Test Group Summary Report C02C Metals in Water-Total March 2024 PT Round

Issued: May 8, 2024

PTC | Proficiency Testing Canada

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1.0 The Proficiency Testing Report

The Proficiency Testing Report consists of two parts.

- *PTC Proficiency Testing Report*: This report contains participant-specific data and other confidential information. This report is emailed to participants at the end of the PT round.
- *Test Group Summary Report*: A Test Group Summary Report is created for each quantified test group at the end of the PT round. These reports contain more detailed information on the round than is found in the participant-specific PTC Proficiency Testing Report. These reports do not contain any confidential information and are made available on the PTC web site.

2.0 Definitions

The participant-specific PTC Proficiency Testing Report contains some terms that new participants may not be familiar with.

Code:	The registration code that is unique to each analyte that a participant is registered for.
App:	If a participant is accredited by CALA, this three-digit number is the appendix number that the accredited method is assigned to.
N:	The number of participants results that were used to calculate the summary statistics. This excludes qualified data (e.g., <) and any results that were flagged as outliers.
Assigned:	The Assigned Value is the robust mean of the reported results, outliers excluded. This is often referred to as the "target" value.
$\pm u$:	The uncertainty of the assigned value.
Reported:	The result reported by the participant.
s:	The Standard Deviation of Proficiency Assessment (SDPA). This value is used to determine the acceptance limits for the PT evaluation.
z-Score:	A value assigned to each reported result that is a measure of the degree to which it deviates from the Assigned Value.
Score:	The composite score of the four results reported for each analyte. It is normalized to a score out of 100.
Bias:	A flag assigned if bias is detected using the re-scaled *z*-score procedure.

3.0 Scoring System

Participant performance is evaluated for each proficiency testing sample by a quantitative method that is consistent with ISO/IEC 17043 - *Conformity assessment- General requirements for the competence of proficiency testing providers*, the *International Harmonized Protocol for Proficiency Testing of (Chemical) Analytical Laboratories* (2006), and ISO 13528:2015 *Statistical methods for use in proficiency testing by interlaboratory comparisons*.

The following is a brief description of the evaluation procedure used by PTC. The detailed evaluation procedure is described in PROC09 – PT Evaluation *Procedure*, which is available on the PTC website www.PTCanada.org).

3.1 HOMOGENEITY AND STABILITY ASSESSMENT

Homogeneity and stability are assessed using participant data. Regression analysis is performed on reported result against order of sample production (Homogeneity) and reported result against date of analysis (Stability). If the slope is significantly different than zero for either then the Standard Deviation of Proficiency Assessment (s) is increased to minimize the impact.

3.2 THE Z SCORE

A "z-score" is calculated for each reported result as follows:

$$z - Score = \frac{(x - \bar{X})}{SDPA}$$

where: x = participant result;
$\overline{X}$ = the Assigned Value;
SDPA = the Standard Deviation for Proficiency Assessment.

The assigned value $\overline{X}$ is generally estimated from the inter-laboratory Robust mean after outliers due to obvious gross errors (e.g., reported in wrong units) have been removed.

The Standard Deviation for Proficiency Assessment, s, is determined as follows:

- The inter-laboratory Robust standard deviation ($Stdev_{rob}$) is calculated using reported results, obvious outliers removed;
- The regression equation standard deviation ($Stdev_{reg}$) is estimated from regression equations derived from previous studies (see PROC11- *PT Regression Equations* for details);
- The SDPA is the higher of $Stdev_{rob}$ and $Stdev_{reg}$;
- When a laboratory reports its detection limit, s will be estimated using a pooled variance procedure that uses both the inter-laboratory data and the reported detection limit.

3.2 COMPOSITE (PT) SCORE

Since each PT round involves four or two separate samples of distinct concentration for each test, it is necessary to calculate a composite PT score for each test to determine overall performance. The composite score is calculated by first averaging the absolute *z*-scores for the four results and then calculating a final score as 100 + (-15 x avg |z|).

Acceptable PT Scores equal or exceed 70.

3.3 IDENTIFYING BIAS

The proficiency testing report provides flags for bias. These are determined using the re-scaled *z*-score procedure.

$$RSZ = \frac{\sum z}{\sqrt{N}}$$

where *z* = the *z*- score
N = the number of samples

Flags are assigned for each test group/parameter combination as follows:

RSZ ≥ -2 and ≤ 2	no flag assigned
RSZ > 2	H (High)
RSZ > 3	VH (Very High)
RSZ < -2	L (LOW)
RSZ < -3	VL (Very Low)

3.4 DEVIATIONS FROM EVALUATION PROCEDURE

Other than changes to the Standard Deviation of Proficiency Assessment due to homogeneity or stability flags, any deviation from the published evaluation procedure is described on the cover page(s) of the final *PTC Proficiency Testing Report*.

4.0 PT Round Specific Data Summary

The following pages provide more detailed information about the PT round indicated in the cover page of this report than is found in the participant-specific PTC Proficiency Testing Report. The graphical representations and the statistical summaries are based upon the data after outliers have been removed.

4.1 SUMMARY STATISTICS

In addition to some of the statistics found in the customer reports, this table includes additional summary statistics such as Median, different measures of dispersion, the number of outliers removed, the number of results in the Questionable range (|z| between 2 and 3) and the Unacceptable range (z > 3), and whether a data set was flagged for Homogeneity or Stability. This section also includes sorted scatter plots of the data for each sample.

4.2 *z*- SCORE PLOTS

The z -scores for each sample are ranked in increasing order and plotted. When the data is normally distributed, the plot should show a slight sigmoidal curve, with an equal number of points above zero as below. Each bar in these plots is colour-coded to indicate the analytical method used by the participant.

4.3 KERNEL DENSITY PLOTS

Kernel density plots are generated for each data set. These plots are a graphical way to represent the overall data distribution and are used to visualize possible deviations from normality and unimodality.

4.4 STABILITY AND HOMOGENEITY PLOTS

Plots of reported result against analysis date, and reported result against order of bottling are displayed, along with the regression line. These regression analyses are used to determine if the SDPA should be adjusted due to homogeneity or stability.

4.5 BOX-AND-WHISKER PLOTS

Box-and-Whisker plots are another way to display the distribution of the data. The box denotes the first and third quartile and the whiskers are the 5^{th} and 95th percentile.

4.6 HISTORIC COMPARISON PLOT

The Historic Comparison Plot is a plot of robust mean against robust standard deviation for the previous ten PT rounds as well as the current PT round. This plot can be used to identify possible changes in the sample formulation.

ALUMINUM

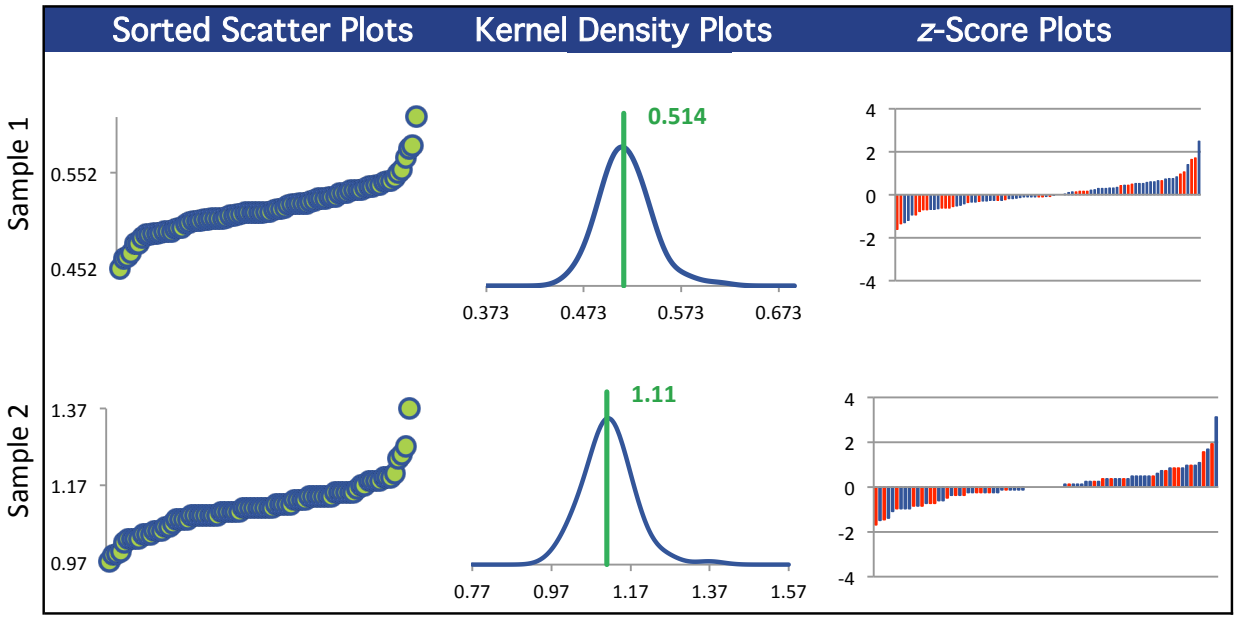
Summary Statistics

Statistic	C02C-1	C02C-2	C02C-3	C02C-4
N	82	82	82	82
Median mg/L	0.511	1.11	0.410	1.13
Robust Mean mg/L	0.514	1.11	0.411	1.13
U mg/L	0.00317	0.00785	0.00282	0.00752
Robust Standard Deviation mg/L	0.0230	0.0569	0.0204	0.0545
Regression Standard Deviation mg/L	0.0385	0.0833	0.0308	0.0844
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0385	0.0833	0.0308	0.0844
Outliers	1	1	1	1
|z|>3.0	0	1	0	0
2<|z|<3	1	0	1	1

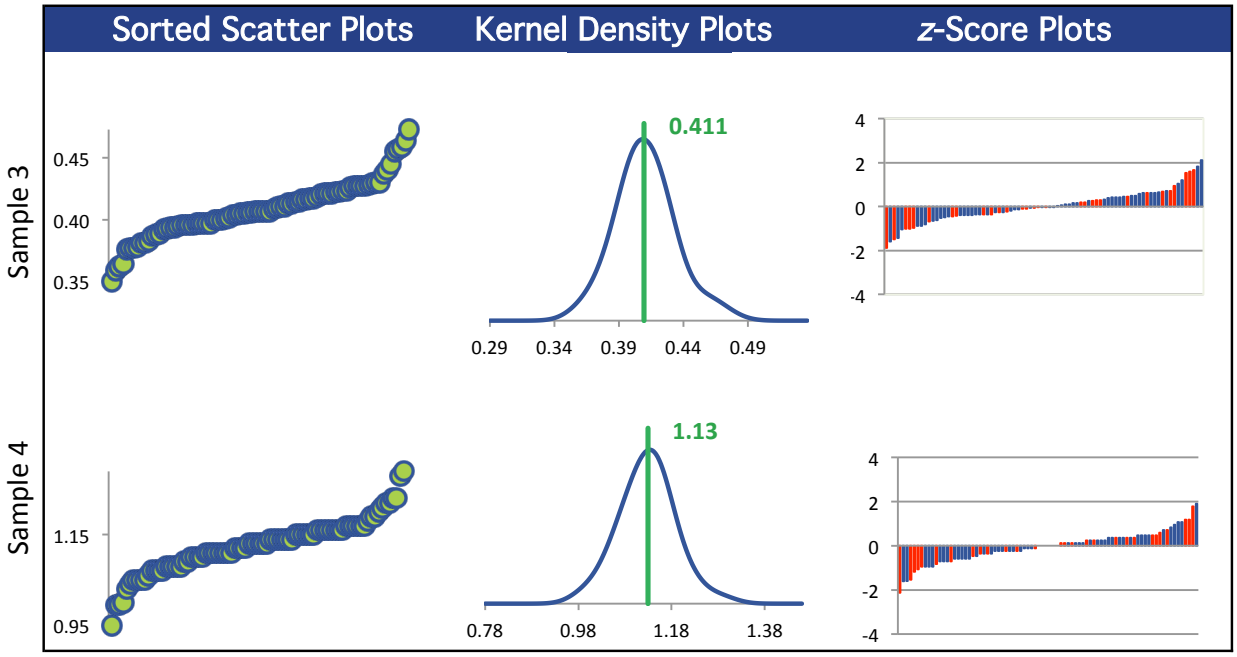
Methods Used

Method	C02C-1	C02C-2	C02C-3	C02C-4
ICP/OES (Blue)	30	30	30	30
ICP/MS (Red)	51	51	51	51
AA FLAME (Green)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



ALUMINUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
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0.40
0.35
0.411
0.29
0.34
0.39
0.44
0.49
4
2
0
-2
-4
Sample 4
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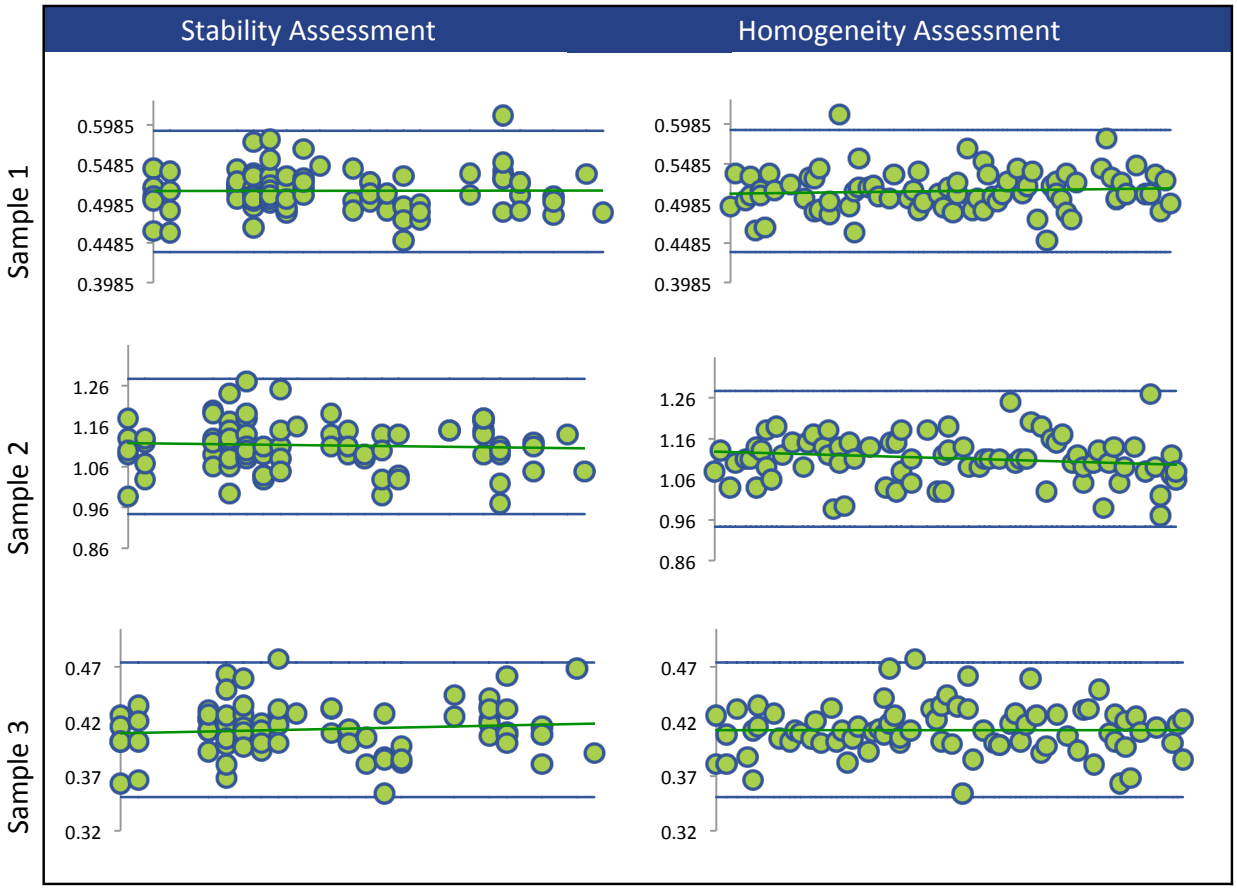
0.95
1.13
0.78
0.98
1.18
1.38
4
2
0
-2
-4


Stability Assessment
Homogeneity Assessment
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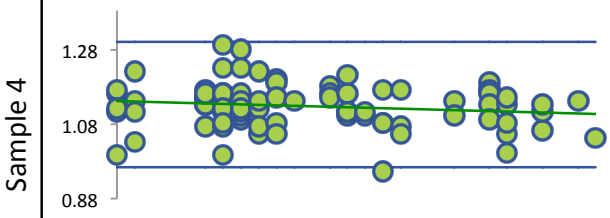
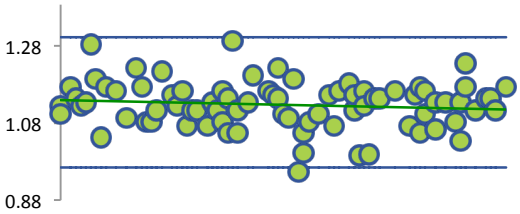
0.5985
0.5485
0.4985
0.4485
0.3985
0.5985
0.5485
0.4985
0.4485
0.3985
Sample 2
1.26
1.16
1.06
0.96
0.86
1.26
1.16
1.06
0.96
0.86
Sample 3
0.47
0.42
0.37
0.32
0.47
0.42
0.37
0.32

ALUMINUM

Stability Assessment



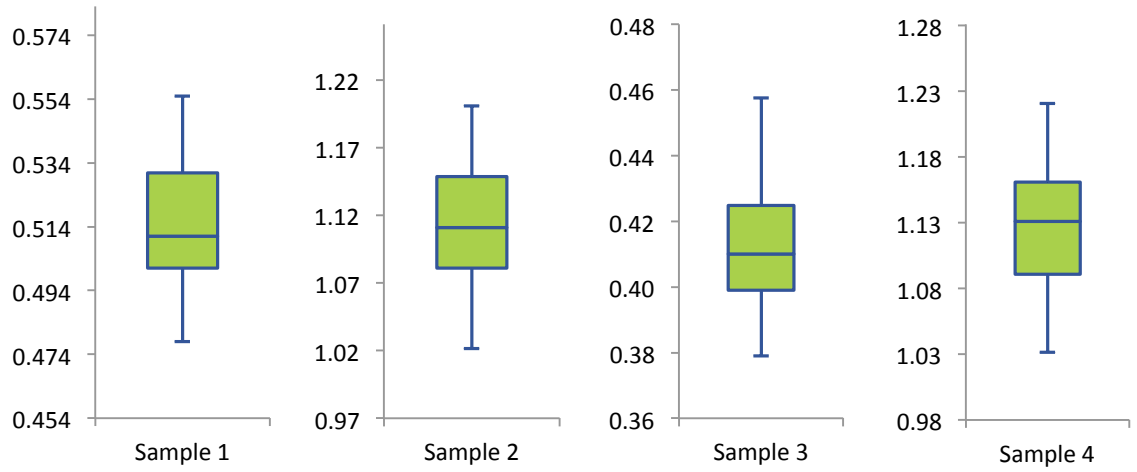
Homogeneity Assessment



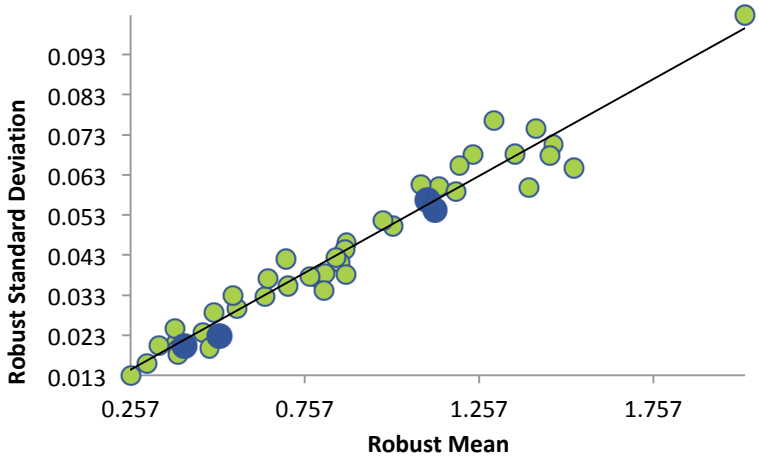
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



ANTIMONY

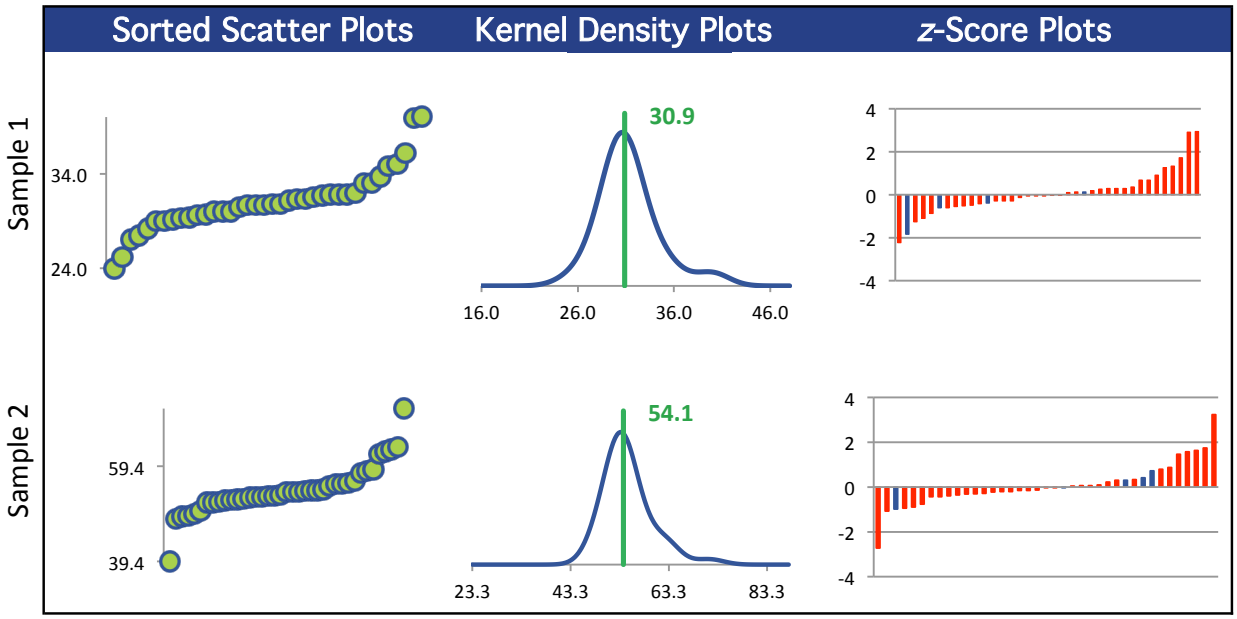
Summary Statistics

Statistic	C02C-1	C02C-2	C02C-3	C02C-4
N	38	39	37	39
Median mg/L	30.8	54.0	16.9	73.0
Robust Mean mg/L	30.9	54.1	16.9	73.3
U mg/L	0.483	0.759	0.210	0.983
Robust Standard Deviation mg/L	2.38	3.79	1.02	4.91
Regression Standard Deviation mg/L	3.09	5.41	1.69	7.33
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	3.09	5.41	1.69	7.33
Outliers	2	2	2	2
|z|>3.0	0	1	1	0
2<|z|<3	3	1	0	1

Methods Used

Method	C02C-1	C02C-2	C02C-3	C02C-4
ICP/MS (Blue)	34	34	33	34
ICP/OES (Red)	4	5	4	5

All summary stats and the plots below are based on the data excluding any flagged outliers



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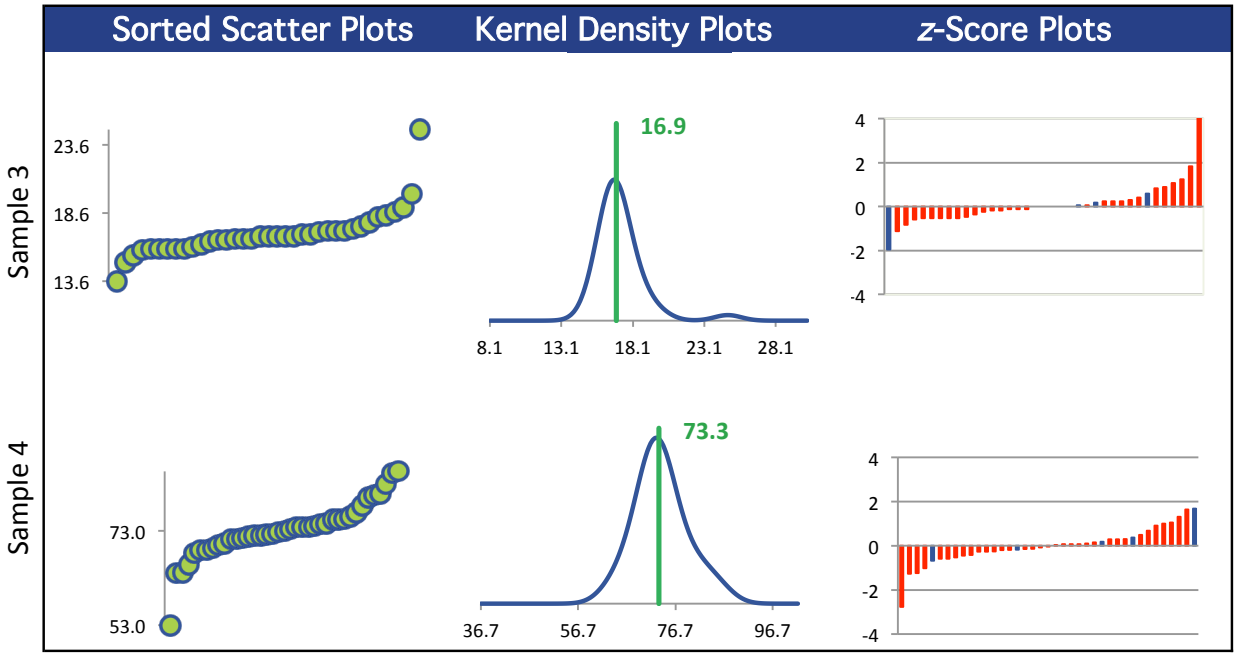
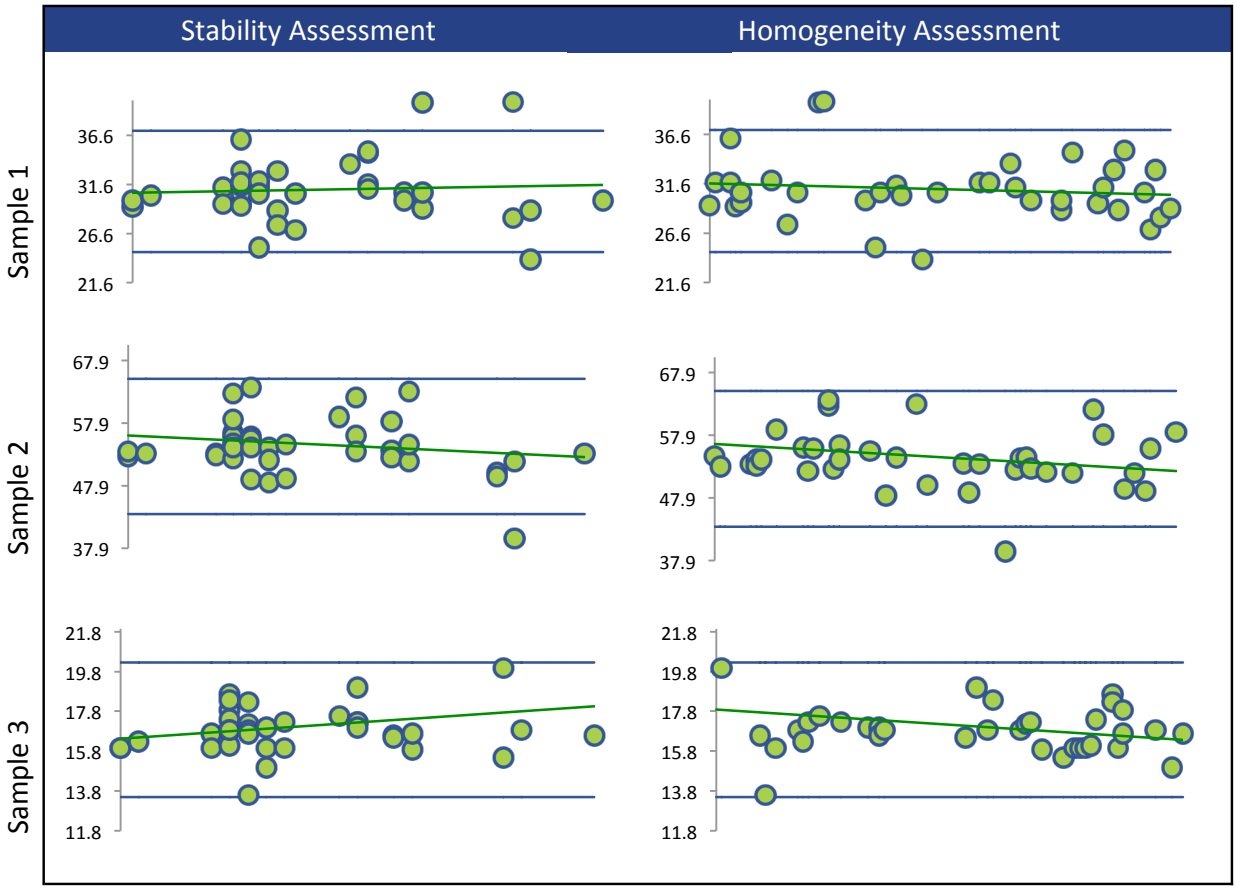
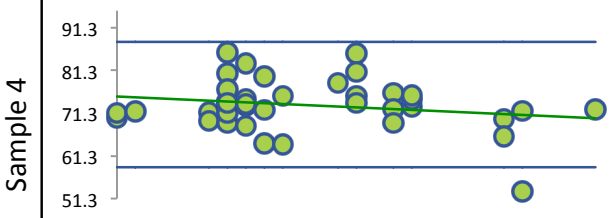

Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
23.6
18.6
13.6
16.9
8.1
13.1
18.1
23.1
28.1
4
2
0
-2
-4
Sample 4
73.0
53.0
73.3
36.7
56.7
76.7
96.7
4
2
0
-2
-4

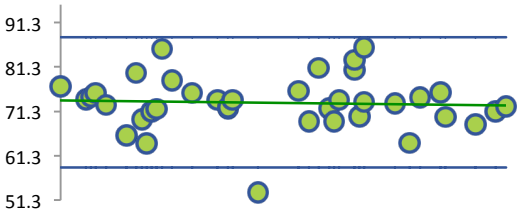

Stability Assessment
Homogeneity Assessment
Sample 1
36.6
31.6
26.6
21.6
Sample 2
67.9
57.9
47.9
37.9
Sample 3
21.8
19.8
17.8
15.8
13.8
11.8

ANTIMONY

Stability Assessment



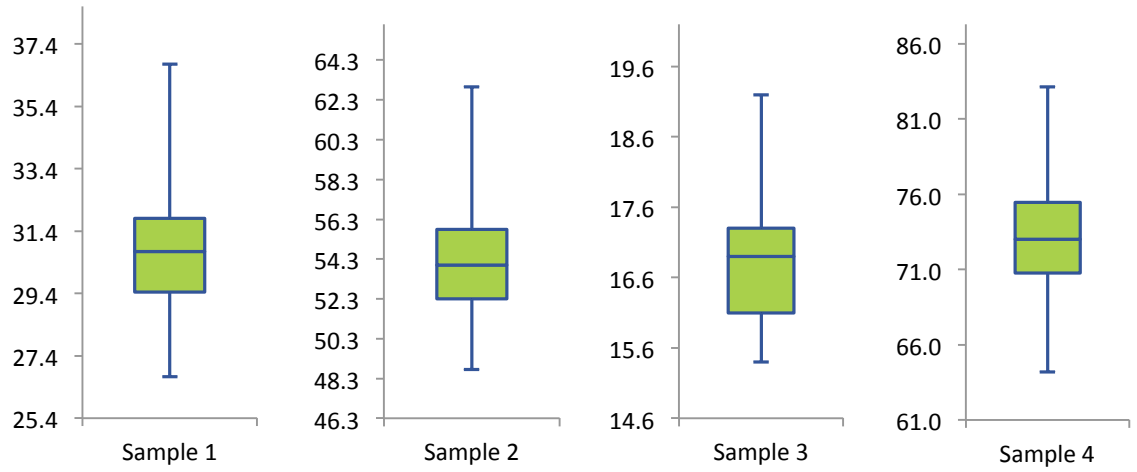
Homogeneity Assessment



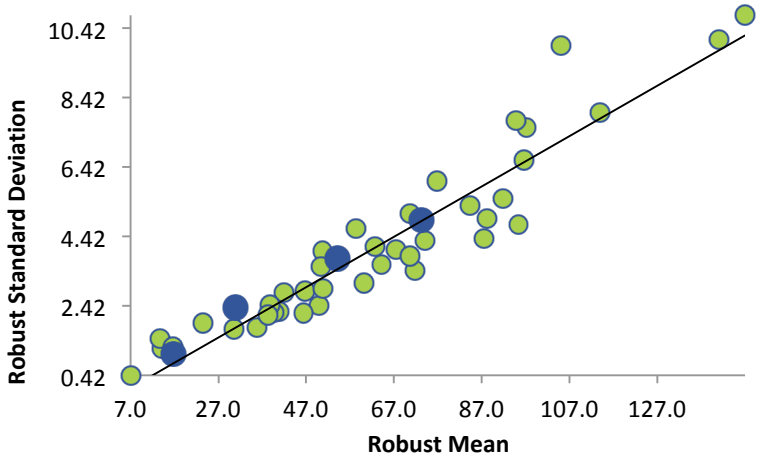
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



ARSENIC

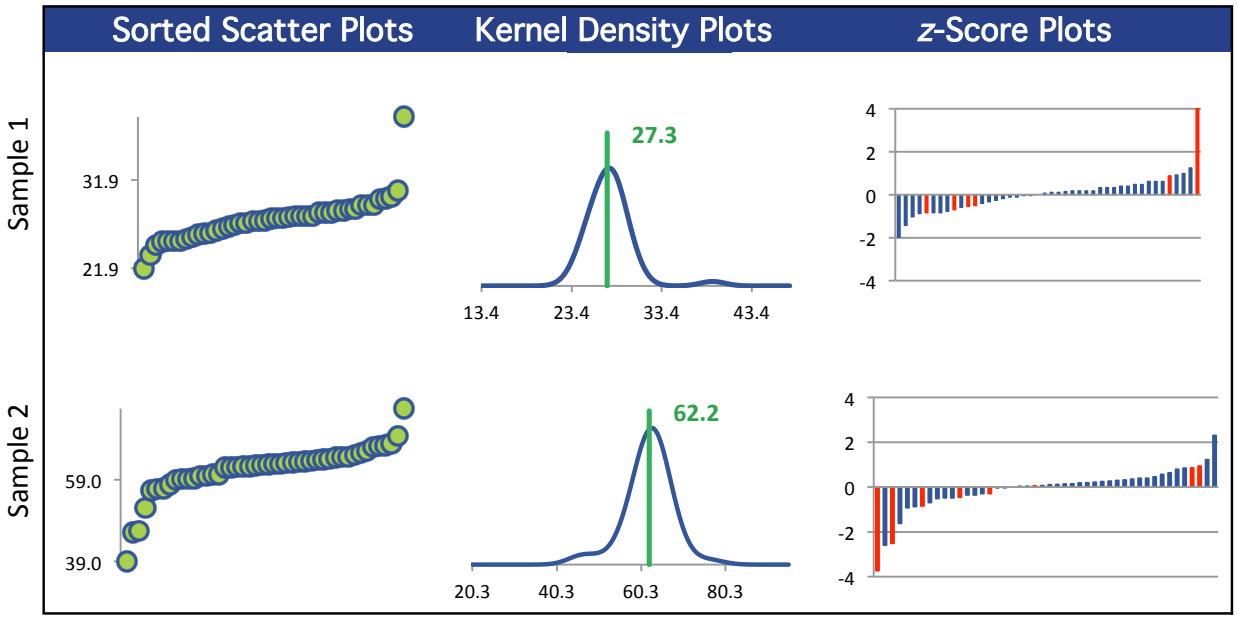
Summary Statistics

Statistic	C02C-1	C02C-2	C02C-3	C02C-4
N	44	46	37	45
Median mg/L	27.6	62.7	4.12	71.2
Robust Mean mg/L	27.3	62.2	4.14	71.3
U mg/L	0.351	0.735	0.0625	0.872
Robust Standard Deviation mg/L	1.86	3.99	0.304	4.68
Regression Standard Deviation mg/L	2.73	6.22	0.414	7.13
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	2.73	6.22	0.414	7.13
Outliers	3	3	4	3
|z|>3.0	1	1	0	0
2<|z|<3	0	3	1	1

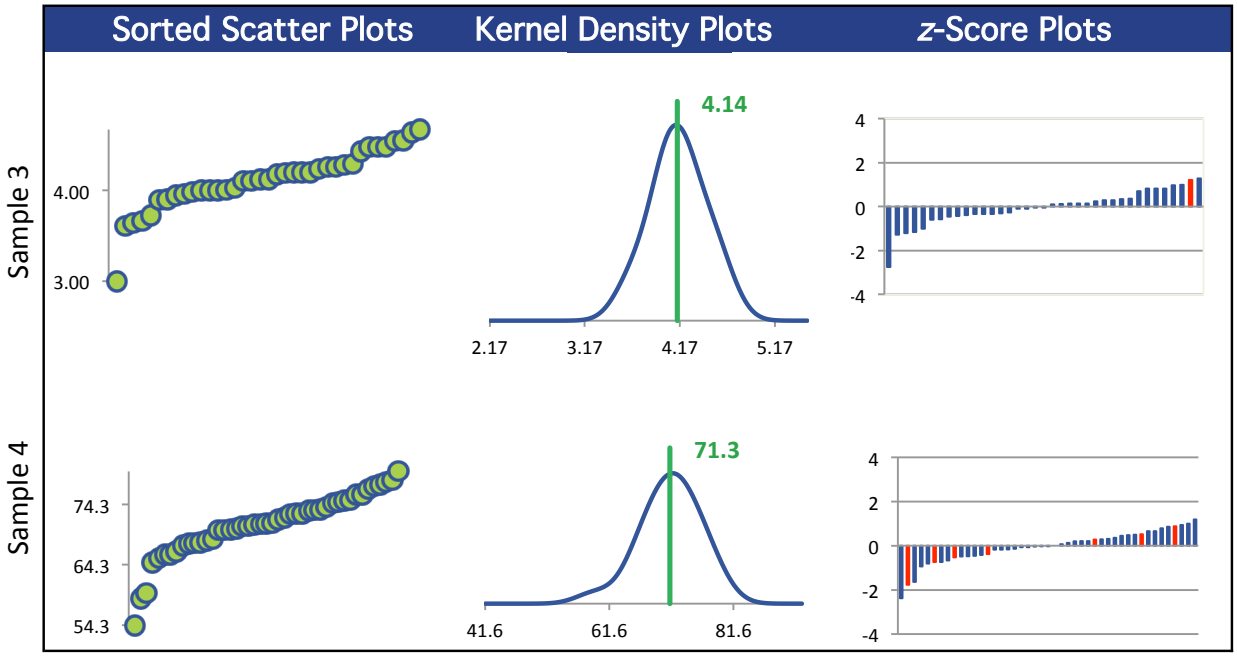
Methods Used

Method	C02C-1	C02C-2	C02C-3	C02C-4
ICP/MS (Blue)	38	38	36	38
ICP/OES (Red)	6	8	1	7

All summary stats and the plots below are based on the data excluding any flagged outliers



