



Clean Air Status and Trends Network

Third Quarter 2025 Quality Assurance Report

Summary of Quarterly Operations (July through September)

Submitted to U.S. Environmental Protection Agency (EPA)
Clean Air and Power Division

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Introduction

This quarterly report summarizes results from the Clean Air Status and Trends Network (CASTNET) quality assurance/quality control (QA/QC) program for data collected during third quarter 2025. The various QA/QC criteria and policies are documented in the CASTNET Quality Assurance Project Plan [QAPP; WSP Environment & Infrastructure Inc. (WSP), 2025]. The QAPP is comprehensive and includes standards and policies for all components of project operation from site selection through final data reporting. It is reviewed annually and updated as warranted.

Quarterly Summary

On July 22, 2025, WSP was notified by the American Association for Laboratory Accreditation that WSP's field and analytical laboratories were approved for renewal of International Organization for Standardization/International Electrotechnical Commission 17025:2017 accreditation for two years, through May 31, 2027.

WSP continued preparations for updating CASTNET ozone (O_3) transfers to the new cross-section. As of the end of third quarter 2025, four CASTNET transfers, which included one Thermo 49i-PS bench standard and three Thermo 49i Level 2 traveling transfers, were updated with the new cross-section and verified following the guidelines in EPA's 2023 Transfer Standards for Calibration of Air Monitoring Analyzers for Ozone Technical Assistance Document (TAD; EPA, 2023). During September, WSP sent an out-of-certification Thermo 49i Level 2 traveling transfer standard to EPA Region 4 for reverification and updating to the new cross-section by the EPA Region 4 standard reference photometer (SRP). The transfer was damaged during shipping to EPA Region 4, and it was sent back to WSP for repair without being updated. WSP will repair the damaged transfer and will ship it back to EPA Region 4 where it will be reverified and updated to the new cross-section by the EPA Region 4 SRP in early fourth quarter 2025. WSP has an additional two transfers still to be updated to the new cross-section and verified following 2023 O_3 TAD guidelines: a Thermo 49i PS bench standard and a Thermo 49i Level 2 traveling transfer. The certification for one of the two transfers expires in October 2025 and the other expires in November 2025.

WSP continued updating the onsite Level 3 O_3 transfer standards to the new cross-section following EPA's updated 2023 O_3 TAD guidelines. The new process includes updating the site data logger program and completing updated documentation during the reverification of the site transfer standard. Beginning January 1, 2025, data from O_3 systems not using the new cross-section are required to be flagged "XS" in EPA's Air Quality System (AQS). WSP is appending "XS" qualifier flags to the 2025 O_3 data for EPA-sponsored CASTNET sites to indicate they were obtained from O_3 systems that were not updated to the new cross-section. WSP will cease application of the "XS" flags following the cross-section update. During third quarter 2025, the sites listed in Table 1 were updated to the new O_3 cross-section as of the date and time listed for each site.

EPA's Office of Air Quality Planning and Standards (OAQPS) is encouraging O₃ monitoring organizations to transition to scrubber-free O₃ transfer standards. WSP believes the best option for transitioning to scrubber-free transfer standards is through equipment changes over time. Under Task Order 68HERH24F0336, Non-routine Maintenance and Repairs (3006), WSP recommended replacement of the current Thermo Model 49i O₃ system with the new Teledyne API (TAPI) O₃ system (models N400 and N703U). EPA's Clean Air and Power Division (CAPD) approved WSP's purchase of the TAPI O₃ systems, and WSP ordered 62 Teledyne Model N400 O₃ analyzers in third quarter 2025. WSP will order N703U during fourth quarter 2025 and begin replacing the Thermo 49i systems at CASTNET sites in early 2026.

The QA Manager completed review of the results of the Level 4 O₃ validation review by Air Resource Specialists, Inc. (ARS). ARS reviewed the O₃ data set for data collected from 2021 through 2023. WSP will make the recommended changes and resubmit the updated data to CAPD and EPA's AQS.

EPA's OAQPS finalized the parameters for submission of CASTNET filter pack data to EPA's AQS. During third quarter 2025, WSP completed uploading validated filter pack data to AQS. Validated filter pack data from EPA-sponsored CASTNET sites from 1990 through 2023 were uploaded, except for data from CHE185, OK, which were uploaded through 2024. Validated filter pack data from National Park Service (NPS)-sponsored CASTNET sites were uploaded for sites active in AQS through 2024. Filter pack data for Bureau of Land Management-sponsored sites active in AQS were uploaded through March 2025. Going forward, validated filter pack data will be updated annually in AQS.

The QA Manager organized documentation for the 2024 managerial review. He prepared the report and provided it to the CASTNET management team for review. The presentation of the report's findings will take place in October 2025. The CASTNET management team and WSP corporate QA and management personnel will attend the presentation.

Review of the CASTNET QAPP to determine if updates are needed continued during third quarter. Updates that will be included in the next version of the QAPP include, but are not limited to, adding procedures for installation and operation of the PurpleAir particulate matter (PM) sensors.

The QA Manager began reviewing the WSP corporate Quality Management Plan (QMP) to assess if it addresses updated EPA guidelines. Once he completes his review, he will submit proposed changes to WSP corporate personnel for incorporation into the WSP QMP.

WSP received final results of analyses of samples for proficiency test (PT) 126 for Rain and Soft Waters from the Water Science and Technology Directorate, a branch of Environmental Science and Technology Laboratories with Environment and Climate Change Canada, during third quarter 2025. There were two warning flags: one for an ammonia sample and one for a pH sample. Overall, WSP's results for PT 126 received a rating of "Good."

The QA Manager began the process to perform an audit of data quality for per- and polyfluoroalkyl substances (PFAS) data collected from January 2023 to December 2024. The QA Manager received data from Martin Shafer with the National Atmospheric Deposition Program analytical laboratory. The results of the audit will be submitted to EPA in fourth quarter 2025.

During third quarter 2025, National Performance Audit Program (NPAP) and state agency audits were performed at the sites listed in Table 2. Results for all sites were within the established audit criteria.

Table 3 lists the quarters of data that were validated to Level 3 during third quarter 2025 by site calibration group. Table 4 lists the sites in each calibration group along with the calibration schedule. Table 5 presents the measurement criteria for laboratory filter pack measurements. These criteria apply to the QC samples listed in the following section of this report. Table 6 presents the critical criteria for O₃ monitoring. Table 7 presents the critical criteria for trace-level gas monitoring.

