



IFA-Proficiency Testing Scheme zur Wasseranalytik / for Water Analysis

Endbericht / Final Report
Eignungsprüfungsrunde / Proficiency testing round
N181

Nährstoffe / Major ions

Probenversand / Sample dispatch: 16.03.2026

Durchführung gemäß Verfahren / In accordance with the procedure: AVKPS.01 idgF



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Allgemeine Informationen

Diese Zusammenfassung beschreibt die 181. Runde der regelmäßigen Eignungsprüfungen zur Parametergruppe „Nährstoffe“. Die Prüfgegenstände N181A und N181B wurden am 16. März 2026 an 38 Teilnehmer versendet. Jedes Labor erhielt zwei Prüfgegenstände zu 1000 ml, abgefüllt in je zwei 500 ml Flaschen aus PET.

Einsendeschluss für die Ergebnisse war am 17. April 2026. Von allen Teilnehmern wurden Ergebnisse übermittelt. Zur Anonymisierung wurde jedem Labor per Zufallsgenerator ein Buchstabencode zugeteilt.

Zusammensetzung der Prüfgegenstände

Die Prüfgegenstände N181A und N181B wurden durch Einwaage von reinen Salzen hergestellt, wobei die meisten der in der österreichischen Gewässerzustandsüberwachungsverordnung (GZÜV i.d.g.F.) für den Parameterblock 1 genannten Parameter berücksichtigt wurden. Zur Herstellung wurden CaCO_3 , CaCl_2 , MgSO_4 , $\text{Mg}(\text{NO}_3)_2$, NaHCO_3 , KHCO_3 , $\text{C}_6\text{H}_{15}\text{PO}_3$ (für Gesamt-P) und Kaliumhydrogenphthalat (für DOC) als Reinsubstanzen sowie zertifizierte Standardlösungen von NaF , NaNO_2 , Na_2SiO_3 , NH_4Cl , KH_2PO_4 und H_3BO_3 verwendet. Beide Prüfgegenstände enthielten freies CO_2 , welches zum Lösen von CaCO_3 und zum Neutralisieren von Na_2SiO_3 verwendet wurde. Stabilisierung der Prüfgegenstände erfolgte durch Sterilfiltration und über die Temperatur.

Homogenitäts-, Richtigkeits- und Stabilitätsuntersuchung

Die Prüfgegenstände wurden vor dem Versand am IFA-Tulln auf Homogenität und Richtigkeit untersucht. Die Ergebnisse der Kontrollanalytik finden sich auf den Rohdatenblättern sowie auf den Auswertungen zu jedem Parameter.

Zur Überprüfung der Stabilität wurden vier Wochen nach dem Versand die Parameter Nitrit, Ammonium, Orthophosphat und DOC nochmals bestimmt. Die Ergebnisse befinden sich ebenfalls auf den Rohdatenblättern sowie auf den Auswertungen zu jedem Parameter. Die Stabilitätsuntersuchungen zu den restlichen Parametern werden zusammen mit der Kontrollanalytik zur folgenden Runde (N182) durchgeführt.

Unserer Erfahrung nach sind die Prüfgegenstände hinsichtlich der Parameter Leitfähigkeit, Gesamthärte, Säurekapazität, Ca^{2+} , Mg^{2+} , Na^+ , K^+ , NO_3^- , Cl^- , SO_4^{2-} , Bor, HCO_3^- , F^- und Si bis 18 Monate stabil. Für die Parameter NH_4^+ , NO_2^- , o-PO_4^{3-} Gesamt-P und DOC sind die Prüfgegenstände mehrere Wochen stabil, wobei die ersten Veränderungen üblicherweise bei Ammonium beobachtet werden können.

Zugewiesene Werte

Die zugewiesenen Werte ergaben sich aus den Einwaagewerten der verwendeten Chemikalien. Die Unsicherheiten der zugewiesenen Werte (erweiterte Unsicherheiten, $k = 2$, $\alpha = 0,05$) wurden nach den Vorgaben des EURACHEM / CITAC Guides „Quantifying Uncertainty in Analytical Measurement, 3rd Edition (2012)“ ermittelt.

Der zugewiesene Wert für die Leitfähigkeit wurde mit einer Näherung nach Debye-Hückel berechnet. Die Auswertung der bis jetzt erhobenen Daten zeigte, dass bei mehr als 20 Teilnehmern und den beobachteten Standardabweichungen der Messwerte zwischen den Labors von ca. 1 %, die Mittelwerte der ausreißerbereinigten Daten eine geringere Unsicherheit haben als die mit der Näherung berechneten Werte. Deshalb wurde die Leitfähigkeit über die Labormittelwerte ausgewertet. Die mit der Näherung berechneten Werte waren $383 \mu\text{S}/\text{cm}$ für N181A und $495 \mu\text{S}/\text{cm}$ für N181B.

Für den pH-Wert lassen sich keine zugewiesenen Werte angeben. Daher wurden die Messwerte nicht weiter ausgewertet. Die Werte können anhand der Rohdatenblätter verglichen werden. Dabei ist jedoch zu berücksichtigen, dass die Prüfgegenstände nur schwach gepuffert waren und freies CO_2 enthielten. Man beobachtet daher in der Regel ein leichtes Ansteigen des pH-Wertes mit der Zeit.

Als Standardsubstanz für den Parameter Gesamt-P (als PO_4^{3-}) nach Aufschluss nach DIN EN ISO 6878 wurde Ethylphosphonsäurediethylester ($\text{C}_6\text{H}_{15}\text{PO}_3$) verwendet. Die zugewiesenen Werte wurden aus den Einwaagen von KH_2PO_4 und $\text{C}_6\text{H}_{15}\text{PO}_3$ berechnet. Die Ergebnisse wurden in mg/l PO_4^{3-} angegeben.

Dem Prüfgegenstand N181A wurden keine Phosphorverbindungen und N181B wurde kein Ammonium zugesetzt. Die zugewiesenen Werte von $<0,01 \text{ mg/l NH}_4^+$, $<0,009 \text{ mg/l o-PO}_4^{3-}$ und $<0,009 \text{ mg/l Ges-P (als PO}_4^{3-})$ wurden bei diesen Überprüfungen der Blindwerte entsprechend den Mindestbestimmungsgrenzen der GZÜV festgelegt.

Auswertung

Mit den bei uns eingegangenen Messwerten wurde ein Ausreißertest nach Hampel durchgeführt. Die durch den Test als auffällig eingestuftten Werte wurden in der parameterorientierten Auswertung mit einem Stern gekennzeichnet. Die aus den ausreißerbereinigten Daten berechneten, auf die zugewiesenen Werte bezogenen mittleren Wiederfindungen lagen zwischen 98,5 % (Säurekapazität in N181B) und 104,6 % (Gesamt-P als PO_4^{3-} in N181B). Die aus den ausreißerbereinigten Daten berechneten Standardabweichungen bewegten sich im Bereich von 0,7 % (Leitfähigkeit in N181A) bis 9,3 % (Gesamt-P als PO_4^{3-} in N181B).

Zu den Mittelwerten und mittleren Wiederfindungen wurden auch die Vertrauensbereiche (P=99%) angegeben. Diese Vertrauensbereiche der Labormittelwerte enthalten in allen Fällen mit Ausnahme von Hydrogencarbonat in N181A (103,1 % \pm 2,0 %) die entsprechenden zugewiesenen Werte mit ihren Unsicherheiten.

Die Standardunsicherheiten aller zugewiesenen Werte wurden nach dem Kriterium

$$u(x_{pp}) < 0,3\sigma_{pp} \text{ oder } u(x_{pp}) < 0,1\delta E \text{ (DIN ISO 13528, Punkt 9.2)}$$

überprüft und entsprach in allen Fällen bis auf Nitrat und Chlorid im Prüfgegenstand N181A und Säurekapazität, Natrium, Nitrat und Chlorid im Prüfgegenstand N181B der Vorgabe.

Bei diesen Parametern, sowie auch für Hydrogencarbonat in N181A wurde deshalb zusätzlich der Vergleich der absoluten Differenz zwischen zugewiesenem Wert (x_{pt}) und Labormittelwert (\bar{X}) unter Berücksichtigung der Messunsicherheiten $u(x_{pt})$ und $u(\bar{X})$ durchgeführt. Alle Parameter bis auf Hydrogencarbonat entsprachen der Vorgabe:

$$|x_{pt} - \bar{X}| < 2 * \sqrt{u(x_{pt})^2 + u(\bar{X})^2} \quad (\text{DIN ISO 13528, Punkt 7 und E7})$$

Ein Vergleich der von den Teilnehmern übermittelten Messwerte für Säurekapazität und Hydrogencarbonat hat gezeigt, dass die Umrechnung auf Hydrogencarbonat bei mindestens sechs Laboren ohne Blindwertkorrektur (ca. 3 mg/L HCO_3^-) erfolgt ist. Aufgrund der niedrigen Konzentration des zugewiesenen Wertes wurde der Mittelwert der Labore dadurch merklich verzerrt. Daher wurden alle ermittelten zugewiesenen Werte mit ihren Standardunsicherheiten übernommen.

z-Score-Auswertung

Ein z-Score ist die auf eine Standardabweichung bezogene Abweichung eines Messwertes vom zugewiesenen Wert. Er wird mittels folgender Formel berechnet:

$$z = \frac{x_i - X}{\sigma_{pt}}$$

z	z-Score
x_i	Messwert eines Labors
X	Zugewiesener Wert oder ausreißerbereinigter Mittelwert („konventioneller zugewiesener Wert“)
σ_{pt}	Standardabweichung für die Eignungsbewertung

Es handelt sich also um das Verhältnis der Abweichung des Messwerts eines Labors vom zugewiesenen Wert zu einer vorgegebenen Standardabweichung.

Die Standardabweichungen für die Eignungsbewertung wurden aus den Ergebnissen der im Zeitraum 2015 - 2025 vom IFA-Tulln veranstalteten Eignungsprüfungen berechnet.

Diese Vorgehensweise wurde deshalb gewählt, weil unserer Erfahrung nach, die Standardabweichungen der ausreißerbereinigten Messwerte zwischen den einzelnen Eignungsprüfungen variieren. Die Ermittlung der Standardabweichung über die Eignungsprüfungsrunden aus mehreren Jahren bieten jedoch eine gut abgesicherte Basis auf einer breiten Datengrundlage und ist somit meistens besser geeignet, als das bei der direkt aus der Eignungsprüfung berechneten Standardabweichung der Fall wäre. (EN ISO/IEC 17043:2023, B.4.1.3)

Der Vorteil, der sich für alle Teilnehmer daraus ergibt, ist, dass dadurch bei unseren Eignungsprüfungen schon vor der Teilnahme vorhersehbar ist, welche z-Scores man mit den eigenen, aus Routineverfahren bekannten, Messabweichungen erwarten kann.

Rechenbeispiel:

Ein Labor bestimmte für den Parameter DOC einen Wert von 7,00 mg/l (Wiederfindung von 116%). Der zugewiesene Wert war 6,02 mg/l (100%).

In der nachfolgenden Tabelle (und in der Tabelle des Jahresprogrammes www.ifatest.at) ist die relative Standardabweichung für die Eignungsbewertung beim Parameter DOC mit 5,3 % angegeben. Bezogen auf den zugewiesenen Wert von 6,02 mg/l DOC entsprechen 5,3 % 0,32 mg/l.

$$z = \frac{x_i - X}{\sigma_{pt}} = \frac{7,00 \text{ mg/l} - 6,02 \text{ mg/l}}{0,32 \text{ mg/l}} \approx 3,1 \quad \text{oder} \quad \frac{116 \% - 100 \%}{5,3 \%} \approx 3,1$$

z	z-Score
x_i	7,00 mg/l entsprechen 116 % (Messwert des Labors)
X	6,02 mg/l entsprechen 100 % (zugewiesener Wert)
σ_{pt}	0,32 mg/l entsprechen 5,3 % (Standardabweichung für die Eignungsbewertung, siehe Tabelle)

Abweichungen in den Nachkommastellen können sich bei Nachberechnung dadurch ergeben, dass im Bericht bei den Wiederfindungen zwecks Übersichtlichkeit gerundete Werte angegeben sind.

Die folgende Tabelle enthält die Standardabweichung für die Eignungsbewertung bezogen auf den zugewiesenen Wert mit ihren Anwendungsbereichen. Die Berechnung von z-Scores erfolgt nur dann, wenn der zugehörige zugewiesene Wert über der in der Tabelle angegebenen Konzentration liegt.

Parameter	Standardabweichung für die Eignungsbewertung bezogen auf den zugewiesenen Wert	untere Grenze
Ammonium	11 %	0,01 mg/l
Bor	6,8 %	0,012 mg/l
Calcium	3,1 %	9 mg/l
Chlorid	2,7 %	2 mg/l
DOC	5,3 %	1 mg/l
Fluorid	7,0 %	0,2 mg/l
Gesamthärte	2,7 %	0,1 mmol/l
Gesamt-P (als PO ₄ ³⁻)	8,2 %	0,015 mg/l
Hydrogencarbonat	2,3 %	20 mg/l
Kalium	3,7 %	0,5 mg/l
Leitfähigkeit	1,1 %	50 µS/cm
Magnesium	3,5 %	1 mg/l
Natrium	3,0 %	1 mg/l
Nitrat	2,9 %	2 mg/l
Nitrit	5,4 %	0,01 mg/l
Orthophosphat	8,7 %	0,015 mg/l
Säurekapazität	1,8 %	0,2 mmol/l
Silicium	4,6 %	0,9 mg/l
Sulfat	3,0 %	3 mg/l

Zur Interpretation von z-Scores wird meist folgende Klassifikation vorgeschlagen:

z-Score	Klassifikation
≤2	zufriedenstellend
2< z <3	fraglich
≥3	nicht zufriedenstellend

Die z-Scores sind in der parameterorientierten Auswertung in den Tabellen neben den Wiederfindungen angegeben. Jedes Labor erhält zusätzlich zu dieser Auswertung ein Blatt, auf dem die erzielten z-Scores zusammengefasst und grafisch dargestellt sind. Die Standardabweichungen für die Eignungsbewertung sind dort in Konzentrationseinheiten angegeben.

Eine Übersichtstabelle aller z-Scores ist im Anschluss an die Rohdatentabellen im parameterorientierten Teil zu finden.

Probe M106A

Parameter Kupfer

*Sollwert ± U (k=2) 4,79 µg/l ± 0,13 µg/l
 IFA-Kontrolle ± U (k=2) 4,79 µg/l ± 0,38 µg/l
 IFA-Stabilität ± U (k=2) 4,69 µg/l ± 0,38 µg/l

*Sollwert = "zugewiesener Wert"
Sollwert ± Unsicherheit aus Einwaage
Kontrollmessung IFA vor Versand
Messung IFA 3 Wochen nach Versand

Labor-Kennung	Messwert	±	Einheit	Wiederfindung	z-Score
A	5,16	0,4128	µg/l	108%	0,90
B	4,22	0,42	µg/l	88%	-1,38
C	4,45	0,13	µg/l	93%	-0,83
D			µg/l		
E			µg/l		
F	4,10	0,08	µg/l	86%	-1,68
G			µg/l		
H			µg/l		
I	4,75	0,74	µg/l	99%	-0,10
J	<5		µg/l	*	
K	4,76		µg/l	99%	-0,07
L	<10		µg/l	*	
M	4,8	0,5	µg/l	100%	0,02
N	3,7	0,4	µg/l	77%	-2,65
O	4,47	0,447	µg/l	93%	-0,78
P	6,0		µg/l	125%	2,94
Q	4,17	0,2	µg/l	87%	-1,51
R	4,6	0,8	µg/l	96%	-0,46
S	4,44	0,67	µg/l	93%	-0,85
T			µg/l		
U	4,675	0,935	µg/l	95%	-0,28
V	5,0	0,50	µg/l	104%	0,51
W	3,54	0,3	µg/l	74%	-3,03
X	7,108	0,749	µg/l	148%	5,63
Y	<10		µg/l	*	
Z			µg/l		
AA	<3,0		µg/l	FN	
AB	3,775	0,107	µg/l	79%	-2,46
AC	<10,0		µg/l	*	

Wiederfindung des zugewiesenen Wertes in Prozent

z-Score des Labors

Ein Stern markiert einen Ausreißer nach dem Hampel-Test

Ergebnisunsicherheit laut Teilnehmer

	alle Ergebnisse	ohne Ausreißer	Einheit
MW ± VB(99%)	4,65 ± 0,57	4,51 ± 0,42	µg/l
WF ± VB(99%)	97,1 ± 12,0	94,1 ± 8,8	%
Standardabw.	0,84	0,59	µg/l
rel. Standardabw.	18,1	13,2	%
n für Berechnung	18	17	

Standardabweichung zwischen den Labors

Mittelwert der Messwerte und Wiederfindung des zugewiesenen Wertes mit zugehörigen Vertrauensbereichen (p=99%)

Anzahl der Messungen zur Berechnung der statistischen Kenngrößen

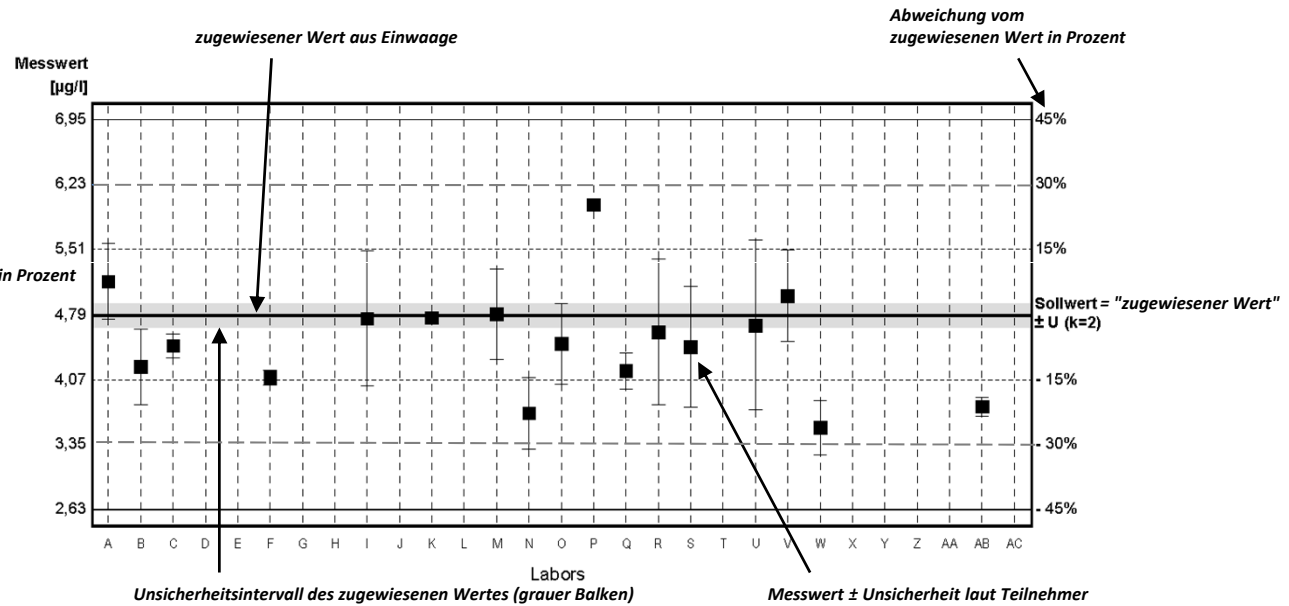
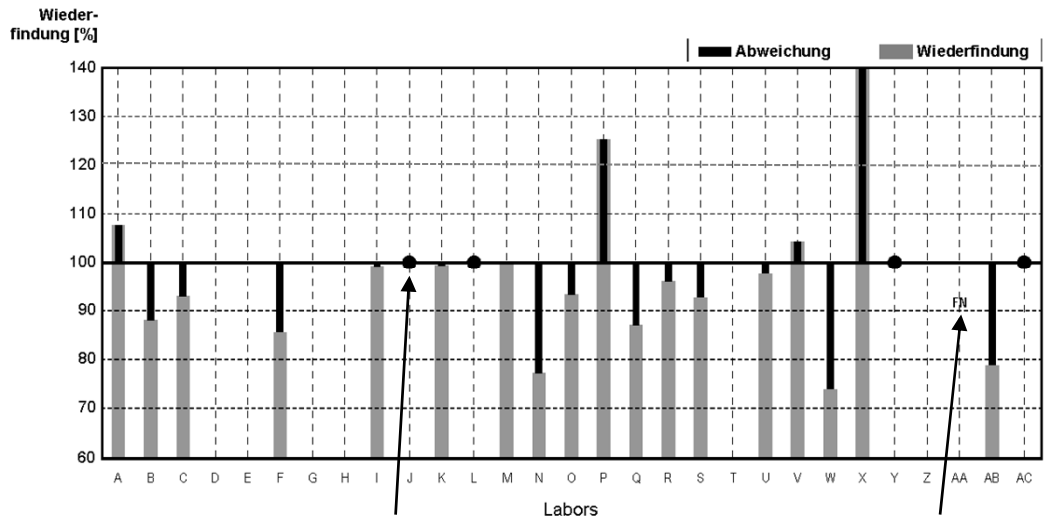


Diagramm 1: Messwerte mit zugehörigen Unsicherheitsintervallen



Ergebnis abgegeben, Berechnung der Wiederfindung oder Zuordnung FN, FP nicht möglich

Falsch negativ „< Ergebnis“ kleiner als der theoretische Sollwert

Diagramm 2: Wiederfindung und Abweichung vom zugewiesenen Wert

LEGENDE

Darstellung der Ergebnisse in der Auswertung

Eine Legende zur Darstellung der Ergebnisse finden Sie auf der nächsten Seite. In den Tabellen der Auswertung sind jeweils der zugewiesene Wert, Messwert, Unsicherheit und die Wiederfindung dargestellt. In der parameterorientierten Auswertung befindet sich der direkt unter der Parameterbezeichnung. Die Unsicherheit des zugewiesenen Wertes ist immer als erweiterte Unsicherheit ($k = 2$; $\alpha = 0,05$) angegeben. Sie wurde nach den Vorgaben des EURACHEM / CITAC Guides „Quantifying Uncertainty in Analytical Measurement, 3rd Edition (2012)“ ermittelt. Die grafische Darstellung der Ergebnisse enthält die Unsicherheit des zugewiesenen Wertes als grau unterlegtes Band.

In der parameterorientierten Auswertung wurden die Messwerte, die nach dem Test nach Hampel als Ausreißer gewertet wurden, mit einem Stern (*) gekennzeichnet. Die Grafik der Messwerte wurde für Nitrit, Ammonium, Orthophosphat, Bor, DOC und ges-P (als PO_4^{3-}), auf $100 \% \pm 45 \%$ des zugewiesenen Wertes und für alle übrigen Parameter auf $100 \% \pm 15 \%$ des zugewiesenen Wertes skaliert. Die kleine Tabelle unten links enthält statistische Parameter, darunter den 99 % - Vertrauensbereich der Labormittelwerte vor und nach Ausreißereliminierung.

Ergebnisse, für die keine Wiederfindung bzw. Abweichung vom zugewiesenen Wert berechnet werden kann (d.h. „kleiner als“ Ergebnisse oder Zahlenwerte bei nicht zugegebenen Substanzen) werden in den Tabellen und Grafiken entweder als **FN** (falsch negativ), **FP** (falsch positiv) oder als • - Symbol dargestellt.

- Als falsch negativ gelten „< Ergebnisse“ mit einem Betrag des < - Wertes unterhalb des zugewiesenen Wertes bzw. Messwert „0“ bei zugegebenen Substanzen.
- Falsch positive Ergebnisse sind nur für Substanzen möglich, die über „< zugewiesener Wert“ ausgewertet wurden. Mit FP werden alle Messwerte gekennzeichnet, die mit Ihren Unsicherheiten das Kriterium „< zugewiesener Wert“ nicht einschließen (tangieren).
- Mit einem • - Symbol werden alle weiteren Ergebnisse illustriert, für die keine Wiederfindung berechnet werden kann

Prüfmethoden

Den Teilnehmenden stand, mit Ausnahme des Parameters Gesamt-P, die Wahl der Analysenmethode frei. Die Prüfmethoden sollten mit den jeweilig im Teilnehmerlabor verwendeten Routineverfahren übereinstimmen. Gesamt-P (gelöst) sollte gemäß DIN EN ISO 6878:2004 nach oxidierendem Aufschluss analysiert werden, wobei gleichwertige oder bessere Verfahren, die vergleichbare Messwerte liefern, zulässig waren. Eine Übersicht der angewendeten Methoden befindet sich am Ende des Berichts. „< Werte“ bzw. „> Werte“ sowie stark abweichende Messwerte, welche zu einer unübersichtlichen Skalierung führen würden, sind in den Graphiken nicht berücksichtigt.

Tulln, 30. April 2026

Information

This report summarises the results of round N181 (major ions) within the IFA-Proficiency Testing Scheme for Water Analysis. The proficiency testing items N181A and N181B were distributed to 38 participants on Monday, 16 March 2026. Each participant received two proficiency testing items of 1000 mL, each filled into two 500 mL PET bottles.

Closing date for reporting results to the IFA-Tulln was Friday, 17 April 2026. All participants submitted results. To make the participants anonymous, each laboratory obtained a letter code by random.

Proficiency testing items

The proficiency testing items consisted of artificial ground water. For proficiency testing item preparation, ultrapure water was spiked with solutions of salts and standards to simulate the ionic composition of natural Austrian ground water. The following substances were added to the proficiency testing items: CaCO_3 , CaCl_2 , MgSO_4 , $\text{Mg}(\text{NO}_3)_2$, NaHCO_3 , KHCO_3 , diethyl ethylphosphonate ($\text{C}_6\text{H}_{15}\text{PO}_3$, for total-P), potassium hydrogen phthalate (for DOC), and certified standard solutions of NaNO_2 , Na_2SiO_3 , NH_4Cl , KH_2PO_4 , H_3BO_3 and NaF . Both proficiency testing items, N181A and N181B, contained free CO_2 , which was used for dissolution of CaCO_3 and neutralisation of Na_2SiO_3 . No other substances (e.g. preservatives) were added. The proficiency testing items were stabilised by sterile filtration and low temperature.

Homogeneity, accuracy and stability tests at the IFA-Tulln

The proficiency testing items were checked for homogeneity and accuracy at the IFA-Tulln before dispatch. The results of the measurements are listed in the result tables and the parameter oriented part of the report ("IFA result").

To verify stability, the parameters DOC, NH_4^+ , NO_2^- , and o-PO_4^{3-} were analysed in several proficiency testing items N181A and N181B approximately four weeks after shipment. The results are listed in the result tables ("Stability test") and the parameter oriented part of the report ("IFA result"). Stability tests for all other parameters will be carried out together with the accuracy tests of the following round (N182).

According to our experience, the proficiency testing items remain stable up to 18 months for the parameters conductivity, total hardness, alkalinity, Ca^{2+} , Mg^{2+} , Na^+ , K^+ , NO_3^- , Cl^- , SO_4^{2-} , boron, HCO_3^- , F^- and Si when stored at 4°C in the dark. For the parameters NH_4^+ , NO_2^- , o-PO_4^{3-} and total-P the proficiency testing items remain stable several weeks, whereas the first changes normally are observed for NH_4^+ .

Results

Data evaluation was based on concentrations that were calculated from the weights of the substances and standards used to produce the proficiency testing items. Their uncertainty intervals correspond to the expanded uncertainty (coverage factor $k = 2$) as described in the EURACHEM/CITAC Guide "Quantifying Uncertainty in Analytical Measurement, 3rd Edition (2012)".

The assigned value of the electrical conductivity was set to the laboratory mean (consensus) value. When calculated from more than 20 results with a standard deviation between the laboratories of about 1 %, the consensus value has a confidence interval that is smaller than the uncertainty of our estimate calculated from the assigned concentrations by Debye-Hückel's theory: 2.4 % ($p = 95\%$). However, the calculated electrical conductivity was 383 $\mu\text{S}/\text{cm}$ in proficiency testing item N181A and 495 $\mu\text{S}/\text{cm}$ in N181B.

For the pH no assigned values can be defined. The results can be compared on the tables. In this kind of proficiency testing items containing CO₂, the pH tends to increase slowly over time.

Total phosphorus after digestion had to be determined according to DIN EN ISO 6878. Diethyl ethylphosphonate (C₆H₁₅PO₃) and potassium dihydrogen phosphate (KH₂PO₄) were used for preparation. The assigned values of total-P were calculated from the weights of the two substances. The results were given in mg/L PO₄³⁻.

No phosphorus substances were added to N181A and ammonium was not added to N181B to check the analytical blank values. The assigned concentrations were set to <0.01 mg/L NH₄⁺, <0.009 mg/L o-PO₄³⁻ and <0.009 mg/L total-P (as PO₄³⁻) which meets the minimum quantifiable values defined by the Austrian ground and river water monitoring program and the quantification limits of the analytical methods applied in the IFA.

Recoveries for individual laboratory results and overall mean values are related to the concentrations. The results were tested for outliers by application of the Hampel outlier test (level of significance 99 %).

The recoveries of the concentrations, calculated from outlier-corrected data mean values ranged between 98.5 % (alkalinity in N181B) and 104.6 % (Ges-P as PO₄³⁻ in N181B).

The between laboratory CVs covered the range between 0.7 % (conductivity in N181A) and 9.3 % (Ges-P as PO₄³⁻ in N181B).

All confidence intervals of the outlier-corrected laboratory mean values except for HCO₃⁻ in N181A (103.1 % ± 2.0 %) encompass the corresponding assigned values with their uncertainties. For all other parameters, statistically, no difference could be detected between theoretical concentrations and outlier corrected laboratory means.

The standard uncertainties of all assigned values were checked according to the criterion

$$u(x_{pp}) < 0,3\sigma_{pp} \text{ or } u(x_{pp}) < 0,1\delta E, \text{ (DIN ISO 13528, Section 9.2)}$$

and met the requirement in all cases except for nitrate and chloride in N181A and alkalinity, sodium, nitrate and chloride in N181B.

For these parameters and additionally for HCO₃⁻ in N181A, the comparison of the absolute difference between the assigned value (x_{pt}) and the laboratory mean value (\bar{X}), considering the measurement uncertainties $u(x_{pt})$ and $u(\bar{X})$, was additionally carried out. All parameters except HCO₃⁻ in N181A met the requirement:

$$|x_{pt} - \bar{X}| < 2 * \sqrt{u(x_{pt})^2 + u(\bar{X})^2} \quad \text{(DIN ISO 13528, Section 7 and E7)}$$

A comparison of the values reported by participants for alkalinity and HCO₃⁻ showed that at least six laboratories converted to HCO₃⁻ without applying a blank correction (about 3 mg/L HCO₃⁻). Due to the low concentration of the assigned value, this noticeably biased the laboratories' mean. Therefore, all determined assigned values with their standard uncertainties were adopted.

z-scores

The most common approach is to form the z-score given by

$$z = \frac{x_i - X}{\sigma_{PT}}$$

- z** z-score
 x_i result of laboratory
X assigned value or mean value („consensus value“)
 σ_{PT} standard deviation for proficiency assessment

Thus, the z-score is the ratio of the estimated bias (difference between result and assigned value) and a standard deviation. The standard deviations for proficiency assessment were determined from the results of all interlaboratory comparisons that have been organised by the IFA-Tulln from 2015 to 2025. They represent average performance data of all former participating laboratories.

This approach was chosen, because standard deviations of the outlier-corrected measurements substantially vary between individual proficiency test rounds. Averaging standard deviations from proficiency testing rounds of several years can provide standard deviations for proficiency assessment on a broad data basis. It is therefore more suitable than a standard deviation taken directly from the interlaboratory comparison (EN ISO/IEC 17043:2023, B.4.1.3). Another advantage of previously determined standard deviations is that the participants can foresee which z-scores can be expected by their routine analysis methods before participation.

Calculation example:

A laboratory found 7.00 mg/L for the parameter DOC (recovery of 116 %). The assigned value for the DOC was 6.02 mg/L (100 %). The relative standard deviation for proficiency assessment is given in the table below (as well as in the annual program www.ifatest.eu) by 5.4 %, which is 0.32 mg/L DOC, when based on the assigned value.

$$z = \frac{x_i - X}{\sigma_{PT}} = \frac{7.00 \text{ mg/L} - 6.02 \text{ mg/L}}{0.32 \text{ mg/L}} \approx 3.1 \quad \text{or} \quad \frac{116 \% - 100 \%}{5.3 \%} \approx 3.1$$

- z** z-score
 x_i 7.00 mg/L equivalent to 116 % (value of the laboratory)
X 6.02 mg/L equivalent to 100 % (assigned value)
 σ_{PT} 0.32 mg/L equivalent to 3.0 % (standard deviation for proficiency assessment, see table below)

Minor deviations in the last digits may occur because rounded values are reported for clarity.

The following table lists the z-score criteria as relative standard deviation and their limits of applicability. Z-scores were only calculated, if the assigned values were higher than these limits.

Parameter	standard deviation for proficiency assessment based on the assigned value	Lower limit
Alkalinity $K_{S4.3}$	1.8 %	0.2 mmol/L
Ammonium	11 %	0.01 mg/L
Boron	6.8 %	0.012 mg/L
Calcium	3.1 %	9 mg/L
Chloride	2.7 %	2 mg/L
el. Conductivity	1.1 %	50 μ S/cm
DOC	5.3 %	1 mg/L
Fluoride	7.0 %	0.2 mg/L
Hydrogen carbonate	2.3 %	20 mg/L
Magnesium	3.5 %	1 mg/L
Nitrate	2.9 %	2 mg/L
Nitrite	5.4 %	0.01 mg/L
Orthophosphate	8.7 %	0.015 mg/L
Potassium	3.7 %	0.5 mg/L
Silicon	4.6 %	0.9 mg/L
Sodium	3.0 %	1 mg/L
Sulphate	3.0 %	3 mg/L
Total hardness	2.7 %	0.1 mmol/L
Total-P (as PO_4^{3-})	8.2 %	0.015 mg/L

Normally, a classification based on z-scores is made this way:

z-Score	Classification
≤ 2	satisfactory
$2 < z < 3$	questionable
≥ 3	unsatisfactory

The z-scores are listed in the parameter-oriented evaluation in the tables next to the recoveries. Additionally, each laboratory receives a sheet on which the obtained z-scores are summarized and graphically presented. The standard deviations for proficiency assessment are given in concentration units there.

An overview table of all z-scores can be found after the result tables in the parameter-oriented part.

Illustration of results

An explanation to the illustration of the results is given on the following page.

The **laboratory oriented part** contains the measurement results and reported uncertainties of each individual laboratory for all parameters together with the achieved recoveries in graphical and tabular form. This part of the report also lists tables with the results originally reported by the laboratories.

In the **parameter oriented part** the reported results and corresponding uncertainties are illustrated together with recoveries of the assigned values and the z-scores for each parameter and all laboratories. This information is presented in graphical and tabular form.

Results, which were identified as outliers by the Hampel test are marked with an asterisk (*). These values were not considered for the calculation of statistical parameters (mean values, standard deviations and confidence intervals). Moreover, the parameter oriented part contains the uncertainties of the assigned values. The uncertainty intervals correspond to the expanded uncertainty (coverage factor $k = 2$) as described in the EURACHEM / CITAC Guide "Quantifying Uncertainty in Analytical Measurement", 3rd Edition (2012)". The uncertainty interval of the reference concentration is illustrated in the graphs as a grey band around the 100 % recovery line.

Results, for which no recoveries could be calculated, are illustrated by one of the following symbols: **FN** (false negative), **FP** (false positive) or • - symbol.

- "FN": A result is considered false negative when the "< result" reported is lower than the corresponding assigned value or the measured value was given as "0" when the substance was added.
- "FP": False positive results can only be obtained for compounds that were evaluated based on a "< assigned value". A result is termed FP if it does not include (strike) the "< assigned value" with its measurement uncertainty.
- "•": All other results for which no recoveries can be calculated are illustrated by this symbol

Overview of measurement methods

Except for total P, the participants were free to choose the analysis method. The test methods should be consistent with the methods applied in routine. Total P (dissolved) should be analysed according to EN ISO 6878:2004, whereby equivalent or better methods that provide comparable measured values were allowed. An overview of the methods used can be found at the end of the report.