ARSENIC


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
4.00
3.00
4.14
2.17
3.17
4.17
5.17
4
2
0
-2
-4
Sample 4
74.3
64.3
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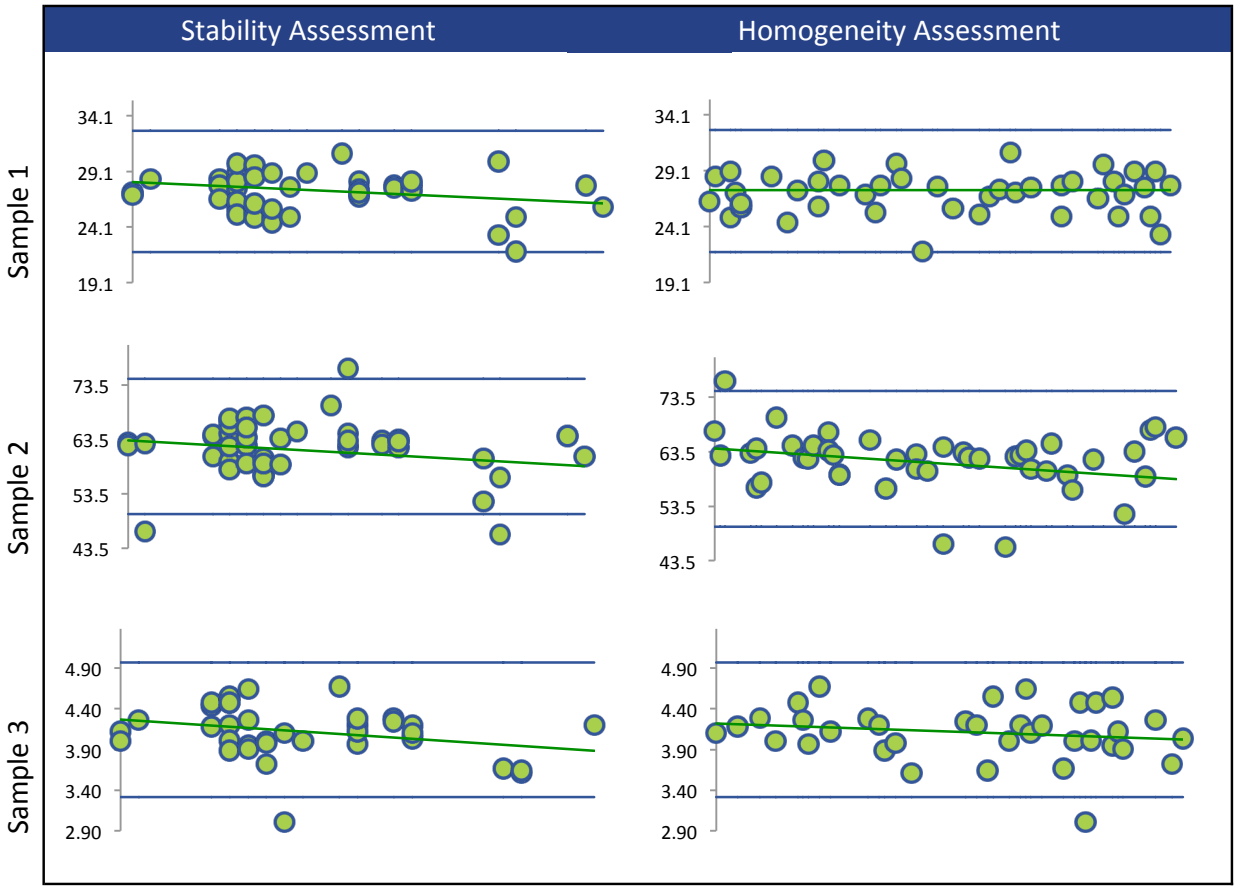
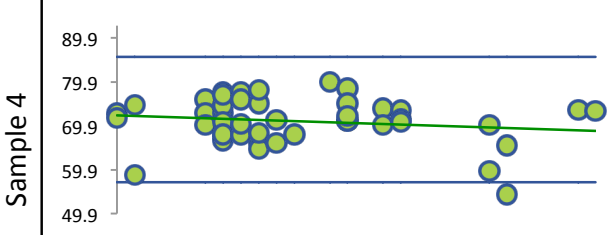
71.3
41.6
61.6
81.6
4
2
0
-2
-4

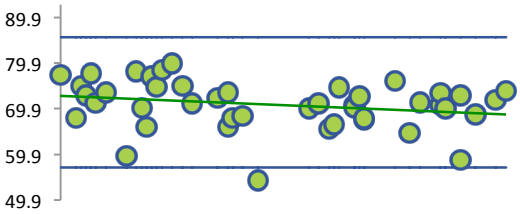

Stability Assessment
Homogeneity Assessment
Sample 1
34.1
29.1
24.1
19.1
Sample 2
73.5
63.5
53.5
43.5
Sample 3
4.90
4.40
3.90
3.40
2.90

ARSENIC

Stability Assessment



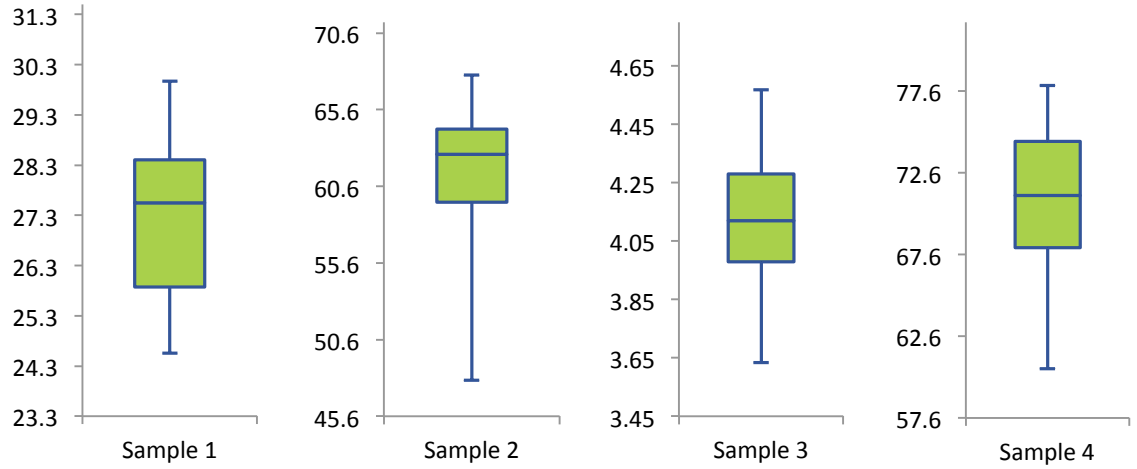
Homogeneity Assessment



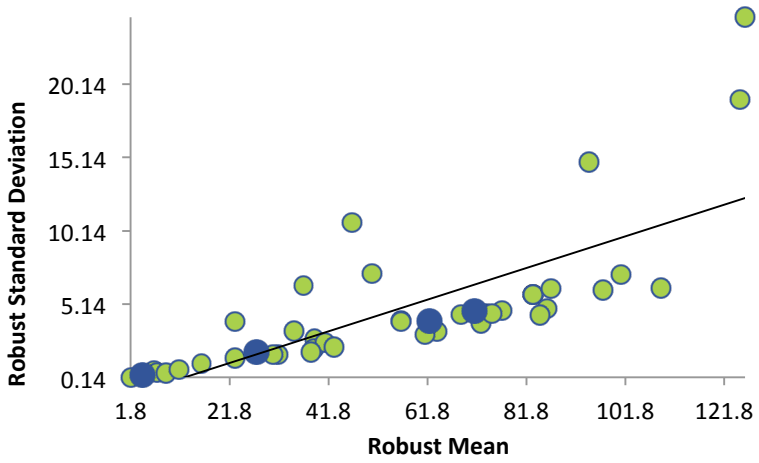
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



BARIUM

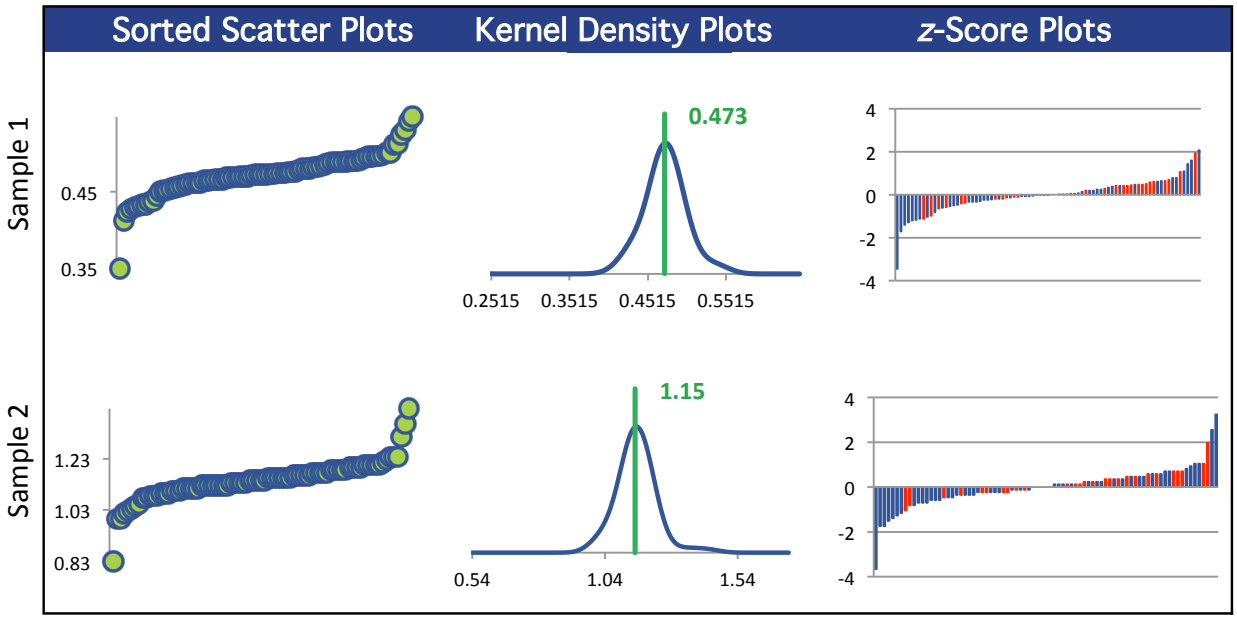
Summary Statistics

Statistic	C02C-1	C02C-2	C02C-3	C02C-4
N	81	81	81	81
Median mg/L	0.472	1.15	0.286	1.07
Robust Mean mg/L	0.473	1.15	0.285	1.07
U mg/L	0.00304	0.00774	0.00183	0.00699
Robust Standard Deviation mg/L	0.0219	0.0557	0.0132	0.0503
Regression Standard Deviation mg/L	0.0355	0.0863	0.0214	0.0799
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0355	0.0863	0.0214	0.0799
Outliers	0	0	0	0
|z|>3.0	1	2	1	1
2<|z|<3	1	1	0	1

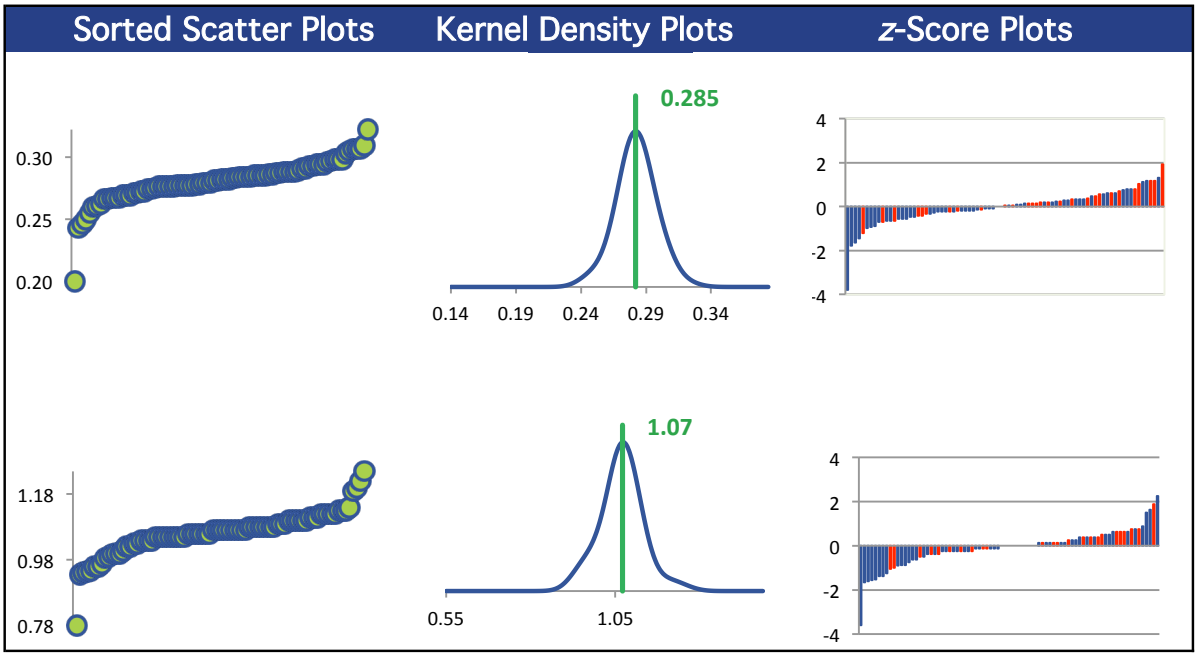
Methods Used

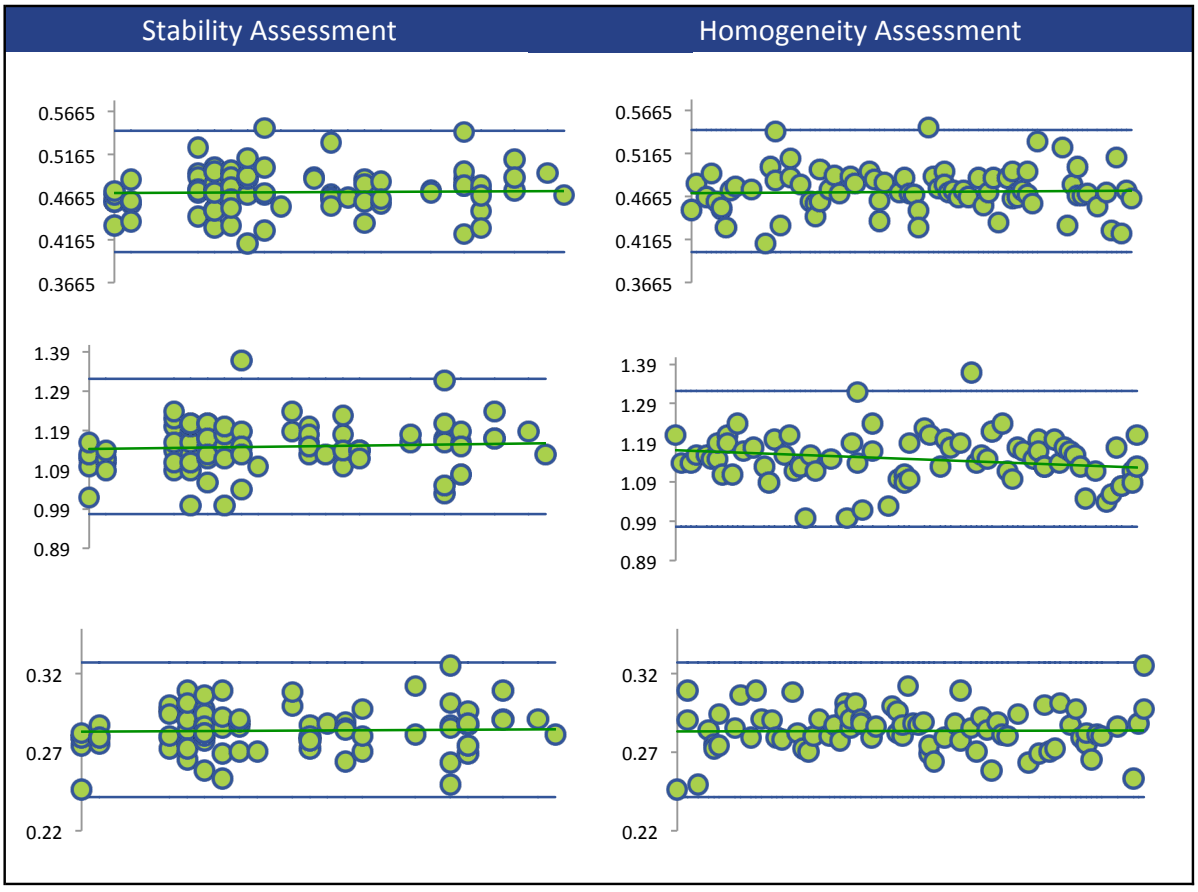
Method	C02C-1	C02C-2	C02C-3	C02C-4
ICP/MS (Blue)	52	52	52	52
ICP/OES (Red)	28	28	28	28
AA FLAME (Green)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



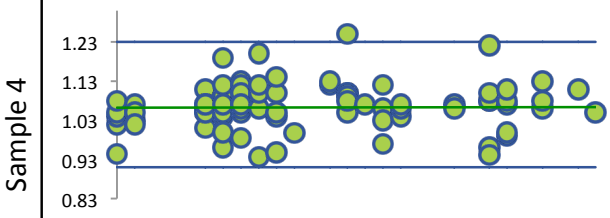
BARIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.30
0.25
0.20
0.285
0.14
0.19
0.24
0.29
0.34
4
2
0
-2
-4
Sample 4
1.18
0.98
0.78
1.07
0.55
1.05
4
2
0
-2
-4

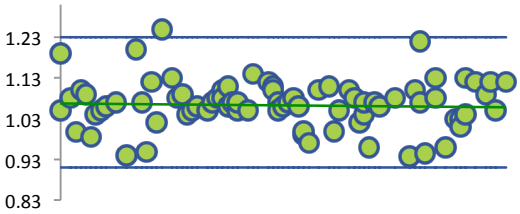

Stability Assessment
Homogeneity Assessment
Sample 1
0.5665
0.5165
0.4665
0.4165
0.3665
Sample 2
1.39
1.29
1.19
1.09
0.99
0.89
Sample 3
0.32
0.27
0.22

BARIUM

Stability Assessment



Homogeneity Assessment



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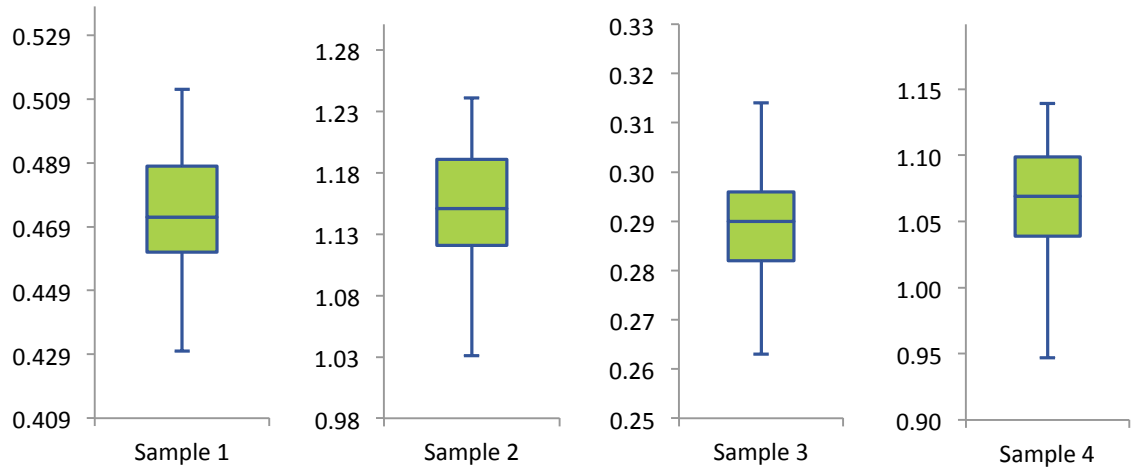
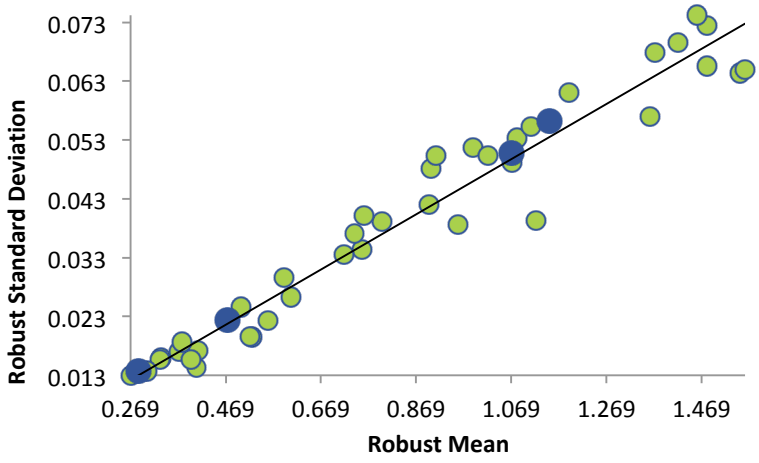
Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



BERYLLIUM

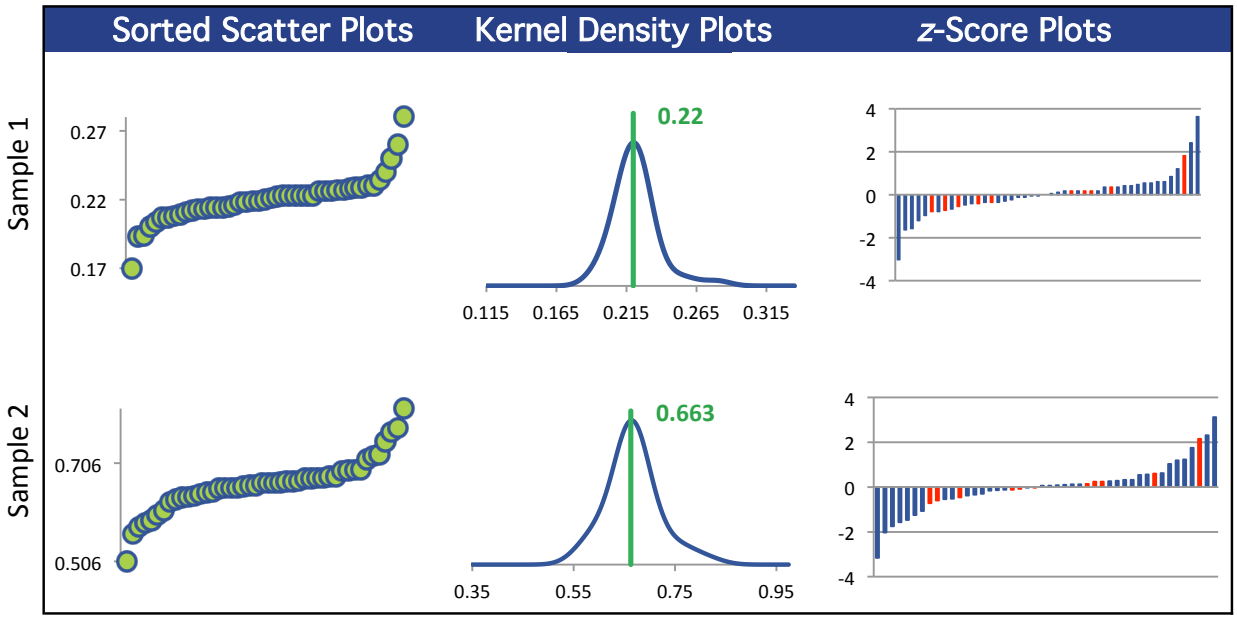
Summary Statistics

Statistic	C02C-1	C02C-2	C02C-3	C02C-4
N	46	46	46	46
Median mg/L	0.221	0.666	0.0121	0.874
Robust Mean mg/L	0.220	0.663	0.0121	0.872
U mg/L	0.00206	0.00780	0.000157	0.00840
Robust Standard Deviation mg/L	0.0112	0.0423	0.000853	0.0456
Regression Standard Deviation mg/L	0.0165	0.0497	0.000907	0.0654
Stability Flag			Stability	
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0165	0.0497	0.00136	0.0654
Outliers	0	0	0	0
|z|>3.0	2	2	0	1
2<|z|<3	1	3	1	1

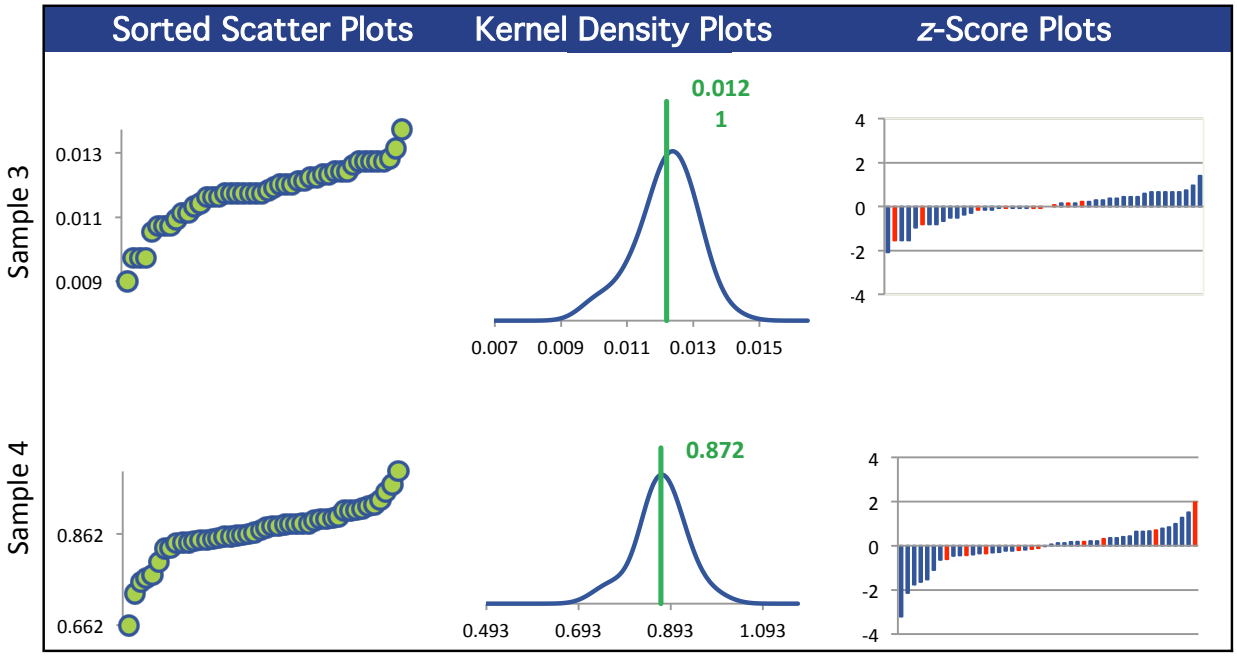
Methods Used

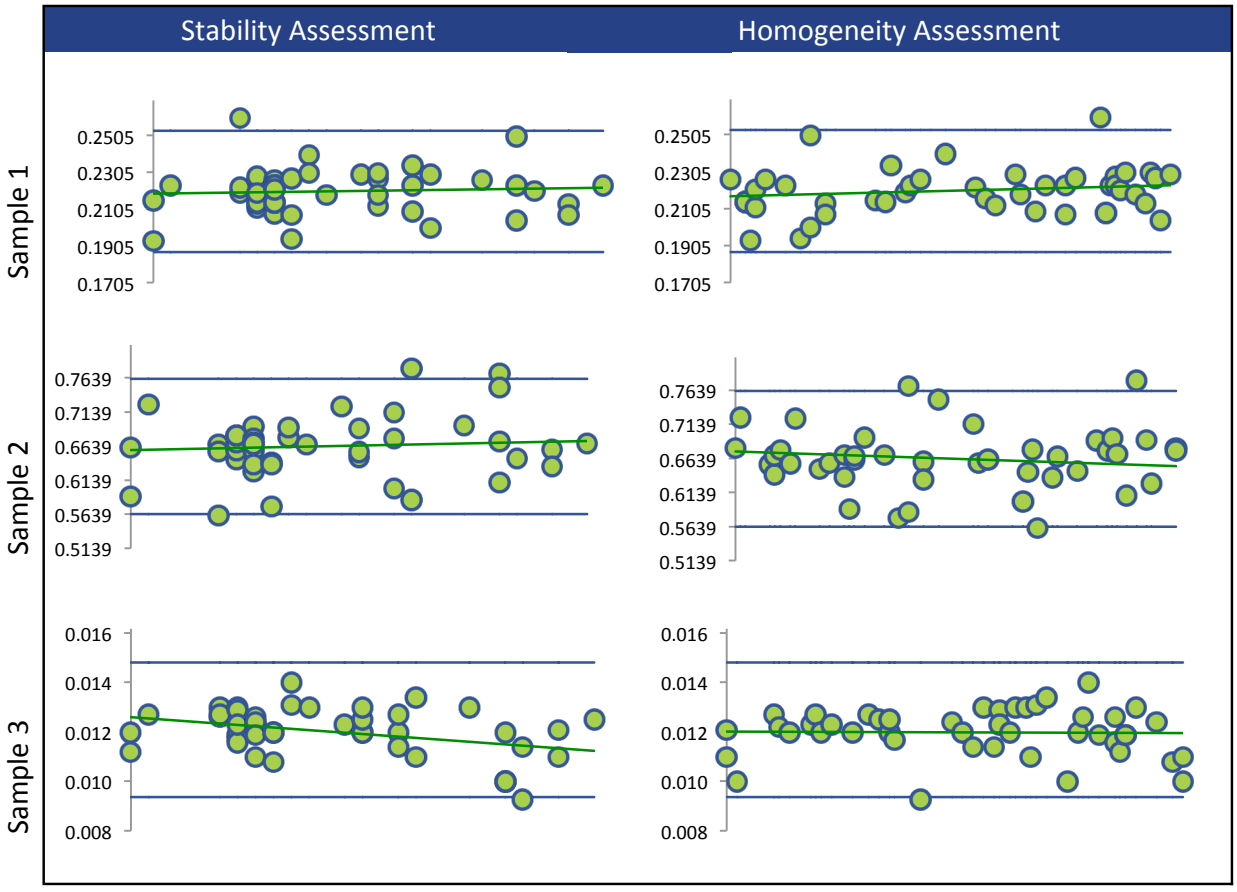
Method	C02C-1	C02C-2	C02C-3	C02C-4
ICP/MS (Blue)	35	35	35	35
ICP/OES (Red)	10	10	10	10
AA FLAME (Green)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



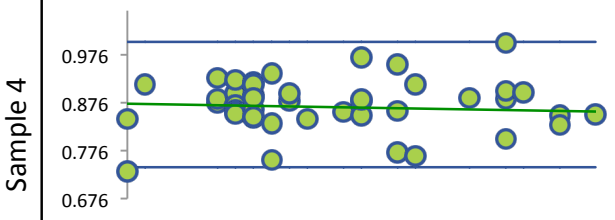
BERYLLIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.013
0.011
0.009
0.012
1
0.007 0.009 0.011 0.013 0.015
4
2
0
-2
-4
Sample 4
0.862
0.662
0.872
0.493 0.693 0.893 1.093
4
2
0
-2
-4

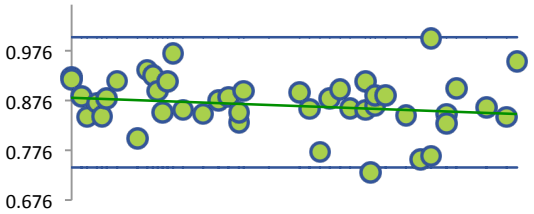

Stability Assessment
Homogeneity Assessment
Sample 1
0.2505
0.2305
0.2105
0.1905
0.1705
Sample 2
0.7639
0.7139
0.6639
0.6139
0.5639
0.5139
Sample 3
0.016
0.014
0.012
0.010
0.008

BERYLLIUM

Stability Assessment



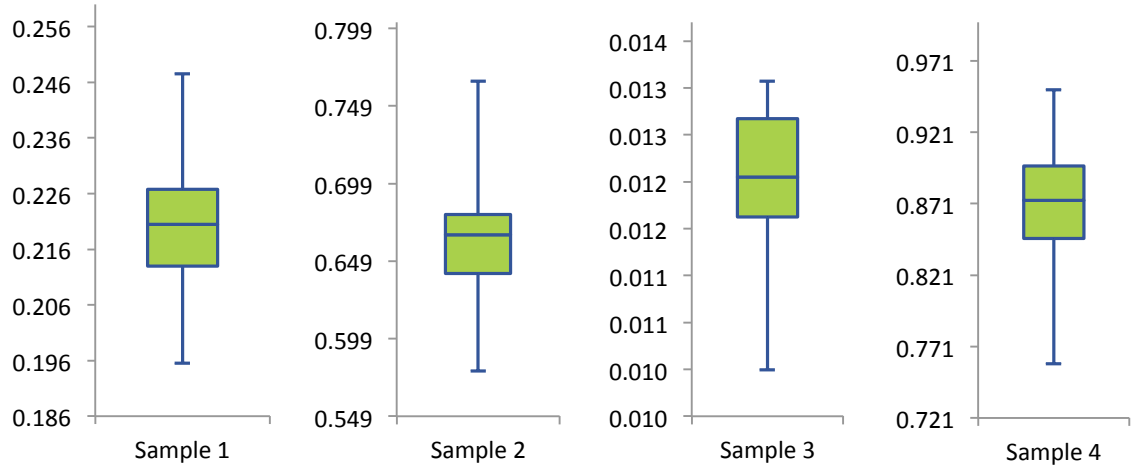
Homogeneity Assessment



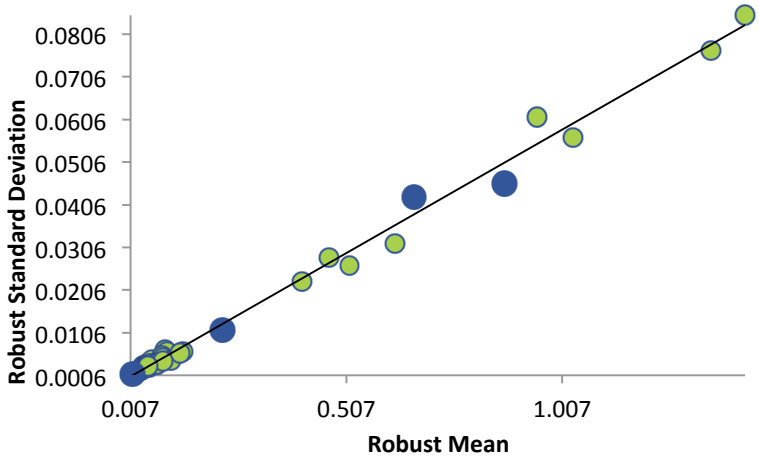
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



BORON

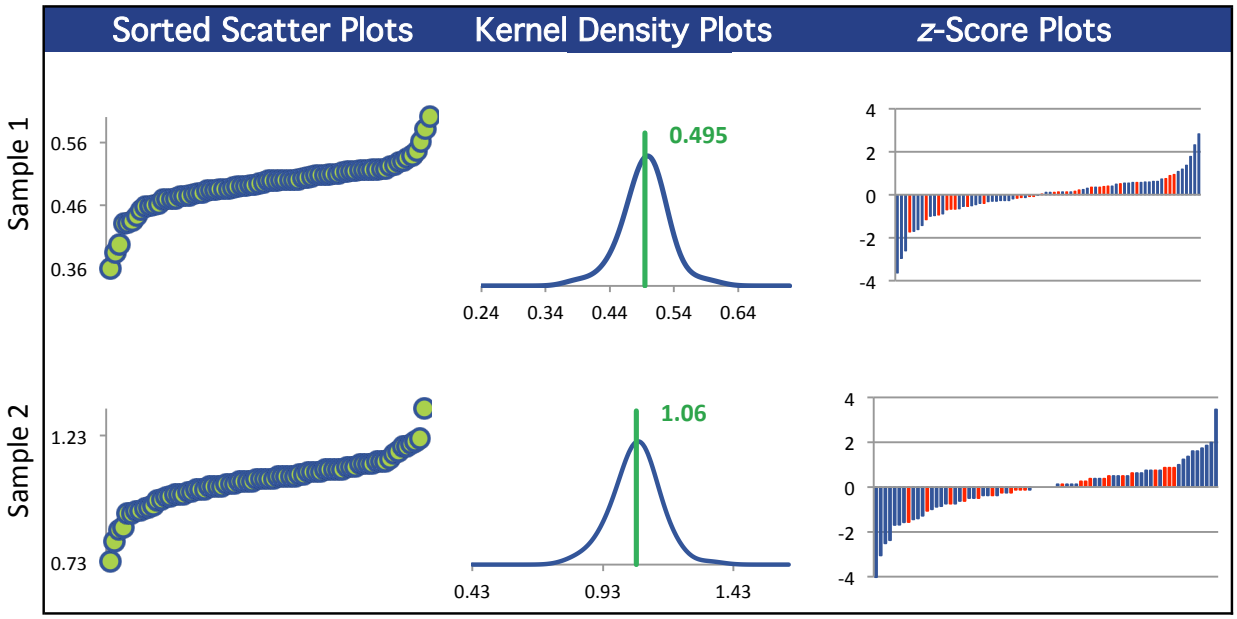
Summary Statistics

Statistic	C02C-1	C02C-2	C02C-3	C02C-4
N	74	74	74	74
Median mg/L	0.499	1.06	0.331	1.27
Robust Mean mg/L	0.495	1.06	0.332	1.27
U mg/L	0.00413	0.0118	0.00331	0.0125
Robust Standard Deviation mg/L	0.0284	0.0810	0.0228	0.0862
Regression Standard Deviation mg/L	0.0371	0.0792	0.0249	0.0950
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0371	0.0810	0.0249	0.0950
Outliers	0	0	0	0
|z|>3.0	1	3	2	4
2<|z|<3	4	2	5	3

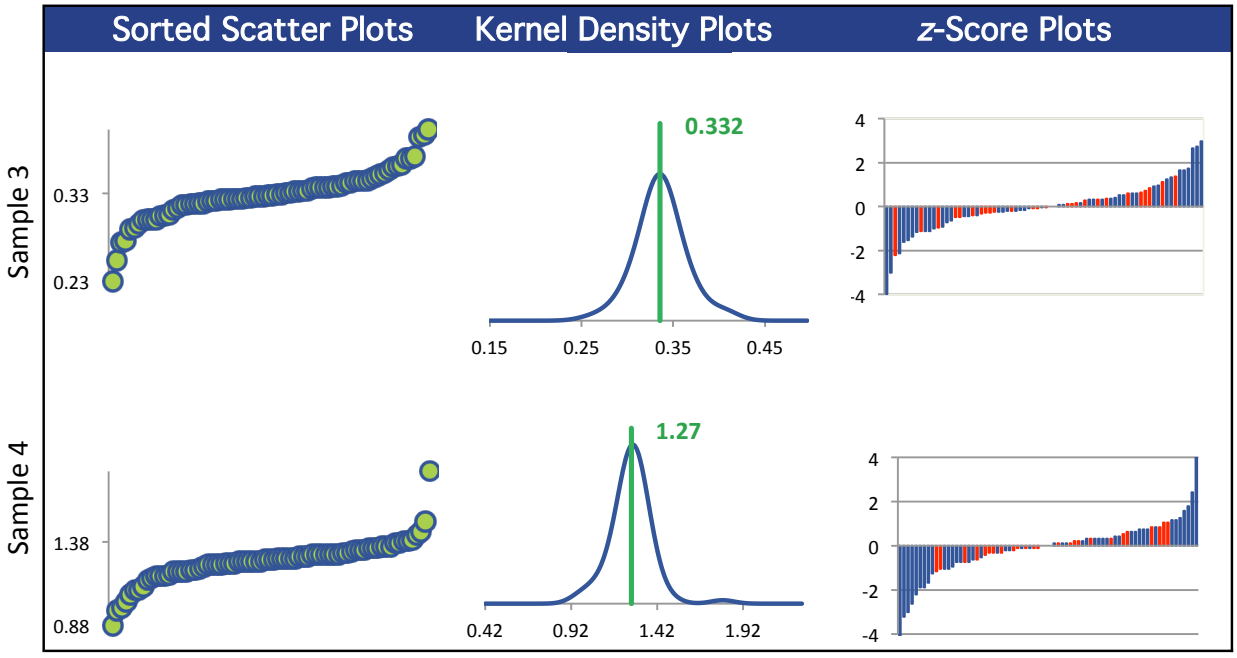
Methods Used

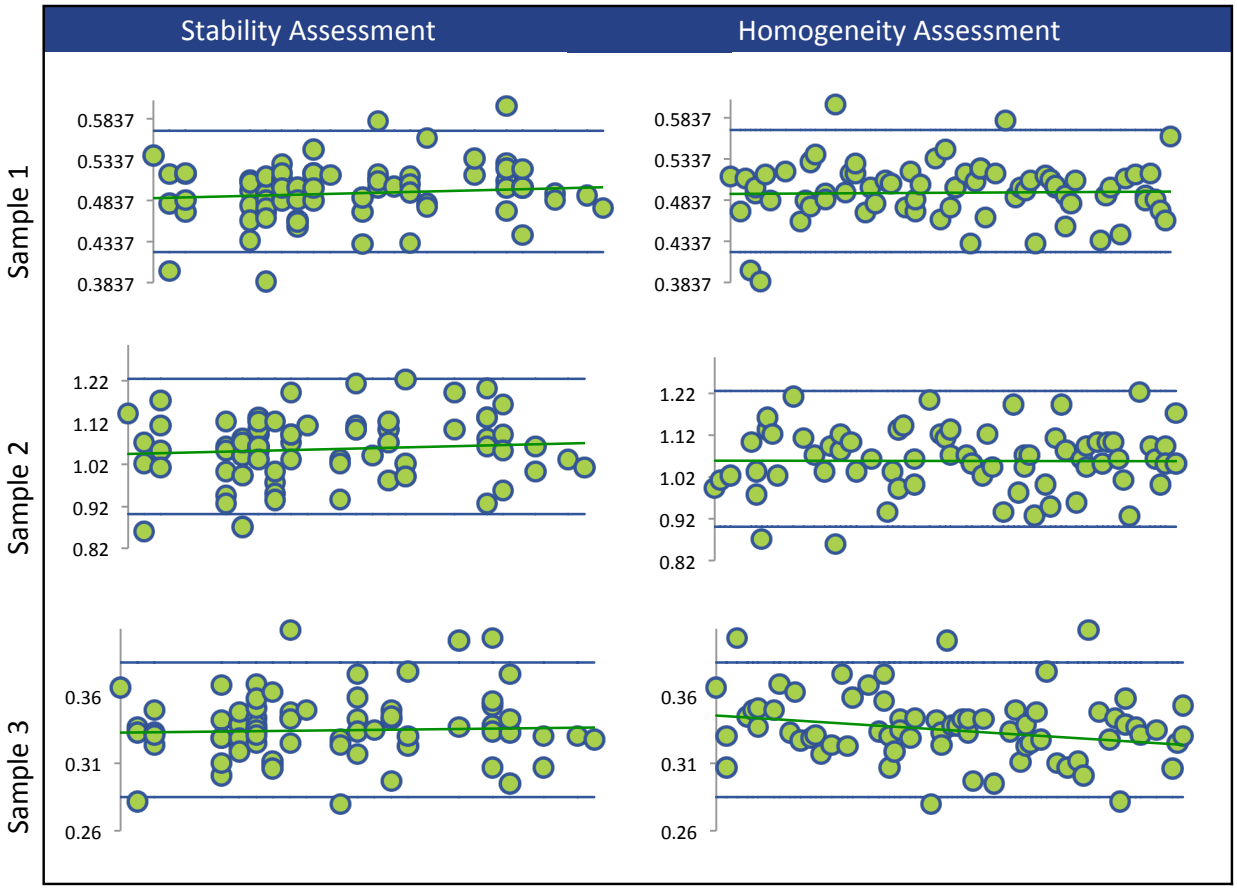
Method	C02C-1	C02C-2	C02C-3	C02C-4
ICP/MS (Blue)	46	46	46	46
ICP/OES (Red)	27	27	27	27
AA FLAME (Green)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