Quality Control Analysis Count

The QC sample statistics presented in this report are for reference standards (RF) and continuing calibration verification spikes (CCV) used to assess accuracy and for replicate sample analyses (RP) used to assess “in-run” precision. In addition, laboratory method blanks (MB) containing reagents without a filter; laboratory blanks (LB) containing reagents and a new, unexposed filter; and field blanks (FB) containing reagents and an unexposed filter that had been loaded into a filter pack assembly and shipped to and from the monitoring site while remaining in sealed packaging are also included. Table 8 presents the number of analyses in each category that were performed during third quarter 2025.

Sample Receipt Statistics

Ninety-five percent of field samples from EPA-sponsored sites should be received by the CASTNET laboratory in Gainesville, FL no later than 14 days after removal from the sampling tower. Table 9 presents the relevant sample receipt statistics for third quarter 2025.

Data Quality Indicator (DQI) Results

Figures 1 through 3 present the results of RF, CCV, and RP QC sample analyses for third quarter 2025. All results were within the criteria listed in Table 5.

Table 10 presents summary statistics of critical criteria measurements at O₃ sites collected during third quarter 2025. The statistics presented contain data validated at Level 2 and Level 3. All data associated with QC checks that fail to meet the criteria listed in Table 6 were or will be invalidated unless the cause of failure has no effect on ambient data collection and passing results still meet frequency criteria. Results in shaded cells either exceed documented criteria or are otherwise notable. Table 11 presents observations associated with the shaded cell results in Table 10.

Table 12 presents summary statistics of critical criteria measurements at trace-level gas monitoring sites collected during third quarter 2025. The statistics presented contain data validated at Level 2 and Level 3. All data associated with QC checks that fail to meet the criteria listed in Table 7 were or will be invalidated unless the cause of failure has no effect on ambient data collection and passing results still meet frequency criteria. Results in shaded cells either exceed documented criteria or are otherwise notable. Table 13 presents observations associated with the shaded cell results in Table 12.

Laboratory Control Sample Analysis

The laboratory control sample (LCS) is a reagent blank spiked with the target analytes from the established analytical methods and carried through the same extraction process that field samples must undergo. LCS analyses are performed by the laboratory to monitor for potential sample handling artifacts and provide a means to identify possible analyte loss from the extraction process. Figure 4 presents LCS analysis results for third quarter 2025. All recovery values were between 91 percent and 110 percent.

Blank Results

Figures 5 through 7 present the results of MB, LB, and FB QC sample analyses for third quarter 2025. All third quarter results were within criteria (two times the reporting limit listed in Table 5).

Suspect/Invalid Filter Pack Samples

Filter pack samples that were flagged as suspect or invalid during third quarter 2025 are listed in Table 14. This table also includes associated site identification and a brief description of the reason the sample was flagged. During third quarter, nine filter pack samples were invalidated.

Field Problem Count

Table 15 presents counts of field problems affecting continuous data collection for more than one day for third quarter 2025. The problem counts are sorted by a 30-, 60-, or 90-day time period to resolution. A category for unresolved problems is also included.

References

- American Society for Testing and Materials (ASTM). 2022. ASTM E29-22, Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications. ASTM International, West Conshohocken, PA, DOI:10.1520/E0029-22. www.astm.org.
- U.S. Environmental Protection Agency (EPA). 2024. Title 40 Code of Federal Regulations Part 58, Appendix A to Part 58 – Quality Assurance Requirements for Monitors used in Evaluations of National Ambient Air Quality Standards. <https://www.epa.gov/amtic/ambient-air-monitoring-quality-assurance>.
- U.S. Environmental Protection Agency (EPA). 2023. Transfer Standards for Calibration of Air Monitoring Analyzers for Ozone Technical Assistance Document. Publication No. EPA-454/B-22-003, January 2023: https://www.epa.gov/system/files/documents/2023-11/o3_tad_508_20230906_final.pdf.
- WSP USA Environment & Infrastructure Inc. (WSP). 2025. *Clean Air Status and Trends Network (CASTNET) Quality Assurance Project Plan (QAPP) Revision 10.2*. Prepared for U.S. Environmental Protection Agency (EPA), Office of Air and Radiation, Clean Air and Power Division, Washington, DC. Contract No. 68HERH21D0006. Gainesville, FL. <https://www.epa.gov/castnet/documents-reports>.

Table 1 Sites Updated to the New Ozone Cross-Section During Third Quarter 2025

Site ID	Date	Time	Site ID	Date	Time
July			August (continued)		
CKT136, KY	07-24-2025	13:15 EST	PSU106, PA	08-24-2025	19:15 EST
ESP127, TN	07-21-2025	21:51 CST	SND152, AL	08-16-2025	22:35 CST
MCK131, KY	07-23-2025	12:56 CST	SPD111, TN	08-13-2025	22:09 EST
MCK231, KY	07-22-2025	21:36 CST	SUM156, FL	08-21-2025	06:54 EST
August			VPI120, VA	08-26-2025	17:05 EST
ARE128, PA	08-25-2025	15:55 EST	WSP144, NJ	08-23-2025	11:29 EST
BEL116, MD	08-21-2025	20:34 EST	September		
BWR139, MD	08-22-2025	15:50 EST	ALC188, TX	09-24-2025	14:01 CST
CAD150, AR	08-18-2025	20:37 CST	BVL130, IL	09-26-2025	14:38 CST
CND125, NC	08-11-2025	14:37 EST	DUK008, NC	09-01-2025	21:17 EST
COW137, NC	08-12-2025	19:30 EST	HAS012, KS	09-11-2025	12:35 CST
CTH110, NY	08-24-2025	05:43 EST	OXF122, OH	09-23-2025	20:38 EST
CVL151, MS	08-17-2025	20:45 CST	PRK134, WI	09-28-2025	20:21 CST
GAS153, GA	08-15-2025	14:41 EST	QAK172, OH	09-22-2025	19:51 EST
IRL141, FL	08-25-2025	21:43 EST	SAN192, NE	09-09-2025	14:45 CST
PED108, VA	08-27-2025	15:15 EST	VIN140, IN	09-25-2025	07:56 CST

Table 2 NPAP and State Agency Audits of CASTNET Ozone Systems

Site ID	Auditing Agency
ESP127, TN	NPAP (EPA Region 4)
HOX148, MI	NPAP (EPA Region 5)
KEF112, PA	State of Pennsylvania Department of Environmental Protection
LPO010, CA	California Air Resources Board
LRL117, PA	State of Pennsylvania Department of Environmental Protection
MKG113, PA	State of Pennsylvania Department of Environmental Protection
PAL190, TX	NPAP (EPA Region 6)
QAK172, OH	NPAP (EPA Region 5)
SAL133, IN	Indiana Department of Environmental Management
STK138, IL	NPAP (EPA Region 5)
VIN140, IN	Indiana Department of Environmental Management
VIN140, IN	NPAP (EPA Region 5)
UVL124, MI	NPAP (EPA Region 5)

Table 3 Data Validated to Level 3 through Third Quarter 2025

Calibration Group*	Months Available	Number of Months	Complete Quarters	Number of Quarters
E-3/W-10 [†]	November 2024– April 2025	6	Quarter 1 2025	1
SE-4/MW-6 [‡]	January 2025– June 2025	6	Quarter 1 2025– Quarter 2 2025	2

Notes: * The sites contained in each calibration group are listed in Table 4.