"< values" or "> values" as well as significantly different measured values, which would lead to confusing scaling, are not included in the graphics.

Tulln, 30 April 2026

Sample M106A
Parameter Copper

*Target value ± U (k=2) 4,79 µg/l ± 0,13 µg/l
 IFA result ± U (k=2) 4,79 µg/l ± 0,38 µg/l
 Stability test ± U (k=2) 4,69 µg/l ± 0,38 µg/l

**Target value = "assigned value"*
Obtained from sample preparation, U=uncertainty
Determined at IFA prior to shipment of samples
Determined at IFA 3 weeks after sample dispatch

Lab Code	Result	±	Unit	Recovery	z-Score
A	5.16	0.4128	µg/l	108%	0.90
B	4.22	0.42	µg/l	88%	-1.38
C	4.45	0.13	µg/l	93%	-0.83
D			µg/l		
E			µg/l		
F	4.10	0.08	µg/l	86%	-1.68
G			µg/l		
H			µg/l		
I	4.75	0.74	µg/l	99%	-0.10
J	<5		µg/l	.	.
K	4.76		µg/l	99%	-0.07
L	<10		µg/l	.	.
M	4.8	0.5	µg/l	100%	0.02
N	3.7	0.4	µg/l	77%	-2.65
O	4.47	0.447	µg/l	93%	-0.78
P	6.0		µg/l	125%	2.94
Q	4.17	0.2	µg/l	87%	-1.51
R	4.6	0.8	µg/l	96%	-0.46
S	4.44	0.67	µg/l	93%	-0.85
T			µg/l		
U	4.675	0.935	µg/l	98%	-0.28
V	5.0	0.50	µg/l	104%	0.51
W	3.54	0.3	µg/l	74%	-3.03
X	7.108 *	0.749	µg/l	148%	5.63
Y	<10		µg/l	.	.
Z			µg/l		
AA	<3.0		µg/l	FN	
AB	3.775	0.107	µg/l	79%	-2.46
AC	<10.0		µg/l	.	.

Recovery of assigned value in percent

z-Score of the laboratory

An asterik indicates a result detected as outlier by Hampel test

Interval expected to encompass target value as stated by participant

	All results	Outliers excl.	Unit
Mean ± CI(99%)	4,65 ± 0,57	4,51 ± 0,42	µg/l
Recov. ± CI(99%)	97,1 ± 12,0	94,1 ± 8,8	%
SD between labs	0,84	0,59	µg/l
RSD between labs	18,1	13,2	%
n for calculation	18	17	

Between laboratory standard deviation

Laboratory mean and recovery of assigned value with corresponding confidence intervals (p=99%)

Number of results used for calculation of statistic parameters

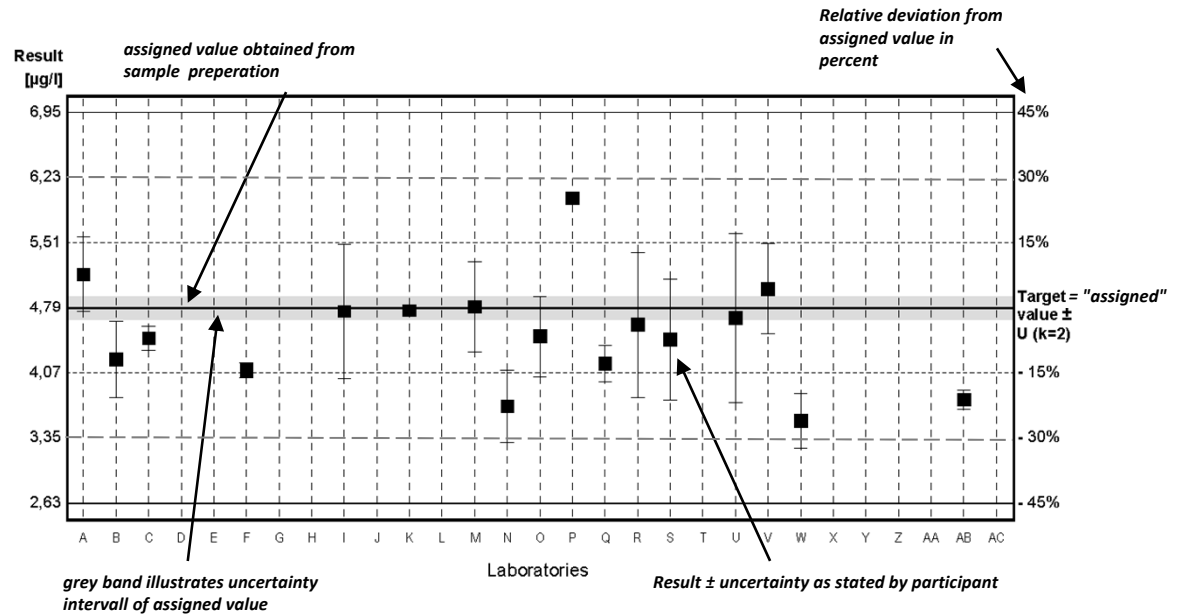
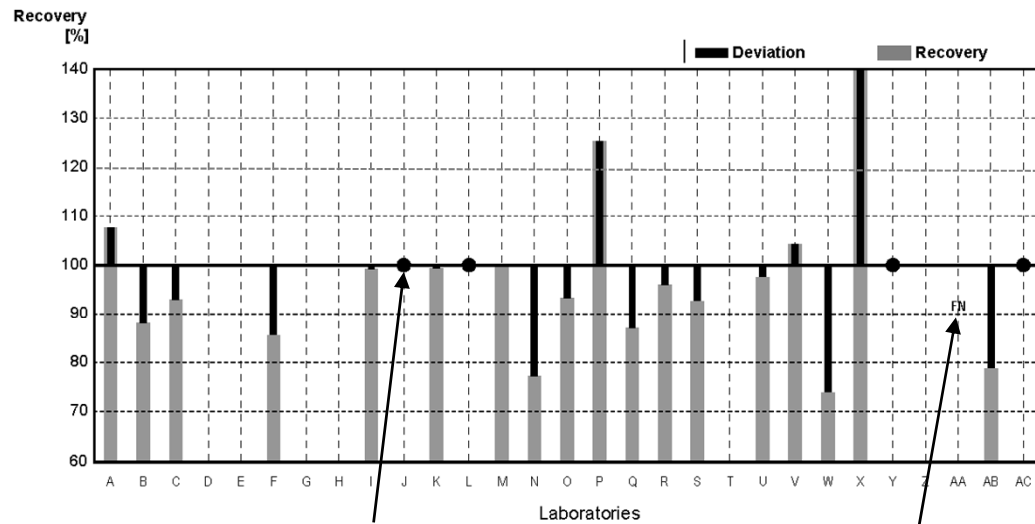


Diagram 1: Measurement results and their uncertainties



Result neither possible to calculate recovery nor false positive or false negative

False negative: reported „<-result“ is lower than target value

Diagram 2: Recoveries and deviations from assigned values

EXPLANATION



**Rohdatenblätter und
Parameterorientierte Auswertung
Tables and Parameter Oriented Part**

Eignungsprüfungsrunde / Proficiency testing round
N181

Nährstoffe
Major ions

Versand / Dispatch: 16.03.2026

Results N181A

	pH	Cond.	total-Hardn.	K _S 4.3	HCO ₃ ⁻	Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	NO ₃ ⁻
Unit		μS/cm	mmol/L	mmol/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
assigned value		389	1.321	1.144	66.7	32.3	12.51	20.14	1.87	17.9
IFA result	6.62	388	1.33	1.14	66	32.8	12.5	19.7	1.95	17.7
stability test										
A	6.92	408.95								17.586
B	6.70	389	1.35	1.20		<40	12.6	20.46	1.93	17.07
C	6.65	383	1.35	1.12	68.3	33.5	12.4	19.5	1.89	17.8
D	6.76	392.30		1.14	70.0	35.06	13.4	20.20	1.766	18.193
E		391	1.343	1.13	65.9	32.9	12.7	20.4	2.00	17.8
F	6.7	388	1.31	1.12	68.6	32.2	12.4	19.7	1.84	17.2
G	6.6	385	1.34	1.17		33.1	12.6	20.0	1.86	17.9
H	6.89	392	1.32	1.14	69.4	31.7	12.8	20.5	1.80	17.6
I	6.88	388	1.29	1.14	66.5	31.8	12.1	19.8	1.84	17.7
J	6.57	386	1.34	1.15	67.1	32.8	12.5	20.3	1.85	17.4
K	7.00	388	1.345	1.153	67.3	32.8	12.79	20.8	<2	17.4
L	6.44	390	1.34	1.180	72.0	33.1	12.4	20.2	1.95	18.1
M	6.79	388	1.32	1.89	112.4	32.4	12.3	19.83	1.76	17.6
N	6.7	391	3.38	1.11	64.6	96.0	24.0	18.6	1.85	17.8
O	6.72	390	1.280	1.19	69.74	31.66	11.91	19.85	1.752	18.5
P	6.88	387	1.34	1.16	67.6	33.1	12.5	19.1	2.70	17.7
Q		349	1.518	1.450		39.4	14.7	20.5	2.44	19.6
R	6.6	385		1.14						17.9
S	6.68	386		1.14	66					17.5
T	6.87	394	1.30	1.20	70.2	31.8	12.3	20.3	1.85	17.61
U	6.90	401	1.30	2.255	137.56	32.36	12.16	20.11	1.809	18.15
V	6.62	389	1.312	1.145	69.86	31.50	12.78	20.09	1.842	18.9
W	6.77	392	1.28	1.21	74	31.0	12.3	20.5	1.88	18.2
X	6.63	385	1.327	1.164	68	31.662	13.056	21.259	1.988	18.41
Y	6.58	391	1.26			31.22	11.69	19.5	1.89	16.9
Z	6.40	470.00	1.32	0.53	52.52	16.55	13.15	35.39		7.05
AA	6.61	387	1.314	1.15	70					20.0
AB	6.61	387	1.29	1.16	70.5	30.8	12.7	20.6	1.79	18.0
AC	6.76	389	1.37	1.12	65.3	34.6	12.4	20.6	1.85	18.4
AD		388	1.34	1.16	71	32.9	12.7	20.0	1.64	17.6
AE	6.8	390.6	1.276	1.157	67.5	31.4	12.0	19.7	1.80	16.9
AF	6.82	390	1.39	1.16	68	34.6	12.7	20.1	2.12	18.0
AG	6.70	389	1.31	1.11	67.7	32.48	12.13	19.49	1.84	17.712
AH										
AI	6.77	390.21	1.33	1.17	68.34	33.00	12.50	19.80	1.86	17.9
AJ	6.66	388	1.35	1.15	70.17	32.93	12.79	20.70	1.97	16.93
AK				1.242	75.8					
AL	6.6	383	1.37	1.15	67	32.0	12.2	20.0	1.86	17.2

Measurement Uncertainties N181A

	pH ±	Cond. ±	total- Hardn. ±	K _S 4.3 ±	HCO ₃ ⁻ ±	Ca ²⁺ ±	Mg ²⁺ ±	Na ⁺ ±	K ⁺ ±	NO ₃ ⁻ ±
Unit		µS/cm	mmol/L	mmol/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
assigned value		1	0.017	0.005	0.3	0.6	0.13	0.10	0.03	0.4
IFA result	0.02	6	0.07	0.05	3	2.1	0.7	1.0	0.16	0.9
stability test										
A	0.12	5.08								0.011
B	0.34	11.7	0.07	0.06			1.26	2.1	0.2	0.9
C	0.20	11	0.20	0.090	5.5	5.0	1.5	2.5	0.28	1.8
D	0.13	39.23		1.39	1.4	5.26	2.01	3.03	0.26	1.455
E		19.6		0.06	3.3	2.0	0.8	1.2	0.1	1.8
F	0.2	16	0.063	0.09	5.3	1.3	0.8	1.1	0.13	1.7
G	0.341	3.50		0.021		2.42	0.60	1.54	0.164	2.24
H	0.12	22	0.16	0.03	1.6	1.5	1.0	1.6	0.14	1.6
I	0.0688	0.0283	0.0118	0.0718	1.33	0.173	0.266	0.154	0.0179	1.22
J	0.4	16	0.1	0.1	3	3	1.6	4	0.3	1.4
K	0.18	8.0		0.078		2.10	1.05	1.54		1.20
L	0.05	9	0.11	0.052	3.2	1.5	0.5	0.9	0.08	0.7
M										
N	0.67	23.5	0.254	0.105	6.13	5.76	2.88	1.21	0.185	1.87
O	0.1	3		0.022						1.08
P	0.34	19.4	0.13	0.07	4.06	3.3	1.3	1.9	0.3	1.8
Q										
R	0.05	2		0.06						2.1
S	0.01	3		0.032	1.0					1.2
T	0.1	10	0.13	0.12	7	6.4	2.5	3.1	0.37	1.8
U	0.0655	11.99				3.013	0.546	0.825	0.097	
V										
W	0.07	8.5	0.10	0.10	3.3	1.6	0.78	1.6	0.07	0.88
X	0.19	21.4	0.13	0.064	3.74	1.741	0.457	0.744	0.07	1.4
Y	0.07	11	0.38			5.00	1.64	2.0	0.38	0.8
Z	0.03	0.5	0.65	2.0	2.0	0.3	0.3	1.5		0.5
AA	0.04	14	0.025	0.025	10					1
AB	0.006	0.577	0.015	0.006	0.153	0.666	0.115	0.153	0.006	0.115
AC	0.676	38.9	0.137	0.112	6.53	3.46	1.24	2.06	0.185	1.84
AD		12	0.07	0.06	5.6	2.0	1.0	1.6	0.13	1.1
AE	0.19	22	0.17			4.19	1.59	3.48	0.30	1.43
AF				0.08		2.9	1.4	1.7	0.2	2.6
AG	0.20	38.9		0.167	10.16	3.248	1.213	1.949	0.184	0.8856
AH										
AI	0.2	39	0.13	0.283	6.83	4.94	4.04	3.2	0.246	4.97
AJ	0.1	2.9	0.135	0.115	7.02	3.34	0.98	1.44	0.145	1.7
AK				0.1	2.5					
AL	0.1	11		0.12		3.2	1.2	2.0	0.28	0.9

Results N181A

	NO ₂ ⁻	NH ₄ ⁺	Cl ⁻	SO ₄ ²⁻	o-PO ₄ ³⁻	Boron	DOC	total-P (as PO ₄ ³⁻)	Silicon	F ⁻
Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
assigned value	0.0605	0.061	48.8	35.6	<0.009	0.0753	2.370	<0.009	5.79	0.804
IFA result	0.059	0.0613	49.1	35.4	<0.009	0.083	2.32	<0.009	5.5	0.797
stability test	0.059	0.0616			<0.009		2.39			
A	<0.010	0.064	47.404	34.987	<0.150					
B	0.0597	0.057	50.38	35.90	<0.006	0.075				0.83
C	0.0630	0.0557	49.3	35.8	<0.015	0.0757	2.07	<0.015	5.26	0.837
D	0.061	0.0654	51.77	35.80	0.0113	0.0760	2.68	<0.05	5.95	
E	0.0590	0.062	48.8	35.5	<0.0015			<0.030		0.797
F	0.069	0.072	49.0	35.5	<0.010	0.0752	2.41	<0.010		0.80
G	0.061	0.053	49.6	35.7	<0.014	71	2.31		5.73	0.79
H	0.0485	0.0541	48.5	36.7	0.0365	0.0823	2.53	0.0365	5.44	0.769
I	0.0609	0.0636	49.2	34.7	<0.0150	0.0762	2.61	<0.0150		0.786
J	0.061	0.060	49.0	34.6	<0.01		2.46	<0.013	5.72	
K	0.0630	0.0610	49.08	35.0		0.0809				
L	0.062	0.060	51	36.7	<0.01		2.68	<0.01		0.77
M	0.0608	0.0638	49.5	33.7	<0.006	0.0760	2.37	<0.006	5.79	0.820
N	0.0628	0.0639	46.2	32.2	<0.015	0.071	2.38	<0.015		0.72
O	0.0715	0.057	50.9	34.55	<0.02	0.075607		0.0135		0.82
P	0.0629	0.0597	49.0	35.1	<0.03	0.0572		<0.03	4.84	0.807
Q	0.061	0.0567	51.6	37.9	<0.009			0.0087		0.53
R	0.0571	0.0709	48.9	35.3	<0.02		2.53		6.03	0.803
S	0.05939	0.0766	49.5		<0.006			<0.006		
T	0.0588	0.0627	48.7	34.39	<0.009	0.0747	2.588	<0.009		
U	0.056	0.063	49.40	36.728	0.00300	0.07009	2.45	0.00400	11.75	0.817
V	0.063	0.063	51.34	36.56	0.00200			0.0060		0.747
W	0.067	0.055	47.3	35.6	<0.01		2.76	<0.01		
X	0.061	0.062	49.47	35.27	<0.01	0.0795	2.487	<0.010	6.079	0.794
Y	0.058	0.051	49.3		0.0070					0.75
Z	0.094	3.31	58.99	10.00	1.04			0.340	3.27	0.0100
AA	0.060	0.060	53.4	36.95						
AB	0.0630	0.0592	49.4	35.4	<0.020	0.0802	2.40	<0.020	5.53	0.847
AC	0.060	0.060	50.3	35.6	0.0061	0.0766	2.53	<0.0032		
AD	0.060	0.060	47.9	34.5	<0.009		2.33	<0.009		0.79
AE	0.059	0.060	48.2	34.5		0.076	2.20		5.76	0.80
AF	0.0658	0.0611	50.0	35.3	<0.01	0.0771	2.51	<0.03	6.07	0.84
AG	0.062	0.0570	47.80	35.82	0.0060	0.075	2.30	<0.0150	5.75	0.810
AH									5.7791	
AI	0.061	0.0339	50.00	35.4	<0.1	0.055	2.11	<0.005	5.65	0.779
AJ	0.061	0.058	47.37	32.52	0.00100	0.07578	2.55	0.00300	5.87	0.743
AK									5.59	
AL	0.062		49.1	35.0		0.075	2.42		6.0	0.80

Measurement Uncertainties N181A

	NO ₂ ⁻ ±	NH ₄ ⁺ ±	Cl ⁻ ±	SO ₄ ²⁻ ±	o-PO ₄ ³⁻ ±	Boron ±	DOC ±	total-P (as PO ₄ ³⁻) ±	Silicon ±	F ⁻ ±
Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
assigned value	0.0002	0.003	1.1	0.4		0.0013	0.015		0.03	0.003
IFA result	0.002	0.0019	1.7	0.9		0.007	0.07		0.4	0.015
stability test	0.002	0.0019					0.07			
A		0.0004	0.028	0.077						
B	0.01	0.007	2.5	3.6		0.02				0.2
C	0.0069	0.0045	4.9	5.7		0.011	0.41		0.53	0.084
D	0.0061	0.0163	1.55	5.37	0.0017	0.0114	0.67	0.0016	0.89	
E	0.0059	0.009	4.9	3.6						0.080
F	0.007	0.013	3.8	2.9		0.0059	0.54			0.13
G	0.0067	0.011	5.7	1.93		9.1	0.367		0.481	0.075
H	0.007	0.004	3.6	2.5	0.004	0.006	0.84	0.001	0.092	0.062
I	0.000904	0.00198	1.14	1.04		0.000643	0.116			0.00846
J	0.005	0.008	4	3			0.4		0.6	
K	0.0123	0.0234	6.28	1.64		0.0089				
L	0.005	0.008	2	1.4			0.34			0.04
M										
N	0.00628	0.00639	4.16	2.90		0.0100	0.143			0.065
O	0.004	0.008	2.16	2.2				0.002		0.08
P	0.0126	0.0060	4.9	3.5		0.0143			1.21	0.081
Q										
R	0.0081	0.0093	5.3	3.8			0.39		0.71	0.085
S	0.00594	0.0116	0.5							
T	0.0085	0.0103	4.9	3.5		0.019	0.388			
U						0.0052				
V										
W	0.0039	0.0041	3.7	2.2			0.26			
X	0.006	0.006	5.19	3.03		0.0143	0.4974		0.61	0.115
Y	0.012	0.020	4.9		0.0014					0.23
Z	0.01	1.0	2.0	0.05	0.5			0.5	0.05	0.01
AA	0.01	0.01	1	1.5						
AB	0.001	0.001	0.289	0.173		0.001	0.015		0.025	0.002
AC	0.0060	0.0060	0.503	3.56	0.00061	0.0115	0.253			
AD	0.008	0.0126	3.8	2.1			0.14			0.08
AE	0.01	0.01	4.02	2.23		0.001	0.41		0.58	0.17
AF	0.01	0.009	7.1	2.9		5.54	0.3		1.91	0.1
AG	0.0094	0.00570	4.780	3.582	0.00090	0.0113	0.180		0.86	0.081
AH									0.444	
AI	0.0213	0.0142	10.2	6.52		0.011	0.7		1.09	0.14
AJ	0.006	0.006	4.74	3.25	0.001	0.004872	0.255	0.002	0.587	0.074
AK									0.25	
AL	0.012		4.9	3.5		0.011	0.48		0.6	0.12

Results N181B

	pH	Cond.	total-Hardn.	K _S 4.3	HCO ₃ ⁻	Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	NO ₃ ⁻
Unit		µS/cm	mmol/L	mmol/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
assigned value		498	2.14	1.92	114.1	51.0	21.1	10.4	4.01	43.6
IFA result	5.92	496	2.18	1.87	111	52	21.2	10.4	4.30	43.2
stability test										
A	6.50	518.02								42.923
B	6.05	500	2.20	1.90		51.9	21.2	10.8	4.12	43.5
C	6.05	492	2.25	1.84	112	54.6	21.4	11.0	3.76	44.1
D	6.13	530.70		1.88	115	55.42	20.82	10.66	3.788	44.031
E		501	2.157	1.85	109.6	51.0	21.5	10.5	4.00	43.2
F	6.1	495	2.12	1.86	113.5	50.7	20.8	10.3	3.91	43.1
G	6.0	495	2.16	1.90		52	21.1	10.3	4.01	44.3
H	6.26	503	2.16	1.71	104	50.1	21.9	10.5	3.65	42.0
I	6.25	497	2.13	1.89	112	51.2	20.6	10.3	3.90	44.2
J	5.94	497	2.15	1.87	111	51.3	21.1	10.5	3.97	41.8
K	8.13	495	2.167	1.881	111.7	52.0	21.14	10.8	4.08	43.3
L	6.09	500	2.12	1.970	120	51	20.6	10.3	3.86	44.9
M	6.08	497	2.12	1.14	66.3	50.4	20.8	10.3	3.83	42.5
N	6.0	507	4.46	1.84	109.0	120.6	35.2	8.9	3.90	43.2
O	6.20	501	2.063	1.88	111.84	49.411	20.177	10.484	3.856	44.8
P	6.34	489	2.16	1.86	110.0	52.0	21.1	10.0	4.90	43.1
Q		448	2.412	2.452		60.6	24.6	10.9	4.59	46.7
R	5.95	493		1.88						43.4
S	6.07	499		1.87	111					43.6
T	6.13	503	2.10	2.29	139.7	49.6	20.9	10.6	4.12	43.83
U	6.30	488	2.10	3.79	230.89	50.36	20.61	10.51	3.922	43.71
V	5.94	499	2.214	1.875	114.40	50.64	23.09	11.31	4.098	44.4
W	6.22	504	2.07	2.04	124	48.7	20.8	10.5	3.95	42.4
X	5.98	494	2.166	1.917	114	50.537	22.007	11.048	4.274	43.52
Y	5.93	500	1.94			47.40	18.44	10.2	4.06	42.4
Z	5.72	500.00	2.12	0.86	85.85	28.11	19.04	28.75		56.39
AA	5.91	496	2.12	1.88	115					51.2
AB	5.97	501	2.09	1.91	117	49.1	21.0	10.9	4.13	44.4
AC	6.48	503	2.26	1.87	111	55.1	21.4	10.6	3.72	45.1
AD		497	2.14	1.90	116	51	21.2	10.4	3.73	43.5
AE	6.1	502.2	2.114	1.936	115.1	50.5	20.8	10.3	4.00	42.5
AF	6.17	499	2.21	1.94	115	53.3	21.4	11.2	4.09	44.1
AG	6.10	500	2.09	1.87	114.1	50.34	20.31	10.16	3.93	43.316
AH										
AI	6.08	500.1	2.14	1.90	112.88	51.3	21.00	10.3	3.98	44.00
AJ	6.02	497	2.15	1.91	116.24	51.52	21.42	10.95	4.19	41.71
AK				1.970	120.2					
AL	5.9	489	2.19	1.89	112	50	21.3	10.3	3.86	42.3

Measurement Uncertainties N181B

	pH ±	Cond. ±	total- Hardn. ±	K _{s 4.3} ±	HCO ₃ ⁻ ±	Ca ²⁺ ±	Mg ²⁺ ±	Na ⁺ ±	K ⁺ ±	NO ₃ ⁻ ±
Unit		µS/cm	mmol/L	mmol/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
assigned value		2	0.02	0.03	1.5	0.7	0.3	0.3	0.03	1.0
IFA result	0.02	8	0.11	0.08	5	3	1.1	0.8	0.24	2.2
stability test										
A	0.04	2.75								0.218
B	0.30	15	0.11	0.10		5.2	2.1	1.1	0.4	2.2
C	0.20	15	0.34	0.15	9.0	8.2	2.6	1.4	0.56	4.4
D	0.11	53.07		2.29	2.29	8.31	3.12	1.60	0.57	3.523
E		25.1		0.09	5.5	3.1	1.3	0.6	0.2	4.3
F	0.2	20	0.099	0.12	7.5	1.9	1.2	0.6	0.21	4.2
G	0.308	4.50		0.034		3.77	1.01	0.80	0.353	5.5
H	0.11	29	0.26	0.04	2.4	2.4	1.6	0.82	0.28	3.9
I	0.0625		0.0106	0.0867	2.24	0.181	0.232	0.167	0.0207	0.998
J	0.4	20	0.1	0.1	5	5	3	1.6	0.6	4
K	0.20	10.0		0.128		3.33	1.73	0.80	0.36	2.99
L	0.05	11	0.18	0.087	6	3	0.8	0.5	0.15	1.7
M										
N	0.60	30.4	0.334	0.175	10.36	7.23	4.23	0.58	0.390	4.54
O	0.1	4		0.035						2.62
P	0.32	24.5	0.22	0.11	6.6	5.2	2.1	1.0	0.49	4.3
Q										
R	0.01	4		0.10						5.1
S	0.01	4		0.053	2					3.0
T	0.1	10	0.21	0.23	14	10	4.2	1.6	0.83	4.4
U	0.0599	14.59				4.689	0.925	0.431	0.210	
V										
W	0.06	11	0.17	0.17	5.6	2.5	1.3	0.80	0.14	2.0
X	0.19	27.5	0.21	0.105	6.27	2.779	0.77	0.387	0.149	3.31
Y	0.06	15	0.58			7.58	2.58	1.0	0.81	2.1
Z	0.03	0.5	0.65	2.0	2.0	0.3	0.3	1.5		0.5
AA	0.04	14	0.025	0.025	10					1
AB	0.006	0.577	0.006	0.001	0.001	0.611	0.306	0.115	0.066	0.361
AC	0.648	50.3	0.226	0.187	11.1	5.51	2.14	1.06	0.372	4.51
AD		15	0.11	0.10	9	3	1.7	0.8	0.30	2.61
AE	0.17	28	0.281			6.74	2.75	1.82	0.66	3.59
AF				0.14		4.5	2.3	1.0	0.4	6.3
AG	0.20	50.0		0.281	17.12	5.034	2.031	1.016	0.393	2.1658
AH										
AI	0.2	50	0.214	0.459	11.28	7.68	6.78	1.66	0.526	12.2
AJ	0.1	3.5	0.22	0.2	11.624	5.224	1.641	0.76	0.31	4.2
AK				0.1	3.6					
AL	0.1	15		0.19		5	2.1	1.0	0.58	2.1

Results N181B

	NO ₂ ⁻	NH ₄ ⁺	Cl ⁻	SO ₄ ²⁻	o-PO ₄ ³⁻	Boron	DOC	total-P (as PO ₄ ³⁻)	Silicon	F ⁻
Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
assigned value	0.02879	<0.01	39.5	49.5	0.0394	0.0328	5.23	0.0578	2.537	1.194
IFA result	0.0280	<0.01	39.8	49.0	0.0419	0.0363	4.95	0.059	2.45	1.179
stability test	0.0278	<0.01			0.0411		5.13			
A	<0.010	<0.010	37.677	48.884	<0.150					
B	0.0286	<0.01	40.94	50.07	0.0373	0.0320				1.24
C	0.0290	<0.01	39.7	50.2	0.0497	0.0343	5.24	0.0727	2.38	1.25
D	0.0298	<0.01	41.73	49.90	0.0456	0.0311	5.44	<0.05	2.61	
E	0.0280	<0.02	39.4	49.3	0.0386			0.0586		1.217
F	0.0368	0.0140	39.9	49.0	0.0382	0.0333	5.2	0.061		1.25
G	0.0290	<0.004	39.2	49.5	0.0280	33.1	5.1		2.53	1.18
H	0.0240	<0.01	38.7	49.0	0.0705	0.0404	5.48	0.0978	2.37	1.06
I	0.0290	<0.0100	40.4	49.1	0.0380	0.0324	5.43	0.0599		1.16
J	0.0290	<0.013	39.6	48.7	0.0420		5.31	0.055	2.50	
K	0.0314	<0.05	39.16	48.5		0.0347				
L	0.0284	<0.02	41.5	51	0.0370		5.5	0.054		1.09
M	0.0292	<0.008	40.1	46.3	0.0389	0.0342	5.16	0.0567	2.55	1.22
N	0.0299	<0.006	37.3	45.3	0.0401	0.0306	5.32	0.059		1.09
O	0.0395	<0.03	40.1	49.7	0.0405	0.033864		0.0595		1.21
P	0.0299	<0.05	39.6	48.9	<0.03	0.0329		0.0180	1.31	1.18
Q	0.0286	0.1502	42.3	51.4	0.0199			0.072		0.73
R	0.0280	<0.03	39.7	49.3	0.0386		5.82		2.66	1.202
S	0.0285	0.0107	40.3		0.0400			0.0566		
T	0.0274	<0.010	38.85	48.44	0.0421	0.0329	5.493	0.0603		
U	0.0265	0.00700	39.82	49.657	0.0390	0.03202	5.27	0.052	5.41	1.203
V	0.0300	0.00300	38.3	47.32	0.0365			0.0625		1.142
W	0.0410	<0.01	36.2	49.3	0.0410		5.1	0.060		
X	0.0290	<0.0100	40.31	49.88	0.0440	0.0345	5.277	0.066	2.651	1.159
Y	0.0280	0.0060	40.8		0.0420					1.19
Z	0.00200	0.0100	47.92	13.00	0.54			0.175	0.68	0.0100
AA	0.0290	<0.01	46.4	55.4						
AB	0.0289	<0.015	40.0	49.7	0.402	0.0357	5.31	0.0632	2.42	1.22
AC	0.0300	<0.009	41.4	50.07	0.0430	0.0330	5.3	0.0520		
AD	0.0290	<0.02	38.7	48.4	0.0380		5.1	0.067		1.17
AE	0.0270	<0.03	40.0	48.7	0.055	0.0310	4.90	0.067	2.59	1.20
AF	0.0331	<0.01	39.6	51.1	0.0390	0.0353	5.18	0.056	2.65	1.25
AG	0.0300	<0.00052	39.07	49.67	0.0370	0.0330	5.20	0.0613	2.57	1.22
AH									2.4821	
AI	0.0253	0.0147	40.4	49.4	<0.1	0.0175	5.06	0.0117	2.48	1.16
AJ	0.0313	0.00350	38.35	45.44	0.0380	0.033175	5.43	0.058	2.69	1.10
AK									2.40	
AL	0.0280		39.6	48.8		0.0313	5.2		2.61	1.19