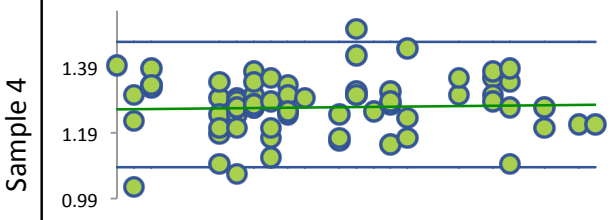
BORON


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.33
0.23
0.332
0.15
0.25
0.35
0.45
4
2
0
-2
-4
Sample 4
1.38
0.88
1.27
0.42
0.92
1.42
1.92
4
2
0
-2
-4

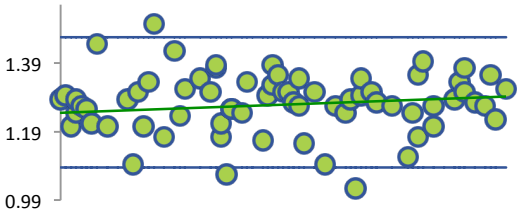

Stability Assessment
Homogeneity Assessment
Sample 1
0.5837
0.5337
0.4837
0.4337
0.3837
0.5837
0.5337
0.4837
0.4337
0.3837
Sample 2
1.22
1.12
1.02
0.92
0.82
1.22
1.12
1.02
0.92
0.82
Sample 3
0.36
0.31
0.26
0.36
0.31
0.26

BORON

Stability Assessment



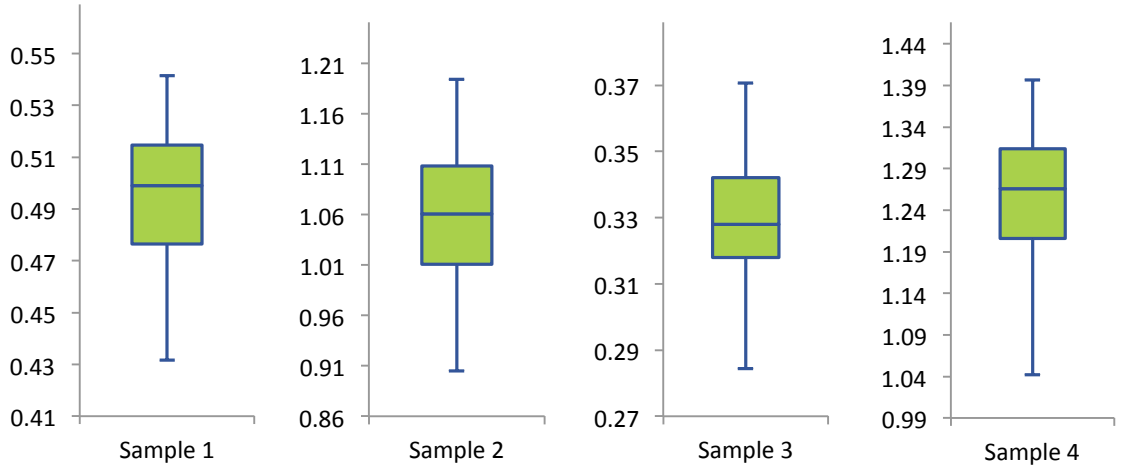
Homogeneity Assessment



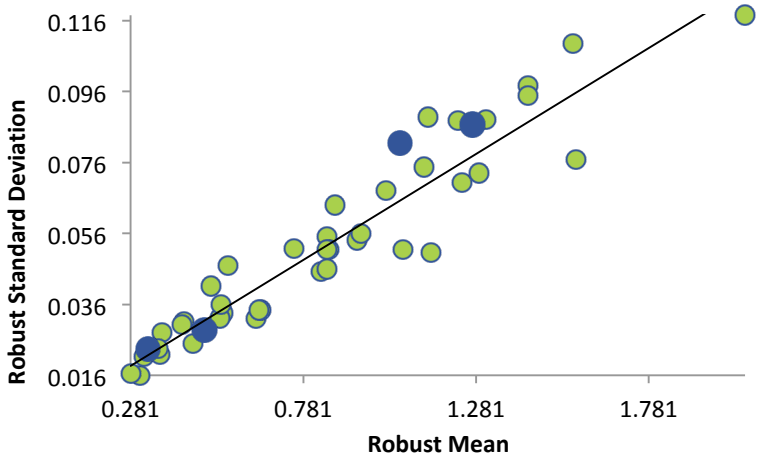
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



CADMIUM

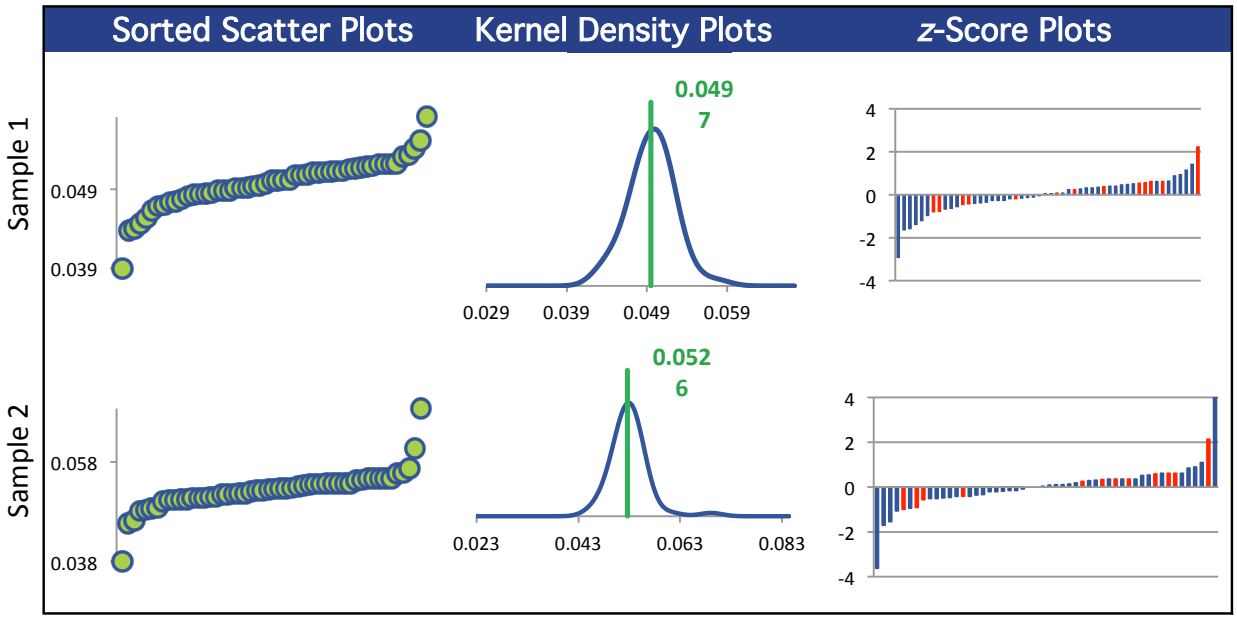
Summary Statistics

Statistic	C02C-1	C02C-2	C02C-3	C02C-4
N	52	52	52	52
Median mg/L	0.0499	0.0528	0.0225	0.0725
Robust Mean mg/L	0.0497	0.0526	0.0224	0.0725
U mg/L	0.000440	0.000435	0.000160	0.000501
Robust Standard Deviation mg/L	0.00254	0.00251	0.000923	0.00289
Regression Standard Deviation mg/L	0.00373	0.00395	0.00168	0.00544
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.00373	0.00395	0.00168	0.00544
Outliers	0	0	0	0
|z|>3.0	0	2	1	1
2<|z|<3	2	1	1	2

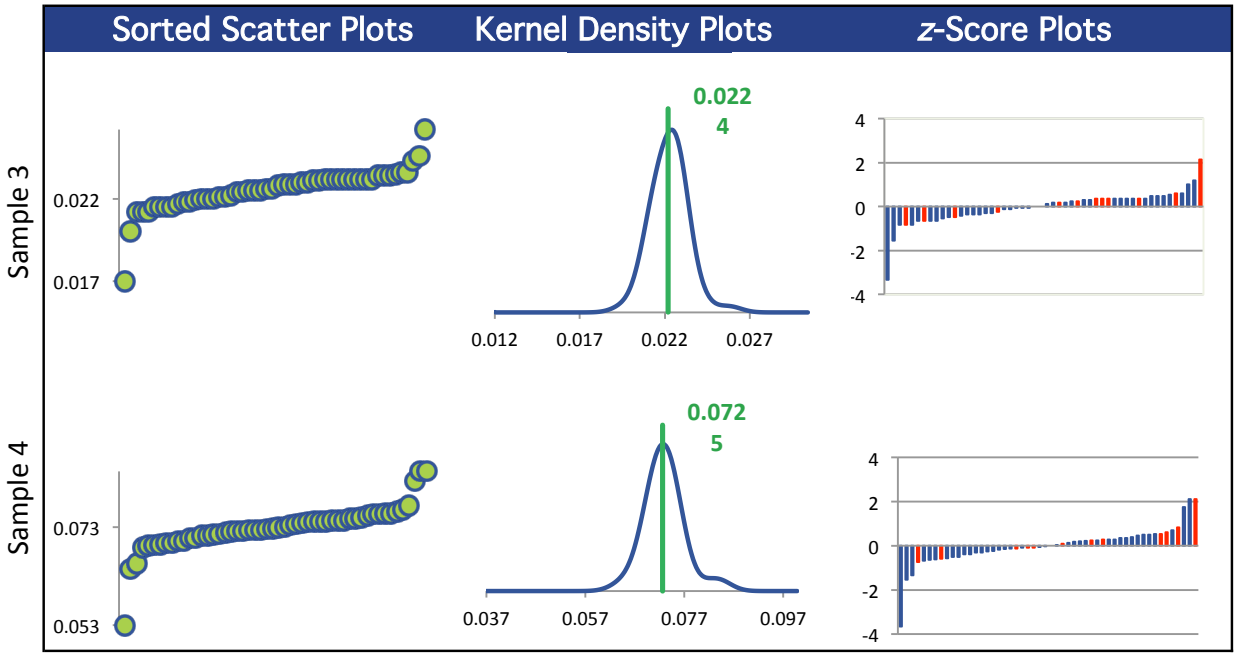
Methods Used

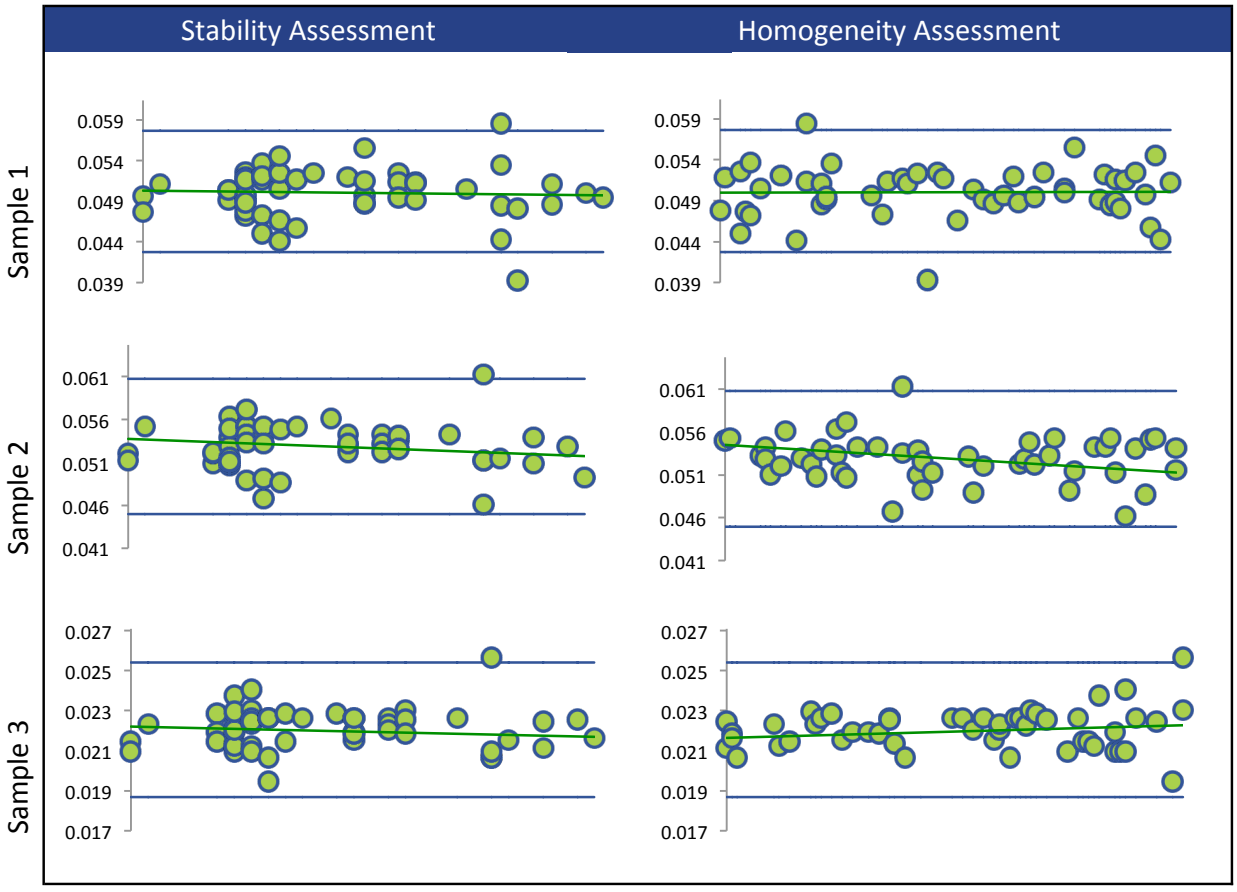
Method	C02C-1	C02C-2	C02C-3	C02C-4
ICP/MS (Blue)	39	39	39	39
ICP/OES (Red)	12	12	12	12
AA FLAME (Green)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



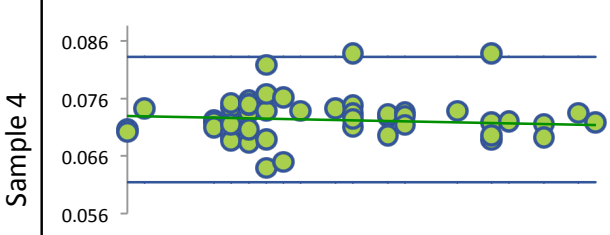
CADMIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.022
0.017
0.022
4
0.012
0.017
0.022
0.027
4
2
0
-2
-4
Sample 4
0.073
0.053
0.072
5
0.037
0.057
0.077
0.097
4
2
0
-2
-4

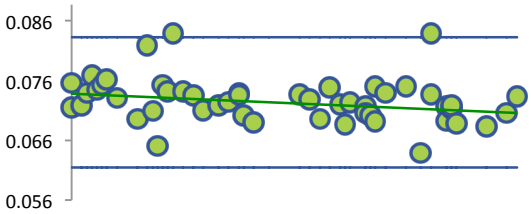

Stability Assessment
Homogeneity Assessment
Sample 1
0.059
0.054
0.049
0.044
0.039
Sample 2
0.061
0.056
0.051
0.046
0.041
Sample 3
0.027
0.025
0.023
0.021
0.019
0.017

CADMIUM

Stability Assessment



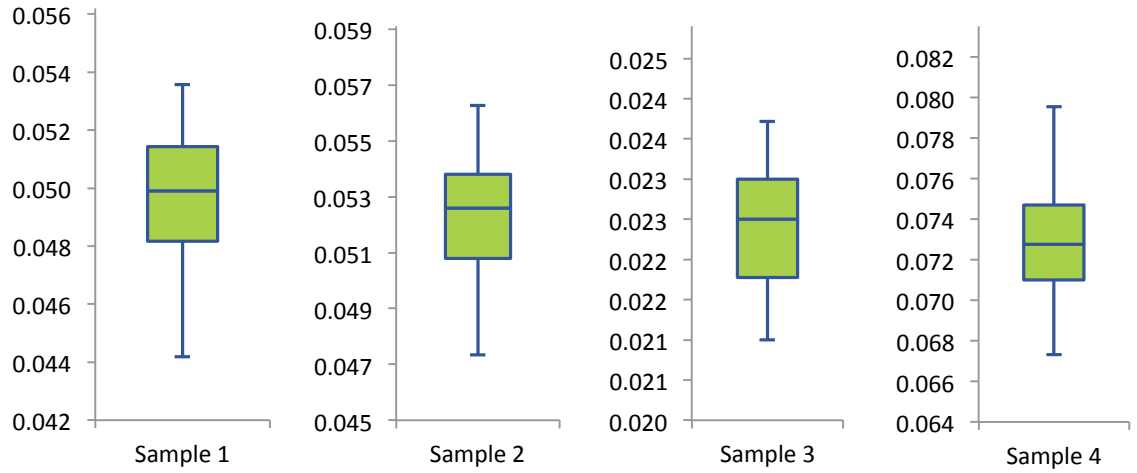
Homogeneity Assessment



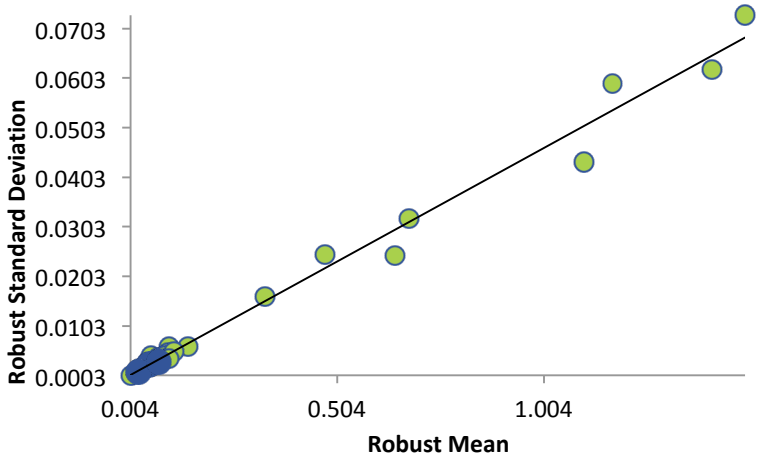
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



CHROMIUM

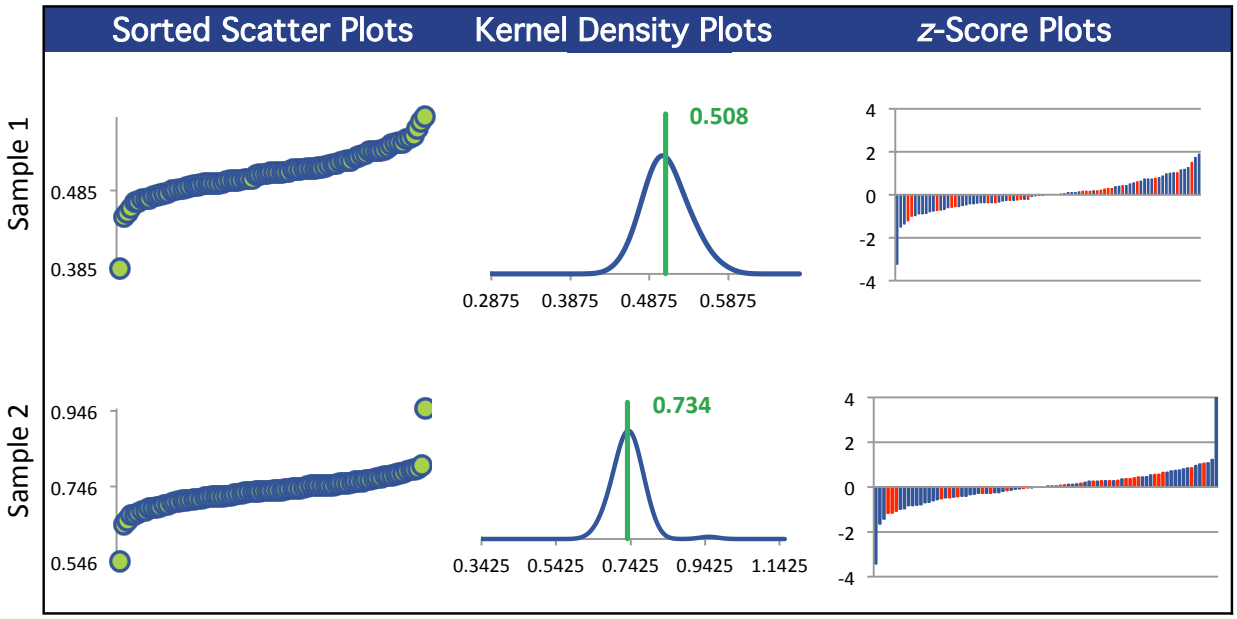
Summary Statistics

Statistic	C02C-1	C02C-2	C02C-3	C02C-4
N	84	84	84	84
Median mg/L	0.508	0.735	0.412	1.55
Robust Mean mg/L	0.508	0.734	0.412	1.54
U mg/L	0.00364	0.00479	0.00254	0.00911
Robust Standard Deviation mg/L	0.0267	0.0351	0.0186	0.0668
Regression Standard Deviation mg/L	0.0381	0.0550	0.0309	0.116
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0381	0.0550	0.0309	0.116
Outliers	0	0	0	0
|z|>3.0	1	2	1	1
2<|z|<3	0	0	0	1

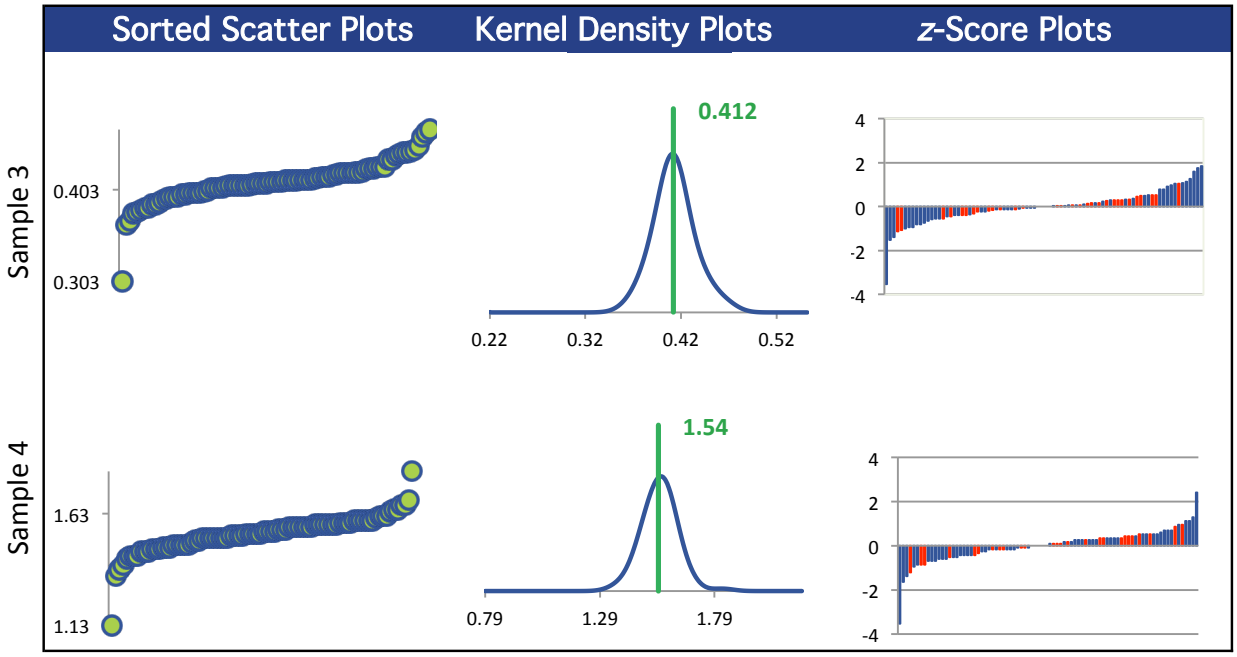
Methods Used

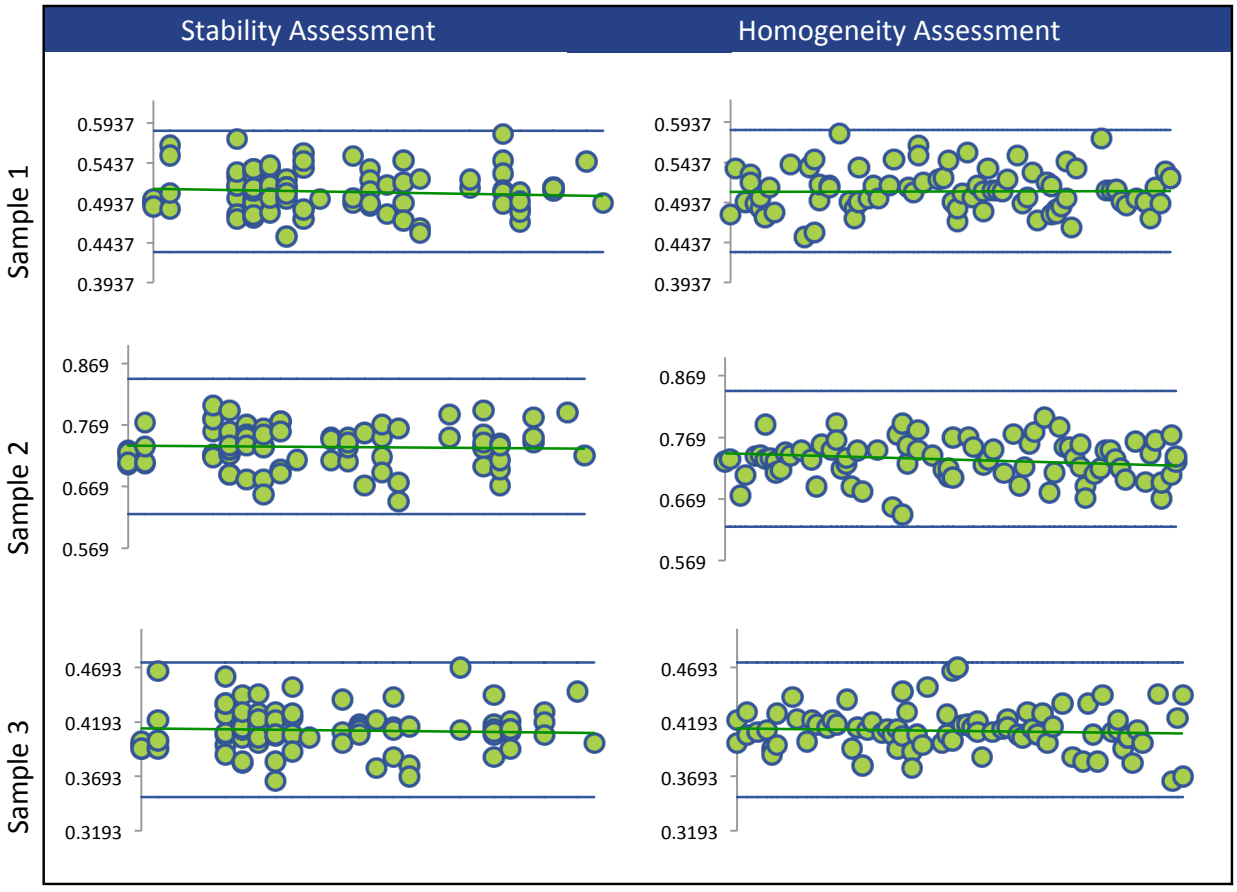
Method	C02C-1	C02C-2	C02C-3	C02C-4
ICP/MS (Blue)	54	54	54	54
ICP/OES (Red)	29	29	29	29
AA FLAME (Green)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



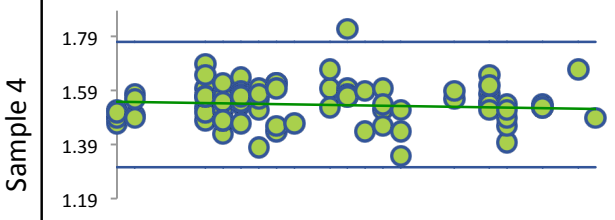
CHROMIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.403
0.303
0.412
0.22
0.32
0.42
0.52
4
2
0
-2
-4
Sample 4
1.63
1.13
1.54
0.79
1.29
1.79
4
2
0
-2
-4

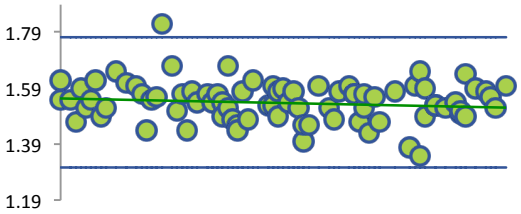

Stability Assessment
Homogeneity Assessment
Sample 1
0.5937
0.5437
0.4937
0.4437
0.3937
Sample 2
0.869
0.769
0.669
0.569
Sample 3
0.4693
0.4193
0.3693
0.3193

CHROMIUM

Stability Assessment



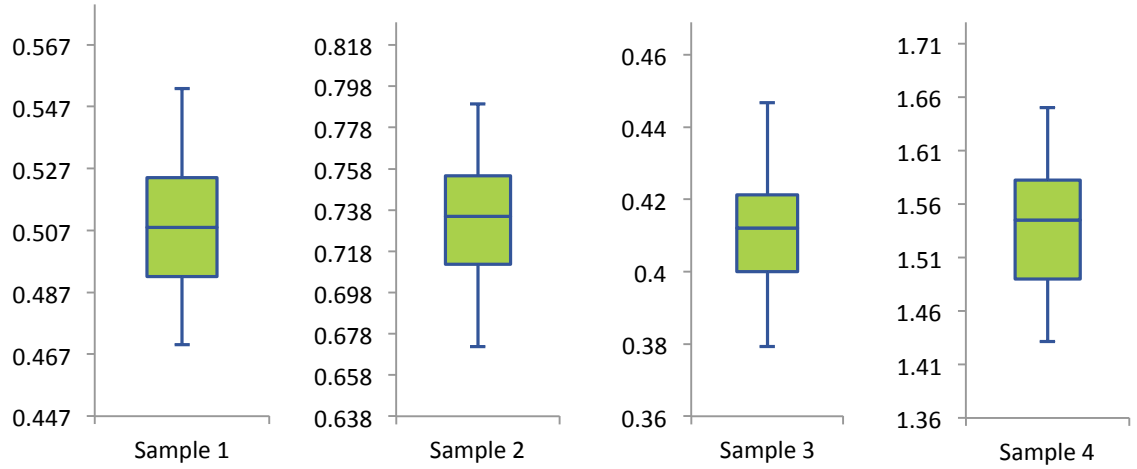
Homogeneity Assessment



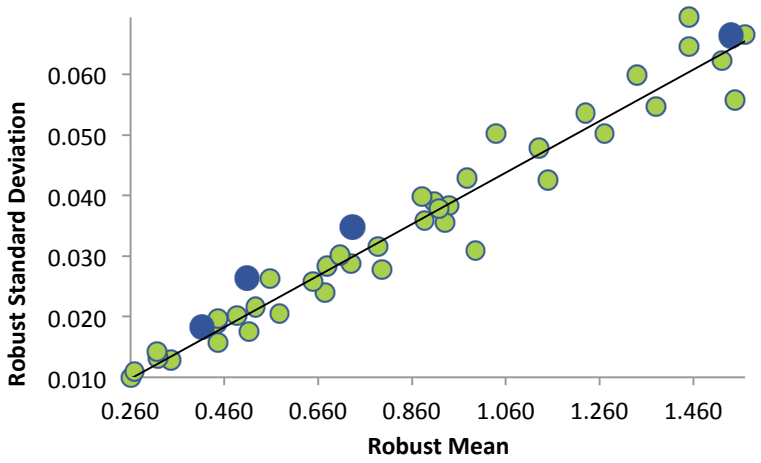
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



COBALT

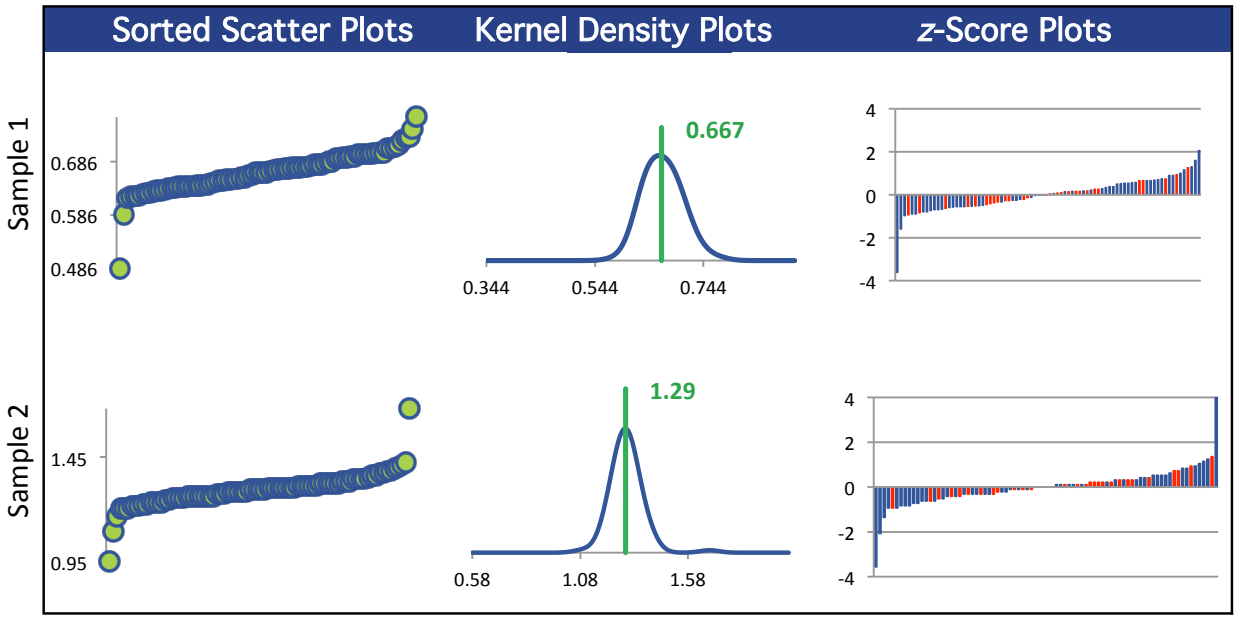
Summary Statistics

Statistic	C02C-1	C02C-2	C02C-3	C02C-4
N	82	82	82	82
Median mg/L	0.668	1.29	0.266	1.24
Robust Mean mg/L	0.667	1.29	0.267	1.24
U mg/L	0.00471	0.00799	0.00181	0.00839
Robust Standard Deviation mg/L	0.0341	0.0579	0.0131	0.0608
Regression Standard Deviation mg/L	0.0500	0.0966	0.0200	0.0929
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0500	0.0966	0.0200	0.0929
Outliers	0	0	0	0
|z|>3.0	1	2	1	1
2<|z|<3	1	1	2	1

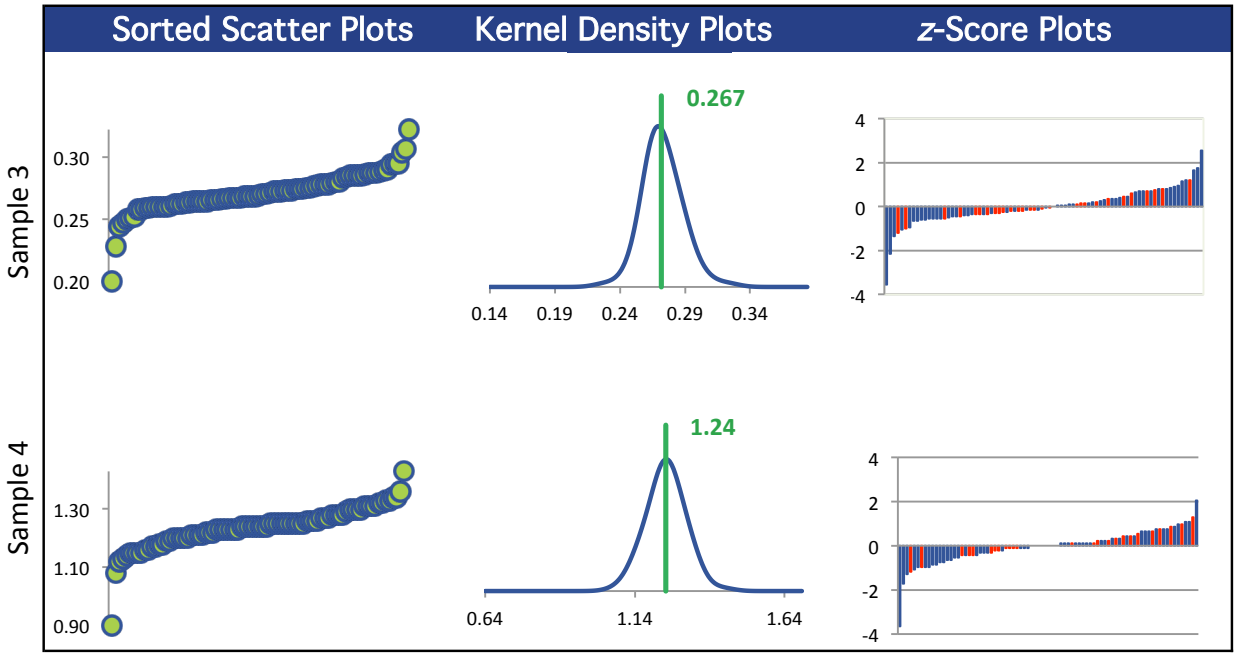
Methods Used

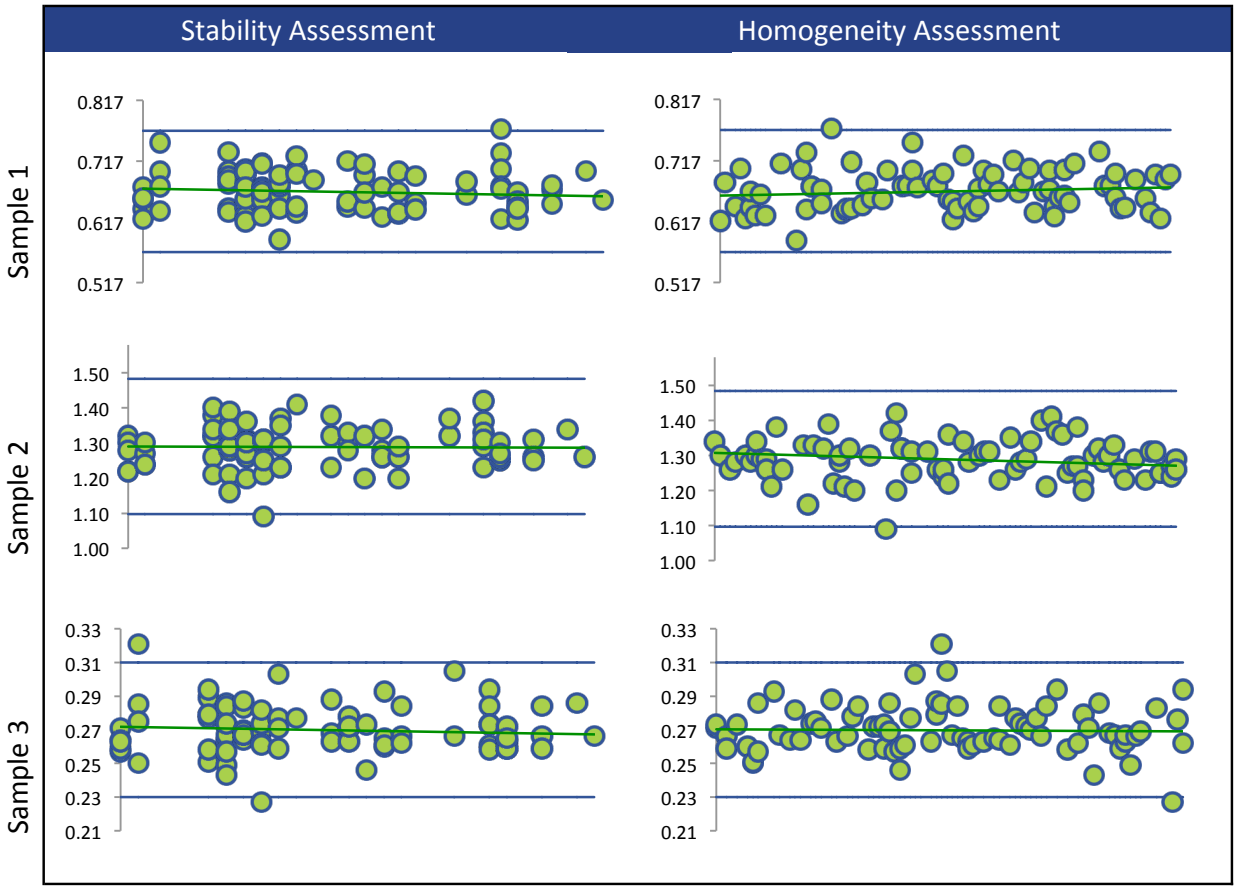
Method	C02C-1	C02C-2	C02C-3	C02C-4
ICP/MS (Blue)	53	53	53	53
ICP/OES (Red)	28	28	28	28
AA FLAME (Green)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



