



# Clean Air Status and Trends Network

## Third Quarter 2024 Quality Assurance Report

### Summary of Quarterly Operations (July through September)

EPA Contract No. 68HERH21D0006

#### 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 2024. Various QA/QC criteria and policies are documented in the CASTNET Quality Assurance Project Plan [QAPP; WSP USA Environment & Infrastructure Inc. (WSP), 2024]. 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

The CASTNET QA Manager completed work on the report for the annual managerial review in support of the International Organization for Standardization (ISO)/International Electrotechnical Commission (IEC) 17025:2017 accreditation by the American Association for Laboratory Accreditation (A2LA). The CASTNET QA Manager presented the results of the annual managerial review report on August 23, 2024. The presentation was well received by the CASTNET management team, CASTNET QA Supervisor, and WSP's regional corporate management and QA representatives.

During third quarter 2024, National Performance Audit Program (NPAP) audits were performed at the following sites:

ANA115, MI	LPO010, CA	ROM206, CO
BWR139, MD	LRL117, PA	VIN140, IN
CNT169, WY	MKG113, PA	WST109, NH
GTH161, CO	PED108, VA	
KEF112, PA	PRK134, WI	

NPAP audits were conducted by an EPA Region 8 auditor at sites CNT169, WY; ROM206, CO; and GTH161, CO. The analyzers at all 3 sites failed to meet NPAP audit criteria. WSP is working with the auditor to troubleshoot the cause of the problem. The CNT169 NPAP audit was performed on July 25, 2024. This site received its annual performance evaluation by Environmental Engineering & Measurement Services, Inc. (EEMS) two days earlier on July 23, 2024 and passed at all challenge points. Site ROM206 was audited on July 30, 2024 and then re-audited on August 14, 2024. During the re-audit, the original auditor was accompanied by his technical supervisor, who observed and verified results using his own equipment. After the re-audit, they responded to WSP and noted that the zero air used during the audit was very dry, and the results reflected an audit issue. Moreover, these results do not indicate a problem with reported ambient results. The EPA Region 8 auditor performed a NPAP audit of the GTH161 site on September 19, 2024, and the CASTNET Field Operations Manager (FOM) met with the auditor at the site to observe audit procedures. The ozone system at the site failed to meet criteria using the auditor's Teledyne API T701 zero air generator. Audit readings for all three photometers, NPAP and CASTNET, matched well within criteria using the onsite ozone and zero air generation system. The FOM is performing additional investigations at WSP's Gainesville field laboratory.

The CASTNET QA Manager began review of potential updates to the CASTNET QAPP.

EPA's Office of Air Quality Planning and Standards (OAQPS) is encouraging ozone monitoring organizations to transition to scrubber-free ozone transfer standards. When contacted, EPA Region 7 said it will not provide certification documents for transfers with scrubbers. WSP contacted EPA Region 4, which did agree to perform a recertification of two Level 2 transfers with scrubbers and will provide certification documentation.

The laboratory detected elevated sulfate concentrations on the cellulose filter laboratory and field blanks. The elevated concentrations were all less than two times the reporting limit. No problems were noted during initial acceptance testing of the filters. In addition, method blanks exhibited no elevations in concentration. Lot numbers for the chemicals used for filter impregnation remained the same across impacted and non-impacted batches of impregnated filters. Since only a few sites are using cellulose filters, analyses are not done as frequently as for other filter media. By the time the potential issue was identified, and new non-impacted filters were prepped and tested, approximately 12 weeks (weeks 28-39) of potentially impacted filters had been shipped out. The laboratory plans to analyze smaller batches of cellulose filters more frequently to track results more closely.

During September 2024, WSP received results of analyses of samples for proficiency test (PT) 124 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 (ECCC). WSP's results were rated, "Good." However, two high ammonia values were flagged indicating potential bias and requiring corrective action. WSP is currently troubleshooting what could have caused the high values. There has been no indication of recent bias in CASTNET samples or standards.

Table 1 lists the quarters of data that were validated to Level 3 during third quarter 2024 by the site calibration group. Table 2 lists the sites in each calibration group along with the calibration schedule. Table 3 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 4 presents the critical criteria for ozone monitoring. Table 5 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 was loaded into a filter pack assembly and shipped to and from the monitoring site while remaining in sealed packaging are also included. Table 6 presents the number of analyses in each category that were performed during third quarter 2024.

## Sample Receipt Statistics

Ninety-five percent of field samples from EPA-sponsored sites must be received by the CASTNET laboratory in Gainesville, FL no later than 14 days after removal from the sampling tower. Table 7 presents the relevant sample receipt statistics for third quarter 2024.

## Data Quality Indicator (DQI) Results

Figures 1 through 3 present the results of RF, CCV, and RP QC sample analyses for third quarter 2024. All results were within the criteria listed in Table 3.

Table 8 presents summary statistics of critical criteria measurements at ozone sites collected during third quarter 2024. 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 4 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 9 presents observations associated with the shaded cell results in Table 8.

Table 10 presents summary statistics of critical criteria measurements at trace-level gas monitoring sites collected during third quarter 2024. 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 5 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.

## 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 2024. All recovery values were between 94 percent and 108 percent.

## Blank Results

Figures 5 through 7 present the results of MB, LB, and FB QC sample analyses for third quarter 2024. All third quarter results were within criteria (two times the reporting limit) listed in Table 3.

## Suspect/Invalid Filter Pack Samples

Filter pack samples that were flagged as suspect or invalid during third quarter 2024 are listed in Table 12. This table also includes associated site identification and a brief description of the reason the sample was flagged. During third quarter, 10 filter pack samples were invalidated.

