; however, this may not apply to difficult oxygenated analytes such as acrolein, which often show poor/noisy peak shape at low (~< 40 pptv) concentrations. For acrolein in this case, a low calibration standard level of 40 or 50 pptv may be more appropriate (the MDL MQO is 39 pptv). Therefore, standards analyzed at concentrations below 40 pptv may be included in the calibration regression to establish the benzene response; however, this calibration level may be excluded from calibration curves for other analytes such as acrolein.	Section 4.2 Section 4.2.8.5.1 page ~120. 4.1 page ~55 3.3.1.3.15.1

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
14	Continued.		As to the response, the notion that this is only a guideline is a false assumption since if it is written that this is to be achieved an auditor would have no choice but to have a finding. My recommendation would be that sampling cans and instruments should prove to be clean down to the MDL and no further. Yes, this means that there will be variability between labs. With some labs having more attainable values than others but this is better, in my opinion, than forcing unattainable values on everyone.	TO-15A was written purposely to follow a general order of qualification to demonstrate that the analytical instrumentation is clean and appropriately free of bias, that canister media are appropriately free of bias, and that sampling systems are appropriately free of bias. To demonstrate a clean measurement system is critical, but may be challenging for some laboratories if any of the aspects of the analysis instrumentation (e.g., preconcentrator), support gases (IS and diluent gases), and canister cleanliness cannot be demonstrated to be appropriately clean. The MDL represents an estimate of the concentration above which we are confident the analyte is present above background. For analytes with background in the system (media, instrument, etc.), this typically drives the determined MDL value. Establishment of the calibration can be optimized to best characterize the desired low concentrations and by extension the extrapolation of concentrations approximating the MDL (selection of concentrations, regression model, and regression weighting). It is an oversimplification to state that measurements less than the calibration curve are meaningless, though the commenter correctly states they have higher uncertainty. This uncertainty is understood and communicated to data users by adding qualifiers indicating the relative association to the MDL.	

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
15	Siarra Sherako	4.2.8.4.3 Method Blank Pg. 85	The MB canister is prepared by filling a cleaned canister with humidified diluent gas. For laboratories using a dilution system (dynamic or automated static), the method blank should be pressurized with the dilution system. The MB verifies the diluent gas is sufficiently clean. To best represent canisters which are sent to the field for sample collection, the MB should be prepared in a clean canister which was verified by batch blank analysis. Analysis of a canister cleaning batch blank as the MB complicates the corrective action process to locate the source if the MB canister analysis indicates contamination. I know we discussed it isn't acceptable to use Nitrogen as the diluent gas in this case, because it wouldn't result in an accurate representation of the reactive compounds that could be present in the canister. The diluent gas section (4.2.8.3.4 Diluent Gases) still states that UHP Nitrogen can be used for preparing dilutions, etc. This is also the case for the canister/sampler zero checks.	Preparing the method blank through the dilution system is not recommended due to the potential for carryover from the dilution system into the method blank. Instead, the recommended procedure is to fill the MB with humidified diluent gas upstream of the dilution apparatus so that root cause analysis is simplified if contaminants are found in the MB. Preparing a blank through the dilution system can be a supplemental tool to assess carryover within the dilution system that may manifest in poor calibration regression modeling evidenced by elevated intercepts or excessive recoveries of standard concentration calculations (when inputting standard responses into the regression equation). The TAD text will ensure it is explicitly clear in which functions nitrogen is permitted. The important aspect of specifying use of humidified zero air is to characterize interactions that would occur when the process or equipment is exposed to ambient air. The MB's purpose is to ensure the analytical system is clean and that the diluent gas is clean – it is not intended to be an evaluation on the canister in which the clean diluent gas is held or the cleanliness of the standard dilution system. We would recommend using zero air for all diluent and clean gas purposes; however, N_2 can still be used for diluent gas when preparing calibration standards since the purpose is solely to introduce the standard material to the instrument. N_2 cannot be employed to do canister qualification checks, instrument bias checks, or sampler bias checks as the N_2 will inhibit reactions that may occur when the system is exposed to ambient air (e.g., growth of oxygenated VOCs).	Discussed N2 vs zero air in 4.2.6.2.

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
16	Siarra Sherako	4.2.4.1.1 Canister Bias Pg. 73	It is *strongly recommended* that all canisters be evaluated for bias when newly purchased (prior to use for field sample collection or use for laboratory QC sample preparation) and annually thereafter. Is the annual check something that is necessary since we are continually switching out our canister blank representative can, as well as leak checking before every cleaning cycle?	The use of a canister as a MB does not fully qualify the canister, particularly if using N_2 as the diluent gas to prepare the MB. Canister qualification requires using humidified zero air for the zero challenge and as the diluent gas for the known standard challenge. Further, the qualification requires evaluating the canister initially and after an approximately 30-day period (or similar maximum duration over which samples are held after collection until analysis). It is unlikely that the use of a canister as an MB would satisfy these requirements. One critical reason is that when continually removing an aliquot of gas from the canister undergoing qualification (as is done for MB analysis), the mass of contaminants will not be permitted to build up in the canister to the level that would be expected if the canister was undisturbed for approximately 30 days.	Section 4.2.4.1.2
17	IDEM	4.2.1.1 / Page 65	Should there be an ID limit on the sample line?	The TAD revision will include a discussion of reducing residence time and the impact that sampling line inner diameter and length, as well as sampling flow rate, have on reducing residence time and increasing linear velocity of the sample stream to minimize interaction with the sampling flow path. The ID of the tubing defines the dead volume in the tubing that is cleared during sampling, therefore is directly related to the sampling flow rate – while smaller is generally better for decreasing residence time, there is a limit to how small the inner diameter can be before the flow rate can be overly restricted.	Section 4.2.3.2

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
18	J. Nwia, Region 5	Section 4.2 and Table 3.3-1 (may be in other sections of NATTS TAD Version 3)	Address stainless steel versus ceramic lined canisters and effects on EtO.	Performance differences, if any, for EtO collected into silicon ceramic-lined vs electropolished canisters are not definitively known. Both types of canisters may perform well depending on a number of factors. EPA is seeking to conduct thorough studies to investigate whether canister lining impacts EtO concentration stability and expects to communicate study outcomes. Overall, properly coated and treated silicon ceramic-lined canisters are thought to perform better (i.e., provide better compound concentration stability) than unlined, electropolished canisters for many compounds. ORD has conducted a study on evaluating a limited fleet of canisters of various types. (Here is a link to their study report and memo: https://www.epa.gov/sites/default/files/2021-05/documents/ord-eto-canister-background-memo-05072021.pdf). In addition, empirical data also exist for sulfur compounds which have been demonstrated to be far more stable in silicon ceramic-lined canisters. Each canister performs uniquely and requires qualification to demonstrate proper performance and acceptable bias. Aspects of canister treatment can greatly impact performance – such as manufacturers using low volatility compounds to test canister behavior for QC purposes and poor handling practices of silicon ceramic-lined canisters (such as heating to temperatures above 80°C with humidified zero air), which may damage the lining and create active sites that will simultaneously degrade labile compounds (like 1,3-butadiene) and create favorable conditions for formation of breakdown products (small chain oxygenated compounds like acrolein, EtO, acetone, ethanol, etc.).	Section 4.2.4.1