[†] Contains ROM206 of the ROM406/ROM206 co-located pair

[‡] Contains MCK131/231 co-located pair

Table 4 Field Calibration Schedule for 2025

Calibration Group	Months Calibrated	Sites Calibrated			
Eastern Sites (17 Total)					
E-1 (7 Sites)	February/August	ARE128, PA PED108, VA	BEL116, MD VPI120, VA	BWR139, MD WSP144, NJ	CTH110, NY
E-2 (6 Sites)	April/October	ABT147, CT WFM105, NY	CAT175, NY WST109, NH	EGB181, ON	NIC001, NY
E-3 (4 Sites)	May/November	KEF112, PA	LRL117, PA	MKG113, PA	PAR107, WV
Southeastern Sites (11 Total)					
SE-4 (7 Sites)	January/July	BFT142, NC GAS153, GA	CND125, NC SND152, AL	COW137, NC SPD111, TN	DUK008, NC ¹
SE-5 (4 Sites)	February/August	CAD150, AR	CVL151, MS	IRL141, FL	SUM156, FL
Midwestern Sites (15 Total)					
MW-6 (4 Sites)	January/July	CKT136, KY	ESP127, TN	MCK131, KY	MCK231, KY
MW-7 (7 Sites)	March/September	BVL130, IL ² RED004, MN	OXF122, OH STK138, IL ²	PRK134, WI VIN140, IN	QAK172, OH
MW-8 (4 Sites)	April/October	ANA115, MI	HOX148, MI	SAL133, IN	UVL124, MI
Western Sites (13 Total)					
W-9 (5 Sites)	March/September	ALC188, TX SAN192, NE ²	CHE185, OK	HAS012, KS	KNZ184, KS
W-10 (8 Sites)	May/November	CNT169, WY PAL190, TX	GTH161, CO PND165, WY	LPO010, CA ROM206, CO	NPT006, ID UMA009, WA

Notes: ¹ Trace-level gas calibrations are performed quarterly in January, April, July, and October.

² Trace-level gas calibrations are performed quarterly in March, June, September, and December.

Table 5 Data Quality Indicators for CASTNET Laboratory Measurements

Analyte	Method	Precision ¹ (MARPD)	Accuracy ² (%)	Nominal Reporting Limits ³	
				mg/L	µg/Filter
Ammonium (NH ₄ ⁺)	AC	20	90–110	0.020*	0.5
Sodium (Na ⁺)	ICP-OES	20	95–105	0.005	0.125
Potassium (K ⁺)	ICP-OES	20	95–105	0.006	0.15
Magnesium (Mg ²⁺)	ICP-OES	20	95–105	0.003	0.075
Calcium (Ca ²⁺)	ICP-OES	20	95–105	0.006	0.15
Chloride (Cl ⁻)	IC	20	95–105	0.020	0.5
Nitrate (NO ₃ ⁻)	IC	20	95–105	0.008*	0.2
Sulfate (SO ₄ ²⁻)	IC	20	95–105	0.040	1.0

Notes: ¹ This column lists precision goals for both network precision calculated from co-located filter samples and laboratory precision based on replicate samples for samples > five times the reporting limit. The criterion is ± the reporting limit if the sample is ≤ five times the reporting limit.

² This column lists laboratory accuracy goals based on reference standards and continuing calibration verification spikes. The criterion is 90–110 percent for ICP-OES reference standards.

³ The reporting limit for sulfate on cellulose filters (reported as SO₄²⁻ with correction factor applied) is 0.080 mg/L (2.0 µg/filter) because there are two cellulose filters in each filter pack.

AC = automated colorimetry
 IC = ion chromatography
 ICP-OES = inductively coupled plasma-optical emission spectrometry
 MARPD = mean absolute relative percent difference
 mg/L = milligrams per liter
 µg/Filter = micrograms per filter
 * = as nitrogen

Values are rounded according to American Society for Testing and Materials (ASTM) E29-22, “Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications” (ASTM, 2022).

For more information on analytical methods and associated precision and accuracy criteria, see the CASTNET QAPP, (WSP, 2025).

Table 6 Ozone Critical Criteria*

Type Check	Analyzer Response
Zero	Less than ± 3.1 parts per billion (ppb)
Span	Less than ± 7.1 percent between supplied and observed concentrations
Single Point QC	Less than ± 7.1 percent between supplied and observed concentrations

Notes: * Applies to CASTNET sites that are configured and operated in accordance with Part 58 of Title 40 of the Code of Federal Regulations (EPA, 2024). The minimum frequency for these checks is once every two weeks.

Values are rounded according to ASTM E29-22, “Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications” (ASTM, 2022).

Table 7 Trace-level Gas Monitoring Critical Criteria*

Parameter	Analyzer Response	
	Zero Check	Span Check / Single Point QC Check
SO ₂	Less than ± 1.51 ppb	Less than ± 10.1 percent between supplied and observed concentrations
NO _y	Less than ± 1.51 ppb	
CO	Less than ± 50 ppb	

Notes: *Applies to CASTNET sites that are configured and operated in accordance with Part 58 of Title 40 of the Code of Federal Regulations (EPA, 2024). The minimum frequency for these checks is once every two weeks.

Values are rounded according to ASTM E29-22, "Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications" (ASTM, 2022).