## Field Problem Count

Table 13 presents counts of field problems affecting continuous data collection for more than one day for third quarter 2024. 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](http://www.astm.org).

U.S. Environmental Protection Agency (EPA). 2023. 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.”

WSP USA Environment & Infrastructure Inc. (WSP). 2024. Clean Air Status and Trends Network (CASTNET) Quality Assurance Project Plan (QAPP) Revision 10.1. 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** Data Validated to Level 3 through Third Quarter 2024

Calibration Group*	Months Available	Number of Months	Complete Quarters	Number of Quarters
E-3/W-10 <sup>†</sup>	November 2023–April 2024	6	Quarter 1 2024	1
SE-4/MW-6 <sup>‡</sup>	January 2024–June 2024	6	Quarter 1 2024–Quarter 2 2024	2

**Notes:** \* The sites contained in each calibration group are listed in Table 2.

<sup>†</sup> Contains ROM206 of the ROM406/ROM206 co-located pair

<sup>‡</sup> Contains MCK131/231 co-located pair

**Table 2** Field Calibration Schedule for 2024

Calibration Group	Months Calibrated	Sites Calibrated			
Eastern Sites (22 Total)					
E-1 (8 Sites)	February/August	ARE128, PA PED108, VA	BEL116, MD PSU106, PA	BWR139, MD VPI120, VA	CTH110, NY WSP144, NJ
E-2 (9 Sites)	April/October	ABT147, CT HWF187, NY WST109, NH	ASH135, ME NIC001, NY	CAT175, NY UND002, VT	EGB181, ON WFM105, NY
E-3 (5 Sites)	May/November	CDR119, WV PAR107, WV	KEF112, PA	LRL117, PA	MKG113, PA
Southeastern Sites (11 Total)					
SE-4 (7 Sites)	January/July	BFT142, NC GAS153, GA	CND125, NC SND152, AL	COW137, NC SPD111, TN	DUK008, NC <sup>1</sup>
SE-5 (5 Sites)	February/August	CAD150, AR SUM156, FL	CNS011, FL	CVL151, MS	IRL141, FL
Midwestern Sites (18 Total)					
MW-6 (5 Sites)	January/July	CKT136, KY PNF126, NC	ESP127, TN	MCK131, KY	MCK231, KY
MW-7 (8 Sites)	March/September	BVL130, IL <sup>2</sup> QAK172, OH	DCP114, OH RED004, MN	OXF122, OH STK138, IL <sup>2</sup>	PRK134, WI VIN140, IN
MW-8 (4 Sites)	April/October	ANA115, MI	HOX148, MI	SAL133, IN	UVL124, MI
Western Sites (13 Total)					
W-9 (4 Sites)	March/September	ALC188, TX	CHE185, OK	KNZ184, KS	SAN192, NE <sup>2</sup>
W-10 (8 Sites)	May/November	CNT169, WY PAL190, TX	GTH161, CO PND165, WY <sup>3</sup>	LPO010, CA ROM206, CO <sup>3</sup>	NPT006, ID UMA009, WA

**Notes:** <sup>1</sup> Trace-level gas calibrations are performed quarterly in January, April, July, and October.

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

<sup>3</sup> Trace-level gas calibrations are performed quarterly in February, May, August, and November.

**Table 3** Data Quality Indicators for CASTNET Laboratory Measurements

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

**Notes:** <sup>1</sup> 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.

<sup>2</sup> 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.

<sup>3</sup> The reporting limit for sulfate on cellulose filters is 0.080 mg/L (2.0 µg/filter).

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, 2024).

**Table 4** 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, 2023). 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 5** Trace-level Gas Monitoring Critical Criteria\*

Parameter	Analyzer Response	
	Zero Check	Span Check / Single Point QC Check
SO <sub>2</sub>	Less than ± 1.51 ppb	Less than ± 10.1 percent between supplied and observed concentrations
NO <sub>y</sub>	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, 2023). 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).

SO<sub>2</sub> = sulfur dioxide  
 NO<sub>y</sub> = total reactive oxides of nitrogen  
 CO = carbon monoxide  
 ppb = parts per billion

**Table 6** QC Analysis Count for Third Quarter 2024

Filter Type	Parameter	RF Sample Count	CCV Sample Count	RP Sample Count	MB Sample Count	LB Sample Count	FB Sample Count
Teflon	SO <sub>4</sub> <sup>2-</sup>	60	169	75	15	24	54
	NO <sub>3</sub> <sup>-</sup>	60	169	75	15	24	54
	NH <sub>4</sub> <sup>+</sup>	30	155	70	14	24	52
	Cl <sup>-</sup>	60	169	75	15	24	54
	Ca <sup>2+</sup>	33	161	75	16	24	52
	Mg <sup>2+</sup>	33	161	75	16	24	52
	Na <sup>+</sup>	33	161	75	16	24	52
	K <sup>+</sup>	33	161	75	16	24	52
Nylon	SO <sub>4</sub> <sup>2-</sup>	44	176	73	14	22	45
	NO <sub>3</sub> <sup>-</sup>	44	176	73	14	22	45
Cellulose	SO <sub>4</sub> <sup>2-</sup>	20	70	28	8	24	40

**Table 7** Filter Pack Receipt Summary for Third Quarter 2024

Count of samples received more than 14 days after removal from tower:	22
Count of all samples received	665
Fraction of samples received within 14 days:	0.967
Average interval in days:	4.982
First receipt date:	7/01/2024
Last receipt date:	9/30/2024