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
19	Region 4 ARD	Section 4.2.2, Page 66	We recommend the precision calculation includes when either collocated/duplicate sample is >5xMDL. A >5xMDL sample and low value or non-detect collocated/duplicate sample should count towards the precision calculation as it could indicated an issue with field collection.	The TAD revision will update this precision evaluation when one of the precision pair is above 5x MDL and the other below. This will address obvious problems where one value is much higher than 5x MDL and the other below and the data clearly show imprecision. In such cases, the RPD will be calculated by inputting the concentration > 5xMDL and the concentration equivalent of 5xMDL. This assigns a best-case scenario for the lower concentration and permits quantifying the imprecision in such cases.	2.1.3.1
20	IDEM	4.2.3.2.1 / Page 68	So if cannister is 28 inches or lower value than is the sample considered invalid or QA qualifier? Also, not sure it is possible to observe a 0.2 psi leak within 5 minutes.	The initial canister pressure (or vacuum) directly relates to the amount of dilution that will occur in the canister contents - the higher the starting pressure above hard vacuum, the more dilute the sample will be. Additionally, gas in the canister will be of unknown quality and could contribute contaminants in addition to causing dilution. This potential dilution should be kept as low as possible, and preferably less than 5% of the final collection pressure. Samples with starting canister pressures exceeding 10% of the intended final collection pressure are to be invalidated. Data for samples with starting canister pressures between 5 and 10% of the intended final sample pressure should be qualified as estimated. For example, positive pressure samples (pressurized to approximately 3 psig) will exceed the 10% threshold at approximately 26.5 inHg vacuum. The revised TAD will include a table of ending canister pressures and the relative 5 and 10% thresholds.	Section 4.2.3.4.2

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
21	Region 4 ARD	Section 4.2.3.2, Page 68	We recommend adding a generally accepted time period in which a sample should be set up in the field before sampling begins as well as a generally accepted period of time to pick up the sample in the field after it was collected. If weather influences these timeframes, please provide additional guidance on sample drop off and pick up times related to weather considerations.	The TAD will mostly include the guidance provided within TO-15A so long as they permit compliance with the 1-in-6 days schedule. Best practice is to set up samples as close to the sampling date as possible and be retrieved as soon as possible after completion of sampling. The TAD (and TO-15A) strongly recommend/require measuring the canister pressure at numerous points before sampling and following completion of sampling. These measurements ensure the sample's integrity (and demonstrate leaks have not occurred) throughout the sample setup, collection, and analysis timeline. In general, weather does not impact a collected VOCs sample as the canister is protective of the sample integrity. While logically higher temperatures could result in more rapid VOC degradation/loss, we are not aware of studies performed to investigate the degradation of VOCs concentrations in canisters as a function of temperature.	4.2.3.4.3
22	IDEM	4.2.3.5 / Page 70	For sampling Unit Non-Biasing Certification, can you give the option of running a shorter time sample as long as the cannister meets proper pressure? We do hour checks vs 24 hours.	The shorter than 24-hour time period described in TO-15A will be described in the updated TAD. Note that the 24-hour period is a best practice since the lower flow rate and elapsed time period best represents the conditions during 24-hour sampling.	4.2.3.3.1 and 4.2.3.3.2
23	Wisconsin Department of Natural Resources	4.2.4.1 and 4.2.4.1.1	Qualification of canisters on purchase is extremely costly and not within budget. To have yearly certifications adds additional expenses and strains canister availability for months at a time. EPA should add funding to account for the annual certification within a network or rely on cleaning criteria to be sufficient.	This comment is communication to EPA to provide more funding to cover periodic canister qualification. Canister qualification is required for new canisters (it is noteworthy that many agencies are reporting problems with newly purchased canisters), is recommended annually thereafter, but should not exceed every 3 years. To ensure measured concentrations are attributable to the collected ambient air, the canister qualification is needed.	4.2.4.1

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
24	Los Angeles County Sanitation Districts Laboratory	4.2.4.2.4	Please consider changing the blank check for canister cleanliness to either ~~3x MDL~~ *half the LOQ (RL)* or 0.2ppbv, whichever is lower. EPA TO-15 has the blank level set for 0.2ppbv.	Canister cleanliness criteria will be based on the MDL MQO for Tier I compounds and the lower of either 0.03 ppbv or 3-fold MDL. The canister should ideally be clean enough that clean canisters contain less than 5% of the concentration of the analyte as routinely measured in ambient air. For many analytes that are routinely measured in ambient air at concentrations above but approaching the MDL, this 5% goal will not be attainable. One of the main goals of revising TO-15 was to lower the canister cleanliness criterion to ensure that measured concentrations are attributable to the ambient air sample and not to background remaining in canisters after cleaning. A large portion of the VOCs measured in ambient air are below 0.2 ppbv, therefore this threshold is no longer viable. As for relating the cleanliness criterion to the LOQ or RL, this value can be arbitrarily assigned by the laboratory and may not be reasonable for ensuring sufficiently clean canisters.	4.2.4.2.4

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
25	Region 4 ARD	Section 4.2.6, Page 79	Please provide guidance on how an agency should handle a sample when there is a vacuum between 0 and 2in Hg. Should that sample be invalidated? Could a weight of evidence approach be used to keep the sample? • Include discussion on what to do when the lab records a vacuum on receipt, but the vacuum was not noted in the field due to the use of the on-board gauge. We appreciate you including the language strongly recommending that the final canister pressure be measured with a calibrated pressure gauge in the field (page 70).	Unless the gauges installed on the canisters are demonstrated to be calibrated and operating properly, they are only trustworthy as an approximate measurement. As discussed at length in TO-15A, the pressure (vacuum) at retrieval should be measured with a calibrated gauge and this recommendation will remain in TAD Revision 4 and will be a critical criterion for subambient pressure sampling. It is critical that a canister's final pressure not exceed the pressure at which the flow controller maintains a constant flow rate (this should be experimentally determined). Once the flow rate is no longer constant, the time-integration is not representative of the air concentration over the sampling period as the air sampled will be more heavily weighted to the earlier portion of the sampling period. Very few flow controllers can maintain constant flow once canister vacuum gets below approximately 4 or 5 in Hg, but it's critical that this pressure threshold be established.	4.2.3.4.2

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
26	Region 4 ARD	Section 4.2.8.3, Page 82	A number of labs have reported issues with the stability of the ethylene oxide standard. It would be helpful to provide guidance on how labs can identify this issue and how the previously analyzed data are handled in relation to stability issues.	Standard degradation is difficult to detect without observing a change in concentration relative to another trusted standard or by comparison to a PT sample. The instability of the EtO standard (degradation) became evident when comparison to a second source standard showed a > 30% difference with the primary standard. Evidence strongly suggests that EtO standards in a high pressure cylinder will degrade, and not increase, in concentration. However, EtO concentrations can increase in sampling canisters, complicating testing to determine whether a high pressure EtO standard is indeed degrading in concentration. It's critical to design a test employing qualified canisters and to ensure that there are several iterations of testing to isolate variables to confirm a stock standard gas has in fact degraded in concentration. For consideration of already collected data, the outcome of determining whether the primary or secondary standard was problematic will inform whether collected data will require qualification. If the primary standard is shown to be low, then the data will need to be qualified as estimated or possibly invalidated if the discrepancy is large enough (> 30%). If the secondary standard is shown to be low, then the data will need to be qualified as a QA failure, though the reported concentration is not estimated.	4.2.6.1.3
27	ODEQ BA	4.3.7.2	This paragraph says it requires a glass manifold, but doesn't say that it is intended only for manifolds that also share ports for criteria. Otherwise, it can be stainless steel. (email with Doug Turner on 1/9/18 at 6:52 PM.)	The revision will update the guidance on the manifold construction to address whether glass or stainless steel is appropriate depending on the samplers/analyzers connected to the manifold.	4.2.3.1.1