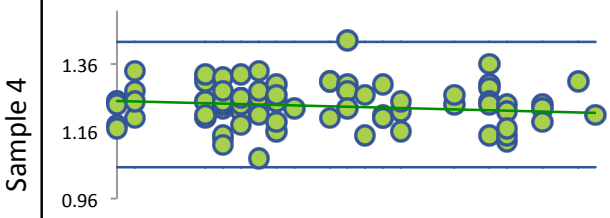
COBALT


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.30
0.25
0.20
0.267
0.14
0.19
0.24
0.29
0.34
4
2
0
-2
-4
Sample 4
1.30
1.10
0.90
1.24
0.64
1.14
1.64
4
2
0
-2
-4

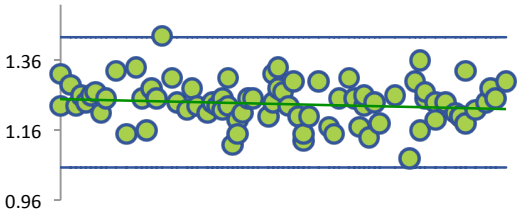

Stability Assessment
Homogeneity Assessment
Sample 1
0.817
0.717
0.617
0.517
Sample 2
1.50
1.40
1.30
1.20
1.10
1.00
Sample 3
0.33
0.31
0.29
0.27
0.25
0.23
0.21

COBALT

Stability Assessment



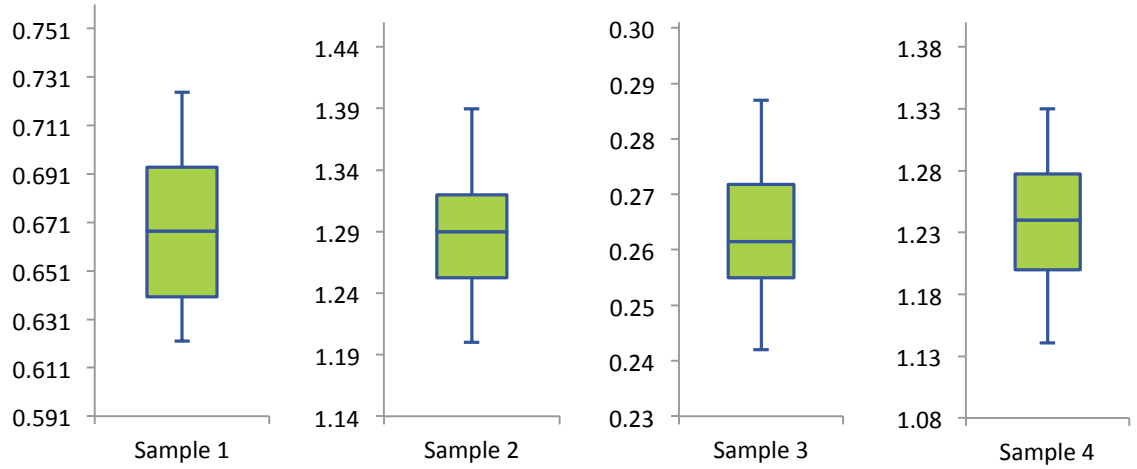
Homogeneity Assessment



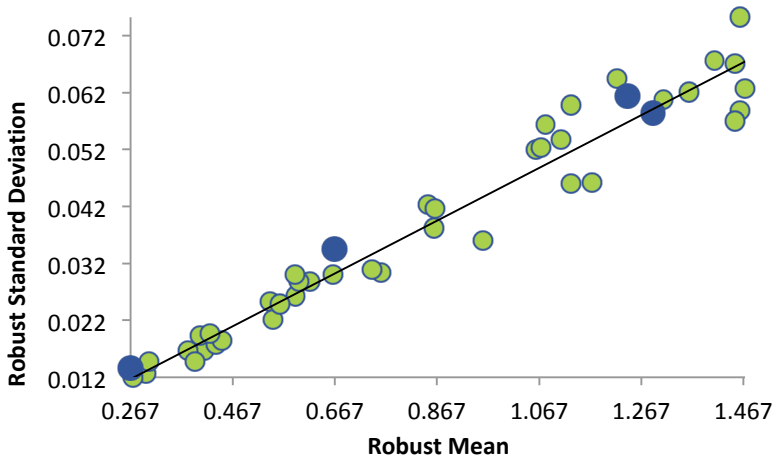
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



COPPER

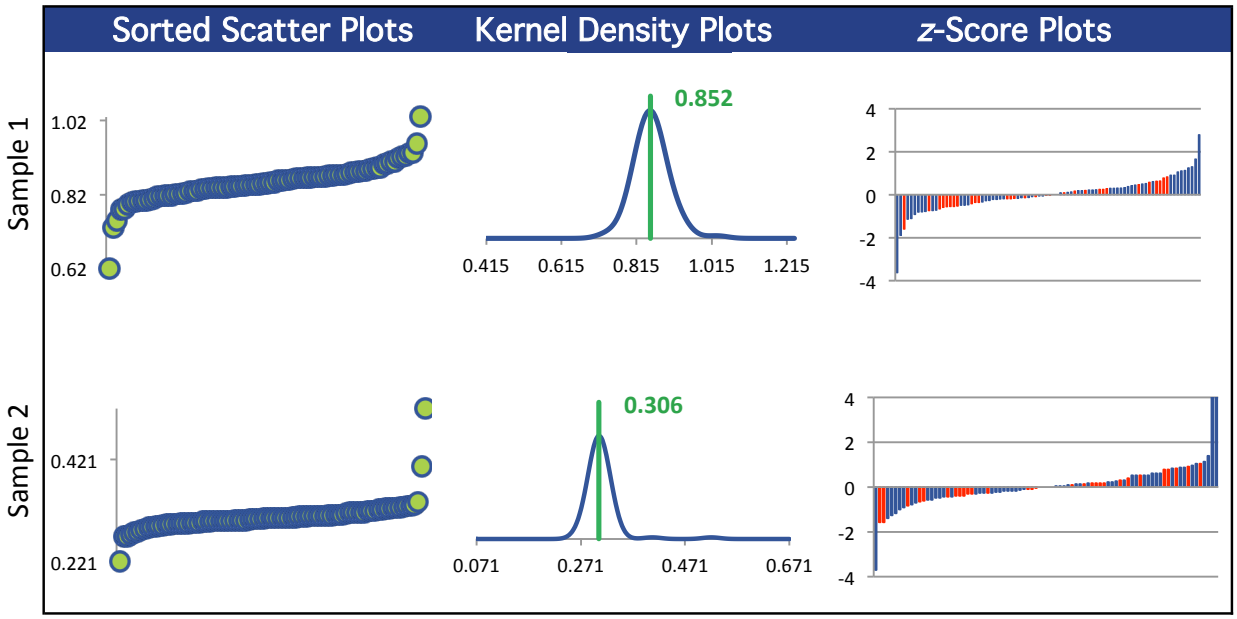
Summary Statistics

Statistic	C02C-1	C02C-2	C02C-3	C02C-4
N	86	86	86	86
Median mg/L	0.850	0.306	0.583	1.12
Robust Mean mg/L	0.852	0.306	0.585	1.12
U mg/L	0.00531	0.00199	0.00333	0.00632
Robust Standard Deviation mg/L	0.0394	0.0148	0.0247	0.0469
Regression Standard Deviation mg/L	0.0639	0.0230	0.0439	0.0839
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0639	0.0230	0.0439	0.0839
Outliers	0	0	0	0
|z|>3.0	1	3	1	1
2<|z|<3	1	0	1	2

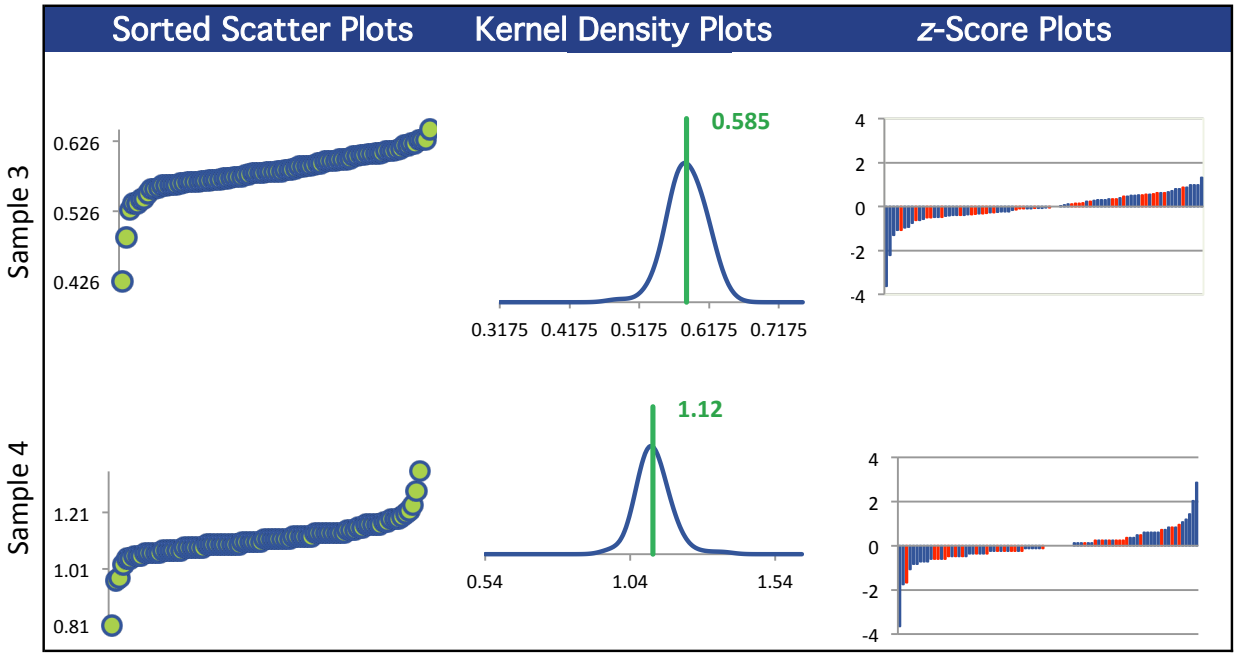
Methods Used

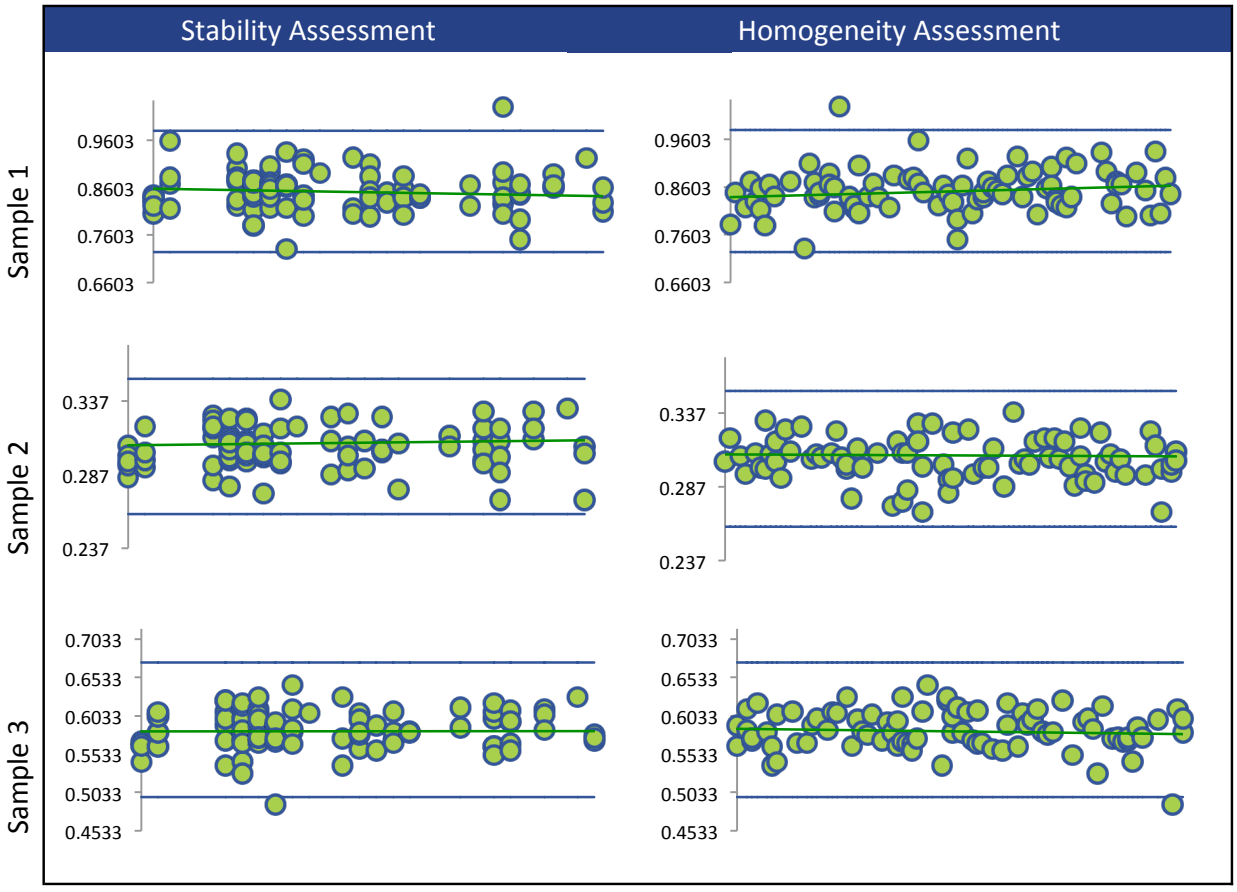
Method	C02C-1	C02C-2	C02C-3	C02C-4
ICP/MS (Blue)	55	55	55	55
ICP/OES (Red)	30	30	30	30
AA FLAME (Green)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



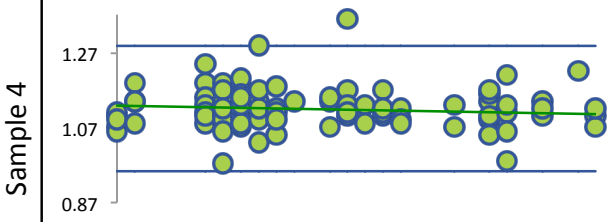
COPPER


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.626
0.526
0.426
0.585
0.3175 0.4175 0.5175 0.6175 0.7175
4
2
0
-2
-4
Sample 4
1.21
1.01
0.81
1.12
0.54 1.04 1.54
4
2
0
-2
-4

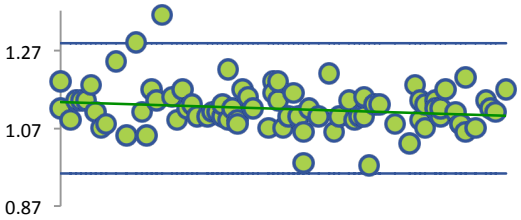

Stability Assessment
Homogeneity Assessment
Sample 1
0.9603
0.8603
0.7603
0.6603
Sample 2
0.337
0.287
0.237
Sample 3
0.7033
0.6533
0.6033
0.5533
0.5033
0.4533

COPPER

Stability Assessment



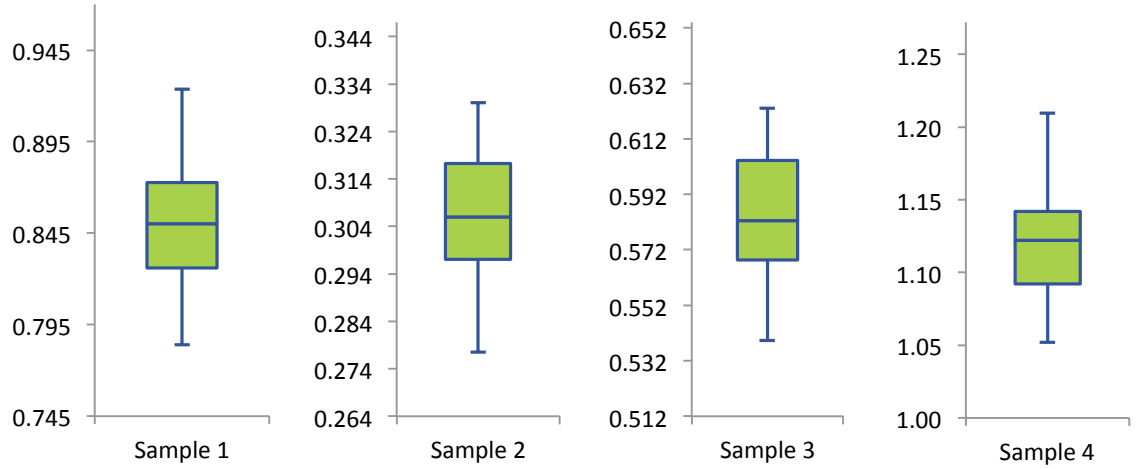
Homogeneity Assessment



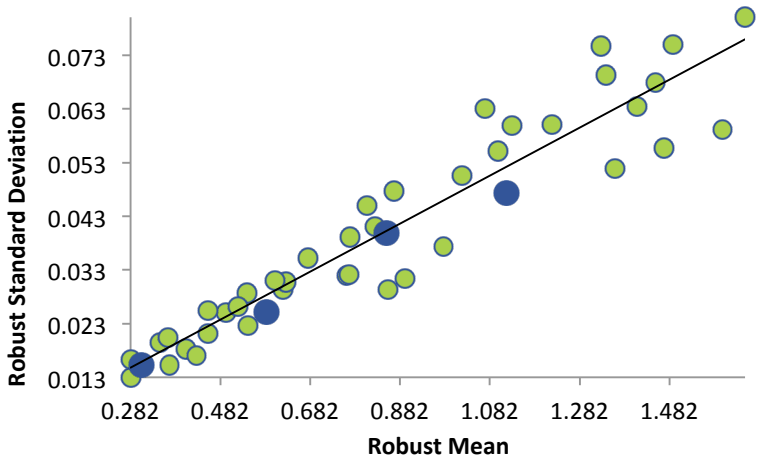
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



IRON

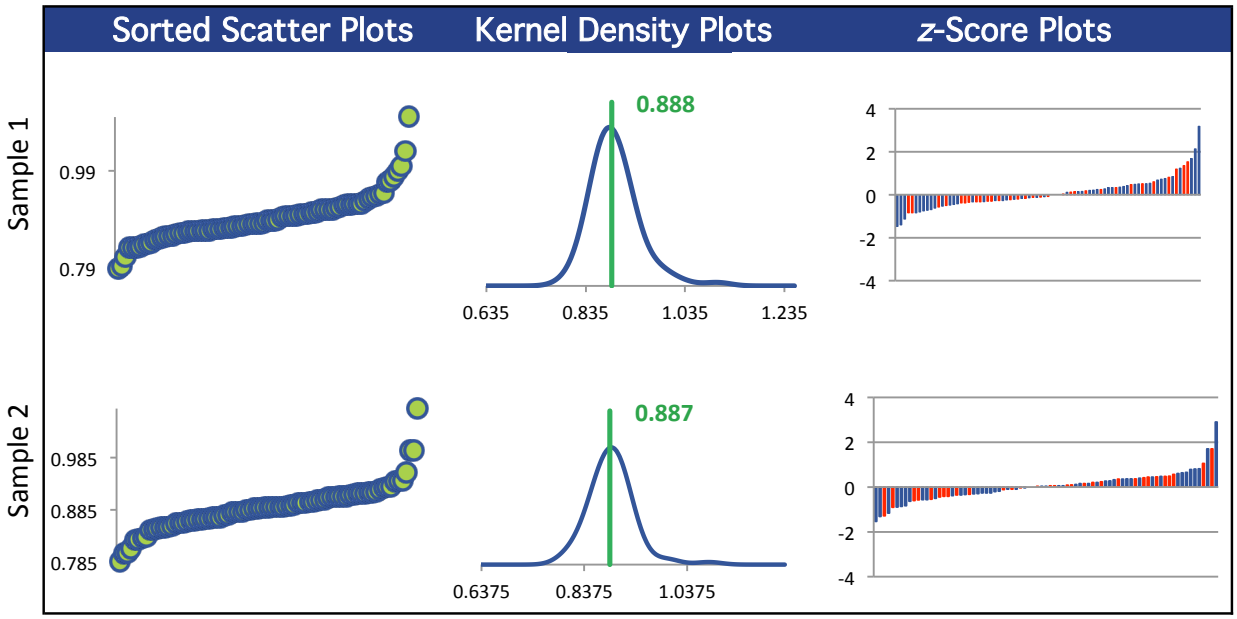
Summary Statistics

Statistic	C02C-1	C02C-2	C02C-3	C02C-4
N	81	81	81	81
Median mg/L	0.883	0.889	0.299	1.24
Robust Mean mg/L	0.888	0.887	0.298	1.24
U mg/L	0.00542	0.00489	0.00231	0.00800
Robust Standard Deviation mg/L	0.0390	0.0352	0.0166	0.0576
Regression Standard Deviation mg/L	0.0666	0.0665	0.0224	0.0931
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0666	0.0665	0.0224	0.0931
Outliers	1	1	1	1
|z|>3.0	1	0	1	1
2<|z|<3	1	1	3	0

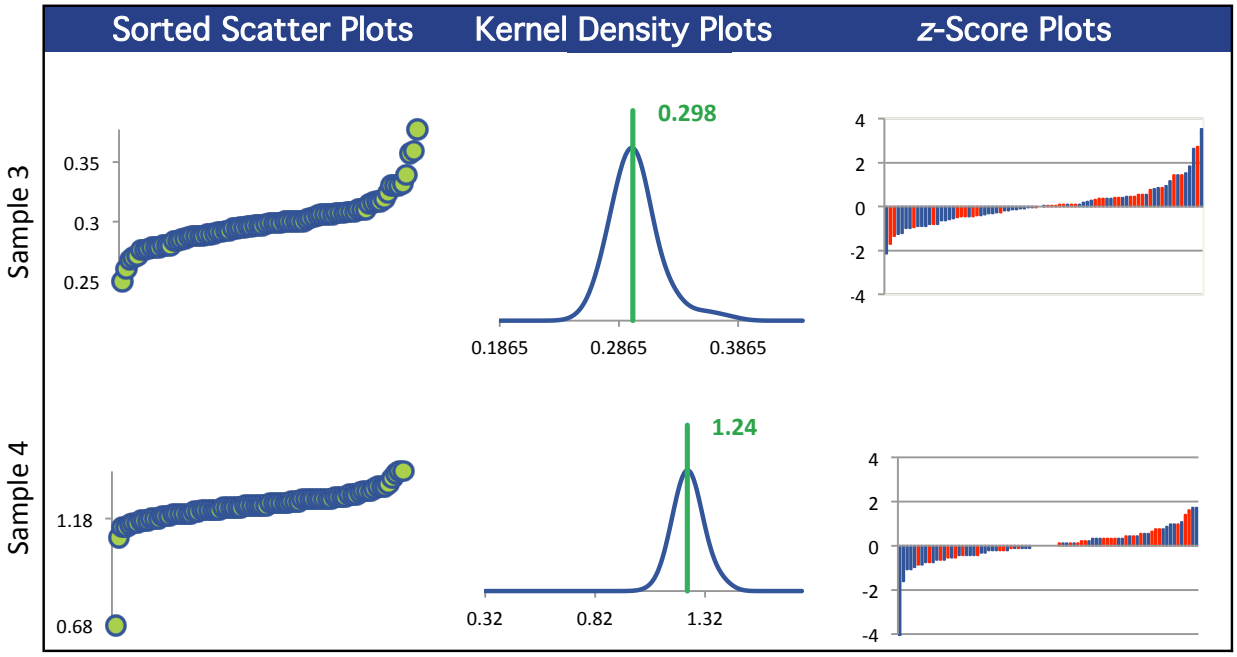
Methods Used

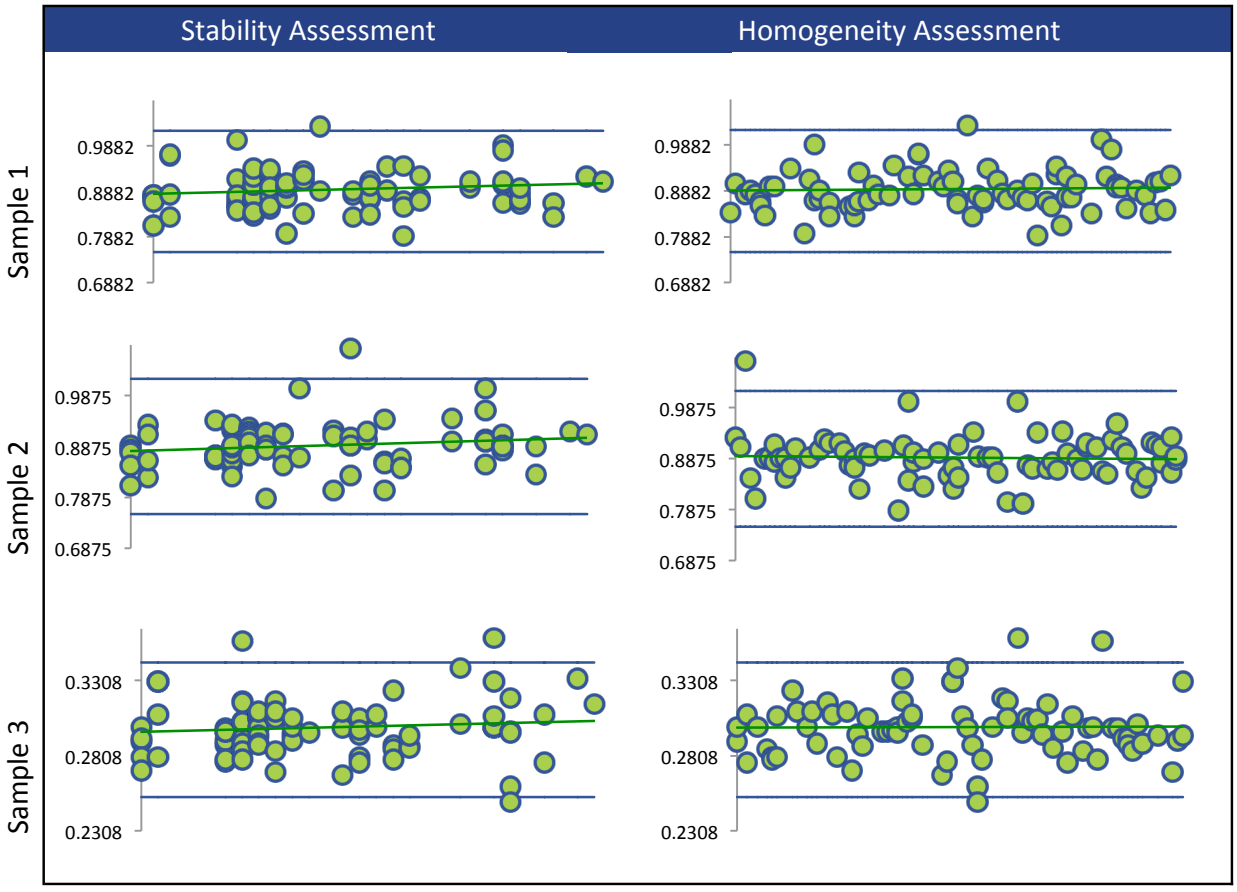
Method	C02C-1	C02C-2	C02C-3	C02C-4
ICP/MS (Blue)	47	47	47	48
ICP/OES (Red)	32	32	32	31
AA FLAME (Green)	1	1	1	1
COLORIMETRIC (Orange)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



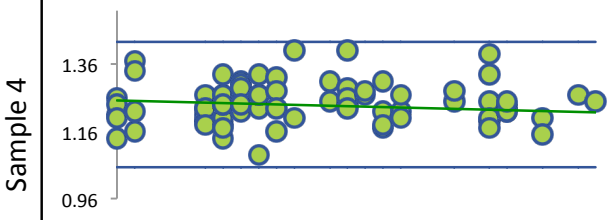
IRON


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.35
0.3
0.25
0.298
0.1865
0.2865
0.3865
4
2
0
-2
-4
Sample 4
1.18
0.68
1.24
0.32
0.82
1.32
4
2
0
-2
-4

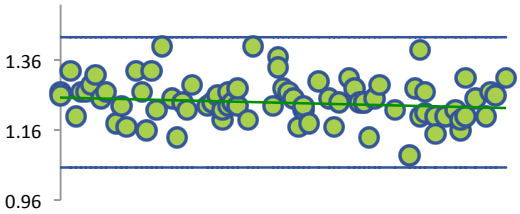

Stability Assessment
Homogeneity Assessment
Sample 1
0.9882
0.8882
0.7882
0.6882
0.9882
0.8882
0.7882
0.6882
Sample 2
0.9875
0.8875
0.7875
0.6875
0.9875
0.8875
0.7875
0.6875
Sample 3
0.3308
0.2808
0.2308
0.3308
0.2808
0.2308

IRON

Stability Assessment



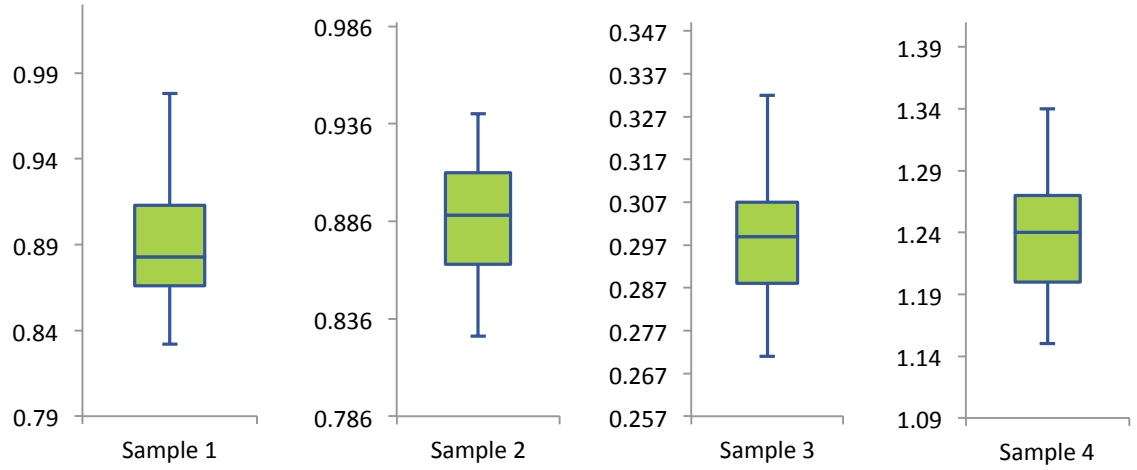
Homogeneity Assessment



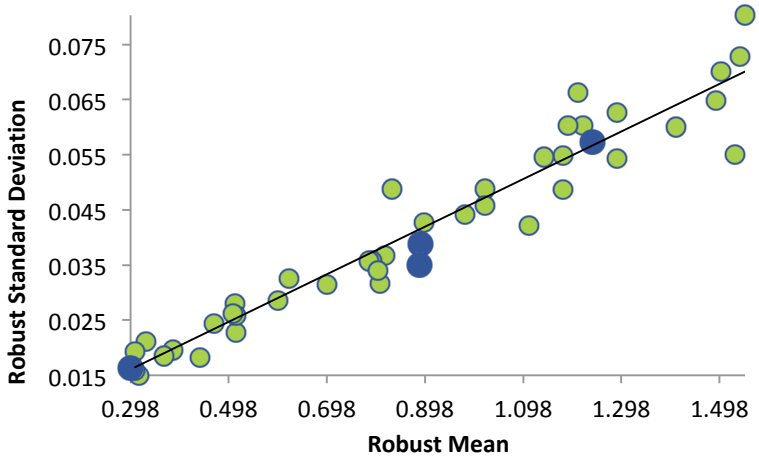
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



LEAD

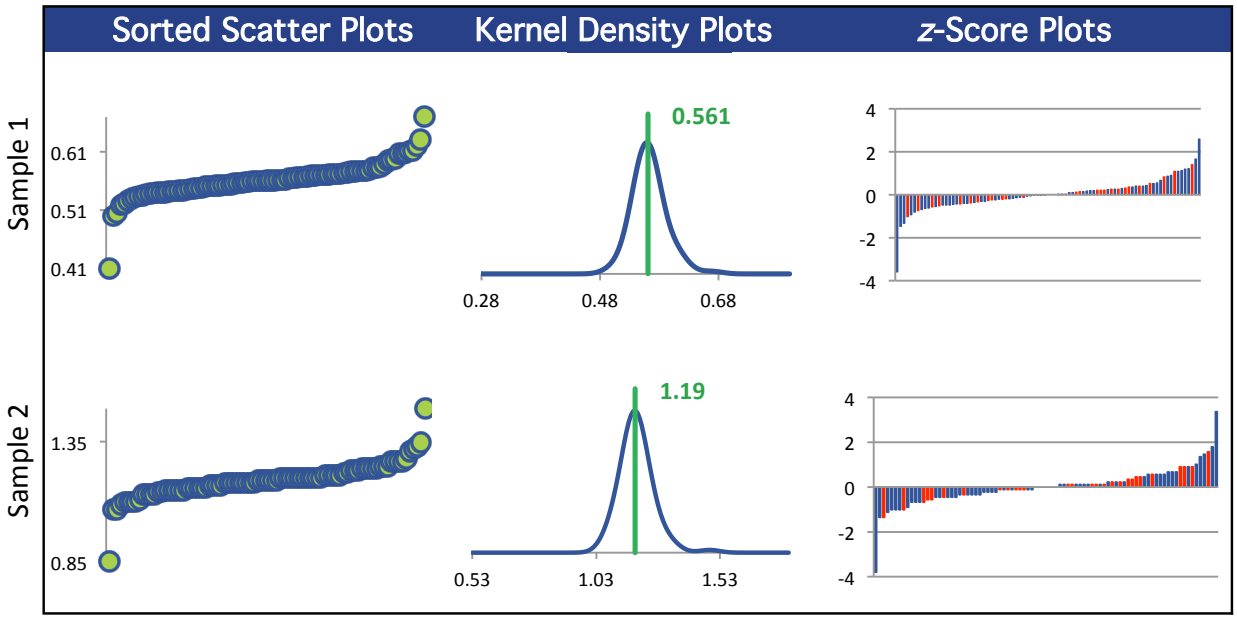
Summary Statistics

Statistic	C02C-1	C02C-2	C02C-3	C02C-4
N	87	86	87	87
Median mg/L	0.561	1.19	0.538	1.50
Robust Mean mg/L	0.561	1.19	0.536	1.50
U mg/L	0.00303	0.00732	0.00306	0.00788
Robust Standard Deviation mg/L	0.0226	0.0543	0.0228	0.0588
Regression Standard Deviation mg/L	0.0421	0.0892	0.0402	0.113
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0421	0.0892	0.0402	0.113
Outliers	0	1	0	0
|z|>3.0	1	2	1	1
2<|z|<3	1	0	0	0

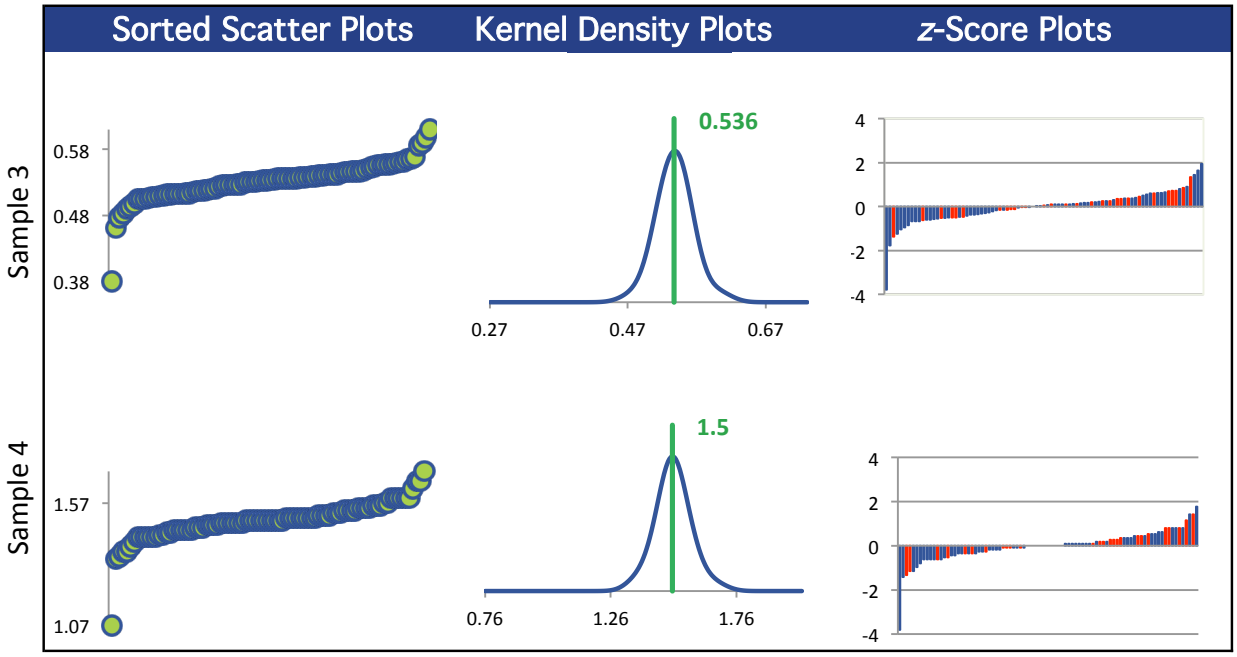
Methods Used

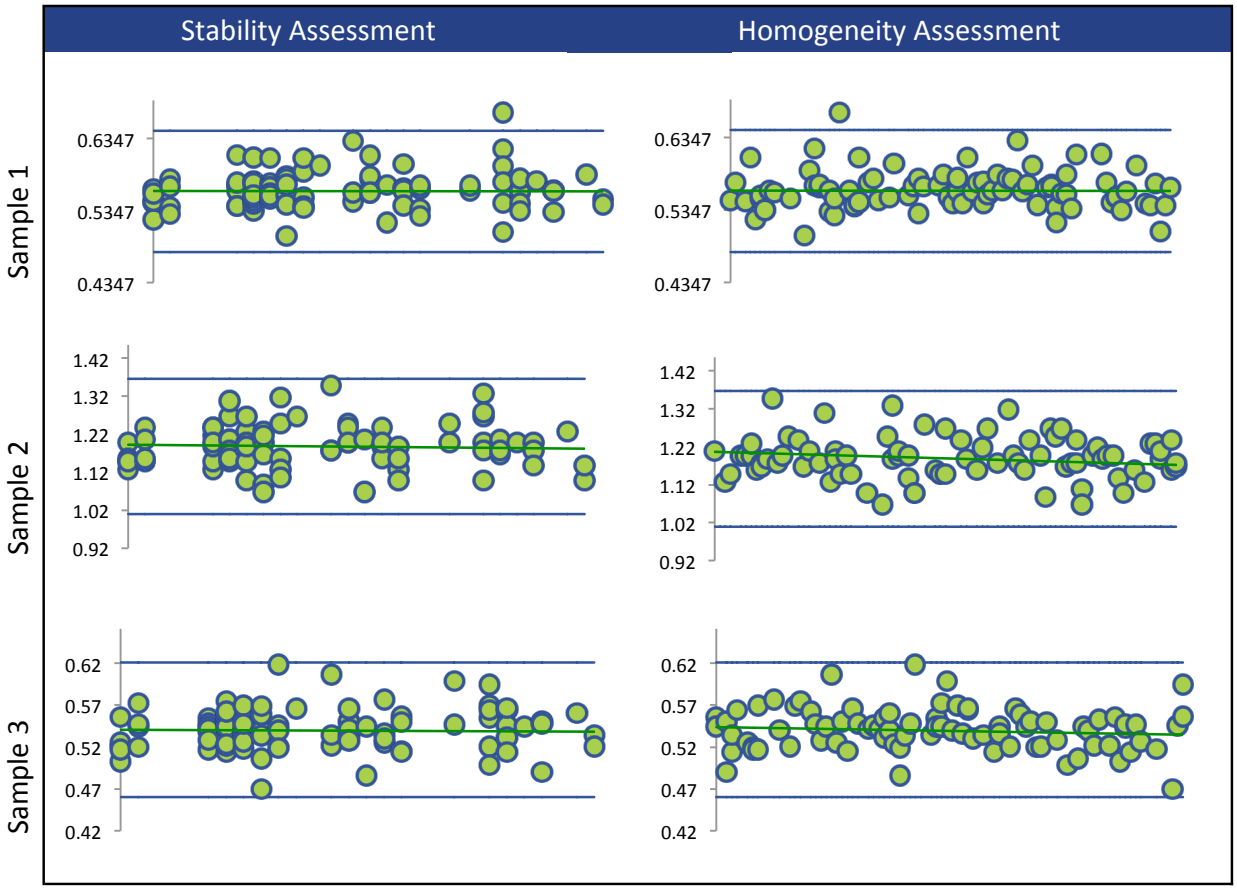
Method	C02C-1	C02C-2	C02C-3	C02C-4
ICP/MS (Blue)	56	55	56	56
ICP/OES (Red)	30	30	30	30
AA FLAME (Green)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



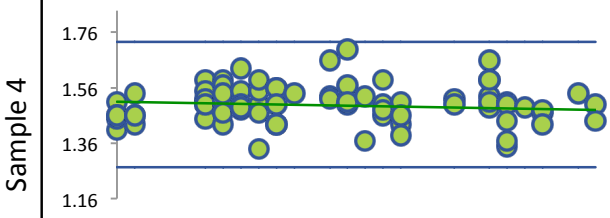
LEAD


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.58
0.48
0.38
0.536
0.27
0.47
0.67
4
2
0
-2
-4
Sample 4
1.57
1.07
1.5
0.76
1.26
1.76
4
2
0
-2
-4