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



**Table 8** Ozone QC Summary for Third Quarter 2024 (1 of 2)

Site ID	% Span Pass <sup>1</sup>	Span [%D] <sup>2</sup>	% Single Point QC Pass <sup>1</sup>	Single Point QC [%D] <sup>2</sup>	% Zero Pass <sup>1</sup>	Zero Average (ppb) <sup>2</sup>
ABT147, CT	100.00	1.35	100.00	1.30	100.00	0.29
ALC188, TX	100.00	4.15	100.00	4.03	100.00	0.43
ANA115, MI	100.00	1.90	100.00	1.85	100.00	0.26
ARE128, PA	100.00	0.53	100.00	0.72	100.00	0.51
ASH135, ME	N/A	N/A	N/A	N/A	N/A	N/A
BEL116, MD	100.00	1.19	100.00	1.29	100.00	0.38
BFT142, NC	100.00	2.34	100.00	1.82	100.00	0.28
BVL130, IL	100.00	0.83	100.00	1.54	100.00	0.75
BWR139, MD	82.47	3.36	83.51	2.81	100.00	0.34
CAD150, AR	100.00	0.51	100.00	0.87	100.00	0.27
CDR119, WV	N/A	N/A	N/A	N/A	N/A	N/A
CKT136, KY	100.00	1.16	100.00	1.20	100.00	0.15
CND125, NC	100.00	0.39	100.00	0.71	100.00	0.31
CNT169, WY	90.43	1.49	93.62	1.56	100.00	0.23
COW137, NC	100.00	0.74	100.00	1.24	100.00	0.54
CTH110, NY	100.00	1.04	100.00	1.38	100.00	0.37
CVL151, MS	100.00	1.44	100.00	1.60	100.00	0.22
DCP114, OH	N/A	N/A	N/A	N/A	N/A	N/A
DUK008, NC	100.00	1.01	100.00	1.47	100.00	0.58
ESP127, TN	100.00	1.12	100.00	1.20	100.00	0.60
GAS153, GA	100.00	0.72	100.00	1.35	100.00	0.82
GTH161, CO	100.00	1.63	100.00	1.78	100.00	0.39
HOX148, MI	100.00	0.29	100.00	0.43	100.00	0.26
HWF187, NY	N/A	N/A	N/A	N/A	N/A	N/A
IRL141, FL	95.88	2.50	96.91	2.88	98.97	1.08
KEF112, PA	98.95	4.69	100.00	2.92	100.00	0.60
LPO010, CA	65.81	46.39	66.37	34.89	98.21	0.38
LRL117, PA	89.80	10.63	89.69	10.73	97.94	0.38
MCK131, KY	100.00	2.51	100.00	2.70	100.00	0.29
MCK231, KY	100.00	1.18	100.00	1.46	100.00	0.26
MKG113, PA	100.00	0.87	100.00	1.17	100.00	0.37
NPT006, ID	73.56	27.48	73.26	28.03	100.00	0.17
OXF122, OH	100.00	1.94	100.00	2.21	100.00	0.31
PAL190, TX	100.00	1.38	100.00	1.25	100.00	0.20
PAR107, WV	100.00	2.06	100.00	1.87	100.00	0.19
PED108, VA	100.00	1.30	100.00	1.07	100.00	0.21
PND165, WY	100.00	0.67	100.00	0.74	100.00	0.40
PNF126, NC	N/A	N/A	N/A	N/A	N/A	N/A
PRK134, WI	100.00	0.91	100.00	1.14	100.00	0.26
PSU106, PA	100.00	3.46	98.67	4.39	98.67	0.48
QAK172, OH	100.00	1.01	100.00	1.07	100.00	0.30
ROM206, CO	100.00	2.22	100.00	1.23	100.00	0.26
SAL133, IN	100.00	0.88	100.00	0.72	100.00	0.31

**Table 8** Ozone QC Summary for Third Quarter 2024 (2 of 2)

Site ID	% Span Pass <sup>1</sup>	Span [%D] <sup>2</sup>	% Single Point QC Pass <sup>1</sup>	Single Point QC [%D] <sup>2</sup>	% Zero Pass <sup>1</sup>	Zero Average (ppb) <sup>2</sup>
SAN192, NE	100.00	1.26	100.00	1.43	100.00	0.39
SND152, AL	100.00	0.91	100.00	1.94	100.00	0.72
SPD111, TN	100.00	2.20	100.00	1.81	100.00	0.25
STK138, IL	100.00	1.25	100.00	1.00	100.00	0.29
SUM156, FL	97.83	4.24	100.00	2.94	100.00	0.20
UMA009, WA	100.00	0.46	98.94	0.53	100.00	0.49
UVL124, MI	100.00	1.67	100.00	1.29	100.00	0.25
VIN140, IN	100.00	0.44	100.00	0.78	100.00	0.14
VPI120, VA	90.57	2.81	89.69	3.53	98.97	0.28
WSP144, NJ	98.80	2.53	100.00	2.78	98.80	0.92
WST109, NH	100.00	2.10	98.94	1.54	100.00	0.45

**Notes:** <sup>1</sup>Percentage of comparisons that pass the criteria listed in Table 4). Values falling below 90 percent are addressed in Table 9.

<sup>2</sup>Absolute value of the average percent differences between the on-site transfer standard and the site monitor. Values exceeding the criteria listed in Table 4 are addressed in Table 9.