Measurement Uncertainties N181B

	NO ₂ ⁻ ±	NH ₄ ⁺ ±	Cl ⁻ ±	SO ₄ ²⁻ ±	o-PO ₄ ³⁻ ±	Boron ±	DOC ±	total-P (as PO ₄ ³⁻) ±	Silicon ±	F ⁻ ±
Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
assigned value	0.00011		0.9	0.6	0.0017	0.0006	0.03	0.0014	0.014	0.005
IFA result	0.0012		1.4	1.3	0.0015	0.0031	0.10	0.014	0.18	0.019
stability test	0.0012				0.0014		0.10			
A			0.161	0.248						
B	0.006		2.1	5.0	0.004	0.006				0.3
C	0.0032		4.0	8.0	0.0040	0.0051	1.0	0.0058	0.24	0.13
D	0.0045	0.0071	1.25	7.49	0.0068	0.0047	1.36	0.0071	0.39	
E	0.0028		3.9	4.9	0.0058			0.0088		0.122
F	0.0045	0.0041	3.1	3.9	0.0061	0.0031	1.0	0.007		0.19
G	0.0032		4.51	2.67	0.0034	4.23	0.81		0.456	0.112
H	0.003	0.001	2.9	3.3	0.015	0.003	1.8	0.002	0.040	0.086
I	0.000940		0.816	0.966	0.000967	0.000711	0.124	0.000531		0.0800
J	0.003		3	4	0.008		0.8	0.007	0.3	
K	0.006		5.01	2.28		0.0038				
L	0.0021		1.6	2	0.0032		0.7	0.012		0.06
M										
N	0.00299		3.35	4.08	0.00401	0.00428	0.319	0.006		0.099
O	0.002		1.7	3.15	0.007			0.01		0.11
P	0.0060	0.0042	4.0	4.9		0.0082		0.002	0.33	0.118
Q										
R	0.0040		4.3	5.2	0.0044		0.65		0.38	0.127
S	0.0029	0.0016	0.4		0.0047			0.0075		
T	0.0040		3.9	4.9	0.0050	0.0083	0.549	0.0071		
U						0.00238				
V										
W	0.0024		2.9	3.0	0.0061		0.47	0.0079		
X	0.003		4.23	4.29	0.004	0.0062	1.055	0.007	0.27	0.168
Y	0.006	0.0024	4.1		0.0084					0.36
Z	0.001	0.001	2.0	0.05	0.5			0.5	0.05	0.01
AA	0.1	0.01	1	1.5						
AB	0.001		0.306	0.404	0.001	0.001	0.015	0.002	0.006	0.010
AC	0.0030		0.414	5.07	0.00430	0.0050	0.053	0.0052		
AD	0.004		3.1	2.9	0.007		0.3	0.009		0.12
AE	0.0029		3.34	3.14	0.0151	0.0006	0.92	0.011	0.259	0.26
AF	0.01		5.6	4.1		5.98	0.62		0.84	0.2
AG	0.00440		3.907	4.967	0.00550	0.0050	0.420	0.0092	0.388	0.122
AH									0.191	
AI	0.00883	0.00615	8.27	9.1		0.0035	1.7	0.00133	0.477	0.22
AJ	0.003	0.002	3.84	4.544	0.004	0.0021	0.543	0.006	0.27	0.11
AK									0.12	
AL	0.0056		4.0	4.9		0.0047	1.0		0.26	0.18

z-Scores N181A

	Cond.	total-Hardn.	K _{s 4.3}	HCO ₃ ⁻	Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	NO ₃ ⁻
A	4.66								-0.60
B	0.00	0.81	2.72			0.21	0.53	0.87	-1.60
C	-1.40	0.81	-1.17	1.04	1.20	-0.25	-1.06	0.29	-0.19
D	0.77		-0.19	2.15	2.76	2.03	0.10	-1.50	0.56
E	0.47	0.62	-0.68	-0.52	0.60	0.43	0.43	1.88	-0.19
F	-0.23	-0.31	-1.17	1.24	-0.10	-0.25	-0.73	-0.43	-1.35
G	-0.93	0.53	1.26		0.80	0.21	-0.23	-0.14	0.00
H	0.70	-0.03	-0.19	1.76	-0.60	0.66	0.60	-1.01	-0.58
I	-0.23	-0.87	-0.19	-0.13	-0.50	-0.94	-0.56	-0.43	-0.39
J	-0.70	0.53	0.29	0.26	0.50	-0.02	0.26	-0.29	-0.96
K	-0.23	0.67	0.44	0.39	0.50	0.64	1.09		-0.96
L	0.23	0.53	1.75	3.45	0.80	-0.25	0.10	1.16	0.39
M	-0.23	-0.03	36.23	29.79	0.10	-0.48	-0.51	-1.59	-0.58
N	0.47	57.73	-1.65	-1.37	63.62	26.24	-2.55	-0.29	-0.19
O	0.23	-1.15	2.23	1.98	-0.64	-1.37	-0.48	-1.71	1.16
P	-0.47	0.53	0.78	0.59	0.80	-0.02	-1.72	12.00	-0.39
Q	-9.35	5.52	14.86		7.09	5.00	0.60	8.24	3.27
R	-0.93		-0.19						0.00
S	-0.70		-0.19	-0.46					-0.77
T	1.17	-0.59	2.72	2.28	-0.50	-0.48	0.26	-0.29	-0.56
U	2.80	-0.59	53.95	46.19	0.06	-0.80	-0.05	-0.88	0.48
V	0.00	-0.25	0.05	2.06	-0.80	0.62	-0.08	-0.40	1.93
W	0.70	-1.15	3.21	4.76	-1.30	-0.48	0.60	0.14	0.58
X	-0.93	0.17	0.97	0.85	-0.64	1.25	1.85	1.71	0.98
Y	0.47	-1.71			-1.08	-1.87	-1.06	0.29	-1.93
Z	18.93	-0.03	-29.82	-9.24	-15.73	1.46	25.24		-20.90
AA	-0.47	-0.20	0.29	2.15					4.05
AB	-0.47	-0.87	0.78	2.48	-1.50	0.43	0.76	-1.16	0.19
AC	0.00	1.37	-1.17	-0.91	2.30	-0.25	0.76	-0.29	0.96
AD	-0.23	0.53	0.78	2.80	0.60	0.43	-0.23	-3.32	-0.58
AE	0.37	-1.26	0.63	0.52	-0.90	-1.16	-0.73	-1.01	-1.93
AF	0.23	1.93	0.78	0.85	2.30	0.43	-0.07	3.61	0.19
AG	0.00	-0.31	-1.65	0.65	0.18	-0.87	-1.08	-0.43	-0.36
AH									
AI	0.28	0.25	1.26	1.07	0.70	-0.02	-0.56	-0.14	0.00
AJ	-0.23	0.81	0.29	2.26	0.63	0.64	0.93	1.45	-1.87
AK			4.76	5.93					
AL	-1.40	1.37	0.29	0.20	-0.30	-0.71	-0.23	-0.14	-1.35

z-Scores N181A

	NO ₂ ⁻	NH ₄ ⁺	Cl ⁻	SO ₄ ²⁻	o-PO ₄ ³⁻	Boron	DOC	total-P (as PO ₄ ³⁻)	Silicon	F ⁻
A		0.45	-1.06	-0.57						
B	-0.24	-0.60	1.20	0.28		-0.06				0.46
C	0.77	-0.79	0.38	0.19		0.08	-2.39		-1.99	0.59
D	0.15	0.66	2.25	0.19		0.14	2.47		0.60	
E	-0.46	0.15	0.00	-0.09						-0.12
F	2.60	1.64	0.15	-0.09		-0.02	0.32			-0.07
G	0.15	-1.19	0.61	0.09		13851.4	-0.48		-0.23	-0.25
H	-3.67	-1.03	-0.23	1.03		1.37	1.27		-1.31	-0.62
I	0.12	0.39	0.30	-0.84		0.18	1.91			-0.32
J	0.15	-0.15	0.15	-0.94			0.72		-0.26	
K	0.77	0.00	0.21	-0.56		1.09				
L	0.46	-0.15	1.67	1.03			2.47			-0.60
M	0.09	0.42	0.53	-1.78		0.14	0.00		0.00	0.28
N	0.70	0.43	-1.97	-3.18		-0.84	0.08			-1.49
O	3.37	-0.60	1.59	-0.98		0.06				0.28
P	0.73	-0.19	0.15	-0.47		-3.53			-3.57	0.05
Q	0.15	-0.64	2.13	2.15						-4.87
R	-1.04	1.48	0.08	-0.28			1.27		0.90	-0.02
S	-0.34	2.32	0.53							
T	-0.52	0.25	-0.08	-1.13		-0.12	1.74			
U	-1.38	0.30	0.46	1.06		-1.02	0.64		22.38	0.23
V	0.77	0.30	1.93	0.90						-1.01
W	1.99	-0.89	-1.14	0.00			3.10			
X	0.15	0.15	0.51	-0.31		0.82	0.93		1.09	-0.18
Y	-0.77	-1.49	0.38							-0.96
Z	10.25	484.20	7.73	-23.97					-9.46	-14.11
AA	-0.15	-0.15	3.49	1.26						
AB	0.77	-0.27	0.46	-0.19		0.96	0.24		-0.98	0.76
AC	-0.15	-0.15	1.14	0.00		0.25	1.27			
AD	-0.15	-0.15	-0.68	-1.03			-0.32			-0.25
AE	-0.46	-0.15	-0.46	-1.03		0.14	-1.35		-0.11	-0.07
AF	1.62	0.01	0.91	-0.28		0.35	1.11		1.05	0.64
AG	0.46	-0.60	-0.76	0.21		-0.06	-0.56		-0.15	0.11
AH									-0.04	
AI	0.15	-4.04	0.91	-0.19		-3.96	-2.07		-0.53	-0.44
AJ	0.15	-0.45	-1.09	-2.88		0.09	1.43		0.30	-1.08
AK									-0.75	
AL	0.46		0.23	-0.56		-0.06	0.40		0.79	-0.07

z-Scores N181B

	Cond.	total-Hardn.	K _{s 4.3}	HCO ₃ ⁻	Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	NO ₃ ⁻
A	3.65								-0.54
B	0.37	1.04	-0.58		0.57	0.14	1.28	0.74	-0.08
C	-1.10	1.90	-2.31	-0.80	2.28	0.41	1.92	-1.68	0.40
D	5.97		-1.16	0.34	2.80	-0.38	0.83	-1.50	0.34
E	0.55	0.29	-2.03	-1.71	0.00	0.54	0.32	-0.07	-0.32
F	-0.55	-0.35	-1.74	-0.23	-0.19	-0.41	-0.32	-0.67	-0.40
G	-0.55	0.35	-0.58		0.63	0.00	-0.32	0.00	0.55
H	0.91	0.35	-6.08	-3.85	-0.57	1.08	0.32	-2.43	-1.27
I	-0.18	-0.17	-0.87	-0.80	0.13	-0.68	-0.32	-0.74	0.47
J	-0.18	0.17	-1.45	-1.18	0.19	0.00	0.32	-0.27	-1.42
K	-0.55	0.47	-1.13	-0.91	0.63	0.05	1.28	0.47	-0.24
L	0.37	-0.35	1.45	2.25	0.00	-0.68	-0.32	-1.01	1.03
M	-0.18	-0.35	-22.57	-18.21	-0.38	-0.41	-0.32	-1.21	-0.87
N	1.64	40.15	-2.31	-1.94	44.02	19.09	-4.81	-0.74	-0.32
O	0.55	-1.33	-1.16	-0.86	-1.01	-1.25	0.27	-1.04	0.95
P	-1.64	0.35	-1.74	-1.56	0.63	0.00	-1.28	6.00	-0.40
Q	-9.13	4.71	15.39		6.07	4.74	1.60	3.91	2.45
R	-0.91		-1.16						-0.16
S	0.18		-1.45	-1.18					0.00
T	0.91	-0.69	10.71	9.75	-0.89	-0.27	0.64	0.74	0.18
U	-1.83	-0.69	54.11	44.50	-0.40	-0.66	0.35	-0.59	0.09
V	0.18	1.28	-1.30	0.11	-0.23	2.69	2.92	0.59	0.63
W	1.10	-1.21	3.47	3.77	-1.45	-0.41	0.32	-0.40	-0.95
X	-0.73	0.45	-0.09	-0.04	-0.29	1.23	2.08	1.78	-0.06
Y	0.37	-3.46			-2.28	-3.60	-0.64	0.34	-0.95
Z	0.37	-0.35	-30.67	-10.76	-14.48	-2.79	58.81		10.12
AA	-0.37	-0.35	-1.16	0.34					6.01
AB	0.55	-0.87	-0.29	1.11	-1.20	-0.14	1.60	0.81	0.63
AC	0.91	2.08	-1.45	-1.18	2.59	0.41	0.64	-1.95	1.19
AD	-0.18	0.00	-0.58	0.72	0.00	0.14	0.00	-1.89	-0.08
AE	0.77	-0.45	0.46	0.38	-0.32	-0.41	-0.32	-0.07	-0.87
AF	0.18	1.21	0.58	0.34	1.45	0.41	2.56	0.54	0.40
AG	0.37	-0.87	-1.45	0.00	-0.42	-1.07	-0.77	-0.54	-0.22
AH									
AI	0.38	0.00	-0.58	-0.46	0.19	-0.14	-0.32	-0.20	0.32
AJ	-0.18	0.17	-0.29	0.82	0.33	0.43	1.76	1.21	-1.49
AK			1.45	2.32					
AL	-1.64	0.87	-0.87	-0.80	-0.63	0.27	-0.32	-1.01	-1.03

z-Scores N181B

	NO ₂ ⁻	NH ₄ ⁺	Cl ⁻	SO ₄ ²⁻	o-PO ₄ ³⁻	Boron	DOC	total-P (as PO ₄ ³⁻)	Silicon	F ⁻
A			-1.71	-0.41						
B	-0.12		1.35	0.38	-0.61	-0.36				0.55
C	0.14		0.19	0.47	3.00	0.67	0.04	3.14	-1.35	0.67
D	0.65		2.09	0.27	1.81	-0.76	0.76		0.63	
E	-0.51		-0.09	-0.13	-0.23			0.17		0.28
F	5.15		0.38	-0.34	-0.35	0.22	-0.11	0.68		0.67
G	0.14		-0.28	0.00	-3.33	14825.6	-0.47		-0.06	-0.17
H	-3.08		-0.75	-0.34	9.07	3.41	0.90	8.44	-1.43	-1.60
I	0.14		0.84	-0.27	-0.41	-0.18	0.72	0.44		-0.41
J	0.14		0.09	-0.54	0.76		0.29	-0.59	-0.32	
K	1.68		-0.32	-0.67		0.85				
L	-0.25		1.88	1.01	-0.70		0.97	-0.80		-1.24
M	0.26		0.56	-2.15	-0.15	0.63	-0.25	-0.23	0.11	0.31
N	0.71		-2.06	-2.83	0.20	-0.99	0.32	0.25		-1.24
O	6.89		0.56	0.13	0.32	0.48		0.36		0.19
P	0.71		0.09	-0.40		0.04		-8.40	-10.51	-0.17
Q	-0.12		2.63	1.28	-5.69			3.00		-5.55
R	-0.51		0.19	-0.13	-0.23		2.13		1.05	0.10
S	-0.19		0.75		0.18			-0.25		
T	-0.89		-0.61	-0.71	0.79	0.04	0.95	0.53		
U	-1.47		0.30	0.11	-0.12	-0.35	0.14	-1.22	24.62	0.11
V	0.78		-1.13	-1.47	-0.85			0.99		-0.62
W	7.85		-3.09	-0.13	0.47		-0.47	0.46		
X	0.14		0.76	0.26	1.34	0.76	0.17	1.73	0.98	-0.42
Y	-0.51		1.22		0.76					-0.05
Z	-17.23		7.89	-24.58	146.04			24.73	-15.91	-14.17
AA	0.14		6.47	3.97						
AB	0.07		0.47	0.13	105.78	1.30	0.29	1.14	-1.00	0.31
AC	0.78		1.78	0.38	1.05	0.09	0.25	-1.22		
AD	0.14		-0.75	-0.74	-0.41		-0.47	1.94		-0.29
AE	-1.15		0.47	-0.54	4.55	-0.81	-1.19	1.94	0.45	0.07
AF	2.77		0.09	1.08	-0.12	1.12	-0.18	-0.38	0.97	0.67
AG	0.78		-0.40	0.11	-0.70	0.09	-0.11	0.74	0.28	0.31
AH									-0.47	
AI	-2.24		0.84	-0.07		-6.86	-0.61	-9.73	-0.49	-0.41
AJ	1.61		-1.08	-2.73	-0.41	0.17	0.72	0.04	1.31	-1.12
AK									-1.17	
AL	-0.51		0.09	-0.47		-0.67	-0.11		0.63	-0.05

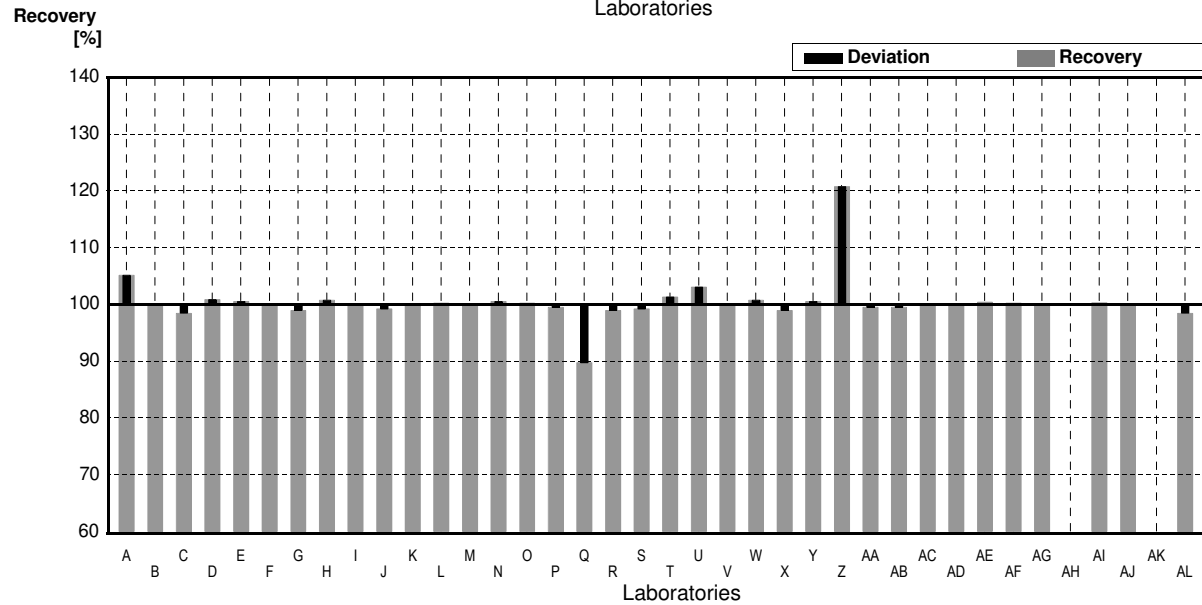
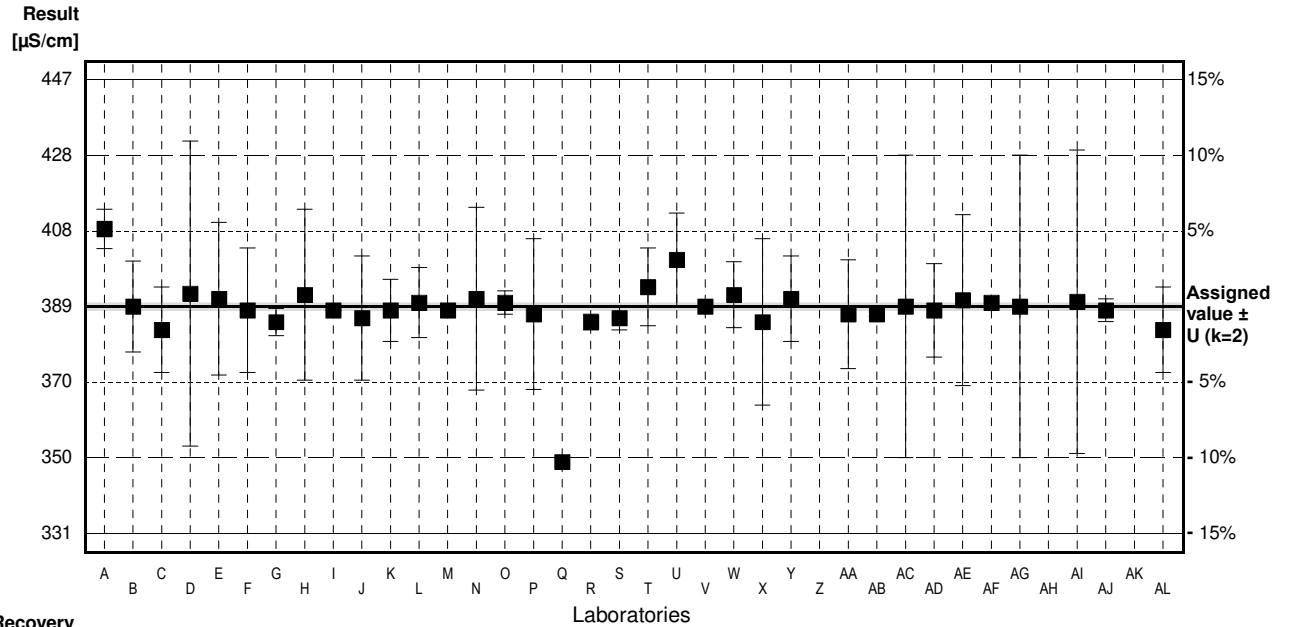
Sample N181A

Parameter Electr. Conductivity (25°C)

Assigned value ± U (k=2) 389 μS/cm ± 1 μS/cm
 IFA result ± U (k=2) 388 μS/cm ± 6 μS/cm
 Stability test μS/cm

Lab Code	Result	±	Unit	Recovery	z-Score
A	408.95 *	5.08	μS/cm	105%	4.66
B	389	11.7	μS/cm	100%	0.00
C	383	11	μS/cm	98%	-1.40
D	392.30	39.23	μS/cm	101%	0.77
E	391	19.6	μS/cm	101%	0.47
F	388	16	μS/cm	100%	-0.23
G	385	3.50	μS/cm	99%	-0.93
H	392	22	μS/cm	101%	0.70
I	388	0.0283	μS/cm	100%	-0.23
J	386	16	μS/cm	99%	-0.70
K	388	8.0	μS/cm	100%	-0.23
L	390	9	μS/cm	100%	0.23
M	388		μS/cm	100%	-0.23
N	391	23.5	μS/cm	101%	0.47
O	390	3	μS/cm	100%	0.23
P	387	19.4	μS/cm	99%	-0.47
Q	349 *		μS/cm	90%	-9.35
R	385	2	μS/cm	99%	-0.93
S	386	3	μS/cm	99%	-0.70
T	394	10	μS/cm	101%	1.17
U	401 *	11.99	μS/cm	103%	2.80
V	389		μS/cm	100%	0.00
W	392	8.5	μS/cm	101%	0.70
X	385	21.4	μS/cm	99%	-0.93
Y	391	11	μS/cm	101%	0.47
Z	470.00 *	0.5	μS/cm	121%	18.93
AA	387	14	μS/cm	99%	-0.47
AB	387	0.577	μS/cm	99%	-0.47
AC	389	38.9	μS/cm	100%	0.00
AD	388	12	μS/cm	100%	-0.23
AE	390.6	22	μS/cm	100%	0.37
AF	390		μS/cm	100%	0.23
AG	389	38.9	μS/cm	100%	0.00
AH			μS/cm		
AI	390.21	39	μS/cm	100%	0.28
AJ	388	2.9	μS/cm	100%	-0.23
AK			μS/cm		
AL	383	11	μS/cm	98%	-1.40

	All results	Outliers excl.	Unit
Mean ± CI(99%)	391 ± 7	389 ± 1	μS/cm
Recov. ± CI(99%)	100,4 ± 1,9	99,9 ± 0,3	%
SD between labs	16	3	μS/cm
RSD between labs	4,1	0,7	%
n for calculation	36	32	



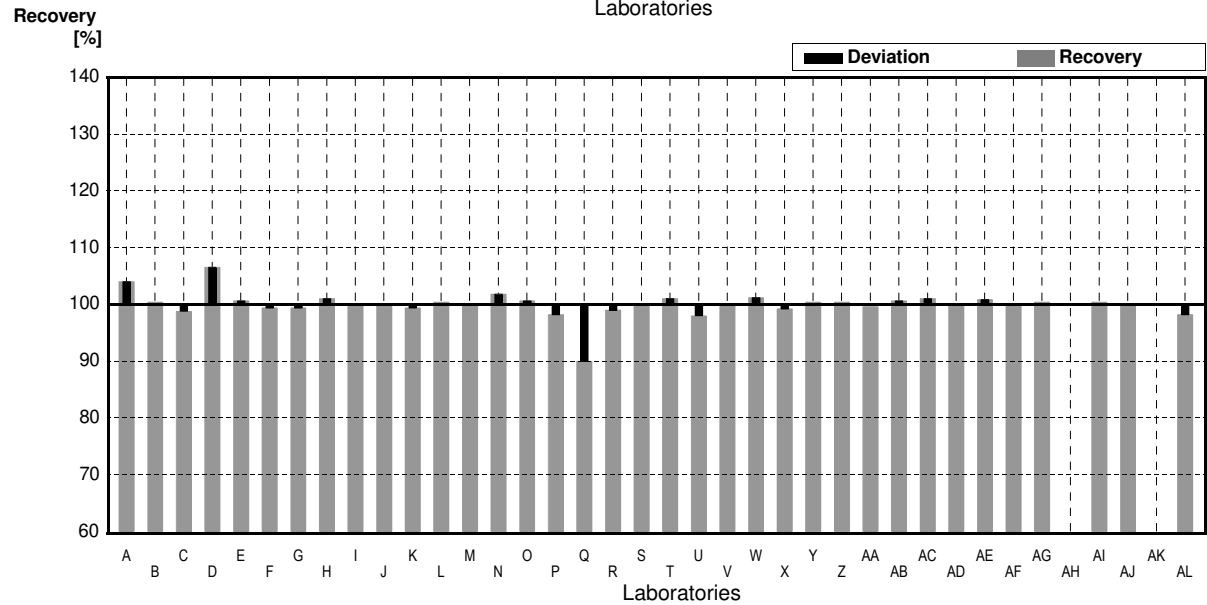
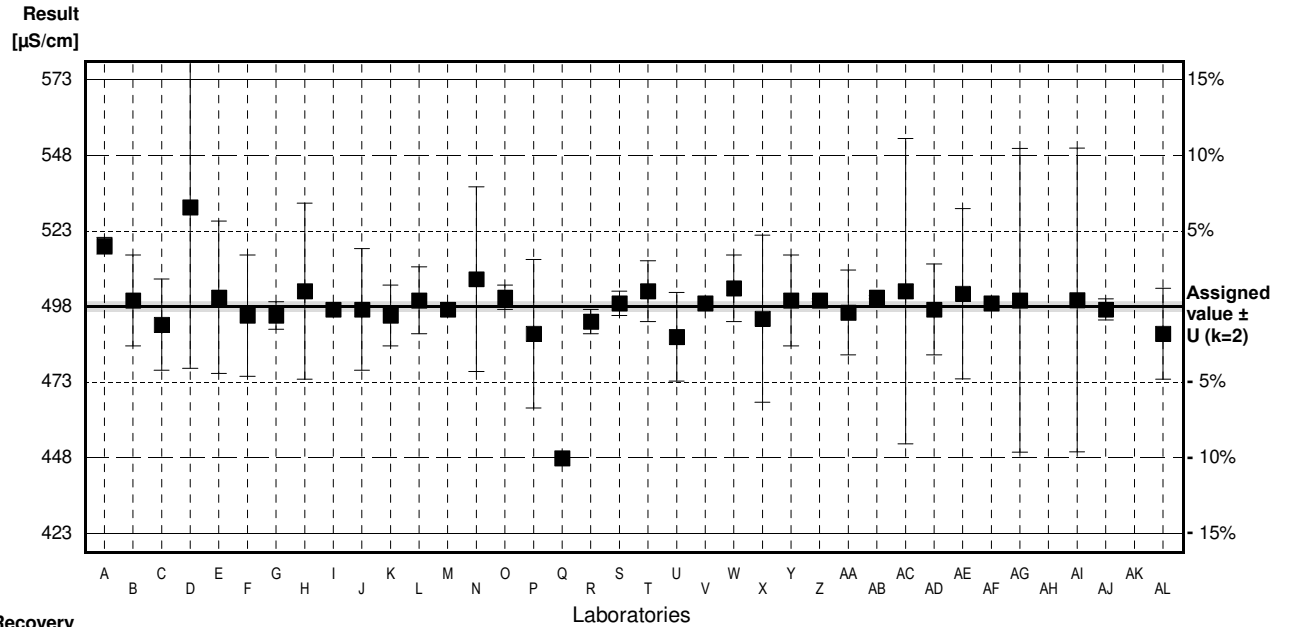
Sample N181B

Parameter Electr. Conductivity (25°C)

Assigned value ± U (k=2) 498 μS/cm ± 2 μS/cm
 IFA result ± U (k=2) 496 μS/cm ± 8 μS/cm
 Stability test μS/cm

Lab Code	Result	±	Unit	Recovery	z-Score
A	518.02 *	2.75	μS/cm	104%	3.65
B	500	15	μS/cm	100%	0.37
C	492	15	μS/cm	99%	-1.10
D	530.70 *	53.07	μS/cm	107%	5.97
E	501	25.1	μS/cm	101%	0.55
F	495	20	μS/cm	99%	-0.55
G	495	4.50	μS/cm	99%	-0.55
H	503	29	μS/cm	101%	0.91
I	497		μS/cm	100%	-0.18
J	497	20	μS/cm	100%	-0.18
K	495	10.0	μS/cm	99%	-0.55
L	500	11	μS/cm	100%	0.37
M	497		μS/cm	100%	-0.18
N	507	30.4	μS/cm	102%	1.64
O	501	4	μS/cm	101%	0.55
P	489	24.5	μS/cm	98%	-1.64
Q	448 *		μS/cm	90%	-9.13
R	493	4	μS/cm	99%	-0.91
S	499	4	μS/cm	100%	0.18
T	503	10	μS/cm	101%	0.91
U	488	14.59	μS/cm	98%	-1.83
V	499		μS/cm	100%	0.18
W	504	11	μS/cm	101%	1.10
X	494	27.5	μS/cm	99%	-0.73
Y	500	15	μS/cm	100%	0.37
Z	500.00	0.5	μS/cm	100%	0.37
AA	496	14	μS/cm	100%	-0.37
AB	501	0.577	μS/cm	101%	0.55
AC	503	50.3	μS/cm	101%	0.91
AD	497	15	μS/cm	100%	-0.18
AE	502.2	28	μS/cm	101%	0.77
AF	499		μS/cm	100%	0.18
AG	500	50.0	μS/cm	100%	0.37
AH			μS/cm		
AI	500.1	50	μS/cm	100%	0.38
AJ	497	3.5	μS/cm	100%	-0.18
AK			μS/cm		
AL	489	15	μS/cm	98%	-1.64

	All results	Outliers excl.	Unit
Mean ± CI(99%)	498 ± 5	498 ± 2	μS/cm
Recov. ± CI(99%)	100,0 ± 1,0	100,0 ± 0,4	%
SD between labs	11	4	μS/cm
RSD between labs	2,3	0,9	%
n for calculation	36	33	



Sample N181A

Parameter Total hardness

Assigned value $\pm U$ (k=2) 1,321 mmol/l \pm 0,017 mmol/l

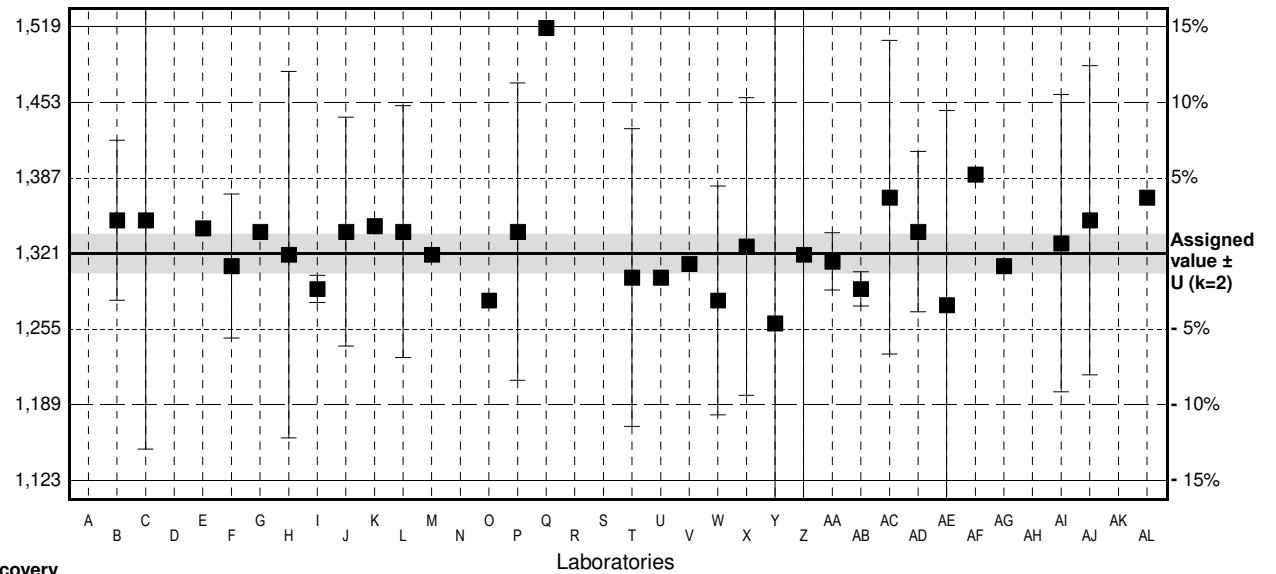
IFA result $\pm U$ (k=2) 1,33 mmol/l \pm 0,07 mmol/l

Stability test mmol/l

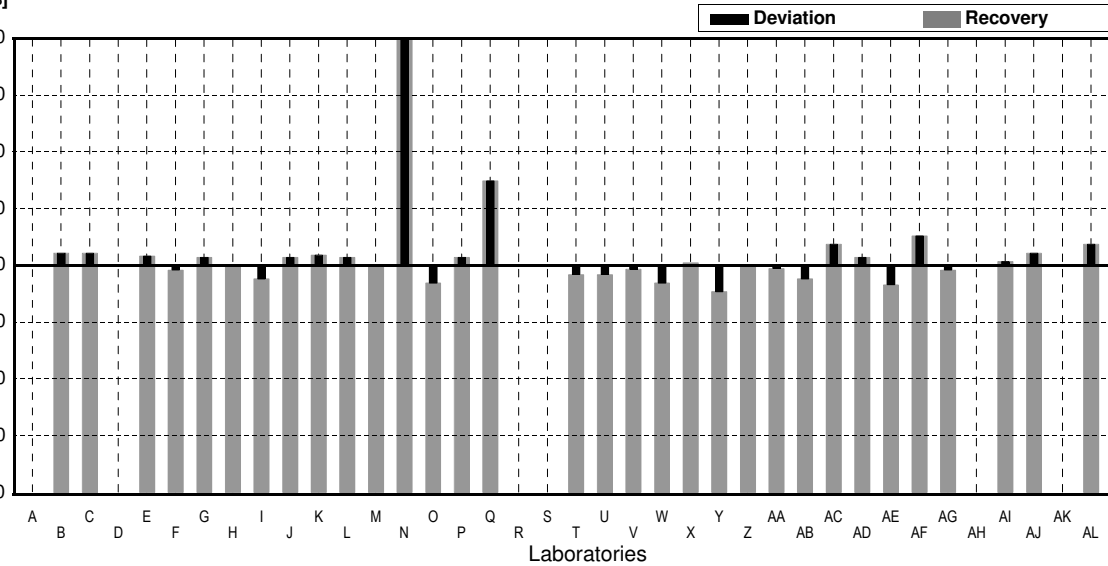
Lab Code	Result	\pm	Unit	Recovery	z-Score
A			mmol/l		
B	1,35	0,07	mmol/l	102%	0,81
C	1,35	0,20	mmol/l	102%	0,81
D			mmol/l		
E	1,343		mmol/l	102%	0,62
F	1,31	0,063	mmol/l	99%	-0,31
G	1,34		mmol/l	101%	0,53
H	1,32	0,16	mmol/l	100%	-0,03
I	1,29	0,0118	mmol/l	98%	-0,87
J	1,34	0,1	mmol/l	101%	0,53
K	1,345		mmol/l	102%	0,67
L	1,34	0,11	mmol/l	101%	0,53
M	1,32		mmol/l	100%	-0,03
N	3,38	* 0,254	mmol/l	256%	57,73
O	1,280		mmol/l	97%	-1,15
P	1,34	0,13	mmol/l	101%	0,53
Q	1,518	*	mmol/l	115%	5,52
R			mmol/l		
S			mmol/l		
T	1,30	0,13	mmol/l	98%	-0,59
U	1,30		mmol/l	98%	-0,59
V	1,312		mmol/l	99%	-0,25
W	1,28	0,10	mmol/l	97%	-1,15
X	1,327	0,13	mmol/l	100%	0,17
Y	1,26	0,38	mmol/l	95%	-1,71
Z	1,32	0,65	mmol/l	100%	-0,03
AA	1,314	0,025	mmol/l	99%	-0,20
AB	1,29	0,015	mmol/l	98%	-0,87
AC	1,37	0,137	mmol/l	104%	1,37
AD	1,34	0,07	mmol/l	101%	0,53
AE	1,276	0,17	mmol/l	97%	-1,26
AF	1,39		mmol/l	105%	1,93
AG	1,31		mmol/l	99%	-0,31
AH			mmol/l		
AI	1,33	0,13	mmol/l	101%	0,25
AJ	1,35	0,135	mmol/l	102%	0,81
AK			mmol/l		
AL	1,37		mmol/l	104%	1,37

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	1,394 \pm 0,178	1,324 \pm 0,015	mmol/l
Recov. \pm CI(99%)	105,5 \pm 13,4	100,2 \pm 1,2	%
SD between labs	0,365	0,031	mmol/l
RSD between labs	26,2	2,3	%
n for calculation	32	30	

Result
[mmol/l]



Recovery
[%]