SO₂ = sulfur dioxide
 NO_y = total reactive oxides of nitrogen
 CO = carbon monoxide
 ppb = parts per billion

Table 8 QC Analysis Count for Third Quarter 2025

Filter Type	Parameter	RF Sample Count	CCV Sample Count	RP Sample Count	MB Sample Count	LB Sample Count	FB Sample Count
Teflon	SO ₄ ²⁻	56	167	70	14	22	41
	NO ₃ ⁻	56	167	70	14	22	41
	NH ₄ ⁺	28	154	70	14	22	41
	Cl ⁻	56	167	70	14	22	41
	Ca ²⁺	28	152	69	14	22	41
	Mg ²⁺	28	152	69	14	22	41
	Na ⁺	28	152	69	14	22	41
	K ⁺	28	152	69	14	22	41
Nylon	SO ₄ ²⁻	42	165	70	14	22	41
	HNO ₃	42	165	70	14	22	41
Cellulose	SO ₂	24	49	14	9	22	8

Table 9 Filter Pack Receipt Summary for Third Quarter 2025

Count of samples received more than 14 days after removal from tower:	19
Count of all samples received:	682
Fraction of samples received within 14 days:	0.972
Average interval in days:	6.085
First receipt date:	7-01-2025
Last receipt date:	9-30-2025

Note: Sample shipments for the Egbert, Ontario site (EGB181) are sent in groups of four. Samples associated with EGB181 are excluded from this statistic.

Table 10 Ozone QC Summary for Third Quarter 2025 (1 of 2)

Site ID	% Span Pass ¹	Span [%D] ²	% Single Point QC Pass ¹	Single Point QC [%D] ²	% Zero Pass ¹	Zero Average (ppb) ²
ABT147, CT	100.00	1.34	97.85	1.94	98.91	0.25
ALC188, TX	86.41	3.40	90.10	3.60	100.00	0.24
ANA115, MI	94.85	2.41	98.97	1.23	100.00	0.26
ARE128, PA	100.00	3.00	100.00	3.00	100.00	0.71
BEL116, MD	100.00	0.93	100.00	1.47	100.00	0.37
BFT142, NC	100.00	3.61	100.00	3.75	100.00	0.20
BVL130, IL	97.85	1.11	97.85	1.77	100.00	0.76
BWR139, MD	100.00	1.96	98.72	2.37	97.44	0.43
CAD150, AR	100.00	1.19	100.00	1.21	100.00	0.51
CKT136, KY	100.00	1.32	100.00	1.25	100.00	0.17
CND125, NC	100.00	0.88	100.00	1.77	100.00	0.29
CNT169, WY	100.00	0.48	98.94	0.98	100.00	0.19
COW137, NC	100.00	1.43	100.00	1.36	100.00	0.20
CTH110, NY	100.00	0.78	100.00	1.06	98.92	0.36
CVL151, MS	100.00	0.61	100.00	0.77	100.00	0.32
DUK008, NC	100.00	1.00	100.00	1.45	100.00	0.60
ESP127, TN	100.00	1.56	100.00	1.33	100.00	0.28
GAS153, GA	100.00	0.64	100.00	2.52	100.00	1.17
GTH161, CO	100.00	1.97	100.00	2.24	100.00	0.20
HAS012, KS	100.00	0.72	100.00	0.61	100.00	0.30
HOX148, MI	100.00	0.31	100.00	0.43	100.00	0.28
IRL141, FL	100.00	2.52	100.00	2.48	100.00	0.35
KEF112, PA	100.00	1.64	100.00	1.11	100.00	0.39
LPO010, CA	99.02	2.19	98.94	2.95	100.00	0.17
LRL117, PA	100.00	1.38	98.91	1.09	100.00	0.25
MCK131, KY	100.00	1.29	100.00	1.49	100.00	0.49
MCK231, KY	100.00	1.28	100.00	1.53	98.96	0.89
MKG113, PA	100.00	1.42	98.96	1.63	97.92	0.55
NPT006, ID	98.94	0.78	100.00	0.75	100.00	0.11
OXF122, OH	100.00	3.19	100.00	3.30	100.00	0.43
PAL190, TX	100.00	0.66	100.00	0.86	100.00	0.22
PAR107, WV	96.00	5.48	96.00	5.14	96.00	0.49
PED108, VA	92.63	2.21	92.63	2.44	100.00	0.32
PND165, WY	100.00	0.81	100.00	0.45	100.00	0.62
PRK134, WI	100.00	1.12	100.00	1.52	100.00	0.27
PSU106, PA	100.00	1.88	97.92	1.78	98.96	0.35
QAK172, OH	100.00	1.32	100.00	1.08	100.00	0.27
ROM206, CO	100.00	0.56	100.00	0.76	100.00	0.27
SAL133, IN	100.00	1.08	98.95	0.98	100.00	0.30
SAN192, NE	91.57	3.29	91.46	4.14	100.00	0.44
SND152, AL	100.00	1.09	99.00	1.29	99.01	0.85
SPD111, TN	100.00	1.13	100.00	1.07	100.00	0.21
STK138, IL	89.09	5.43	98.95	2.04	100.00	0.25
SUM156, FL	100.00	2.20	100.00	2.19	100.00	0.20

Table 10 Ozone QC Summary for Third Quarter 2025 (2 of 2)

Site ID	% Span Pass ¹	Span [%D] ²	% Single Point QC Pass ¹	Single Point QC [%D] ²	% Zero Pass ¹	Zero Average (ppb) ²
UMA009, WA	96.97	4.24	97.94	4.44	95.88	0.77
UVL124, MI	100.00	0.67	100.00	1.09	100.00	0.44
VIN140, IN	93.48	41.20	87.78	2.84	97.78	0.61
VPI120, VA	99.00	1.40	97.00	1.88	97.00	0.43
WSP144, NJ	100.00	3.04	97.78	3.05	100.00	0.41
WST109, NH	100.00	0.76	98.96	0.95	100.00	0.30

Notes: ¹Percentage of comparisons that pass the criteria listed in Table 6. Values falling below 90 percent are addressed in Table 11.

²Absolute value of the average percent differences between the on-site transfer standard and the site monitor. Values exceeding the criteria listed in Table 6 are addressed in Table 11.

%D = percent difference

ppb = parts per billion

Table 11 Ozone QC Observations for Third Quarter 2025

Site ID	QC Criterion	Comments
ALC188, TX	% Span Pass	Solenoid issue
STK138, IL	% Span Pass	QC failures. Associated data were invalidated.
VIN140, IN	Span [%D] % Single Point QC Pass	Recurrent issues with system moisture

Note: %D = percent difference

Table 12 Trace-level Gas QC Summary for Third Quarter 2025

Parameter	% Span Pass ¹	Span [%D] ²	% Single Point QC Pass ¹	Single Point QC [%D] ²	% Zero Pass ¹	Zero Average (ppb) ²
BVL130, IL						
SO ₂	100.00	2.27	100.00	2.07	100.00	0.97
NO _y	100.00	3.43	100.00	4.24	100.00	0.55
CO	100.00	2.60	97.62	5.97	100.00	26.08
DUK008, NC						
NO _y	100.00	4.50	100.00	4.06	100.00	0.59
SAN192, NE						
NO _y	84.78	9.03	84.78	8.88	93.48	0.82
STK138, IL						
NO _y	100.00	1.52	97.78	3.28	95.45	0.83

Notes: ¹Percentage of comparisons that pass the criteria listed in Table 7. Values falling below 90 percent are addressed in Table 13.