%D = percent difference  
ppb = parts per billion

**Table 9** Ozone QC Observations for Third Quarter 2024

Site ID	QC Criterion	Comments
BWR139, MD	% Span Pass % Single Point QC Pass	There was an obstruction in the ozone inlet that affected data from mid- to late September.
LPO010, CA	% Span Pass Span [%D] % Single Point QC Pass Single Point QC [%D]	The site analyzer sample pump failed in late July and was replaced in early August.
LRL117, PA	Span [%D] Single Point QC [%D]	The site analyzer sample pump failed and was replaced in late August.
NPT006, ID	% Span Pass Span [%D] % Single Point QC Pass Single Point QC [%D]	The site analyzer sample pump failed in late June and was replaced in mid-July.

**Note:** %D = percent difference

**Table 10** Trace-level Gas QC Summary for Third Quarter 2024

Parameter	% Span Pass <sup>1</sup>	Span [%D] <sup>2</sup>	% Single Point QC Pass <sup>1</sup>	Single Point QC [%D] <sup>2</sup>	% Zero Pass <sup>1</sup>	Zero Average (ppb) <sup>2</sup>
BVL130, IL						
SO <sub>2</sub>	100.00	2.48	90.48	5.28	100.00	0.57
NO <sub>y</sub>	100.00	3.33	93.33	4.11	93.33	0.75
CO	100.00	1.07	100.00	3.21	100.00	15.22
DUK008, NC						
NO <sub>y</sub>	100.00	4.94	100.00	4.91	100.00	0.78
PND165, WY						
NO <sub>y</sub>	100.00	0.33	100.00	4.08	100.00	0.95
ROM206, CO						
NO <sub>y</sub>	100.00	0.91	100.00	1.46	100.00	0.65
SAN192, NE						
NO <sub>y</sub>	98.11	2.52	88.68	5.98	100.00	0.60
STK138, IL						
NO <sub>y</sub>	100.00	4.75	100.00	4.18	100.00	0.66

**Notes:** <sup>1</sup>Percentage of comparisons that pass the criteria listed in Table 5. Values falling below 90 percent are addressed in Table 11.

<sup>2</sup>Absolute value of the average percent differences between the supplied and observed concentrations. Values exceeding the criteria listed in Table 5 are addressed in Table 11.

%D = percent difference

ppb = parts per billion

**Table 11** Trace-level Gas QC Observations for Third Quarter 2024

Site ID	Parameter	QC Criterion	Comments
SAN192, NE	NO <sub>y</sub>	% Single Point QC Pass	Analyzer required recalibration.