Sample N181B

Parameter Total hardness

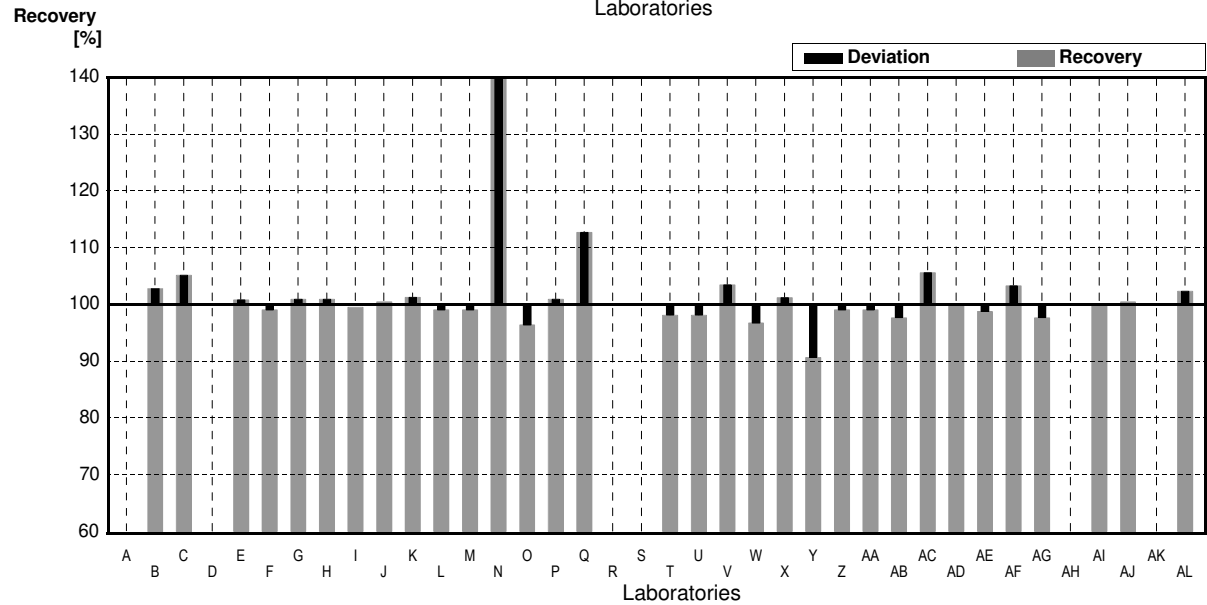
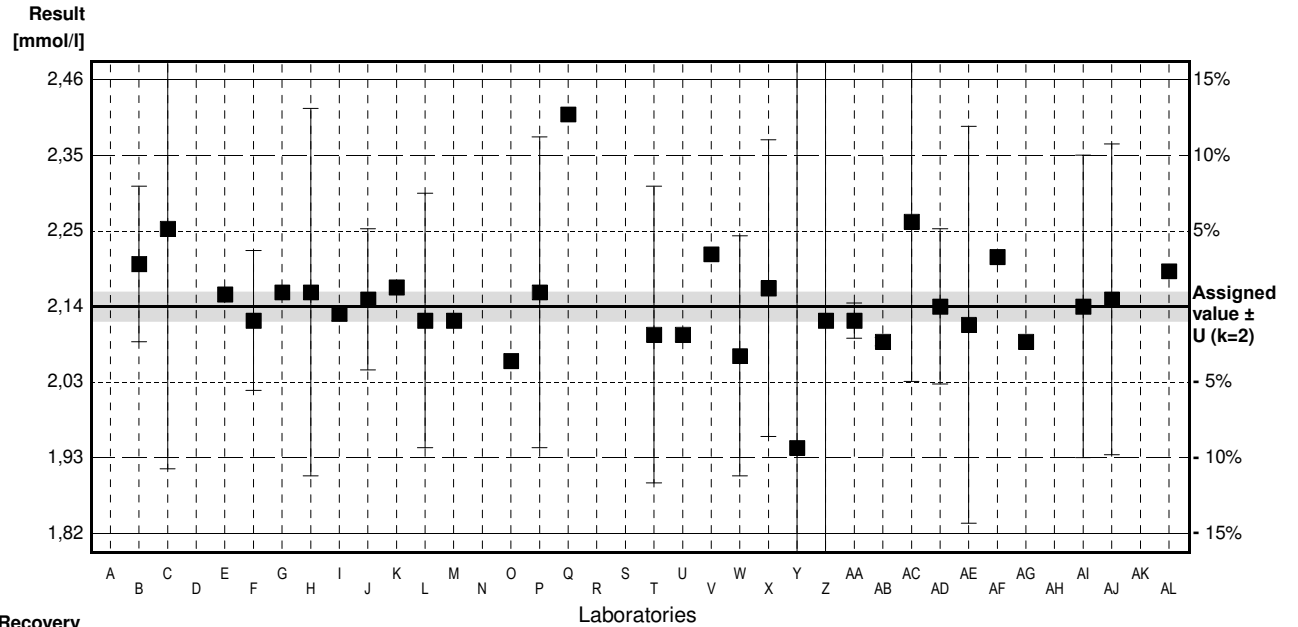
Assigned value ± U (k=2) 2,14 mmol/l ± 0,02 mmol/l

IFA result ± U (k=2) 2,18 mmol/l ± 0,11 mmol/l

Stability test mmol/l

Lab Code	Result	±	Unit	Recovery	z-Score
A			mmol/l		
B	2,20	0,11	mmol/l	103%	1,04
C	2,25	0,34	mmol/l	105%	1,90
D			mmol/l		
E	2,157		mmol/l	101%	0,29
F	2,12	0,099	mmol/l	99%	-0,35
G	2,16		mmol/l	101%	0,35
H	2,16	0,26	mmol/l	101%	0,35
I	2,13	0,0106	mmol/l	100%	-0,17
J	2,15	0,1	mmol/l	100%	0,17
K	2,167		mmol/l	101%	0,47
L	2,12	0,18	mmol/l	99%	-0,35
M	2,12		mmol/l	99%	-0,35
N	4,46 *	0,334	mmol/l	208%	40,15
O	2,063		mmol/l	96%	-1,33
P	2,16	0,22	mmol/l	101%	0,35
Q	2,412 *		mmol/l	113%	4,71
R			mmol/l		
S			mmol/l		
T	2,10	0,21	mmol/l	98%	-0,69
U	2,10		mmol/l	98%	-0,69
V	2,214		mmol/l	103%	1,28
W	2,07	0,17	mmol/l	97%	-1,21
X	2,166	0,21	mmol/l	101%	0,45
Y	1,94 *	0,58	mmol/l	91%	-3,46
Z	2,12	0,65	mmol/l	99%	-0,35
AA	2,12	0,025	mmol/l	99%	-0,35
AB	2,09	0,006	mmol/l	98%	-0,87
AC	2,26	0,226	mmol/l	106%	2,08
AD	2,14	0,11	mmol/l	100%	0,00
AE	2,114	0,281	mmol/l	99%	-0,45
AF	2,21		mmol/l	103%	1,21
AG	2,09		mmol/l	98%	-0,87
AH			mmol/l		
AI	2,14	0,214	mmol/l	100%	0,00
AJ	2,15	0,22	mmol/l	100%	0,17
AK			mmol/l		
AL	2,19		mmol/l	102%	0,87

	All results	Outliers excl.	Unit
Mean ± CI(99%)	2,22 ± 0,20	2,15 ± 0,03	mmol/l
Recov. ± CI(99%)	103,7 ± 9,4	100,3 ± 1,2	%
SD between labs	0,42	0,05	mmol/l
RSD between labs	18,7	2,3	%
n for calculation	32	29	



Sample N181A

Parameter Alkalinity

Assigned value ± U (k=2) 1,144 mmol/l ± 0,005 mmol/l

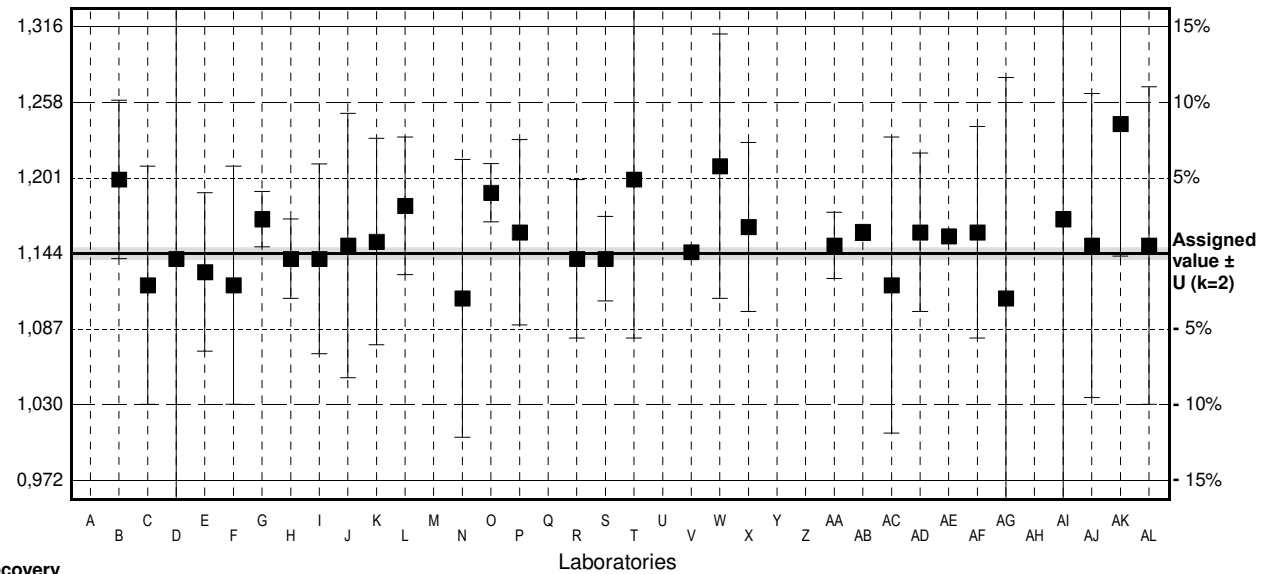
IFA result ± U (k=2) 1,14 mmol/l ± 0,05 mmol/l

Stability test mmol/l

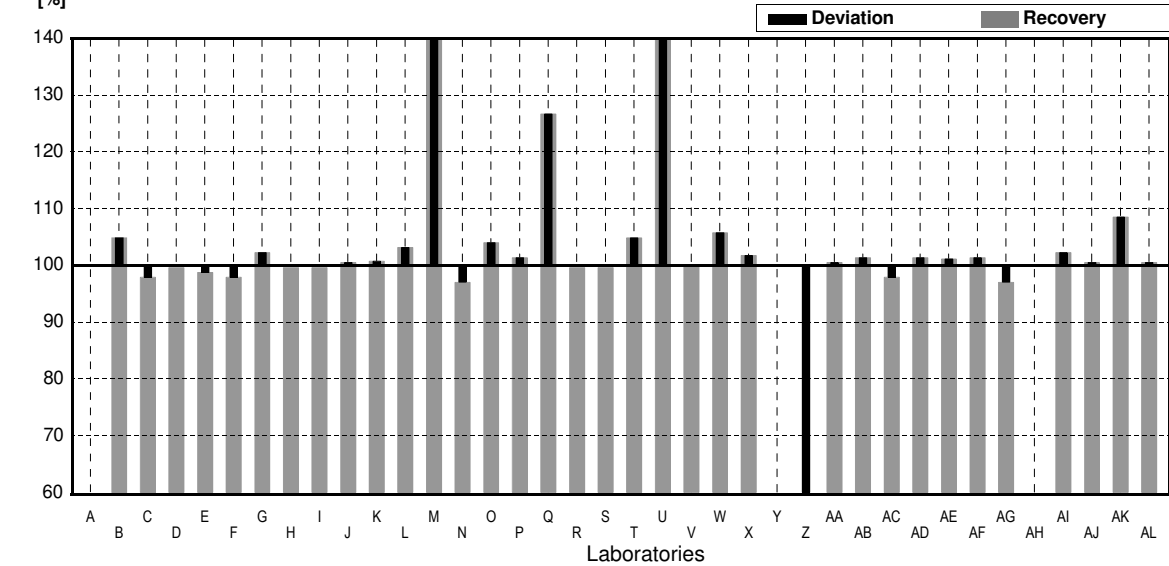
Lab Code	Result	±	Unit	Recovery	z-Score
A			mmol/l		
B	1,20	0,06	mmol/l	105%	2,72
C	1,12	0,090	mmol/l	98%	-1,17
D	1,14	1,39	mmol/l	100%	-0,19
E	1,13	0,06	mmol/l	99%	-0,68
F	1,12	0,09	mmol/l	98%	-1,17
G	1,17	0,021	mmol/l	102%	1,26
H	1,14	0,03	mmol/l	100%	-0,19
I	1,14	0,0718	mmol/l	100%	-0,19
J	1,15	0,1	mmol/l	101%	0,29
K	1,153	0,078	mmol/l	101%	0,44
L	1,180	0,052	mmol/l	103%	1,75
M	1,89	*	mmol/l	165%	36,23
N	1,11	0,105	mmol/l	97%	-1,65
O	1,19	0,022	mmol/l	104%	2,23
P	1,16	0,07	mmol/l	101%	0,78
Q	1,450	*	mmol/l	127%	14,86
R	1,14	0,06	mmol/l	100%	-0,19
S	1,14	0,032	mmol/l	100%	-0,19
T	1,20	0,12	mmol/l	105%	2,72
U	2,255	*	mmol/l	197%	53,95
V	1,145		mmol/l	100%	0,05
W	1,21	0,10	mmol/l	106%	3,21
X	1,164	0,064	mmol/l	102%	0,97
Y			mmol/l		
Z	0,53	*	2,0	46%	-29,82
AA	1,15	0,025	mmol/l	101%	0,29
AB	1,16	0,006	mmol/l	101%	0,78
AC	1,12	0,112	mmol/l	98%	-1,17
AD	1,16	0,06	mmol/l	101%	0,78
AE	1,157		mmol/l	101%	0,63
AF	1,16	0,08	mmol/l	101%	0,78
AG	1,11	0,167	mmol/l	97%	-1,65
AH			mmol/l		
AI	1,17	0,283	mmol/l	102%	1,26
AJ	1,15	0,115	mmol/l	101%	0,29
AK	1,242	*	0,1	109%	4,76
AL	1,15	0,12	mmol/l	101%	0,29

	All results	Outliers excl.	Unit
Mean ± CI(99%)	1,199 ± 0,117	1,153 ± 0,013	mmol/l
Recov. ± CI(99%)	104,8 ± 10,2	100,8 ± 1,1	%
SD between labs	0,254	0,026	mmol/l
RSD between labs	21,2	2,2	%
n for calculation	35	30	

Result [mmol/l]



Recovery [%]



Sample N181B

Parameter Alkalinity

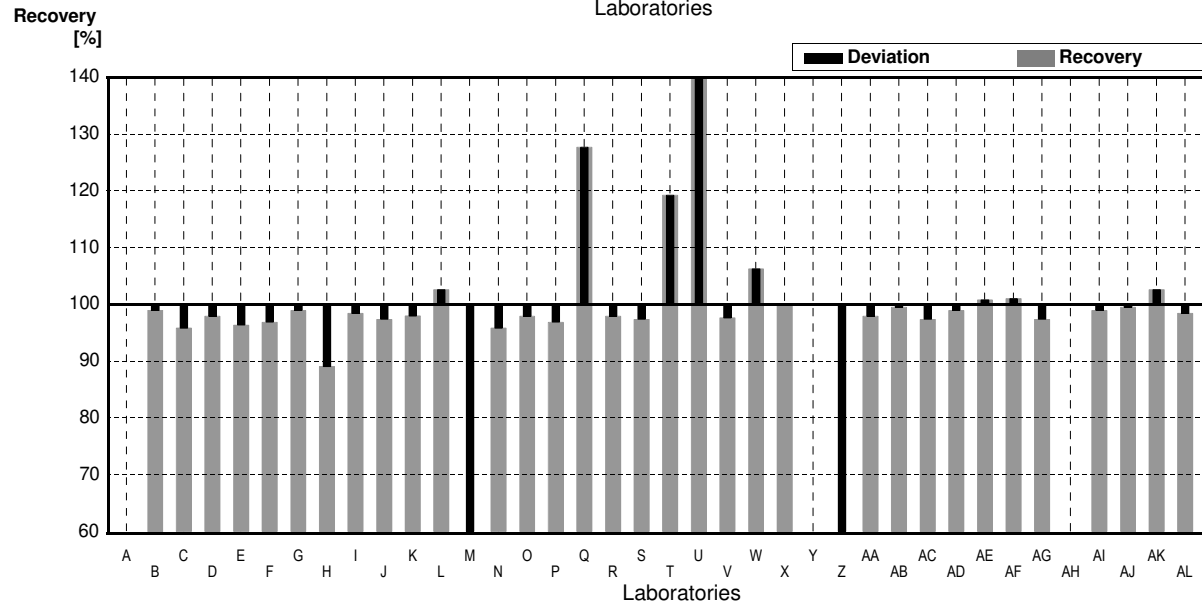
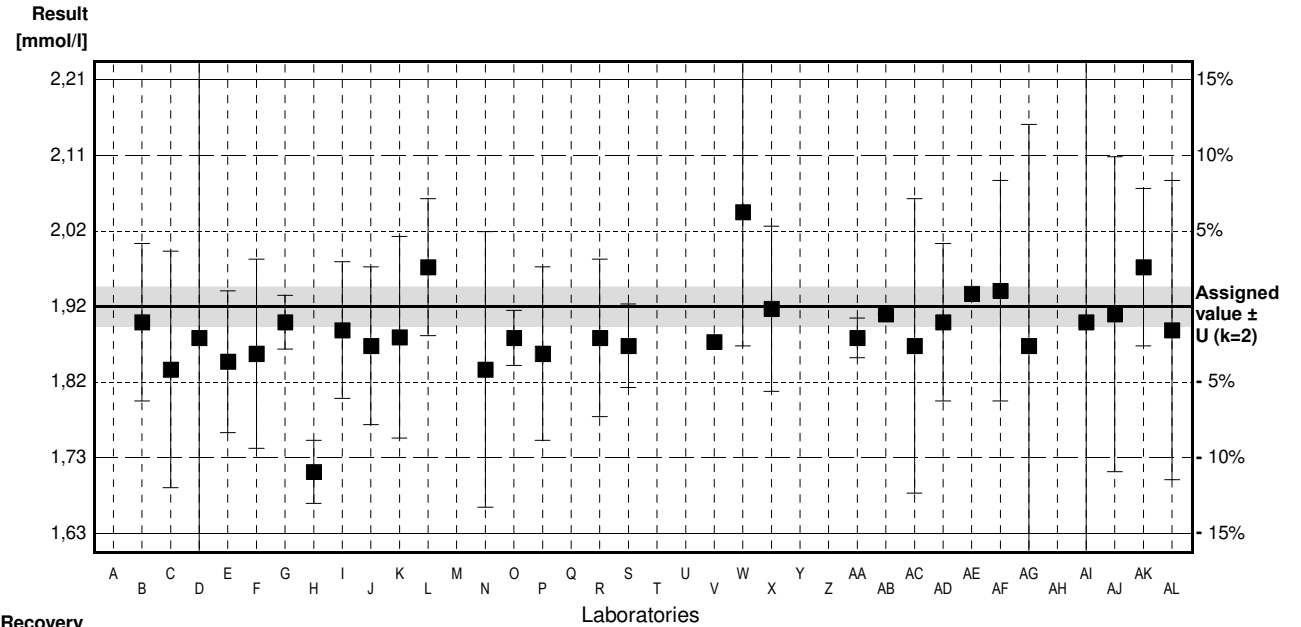
Assigned value ± U (k=2) 1,92 mmol/l ± 0,03 mmol/l

IFA result ± U (k=2) 1,87 mmol/l ± 0,08 mmol/l

Stability test mmol/l

Lab Code	Result	±	Unit	Recovery	z-Score
A			mmol/l		
B	1,90	0,10	mmol/l	99%	-0,58
C	1,84	0,15	mmol/l	96%	-2,31
D	1,88	2,29	mmol/l	98%	-1,16
E	1,85	0,09	mmol/l	96%	-2,03
F	1,86	0,12	mmol/l	97%	-1,74
G	1,90	0,034	mmol/l	99%	-0,58
H	1,71 *	0,04	mmol/l	89%	-6,08
I	1,89	0,0867	mmol/l	98%	-0,87
J	1,87	0,1	mmol/l	97%	-1,45
K	1,881	0,128	mmol/l	98%	-1,13
L	1,970	0,087	mmol/l	103%	1,45
M	1,14 *		mmol/l	59%	-22,57
N	1,84	0,175	mmol/l	96%	-2,31
O	1,88	0,035	mmol/l	98%	-1,16
P	1,86	0,11	mmol/l	97%	-1,74
Q	2,452 *		mmol/l	128%	15,39
R	1,88	0,10	mmol/l	98%	-1,16
S	1,87	0,053	mmol/l	97%	-1,45
T	2,29 *	0,23	mmol/l	119%	10,71
U	3,79 *		mmol/l	197%	54,11
V	1,875		mmol/l	98%	-1,30
W	2,04 *	0,17	mmol/l	106%	3,47
X	1,917	0,105	mmol/l	100%	-0,09
Y			mmol/l		
Z	0,86 *	2,0	mmol/l	45%	-30,67
AA	1,88	0,025	mmol/l	98%	-1,16
AB	1,91	0,001	mmol/l	99%	-0,29
AC	1,87	0,187	mmol/l	97%	-1,45
AD	1,90	0,10	mmol/l	99%	-0,58
AE	1,936		mmol/l	101%	0,46
AF	1,94	0,14	mmol/l	101%	0,58
AG	1,87	0,281	mmol/l	97%	-1,45
AH			mmol/l		
AI	1,90	0,459	mmol/l	99%	-0,58
AJ	1,91	0,2	mmol/l	99%	-0,29
AK	1,970	0,1	mmol/l	103%	1,45
AL	1,89	0,19	mmol/l	98%	-0,87

	All results	Outliers excl.	Unit
Mean ± CI(99%)	1,92 ± 0,19	1,89 ± 0,02	mmol/l
Recov. ± CI(99%)	100,0 ± 9,9	98,5 ± 0,9	%
SD between labs	0,41	0,03	mmol/l
RSD between labs	21,4	1,8	%
n for calculation	35	28	



Sample N181A

Parameter Hydrogen carbonate

Assigned value \pm U (k=2) 66,7 mg/l \pm 0,3 mg/l

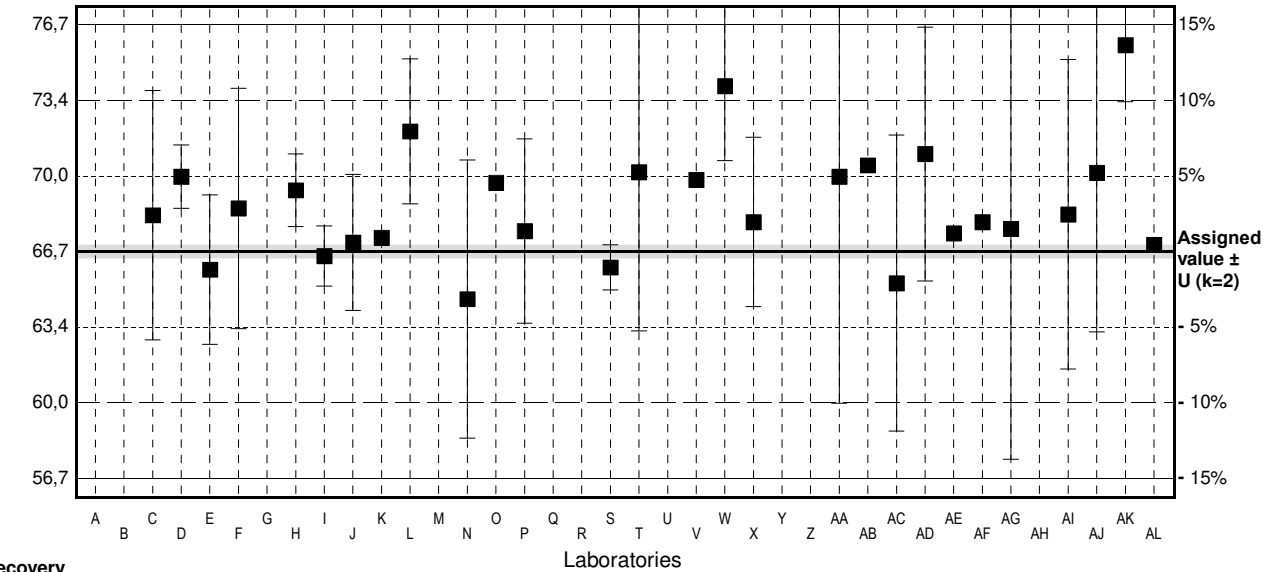
IFA result \pm U (k=2) 66 mg/l \pm 3 mg/l

Stability test mg/l

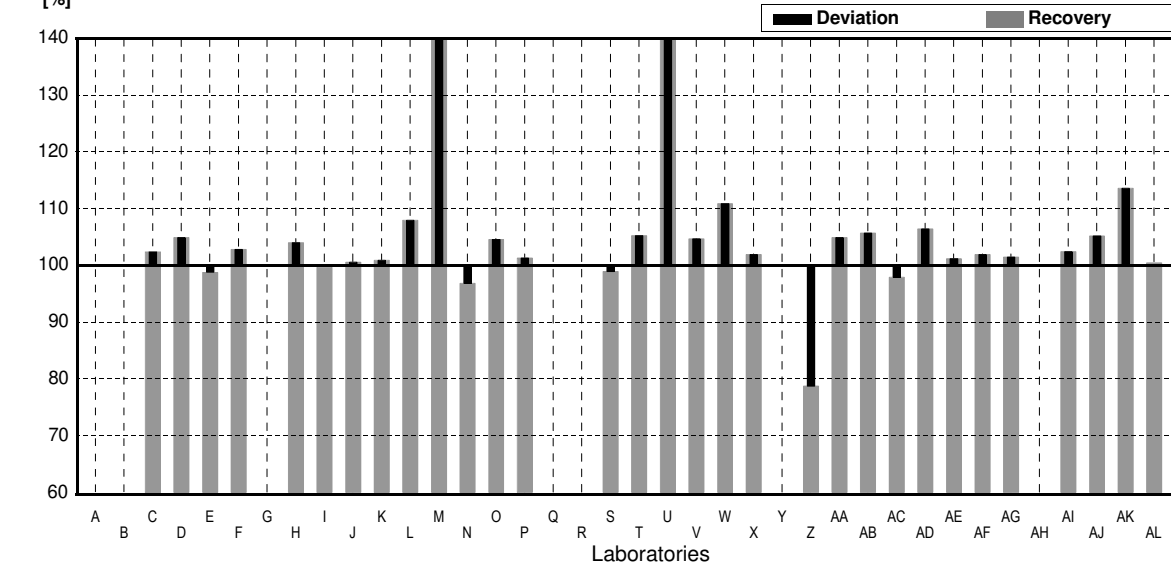
Lab Code	Result	\pm	Unit	Recovery	z-Score
A			mg/l		
B			mg/l		
C	68.3	5.5	mg/l	102%	1.04
D	70.0	1.4	mg/l	105%	2.15
E	65.9	3.3	mg/l	99%	-0.52
F	68.6	5.3	mg/l	103%	1.24
G			mg/l		
H	69.4	1.6	mg/l	104%	1.76
I	66.5	1.33	mg/l	100%	-0.13
J	67.1	3	mg/l	101%	0.26
K	67.3		mg/l	101%	0.39
L	72.0	3.2	mg/l	108%	3.45
M	112.4 *		mg/l	169%	29.79
N	64.6	6.13	mg/l	97%	-1.37
O	69.74		mg/l	105%	1.98
P	67.6	4.06	mg/l	101%	0.59
Q			mg/l		
R			mg/l		
S	66	1.0	mg/l	99%	-0.46
T	70.2	7	mg/l	105%	2.28
U	137.56 *		mg/l	206%	46.19
V	69.86		mg/l	105%	2.06
W	74	3.3	mg/l	111%	4.76
X	68	3.74	mg/l	102%	0.85
Y			mg/l		
Z	52.52 *	2.0	mg/l	79%	-9.24
AA	70	10	mg/l	105%	2.15
AB	70.5	0.153	mg/l	106%	2.48
AC	65.3	6.53	mg/l	98%	-0.91
AD	71	5.6	mg/l	106%	2.80
AE	67.5		mg/l	101%	0.52
AF	68		mg/l	102%	0.85
AG	67.7	10.16	mg/l	101%	0.65
AH			mg/l		
AI	68.34	6.83	mg/l	102%	1.07
AJ	70.17	7.02	mg/l	105%	2.26
AK	75.8	2.5	mg/l	114%	5.93
AL	67		mg/l	100%	0.20

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	71,9 \pm 7,4	68,8 \pm 1,3	mg/l
Recov. \pm CI(99%)	107,8 \pm 11,1	103,1 \pm 2,0	%
SD between labs	15,0	2,5	mg/l
RSD between labs	20,9	3,6	%
n for calculation	31	28	

Result [mg/l]



Recovery [%]



Sample N181B

Parameter Hydrogen carbonate

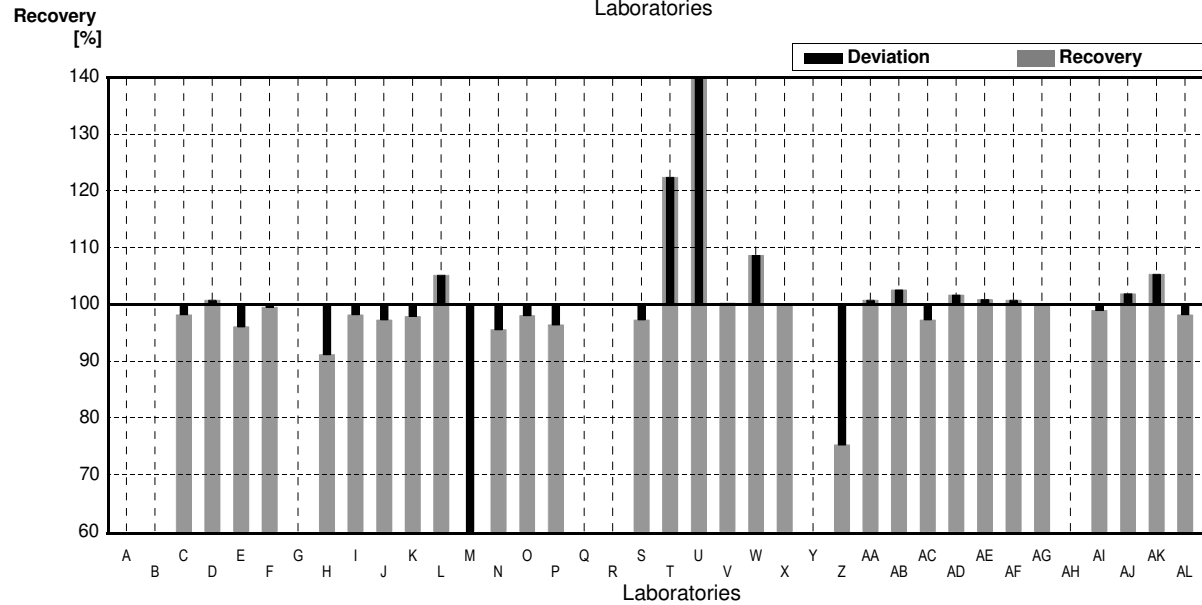
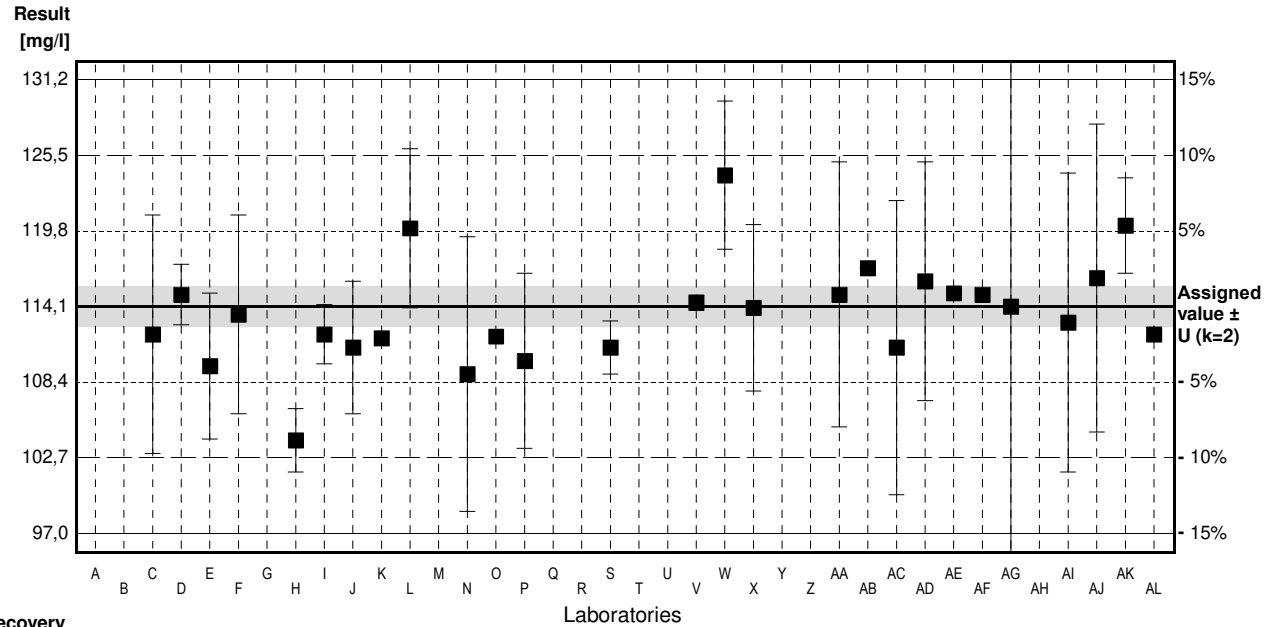
Assigned value ± U (k=2) 114,1 mg/l ± 1,5 mg/l

IFA result ± U (k=2) 111 mg/l ± 5 mg/l

Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A			mg/l		
B			mg/l		
C	112	9,0	mg/l	98%	-0,80
D	115	2,29	mg/l	101%	0,34
E	109,6	5,5	mg/l	96%	-1,71
F	113,5	7,5	mg/l	99%	-0,23
G			mg/l		
H	104	2,4	mg/l	91%	-3,85
I	112	2,24	mg/l	98%	-0,80
J	111	5	mg/l	97%	-1,18
K	111,7		mg/l	98%	-0,91
L	120	6	mg/l	105%	2,25
M	66,3 *		mg/l	58%	-18,21
N	109,0	10,36	mg/l	96%	-1,94
O	111,84		mg/l	98%	-0,86
P	110,0	6,6	mg/l	96%	-1,56
Q			mg/l		
R			mg/l		
S	111	2	mg/l	97%	-1,18
T	139,7 *	14	mg/l	122%	9,75
U	230,89 *		mg/l	202%	44,50
V	114,40		mg/l	100%	0,11
W	124	5,6	mg/l	109%	3,77
X	114	6,27	mg/l	100%	-0,04
Y			mg/l		
Z	85,85 *	2,0	mg/l	75%	-10,76
AA	115	10	mg/l	101%	0,34
AB	117	0,001	mg/l	103%	1,11
AC	111	11,1	mg/l	97%	-1,18
AD	116	9	mg/l	102%	0,72
AE	115,1		mg/l	101%	0,38
AF	115		mg/l	101%	0,34
AG	114,1	17,12	mg/l	100%	0,00
AH			mg/l		
AI	112,88	11,28	mg/l	99%	-0,46
AJ	116,24	11,624	mg/l	102%	0,82
AK	120,2	3,6	mg/l	105%	2,32
AL	112		mg/l	98%	-0,80

	All results	Outliers excl.	Unit
Mean ± CI(99%)	115,8 ± 12,0	113,6 ± 2,1	mg/l
Recov. ± CI(99%)	101,5 ± 10,5	99,6 ± 1,8	%
SD between labs	24,3	3,9	mg/l
RSD between labs	21,0	3,5	%
n for calculation	31	27	