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
28	J. Nwia, Region 5	4.3.9.3	Allowance for a deviation from 14 day extraction time justified with a stability study for PAHs.	This applies broadly for monitoring agencies and/or ASLs seeking to change critical criteria such as holding times or storage temperatures: When seeking to update such critical criteria, the entity must submit an experimental design to OAQPS for approval prior to conducting the study to ensure it is sufficiently robust. Guidance on critical elements to include in such a plan will be further described in TAD Revision 4. Note that for PAH ambient samples, there is very little that can be done to mimic the deposition of PAHs on the XAD and PUF media that occurs when sampling ambient air (note that a liquid spike of standards in solvent will not adequately represent this). The major issue is migration of PAHs out of the cartridge, which would occur at a higher rate for an air sample than for a laboratory-prepared sample given that the PAHs would be stratified throughout the cartridge media (with some portion right at the PUF/air interface) for an ambient sample, but not for the laboratory-prepared sample.	3.3.1.2.1
29	ODEQ-KY	4.4.11.7.4 – page 143	The way the interference check for metals (that the ANALYTE spike must bracket sample results) is written in Rev. 3.0 of the TAD is not how it's done in the industry, nor does it seem technically appropriate. The interference check analytes should be at a low enough level to see the interference upon them. It is the INTERFERENTS in the interference check that should bracket the INTERFERENTS in the samples.	Refer to comment 54 below.	4.4.11.7.4

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
30	Terri Kuhn, MI	4.4.11.8 page 145	As stated, "Concentration results which exceed the instrument calibration range must be diluted and analyzed within the calibration range." Per a December 2018 NATTS Technical Systems Call, the use of Linear Range Verification standards (LRV) was deemed allowable within this method. The TAD does not contain this language, and probably should if that is something that will be allowed when the LRVs are within a specified acceptance range.	If possible, digestates should be diluted to within the calibration curve. If a sample exceeds the calibration but a LRV standard exceeding the concentration of the sample in question meets the bias specification (± 10%), the sample data can be reported without qualification. The revision will recommend that given the linear range of the ICP-MS that the calibration curve extend above the highest anticipated ambient air concentration by a factor or 10 to 25%. This extended calibration range helps to minimize these situations where concentrations exceed the curve range.	4.4.11.7.4 and 4.4.11.8
31	Jason Thomas, WV	4.4.5/128	Field blank analysis must demonstrate all target elements < MDL. MDL is determined using a lot of filters and field blanks may not always be from the same lot. This can lead to elements being above MDL, for filters not from the same lot as MDL determination, due to background levels in HiVol quartz filters.	The revision will discuss the FB and MB acceptance criteria in relation to the MDL and address instances where a different lot is used. Recall that each lot of filter material should be submitted to the laboratory to characterize the lot – which should allow the laboratory to include the MB data from these blanks into the MDL process. This assumes good communication between the monitoring site and ASL to ensure the lots of filters are characterized. This is more of an issue for ASLs that provide support to many sites and may have to deal with multiple lots of filter media.	4.4.10.3.1 , 4.4.5.2, and 4.4.8
32	Jason Thomas, WV	Table 4.4-3/148	Method Blank (MB) Same comment as above.	Same response as comment 31 above.	4.4.10.3.1 , 4.4.5.2, 4.4.10.5.1, and 4.4.8

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
33	ODEQ – MEL	4.5.3	The QFF and PUF/XAD-2/PUF batch blank requirement of < 10 ng/cartridge, each, for all target compounds is inconsistent with requirements set forth in TO-13A section 10.2.7(< 500 ng/cartridge for naphthalene, < 200 ng/cartridge total for all other PAHs). Additionally, ASTM D6209-13 section 11.4.1 gives additional allowance for naphthalene and phenanthrene.	TO-13A specifies the 500 ng (for naphthalene) and 200 ng (for all other PAHs) limits as "guidelines for cartridge background for field use." For naphthalene, 500 ng is still too high and the TAD will be revised to require that an assembled PUF/XAD/PUF cartridge (or the equivalent components of an assembled cartridge) and QFF cannot exceed 200 ng naphthalene or the equivalent of 10% of the monitoring site's 5th percentile concentration of the analyte from the previous 3-year period, whichever is lower. Data pulled from AQS for years 2019 and 2020 indicate an average of each NATTS site's 5th percentile naphthalene concentration is 5.6 ng/m^3, which at 200 L/minute sampling rate for 1440 minutes (288 m^3) provides a collected naphthalene sample mass of 1560 ng/cartridge. Given these data, a naphthalene acceptance criterion would be approximately 160 ng/cartridge. For benzo(a)pyrene, the average of each site's 5th and 10th percentile B(a)P concentrations are 0.021 and 0.029 ng/m^3, equivalent to ~6 and 8 ng/cartridge, respectively. The overall average B(a)P concentration from 2019 and 2020 is 0.105 ng/m^3, equivalent to 30 ng/cartridge. Therefore, for B(a)P, the 10 ng/cartridge criterion will remain. For Tier II PAHs analytes, the batch blank cleanliness criterion will be 10 ng/cartridge or the equivalent of 10% of the 5th percentile concentration for the previous 3 calendar years, whichever is higher.	4.5.3.4
34	J. Nwia, Region 5	4.5.3.2	Clarify whether assembled PAH cartridges must be certified as clean prior to deployment.	The revision will clarify that PAH cartridge certification allows extraction and analysis of the individual media components (i.e., XAD and PUF that comprise the assembled cartridge) and that their analyte mass contribution to an assembled cartridge meets the cleanliness criteria. The media will need to be verified sufficiently clean prior to field deployment.	4.5.3.4

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
35	J. Nwia, Region 5	4.5.3.2	Consideration for deviations from the 15 g of resin if ASL conducts study to determine less resin comparably.	The XAD resin mass primarily impacts the collection and retention of the more volatile SVOCs, most importantly naphthalene, which is not as well-retained on the PUF matrix as on XAD. Deviations from site-to-site in the amount of XAD resin in cartridge reduces the consistency of the PAHs sampling method in the network as smaller masses of resin directly relate to lower collection efficiency for naphthalene and is therefore considered to be a critical aspect of the method. To deviate from the 15-g requirement, the laboratory would need to submit a plan for a robust study to EPA OAQPS and indicate a rationale for reducing the amount of resin. Such a plan should involve demonstration of equivalency, which cannot easily be accomplished with a laboratory experiment, rather would require collecting several sampling events of collocated samples with the collocated samples differing only in masses of included resin.	3.3.1.1.2 and 4.5.3

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
36	South Carolina	SECTION 4.5.3.2	*"For storage, cartridges should be wrapped in solvent rinsed foil, sealed in a resealable plastic bag or other container, and kept at ≤ 4°C."* Clarification is requested for keeping the unsampled cartridge at ≤4°C. • Are there concerns about or reports of condensation formation in the cartridge prior to sampling due to the refrigeration temperatures? • Would wrapping the cartridge cause phthalate contamination? If so, would that impact the PAH analysis? Is refrigeration necessary due to maintaining the integrity of the field spike? If the cartridge is spiked just before shipping (time allowance could be specified), would refrigeration be necessary? Note that to meet the 6-day sampling schedule, cartridges sit in ambient temperatures several days before and/or after sample collection.	The revision will discuss that maintaining lower temperature once spiked with field surrogates is a best practice to ensure the surrogate integrity is maximized. Provided the surrogate recoveries meet criteria, refrigeration may not be strictly necessary; however, if field surrogate recoveries are low, root cause for understanding the low recoveries is complicated if cartridges were not maintained under refrigeration. Condensation on the cartridge prior to sampling should not be an issue as the water evaporates quickly once sampling starts. Phthalate contamination from foil wrapping is not an issue if the foil is solvent rinsed to eliminate phthalates.	4.5.3.4
37	General	TO-13A	Field surrogate spiking holding time of 14 days is too restrictive.	Study performed by the national contract laboratory demonstrated field surrogate stability for 3 months. The revision will recommend maintaining 14 days as the holding time but will permit up to three months.	4.5.3.4