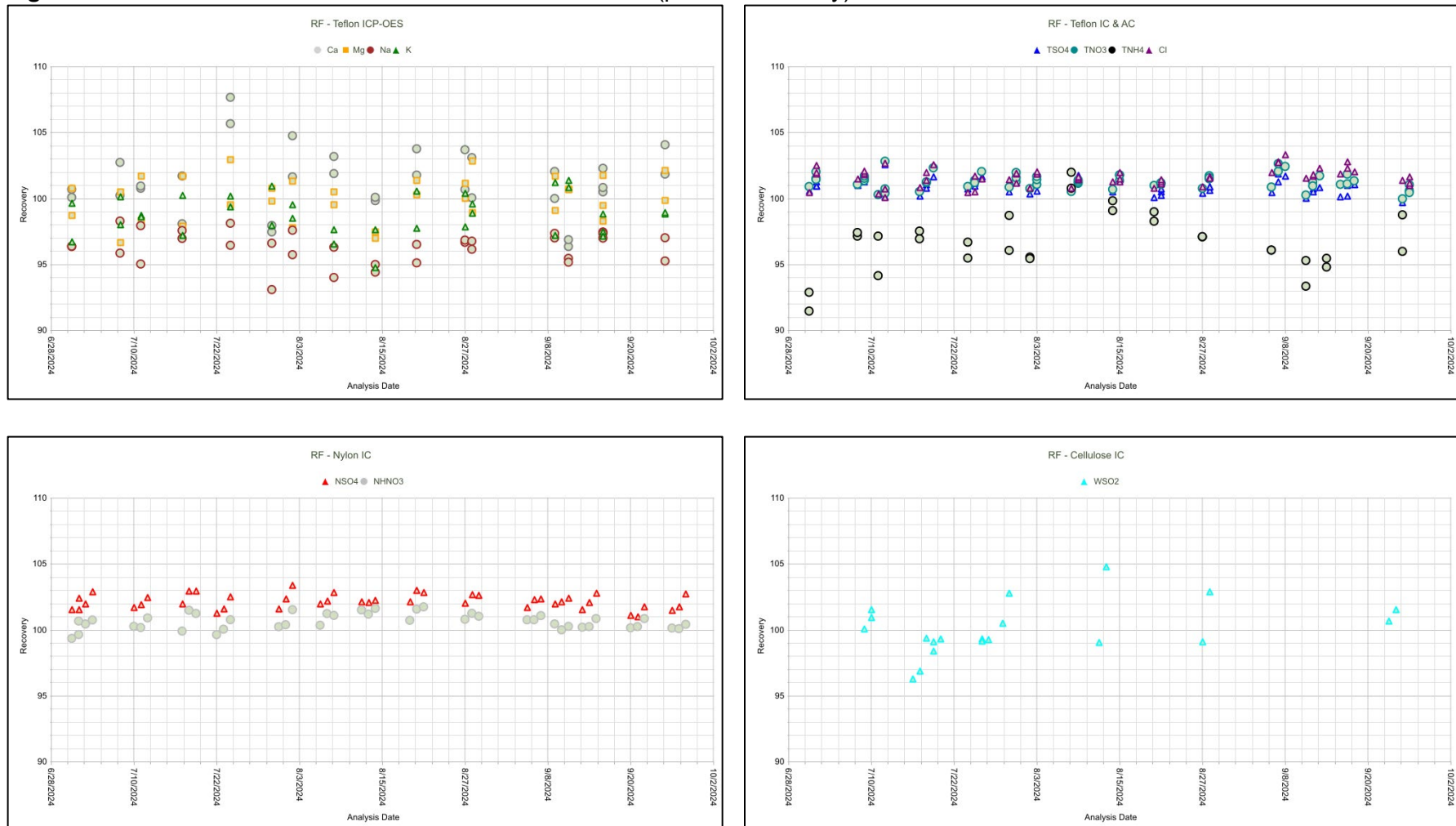
**Note:** %D = percent difference

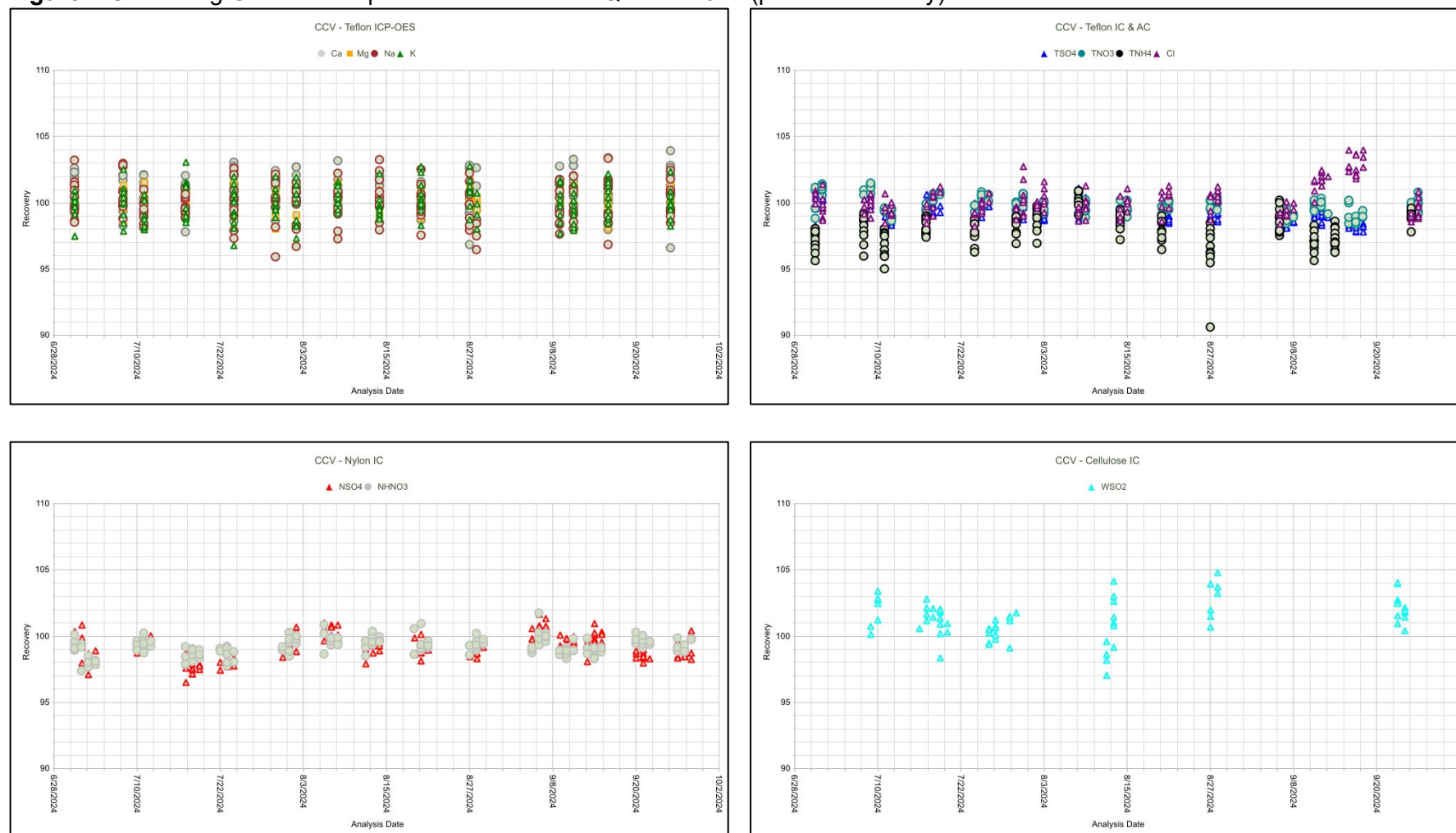
**Table 12** Filter Packs Flagged as Suspect or Invalid During Third Quarter 2024