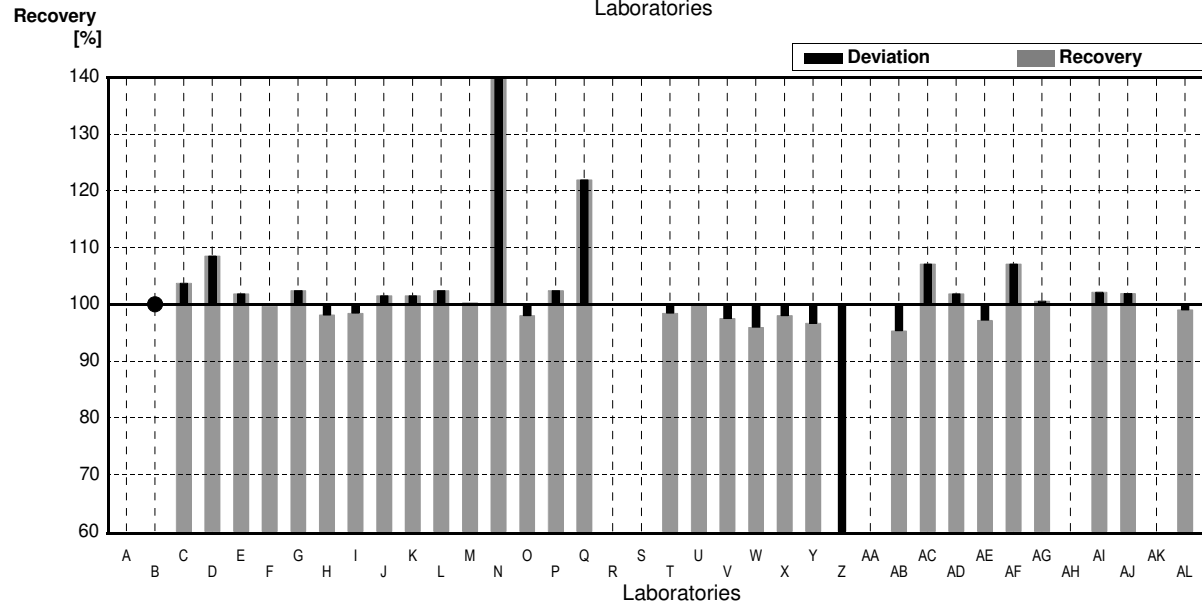
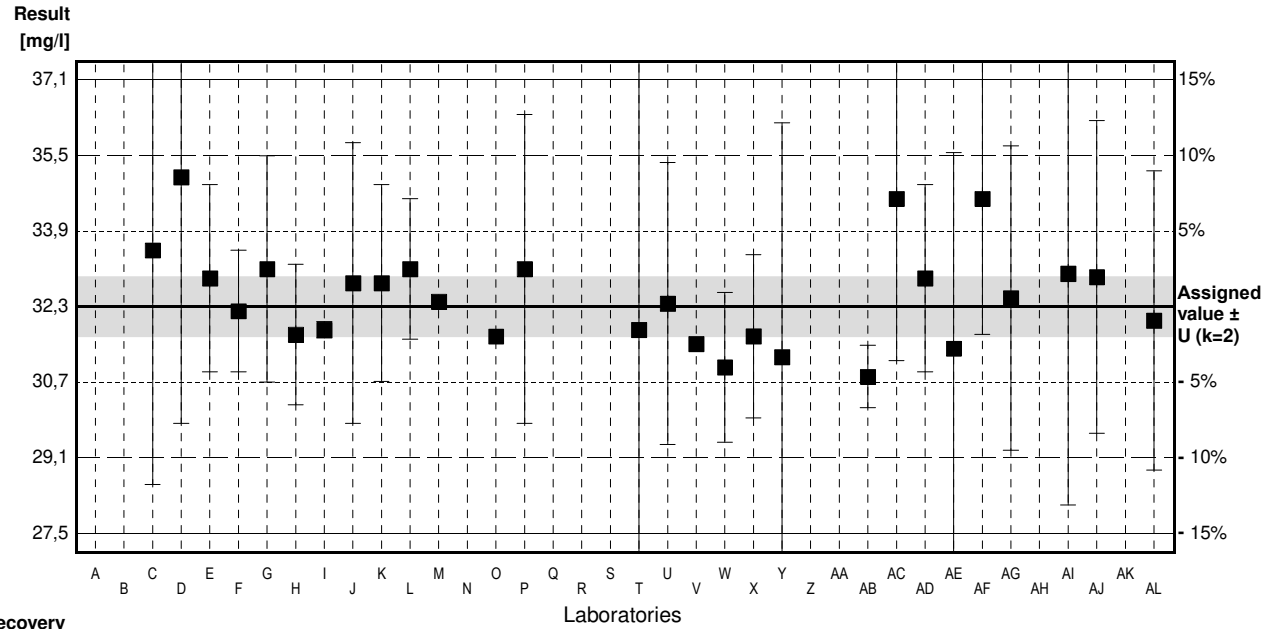
Sample N181A

Parameter Calcium

Assigned value ± U (k=2) 32,3 mg/l ± 0,6 mg/l
 IFA result ± U (k=2) 32,8 mg/l ± 2,1 mg/l
 Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A			mg/l		
B	<40		mg/l	*	
C	33.5	5.0	mg/l	104%	1.20
D	35.06	5.26	mg/l	109%	2.76
E	32.9	2.0	mg/l	102%	0.60
F	32.2	1.3	mg/l	100%	-0.10
G	33.1	2.42	mg/l	102%	0.80
H	31.7	1.5	mg/l	98%	-0.60
I	31.8	0.173	mg/l	98%	-0.50
J	32.8	3	mg/l	102%	0.50
K	32.8	2.10	mg/l	102%	0.50
L	33.1	1.5	mg/l	102%	0.80
M	32.4		mg/l	100%	0.10
N	96.0 *	5.76	mg/l	297%	63.62
O	31.66		mg/l	98%	-0.64
P	33.1	3.3	mg/l	102%	0.80
Q	39.4 *		mg/l	122%	7.09
R			mg/l		
S			mg/l		
T	31.8	6.4	mg/l	98%	-0.50
U	32.36	3.013	mg/l	100%	0.06
V	31.50		mg/l	98%	-0.80
W	31.0	1.6	mg/l	96%	-1.30
X	31.662	1.741	mg/l	98%	-0.64
Y	31.22	5.00	mg/l	97%	-1.08
Z	16.55 *	0.3	mg/l	51%	-15.73
AA			mg/l		
AB	30.8	0.666	mg/l	95%	-1.50
AC	34.6	3.46	mg/l	107%	2.30
AD	32.9	2.0	mg/l	102%	0.60
AE	31.4	4.19	mg/l	97%	-0.90
AF	34.6	2.9	mg/l	107%	2.30
AG	32.48	3.248	mg/l	101%	0.18
AH			mg/l		
AI	33.00	4.94	mg/l	102%	0.70
AJ	32.93	3.34	mg/l	102%	0.63
AK			mg/l		
AL	32.0	3.2	mg/l	99%	-0.30

	All results	Outliers excl.	Unit
Mean ± CI(99%)	34,3 ± 5,9	32,5 ± 0,6	mg/l
Recov. ± CI(99%)	106,1 ± 18,2	100,7 ± 1,7	%
SD between labs	11,9	1,1	mg/l
RSD between labs	34,8	3,3	%
n for calculation	31	28	



Sample N181B

Parameter Calcium

Assigned value ± U (k=2) 51,0 mg/l ± 0,7 mg/l

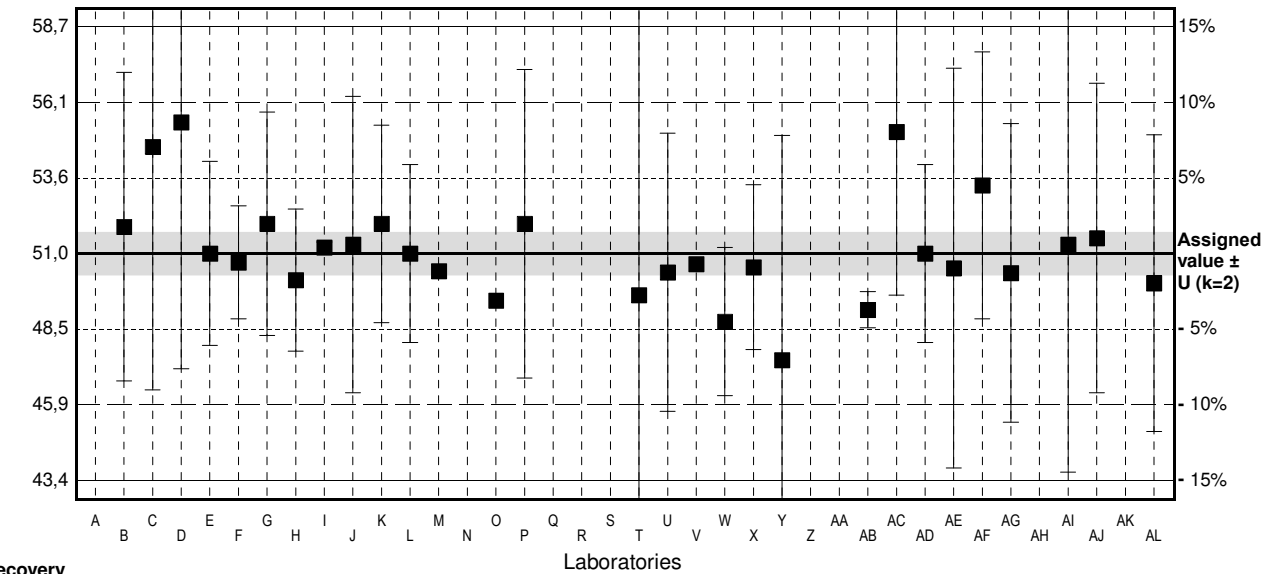
IFA result ± U (k=2) 52 mg/l ± 3 mg/l

Stability test mg/l

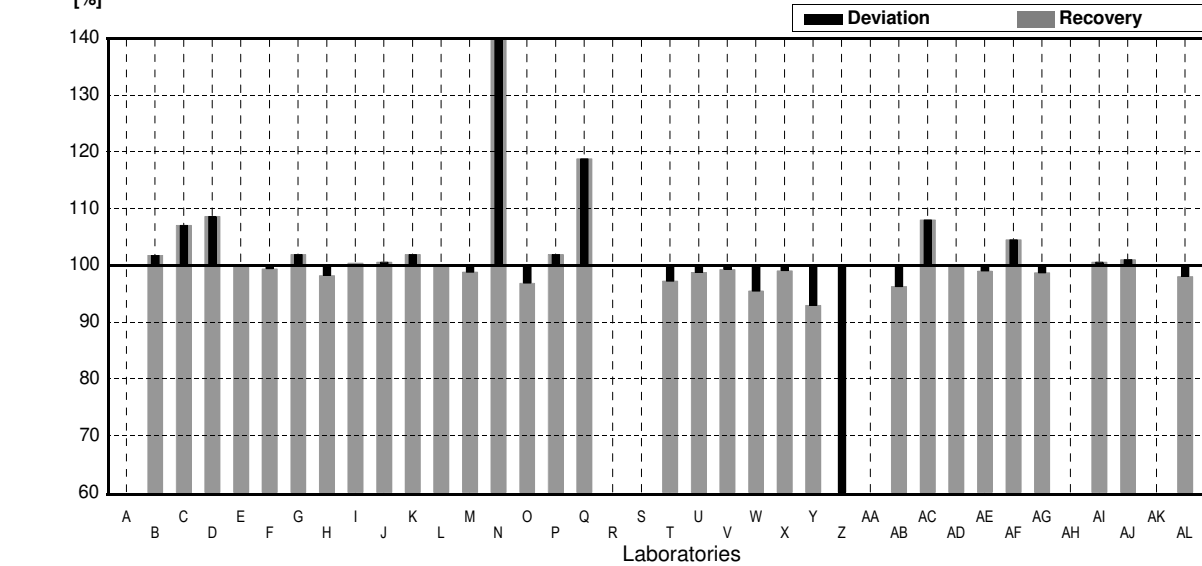
Lab Code	Result	±	Unit	Recovery	z-Score
A			mg/l		
B	51.9	5.2	mg/l	102%	0.57
C	54.6	8.2	mg/l	107%	2.28
D	55.42 *	8.31	mg/l	109%	2.80
E	51.0	3.1	mg/l	100%	0.00
F	50.7	1.9	mg/l	99%	-0.19
G	52	3.77	mg/l	102%	0.63
H	50.1	2.4	mg/l	98%	-0.57
I	51.2	0.181	mg/l	100%	0.13
J	51.3	5	mg/l	101%	0.19
K	52.0	3.33	mg/l	102%	0.63
L	51	3	mg/l	100%	0.00
M	50.4		mg/l	99%	-0.38
N	120.6 *	7.23	mg/l	236%	44.02
O	49.411		mg/l	97%	-1.01
P	52.0	5.2	mg/l	102%	0.63
Q	60.6 *		mg/l	119%	6.07
R			mg/l		
S			mg/l		
T	49.6	10	mg/l	97%	-0.89
U	50.36	4.689	mg/l	99%	-0.40
V	50.64		mg/l	99%	-0.23
W	48.7	2.5	mg/l	95%	-1.45
X	50.537	2.779	mg/l	99%	-0.29
Y	47.40	7.58	mg/l	93%	-2.28
Z	28.11 *	0.3	mg/l	55%	-14.48
AA			mg/l		
AB	49.1	0.611	mg/l	96%	-1.20
AC	55.1	5.51	mg/l	108%	2.59
AD	51	3	mg/l	100%	0.00
AE	50.5	6.74	mg/l	99%	-0.32
AF	53.3	4.5	mg/l	105%	1.45
AG	50.34	5.034	mg/l	99%	-0.42
AH			mg/l		
AI	51.3	7.68	mg/l	101%	0.19
AJ	51.52	5.224	mg/l	101%	0.33
AK			mg/l		
AL	50	5	mg/l	98%	-0.63

	All results	Outliers excl.	Unit
Mean ± CI(99%)	52,9 ± 6,4	51,0 ± 0,8	mg/l
Recov. ± CI(99%)	103,7 ± 12,6	99,9 ± 1,6	%
SD between labs	13,2	1,6	mg/l
RSD between labs	25,1	3,1	%
n for calculation	32	28	

Result [mg/l]



Recovery [%]



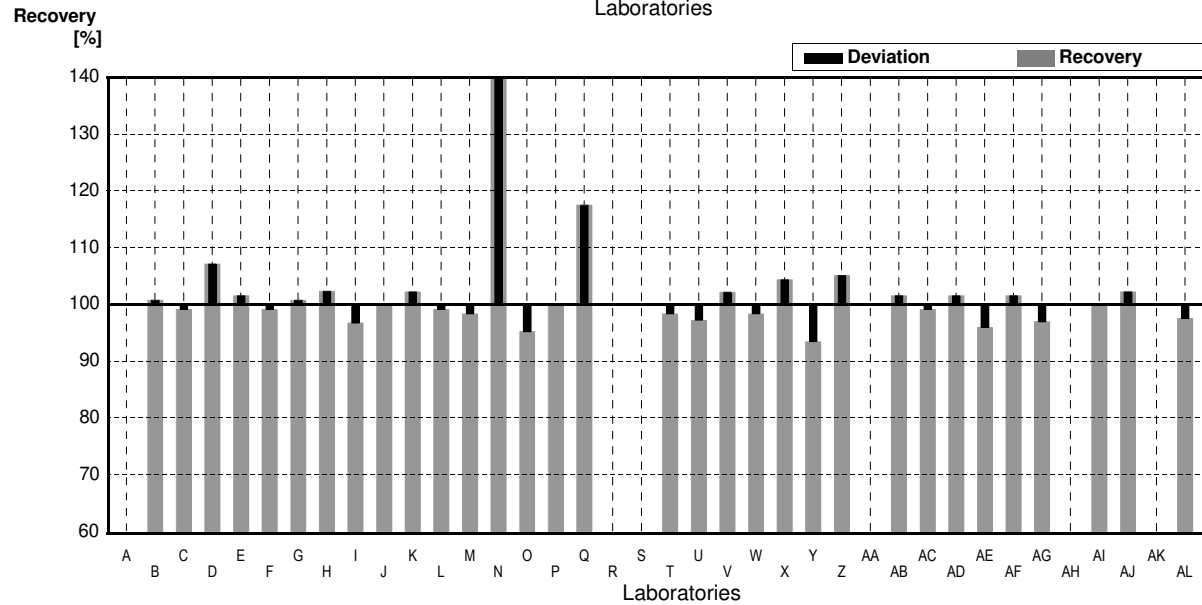
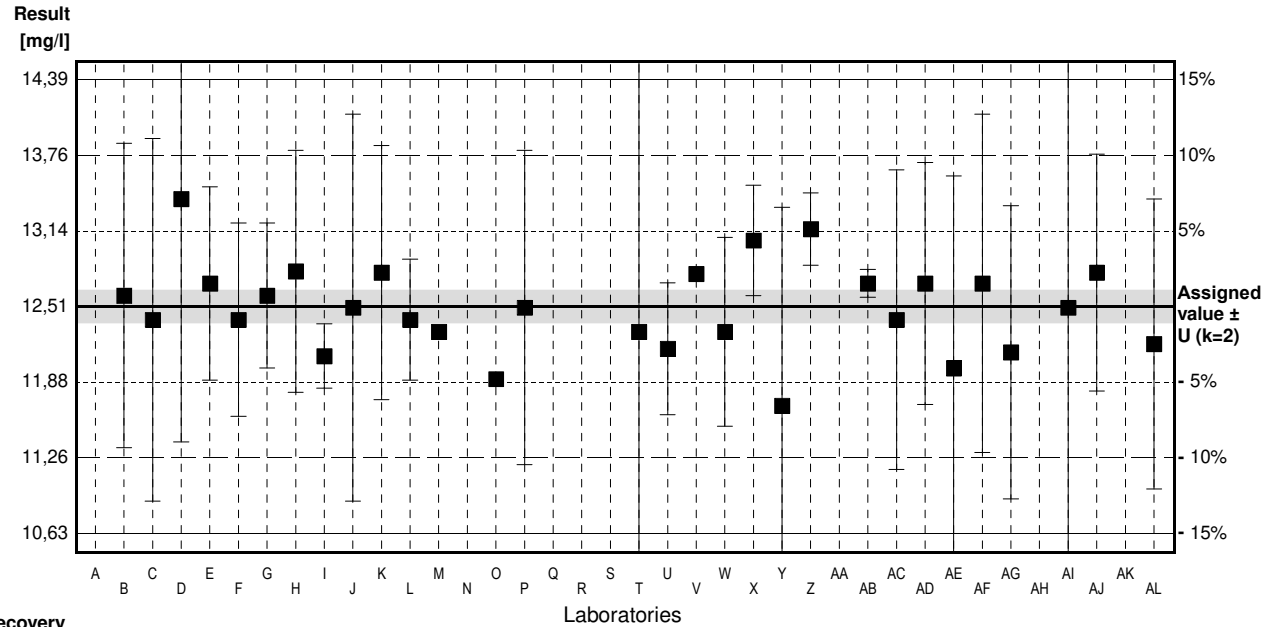
Sample N181A

Parameter Magnesium

Assigned value ± U (k=2) 12,51 mg/l ± 0,13 mg/l
 IFA result ± U (k=2) 12,5 mg/l ± 0,7 mg/l
 Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A			mg/l		
B	12,6	1,26	mg/l	101%	0,21
C	12,4	1,5	mg/l	99%	-0,25
D	13,4	2,01	mg/l	107%	2,03
E	12,7	0,8	mg/l	102%	0,43
F	12,4	0,8	mg/l	99%	-0,25
G	12,6	0,60	mg/l	101%	0,21
H	12,8	1,0	mg/l	102%	0,66
I	12,1	0,266	mg/l	97%	-0,94
J	12,5	1,6	mg/l	100%	-0,02
K	12,79	1,05	mg/l	102%	0,64
L	12,4	0,5	mg/l	99%	-0,25
M	12,3		mg/l	98%	-0,48
N	24,0 *	2,88	mg/l	192%	26,24
O	11,91		mg/l	95%	-1,37
P	12,5	1,3	mg/l	100%	-0,02
Q	14,7 *		mg/l	118%	5,00
R			mg/l		
S			mg/l		
T	12,3	2,5	mg/l	98%	-0,48
U	12,16	0,546	mg/l	97%	-0,80
V	12,78		mg/l	102%	0,62
W	12,3	0,78	mg/l	98%	-0,48
X	13,056	0,457	mg/l	104%	1,25
Y	11,69	1,64	mg/l	93%	-1,87
Z	13,15	0,3	mg/l	105%	1,46
AA			mg/l		
AB	12,7	0,115	mg/l	102%	0,43
AC	12,4	1,24	mg/l	99%	-0,25
AD	12,7	1,0	mg/l	102%	0,43
AE	12,0	1,59	mg/l	96%	-1,16
AF	12,7	1,4	mg/l	102%	0,43
AG	12,13	1,213	mg/l	97%	-0,87
AH			mg/l		
AI	12,50	4,04	mg/l	100%	-0,02
AJ	12,79	0,98	mg/l	102%	0,64
AK			mg/l		
AL	12,2	1,2	mg/l	98%	-0,71

	All results	Outliers excl.	Unit
Mean ± CI(99%)	12,93 ± 1,02	12,50 ± 0,19	mg/l
Recov. ± CI(99%)	103,3 ± 8,1	99,9 ± 1,5	%
SD between labs	2,09	0,37	mg/l
RSD between labs	16,2	3,0	%
n for calculation	32	30	



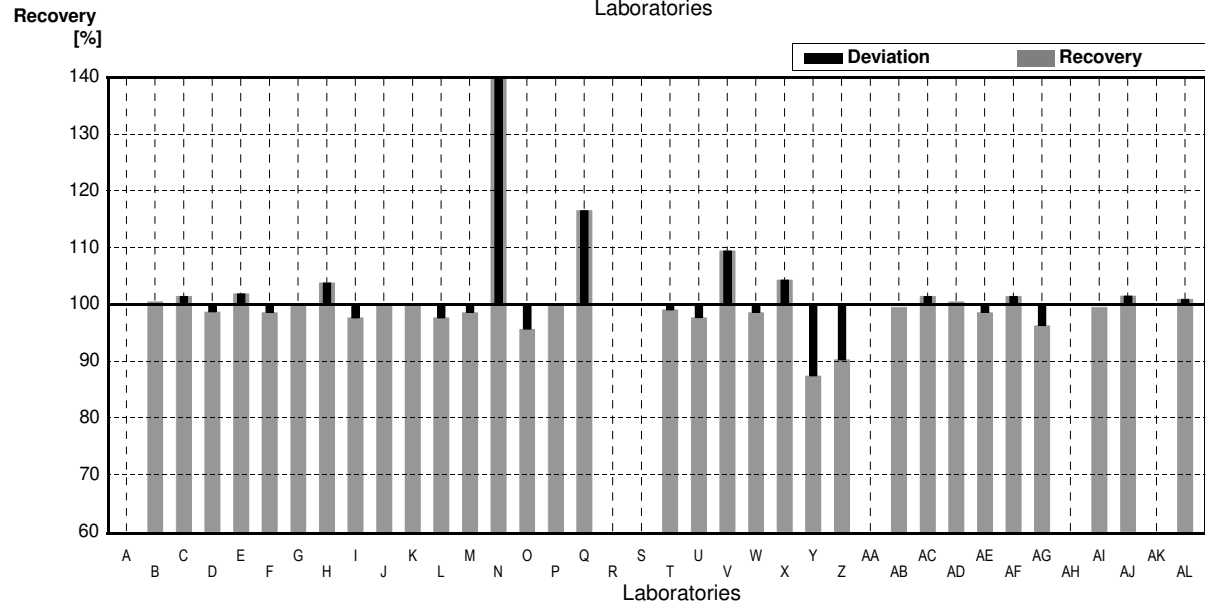
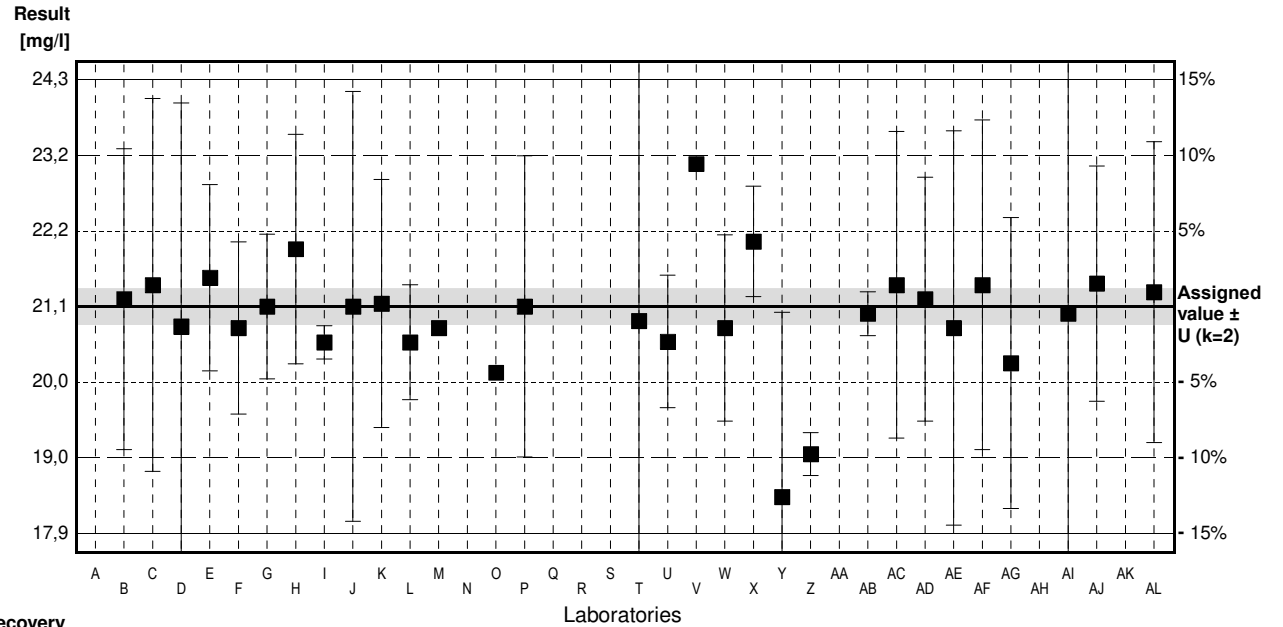
Sample N181B

Parameter Magnesium

Assigned value ± U (k=2) 21,1 mg/l ± 0,3 mg/l
 IFA result ± U (k=2) 21,2 mg/l ± 1,1 mg/l
 Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A			mg/l		
B	21.2	2.1	mg/l	100%	0.14
C	21.4	2.6	mg/l	101%	0.41
D	20.82	3.12	mg/l	99%	-0.38
E	21.5	1.3	mg/l	102%	0.54
F	20.8	1.2	mg/l	99%	-0.41
G	21.1	1.01	mg/l	100%	0.00
H	21.9	1.6	mg/l	104%	1.08
I	20.6	0.232	mg/l	98%	-0.68
J	21.1	3	mg/l	100%	0.00
K	21.14	1.73	mg/l	100%	0.05
L	20.6	0.8	mg/l	98%	-0.68
M	20.8		mg/l	99%	-0.41
N	35.2 *	4.23	mg/l	167%	19.09
O	20.177		mg/l	96%	-1.25
P	21.1	2.1	mg/l	100%	0.00
Q	24.6 *		mg/l	117%	4.74
R			mg/l		
S			mg/l		
T	20.9	4.2	mg/l	99%	-0.27
U	20.61	0.925	mg/l	98%	-0.66
V	23.09 *		mg/l	109%	2.69
W	20.8	1.3	mg/l	99%	-0.41
X	22.007	0.77	mg/l	104%	1.23
Y	18.44 *	2.58	mg/l	87%	-3.60
Z	19.04 *	0.3	mg/l	90%	-2.79
AA			mg/l		
AB	21.0	0.306	mg/l	100%	-0.14
AC	21.4	2.14	mg/l	101%	0.41
AD	21.2	1.7	mg/l	100%	0.14
AE	20.8	2.75	mg/l	99%	-0.41
AF	21.4	2.3	mg/l	101%	0.41
AG	20.31	2.031	mg/l	96%	-1.07
AH			mg/l		
AI	21.00	6.78	mg/l	100%	-0.14
AJ	21.42	1.641	mg/l	102%	0.43
AK			mg/l		
AL	21.3	2.1	mg/l	101%	0.27

	All results	Outliers excl.	Unit
Mean ± CI(99%)	21,5 ± 1,3	21,1 ± 0,2	mg/l
Recov. ± CI(99%)	102,0 ± 6,2	99,8 ± 1,1	%
SD between labs	2,7	0,4	mg/l
RSD between labs	12,5	2,0	%
n for calculation	32	27	



Sample N181A

Parameter Sodium

Assigned value ± U (k=2) 20,14 mg/l ± 0,10 mg/l

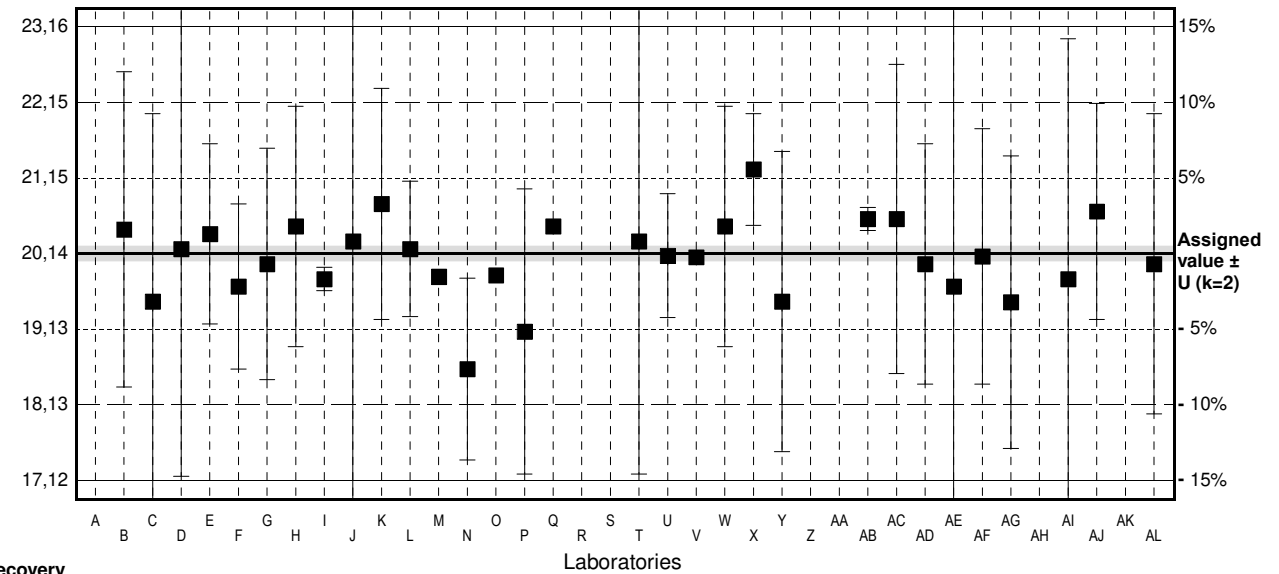
IFA result ± U (k=2) 19,7 mg/l ± 1,0 mg/l

Stability test mg/l

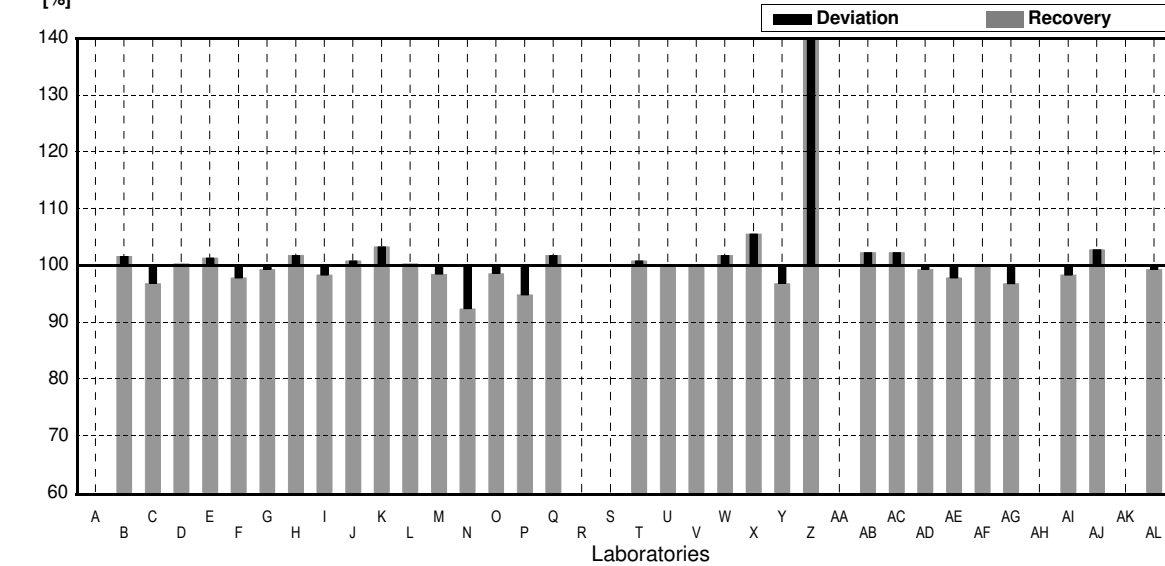
Lab Code	Result	±	Unit	Recovery	z-Score
A			mg/l		
B	20.46	2.1	mg/l	102%	0.53
C	19.5	2.5	mg/l	97%	-1.06
D	20.20	3.03	mg/l	100%	0.10
E	20.4	1.2	mg/l	101%	0.43
F	19.7	1.1	mg/l	98%	-0.73
G	20.0	1.54	mg/l	99%	-0.23
H	20.5	1.6	mg/l	102%	0.60
I	19.8	0.154	mg/l	98%	-0.56
J	20.3	4	mg/l	101%	0.26
K	20.8	1.54	mg/l	103%	1.09
L	20.2	0.9	mg/l	100%	0.10
M	19.83		mg/l	98%	-0.51
N	18.6	1.21	mg/l	92%	-2.55
O	19.85		mg/l	99%	-0.48
P	19.1	1.9	mg/l	95%	-1.72
Q	20.5		mg/l	102%	0.60
R			mg/l		
S			mg/l		
T	20.3	3.1	mg/l	101%	0.26
U	20.11	0.825	mg/l	100%	-0.05
V	20.09		mg/l	100%	-0.08
W	20.5	1.6	mg/l	102%	0.60
X	21.259	0.744	mg/l	106%	1.85
Y	19.5	2.0	mg/l	97%	-1.06
Z	35.39 *	1.5	mg/l	176%	25.24
AA			mg/l		
AB	20.6	0.153	mg/l	102%	0.76
AC	20.6	2.06	mg/l	102%	0.76
AD	20.0	1.6	mg/l	99%	-0.23
AE	19.7	3.48	mg/l	98%	-0.73
AF	20.1	1.7	mg/l	100%	-0.07
AG	19.49	1.949	mg/l	97%	-1.08
AH			mg/l		
AI	19.80	3.2	mg/l	98%	-0.56
AJ	20.70	1.44	mg/l	103%	0.93
AK			mg/l		
AL	20.0	2.0	mg/l	99%	-0.23

	All results	Outliers excl.	Unit
Mean ± CI(99%)	20,56 ± 1,34	20,08 ± 0,26	mg/l
Recov. ± CI(99%)	102,1 ± 6,7	99,7 ± 1,3	%
SD between labs	2,76	0,53	mg/l
RSD between labs	13,4	2,6	%
n for calculation	32	31	

Result [mg/l]



Recovery [%]



Sample N181B

Parameter Sodium

Assigned value ± U (k=2) 10,4 mg/l ± 0,3 mg/l

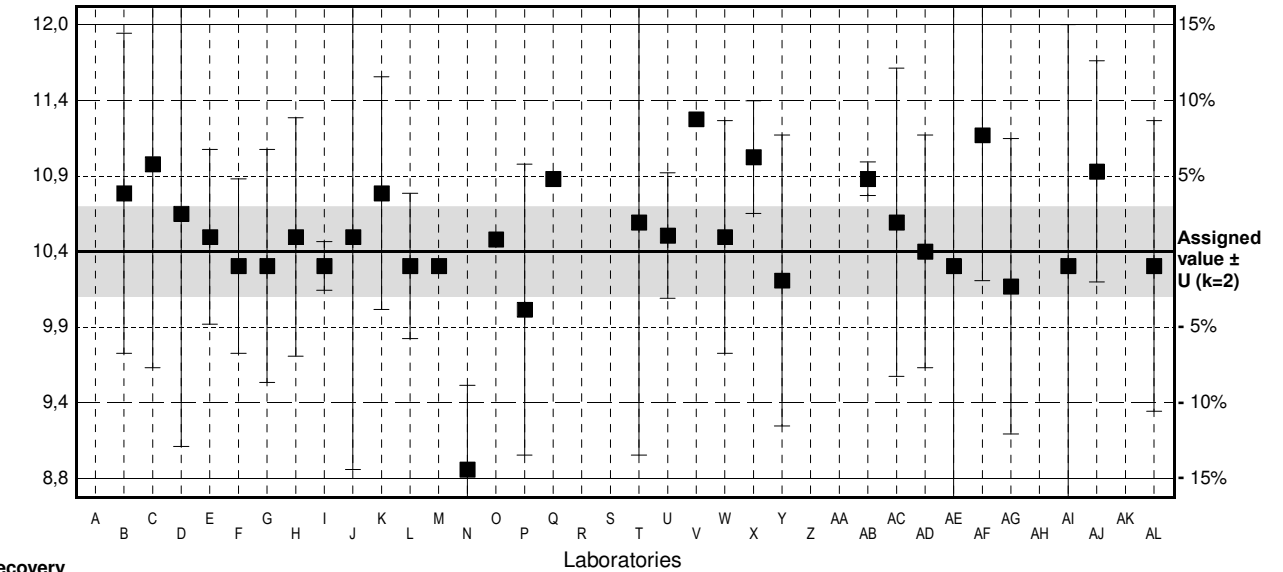
IFA result ± U (k=2) 10,4 mg/l ± 0,8 mg/l