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
38	General	TO-13A	Retention time windows are specified relative to the initial calibration; however, TO-13A specifies the RT window relative to the 3rd level initial calibration standard *or* the CCV and 8270E allows ±10 seconds from the CCV.	The revision will permit RT evaluation relative to the CCV and will adopt the 8270E criteria of ± 10s.	4.5.5.5, 4.5.5.5.3, and 4.5.5.5.7
39	J. Nwia, Region 5	4.5.4.1b	Specify/clarify how the PAH cartridge should be packed on site if disassembly is to occur more than 10 minutes following sample retrieval.	The revision will indicate that the PAH sampling head must be protected from further ambient air exposure by installing a filter cover on the inlet and by installing a plug in the sampling head outlet if the sampling head cannot be dismantled upon retrieval. Further, storing the sample (whether in the sampling module or not) refrigerated as soon as possible is critical, so in the event the cartridge and filter cannot be disassembled immediately, cold storage ASAP is important. There are numerous ways to do this, and some agencies have found using a wine bottle chiller (cylindrical cold pack) works well.	4.5.4.4
40	ODEQ – MEL	4.5.5.5.2	"The SIM MS tune must maximize the signal for masses 198, 275, 265, and 442 while…" - is mass 265 an error and should read instead as mass 255?	M/z 265 was a typo and will be corrected to read 365 m/z.	4.5.5.5.2

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
41	ODEQ – MEL	4.5.5.5.7	Qualifier ion abundance as compared to quantitative ion abundance – it is unclear if the ± 15% acceptance criteria is *absolute* or *relative*. The ± 15% criteria makes sense if this is an *absolute* calculation (e.g., an expected qualifier ion abundance of 50% compared to the quantitative ion would have an acceptable range of 35-65%), but is too narrow if *relative* (42.5-57.5%). Should the calculation be made *relative*, please consider raising the acceptance limit to ± 30%.	The revision will ensure clarification that the correct comparator is relative abundance, not absolute abundance. As for the expansion of the acceptance criteria, the ±15% relative abundance threshold is intentional and prescribed in TO-13A; however, this is more stringent than prescribed in 8270D, which is an essentially identical method from the GC/MS perspective. It is reasonable to adopt the ±30% relative abundance criterion listed in 8270D section 11.6.1.3. Note, however, that the 8270D text provides an incorrect reference to relative abundance and the tolerable acceptance range. The example shown indicates an ion with a 50% relative abundance of the base peak; however, indicates a range of 20 to 80% abundance, where in relative terms to 50% abundance, this should be 35 to 65% relative abundance.	4.5.5.5.7
42	ODEQ – MEL	4.5.5.5.7	Final sentence of the section has an error, referring to Section 4.2.10.5.3; the correct section is 4.2.8.5.3.	Accuracy of section references will be verified in the revision.	throughout
43	Region 4 ARD	Section 7.1, Page 174	Clarify minimum canister ending sample pressure as critical criteria.	The canister ending pressure is dependent on the sampling procedure and equipment and requires that the monitoring agency measure the flow characteristics of the flow controller and determine at what canister pressure the flow rate is no longer constant. This also requires that the canister pressure be measured upon retrieval with a calibrated gauge to ensure the ending collection pressure is within the established specification. For pressurized sampling, the canister pressure will be above ambient barometric pressure and the final canister pressure is not a critical criterion. The revised TAD will reflect this change to be critical for subambient and remain operational for positive pressure.	4.2.3.4.3

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
44	CARB	17	Defined siting between samplers, edge to edge instead of centerlines of inlet…prefer consistency between sampling programs to avoid operator confusion.	The TAD requirement will remain edge to edge to avoid the variation that could occur with different types of samplers and inlets. For example, 2 m from the center of a high volume PM10 inlet is almost a foot different when compared to a low-volume PM10 sampler and could reasonably result in sampling inlets that were too close together.	2.4.1
45	CARB	28	Vague: "failed" standards have to be replaced? No option for repair? Replace batteries on a deltacal? No, replace it. Maybe substitute until it can be returned to service?	Here, "replace" meant to source another standard that is within tolerance etc. Will revise wording here to indicate to source or substitute another standard that is within tolerance.	3.3.1.3.4.1
46	CARB	29	Suggest separating cal/check frequency requirements between standards and critical instruments as the respective users typically delineate between field and lab staff.	The listed instruments will be grouped in the table by field instruments and laboratory instruments, though many may be common among field and laboratory activities.	Table 3.3-1
47	ODEQ-NM	All Handling and Storage required ≤ 4°C	Throughout TAD "must be stored at ≤ 4°C" ODEQ has been utilizing the industry standard of ≤ 6°C for sample shipment and refrigerators. ≤ 6°C per TNI standards, 40 CFR 136, and SW-846.	This 4-degree criterion is specified in both TO-11A and TO-13A and isn't something that can be arbitrarily changed without first understanding the impact, therefore will not change from the Revision 3 TAD in the revised TAD. The temperature increase to 6°C may be related to retarding microbiological growth or activity in water samples and the potential associated degradation (this is suggested as the cited standards are related to water/sediment/soil methods). Such isn't an issue for these two methods, as the concern is loss of analyte through migration (TO-13A) or back-reactions (TO-11A) that are slowed by refrigeration. Samples received above 4°C will be qualified as TT (transport temperature out of spec) and LJ (reported value is an estimate).	4.3.9.3 and 4.5.5.2 (among others)

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
48	Wisconsin Department of Natural Resources	General	NATTS monitoring relative to other federally required criteria pollutant monitoring is very costly. EPA should consider a cost benefit analysis of the parameters and methods required for NATTS to allow for the program to be fully funded. For example, lab analysis costs approximately 60% - 75% of the annual award. This does not allow for funding the field and quality assurance requirements outlined in this TAD much less the overhead of managing the program. Additionally, analysis costs at the laboratory level do not allow labs without a high level of throughput to remain competitive.	This is communication for EPA regarding allocated funds.	Not addressed
49	Wisconsin Department of Natural Resources	General	NATTS monitoring utilizes labor intensive discrete field methods for collection, where many instruments are unable to meet requirements outlined in the TAD and lab methods are unable to meet minimum detection limit criteria. EPA should incentivize private industry and sensor manufactures through enhanced method development opportunities and provide an expanded method approval process focused on toxics monitoring.	Agree that the sample collection process is labor-intensive; however, sensors are not yet commercially available that provide data with comparable quality and robustness for toxics parameters at the concentrations typically measured in ambient air. The methods in use for toxics are research-grade, and sensors do not have the sensitivity or drift-resistance needed to replace these methods. As for MDL requirements, the required levels may not be possible with existing media if the background is high (e.g., formaldehyde on DNPH cartridges); however, MDLs for most pollutants are achievable given available instrumentation. The revised TAD will not reflect changes in this regard; however, will recognize that there are situations for which MDL MQOs could be challenging to meet given commercial vendors' products.	4.1.2