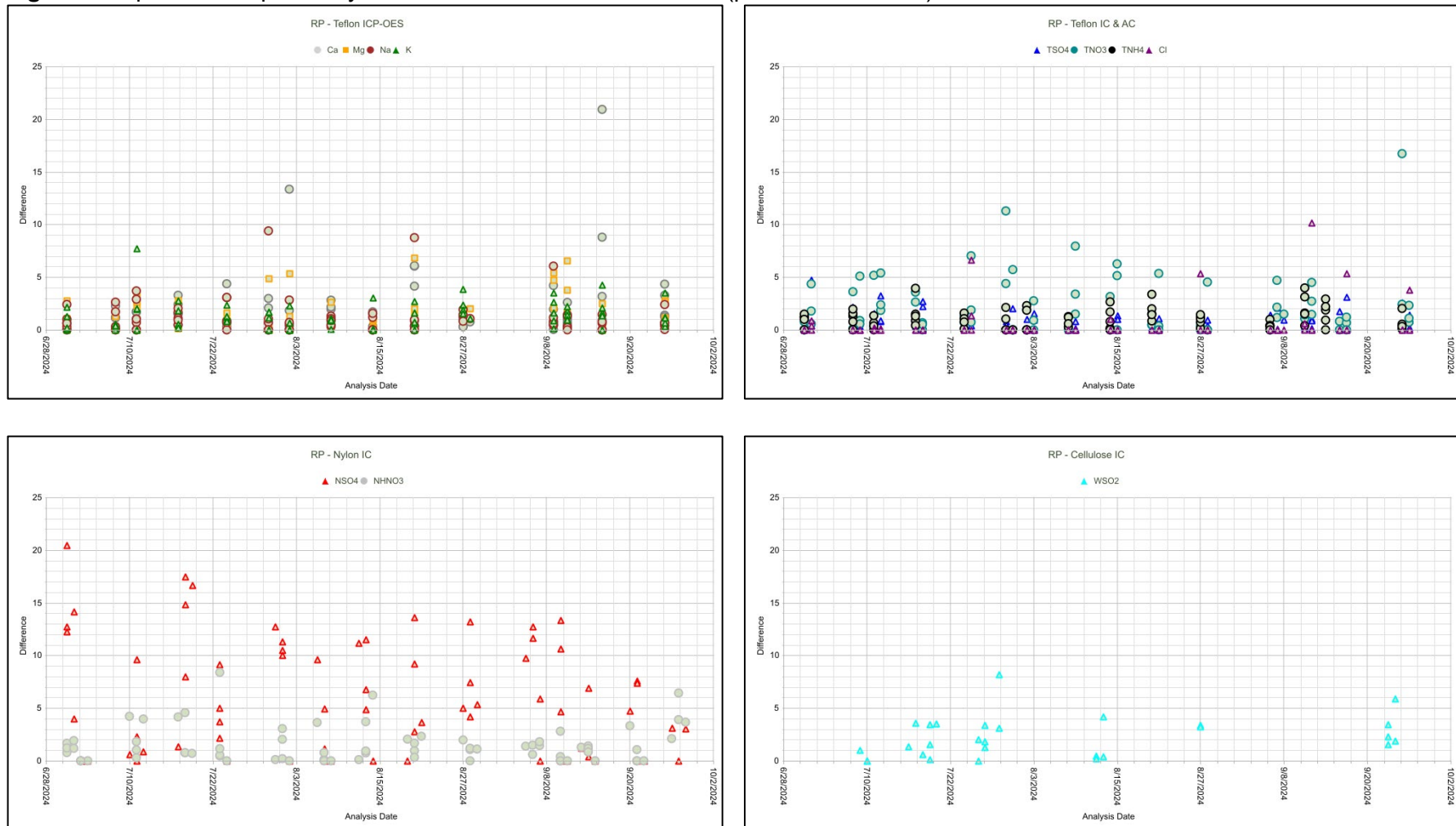
Site ID	Sample No.	Reason
ALB801, AB	2431007-01	Insufficient flow volume
BAS601, WY	2429005-01	Power failure
BBE401, TX	2428003-02	There was a flow data acquisition issue. Data may be recovered during Level 3 review.
BUF603, WY	2431005-02	There was a flow data acquisition issue. Data may be recovered during Level 3 review.
ESP127, TN	2431001-22	Polling issue
FOR605, WY	2431005-03	There was a flow data acquisition issue. Data may be recovered during Level 3 review.
LAV410, CA	2429003-13	Satellite service was down and caused a communications issue.
NEC602, WY	2431005-04	There was a flow data acquisition issue. Data may be recovered during Level 3 review.
VPI120, VA	2428001-53	Power failure
WST109, NH	2429001-56	The site laptop malfunctioned 7/9/24 and was replaced 7/17/24.