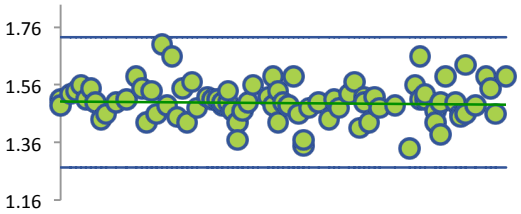

Stability Assessment
Homogeneity Assessment
Sample 1
0.6347
0.5347
0.4347
0.6347
0.5347
0.4347
Sample 2
1.42
1.32
1.22
1.12
1.02
0.92
1.42
1.32
1.22
1.12
1.02
0.92
Sample 3
0.62
0.57
0.52
0.47
0.42
0.62
0.57
0.52
0.47
0.42

LEAD

Stability Assessment



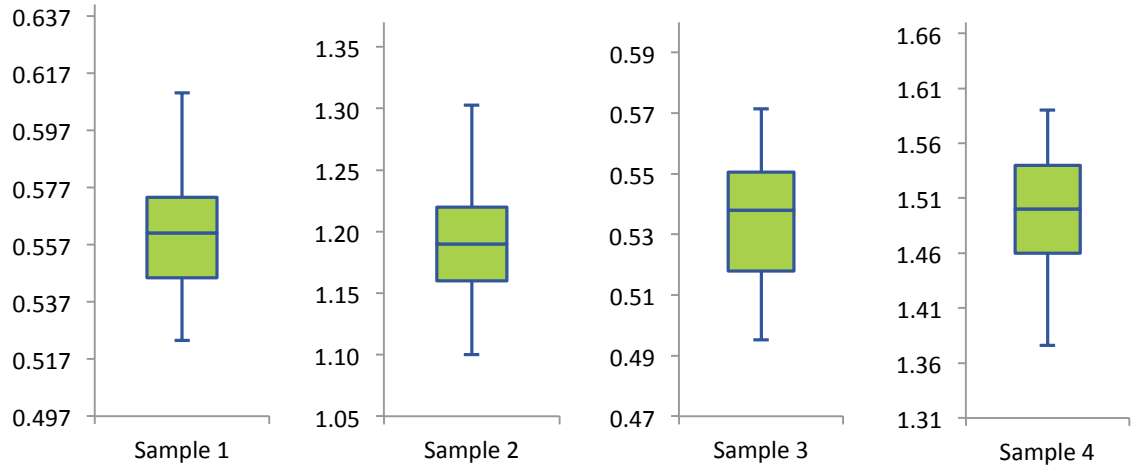
Homogeneity Assessment



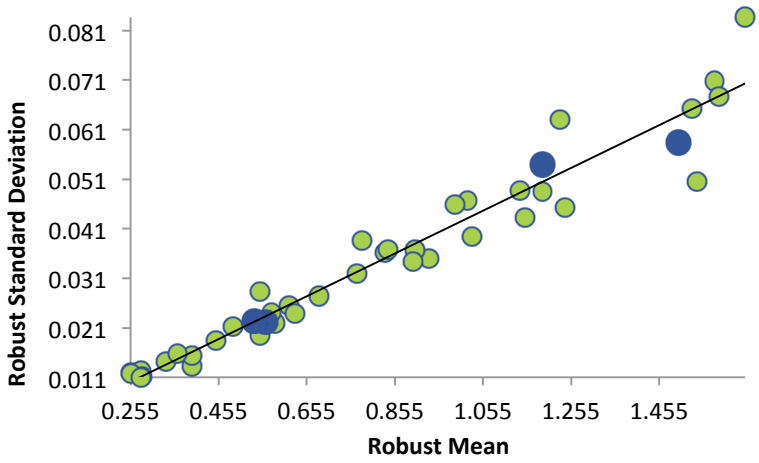
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



MANGANESE

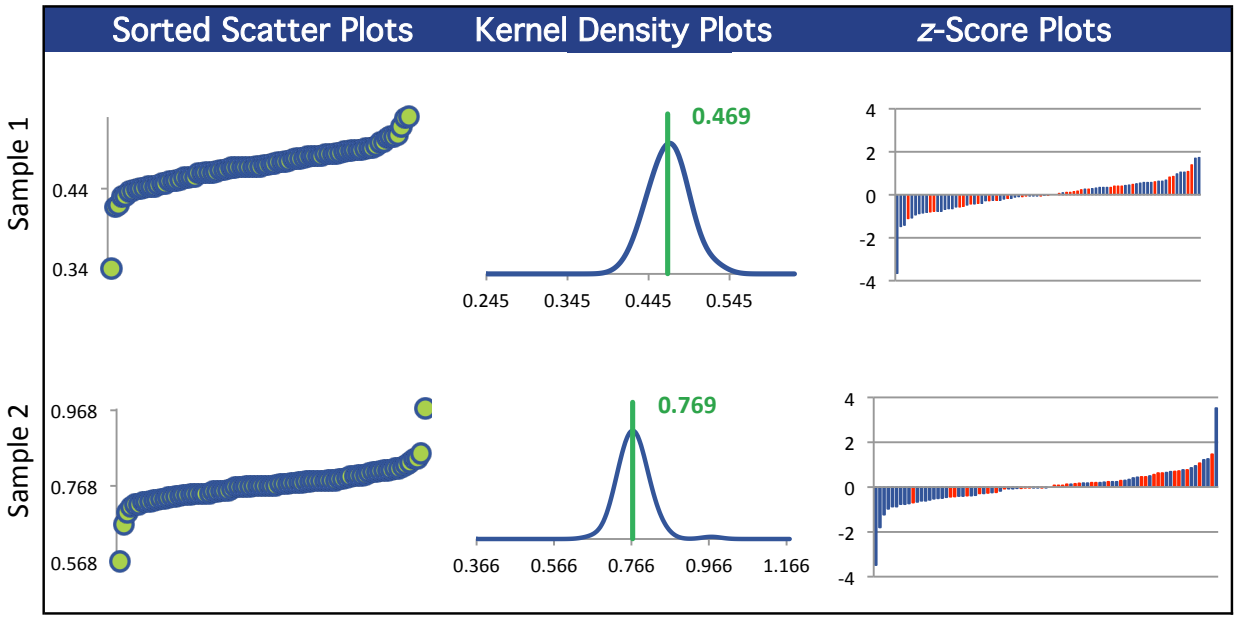
Summary Statistics

Statistic	C02C-1	C02C-2	C02C-3	C02C-4
N	83	83	83	83
Median mg/L	0.468	0.768	1.23	1.18
Robust Mean mg/L	0.469	0.769	1.23	1.18
U mg/L	0.00316	0.00464	0.00702	0.00815
Robust Standard Deviation mg/L	0.0230	0.0338	0.0512	0.0594
Regression Standard Deviation mg/L	0.0352	0.0577	0.0921	0.0884
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0352	0.0577	0.0921	0.0884
Outliers	0	0	0	0
|z|>3.0	1	2	1	1
2<|z|<3	0	0	1	1

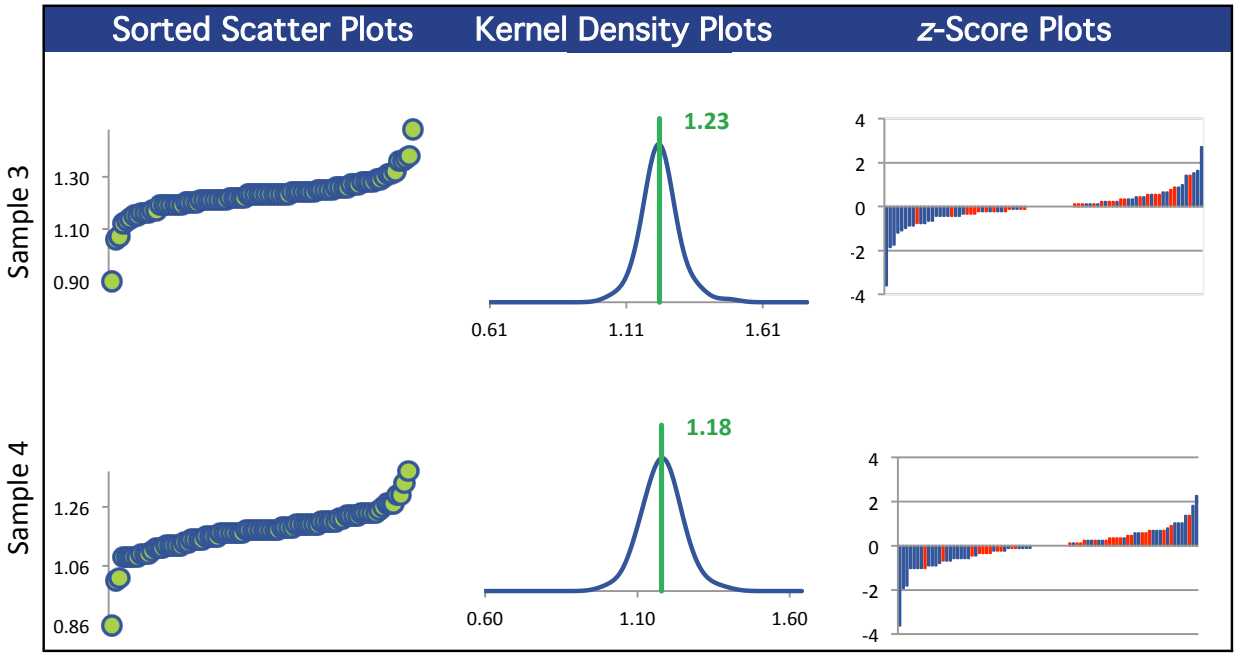
Methods Used

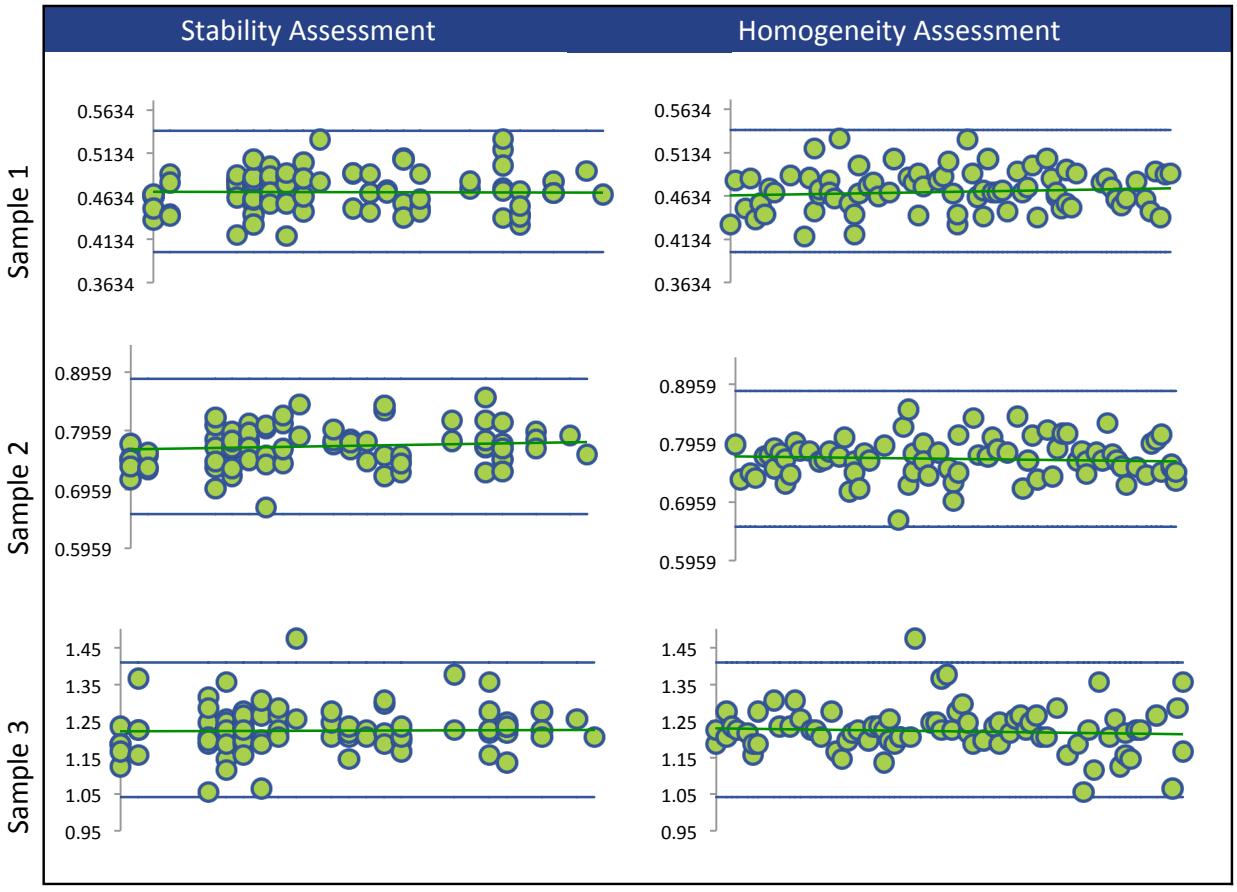
Method	C02C-1	C02C-2	C02C-3	C02C-4
ICP/MS (Blue)	50	50	50	50
ICP/OES (Red)	32	32	32	32
AA FLAME (Green)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



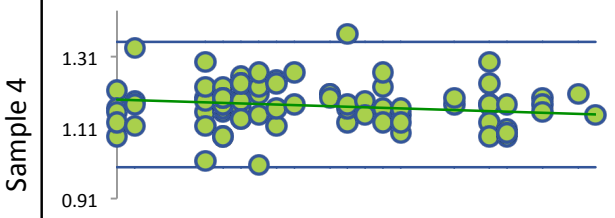
MANGANESE


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
1.30
1.10
0.90
1.23
0.61
1.11
1.61
4
2
0
-2
-4
Sample 4
1.26
1.06
0.86
1.18
0.60
1.10
1.60
4
2
0
-2
-4

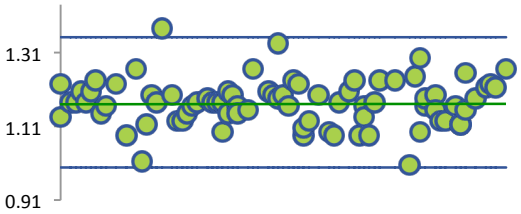

Stability Assessment
Homogeneity Assessment
Sample 1
0.5634
0.5134
0.4634
0.4134
0.3634
Sample 2
0.8959
0.7959
0.6959
0.5959
Sample 3
1.45
1.35
1.25
1.15
1.05
0.95

MANGANESE

Stability Assessment



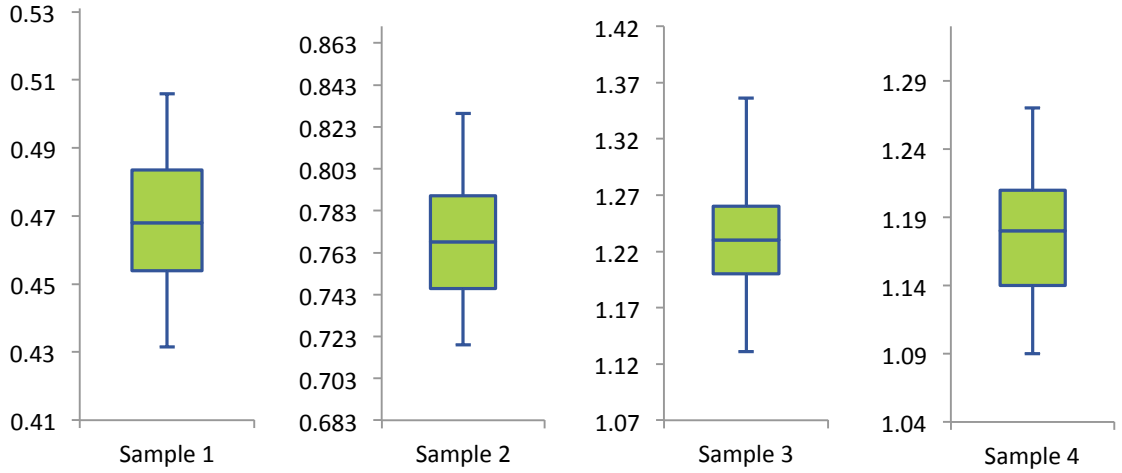
Homogeneity Assessment



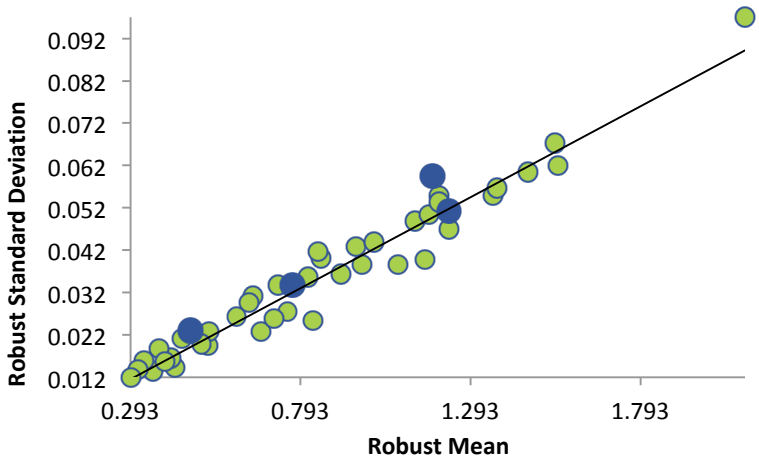
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



MOLYBDENUM

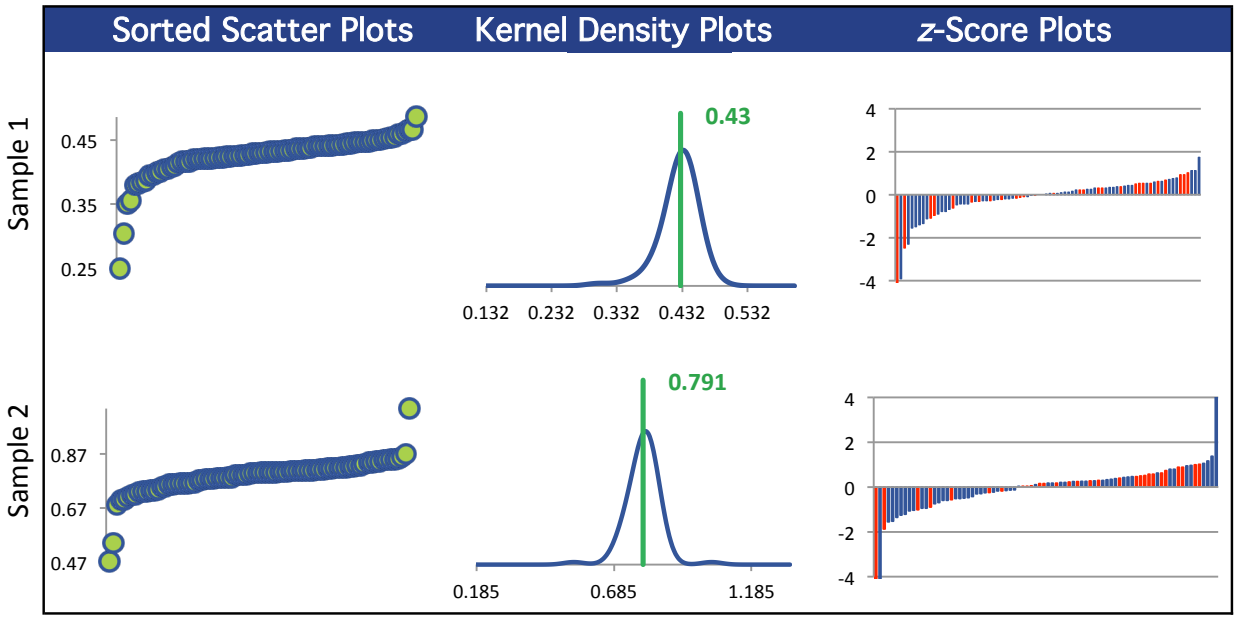
Summary Statistics

Statistic	C02C-1	C02C-2	C02C-3	C02C-4
N	82	82	82	82
Median mg/L	0.432	0.801	0.297	1.00
Robust Mean mg/L	0.430	0.791	0.295	0.992
U mg/L	0.00294	0.00617	0.00217	0.00806
Robust Standard Deviation mg/L	0.0213	0.0447	0.0157	0.0584
Regression Standard Deviation mg/L	0.0322	0.0593	0.0221	0.0744
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0322	0.0593	0.0221	0.0744
Outliers	0	0	0	0
|z|>3.0	2	3	2	2
2<|z|<3	2	0	0	1

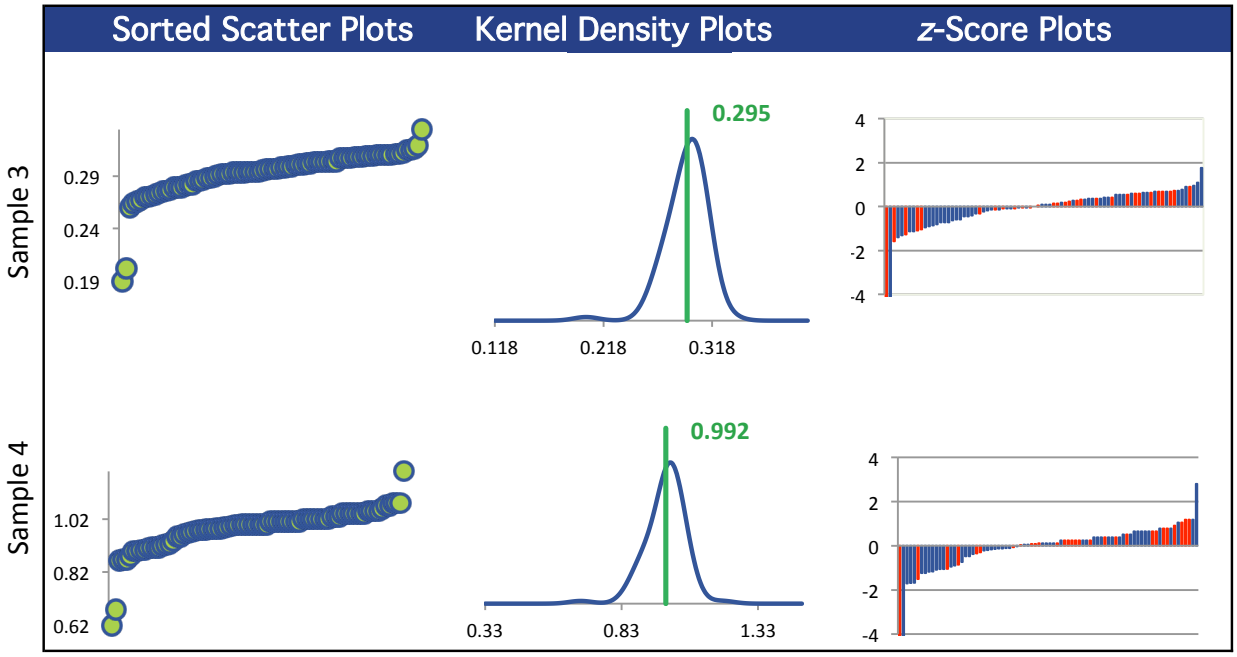
Methods Used

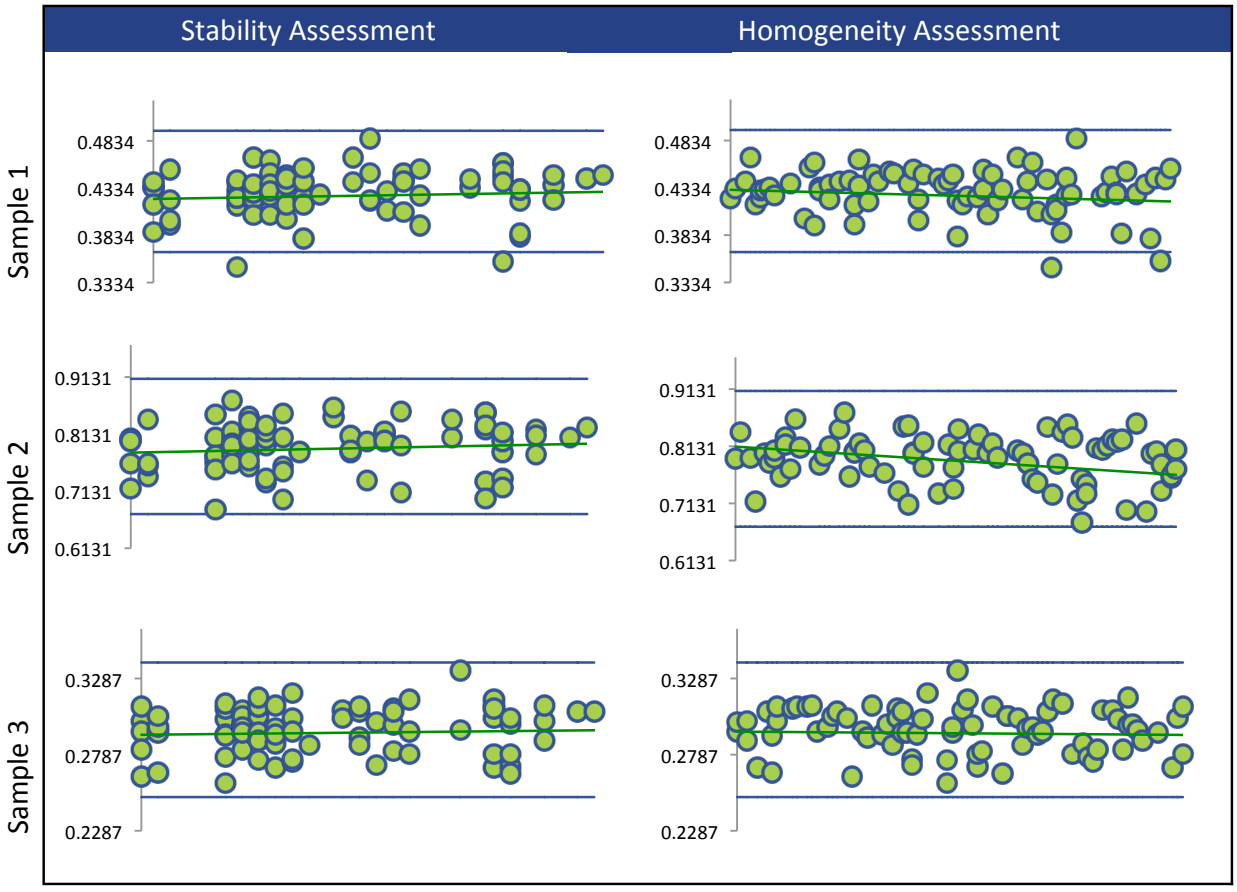
Method	C02C-1	C02C-2	C02C-3	C02C-4
ICP/OES (Blue)	28	28	28	28
ICP/MS (Red)	53	53	53	53
AA FLAME (Green)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



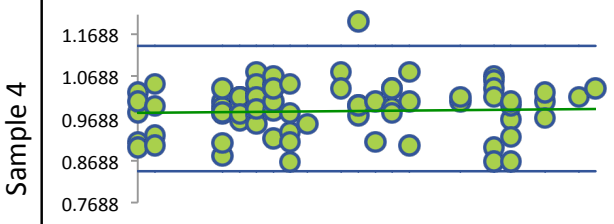
MOLYBDENUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.29
0.24
0.19
0.295
0.118
0.218
0.318
4
2
0
-2
-4
Sample 4
1.02
0.82
0.62
0.992
0.33
0.83
1.33
4
2
0
-2
-4

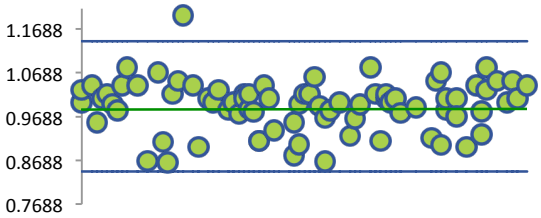

Stability Assessment
Homogeneity Assessment
Sample 1
0.4834
0.4334
0.3834
0.3334
0.4834
0.4334
0.3834
0.3334
Sample 2
0.9131
0.8131
0.7131
0.6131
0.9131
0.8131
0.7131
0.6131
Sample 3
0.3287
0.2787
0.2287
0.3287
0.2787
0.2287

MOLYBDENUM

Stability Assessment



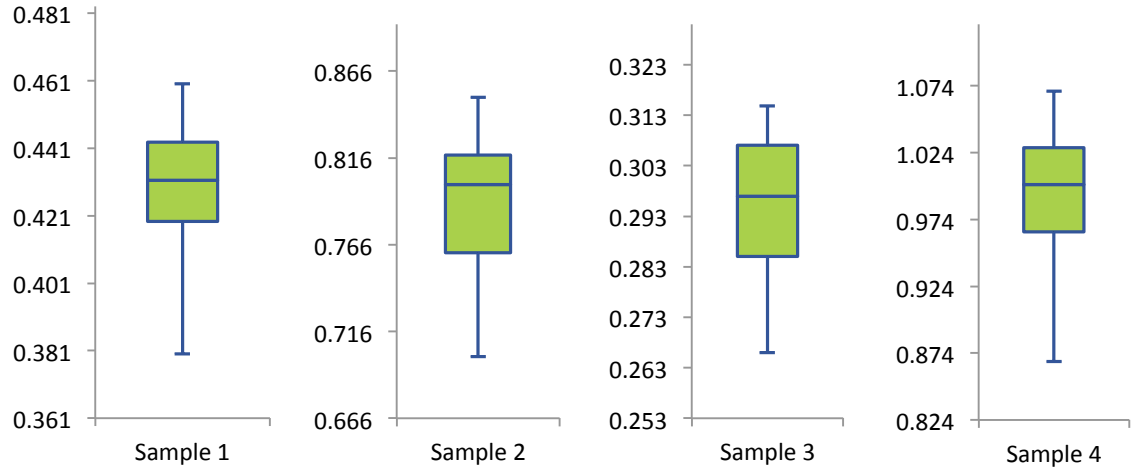
Homogeneity Assessment



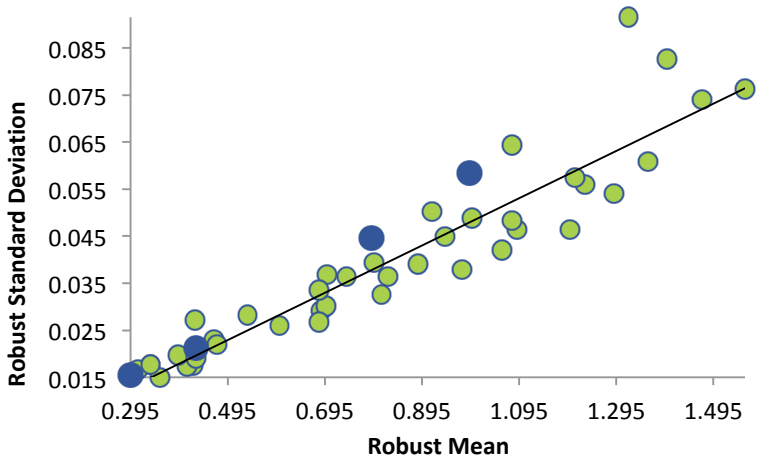
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



NICKEL

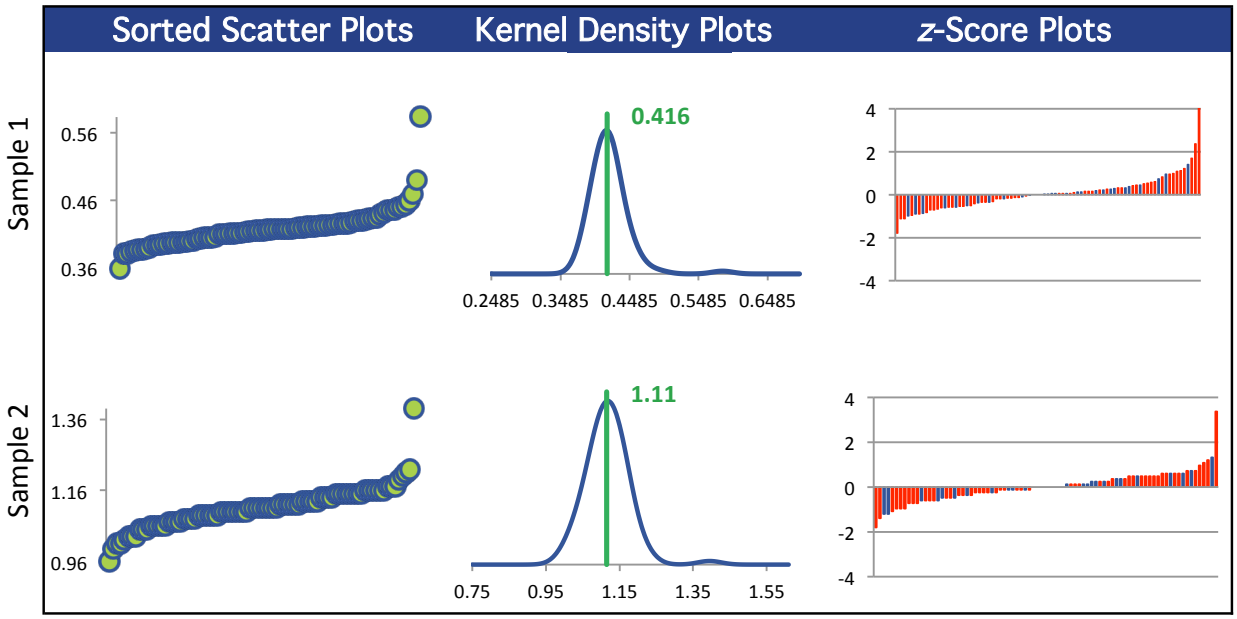
Summary Statistics

Statistic	C02C-1	C02C-2	C02C-3	C02C-4
N	83	83	83	83
Median mg/L	0.417	1.11	0.360	1.53
Robust Mean mg/L	0.416	1.11	0.359	1.53
U mg/L	0.00274	0.00667	0.00222	0.00863
Robust Standard Deviation mg/L	0.0200	0.0486	0.0162	0.0629
Regression Standard Deviation mg/L	0.0312	0.0832	0.0269	0.115
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0312	0.0832	0.0269	0.115
Outliers	0	0	0	0
|z|>3.0	1	1	1	0
2<|z|<3	1	0	0	0

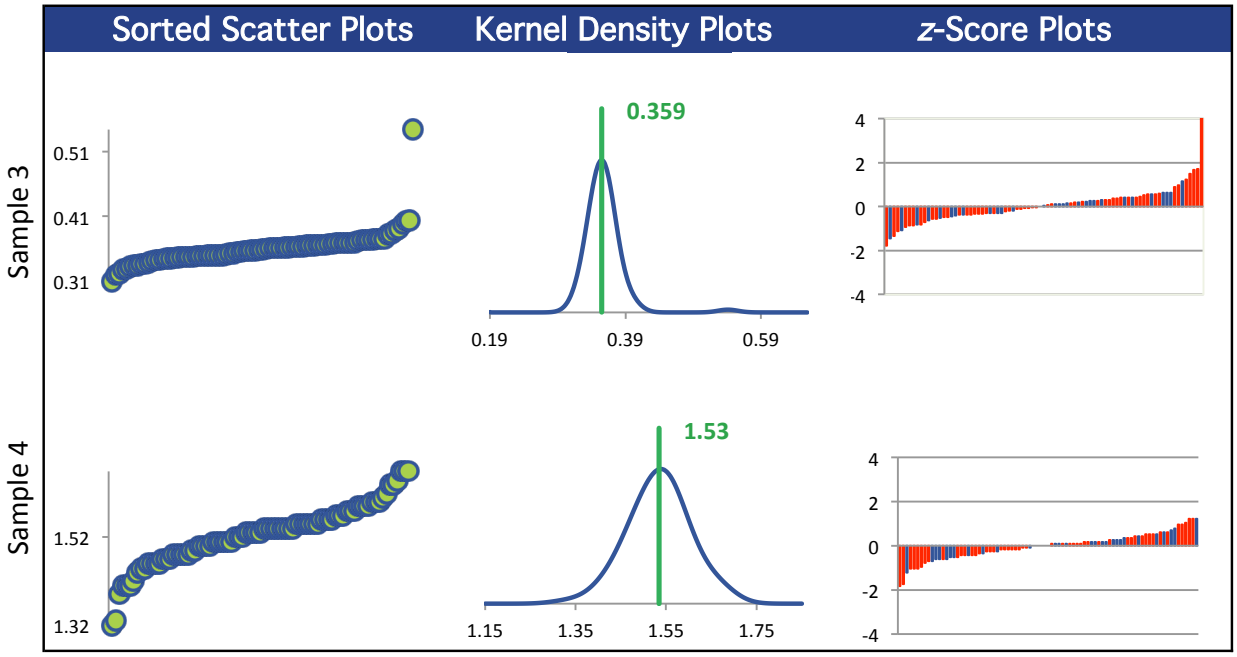
Methods Used

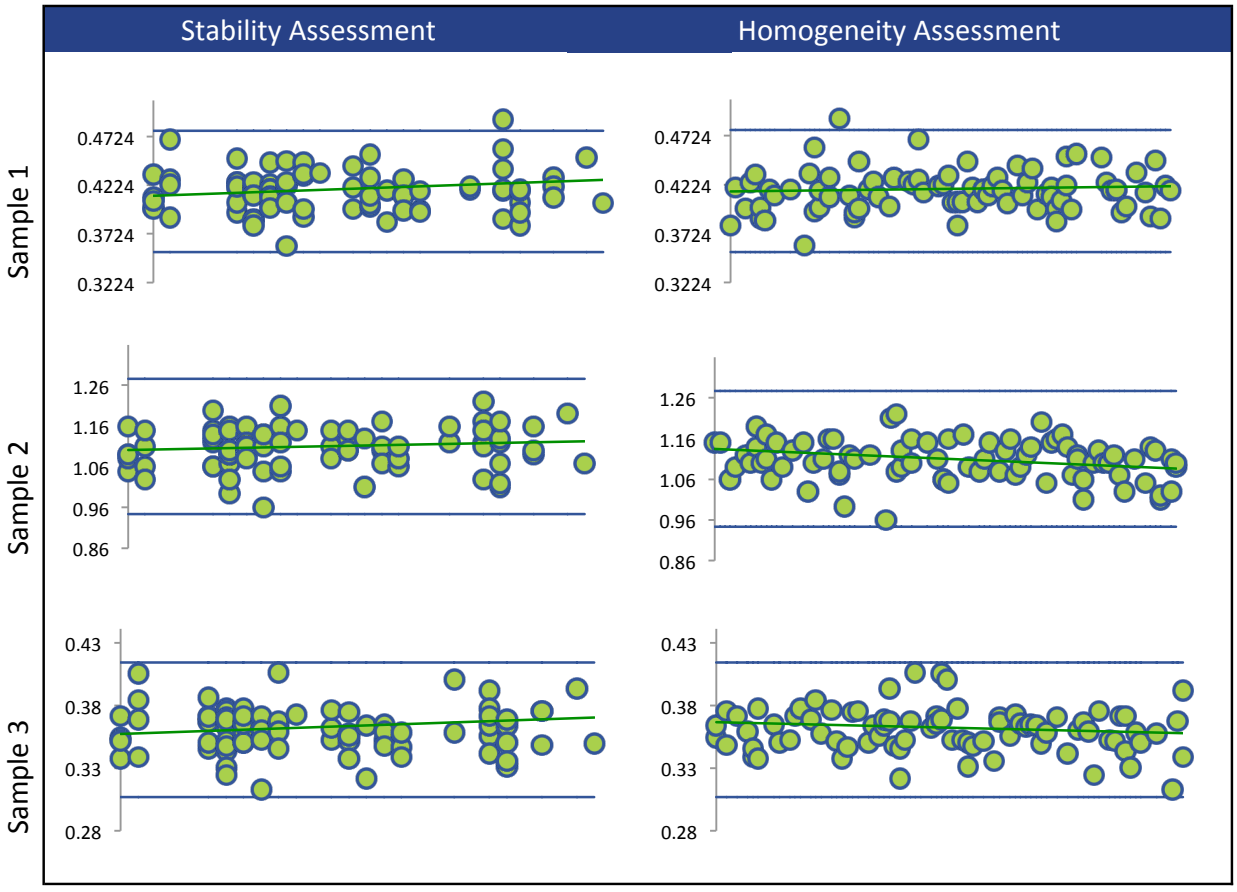
Method	C02C-1	C02C-2	C02C-3	C02C-4
ICP/MS (Blue)	54	54	54	54
ICP/OES (Red)	28	28	28	28
AA FLAME (Green)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



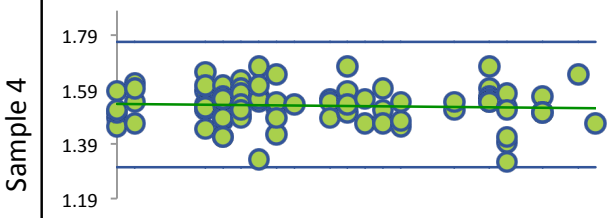
NICKEL


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.51
0.41
0.31
0.359
0.19
0.39
0.59
4
2
0
-2
-4
Sample 4
1.52
1.32
1.53
1.15
1.35
1.55
1.75
4
2
0
-2
-4

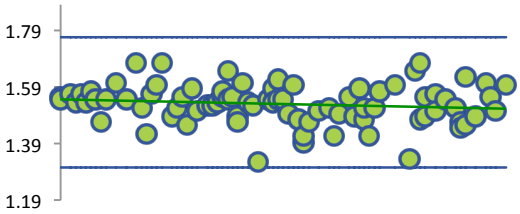

Stability Assessment
Homogeneity Assessment
Sample 1
0.4724
0.4224
0.3724
0.3224
0.4724
0.4224
0.3724
0.3224
Sample 2
1.26
1.16
1.06
0.96
0.86
1.26
1.16
1.06
0.96
0.86
Sample 3
0.43
0.38
0.33
0.28
0.43
0.38
0.33
0.28