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
50	Wisconsin Department of Natural Resources	General	MDLs are extremely low, sometimes to the point of picking up background on the sample media, particularly with QFF filters and metals analysis. EPA should set either/or blank criteria to establish absolute values with flexibility to tie to MDL values as necessary.	Blanks that involve the sample matrix (e.g., a digestion blank including the QFF) have acceptance criteria related/tied to the MDL due to the blank portion (MDL_b) of the CFR MDL, which takes into account all portions of background in the method and its processes, including the sampling media (QFF) background. When the sampling media and digestion process is not involved in the blank undergoing evaluation (e.g., an initial calibration blank), acceptance criteria based on the media and processes (as the MDL is) should not be an option as the criteria may be overly permissive of contamination in the particular blank. Therefore, for blanks that are not related to the media matrix (such as solvent blanks, digestion blanks without filter media, etc.) the acceptance criteria will need to be more reasonably established. However, we recognize that metals digestion blanks go through processes that can contribute background (e.g., digestion vessels) when filters are not present and that these processes are difficult to remedy. There are too many scenarios to list in this comment; however, thoughtful consideration of the reasonableness has been given to each blank acceptance criterion and some have been revised in TAD Rev 4.	4.1.2 and 4.4.11.7.7 – blank acceptance criteria adjusted where appropriate
51	Georgia	General	Will the NATTS TAD Revision 4 address the ethylene oxide canister growth issue/positive bias seen in canisters from multiple vendors?	The revision will discuss the observed growth of oxygenated VOCs in canisters, including EtO and acrolein. There will be a general discussion on the theorized pathway/cause for these effects which will be related to the need to qualify canisters for such analytes.	4.2.1.1 and 4.2.4.1

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
52	Georgia	General	Will the NATTS TAD Revision 4 address the lab methodology discrepancies encountered for Ethylene Oxide that exists among various analytical laboratories?	The revision will describe the main challenges with EtO analysis and conventions to address them. Primarily, the ability to analyze EtO requires addressing coelutions to ensure EtO can be properly resolved from compounds that share ions within the MS detector. Aspects covered will discuss column selection, oven temperature programming, and ions chosen for quantitation and qualification. Preconcentration aspects for eliminating moisture in the injected sample appear to be challenging for some monitoring agencies to optimize. See comment 53 below regarding inclusion of the latest TO-15A guidance for analyzing EtO.	4.2.1.1
53	Georgia	General	Standardized procedures for TO-15A and Ethylene Oxide analysis should be included in the NATTS TAD Revision 4.	As much as possible, the current best practices will be included. There are three different aspects of the EtO analysis by TO-15A. Canister media, stock standard gases, and analysis conditions are all important aspects to develop in this TAD revision. Much of the science is still unsettled regarding standards and canister media, but those aspects that are understood will be discussed.	4.2.1.1

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
54	South Carolina		In reference to the comment regarding the ICS for metals analysis: • It is requested that the new standard concentrations and acceptance criteria be tested across the NATTS network to ensure the criteria can be obtained on a routine basis in a production lab environment. Can ICP/MS instruments meet ICS criteria at lower levels? How will the ICS levels be determined? Would this take into consideration the ambient air background concentrations of the interfering metals such as sodium, calcium, etc? Are filter background levels of those interferences included in the new proposed concentration as well? Include any other sources of background levels of interferents as well.	The TAD revision will include changes in the guidance for ICS. Briefly, the previous guidance in the 2016 TAD was based on IO3.5 from several decades ago based on water analysis (we believe primarily from 6010B) then adapted to air. The amount of mass on a collected quartz filter is very small in comparison to the element load in a water sample and the proportional amounts of interfering species (i.e., minerals) are modest in comparison to those measured in a surface water samples. The suggested ICS concentration levels will be based on the expected maximum concentrations of interfering substances and target elements (i.e., 95th percentile concentrations from NATTS sites in AQS) that can be expected on an ambient collected air filter, primarily QFFs. The interferent concentrations will be lowered commensurate with what is expected in worst-case scenario ambient air samples.	4.4.11.7.4

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
55	South Carolina		We look forward to more information on the Grade A and Grade B data sets. How will this designation be determined and by whom? Will this have an effect on the grant commitments?	The criteria for grade A are defined as those already established in the NATTS MQOs for the Tier I analytes. The grade B data criteria were discussed in NATTS assessment reports, and the grade B data were considered for inclusion due to insufficient available grade A data to successfully assess trends, such that the inclusion of lower quality data would allow sufficient quantities of available data for trends assessments. Grade B data allows for the inclusion of results generated with slightly wider bias, wider precision, lower completeness, and less sensitivity (higher MDLs) than prescribed in the NATTS MQOs. The TAD will include a brief discussion of Grade B data; however, no changes to the NATTS MQOs are to be made and there will be no substantive related changes to the manner in which NATTS monitoring agencies are expected to report data and continue to strive to meet the NATTS MQOs. The assignment of Grade B data criteria is made by EPA OAQPS when reviewing the available data and outcomes of the NATTS assessment for specified rolling 3-year periods. We do not believe that grants have been impacted in the past when monitoring agencies are unable to satisfy all NATTS MQOs. Grants are outside of the scope of the TAD and will not be addressed.	Briefly discussed in 2.0

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
56	South Carolina		PT data being used for data validation purposes: • We are looking forward to clarification on this issue since it would be a new requirement. Would this affect grant commitments?	The performance on PT studies directly relates to the ability of the laboratory to meet bias specifications, therefore repeated (2 consecutive) unacceptable bias evaluations will require qualification of ambient data when there are failures for PT studies. This is listed in the current Rev 3 TAD and will remain so in the Rev 4 TAD. We do not believe that grants have been impacted in the past when ASLs have been unable to satisfy bias MQOs. Grants are outside of the scope of the TAD and will not be addressed.	2.1.4.1
57	South Carolina		We request clarification of the comment regarding QAPP submission to AQS. What specific information will need to be added to AQS that is not currently submitted? This process may need time for evaluation of resources needed (if any) to implement the change if specific MQO information is added.	Currently AQS only permits entry of the QAPP approval date, the primary function of which is for the program to assess whether EPA has approved the QAPP within the previous five years. AQS does not currently offer functionality for uploading files such as pdfs of QAPPs. TAD Rev 4 will state that the QAPP approval date is required to be listed in AQS (this is a Regional responsibility).	3.3
58	South Carolina		Please provide further information on the comment regarding UHPLC techniques. Will there be new QC requirements that will require this technology?	The TO-11A QC requirements will not be revised as part of the TAD revision, rather, the revision will address some of the advantages afforded with UHPLC.	4.3.9.1.1 and 4.3.9.5.1

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
59	South Carolina		We are looking forward to further information on the meteorological data. • Since this has not been required, equipment may need to be procured to meet this requirement. • Will met data from airports or other sources as listed in the current TAD still be allowable? How will this be reported or incorporated into the NATTS data review, validation, reporting process?	The TAD Revision will clarify that meteorology measurements are not required for the NATTS program, but agencies are encouraged to collect meteorology measurements. The revision will include guidance (not requirements) for typical meteorology parameters such as temperature/relative humidity/barometric pressure and will also address solar radiation, precipitation, wind speed and wind direction. Guidance in the TAD revision will be relatively basic and refer to information already available in QA Handbook Volume IV and included in the PAMS TAD (2019). EPA is aware that updated guidance is needed and is planning to revise the meteorology QA Handbook when funding becomes available.	Section 5
60	South Carolina		We are uncertain what AQS reporting conventions are being referenced as having changed since 2016. Additional clarification is requested along with any changes to data reported to AQS.	Previous guidance in TAD Rev 3 refers to RP transactions, which are no longer available for use. These precision transactions are now coded as QA transactions for the specific precision type (e.g., QA – Duplicate). The AQS reporting section will be revised to reflect these changes.	Appendix B
61	South Carolina		PT frequency: The current PT frequency of quarterly for VOCs is burdensome. We request that this requirement be moved back to semi-annually like the other NATTS parameters. Other EPA programs require annual PT studies and a repeat if the laboratory fails to meet the acceptance criteria.	The revised TAD will not include the frequency requirement for PT participation as this requirement is prescribed in the NATTS workplan template. EPA has increased the VOCs PT frequency to evaluate the readiness and aptitude of NATTS ASLs to measure EtO.	Not addressed