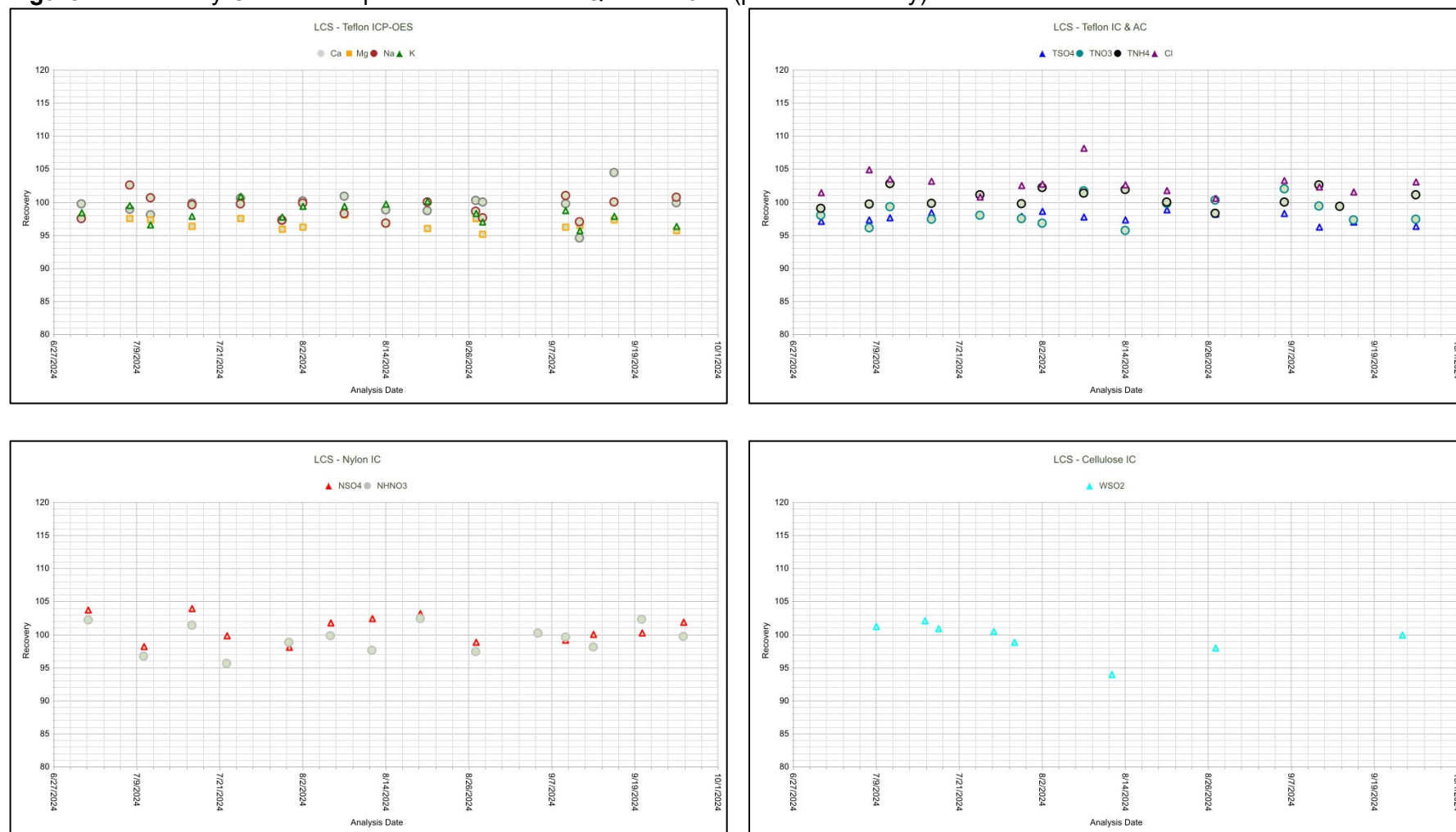
**Table 13** Field Problems Affecting Data Collection

Days to Resolution	Problem Count
30	225
60	7
90	1
Unresolved by end of quarter	4

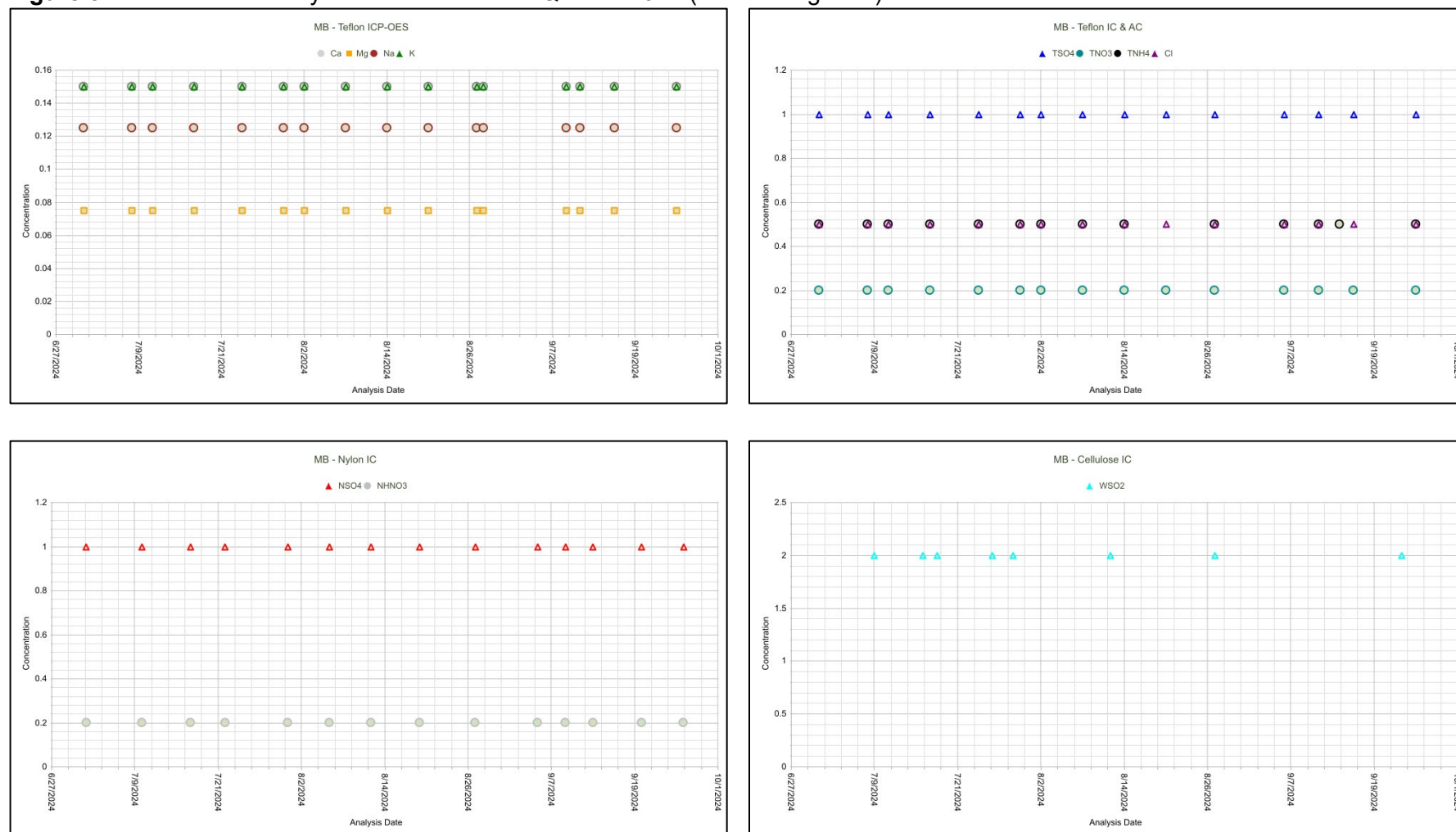
**Figure 1** Reference Standard Results for Third Quarter 2024 (percent recovery)