²Absolute value of the average percent differences between the supplied and observed concentrations. Values exceeding the criteria listed in Table 7 are addressed in Table 13.

%D = percent difference

ppb = parts per billion

Table 13 Trace-level Gas QC Observations for Third Quarter 2025

Site ID	Parameter	QC Criterion	Comments
SAN192, NE	NO _y	% Span Pass % Single Point QC Pass	Monitoring system malfunction. The pre-reactor assembly required replacement.

Table 14 Filter Packs Flagged as Suspect or Invalid During Third Quarter 2025

Site ID	Sample No.	Reason
ALB801, AB	2531007-01	Flow data are missing after 7-31-2025. Data may be recovered.
ARE128, PA	2527001-02 2528001-02 2529001-02	Power failure affecting three samples
CHA467, AZ	2532003-04	Flow data are missing after 7-31-2025. Data may be recovered.
NIC001, NY	2529001-30	Power failure
SAL133, IN	2530001-39	The flow pump was left off after the filter pack exchange.
SND152, AL	2533001-40	The field calibration technician left flow offline after their site visit during the sampling period.
VOY413, MN	2533003-21	Flow data are missing after 8-12-2025. Data may be recovered.

Table 15 Field Problems Affecting Data Collection

Days to Resolution	Problem Count
30	309
60	8
90	1
Unresolved by end of quarter	5

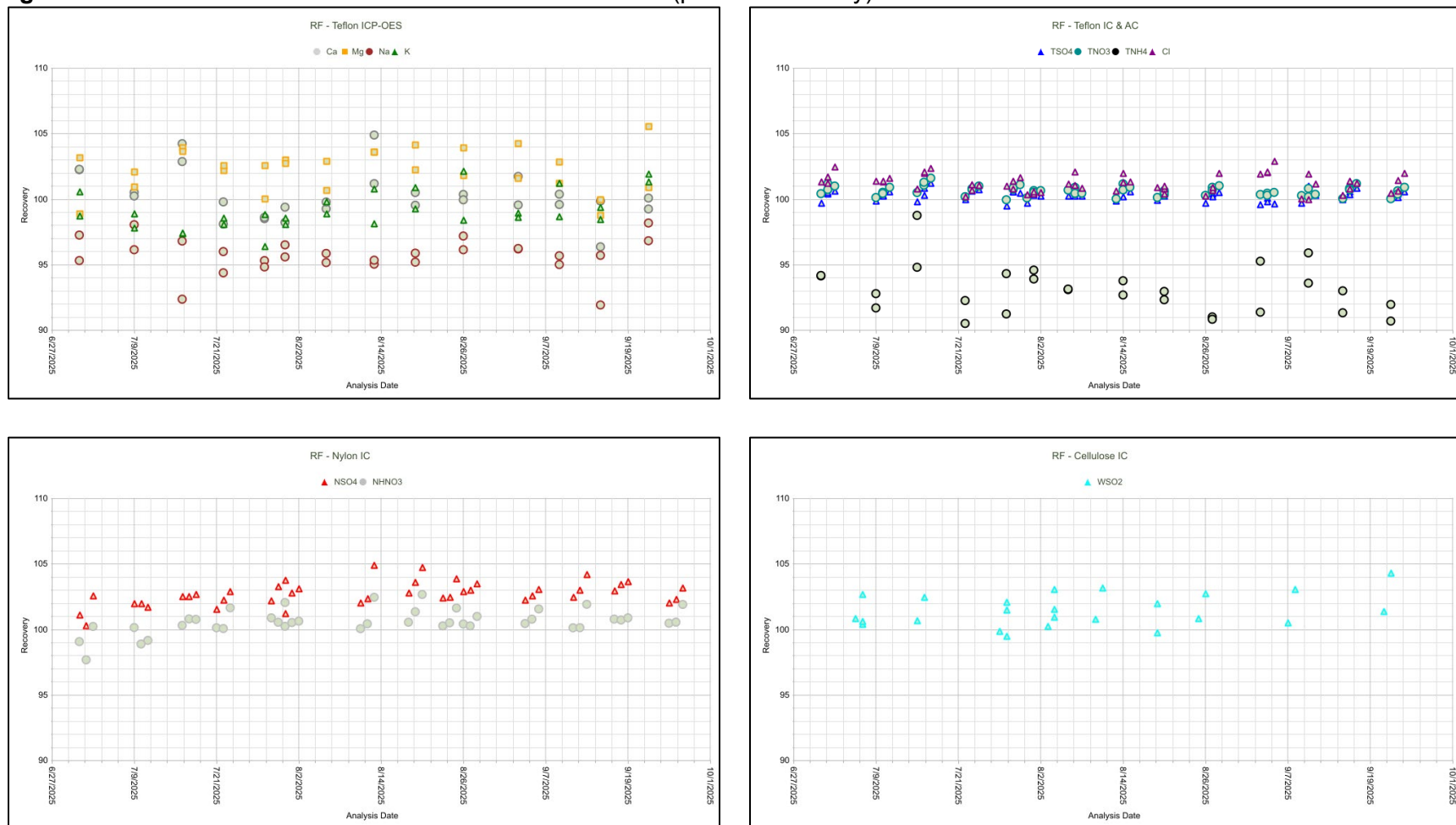
Figure 1 Reference Standard Results for Third Quarter 2025 (percent recovery)