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
62	OAQPS/AAMG	Carbonyls	Incorporate a procedure for performing a known standard challenge on carbonyls sampling equipment. The Rev 3 TAD includes guidance for verifying all other aspects of the sampler except that it is not negatively biasing the samples. Negative bias is suspected to occur due to exposed copper tubing not coated with KI in the ozone denuder. The exposed copper behaves as a catalyst to destroy carbonyls compounds before they can be derivatized on the DNPH cartridge.	The TAD revision will include guidance and basic instruction (including a diagram) for conducting a recommended known standard qualification challenge on carbonyls samplers. Challenge concentrations will be in the 0.5 to 1 ppbv range and should be prepared from gas phase standards diluted in humidified zero air. The process is recommended (not required in TAD Revision 4 but may be required in the future) and will address known difficulties with properly delivering a formaldehyde standard and the apparent loss of approximately 10% from the intended theoretical concentration. The procedure will define recommended corrective actions for failures of criteria of ± 15% when comparing a sample collected from the carbonyls sampler to a reference sample collected of the standard challenge gas upstream of the sampler without a denuder in line.	4.3.7.1.1.2
63	Janet Cawyer	4.3.7.2	Include option for Siltek (Sulfinert) coated 316L stainless steel with warning to clean with DI water only	TAD revision will include reference to various grades of silicon-ceramic lined tubing and canisters and the recommended handling and cleaning to avoid degradation of the material.	4.2.3.1.1
64	Janet Cawyer	4.3.7.2	Clarification needed. FEP Teflon not allowed in flow path contradicts section 4.3.7.3 where Teflon filter is allowed on inlet line	Teflon should ideally consist only of PTFE; however, if the sampling unit/flow path has passed the known standard challenge with FEP or PFA components in place, these materials are acceptable.	4.2.3.1.1
65	Janet Cawyer	4.3.7.1.1	Include an option to use an in-line DHPH scrubber cartridge on the humidified Ultra-Pure Air or N2 line and compare the bias check results to a Field Blank (or Method Blank) + 0.2 ppbV, rather than plumbing an extra port off the manifold for a control sample. This is a more stringent standard but easier to implement.	The TAD will continue to recommend a reference cartridge as it's difficult to assess contamination without having an established baseline. The carbonyls zero challenge procedure will be revised slightly to clarify how to collect the reference sample and zero challenge for the instrument. This procedure will closely match the newly included known standard challenge.	4.3.7.1.1 and 4.3.7.1.2

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
66	Janet Cawyer	4.3.9.5.2	Retention Times - 3s of the Retention Times during a calibration batch can translate into a very small % diff (less than 0.5% of average RT), impossible to meet batch to batch, sometimes even within the same calibration batch. Many instrument flow specifications are +/- 1% accuracy; also temperature shifts can be~ 1% per 1°C, depending on system. With in-line column temperature control, RTs should be within +/- 1% of the calibrated average.	There is reasonable argument to revisit this specification as the initial criteria in TO-11A states that RTs should show precision within ±7%, though this criterion was established when there was more variability in injection precision and flow or pressure control for the HPLC, as well as the specification to perform triplicate injection of each standard level. For laboratories analyzing a single replicate of each standard and standard consecutively, the precision for the RTs for the ICAL may be very tight on modern, well-controlled HPLC systems. Given the variation in HPLC methods and elution times, a strict RT window is not suitable; however, a percentage of the ICAL average RT is a reasonable basis for evaluation. Setting the criteria to the *greater* of ±3s of the ICAL RTs or ±2% of the ICAL average RT is defensible, particularly if the compound identification can be justified by analysis of a standard or standard addition. TAD Rev 4 will specify that the greater of these criteria is acceptable (TAD Rev 3 states the smaller).	4.3.9.5.2 and 4.3.9.5.6
67	Janet Cawyer	Table 4.4-3	Digestion vials for the Hot Block also have varying levels of background. The acceptance criteria MDLsp does not reflect vial background data. If the MDL is driven by MDLb, this may be due to the filter or the digestion vial, and the RB criteria should reflect that. RB criteria should be set to MDL.	Commenter has a valid point here, however; applying the MDL_b to the RB in many cases provides an overly high acceptance criterion for the RB (which does not include a filter), particularly for QFF matrices. For PTFE analysis, the digestion vessel background contamination may be significant compared to the contribution from the filter. A reasonable path forward is to perform an assessment of the lot of digestion vessels used in a similar fashion to how the lot of filter material is characterized – such as by selecting a representative portion of the lot (e.g., 1% or 7 vessels, whichever is greater) to determine the expected lot background. Then a reasonable RB acceptance criterion is the average + ~3-fold the standard deviation.	4.4.8.3
68	WSLH	4.4.11.8	Ta (ambient temperature in K) is not included in the equation. It should be a denominator.	The revision will ensure the formulas are corrected including this one.	4.4.11.9

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
69	WSLH	4.4.11.8.2	The ICP/MS measured concentration unit usually is in ppb level (ug/L) instead of ppm (ug/ml) level.	The revision will employ the typical units as used conventionally (to use whole numbers up to approximately 1000). For example, standards are purchased relative to concentrations in µg/mL (typically 100 µg/mL); however, working standard concentrations will typically be expressed in ng/mL.	Throughout 4.4
70	WSLH	4.4.11.8.2	The 1000 ng/ug should be a numerator.	Formulas and equations will be verified. This specific equation (and the one in 4.4.11.8.1) will be corrected as the commenter mentions.	4.4.11.8
71	WSLH	4.4.11.8.2	Ff (fraction of exposed filter digested) should be denominator if Ff =1/9 as stated in the notes below the equation.	Formulas and equations will be verified. The commenter is correct that the fraction should be in the denominator to ensure the ICP-measured concentration is multiplied by 9 to account for the 1/9 of the filter digested.	4.4.11.8
72	WSLH	4.4.11.7.8	Serial dilution element conc. >=5xMDL, which is not consistent with table 4.4.3 element conc. >=25xMDL	Tables and text will be harmonized in the revision. The revision will clarify that the measurement in the parent sample needs to be ≥ 25xMDL for the 5-fold dilution to generate sufficient signal for a valid recovery comparison.	4.4.11.7.8
73	WSLH	4.4.11.7.4	Interference check standard (ICS) Type-A concentration is too high for the low-level metal analysis and will cause issues from cone deposition, contamination, and require extended washouts. Comparing with quadrupole ICPMS, high resolution (magnetic sector) ICPMS with double-focusing technique operates in a manner that effectively resolves all known spectral interference.	Refer to comment 54. While some ASLs will employ sector-field type detectors, these are not the norm or needed to perform the NATTS metals analysis. In cases where such a detector is employed that greatly reduces or eliminates interferences, an annual demonstration of the lack of interferences will suffice.	4.4.11.7.4
74	WSLH	4.5.5	Add use of a GC/MS/MS for PAH analysis	Revision will include reference to new instrumentation including tandem MS detectors.	4.5.1 and others
75	WSLH	4.5.5	Remove the use of the DFTPP when using a GC/MS/MS	DFTPP will remain a tuning option for quadrupole MS. As was done for TO-15A, reference to manufacturer tuning procedures will supersede guidance here and will be stated as such in TAD Rev 4.	4.5.5.5.2