Stability test mg/l

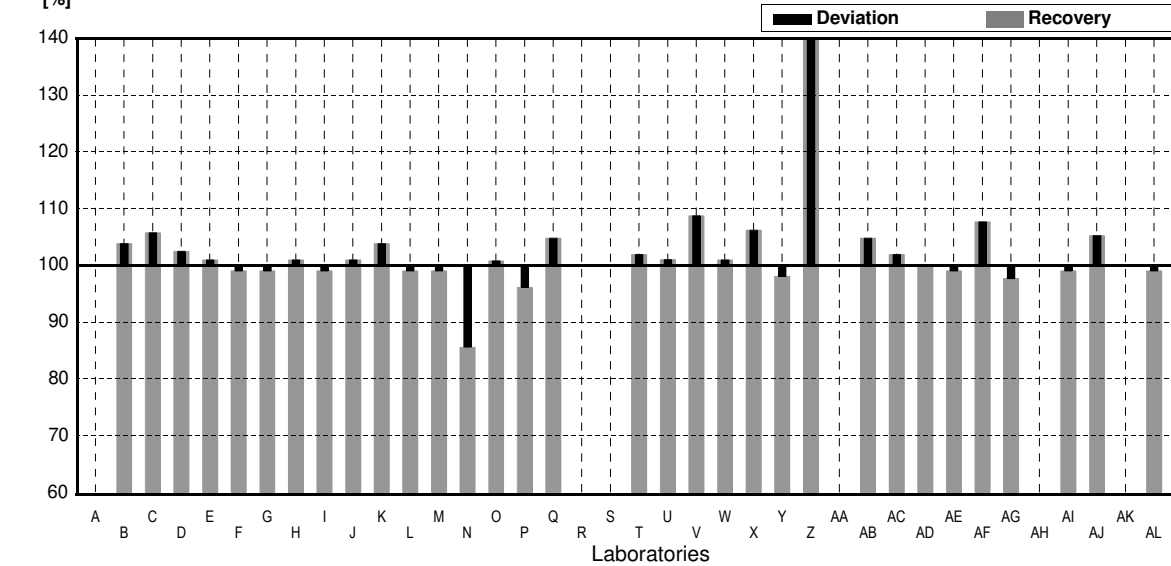
Lab Code	Result	±	Unit	Recovery	z-Score
A			mg/l		
B	10,8	1,1	mg/l	104%	1,28
C	11,0	1,4	mg/l	106%	1,92
D	10,66	1,60	mg/l	103%	0,83
E	10,5	0,6	mg/l	101%	0,32
F	10,3	0,6	mg/l	99%	-0,32
G	10,3	0,80	mg/l	99%	-0,32
H	10,5	0,82	mg/l	101%	0,32
I	10,3	0,167	mg/l	99%	-0,32
J	10,5	1,6	mg/l	101%	0,32
K	10,8	0,80	mg/l	104%	1,28
L	10,3	0,5	mg/l	99%	-0,32
M	10,3		mg/l	99%	-0,32
N	8,9	* 0,58	mg/l	86%	-4,81
O	10,484		mg/l	101%	0,27
P	10,0	1,0	mg/l	96%	-1,28
Q	10,9		mg/l	105%	1,60
R			mg/l		
S			mg/l		
T	10,6	1,6	mg/l	102%	0,64
U	10,51	0,431	mg/l	101%	0,35
V	11,31		mg/l	109%	2,92
W	10,5	0,80	mg/l	101%	0,32
X	11,048	0,387	mg/l	106%	2,08
Y	10,2	1,0	mg/l	98%	-0,64
Z	28,75	* 1,5	mg/l	276%	58,81
AA			mg/l		
AB	10,9	0,115	mg/l	105%	1,60
AC	10,6	1,06	mg/l	102%	0,64
AD	10,4	0,8	mg/l	100%	0,00
AE	10,3	1,82	mg/l	99%	-0,32
AF	11,2	1,0	mg/l	108%	2,56
AG	10,16	1,016	mg/l	98%	-0,77
AH			mg/l		
AI	10,3	1,66	mg/l	99%	-0,32
AJ	10,95	0,76	mg/l	105%	1,76
AK			mg/l		
AL	10,3	1,0	mg/l	99%	-0,32

	All results	Outliers excl.	Unit
Mean ± CI(99%)	11,1 ± 1,6	10,6 ± 0,2	mg/l
Recov. ± CI(99%)	106,5 ± 15,2	101,6 ± 1,6	%
SD between labs	3,3	0,3	mg/l
RSD between labs	29,4	3,1	%
n for calculation	32	30	

Result [mg/l]



Recovery [%]



Sample N181A

Parameter Potassium

Assigned value ± U (k=2) 1,87 mg/l ± 0,03 mg/l

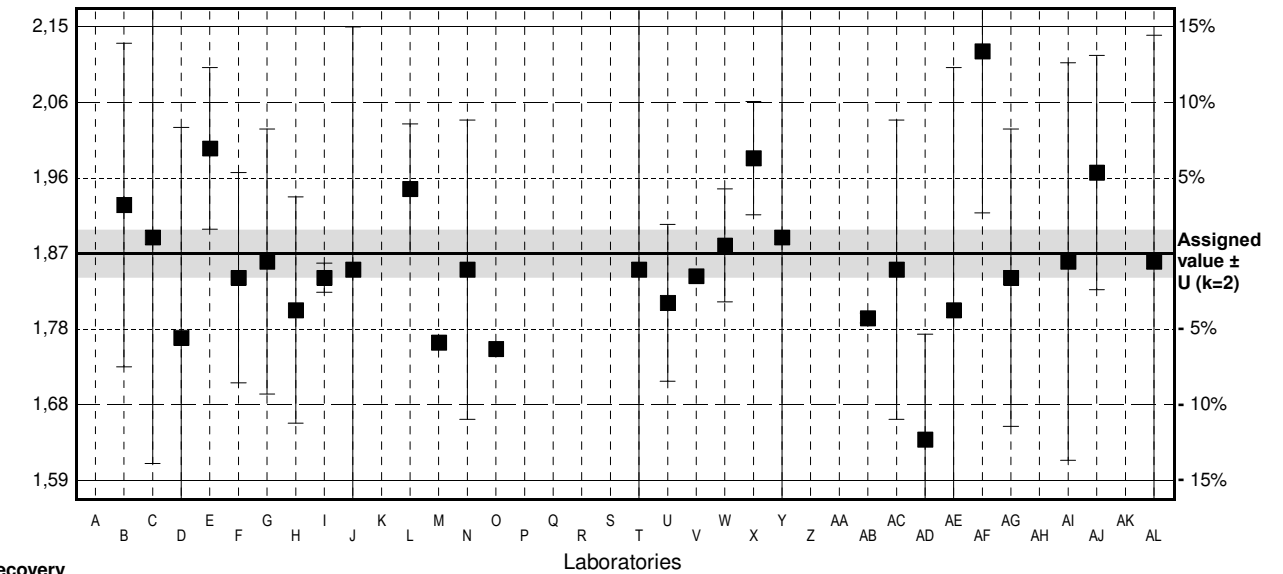
IFA result ± U (k=2) 1,95 mg/l ± 0,16 mg/l

Stability test mg/l

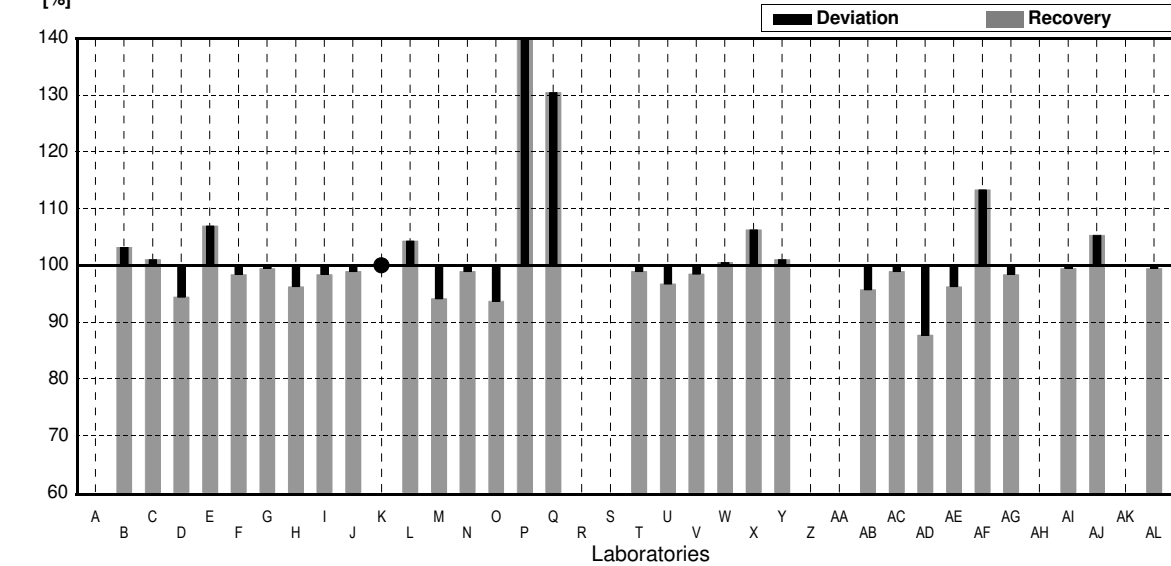
Lab Code	Result	±	Unit	Recovery	z-Score
A			mg/l		
B	1.93	0.2	mg/l	103%	0.87
C	1.89	0.28	mg/l	101%	0.29
D	1.766	0.26	mg/l	94%	-1.50
E	2.00	0.1	mg/l	107%	1.88
F	1.84	0.13	mg/l	98%	-0.43
G	1.86	0.164	mg/l	99%	-0.14
H	1.80	0.14	mg/l	96%	-1.01
I	1.84	0.0179	mg/l	98%	-0.43
J	1.85	0.3	mg/l	99%	-0.29
K	<2		mg/l	.	
L	1.95	0.08	mg/l	104%	1.16
M	1.76		mg/l	94%	-1.59
N	1.85	0.185	mg/l	99%	-0.29
O	1.752		mg/l	94%	-1.71
P	2.70 *	0.3	mg/l	144%	12.00
Q	2.44 *		mg/l	130%	8.24
R			mg/l		
S			mg/l		
T	1.85	0.37	mg/l	99%	-0.29
U	1.809	0.097	mg/l	97%	-0.88
V	1.842		mg/l	99%	-0.40
W	1.88	0.07	mg/l	101%	0.14
X	1.988	0.07	mg/l	106%	1.71
Y	1.89	0.38	mg/l	101%	0.29
Z			mg/l		
AA			mg/l		
AB	1.79	0.006	mg/l	96%	-1.16
AC	1.85	0.185	mg/l	99%	-0.29
AD	1.64 *	0.13	mg/l	88%	-3.32
AE	1.80	0.30	mg/l	96%	-1.01
AF	2.12 *	0.2	mg/l	113%	3.61
AG	1.84	0.184	mg/l	98%	-0.43
AH			mg/l		
AI	1.86	0.246	mg/l	99%	-0.14
AJ	1.97	0.145	mg/l	105%	1.45
AK			mg/l		
AL	1.86	0.28	mg/l	99%	-0.14

	All results	Outliers excl.	Unit
Mean ± CI(99%)	1,91 ± 0,10	1,86 ± 0,04	mg/l
Recov. ± CI(99%)	102,0 ± 5,5	99,4 ± 1,9	%
SD between labs	0,20	0,07	mg/l
RSD between labs	10,7	3,6	%
n for calculation	30	26	

Result [mg/l]



Recovery [%]



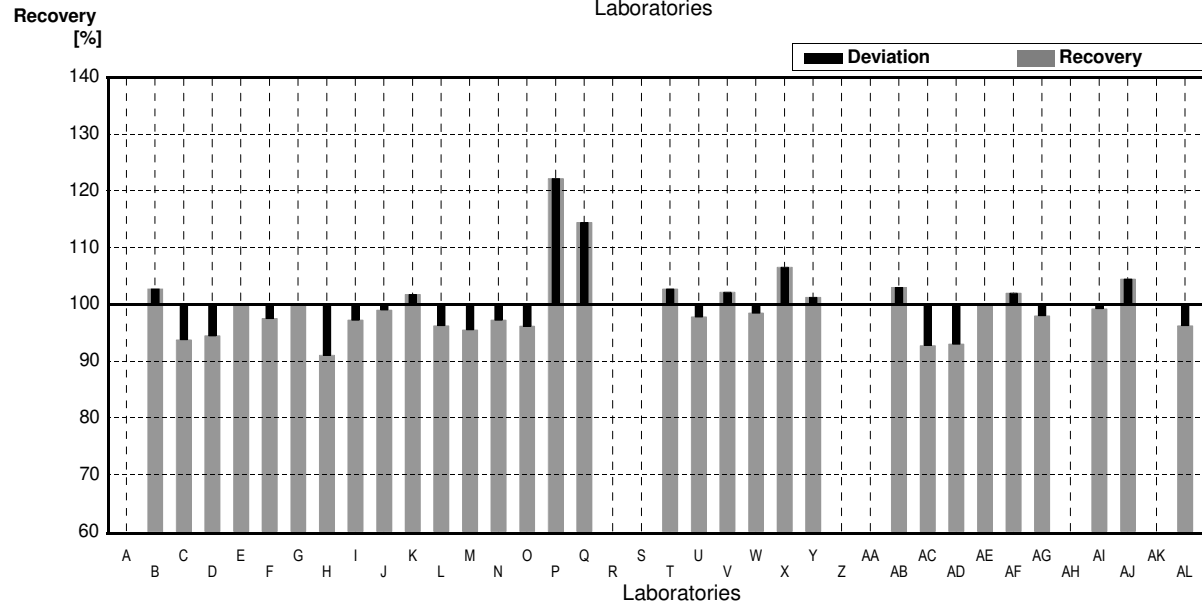
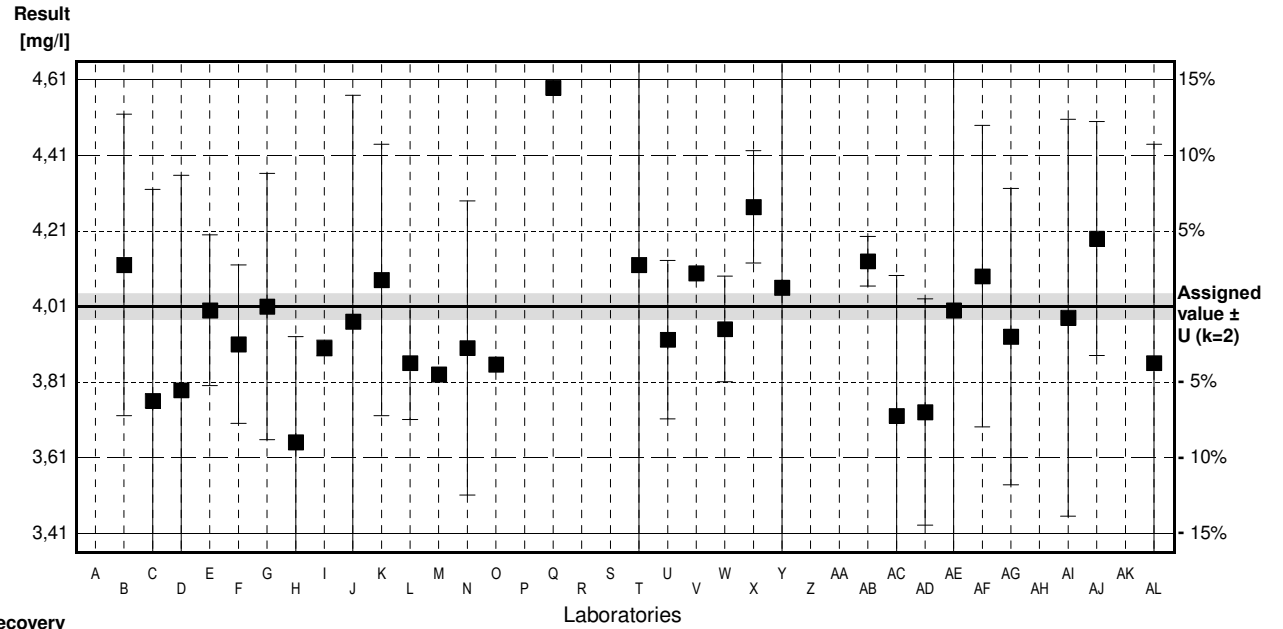
Sample N181B

Parameter Potassium

Assigned value ± U (k=2) 4,01 mg/l ± 0,03 mg/l
 IFA result ± U (k=2) 4,30 mg/l ± 0,24 mg/l
 Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A			mg/l		
B	4.12	0.4	mg/l	103%	0.74
C	3.76	0.56	mg/l	94%	-1.68
D	3.788	0.57	mg/l	94%	-1.50
E	4.00	0.2	mg/l	100%	-0.07
F	3.91	0.21	mg/l	98%	-0.67
G	4.01	0.353	mg/l	100%	0.00
H	3.65	0.28	mg/l	91%	-2.43
I	3.90	0.0207	mg/l	97%	-0.74
J	3.97	0.6	mg/l	99%	-0.27
K	4.08	0.36	mg/l	102%	0.47
L	3.86	0.15	mg/l	96%	-1.01
M	3.83		mg/l	96%	-1.21
N	3.90	0.390	mg/l	97%	-0.74
O	3.856		mg/l	96%	-1.04
P	4.90	0.49	mg/l	122%	6.00
Q	4.59	*	mg/l	114%	3.91
R			mg/l		
S			mg/l		
T	4.12	0.83	mg/l	103%	0.74
U	3.922	0.210	mg/l	98%	-0.59
V	4.098		mg/l	102%	0.59
W	3.95	0.14	mg/l	99%	-0.40
X	4.274	0.149	mg/l	107%	1.78
Y	4.06	0.81	mg/l	101%	0.34
Z			mg/l		
AA			mg/l		
AB	4.13	0.066	mg/l	103%	0.81
AC	3.72	0.372	mg/l	93%	-1.95
AD	3.73	0.30	mg/l	93%	-1.89
AE	4.00	0.66	mg/l	100%	-0.07
AF	4.09	0.4	mg/l	102%	0.54
AG	3.93	0.393	mg/l	98%	-0.54
AH			mg/l		
AI	3.98	0.526	mg/l	99%	-0.20
AJ	4.19	0.31	mg/l	104%	1.21
AK			mg/l		
AL	3.86	0.58	mg/l	96%	-1.01

	All results	Outliers excl.	Unit
Mean ± CI(99%)	4,01 ± 0,12	3,95 ± 0,08	mg/l
Recov. ± CI(99%)	99,9 ± 3,1	98,6 ± 1,9	%
SD between labs	0,25	0,15	mg/l
RSD between labs	6,2	3,8	%
n for calculation	31	29	



Sample N181A

Parameter Nitrate (as NO3)

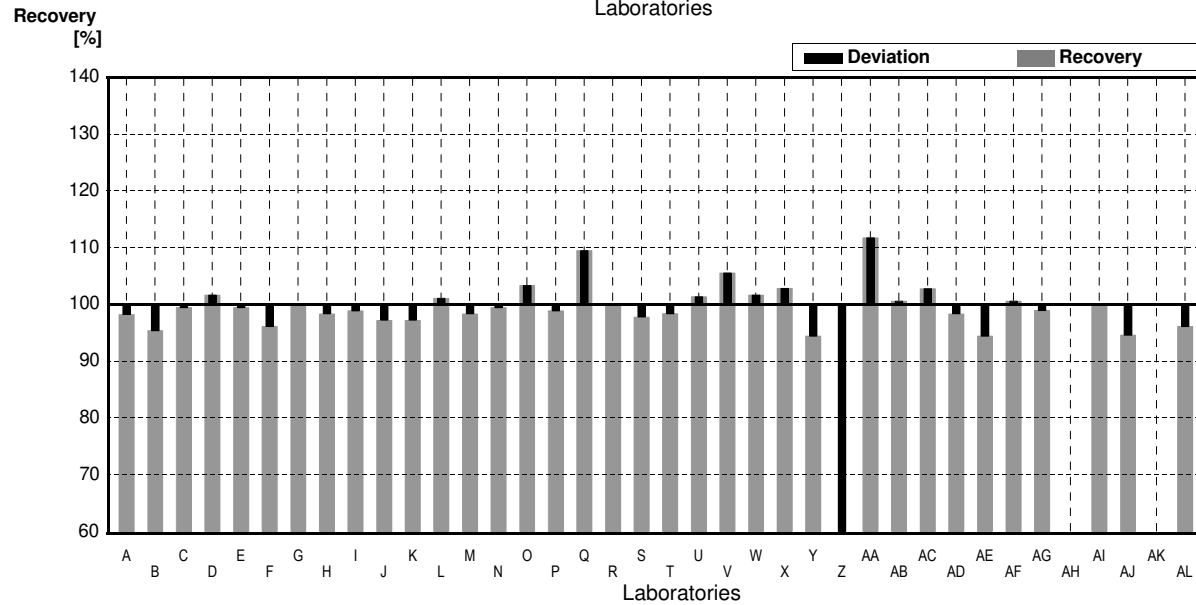
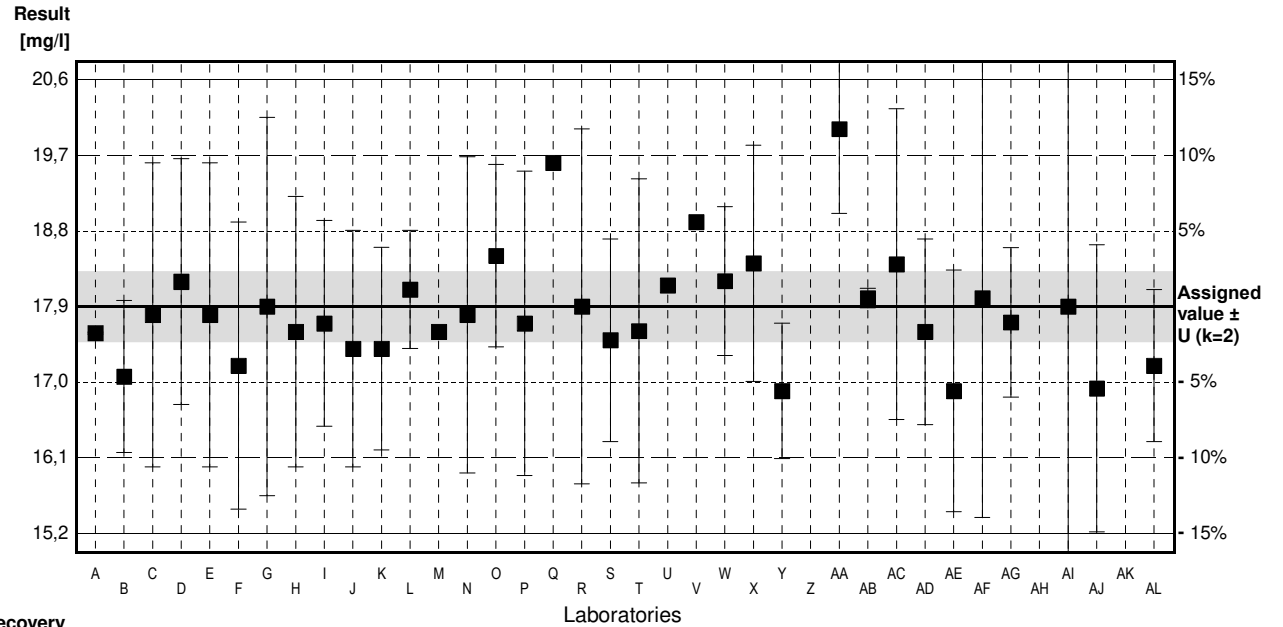
Assigned value ± U (k=2) 17,9 mg/l ± 0,4 mg/l

IFA result ± U (k=2) 17,7 mg/l ± 0,9 mg/l

Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	17,586	0,011	mg/l	98%	-0,60
B	17,07	0,9	mg/l	95%	-1,60
C	17,8	1,8	mg/l	99%	-0,19
D	18,193	1,455	mg/l	102%	0,56
E	17,8	1,8	mg/l	99%	-0,19
F	17,2	1,7	mg/l	96%	-1,35
G	17,9	2,24	mg/l	100%	0,00
H	17,6	1,6	mg/l	98%	-0,58
I	17,7	1,22	mg/l	99%	-0,39
J	17,4	1,4	mg/l	97%	-0,96
K	17,4	1,20	mg/l	97%	-0,96
L	18,1	0,7	mg/l	101%	0,39
M	17,6		mg/l	98%	-0,58
N	17,8	1,87	mg/l	99%	-0,19
O	18,5	1,08	mg/l	103%	1,16
P	17,7	1,8	mg/l	99%	-0,39
Q	19,6 *		mg/l	109%	3,27
R	17,9	2,1	mg/l	100%	0,00
S	17,5	1,2	mg/l	98%	-0,77
T	17,61	1,8	mg/l	98%	-0,56
U	18,15		mg/l	101%	0,48
V	18,9		mg/l	106%	1,93
W	18,2	0,88	mg/l	102%	0,58
X	18,41	1,4	mg/l	103%	0,98
Y	16,9	0,8	mg/l	94%	-1,93
Z	7,05 *	0,5	mg/l	39%	-20,90
AA	20,0 *	1	mg/l	112%	4,05
AB	18,0	0,115	mg/l	101%	0,19
AC	18,4	1,84	mg/l	103%	0,96
AD	17,6	1,1	mg/l	98%	-0,58
AE	16,9	1,43	mg/l	94%	-1,93
AF	18,0	2,6	mg/l	101%	0,19
AG	17,712	0,8856	mg/l	99%	-0,36
AH			mg/l		
AI	17,9	4,97	mg/l	100%	0,00
AJ	16,93	1,7	mg/l	95%	-1,87
AK			mg/l		
AL	17,2	0,9	mg/l	96%	-1,35

	All results	Outliers excl.	Unit
Mean ± CI(99%)	17,6 ± 0,9	17,7 ± 0,2	mg/l
Recov. ± CI(99%)	98,1 ± 4,9	99,1 ± 1,3	%
SD between labs	1,9	0,5	mg/l
RSD between labs	10,9	2,7	%
n for calculation	36	33	



Sample N181B

Parameter Nitrate (as NO3)

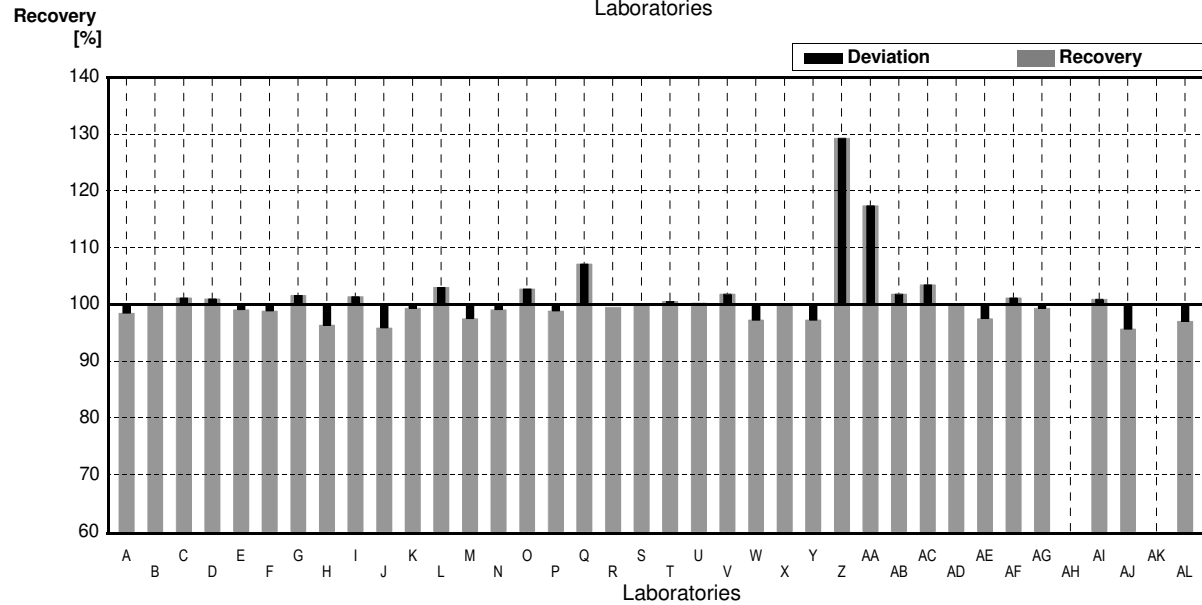
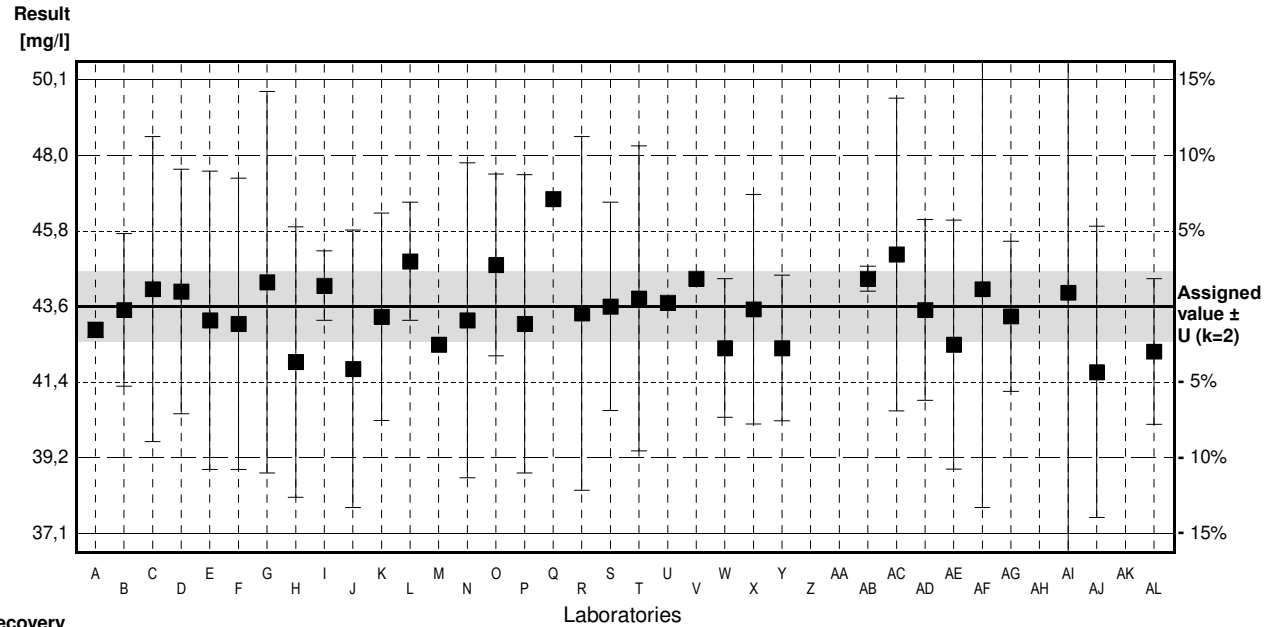
Assigned value ± U (k=2) 43,6 mg/l ± 1,0 mg/l

IFA result ± U (k=2) 43,2 mg/l ± 2,2 mg/l

Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	42,923	0,218	mg/l	98%	-0.54
B	43,5	2,2	mg/l	100%	-0.08
C	44,1	4,4	mg/l	101%	0.40
D	44,031	3,523	mg/l	101%	0.34
E	43,2	4,3	mg/l	99%	-0.32
F	43,1	4,2	mg/l	99%	-0.40
G	44,3	5,5	mg/l	102%	0.55
H	42,0	3,9	mg/l	96%	-1.27
I	44,2	0,998	mg/l	101%	0.47
J	41,8	4	mg/l	96%	-1.42
K	43,3	2,99	mg/l	99%	-0.24
L	44,9	1,7	mg/l	103%	1.03
M	42,5		mg/l	97%	-0.87
N	43,2	4,54	mg/l	99%	-0.32
O	44,8	2,62	mg/l	103%	0.95
P	43,1	4,3	mg/l	99%	-0.40
Q	46,7 *		mg/l	107%	2.45
R	43,4	5,1	mg/l	100%	-0.16
S	43,6	3,0	mg/l	100%	0.00
T	43,83	4,4	mg/l	101%	0.18
U	43,71		mg/l	100%	0.09
V	44,4		mg/l	102%	0.63
W	42,4	2,0	mg/l	97%	-0.95
X	43,52	3,31	mg/l	100%	-0.06
Y	42,4	2,1	mg/l	97%	-0.95
Z	56,39 *	0,5	mg/l	129%	10.12
AA	51,2 *	1	mg/l	117%	6.01
AB	44,4	0,361	mg/l	102%	0.63
AC	45,1	4,51	mg/l	103%	1.19
AD	43,5	2,61	mg/l	100%	-0.08
AE	42,5	3,59	mg/l	97%	-0.87
AF	44,1	6,3	mg/l	101%	0.40
AG	43,316	2,1658	mg/l	99%	-0.22
AH			mg/l		
AI	44,00	12,2	mg/l	101%	0.32
AJ	41,71	4,2	mg/l	96%	-1.49
AK			mg/l		
AL	42,3	2,1	mg/l	97%	-1.03

	All results	Outliers excl.	Unit
Mean ± CI(99%)	44,1 ± 1,2	43,4 ± 0,4	mg/l
Recov. ± CI(99%)	101,1 ± 2,8	99,6 ± 1,0	%
SD between labs	2,7	0,9	mg/l
RSD between labs	6,0	2,0	%
n for calculation	36	33	



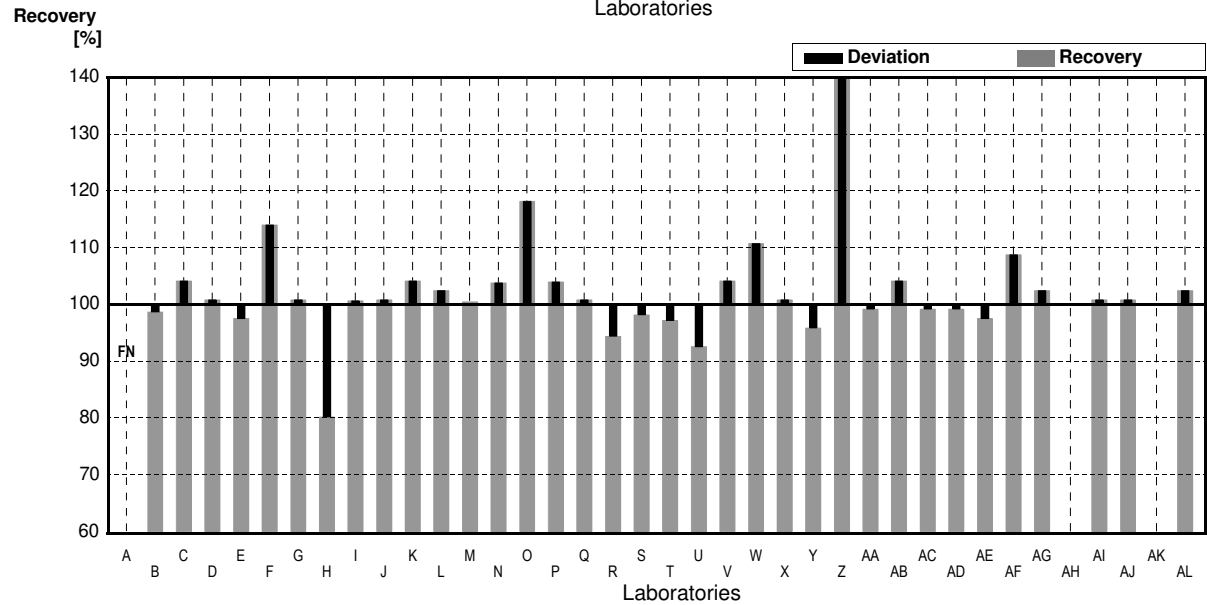
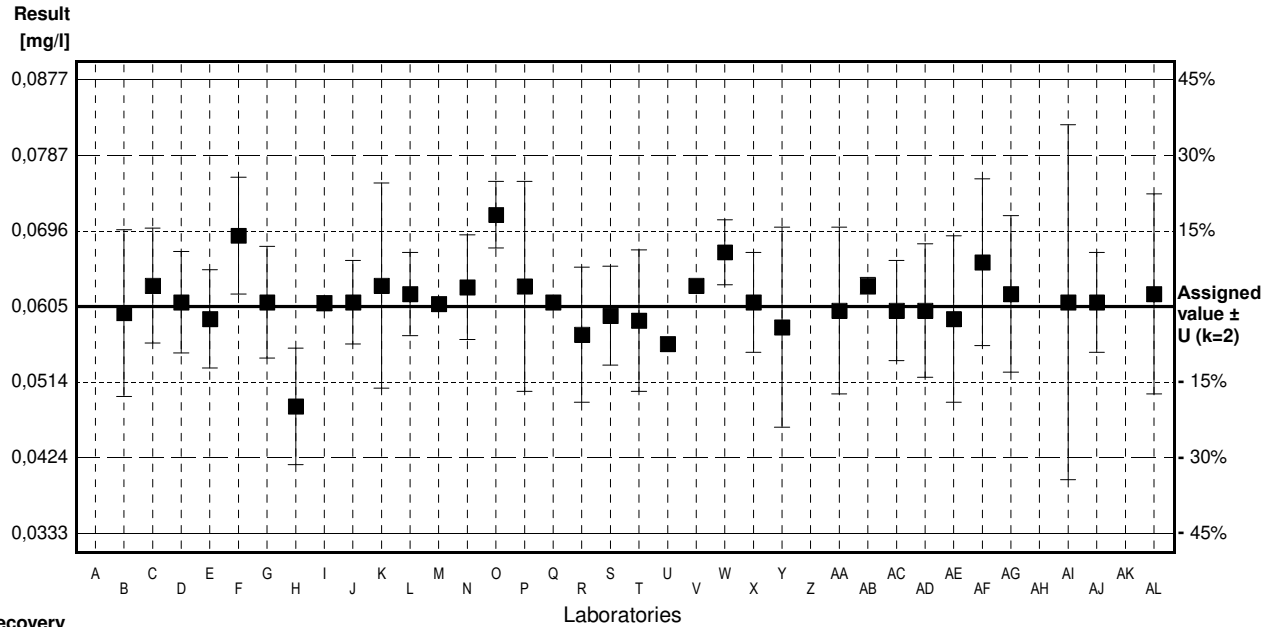
Sample N181A