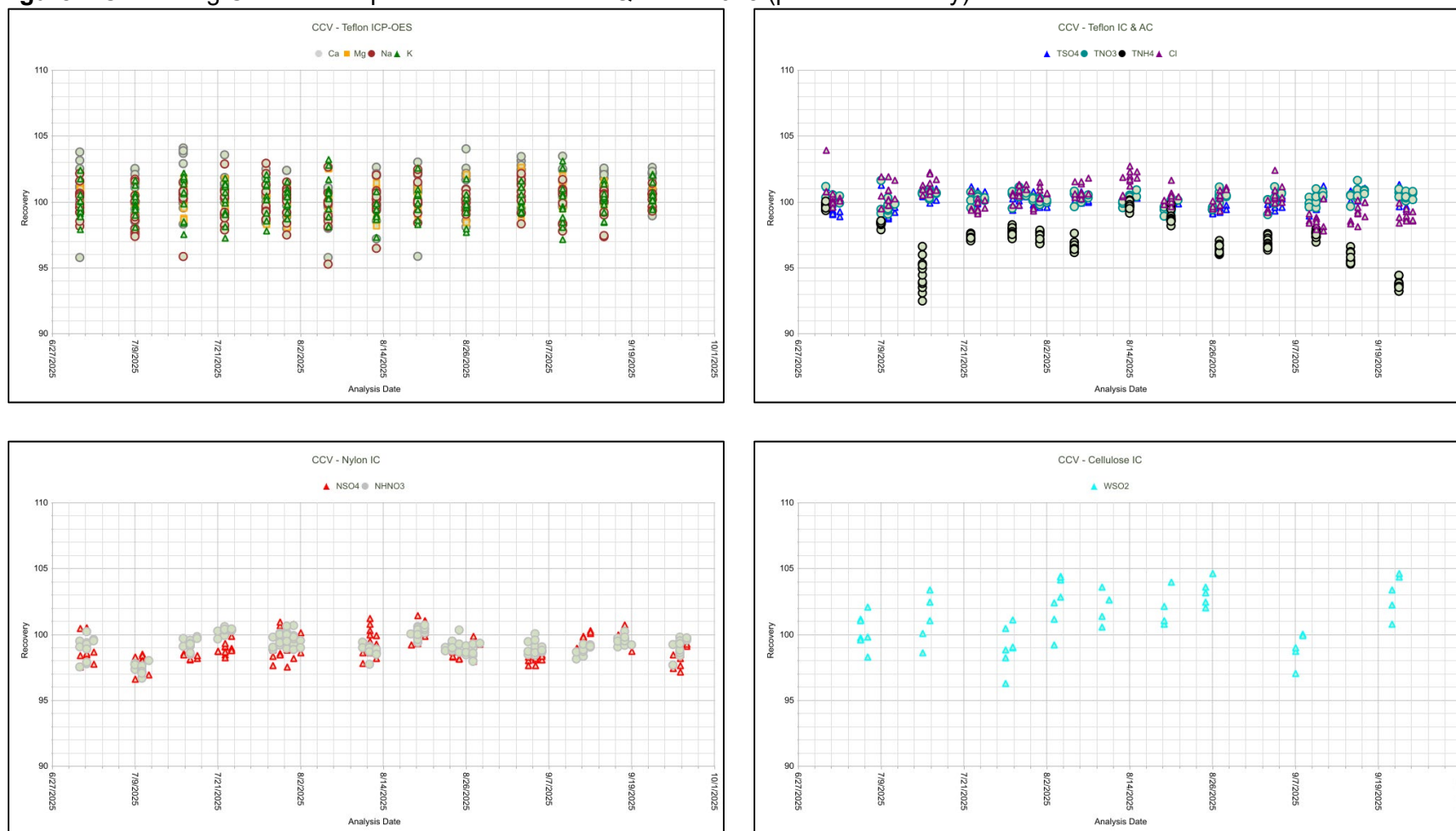
Figure 2 Continuing Calibration Spike Results for Third Quarter 2025 (percent recovery)

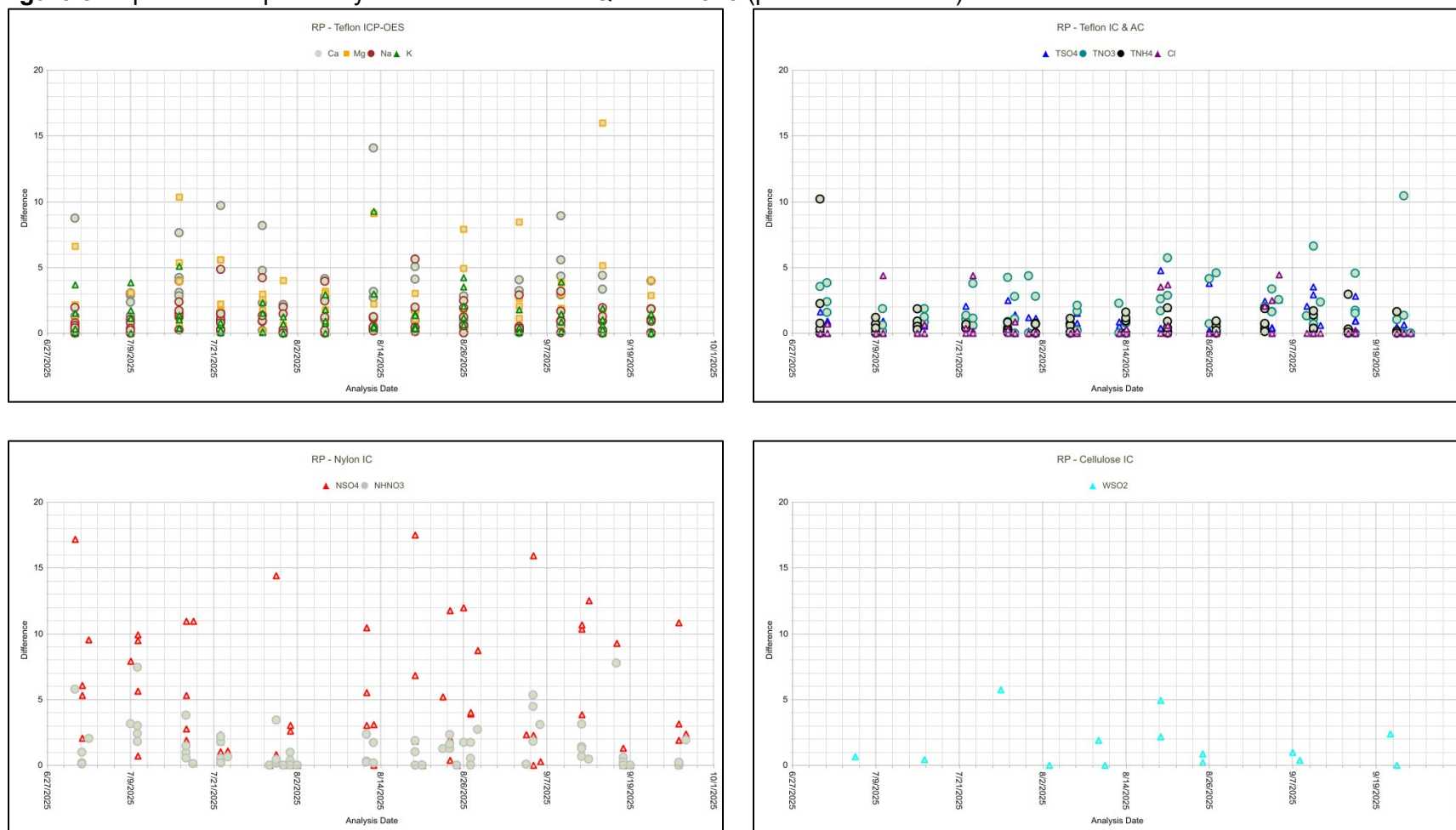
Figure 3 Replicate Sample Analysis Results for Third Quarter 2025 (percent difference)