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
76	Stephanie McCarthy	7.1, Page 174	Line item in the data validation table for "Field Collected Final Sample Pressure" should be changed from Operational to Critical. For a sub-ambient can, if the final pressure in the can has gone to ambient, then the VOC sample should be invalidated (= critical criterion).	The subambient sample collection ending pressure is critical and the text section as well as validation table will be revised to reference the pressure threshold at which sampling flow rate is no longer constant.	7.1
77	Stephanie McCarthy	7.1, Page 174	References Column. There are multiple references to Section 4.2.5.2, 4.2.5.2.1, 4.2.5.3 etc. However, these sections are not found in the TAD, so if it's a reference to TO-15, etc. it needs to be clarified. (recommend that all references in the VOCs data validation table be cross-checked for accuracy)	The references within the document will be verified prior to final publication.	throughout

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
78	Stephanie McCarthy	General	Incorporate the information from the February 2021 OAQPS technical memo, "Use of Stand Alone Timer for VOCs Sampling" into the VOCs section of the document	The use of a standalone timer for VOCs sampling does not directly relate to the 24-hour routine sampling conducted for the NATTS program. However, such sampling may be performed or necessary for special investigations or for determination of whether the site is a proper candidate for routine air toxics sampling, so portions of the guidance in the memo will be adopted/added. This memo is available here: https://www.epa.gov/sites/default/files/2021-04/documents/use_of_stand-alone_timer_timer_guidance_for_voc_sampling.pdf In general, the critical aspects of the memo relate to: - proper training of technicians - establishing the necessary ending canister pressure to ensure the sampling flow rate remains constant - proper setting of sampling flow rate to ensure this pressure is not exceeded at the end of sample collection - performing leak checks when setting up samples to ensure leaks are not present in the connections to the canister or within the apparatus controlling flow (solenoid valve, flow restrictor, and connections) - verifying canister pressures at sample set up and sample retrieval (to verify sufficient canister vacuum for sampling, canister pressure at end of collection is as intended to ensure sampling flow rate was constant, and leaks did not occur)	4.2.3.4.1

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
79	ERG	TO-15A	MDLs ≤ 20 pptv (it is likely that MDLs for compounds present in blanks will be > 20 pptv): ○ Are data flagged in samples for compounds with MDL > 20 pptv? ○ Is the lowest level calibration point still expected to be 20 pptv regardless of the determined MDL? ○ Is the MDL limit and other MDL-related requirements required for all compounds or only the Tier I and/or Tier II compounds?	MDL requirements will remain based on the MDL MQO established for NATTS for Tier I analytes. There will not be a required MDL for compounds without an applicable MDL MQO, cancer risk, or HQ. There will be no additional need to flag data for not meeting the MDL MQO (or similar requirement for Tier II compounds); however, data will still be flagged as MD or SQ based on the proximity to the MDL. If the MDL MQO cannot be met for Tier I analytes, the ASL is not in compliance with the NATTS workplan template requirements and will need to work with EPA OAQPS to resolve the issue. A calibration range will not be prescribed in the TAD; however, laboratories will be encouraged to introduce low level (e.g., 20 pptv) calibration standards and the revision will include recommended calibration standard levels as was done in TO-15A. The standard concentration levels included in the calibration curve will depend on the laboratory's background level for the compound and the ability to sufficiently detect the compound at the low concentration, therefore are unique to each laboratory. E.g., for benzene, a 20 pptv calibration standard level might be appropriate; however, this may not apply to difficult-to-measure oxygenated analytes such as acrolein. For acrolein in this case, a low calibration standard level of 40 or 50 pptv may be more appropriate. Therefore, standard concentration levels analyzed at concentrations below 40 pptv may be analyzed for benzene, but not included in the acrolein calibration curve. In such cases, the benzene calibration curve may include more concentration levels than acrolein (e.g., 8 levels for benzene vs 7 for acrolein).	3.3.1.3.15.1, 4.2.8.5.1,

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80	ERG	TO-15A	Calibrating with the low calibration point at 20 pptv may not be realistic, especially for compounds with MDLs near 20 pptv and for EtO: ○ The qualifying and quantification ions may not be present in sufficient quantity for some compounds at the 20 pptv level, including EtO and other compounds that have low qualifier ratios. Is peak identification via RT alone acceptable at these low concentrations, knowing that we spiked the calibration canister with the standard? ○ It is likely that the nominal check for this calibration level will not meet 30% for all compounds. This 30% nominal seems stringent for a calibration concentration at essentially the MDL. Recall that the MDL confirmation sample for spiked MDLs, which can be up to 5 times the MDL (5 times ~ 20 ppt), has a %recovery criteria of 40-160%. We will likely be running calibrations multiple times to pass criteria for such a low calibration point, if it will pass at all. ○ If a compound cannot pass the nominal check and/or does not have supporting qualifier data to be identified, how is sample data treated for that compound (Qualifiers, invalidation, etc.)?	The MDL MQO for EtO is 61 pptv (though this is being lowered with the updated workplan template in 2022). Neither TO-15A nor the TAD will require a calibration curve to include 20 pptv. As stated above, the recommended calibration curve will include 20 pptv; however, the laboratory can determine the low calibration point based on their instrument's sensitivity. The inclusion in the calibration curve of a concentration level for which the qualitative identification criteria cannot be met is not appropriate. All calibration standard levels will need to meet the prescribed qualitative identification criteria. Calibration curves standard will still need to meet the ±30% criterion at each level compared to nominal. For samples, the compound must meet qualitative identification criteria or cannot be reported as detected. The only exception to this is that in the opinion of an experienced analyst the compound is present and the rationale for indicating a positive identification is documented and can be technically justified. Tier I analytes must meet all initial calibration and continuing calibration criteria. For Tier II analytes for which there was some failure, the associated ambient data would minimally be qualified as QX (does not meet QC criteria) and LJ (reported value is estimate).	4.2.8.5.3, 4.2.11, and throughout 4.2

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81	ERG	TO-15A	New CCV requirements may dramatically decrease analytical capabilities: ○ CCV concentrations will dramatically decrease following method criteria (concentrations in the lower third of the calibration range) and due to the decrease in concentration of the calibration range (20 to 5000 ppt), which could lead to a higher rate of CCV failures. Additionally, more CCVs are required (every 10 samples) and less samples can be analyzed per day. ○ How will data be handled for failing CCVs? Reanalysis of samples is not always possible for samples with high canister vacuums, a problem that would be compounded for duplicate analysis with analytical replicates. Excessive reruns will also limit the number of samples that can be successfully analyzed per day. Is flagging sample data appropriate if some compounds in the CCVs do not meet criteria?	EPA has not seen empirical data supporting increased rate of CCV failures with the change in CCV concentration guidance. The method bias spec is ±30% for all concentrations within the calibration curve and will remain so in the TAD revision. The update to analyze a CCV in the lower third of the calibration range is designed to verify ongoing instrument calibration in the concentration range in which ambient air measurements are typically made. TO-15A states that the CCV is *required* at the beginning and end of the analytical sequence and is recommended (as a best practice) every 10 samples. A failing CCV places sample data analyzed since the last passing CCV at risk for qualification or invalidation; therefore, more frequent analysis of CCVs reduces such risk. The TAD revision will include these requirements and recommendations as stated. When CCVs fail acceptance criteria and the sample(s) cannot be reanalyzed, the data must be appropriately qualified or invalidated for the affected compounds. Treatment of data will be according to the following hierarchy according to the Tier of the analyte: 1. Tier I analytes must meet the CCV acceptance criteria or the samples must be reanalyzed. If reanalysis with acceptable QC is not possible, the data are invalidated. 2. Tier II analytes should meet the CCV acceptance criteria or should be reanalyzed, if possible (this is not required). If the sample is not reanalyzed with acceptable QC, the data are to be qualified as an estimate. If the direction of the bias of the estimated measurement is known, the qualifier should indicate the low (LL) or high (LK) bias.	4.2.8.6