Parameter Nitrite (as NO2)

Assigned value ± U (k=2) 0,0605 mg/l ± 0,0002 mg/l
 IFA result ± U (k=2) 0,059 mg/l ± 0,002 mg/l
 Stability test ± U (k=2) 0,059 mg/l ± 0,002 mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	<0.010		mg/l	FN	
B	0.0597	0.01	mg/l	99%	-0.24
C	0.0630	0.0069	mg/l	104%	0.77
D	0.061	0.0061	mg/l	101%	0.15
E	0.0590	0.0059	mg/l	98%	-0.46
F	0.069	0.007	mg/l	114%	2.60
G	0.061	0.0067	mg/l	101%	0.15
H	0.0485 *	0.007	mg/l	80%	-3.67
I	0.0609	0.000904	mg/l	101%	0.12
J	0.061	0.005	mg/l	101%	0.15
K	0.0630	0.0123	mg/l	104%	0.77
L	0.062	0.005	mg/l	102%	0.46
M	0.0608		mg/l	100%	0.09
N	0.0628	0.00628	mg/l	104%	0.70
O	0.0715 *	0.004	mg/l	118%	3.37
P	0.0629	0.0126	mg/l	104%	0.73
Q	0.061		mg/l	101%	0.15
R	0.0571	0.0081	mg/l	94%	-1.04
S	0.05939	0.00594	mg/l	98%	-0.34
T	0.0588	0.0085	mg/l	97%	-0.52
U	0.056		mg/l	93%	-1.38
V	0.063		mg/l	104%	0.77
W	0.067	0.0039	mg/l	111%	1.99
X	0.061	0.006	mg/l	101%	0.15
Y	0.058	0.012	mg/l	96%	-0.77
Z	0.094 *	0.01	mg/l	155%	10.25
AA	0.060	0.01	mg/l	99%	-0.15
AB	0.0630	0.001	mg/l	104%	0.77
AC	0.060	0.0060	mg/l	99%	-0.15
AD	0.060	0.008	mg/l	99%	-0.15
AE	0.059	0.01	mg/l	98%	-0.46
AF	0.0658	0.01	mg/l	109%	1.62
AG	0.062	0.0094	mg/l	102%	0.46
AH			mg/l		
AI	0.061	0.0213	mg/l	101%	0.15
AJ	0.061	0.006	mg/l	101%	0.15
AK			mg/l		
AL	0.062	0.012	mg/l	102%	0.46

	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,0621 ± 0,0031	0,0613 ± 0,0013	mg/l
Recov. ± CI(99%)	102,7 ± 5,1	101,3 ± 2,1	%
SD between labs	0,0067	0,0026	mg/l
RSD between labs	10,8	4,3	%
n for calculation	35	32	



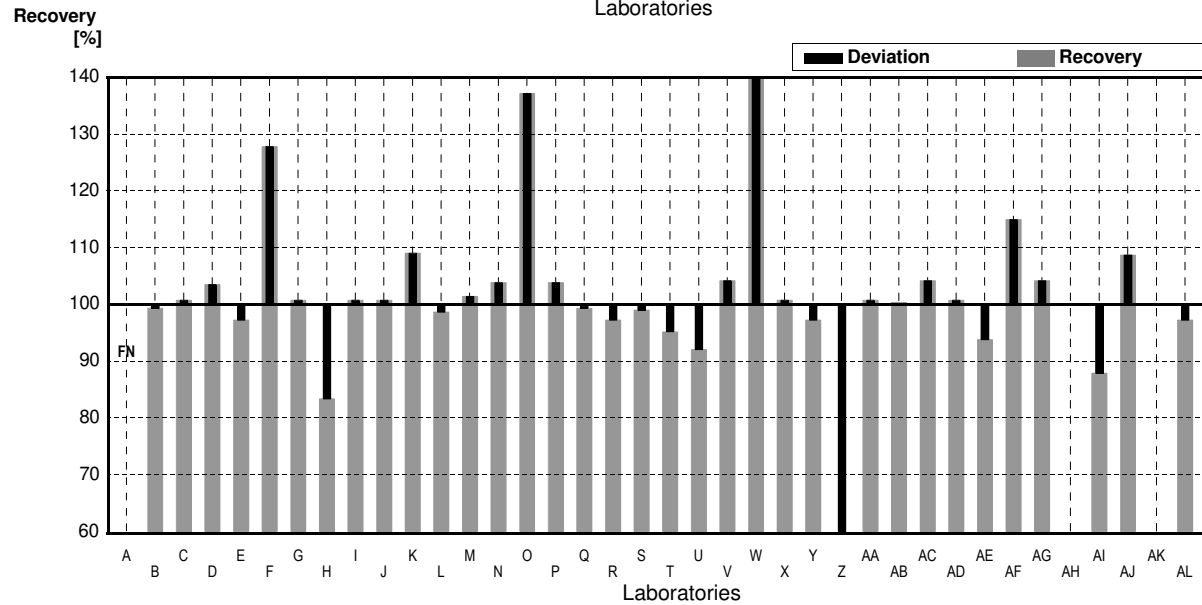
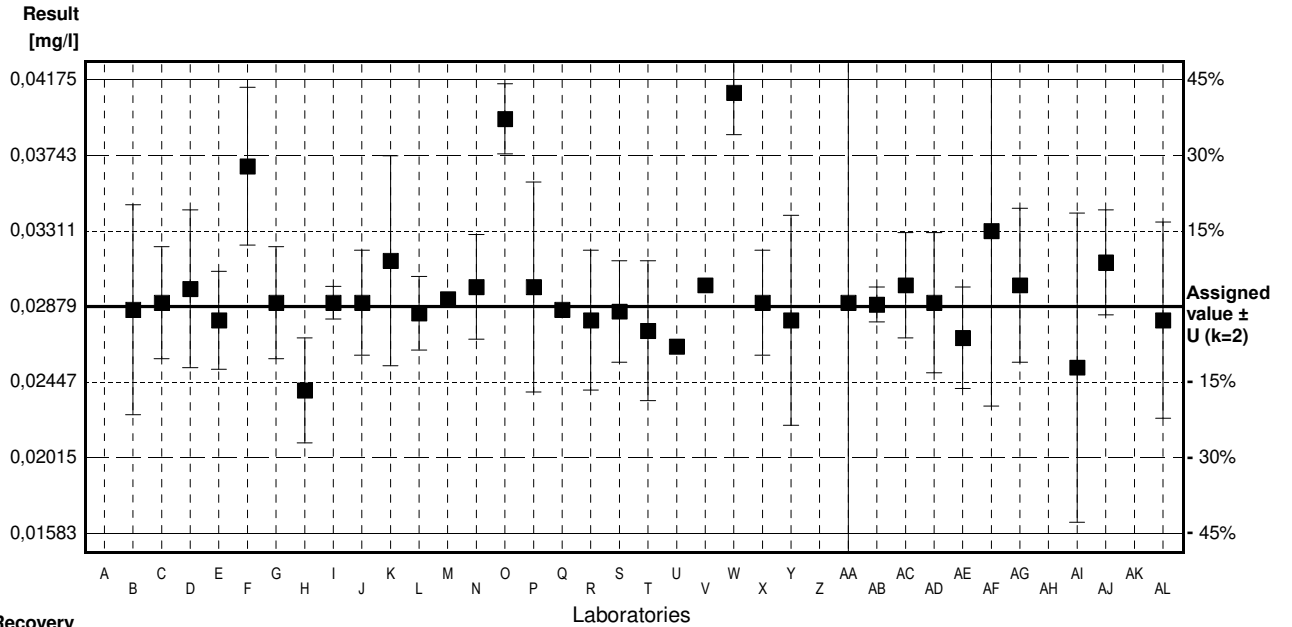
Sample N181B

Parameter Nitrite (as NO₂)

Assigned value ± U (k=2) 0,02879 mg/l ± 0,00011 mg/l
 IFA result ± U (k=2) 0,0280 mg/l ± 0,0012 mg/l
 Stability test ± U (k=2) 0,0278 mg/l ± 0,0012 mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	<0.010		mg/l	FN	
B	0.0286	0.006	mg/l	99%	-0.12
C	0.0290	0.0032	mg/l	101%	0.14
D	0.0298	0.0045	mg/l	104%	0.65
E	0.0280	0.0028	mg/l	97%	-0.51
F	0.0368 *	0.0045	mg/l	128%	5.15
G	0.0290	0.0032	mg/l	101%	0.14
H	0.0240 *	0.003	mg/l	83%	-3.08
I	0.0290	0.000940	mg/l	101%	0.14
J	0.0290	0.003	mg/l	101%	0.14
K	0.0314	0.006	mg/l	109%	1.68
L	0.0284	0.0021	mg/l	99%	-0.25
M	0.0292		mg/l	101%	0.26
N	0.0299	0.00299	mg/l	104%	0.71
O	0.0395 *	0.002	mg/l	137%	6.89
P	0.0299	0.0060	mg/l	104%	0.71
Q	0.0286		mg/l	99%	-0.12
R	0.0280	0.0040	mg/l	97%	-0.51
S	0.0285	0.0029	mg/l	99%	-0.19
T	0.0274	0.0040	mg/l	95%	-0.89
U	0.0265		mg/l	92%	-1.47
V	0.0300		mg/l	104%	0.78
W	0.0410 *	0.0024	mg/l	142%	7.85
X	0.0290	0.003	mg/l	101%	0.14
Y	0.0280	0.006	mg/l	97%	-0.51
Z	0.00200 *	0.001	mg/l	7%	-17.23
AA	0.0290	0.1	mg/l	101%	-0.14
AB	0.0289	0.001	mg/l	100%	0.07
AC	0.0300	0.0030	mg/l	104%	0.78
AD	0.0290	0.004	mg/l	101%	0.14
AE	0.0270	0.0029	mg/l	94%	-1.15
AF	0.0331	0.01	mg/l	115%	2.77
AG	0.0300	0.00440	mg/l	104%	0.78
AH			mg/l		
AI	0.0253	0.00883	mg/l	88%	-2.24
AJ	0.0313	0.003	mg/l	109%	1.61
AK			mg/l		
AL	0.0280	0.0056	mg/l	97%	-0.51

	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,02892 ± 0,0026	0,02896 ± 0,0007	mg/l
Recov. ± CI(99%)	100,4 ± 9,3	100,6 ± 2,6	%
SD between labs	0,00577	0,00149	mg/l
RSD between labs	20,0	5,2	%
n for calculation	35	30	



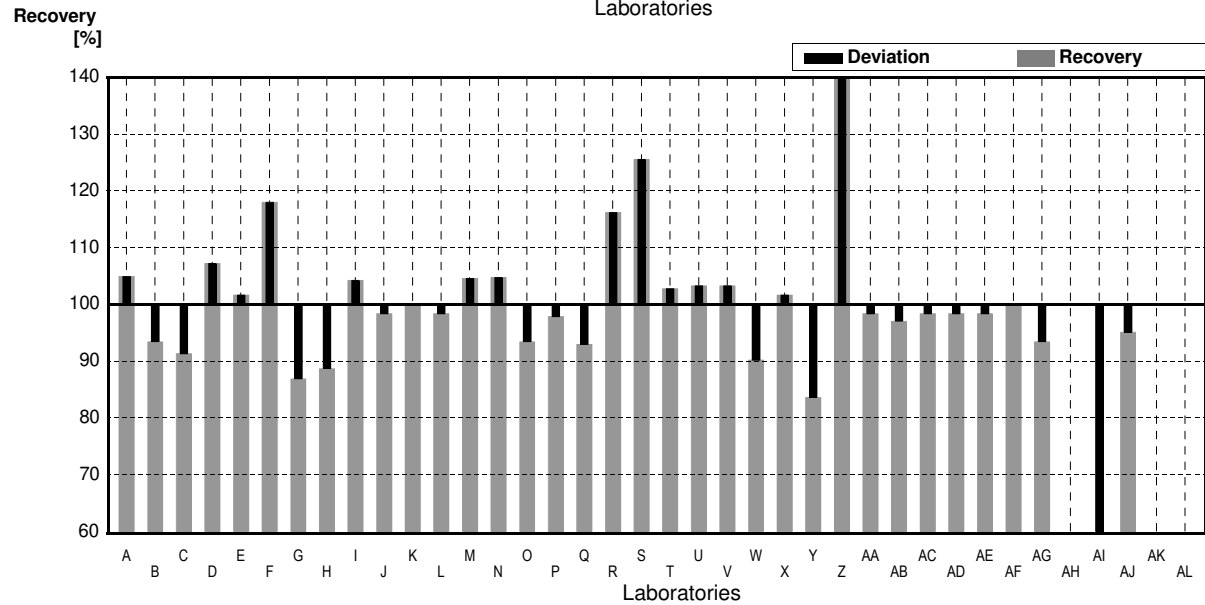
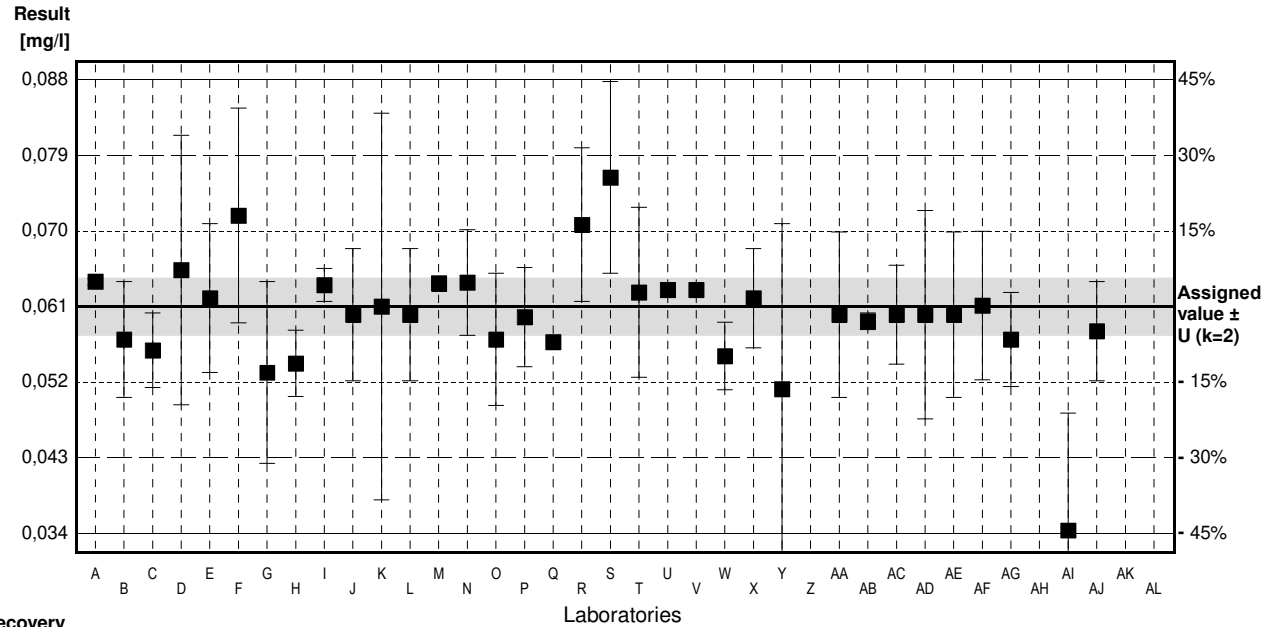
Sample N181A

Parameter Ammonium (as NH4)

Assigned value ± U (k=2) 0,061 mg/l ± 0,003 mg/l
 IFA result ± U (k=2) 0,0613 mg/l ± 0,0019 mg/l
 Stability test ± U (k=2) 0,0616 mg/l ± 0,0019 mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	0.064	0.0004	mg/l	105%	0.45
B	0.057	0.007	mg/l	93%	-0.60
C	0.0557	0.0045	mg/l	91%	-0.79
D	0.0654	0.0163	mg/l	107%	0.66
E	0.062	0.009	mg/l	102%	0.15
F	0.072	0.013	mg/l	118%	1.64
G	0.053	0.011	mg/l	87%	-1.19
H	0.0541	0.004	mg/l	89%	-1.03
I	0.0636	0.00198	mg/l	104%	0.39
J	0.060	0.008	mg/l	98%	-0.15
K	0.0610	0.0234	mg/l	100%	0.00
L	0.060	0.008	mg/l	98%	-0.15
M	0.0638		mg/l	105%	0.42
N	0.0639	0.00639	mg/l	105%	0.43
O	0.057	0.008	mg/l	93%	-0.60
P	0.0597	0.0060	mg/l	98%	-0.19
Q	0.0567		mg/l	93%	-0.64
R	0.0709	0.0093	mg/l	116%	1.48
S	0.0766 *	0.0116	mg/l	126%	2.32
T	0.0627	0.0103	mg/l	103%	0.25
U	0.063		mg/l	103%	0.30
V	0.063		mg/l	103%	0.30
W	0.055	0.0041	mg/l	90%	-0.89
X	0.062	0.006	mg/l	102%	0.15
Y	0.051	0.020	mg/l	84%	-1.49
Z	3.31 *	1.0	mg/l	5426%	484.20
AA	0.060	0.01	mg/l	98%	-0.15
AB	0.0592	0.001	mg/l	97%	-0.27
AC	0.060	0.0060	mg/l	98%	-0.15
AD	0.060	0.0126	mg/l	98%	-0.15
AE	0.060	0.01	mg/l	98%	-0.15
AF	0.0611	0.009	mg/l	100%	0.01
AG	0.0570	0.00570	mg/l	93%	-0.60
AH			mg/l		
AI	0.0339 *	0.0142	mg/l	56%	-4.04
AJ	0.058	0.006	mg/l	95%	-0.45
AK			mg/l		
AL			mg/l		

	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,153 ± 0,254	0,060 ± 0,002	mg/l
Recov. ± CI(99%)	250,7 ± 415,6	99,0 ± 3,6	%
SD between labs	0,549	0,005	mg/l
RSD between labs	359,3	7,5	%
n for calculation	35	32	



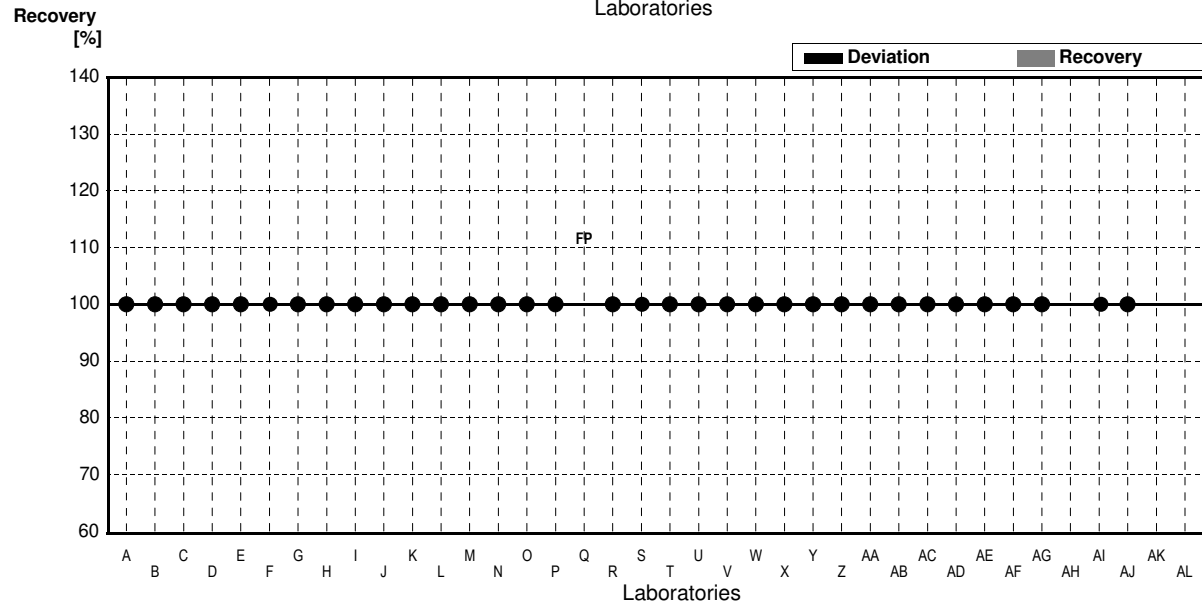
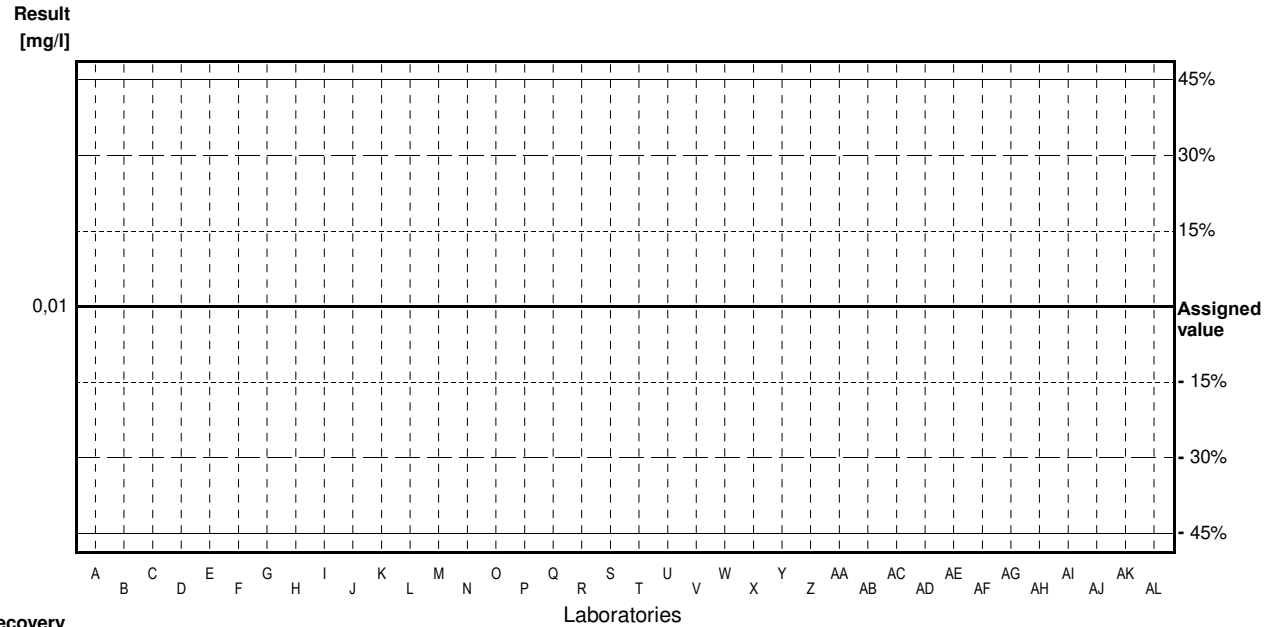
Sample N181B

Parameter Ammonium (as NH4)

Assigned value <0,01 mg/l
 IFA result <0,01 mg/l
 Stability test <0,01 mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	<0,010		mg/l	•	
B	<0,01		mg/l	•	
C	<0,01		mg/l	•	
D	<0,01	0,0071	mg/l	•	
E	<0,02		mg/l	•	
F	0,0140	0,0041	mg/l	•	
G	<0,004		mg/l	•	
H	<0,01	0,001	mg/l	•	
I	<0,0100		mg/l	•	
J	<0,013		mg/l	•	
K	<0,05		mg/l	•	
L	<0,02		mg/l	•	
M	<0,008		mg/l	•	
N	<0,006		mg/l	•	
O	<0,03		mg/l	•	
P	<0,05	0,0042	mg/l	•	
Q	0,1502		mg/l	FP	
R	<0,03		mg/l	•	
S	0,0107	0,0016	mg/l	•	
T	<0,010		mg/l	•	
U	0,00700		mg/l	•	
V	0,00300		mg/l	•	
W	<0,01		mg/l	•	
X	<0,0100		mg/l	•	
Y	0,0060	0,0024	mg/l	•	
Z	0,0100	0,001	mg/l	•	
AA	<0,01	0,01	mg/l	•	
AB	<0,015		mg/l	•	
AC	<0,009		mg/l	•	
AD	<0,02		mg/l	•	
AE	<0,03		mg/l	•	
AF	<0,01		mg/l	•	
AG	<0,00052		mg/l	•	
AH			mg/l	•	
AI	0,0147	0,00615	mg/l	•	
AJ	0,00350	0,002	mg/l	•	
AK			mg/l		
AL			mg/l		

	All results	Outliers excl.	Unit
Mean ± CI(99%)			mg/l
Recov. ± CI(99%)			%
SD between labs			mg/l
RSD between labs			%
n for calculation			



Sample N181A

Parameter Chloride

Assigned value ± U (k=2) 48,8 mg/l ± 1,1 mg/l

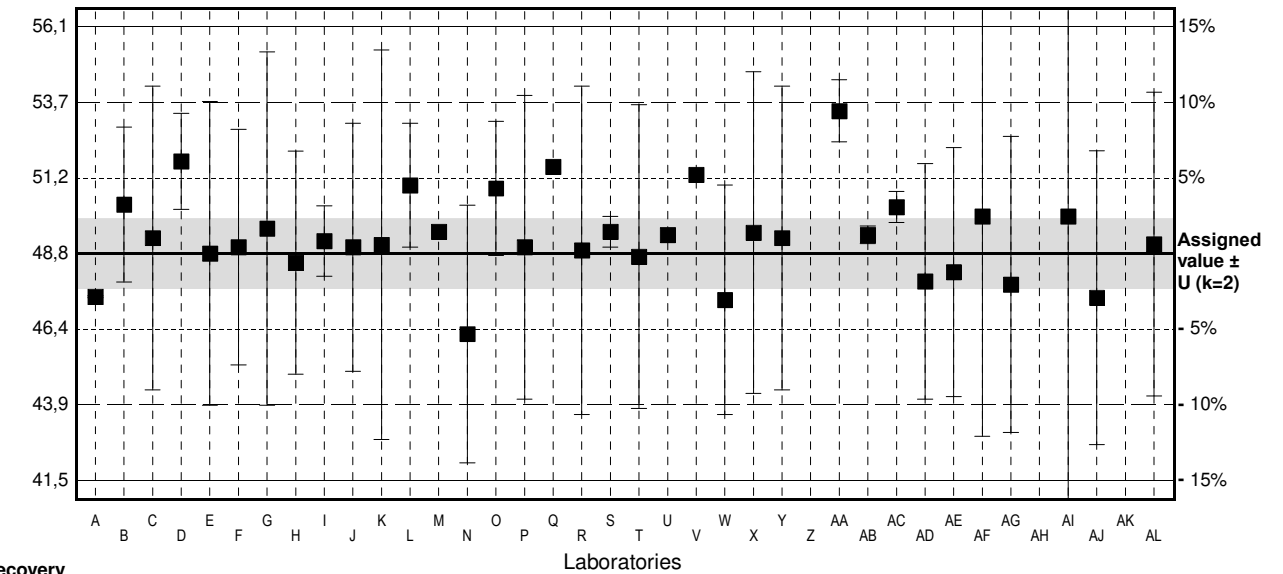
IFA result ± U (k=2) 49,1 mg/l ± 1,7 mg/l

Stability test mg/l

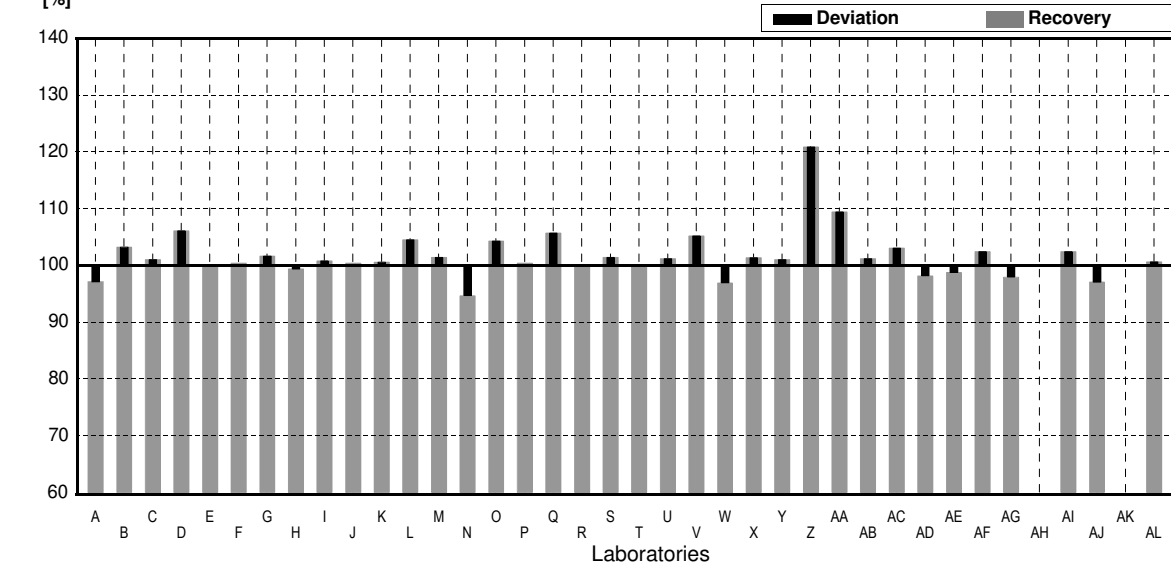
Lab Code	Result	±	Unit	Recovery	z-Score
A	47.404	0,028	mg/l	97%	-1.06
B	50.38	2.5	mg/l	103%	1.20
C	49.3	4.9	mg/l	101%	0.38
D	51.77	1.55	mg/l	106%	2.25
E	48.8	4.9	mg/l	100%	0.00
F	49.0	3.8	mg/l	100%	0.15
G	49.6	5.7	mg/l	102%	0.61
H	48.5	3.6	mg/l	99%	-0.23
I	49.2	1.14	mg/l	101%	0.30
J	49.0	4	mg/l	100%	0.15
K	49.08	6,28	mg/l	101%	0.21
L	51	2	mg/l	105%	1.67
M	49.5		mg/l	101%	0.53
N	46.2	4.16	mg/l	95%	-1.97
O	50.9	2,16	mg/l	104%	1.59
P	49.0	4.9	mg/l	100%	0.15
Q	51.6		mg/l	106%	2.13
R	48.9	5.3	mg/l	100%	0.08
S	49.5	0.5	mg/l	101%	0.53
T	48.7	4.9	mg/l	100%	-0.08
U	49.40		mg/l	101%	0.46
V	51.34		mg/l	105%	1.93
W	47.3	3.7	mg/l	97%	-1.14
X	49.47	5.19	mg/l	101%	0.51
Y	49.3	4.9	mg/l	101%	0.38
Z	58.99 *	2.0	mg/l	121%	7.73
AA	53.4 *	1	mg/l	109%	3.49
AB	49.4	0,289	mg/l	101%	0.46
AC	50.3	0,503	mg/l	103%	1.14
AD	47.9	3.8	mg/l	98%	-0.68
AE	48.2	4,02	mg/l	99%	-0.46
AF	50.0	7.1	mg/l	102%	0.91
AG	47.80	4,780	mg/l	98%	-0.76
AH			mg/l		
AI	50.00	10.2	mg/l	102%	0.91
AJ	47.37	4.74	mg/l	97%	-1.09
AK			mg/l		
AL	49.1	4.9	mg/l	101%	0.23

	All results	Outliers excl.	Unit
Mean ± CI(99%)	49,6 ± 1,0	49,2 ± 0,6	mg/l
Recov. ± CI(99%)	101,7 ± 2,0	100,9 ± 1,2	%
SD between labs	2,1	1,3	mg/l
RSD between labs	4,3	2,6	%
n for calculation	36	34	

Result [mg/l]



Recovery [%]



Sample N181B

Parameter Chloride

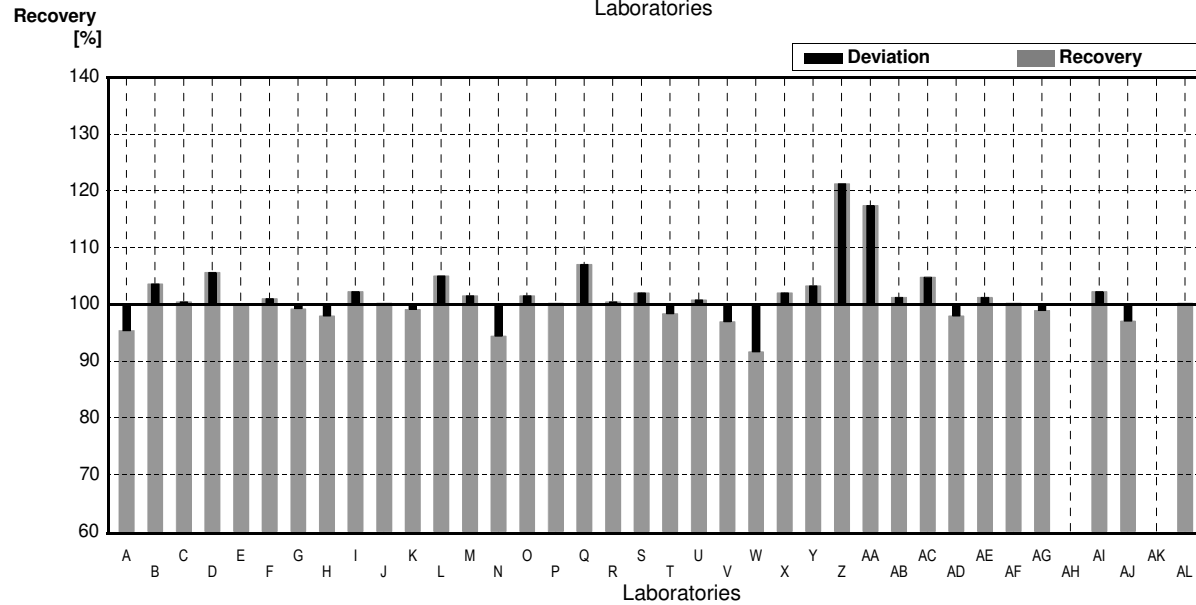
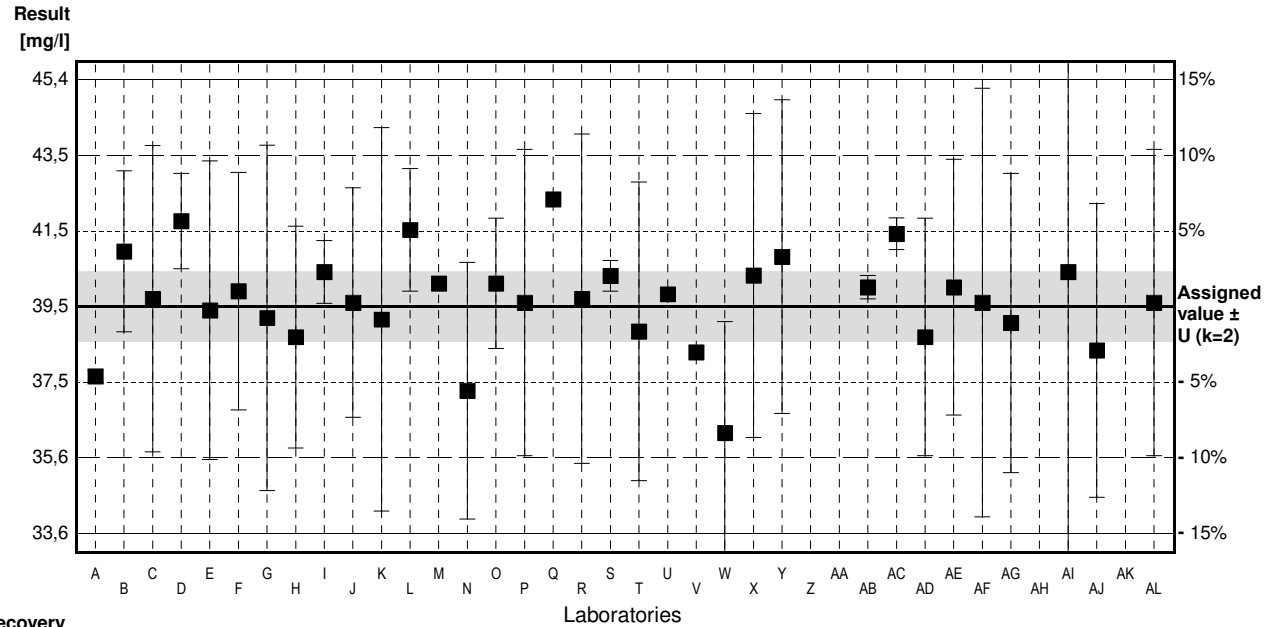
Assigned value ± U (k=2) 39,5 mg/l ± 0,9 mg/l