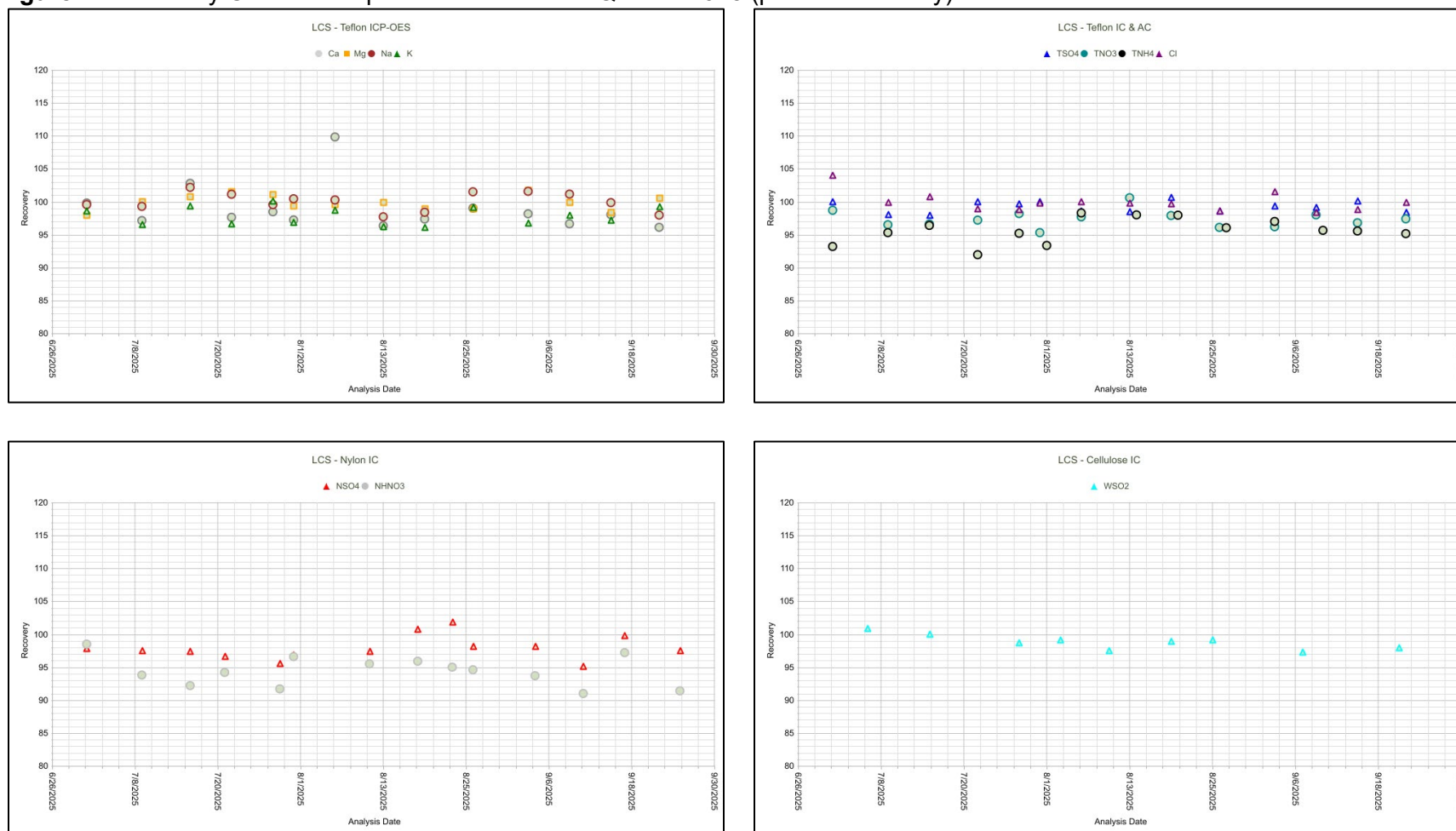
Figure 4 Laboratory Control Sample Results for Third Quarter 2025 (percent recovery)