NICKEL

Stability Assessment



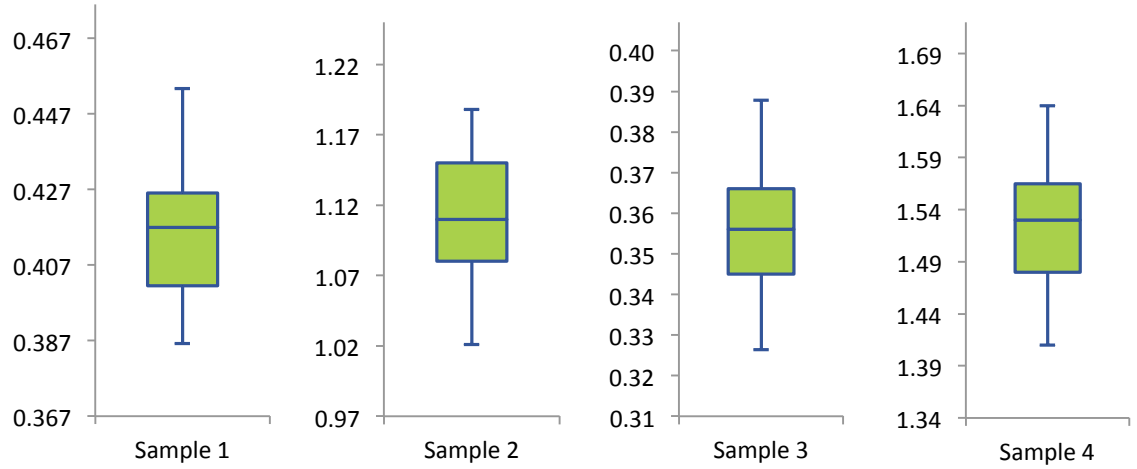
Homogeneity Assessment



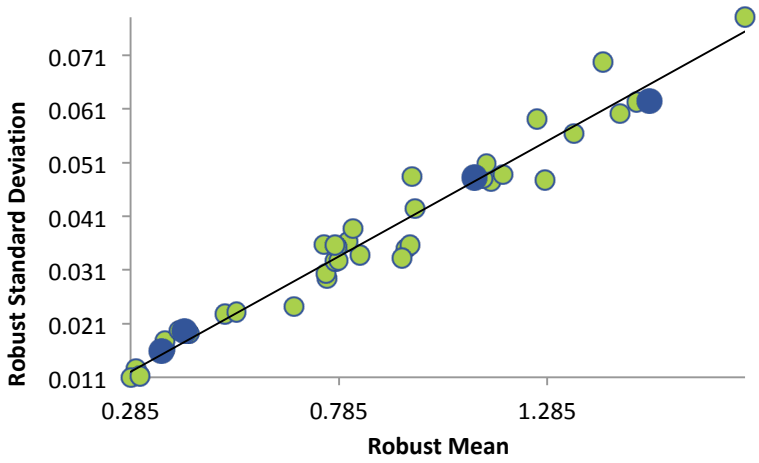
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



SELENIUM

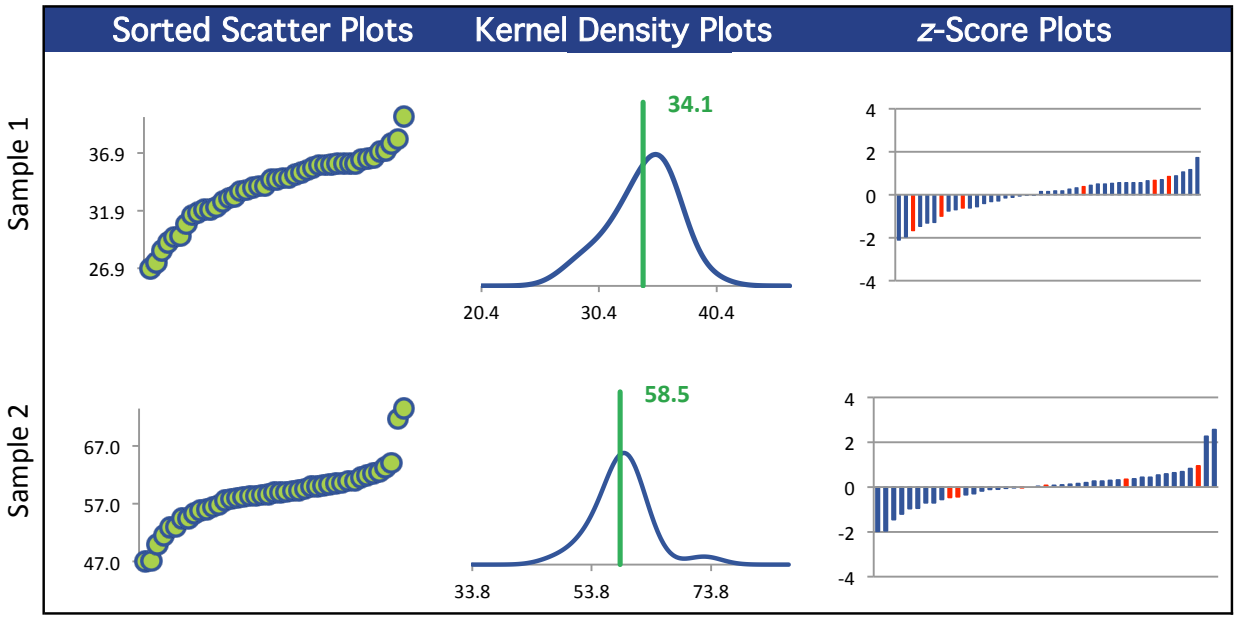
Summary Statistics

Statistic	C02C-1	C02C-2	C02C-3	C02C-4
N	43	43	42	44
Median mg/L	34.6	58.9	12.2	98.2
Robust Mean mg/L	34.1	58.5	12.2	96.1
U mg/L	0.538	0.711	0.203	1.51
Robust Standard Deviation mg/L	2.82	3.73	1.05	7.99
Regression Standard Deviation mg/L	3.41	5.85	1.22	9.61
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	3.41	5.85	1.22	9.61
Outliers	3	3	2	3
|z|>3.0	0	0	3	0
2<|z|<3	1	2	2	2

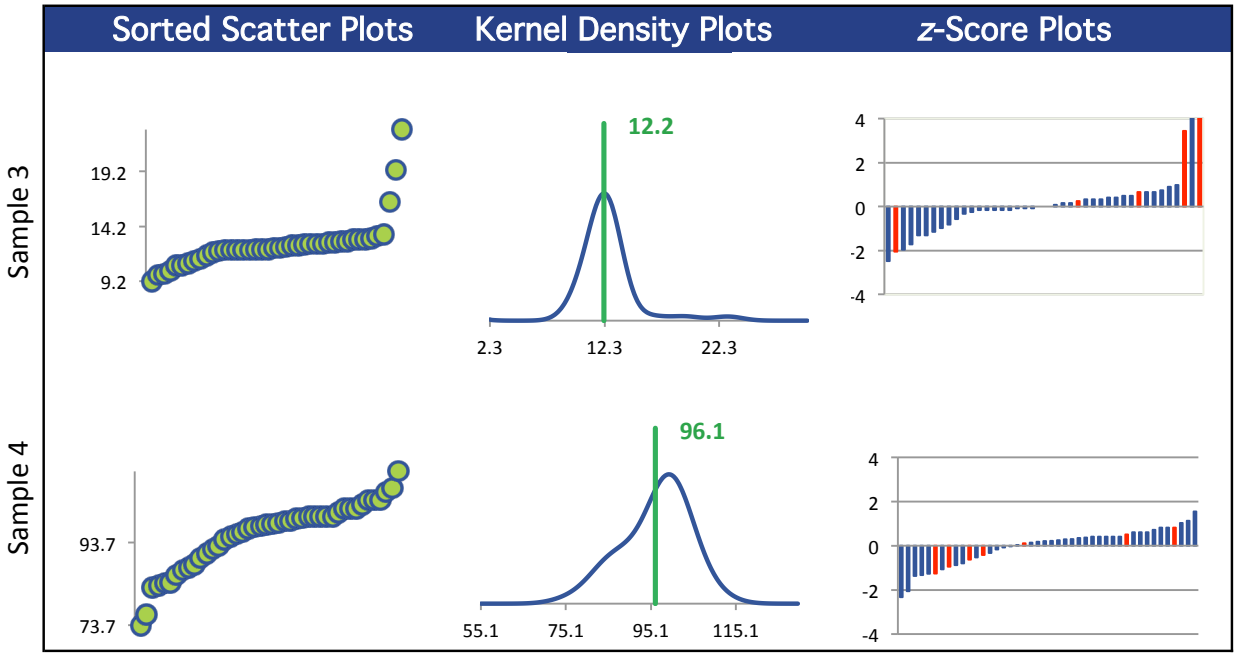
Methods Used

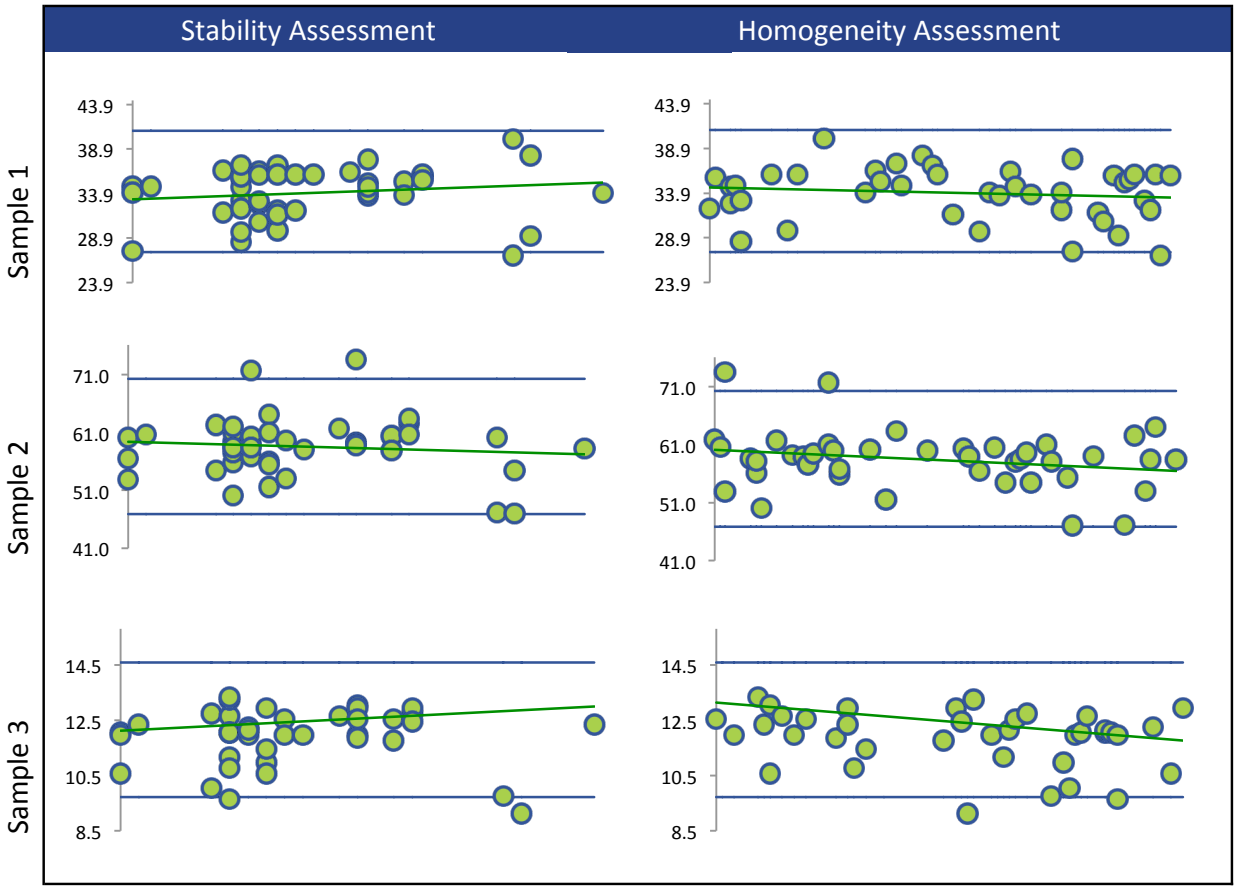
Method	C02C-1	C02C-2	C02C-3	C02C-4
ICP/MS (Blue)	37	37	36	37
ICP/OES (Red)	4	4	4	5
IIC FLUORESCENCE SPECTROPHOTOMETRY (Green)	1	1	1	1
ATOMIC FLUORESCENCE SPECTROMETER (Orange)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



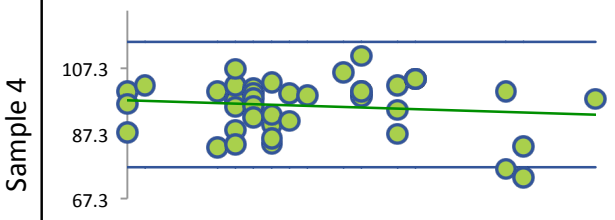
SELENIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
19.2
14.2
9.2
12.2
2.3
12.3
22.3
4
2
0
-2
-4
Sample 4
93.7
73.7
96.1
55.1
75.1
95.1
115.1
4
2
0
-2
-4

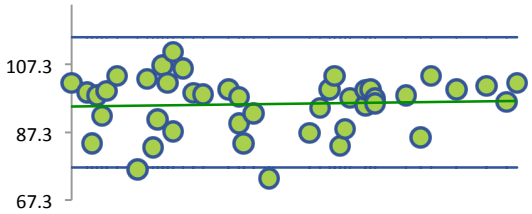

Stability Assessment
Homogeneity Assessment
Sample 1
43.9
38.9
33.9
28.9
23.9
43.9
38.9
33.9
28.9
23.9
Sample 2
71.0
61.0
51.0
41.0
71.0
61.0
51.0
41.0
Sample 3
14.5
12.5
10.5
8.5
14.5
12.5
10.5
8.5

SELENIUM

Stability Assessment



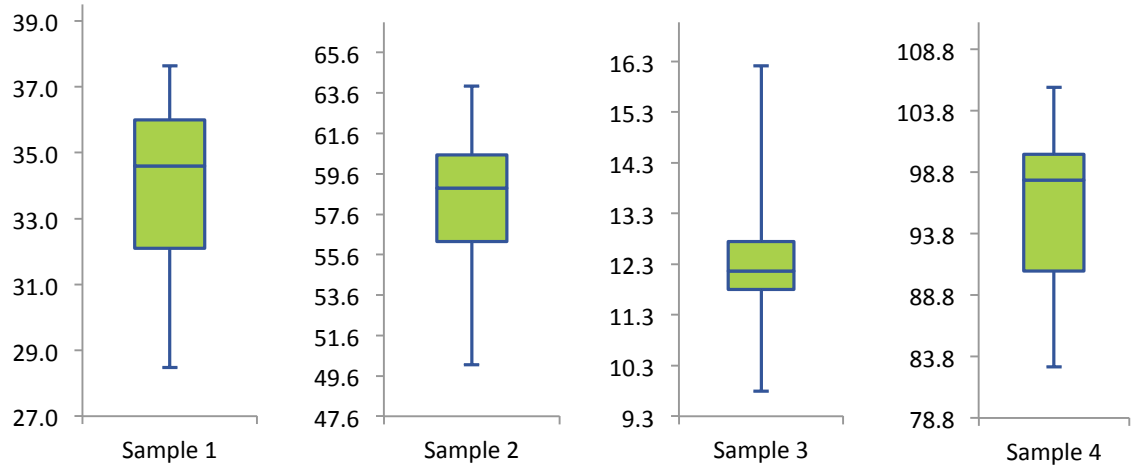
Homogeneity Assessment



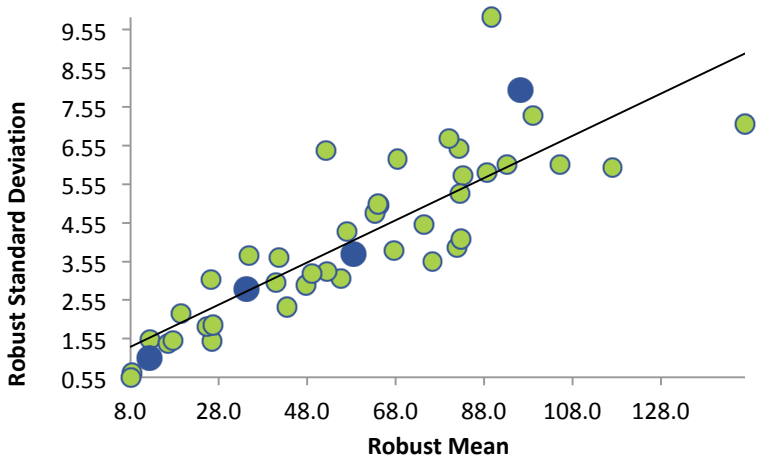
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



SILVER

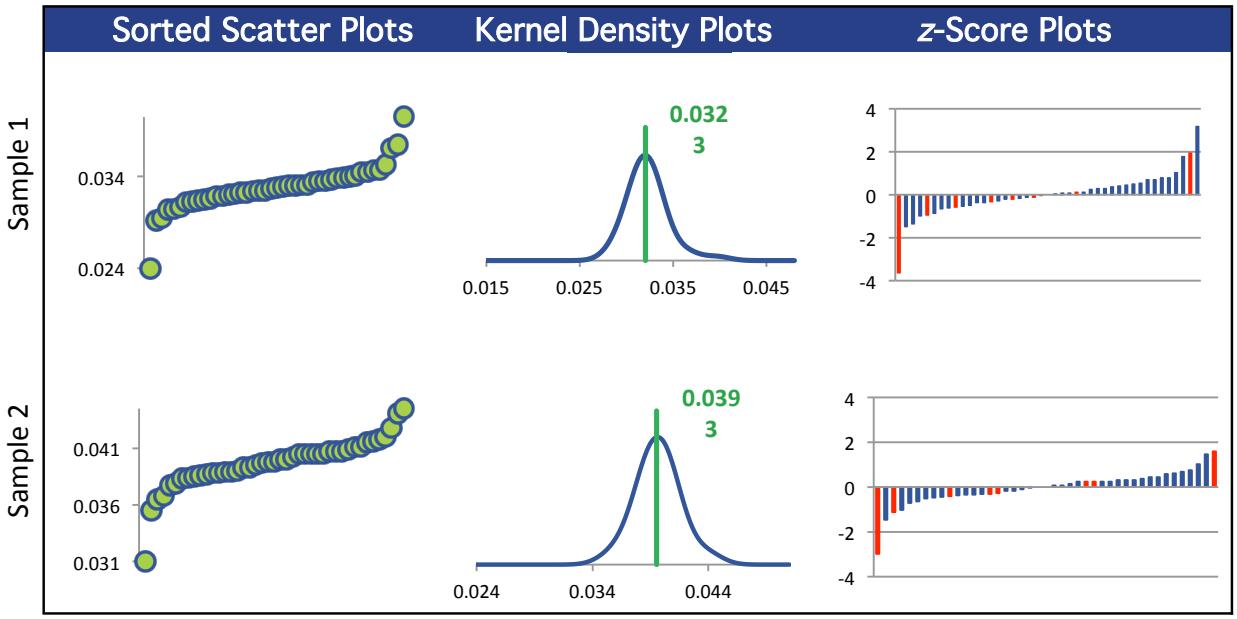
Summary Statistics

Statistic	C02C-1	C02C-2	C02C-3	C02C-4
N	43	43	43	43
Median mg/L	0.0323	0.0393	0.0298	0.0943
Robust Mean mg/L	0.0323	0.0393	0.0297	0.0947
U mg/L	0.000326	0.000315	0.000250	0.000705
Robust Standard Deviation mg/L	0.00171	0.00165	0.00131	0.00370
Regression Standard Deviation mg/L	0.00242	0.00295	0.00222	0.00710
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.00242	0.00295	0.00222	0.00710
Outliers	3	3	3	2
|z|>3.0	2	0	1	0
2<|z|<3	0	1	0	0

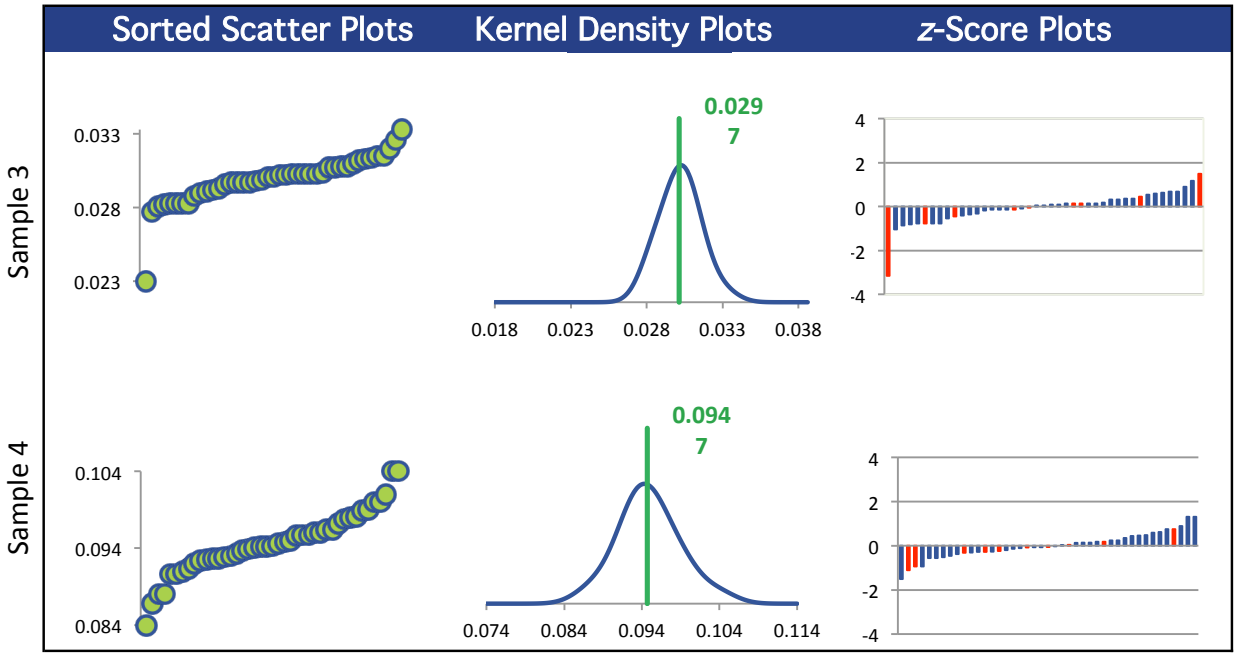
Methods Used

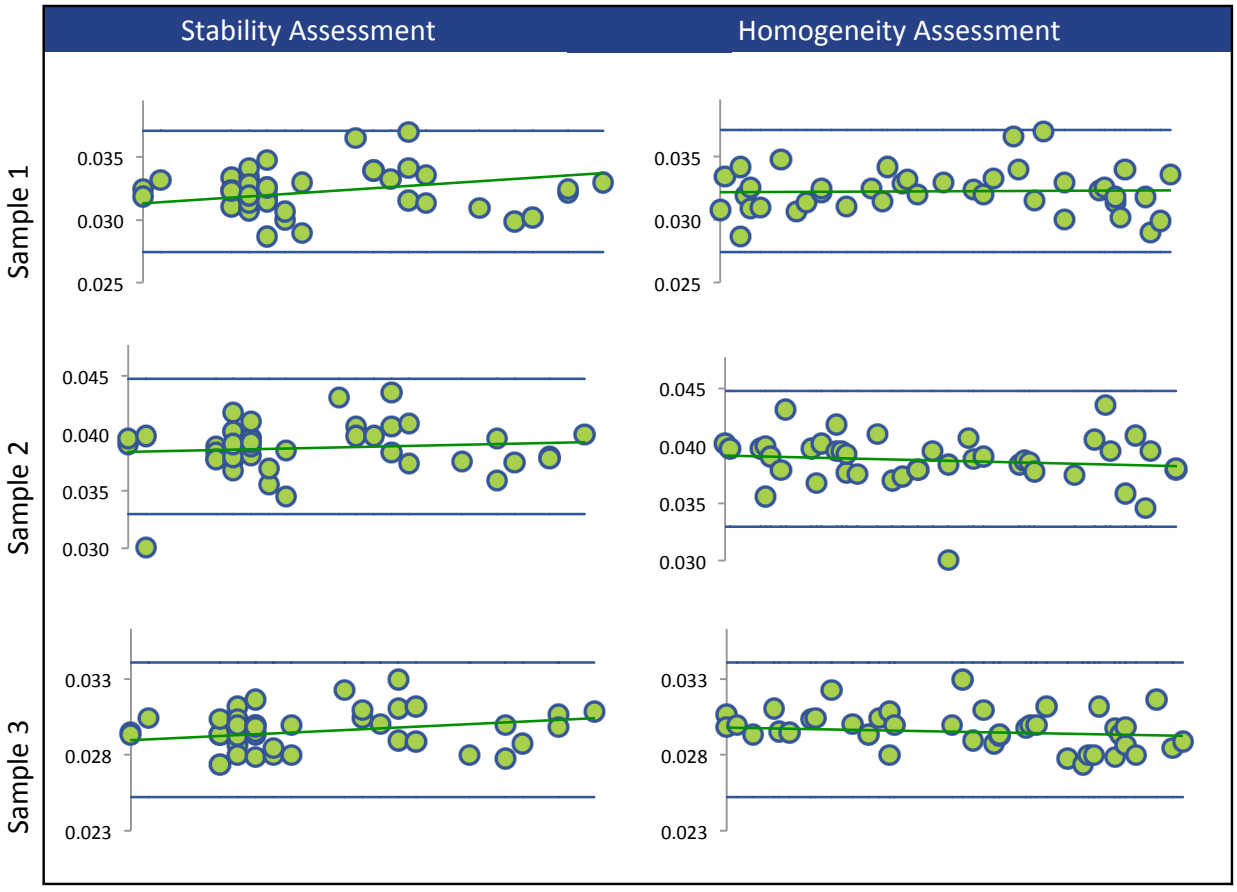
Method	C02C-1	C02C-2	C02C-3	C02C-4
ICP/OES (Blue)	9	9	9	10
ICP/MS (Red)	33	33	33	32
AA FLAME (Green)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



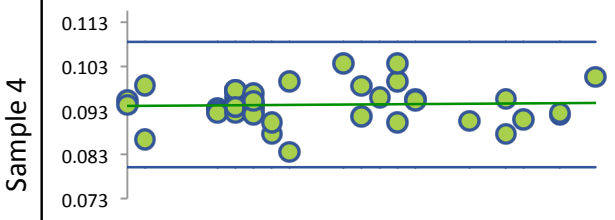
SILVER


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.033
0.028
0.023
0.029
7
0.018
0.023
0.028
0.033
0.038
4
2
0
-2
-4
Sample 4
0.104
0.094
0.084
0.094
7
0.074
0.084
0.094
0.104
0.114
4
2
0
-2
-4

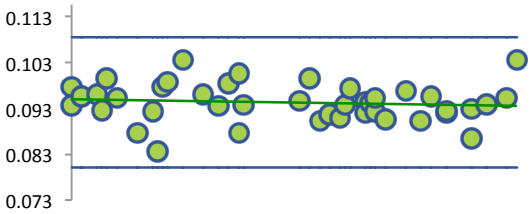

Stability Assessment
Homogeneity Assessment
Sample 1
0.035
0.030
0.025
Sample 2
0.045
0.040
0.035
0.030
Sample 3
0.033
0.028
0.023

SILVER

Stability Assessment



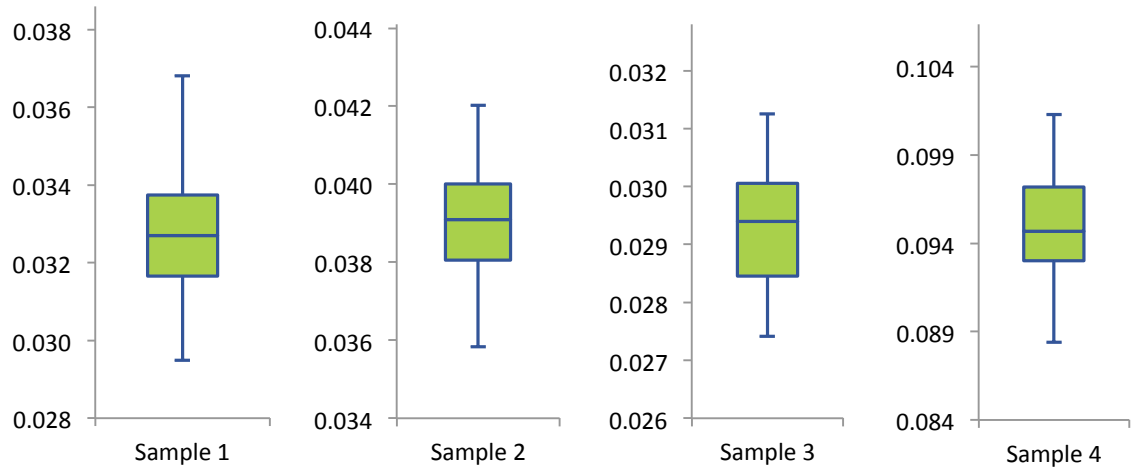
Homogeneity Assessment



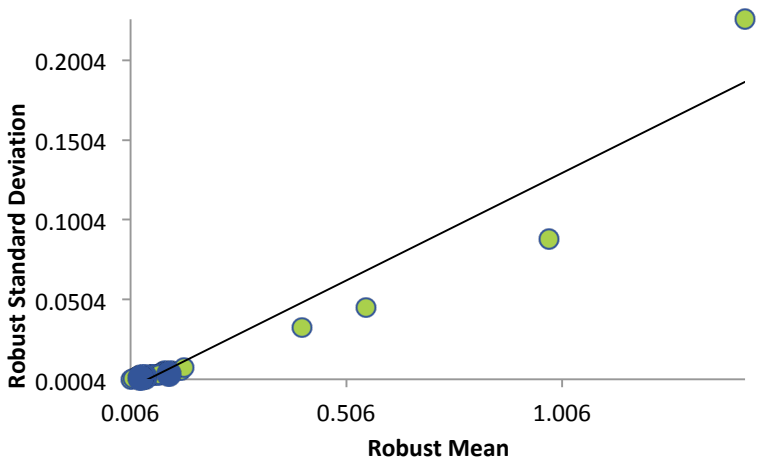
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



STRONTIUM

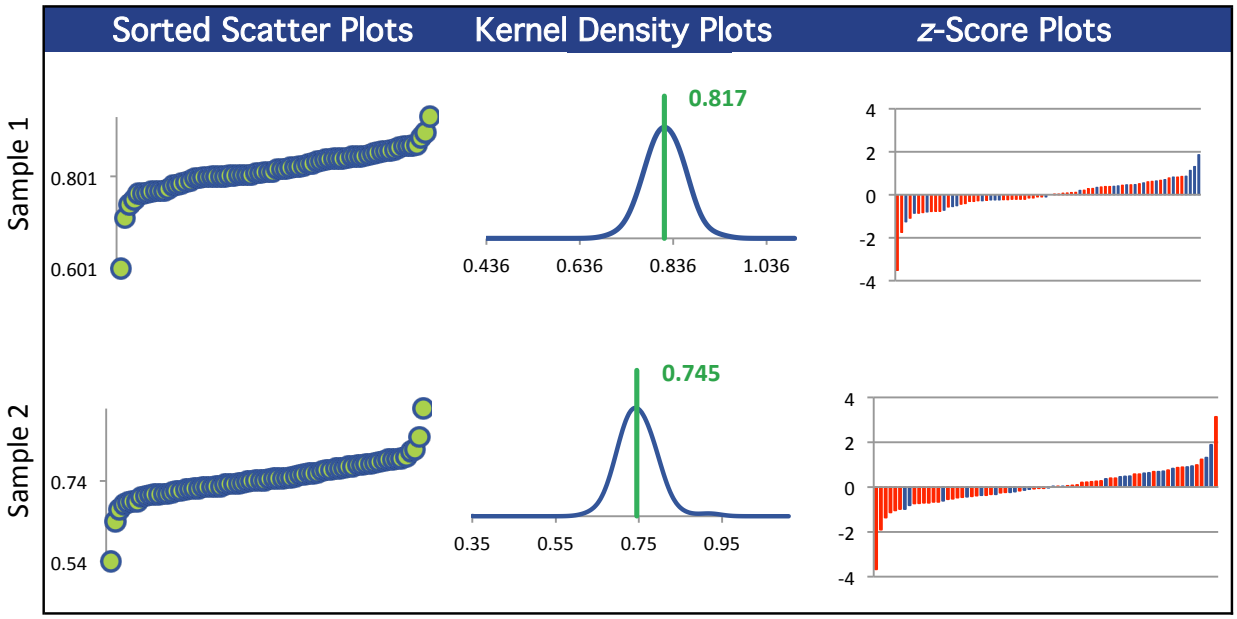
Summary Statistics

Statistic	C02C-1	C02C-2	C02C-3	C02C-4
N	72	72	72	72
Median mg/L	0.814	0.743	0.430	1.47
Robust Mean mg/L	0.817	0.745	0.431	1.48
U mg/L	0.00563	0.00585	0.00311	0.0119
Robust Standard Deviation mg/L	0.0382	0.0397	0.0211	0.0811
Regression Standard Deviation mg/L	0.0613	0.0559	0.0323	0.111
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0613	0.0559	0.0323	0.111
Outliers	0	0	0	0
|z|>3.0	1	2	1	1
2<|z|<3	0	0	0	0

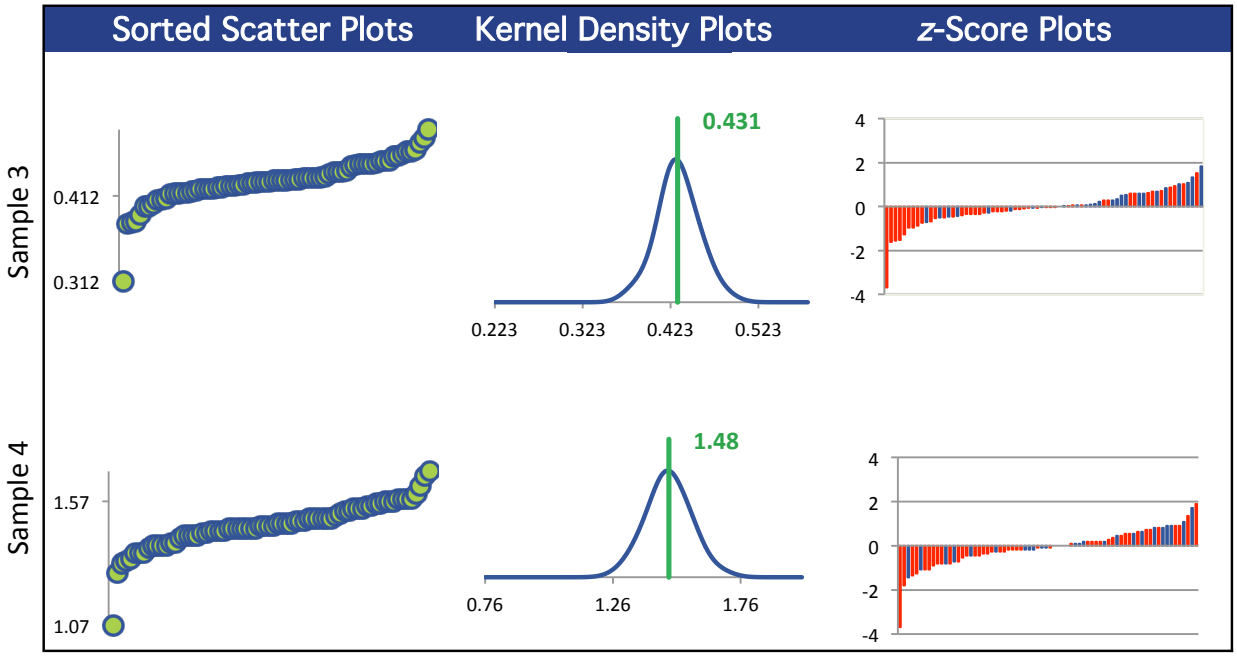
Methods Used

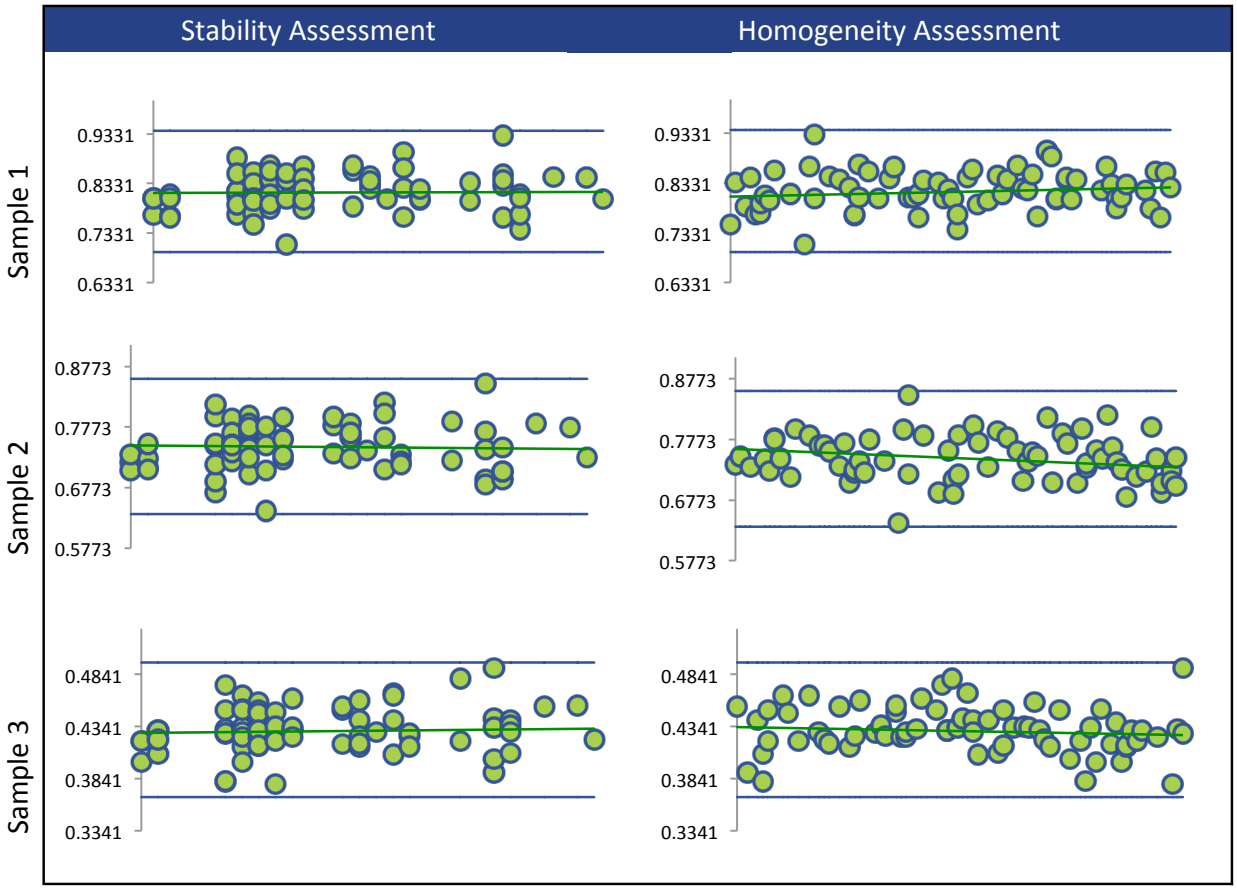
Method	C02C-1	C02C-2	C02C-3	C02C-4
ICP/MS (Blue)	46	46	46	46
ICP/OES (Red)	26	26	26	26

All summary stats and the plots below are based on the data excluding any flagged outliers



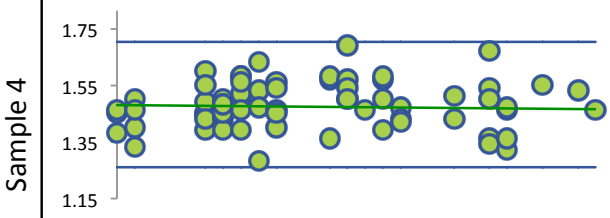
STRONTIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.412
0.312
0.431
0.223
0.323
0.423
0.523
4
2
0
-2
-4
Sample 4
1.57
1.07
1.48
0.76
1.26
1.76
4
2
0
-2
-4

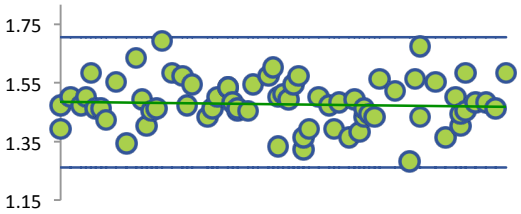

Stability Assessment
Homogeneity Assessment
Sample 1
0.9331
0.8331
0.7331
0.6331
0.9331
0.8331
0.7331
0.6331
Sample 2
0.8773
0.7773
0.6773
0.5773
0.8773
0.7773
0.6773
0.5773
Sample 3
0.4841
0.4341
0.3841
0.3341
0.4841
0.4341
0.3841
0.3341