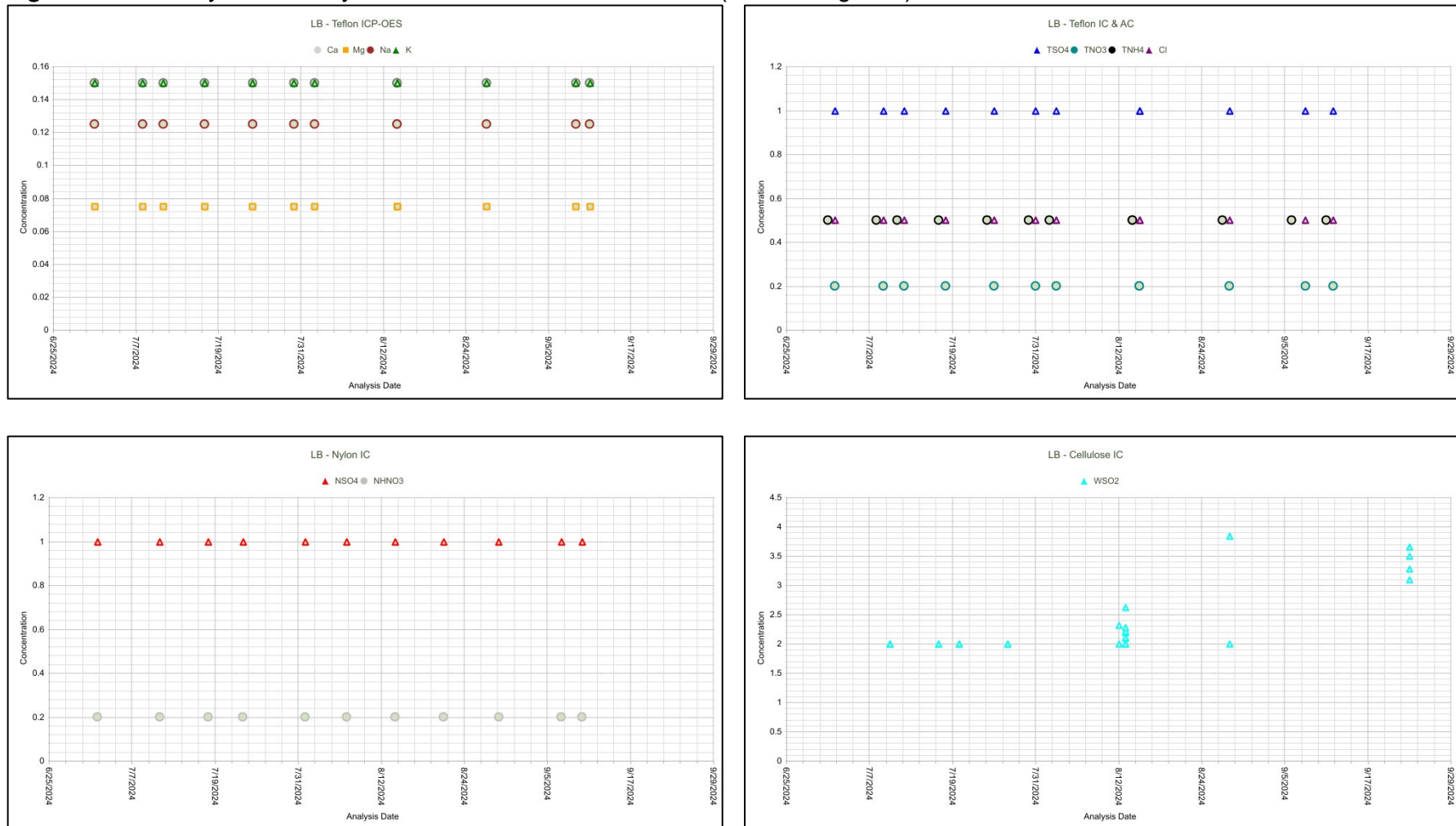
**Figure 2** Continuing Calibration Spike Results for Third Quarter 2024 (percent recovery)

**Figure 3** Replicate Sample Analysis Results for Third Quarter 2024 (percent difference)

**Figure 4** Laboratory Control Sample Results for Third Quarter 2024 (percent recovery)



**Figure 5** Method Blank Analysis Results for Third Quarter 2024 (total micrograms)

**Figure 6** Laboratory Blank Analysis Results for Third Quarter 2024 (total micrograms)

**Figure 7** Field Blank Analysis Results for Third Quarter 2024 (total micrograms)