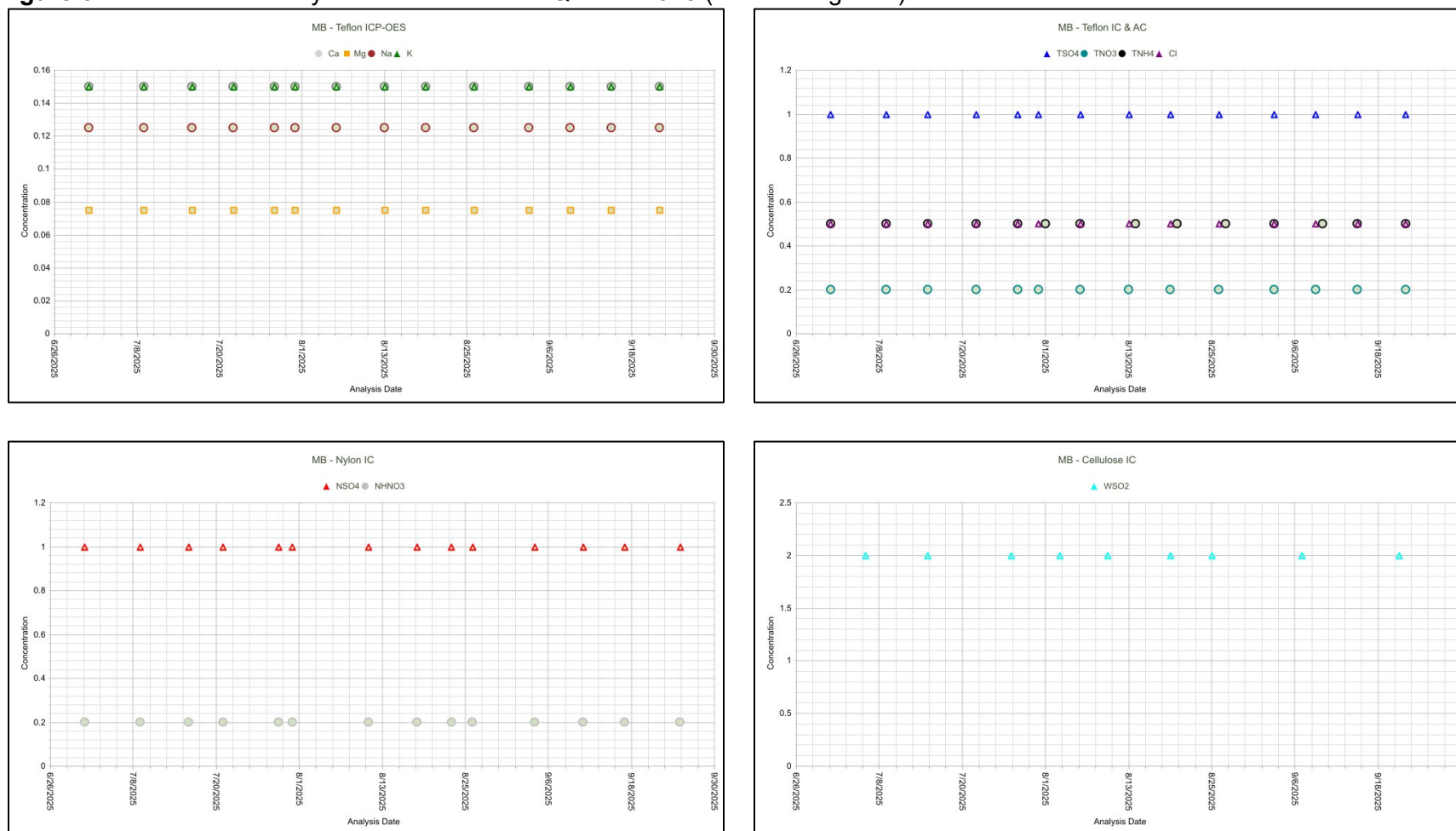
Figure 5 Method Blank Analysis Results for Third Quarter 2025 (total micrograms)

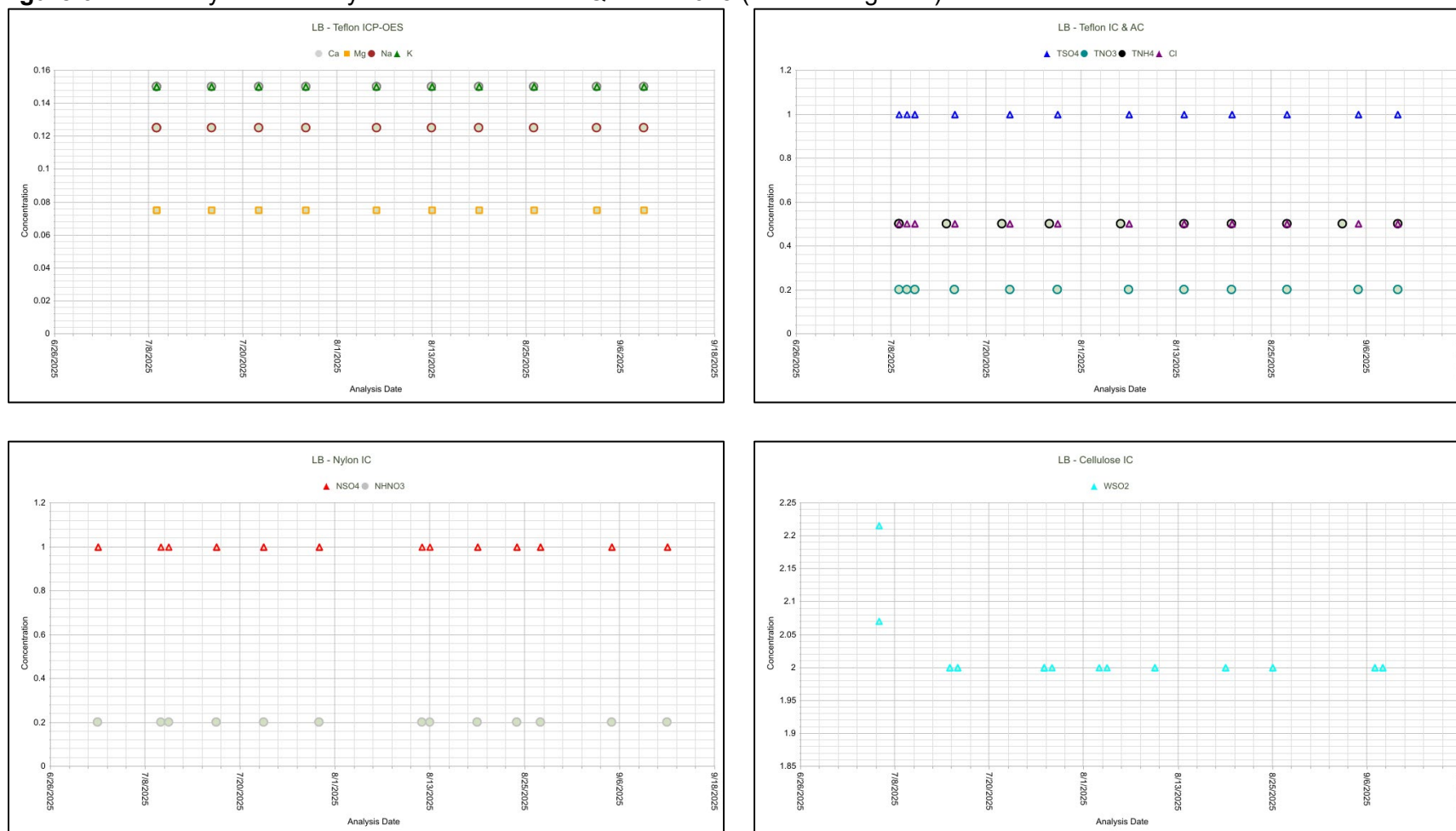
Figure 6 Laboratory Blank Analysis Results for Third Quarter 2025 (total micrograms)

Figure 7 Field Blank Analysis Results for Third Quarter 2025 (total micrograms)