STRONTIUM

Stability Assessment



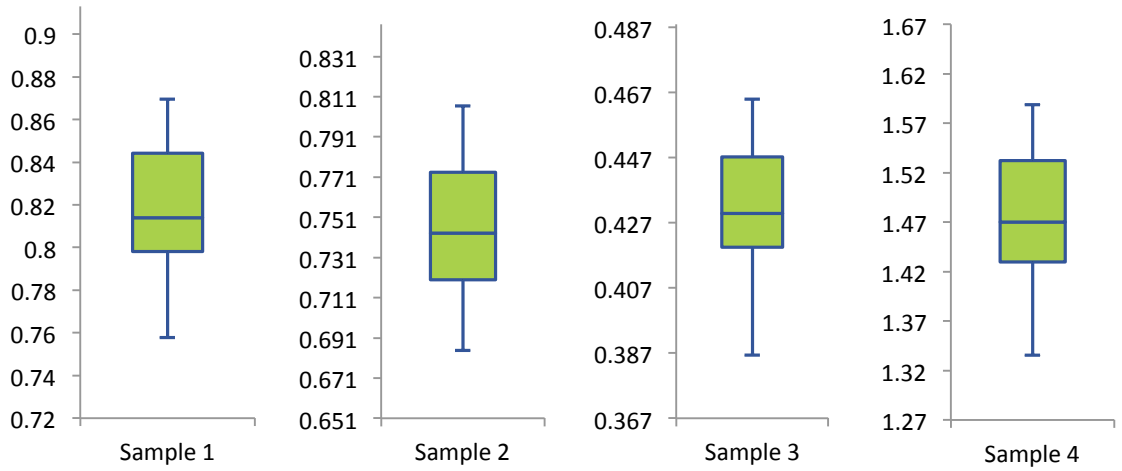
Homogeneity Assessment



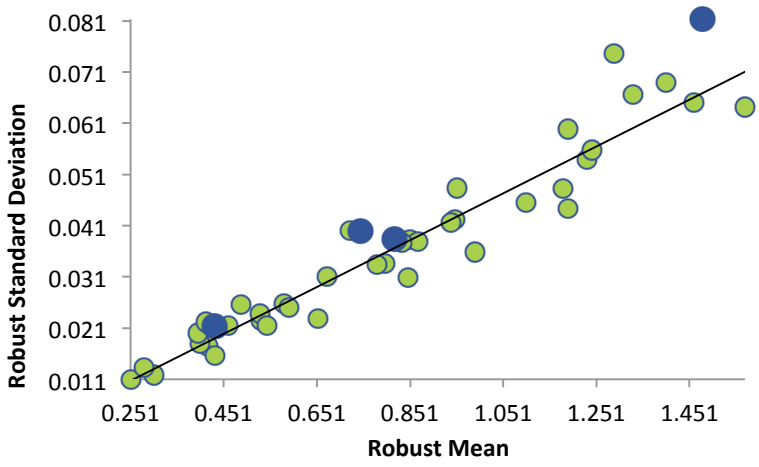
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



THALLIUM

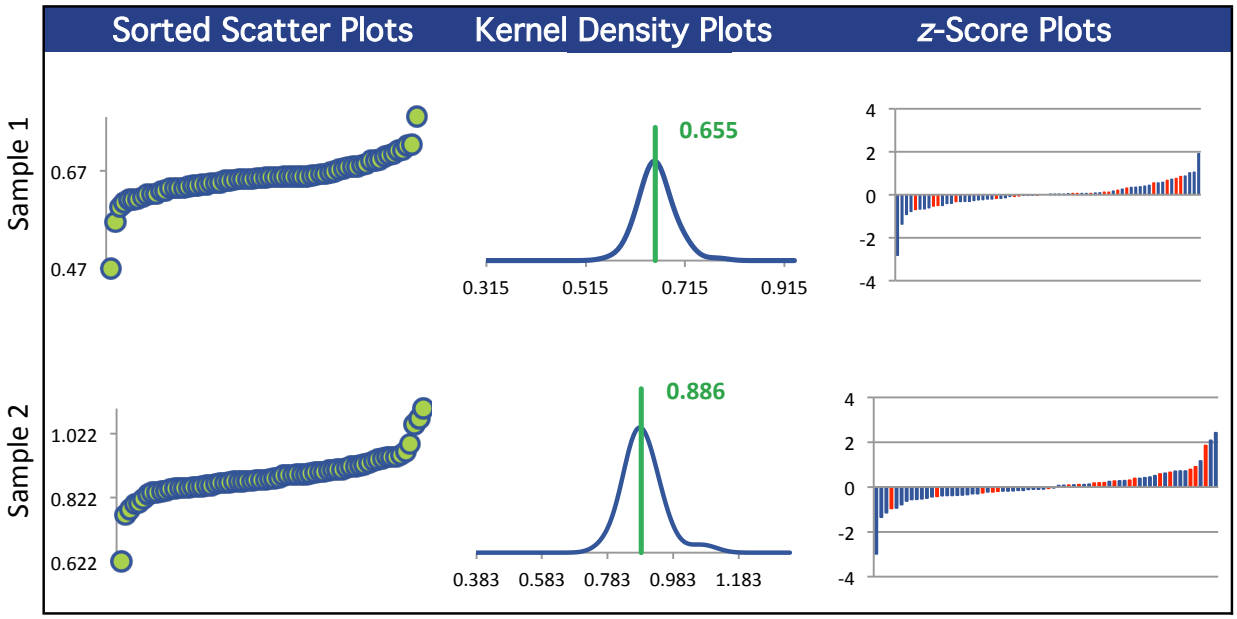
Summary Statistics

Statistic	C02C-1	C02C-2	C02C-3	C02C-4
N	68	68	68	68
Median mg/L	0.656	0.881	0.356	1.31
Robust Mean mg/L	0.655	0.886	0.354	1.31
U mg/L	0.00465	0.00715	0.00246	0.0104
Robust Standard Deviation mg/L	0.0307	0.0472	0.0162	0.0685
Regression Standard Deviation mg/L	0.0655	0.0886	0.0354	0.131
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0655	0.0886	0.0354	0.131
Outliers	0	0	0	0
|z|>3.0	0	0	1	1
2<|z|<3	1	3	1	1

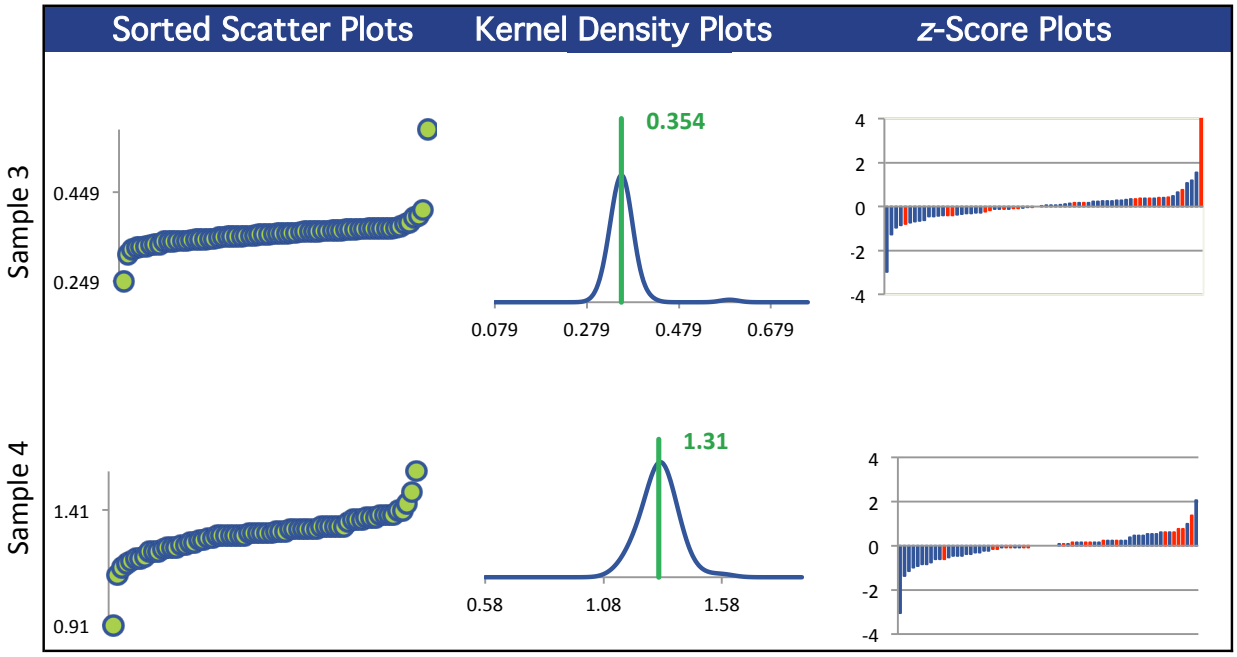
Methods Used

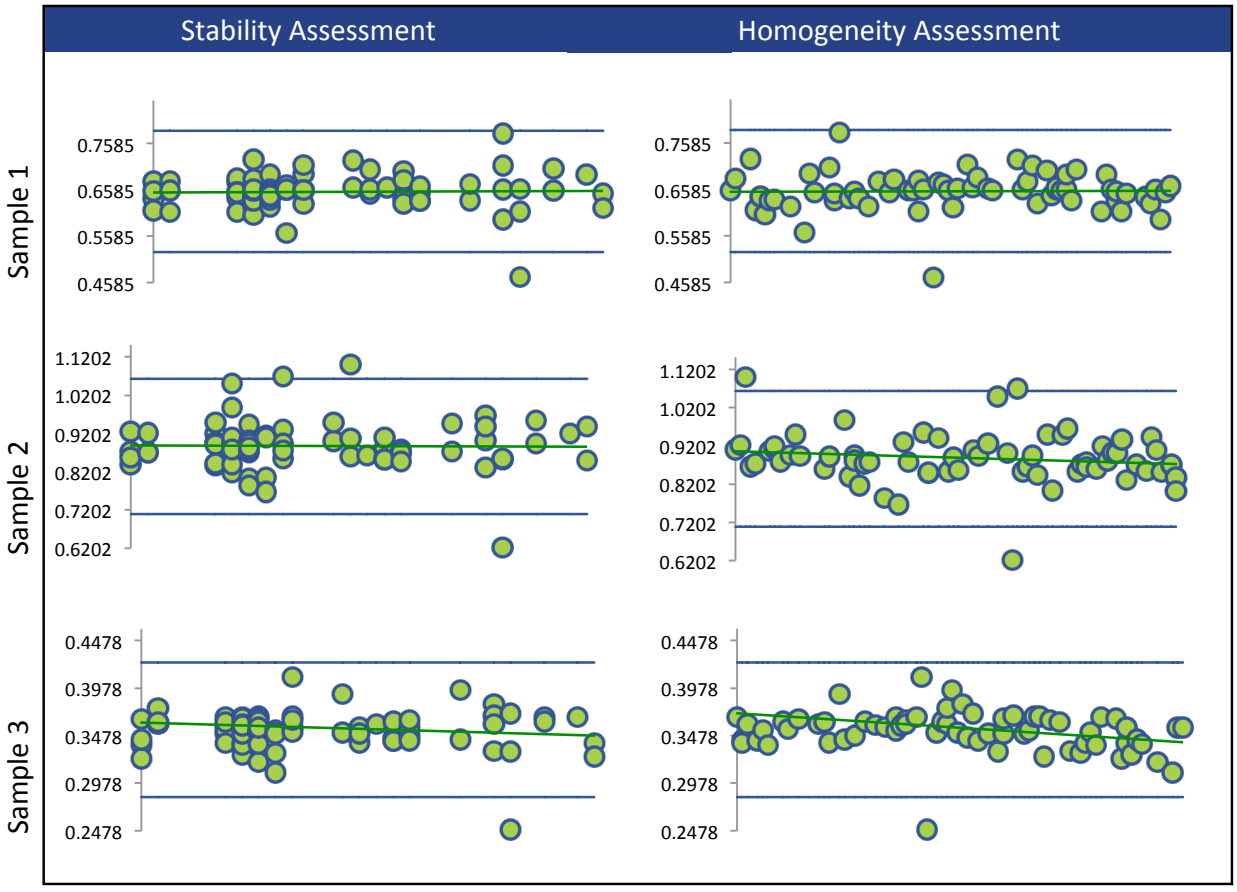
Method	C02C-1	C02C-2	C02C-3	C02C-4
ICP/MS (Blue)	49	49	49	49
ICP/OES (Red)	19	19	19	19

All summary stats and the plots below are based on the data excluding any flagged outliers



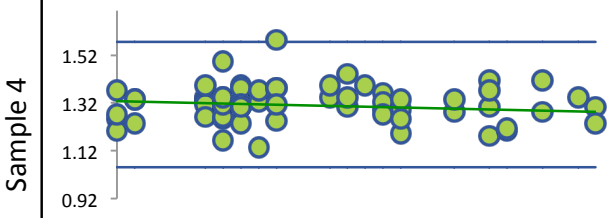
THALLIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.449
0.249
0.354
0.079
0.279
0.479
0.679
4
2
0
-2
-4
Sample 4
1.41
0.91
1.31
0.58
1.08
1.58
4
2
0
-2
-4

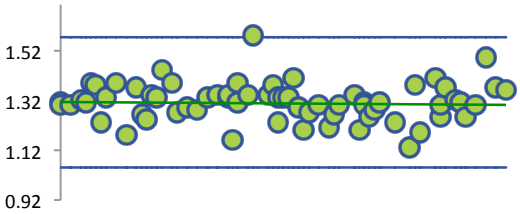

Stability Assessment
Homogeneity Assessment
Sample 1
0.7585
0.6585
0.5585
0.4585
Sample 2
1.1202
1.0202
0.9202
0.8202
0.7202
0.6202
Sample 3
0.4478
0.3978
0.3478
0.2978
0.2478

THALLIUM

Stability Assessment



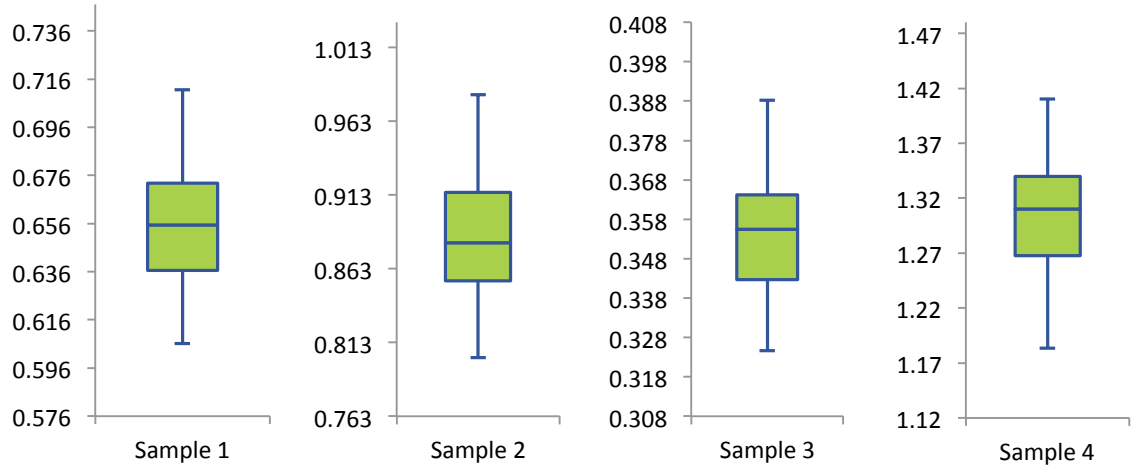
Homogeneity Assessment



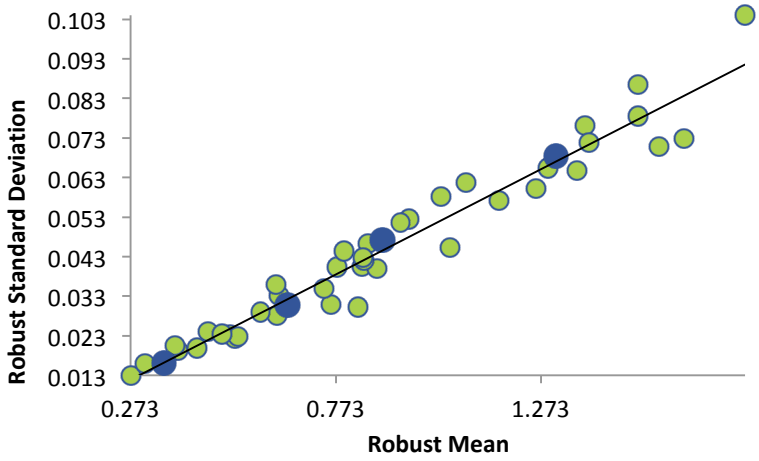
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



TIN

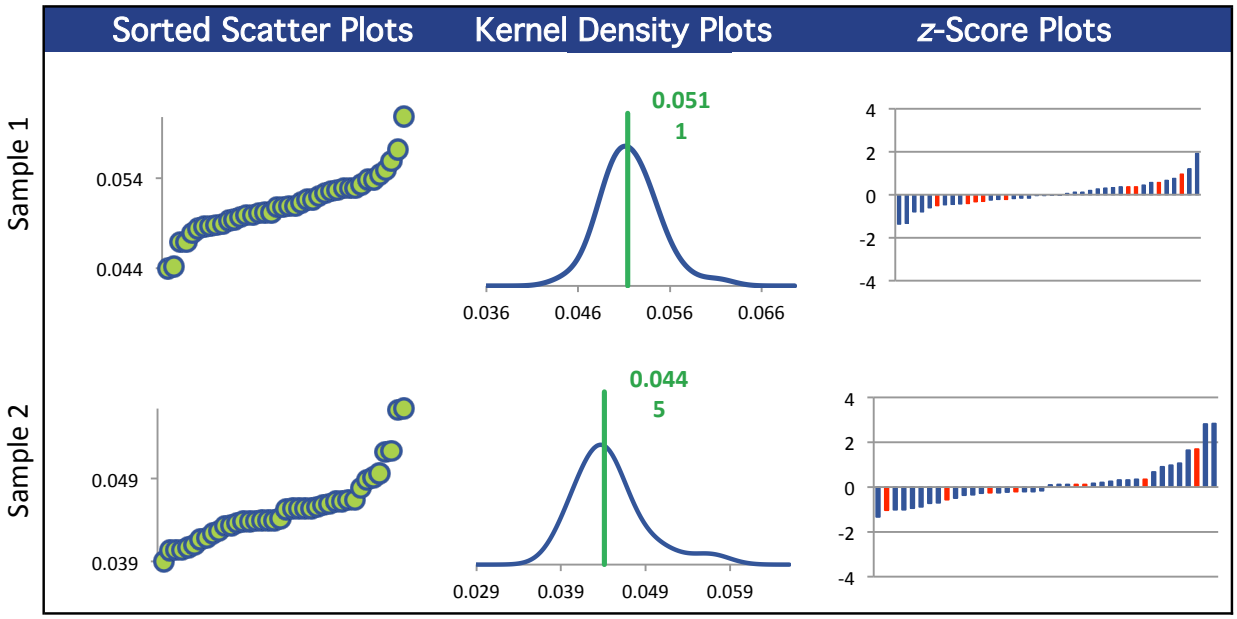
Summary Statistics

Statistic	C02C-1	C02C-2	C02C-3	C02C-4
N	40	40	39	41
Median mg/L	0.0510	0.0444	0.0218	0.0910
Robust Mean mg/L	0.0511	0.0445	0.0218	0.0909
U mg/L	0.000555	0.000662	0.000258	0.000972
Robust Standard Deviation mg/L	0.00281	0.00335	0.00129	0.00498
Regression Standard Deviation mg/L	0.00511	0.00445	0.00218	0.00909
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.00511	0.00445	0.00218	0.00909
Outliers	1	1	2	0
|z|>3.0	0	0	0	2
2<|z|<3	0	2	0	1

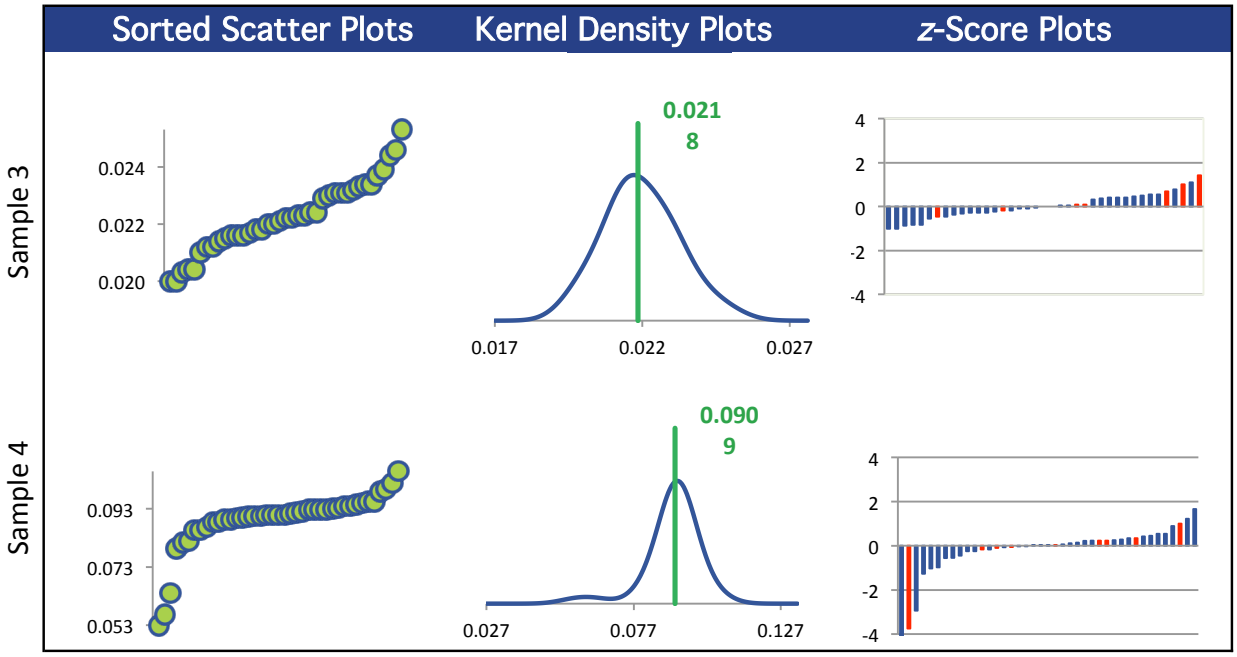
Methods Used

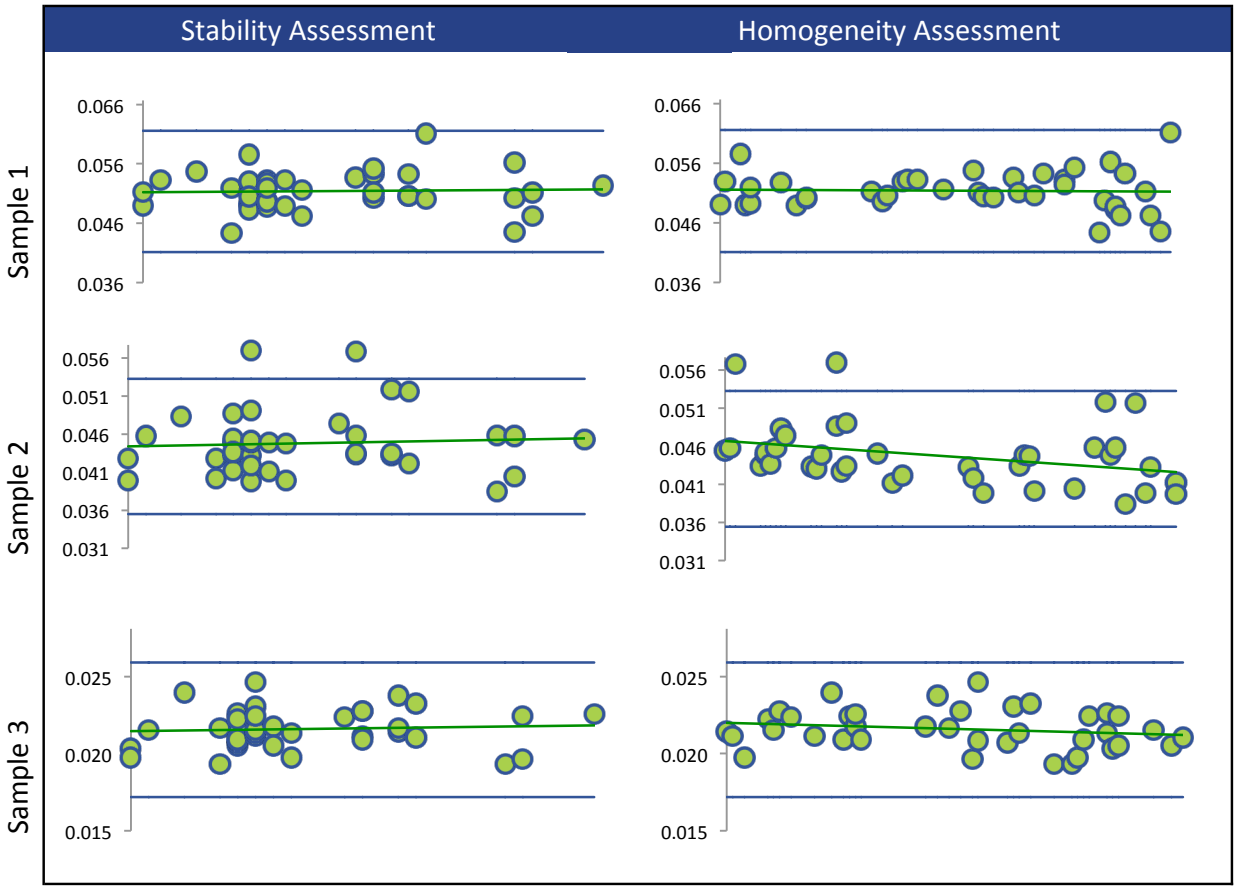
Method	C02C-1	C02C-2	C02C-3	C02C-4
ICP/MS (Blue)	31	32	32	32
ICP/OES (Red)	9	8	7	9

All summary stats and the plots below are based on the data excluding any flagged outliers



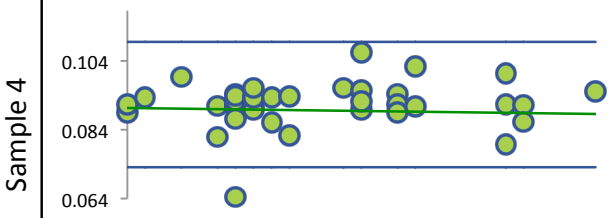
TIN


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.024
0.022
0.020
0.0218
0.017
0.022
0.027
4
2
0
-2
-4
Sample 4
0.093
0.073
0.053
0.0909
0.027
0.077
0.127
4
2
0
-2
-4

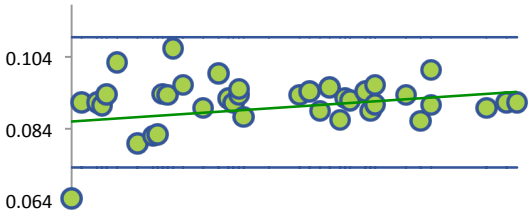

Stability Assessment
Homogeneity Assessment
Sample 1
0.066
0.056
0.046
0.036
Sample 2
0.056
0.051
0.046
0.041
0.036
0.031
Sample 3
0.025
0.020
0.015

TIN

Stability Assessment



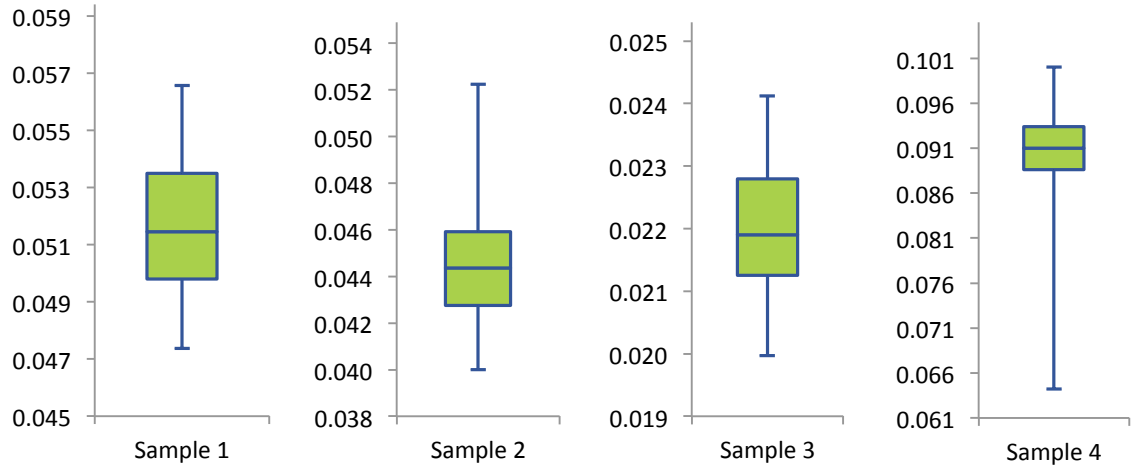
Homogeneity Assessment



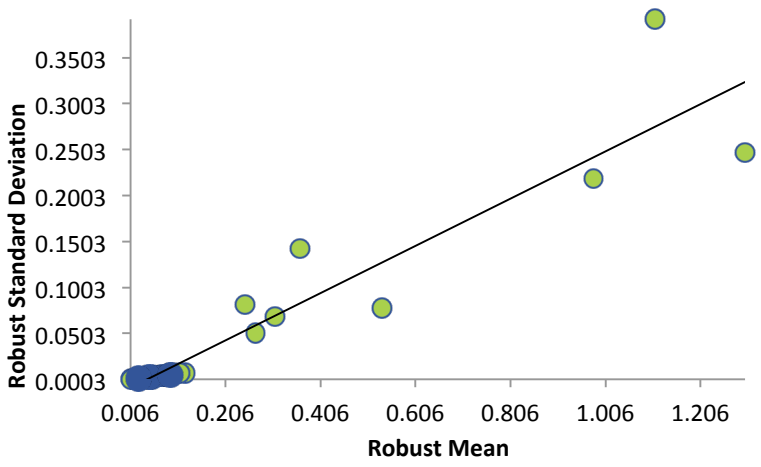
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



TITANIUM

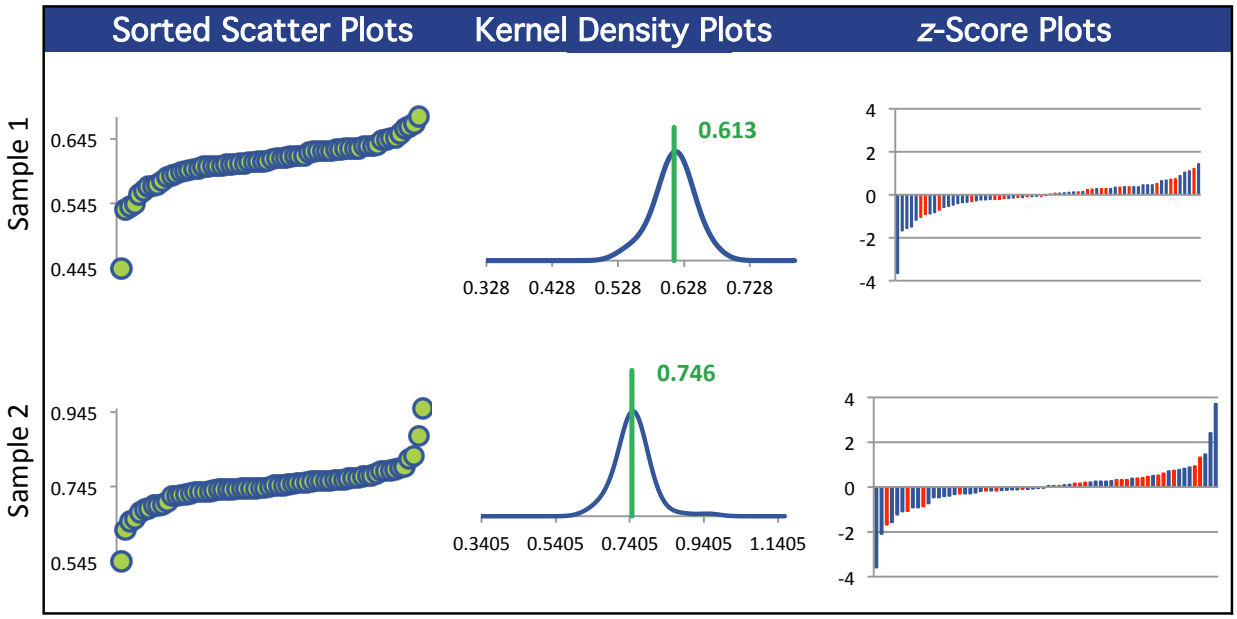
Summary Statistics

Statistic	C02C-1	C02C-2	C02C-3	C02C-4
N	66	66	66	66
Median mg/L	0.613	0.747	0.307	1.09
Robust Mean mg/L	0.613	0.746	0.305	1.08
U mg/L	0.00414	0.00549	0.00234	0.00888
Robust Standard Deviation mg/L	0.0269	0.0357	0.0152	0.0577
Regression Standard Deviation mg/L	0.0459	0.0560	0.0229	0.0810
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0459	0.0560	0.0229	0.0810
Outliers	0	0	0	0
|z|>3.0	1	2	1	2
2<|z|<3	0	2	2	4

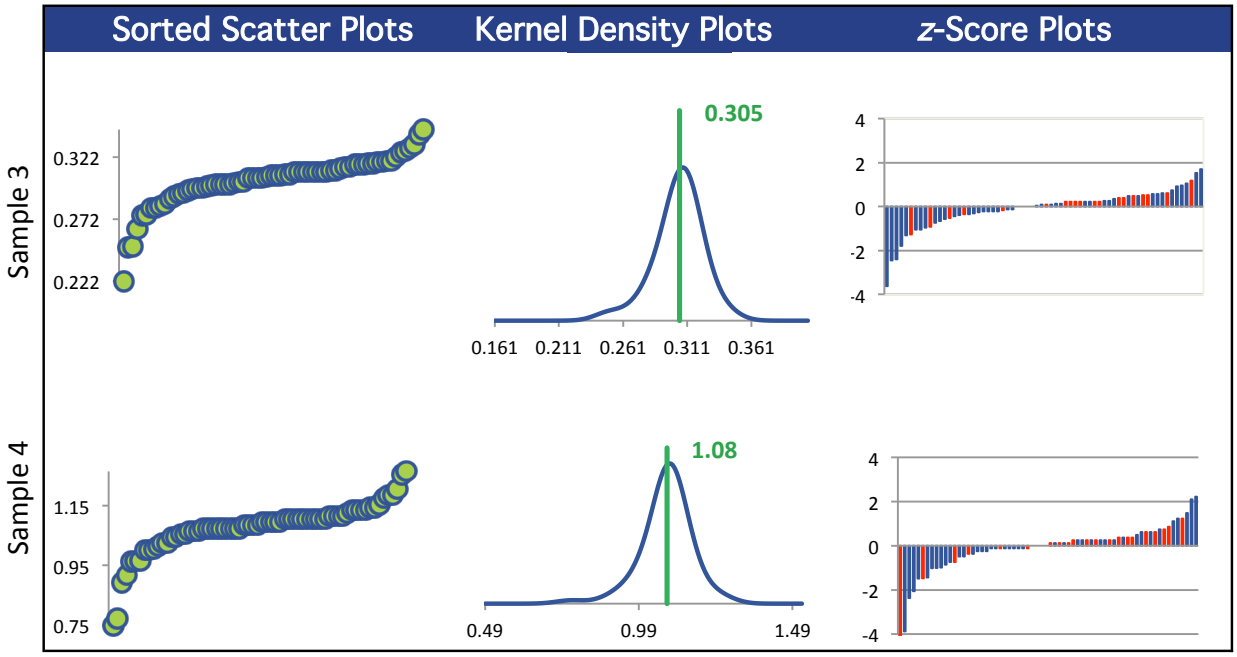
Methods Used

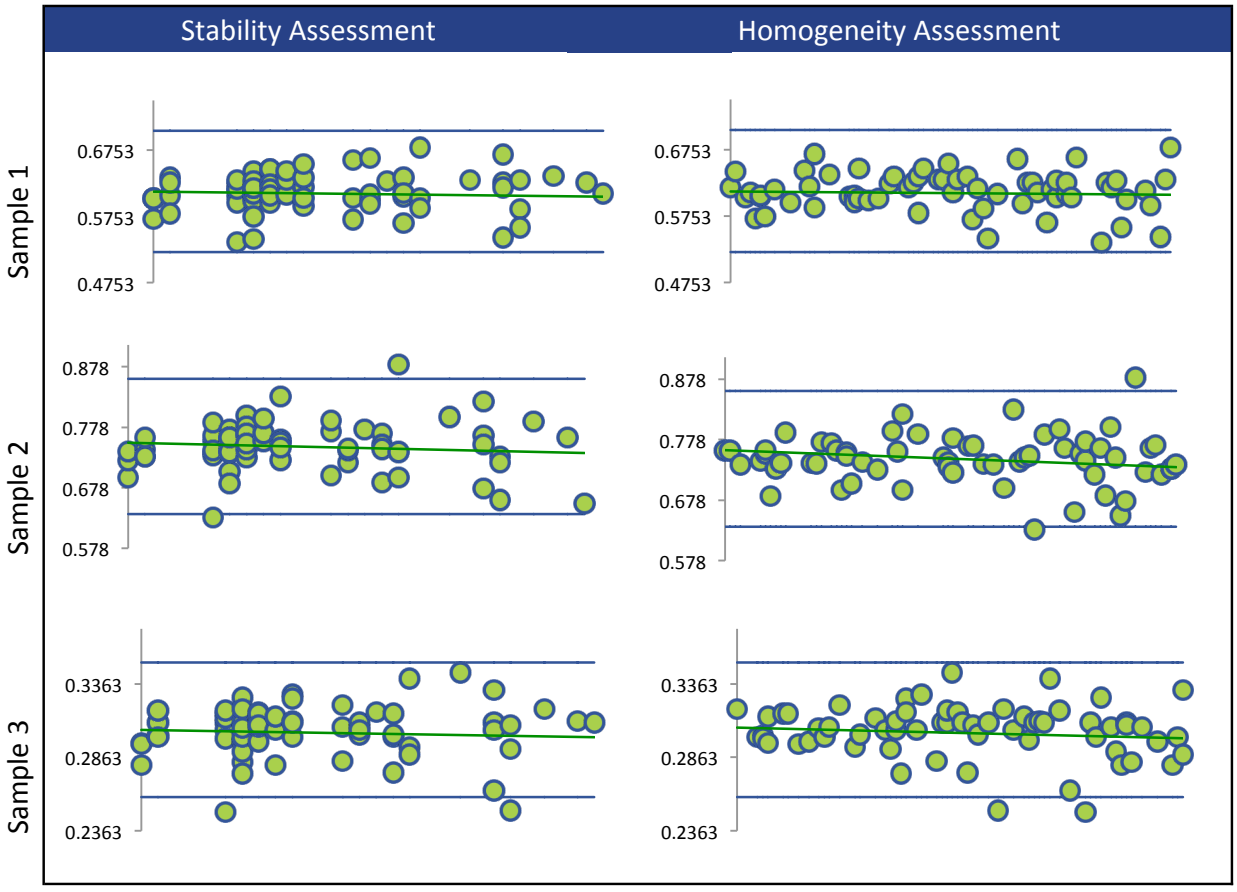
Method	C02C-1	C02C-2	C02C-3	C02C-4
ICP/MS (Blue)	44	44	44	44
ICP/OES (Red)	22	22	22	22

All summary stats and the plots below are based on the data excluding any flagged outliers



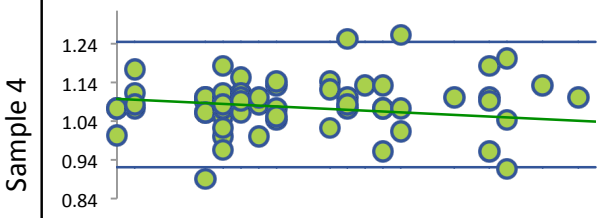
TITANIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.322
0.272
0.222
0.305
0.161 0.211 0.261 0.311 0.361
4
2
0
-2
-4
Sample 4
1.15
0.95
0.75
1.08
0.49 0.99 1.49
4
2
0
-2
-4

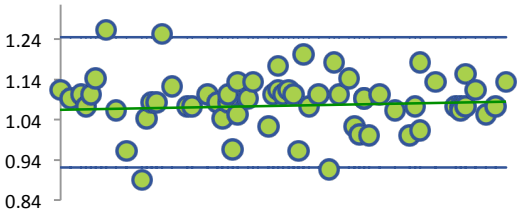

Stability Assessment
Homogeneity Assessment
Sample 1
0.6753
0.5753
0.4753
0.6753
0.5753
0.4753
Sample 2
0.878
0.778
0.678
0.578
0.878
0.778
0.678
0.578
Sample 3
0.3363
0.2863
0.2363
0.3363
0.2863
0.2363