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
82	ERG	TO-15A	RT within ± 2 seconds will be difficult to achieve for polar compounds, including EtO, for samples collected in humid areas of the country because the polar target compounds "ride" the sample humidity during analysis. This would currently invalidate many of the EtO and other polar compound results or require documentation of an exception to the criteria to keep the compound identification for polar compounds in many samples.	The RT window specification of ±2 s should be readily attainable for the large majority of VOCs, therefore TAD Rev 4 will include this change cited in TO-15A. The RT for a given peak is designated as the peak apex, which for certain compounds and chromatographic conditions, is not consistent when concentrations vary widely and result in the movement of the peak apex. For the commenter's reference to riding sample humidity, a recommended course of action is to optimize the preconcentration water management parameters to reduce the impact on RT movement. Qualitative identification criteria must be met to positively identify a compound. However, if in the opinion of an experienced analyst, the identification is appropriate, the compound can be positively identified and the rationale for the identification must be defensible and documented. This allowance for analyst's opinion (with defensible documented rationale) is detailed in TAD Rev 3 and will remain in TAD Rev 4. One such rationale would be the demonstration that the subject peak elutes partially within the defined RT window, demonstrates the established relative ion abundances across the peak, and has a S:N greater ≥ 3:1 (preferably 5:1).	4.2.11

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
83	ERG	TO-15A	We currently do not hold the blanks and standards 24 hours after filling and have not for the last 30+ years. We have analyzed them at various intervals after filling and have not seen any differences. Holding batch blanks for 24 hours after filling will impact our ability to "check" the batch of cleaned canisters prior to shipping to the field, thereby potentially causing flagging of any batch blank failures after the fact rather than preventing the canisters from being sent out.	1999 TO15 Section 6.2.1 states to hold canisters for 24 hours for new canisters and Section 9.2.6.6 states to hold canisters overnight for standards preparation (when adding volumes of standards in water). Holding the canisters for 24 hours and minimally overnight (i.e., 12 hours) is a best practice to ensure the canister contents have achieved equilibrium with humidity and the canister walls. This is more important for water-soluble polar compounds that can partition and require time to allow water to displace them on the canister walls. The 24-hour period is not required in the TAD but is strongly recommended as a best practice. If laboratories choose not to implement the 24-hour waiting period, the TAD will recommend performing a study on a portion of the canister fleet to demonstrate that the practiced waiting period is equivalent to waiting minimally 24 hours. [It appears the commenter has data to support this assertion.]	4.2.7
84	ERG	TO-15A	We currently have exemptions for the IB before each analytical sequence adding it only to the calibration and as a troubleshooting technique. Would that be acceptable for this method?	The IB is not a requirement, but is a best practice in TO-15A. As with TO-15A, the TAD revision will strongly recommend the IB. Accomplishing the IB prior to analysis will eliminate the need to perform such if the need to troubleshoot arises.	4.2.8.6.3.1
85	ERG	TO-15A	Is BFB required? Section 14.4.1 of the method states that it is optional, but this is unclear in Table 18-1.	BFB is not required in TO-15A and will not be required in the TAD. It will be optional and manufacturer tuning practices will be specified to supersede BFB tuning.	4.2.8.3.3.1
86	ERG	TO-15A	Is it possible to get a copy of the MDL study presented in Table 17-2? Were the other Tier I and Tier II compounds studied?	The MDL data in TO-15A will not be included in the revised TAD. There were not compounds studied beyond those listed. Separately from the TAD, we may discuss with the monitoring agency if they are comfortable sharing the supporting data. The MDLs were determined using the MDL MUR process described in TAD Revision 3.	Not addressed

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87	ERG	TO-15A	Acetonitrile may be a contaminate from the canister especially for combination carbonyl/VOC samplers, however it is a Tier II compound. All these concentrations should be considered estimates using any canister analysis. This is one of the compounds we would like to remove from our compound list (when possible).	Acetonitrile, as a Tier II analyte, is not required to be reported unless the monitoring agency or laboratory is required to do so in their approved QAPP. The sampler certification process should identify when contamination exists in the sampler. Otherwise, an evidence-based approach to understanding the source of acetonitrile in samples is needed when recommending qualification. Acetonitrile is a common laboratory solvent, specifically for TO-11A, therefore the potential contamination from within the laboratory cannot be discounted unless studies have shown the contamination to originate elsewhere. In all cases, when contamination is suspected and evidence suggests a cause, the cause should be investigated and eliminated, if possible. Affected data must be invalidated or qualified as estimated when reported to AQS.	4.2.3.3
88	ERG	TO-15A	The internal standard gas cylinder check will be impossible to meet. In the not too distant past, our lab and others have seen issues with IS gas cylinder background. Even the vendors will tell you that it is difficult for them to find cylinders clean enough to meet current IS criteria (0.2ppbv or 3 times the MDL, whichever is lower). We have to order multiple IS cylinders to get one that is good. The cylinders are not likely to pass the new criteria. Lowering the criteria will cause more data to be flagged.	The issue with dichloromethane and other compounds such as carbon disulfide in IS gases is difficult to address. The most prudent resolution to address contamination in IS gases is to order an IS cylinder with the IS compounds at a sufficiently high concentration such that they can be diluted down to a level at which the contribution from contaminants does not interfere with routine analysis. We are aware of several laboratories that ordered IS cylinders with ISs at fairly high concentrations such that the gas can be diluted to a level to which contamination should not interfere. For compounds for which complete elimination of interference from the IS stock gas is not possible, the ambient data must be flagged appropriately when reported to AQS. This will not change substantially in TAD Rev 4 as the requirement to qualify data that exhibit contamination in blanks is already required in TAD Rev 3.	4.2.6.1.4

#	Commenter	Section/Page#	Comment/Input	Response to Comment/Input	TAD Section where addressed
89	General	TO-15A	Canister receipt pressure measurement criteria cannot exceed 0.5 psia from the canister pressure measured at sample retrieval.	Gauge pressure (referenced to local ambient barometric pressure) will change based on altitude; however, the absolute canister pressure will not change with differing altitudes. Gauges employed for measuring final canister pressures at monitoring sites should read absolute pressure (not gauge pressure) and should be calibrated. When pressure at receipt is different by more than 0.5 but not more than 1.5 psi then the sample data will be qualified as an estimate (LJ). When pressure discrepancies exceed 1.5 psi, those samples will be invalidated. Exceptions include when temperature differences can be shown to be responsible for the difference in pressure and allowance to permit subambient samples to have more vacuum (i.e., lower absolute pressure) and pressurized samples to have higher pressure without need for qualification or invalidation. These details for qualifying data and justifying pressure differences will be described in TAD Rev 4.	4.2.5
90	OAQPS/AAMG	All methods	Replicate analyses is performed as a routine QC practice for each pollutant class to assess analytical precision. In the event the first of the replicate precision pair is invalidated and the second of the precision pair is appropriate for reporting, the ASL must report the valid measurement from the replicate precision pair for the sample. This is analogous to the convention for the $PM_{2.5}$ network which requires reporting of QA precision sample result (i.e., a collocated monitor) when the primary monitor sample result is invalidated.	The revision will include the requirement to report precision data meeting criteria when the primary data are invalidated/NULL. This requirement will be included within each method section and in the AQS reporting/coding section.	In individual analysis sections for replicate analyses