TITANIUM

Stability Assessment



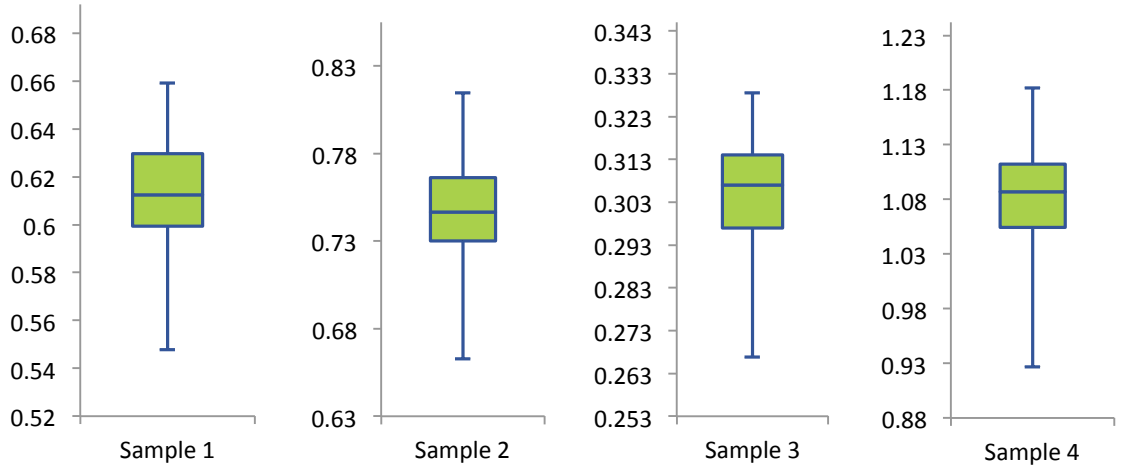
Homogeneity Assessment



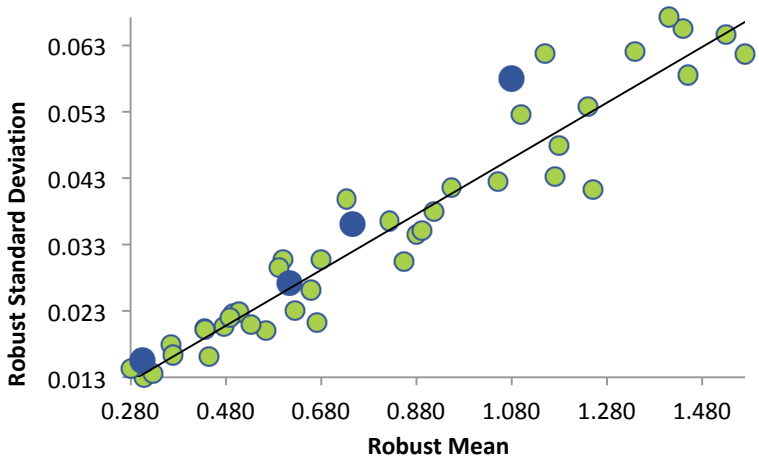
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



URANIUM

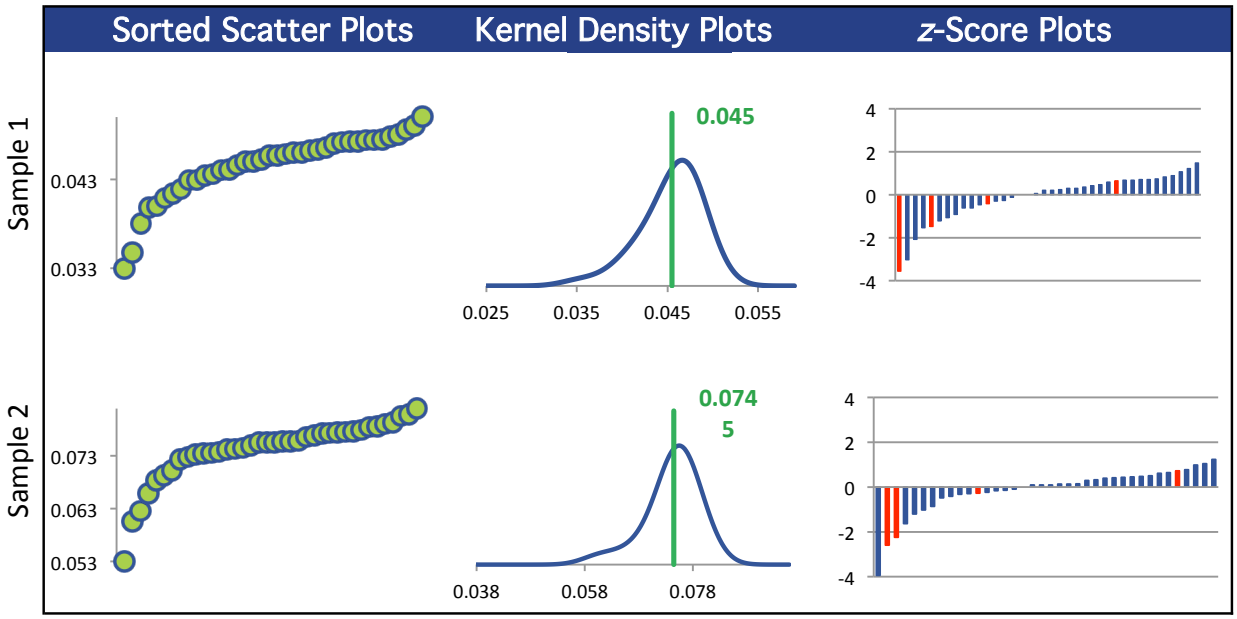
Summary Statistics

Statistic	C02C-1	C02C-2	C02C-3	C02C-4
N	38	38	36	39
Median mg/L	0.0457	0.0750	0.0118	0.0882
Robust Mean mg/L	0.0450	0.0745	0.0117	0.0874
U mg/L	0.000633	0.000815	0.000128	0.00108
Robust Standard Deviation mg/L	0.00312	0.00402	0.000612	0.00539
Regression Standard Deviation mg/L	0.00337	0.00559	0.000878	0.00656
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.00337	0.00559	0.000878	0.00656
Outliers	1	1	2	0
|z|>3.0	2	1	3	2
2<|z|<3	1	2	0	1

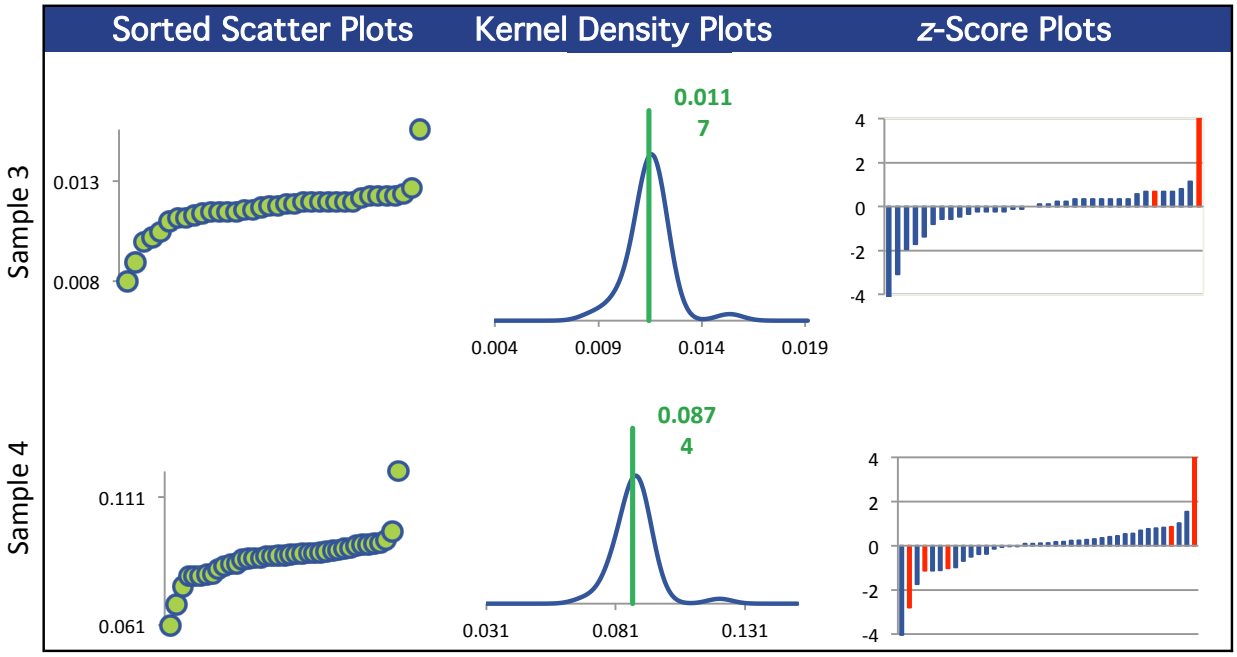
Methods Used

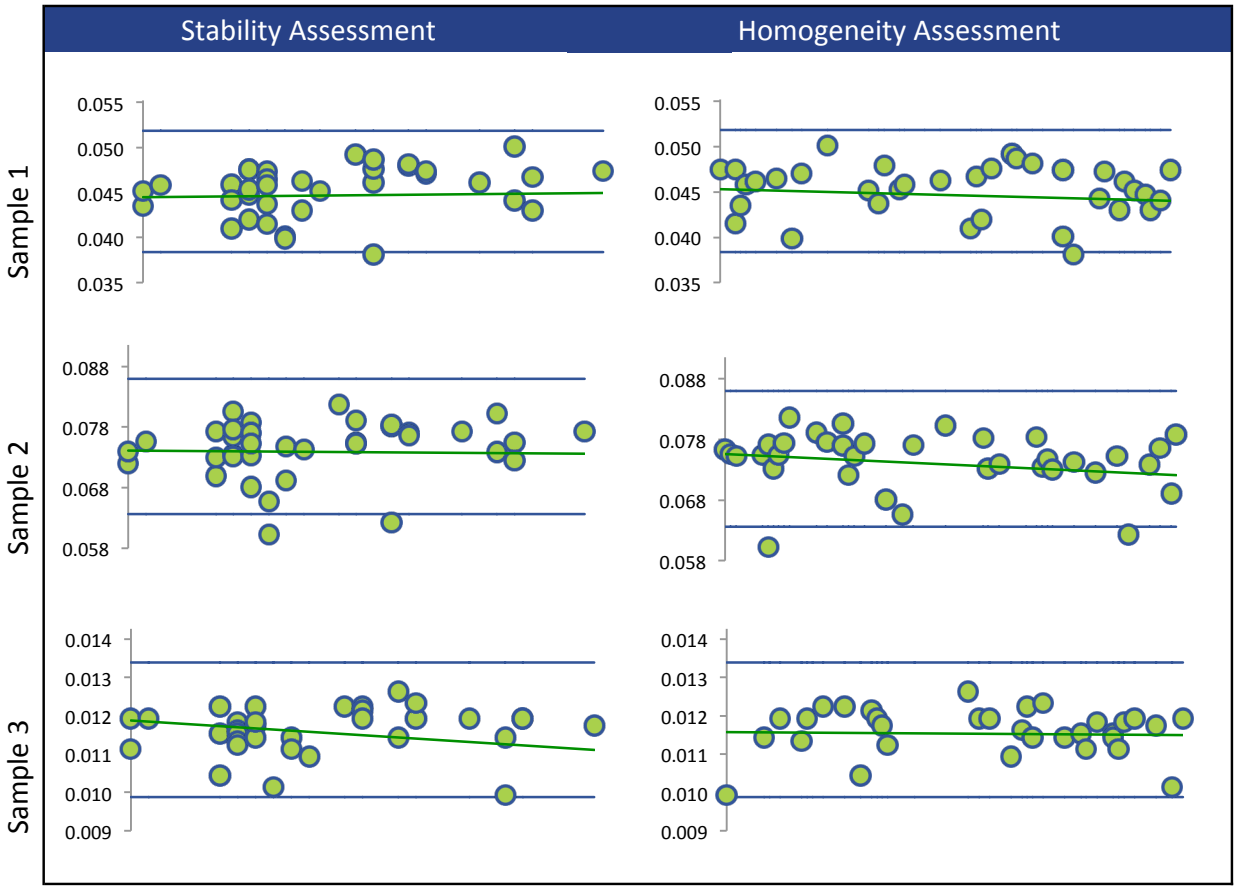
Method	C02C-1	C02C-2	C02C-3	C02C-4
ICP/OES (Blue)	4	4	2	5
ICP/MS (Red)	34	34	34	34

All summary stats and the plots below are based on the data excluding any flagged outliers



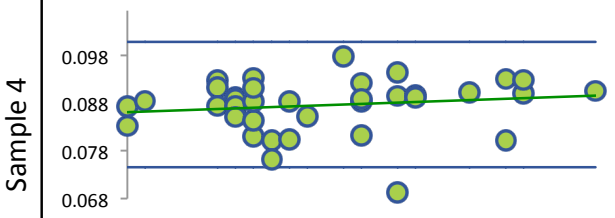
URANIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.013
0.008
0.011
7
0.004
0.009
0.014
0.019
4
2
0
-2
-4
Sample 4
0.111
0.061
0.087
4
0.031
0.081
0.131
4
2
0
-2
-4

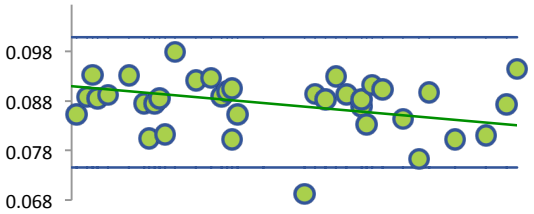

Stability Assessment
Homogeneity Assessment
Sample 1
0.055
0.050
0.045
0.040
0.035
Sample 2
0.088
0.078
0.068
0.058
Sample 3
0.014
0.013
0.012
0.011
0.010
0.009

URANIUM

Stability Assessment



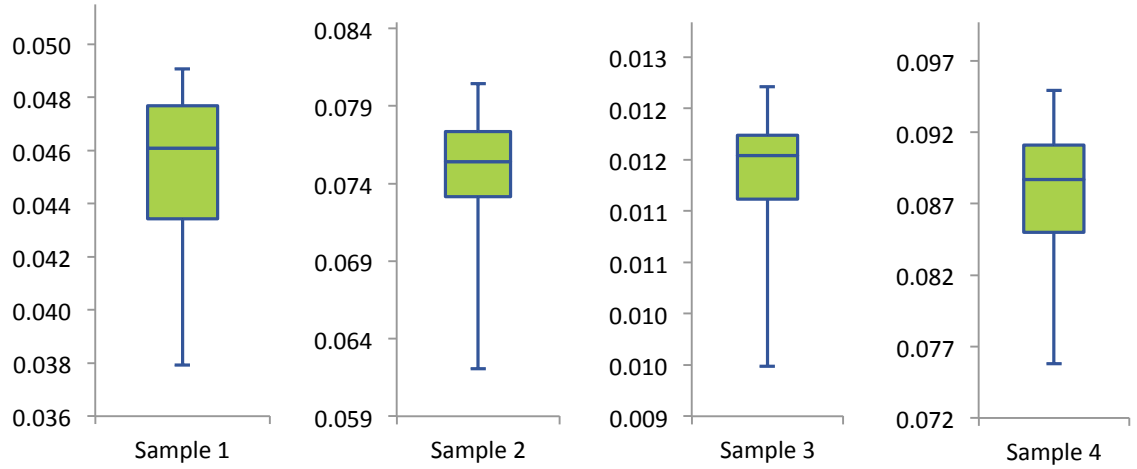
Homogeneity Assessment



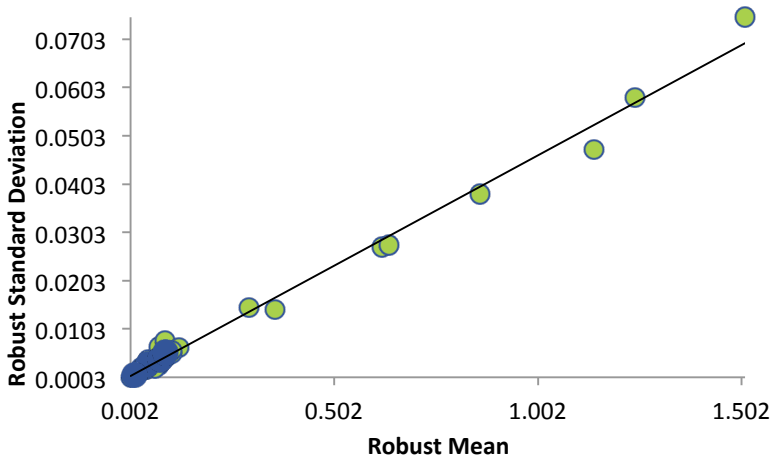
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



VANADIUM

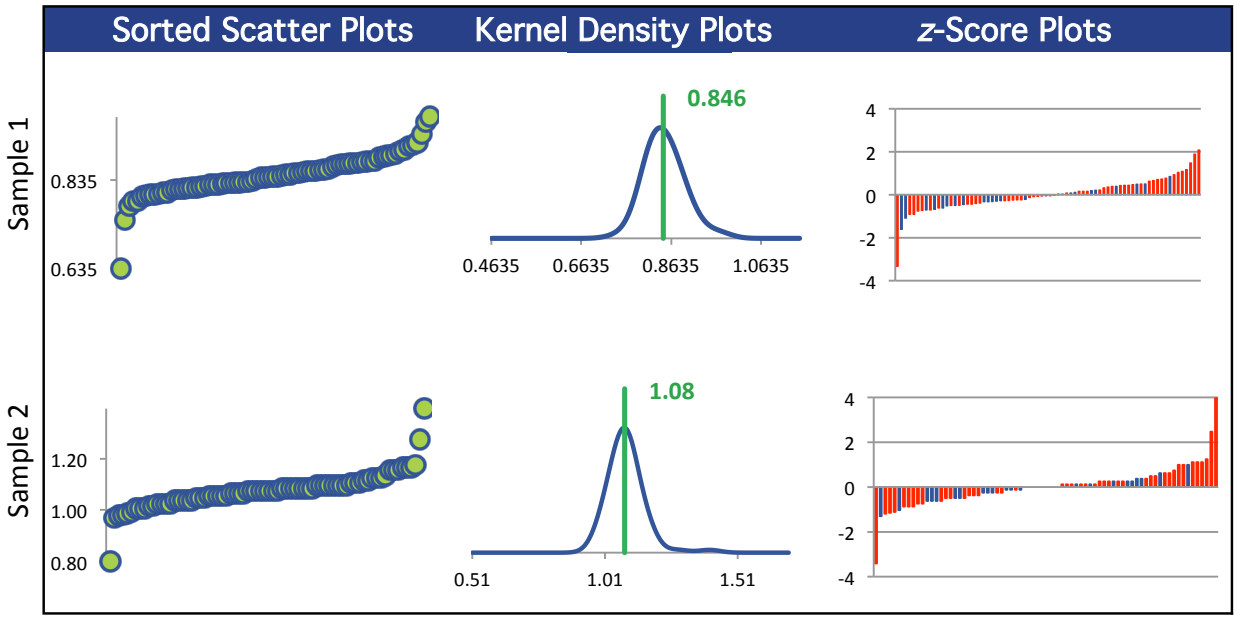
Summary Statistics

Statistic	C02C-1	C02C-2	C02C-3	C02C-4
N	74	74	74	74
Median mg/L	0.843	1.08	0.357	1.12
Robust Mean mg/L	0.846	1.08	0.357	1.11
U mg/L	0.00574	0.00772	0.00222	0.00796
Robust Standard Deviation mg/L	0.0395	0.0531	0.0153	0.0548
Regression Standard Deviation mg/L	0.0634	0.0809	0.0268	0.0834
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0634	0.0809	0.0268	0.0834
Outliers	0	0	0	0
|z|>3.0	1	2	1	1
2<|z|<3	1	1	1	1

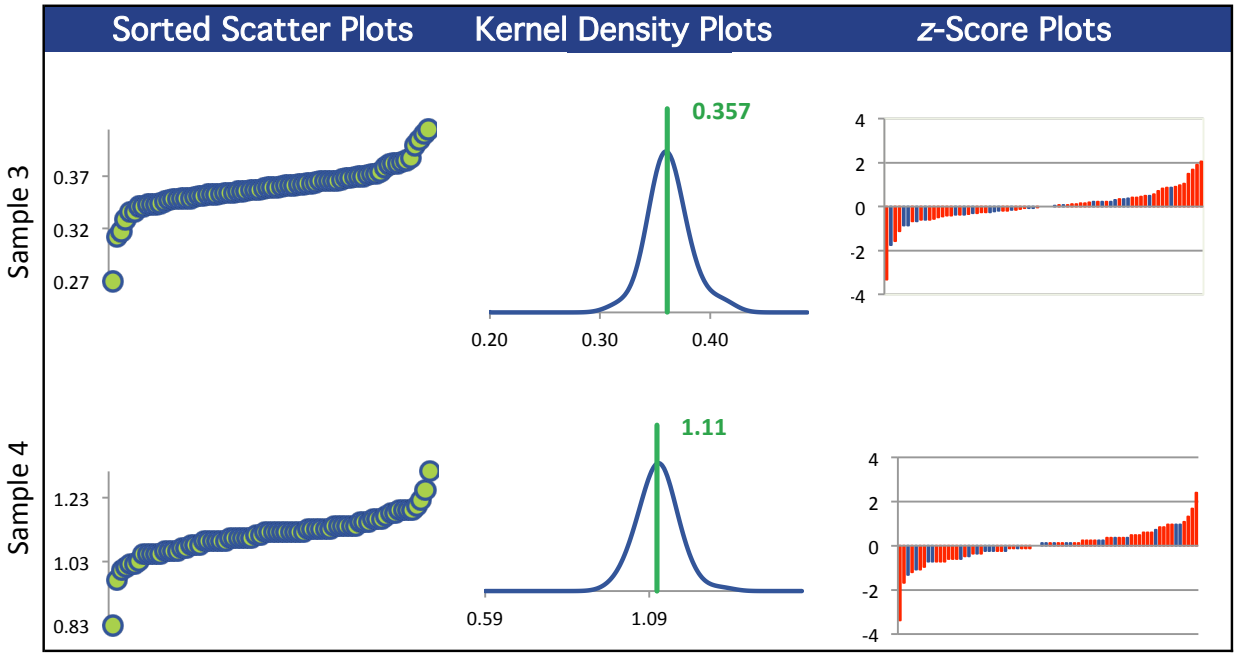
Methods Used

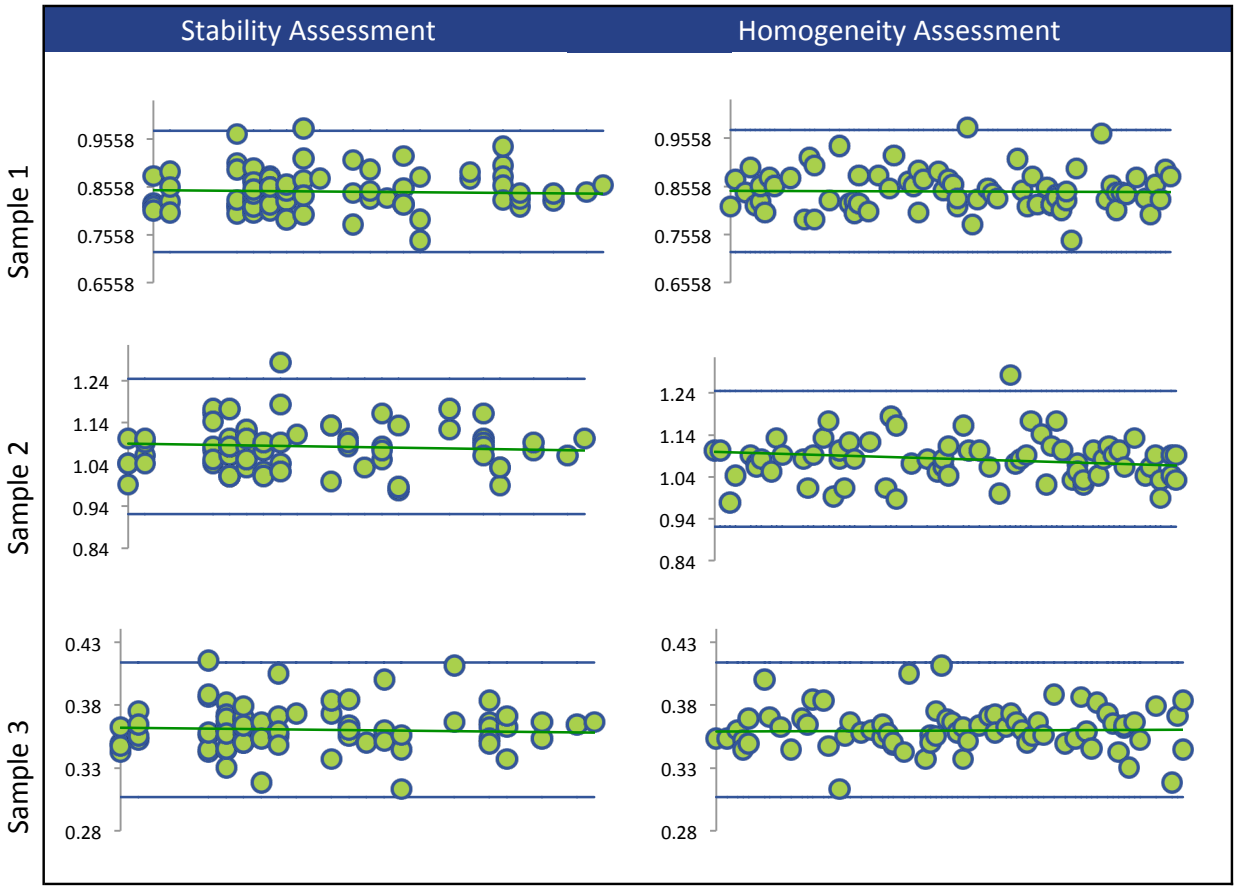
Method	C02C-1	C02C-2	C02C-3	C02C-4
ICP/MS (Blue)	50	50	50	50
ICP/OES (Red)	24	24	24	24

All summary stats and the plots below are based on the data excluding any flagged outliers



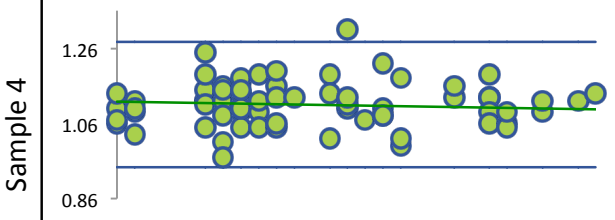
VANADIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.37
0.32
0.27
0.357
0.20
0.30
0.40
4
2
0
-2
-4
Sample 4
1.23
1.03
0.83
1.11
0.59
1.09
4
2
0
-2
-4

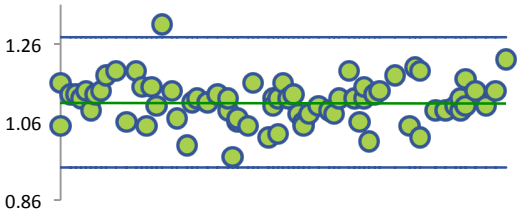

Stability Assessment
Homogeneity Assessment
Sample 1
0.9558
0.8558
0.7558
0.6558
Sample 2
1.24
1.14
1.04
0.94
0.84
Sample 3
0.43
0.38
0.33
0.28

VANADIUM

Stability Assessment



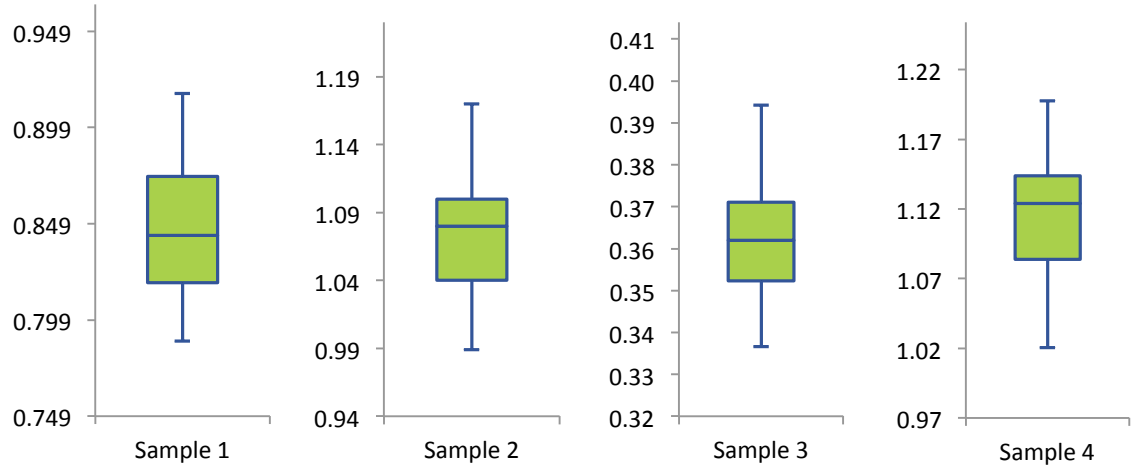
Homogeneity Assessment



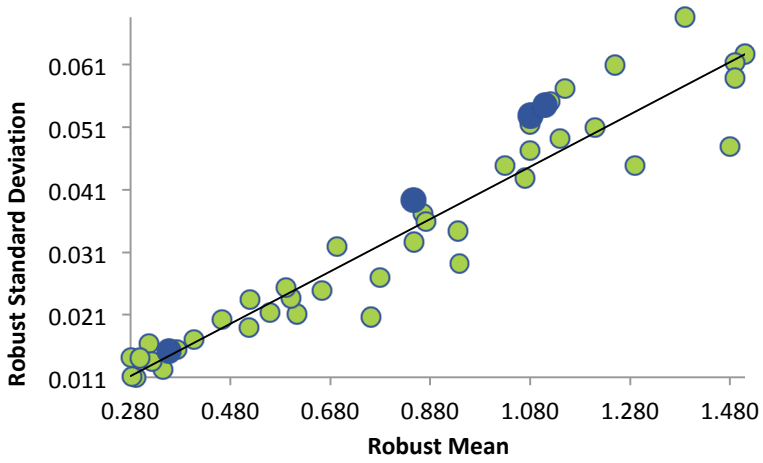
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



ZINC

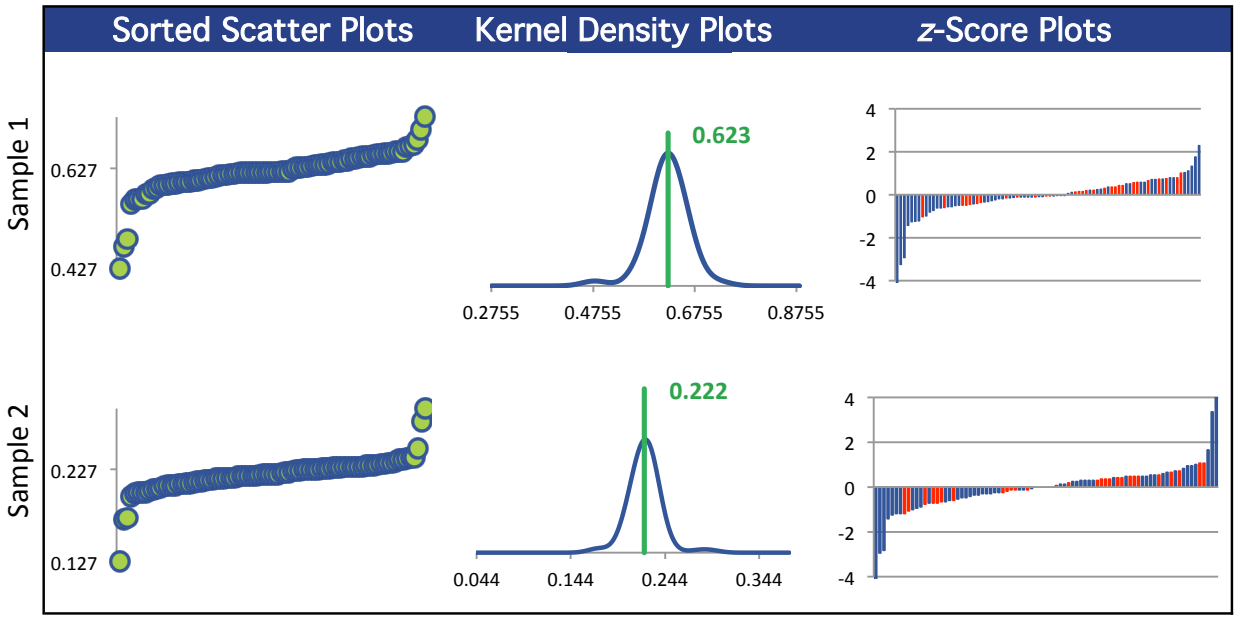
Summary Statistics

Statistic	C02C-1	C02C-2	C02C-3	C02C-4
N	84	84	84	84
Median mg/L	0.620	0.222	0.493	1.01
Robust Mean mg/L	0.623	0.222	0.490	1.00
U mg/L	0.00417	0.00168	0.00349	0.00663
Robust Standard Deviation mg/L	0.0306	0.0123	0.0256	0.0486
Regression Standard Deviation mg/L	0.0467	0.0166	0.0367	0.0752
Stability Flag				
Homogeneity Flag		Homogeneity		
Standard Deviation Used (SDPA) mg/L	0.0467	0.0170	0.0367	0.0752
Outliers	0	0	0	0
|z|>3.0	2	3	2	1
2<|z|<3	2	2	2	4

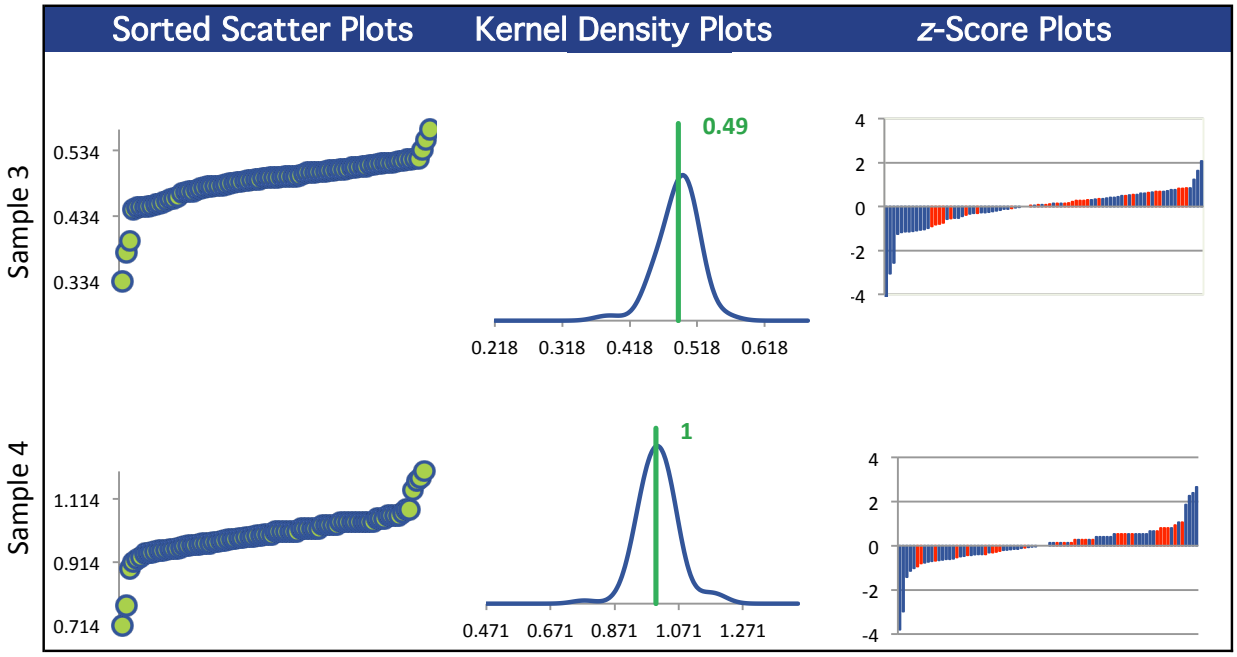
Methods Used

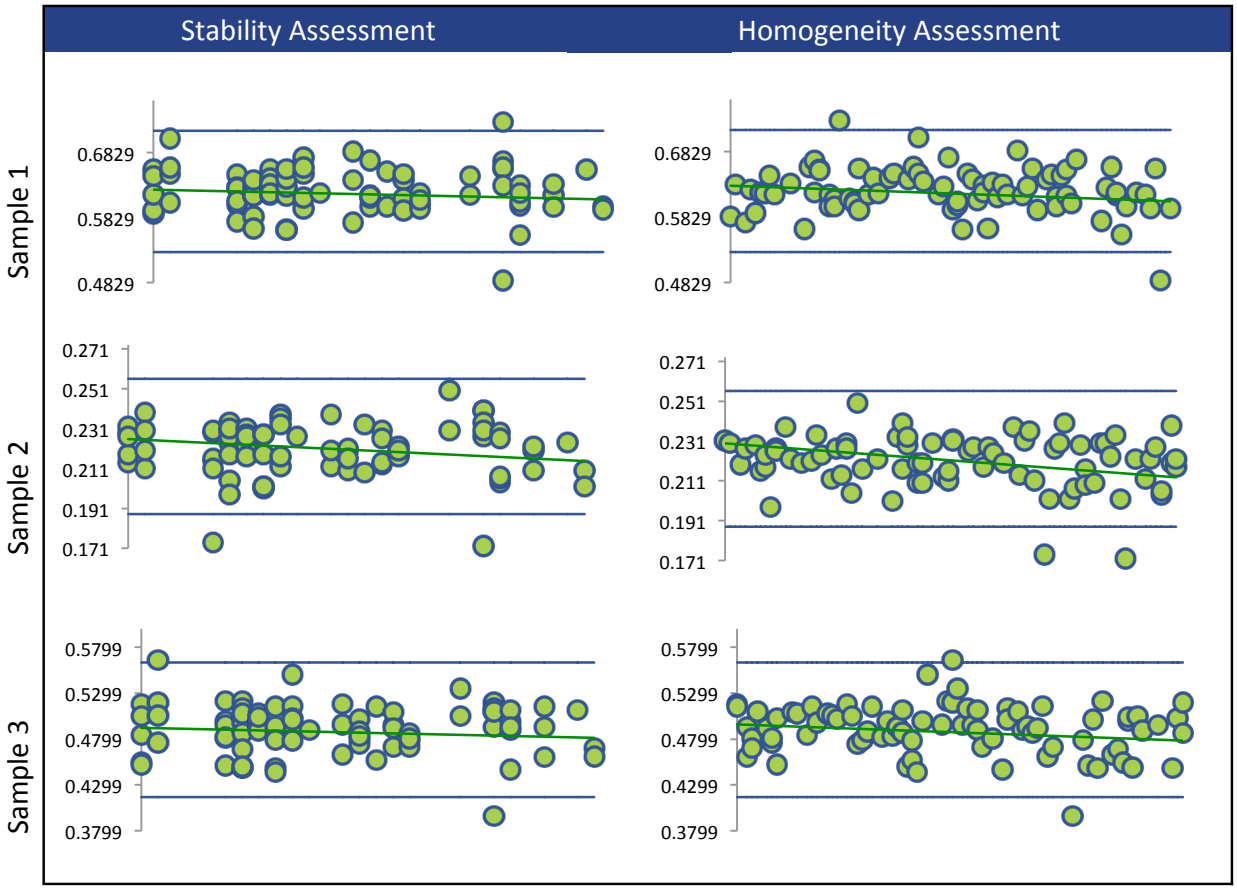
Method	C02C-1	C02C-2	C02C-3	C02C-4
ICP/MS (Blue)	54	54	54	54
ICP/OES (Red)	29	29	29	29
AA FLAME (Green)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



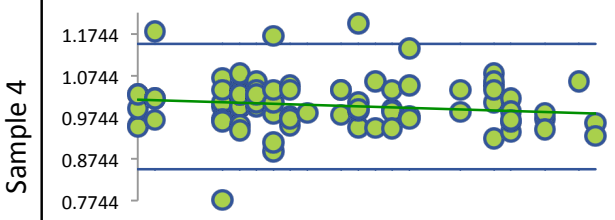
ZINC


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.534
0.434
0.334
0.49
0.218 0.318 0.418 0.518 0.618
4 2 0 -2 -4
Sample 4
1.114
0.914
0.714
1
0.471 0.671 0.871 1.071 1.271
4 2 0 -2 -4

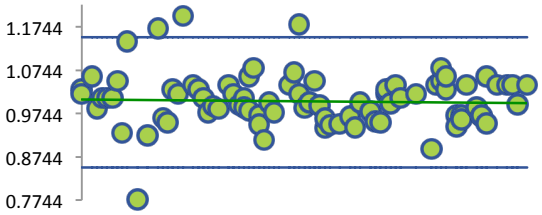

Stability Assessment
Homogeneity Assessment
Sample 1
0.6829
0.5829
0.4829
Sample 2
0.271
0.251
0.231
0.211
0.191
0.171
Sample 3
0.5799
0.5299
0.4799
0.4299
0.3799

ZINC

Stability Assessment



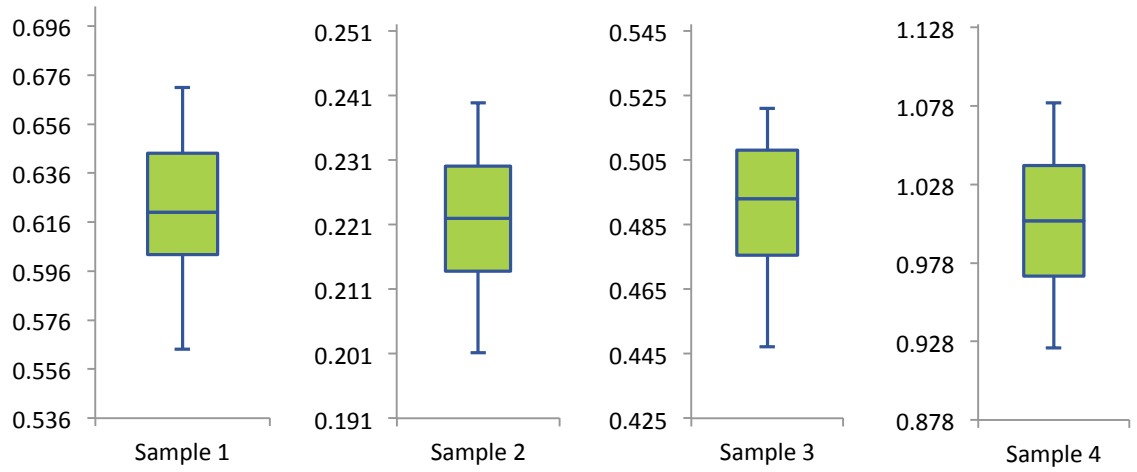
Homogeneity Assessment



Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)