IFA result ± U (k=2) 39,8 mg/l ± 1,4 mg/l

Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	37.677	0.161	mg/l	95%	-1.71
B	40.94	2.1	mg/l	104%	1.35
C	39.7	4.0	mg/l	101%	0.19
D	41.73	1.25	mg/l	106%	2.09
E	39.4	3.9	mg/l	100%	-0.09
F	39.9	3.1	mg/l	101%	0.38
G	39.2	4.51	mg/l	99%	-0.28
H	38.7	2.9	mg/l	98%	-0.75
I	40.4	0.816	mg/l	102%	0.84
J	39.6	3	mg/l	100%	0.09
K	39.16	5.01	mg/l	99%	-0.32
L	41.5	1.6	mg/l	105%	1.88
M	40.1	3.35	mg/l	102%	0.56
N	37.3	1.7	mg/l	94%	-2.06
O	40.1	4.0	mg/l	102%	0.56
P	39.6	4.0	mg/l	100%	0.09
Q	42.3	4.3	mg/l	107%	2.63
R	39.7	0.4	mg/l	101%	0.19
S	40.3	3.9	mg/l	102%	0.75
T	38.85	3.9	mg/l	98%	-0.61
U	39.82	5.01	mg/l	101%	0.30
V	38.3	2.9	mg/l	97%	-1.13
W	36.2 *	4.23	mg/l	92%	-3.09
X	40.31	4.1	mg/l	102%	0.76
Y	40.8	2.0	mg/l	103%	1.22
Z	47.92 *	1	mg/l	121%	7.89
AA	46.4 *	0.306	mg/l	117%	6.47
AB	40.0	0.414	mg/l	101%	0.47
AC	41.4	3.1	mg/l	105%	1.78
AD	38.7	3.34	mg/l	98%	-0.75
AE	40.0	5.6	mg/l	101%	0.47
AF	39.6	3.907	mg/l	100%	0.09
AG	39.07	8.27	mg/l	99%	-0.40
AH		3.84	mg/l		
AI	40.4		mg/l	102%	0.84
AJ	38.35		mg/l	97%	-1.08
AK			mg/l		
AL	39.6	4.0	mg/l	100%	0.09

	All results	Outliers excl.	Unit
Mean ± CI(99%)	40,1 ± 1,0	39,8 ± 0,5	mg/l
Recov. ± CI(99%)	101,5 ± 2,5	100,7 ± 1,3	%
SD between labs	2,1	1,1	mg/l
RSD between labs	5,3	2,8	%
n for calculation	36	33	



Sample N181A

Parameter Sulphate (as SO4)

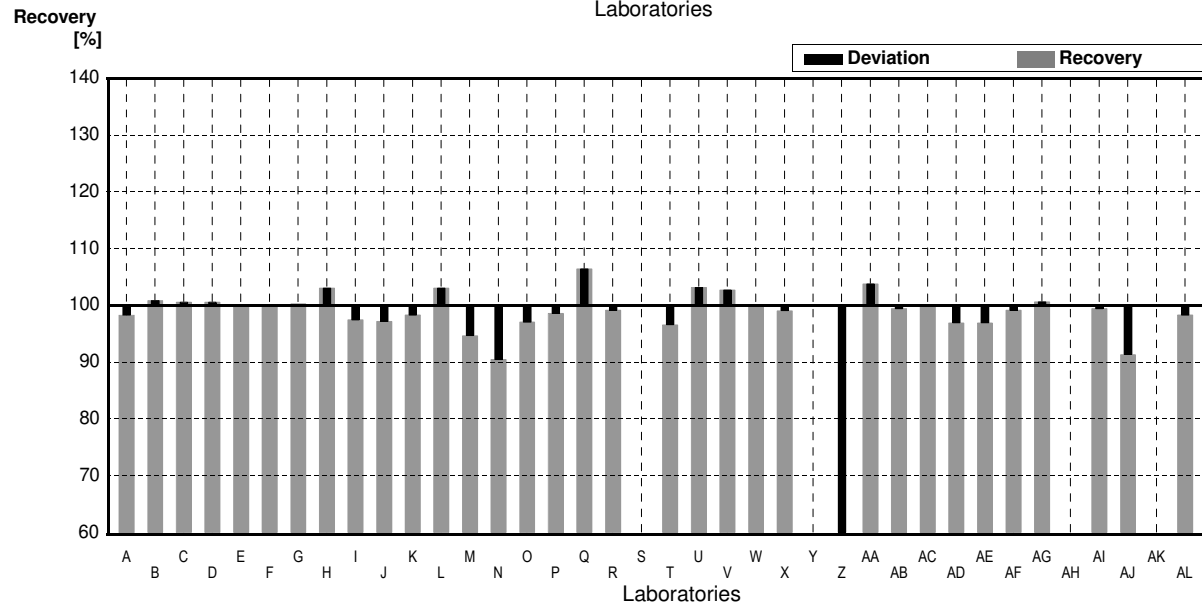
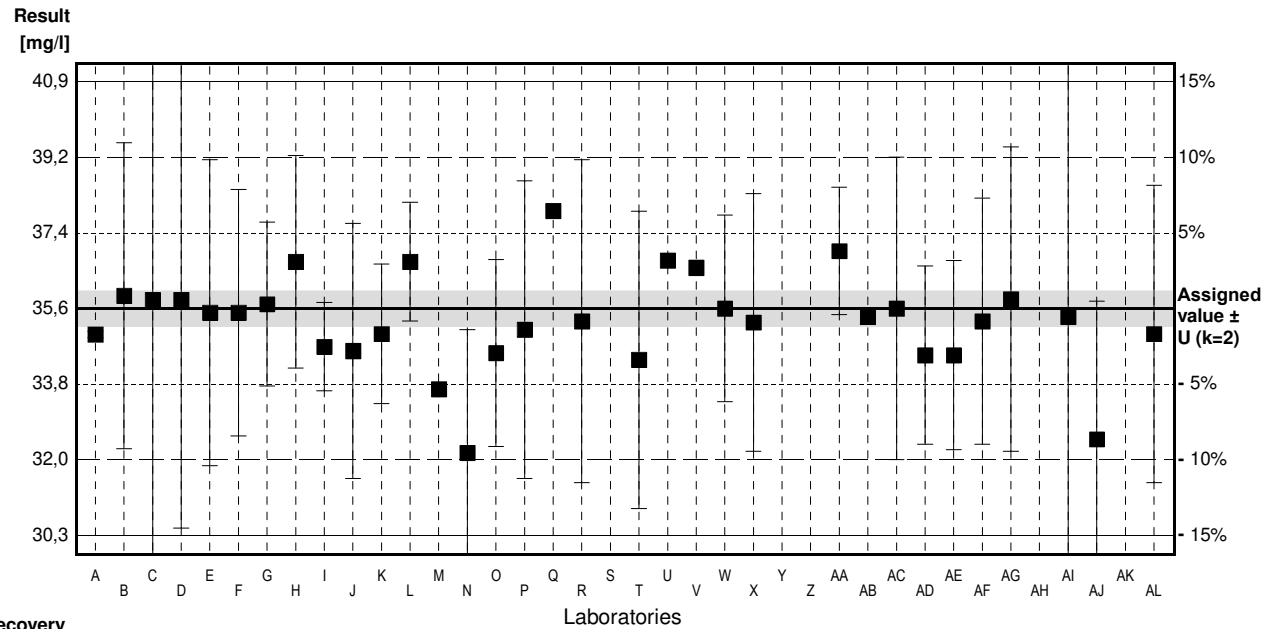
Assigned value ± U (k=2) 35,6 mg/l ± 0,4 mg/l

IFA result ± U (k=2) 35,4 mg/l ± 0,9 mg/l

Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	34,987	0,077	mg/l	98%	-0,57
B	35,90	3,6	mg/l	101%	0,28
C	35,8	5,7	mg/l	101%	0,19
D	35,80	5,37	mg/l	101%	0,19
E	35,5	3,6	mg/l	100%	-0,09
F	35,5	2,9	mg/l	100%	-0,09
G	35,7	1,93	mg/l	100%	0,09
H	36,7	2,5	mg/l	103%	1,03
I	34,7	1,04	mg/l	97%	-0,84
J	34,6	3	mg/l	97%	-0,94
K	35,0	1,64	mg/l	98%	-0,56
L	36,7	1,4	mg/l	103%	1,03
M	33,7		mg/l	95%	-1,78
N	32,2 *	2,90	mg/l	90%	-3,18
O	34,55	2,2	mg/l	97%	-0,98
P	35,1	3,5	mg/l	99%	-0,47
Q	37,9 *		mg/l	106%	2,15
R	35,3	3,8	mg/l	99%	-0,28
S			mg/l		
T	34,39	3,5	mg/l	97%	-1,13
U	36,728		mg/l	103%	1,06
V	36,56		mg/l	103%	0,90
W	35,6	2,2	mg/l	100%	0,00
X	35,27	3,03	mg/l	99%	-0,31
Y			mg/l		
Z	10,00 *	0,05	mg/l	28%	-23,97
AA	36,95	1,5	mg/l	104%	1,26
AB	35,4	0,173	mg/l	99%	-0,19
AC	35,6	3,56	mg/l	100%	0,00
AD	34,5	2,1	mg/l	97%	-1,03
AE	34,5	2,23	mg/l	97%	-1,03
AF	35,3	2,9	mg/l	99%	-0,28
AG	35,82	3,582	mg/l	101%	0,21
AH			mg/l		
AI	35,4	6,52	mg/l	99%	-0,19
AJ	32,52 *	3,25	mg/l	91%	-2,88
AK			mg/l		
AL	35,0	3,5	mg/l	98%	-0,56

	All results	Outliers excl.	Unit
Mean ± CI(99%)	34,6 ± 2,1	35,4 ± 0,4	mg/l
Recov. ± CI(99%)	97,1 ± 5,9	99,5 ± 1,1	%
SD between labs	4,5	0,8	mg/l
RSD between labs	13,0	2,2	%
n for calculation	34	30	



Sample N181B

Parameter Sulphate (as SO4)

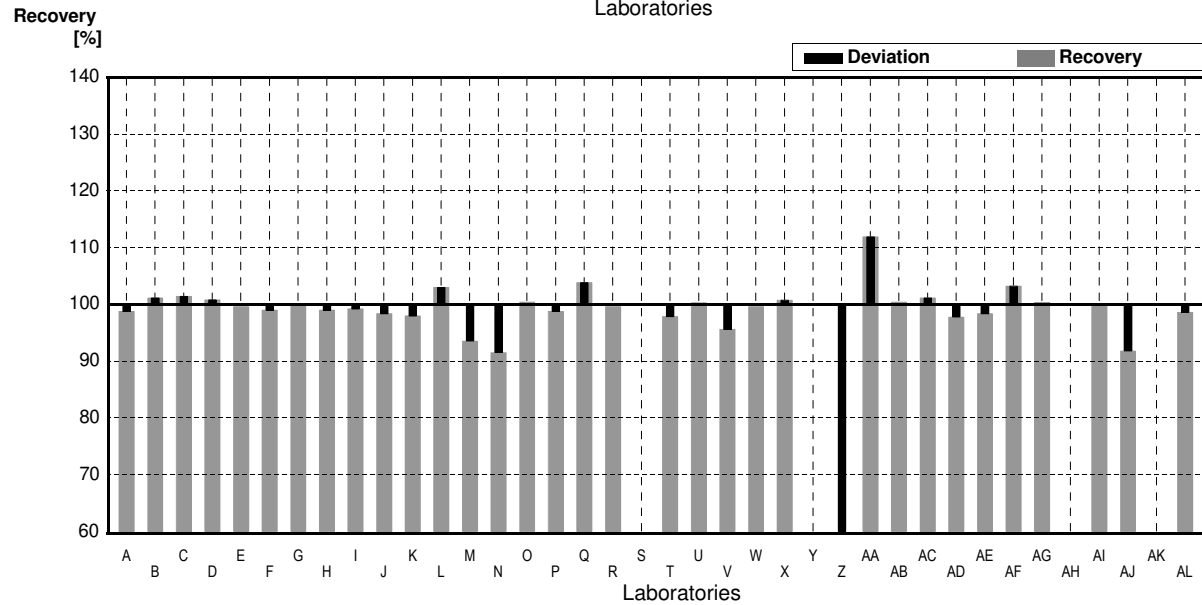
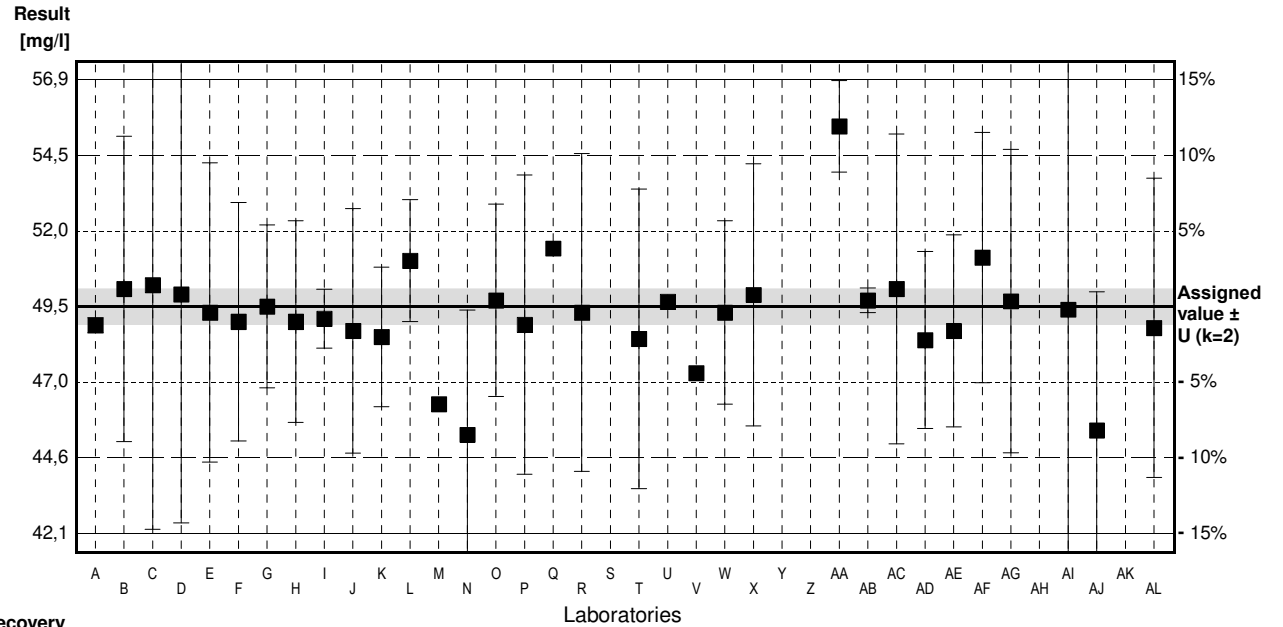
Assigned value ± U (k=2) 49,5 mg/l ± 0,6 mg/l

IFA result ± U (k=2) 49,0 mg/l ± 1,3 mg/l

Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	48,884	0,248	mg/l	99%	-0,41
B	50,07	5,0	mg/l	101%	0,38
C	50,2	8,0	mg/l	101%	0,47
D	49,90	7,49	mg/l	101%	0,27
E	49,3	4,9	mg/l	100%	-0,13
F	49,0	3,9	mg/l	99%	-0,34
G	49,5	2,67	mg/l	100%	0,00
H	49,0	3,3	mg/l	99%	-0,34
I	49,1	0,966	mg/l	99%	-0,27
J	48,7	4	mg/l	98%	-0,54
K	48,5	2,28	mg/l	98%	-0,67
L	51	2	mg/l	103%	1,01
M	46,3 *		mg/l	94%	-2,15
N	45,3 *	4,08	mg/l	92%	-2,83
O	49,7	3,15	mg/l	100%	0,13
P	48,9	4,9	mg/l	99%	-0,40
Q	51,4		mg/l	104%	1,28
R	49,3	5,2	mg/l	100%	-0,13
S			mg/l		
T	48,44	4,9	mg/l	98%	-0,71
U	49,657		mg/l	100%	0,11
V	47,32		mg/l	96%	-1,47
W	49,3	3,0	mg/l	100%	-0,13
X	49,88	4,29	mg/l	101%	0,26
Y			mg/l		
Z	13,00 *	0,05	mg/l	26%	-24,58
AA	55,4 *	1,5	mg/l	112%	3,97
AB	49,7	0,404	mg/l	100%	0,13
AC	50,07	5,07	mg/l	101%	0,38
AD	48,4	2,9	mg/l	98%	-0,74
AE	48,7	3,14	mg/l	98%	-0,54
AF	51,1	4,1	mg/l	103%	1,08
AG	49,67	4,967	mg/l	100%	0,11
AH			mg/l		
AI	49,4	9,1	mg/l	100%	-0,07
AJ	45,44 *	4,544	mg/l	92%	-2,73
AK			mg/l		
AL	48,8	4,9	mg/l	99%	-0,47

	All results	Outliers excl.	Unit
Mean ± CI(99%)	48,2 ± 3,0	49,4 ± 0,4	mg/l
Recov. ± CI(99%)	97,3 ± 6,1	99,8 ± 0,9	%
SD between labs	6,5	0,9	mg/l
RSD between labs	13,4	1,8	%
n for calculation	34	29	



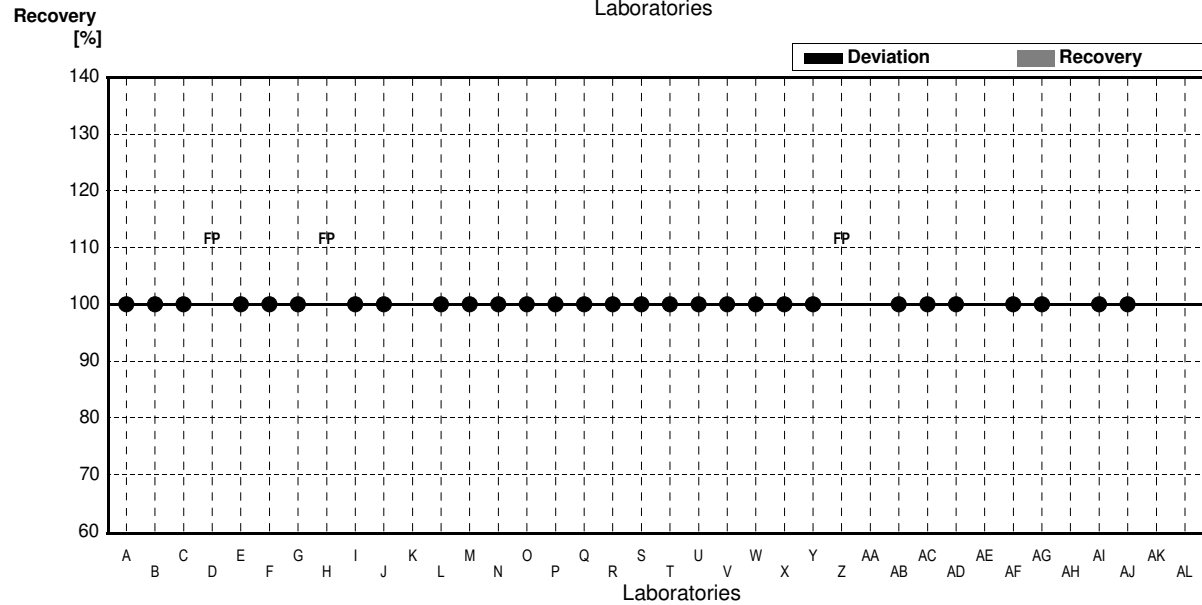
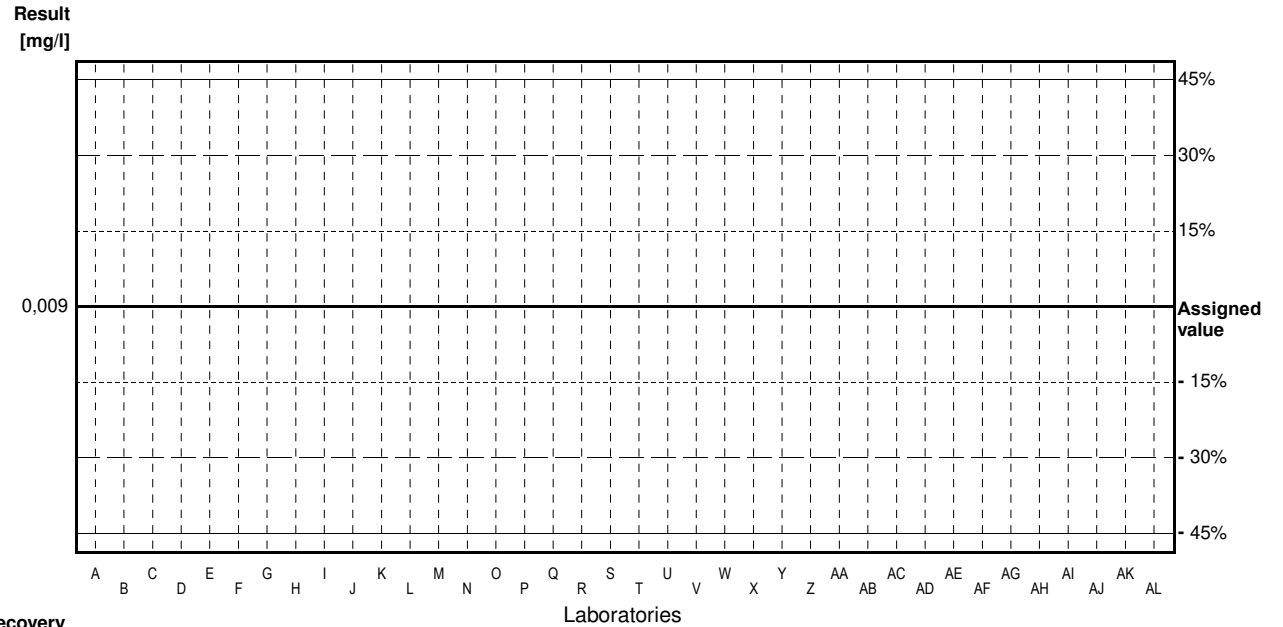
Sample N181A

Parameter Orthophosphate (as PO4)

Assigned value <0,009 mg/l
 IFA result <0,009 mg/l
 Stability test <0,009 mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	<0.150		mg/l	•	
B	<0.006		mg/l	•	
C	<0.015		mg/l	•	
D	0.0113	0.0017	mg/l	FP	
E	<0.0015		mg/l	•	
F	<0.010		mg/l	•	
G	<0.014		mg/l	•	
H	0.0365	0.004	mg/l	FP	
I	<0.0150		mg/l	•	
J	<0.01		mg/l	•	
K			mg/l		
L	<0.01		mg/l	•	
M	<0.006		mg/l	•	
N	<0.015		mg/l	•	
O	<0.02		mg/l	•	
P	<0.03		mg/l	•	
Q	<0.009		mg/l	•	
R	<0.02		mg/l	•	
S	<0.006		mg/l	•	
T	<0.009		mg/l	•	
U	0.00300		mg/l	•	
V	0.00200		mg/l	•	
W	<0.01		mg/l	•	
X	<0.01		mg/l	•	
Y	0.0070	0.0014	mg/l	•	
Z	1.04	0.5	mg/l	FP	
AA			mg/l		
AB	<0.020		mg/l	•	
AC	0.0061	0.00061	mg/l	•	
AD	<0.009		mg/l	•	
AE			mg/l		
AF	<0.01		mg/l	•	
AG	0.0060	0.00090	mg/l	•	
AH			mg/l		
AI	<0.1		mg/l	•	
AJ	0.00100	0.001	mg/l	•	
AK			mg/l		
AL			mg/l		

	All results	Outliers excl.	Unit
Mean ± CI(99%)			mg/l
Recov. ± CI(99%)			%
SD between labs			mg/l
RSD between labs			%
n for calculation			



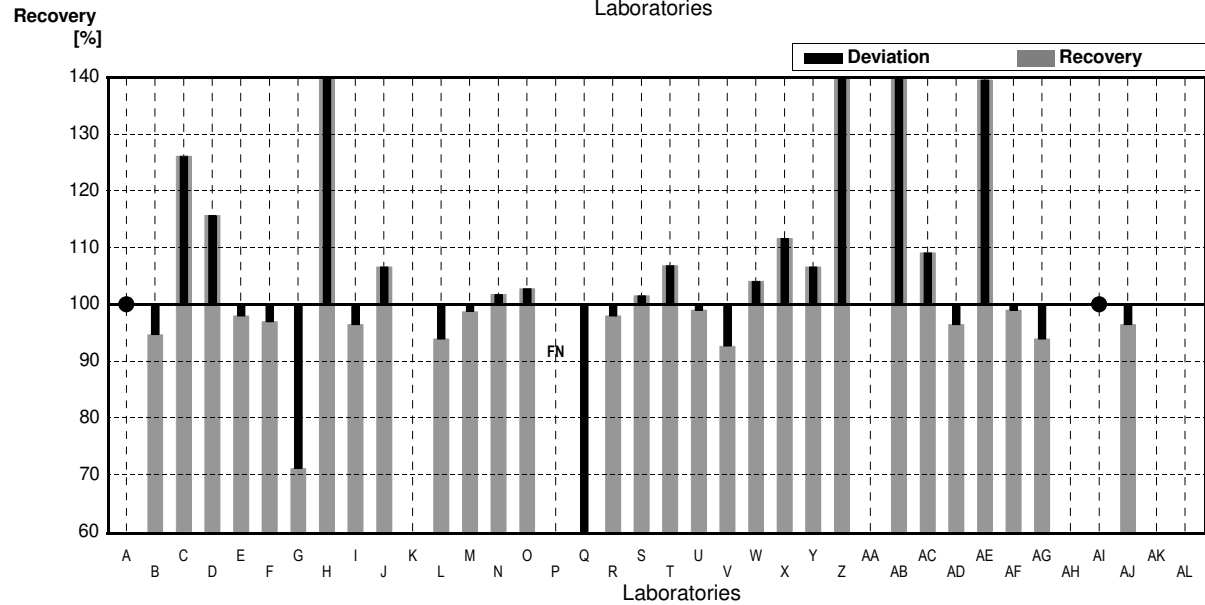
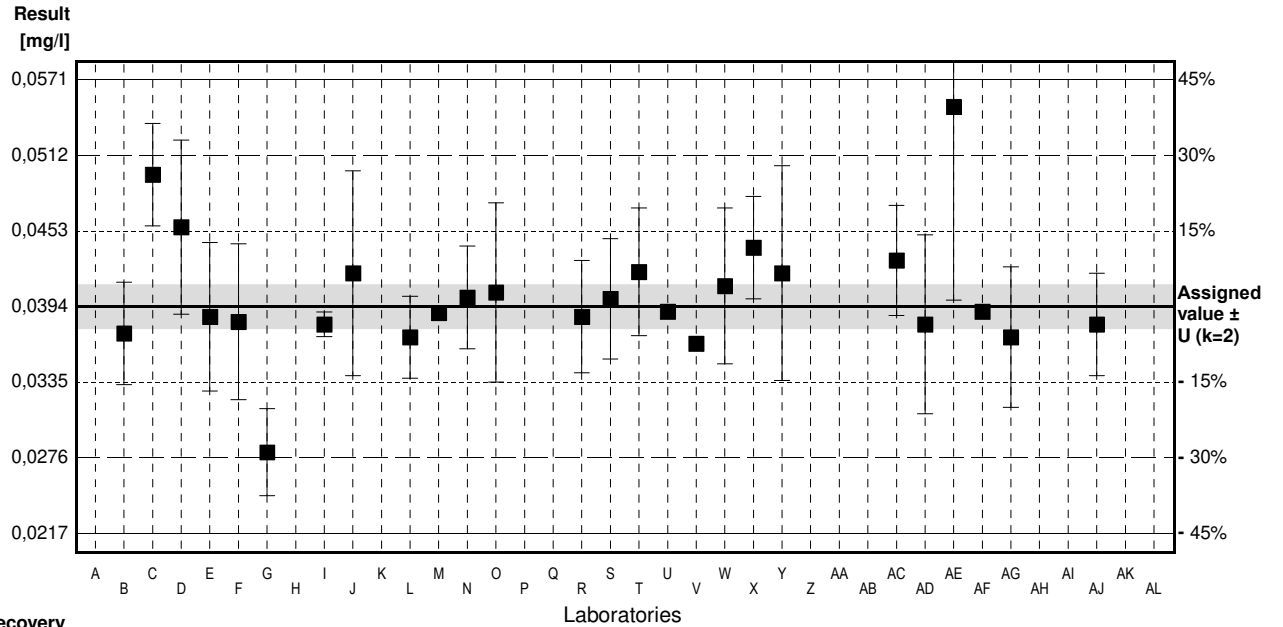
Sample N181B

Parameter Orthophosphate (as PO4)

Assigned value ± U (k=2) 0,0394 mg/l ± 0,0017 mg/l
 IFA result ± U (k=2) 0,0419 mg/l ± 0,0015 mg/l
 Stability test ± U (k=2) 0,0411 mg/l ± 0,0014 mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	<0.150		mg/l	*	
B	0.0373	0.004	mg/l	95%	-0.61
C	0.0497	0.0040	mg/l	126%	3.00
D	0.0456	0.0068	mg/l	116%	1.81
E	0.0386	0.0058	mg/l	98%	-0.23
F	0.0382	0.0061	mg/l	97%	-0.35
G	0.0280 *	0.0034	mg/l	71%	-3.33
H	0.0705 *	0.015	mg/l	179%	9.07
I	0.0380	0.000967	mg/l	96%	-0.41
J	0.0420	0.008	mg/l	107%	0.76
K			mg/l		
L	0.0370	0.0032	mg/l	94%	-0.70
M	0.0389		mg/l	99%	-0.15
N	0.0401	0.00401	mg/l	102%	0.20
O	0.0405	0.007	mg/l	103%	0.32
P	<0.03		mg/l	FN	
Q	0.0199 *		mg/l	51%	-5.69
R	0.0386	0.0044	mg/l	98%	-0.23
S	0.0400	0.0047	mg/l	102%	0.18
T	0.0421	0.0050	mg/l	107%	0.79
U	0.0390		mg/l	99%	-0.12
V	0.0365		mg/l	93%	-0.85
W	0.0410	0.0061	mg/l	104%	0.47
X	0.0440	0.004	mg/l	112%	1.34
Y	0.0420	0.0084	mg/l	107%	0.76
Z	0.54 *	0.5	mg/l	1371%	146.04
AA			mg/l		
AB	0.402 *	0.001	mg/l	1020%	105.78
AC	0.0430	0.00430	mg/l	109%	1.05
AD	0.0380	0.007	mg/l	96%	-0.41
AE	0.055 *	0.0151	mg/l	140%	4.55
AF	0.0390		mg/l	99%	-0.12
AG	0.0370	0.00550	mg/l	94%	-0.70
AH			mg/l		
AI	<0.1		mg/l	*	
AJ	0.0380	0.004	mg/l	96%	-0.41
AK			mg/l		
AL			mg/l		

	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,0693 ± 0,0559	0,0402 ± 0,0018	mg/l
Recov. ± CI(99%)	175,9 ± 141,9	102,0 ± 4,5	%
SD between labs	0,1110	0,0031	mg/l
RSD between labs	160,1	7,8	%
n for calculation	30	24	



Sample N181A

Parameter Boron

Assigned value ± U (k=2) 0,0753 mg/l ± 0,0013 mg/l

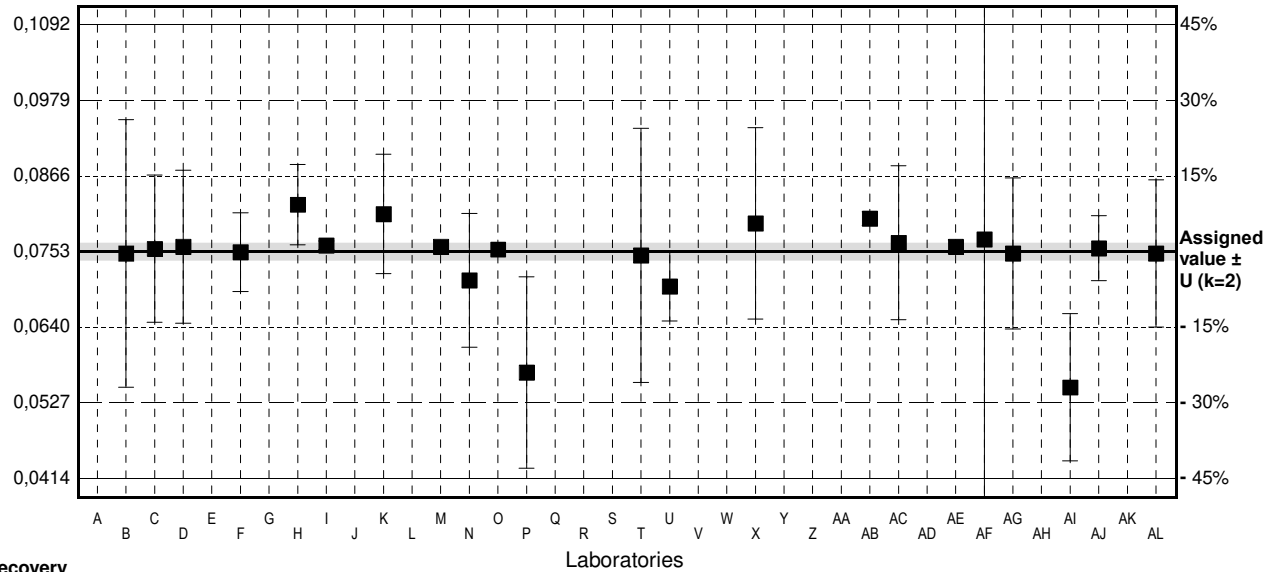
IFA result ± U (k=2) 0,083 mg/l ± 0,007 mg/l

Stability test mg/l

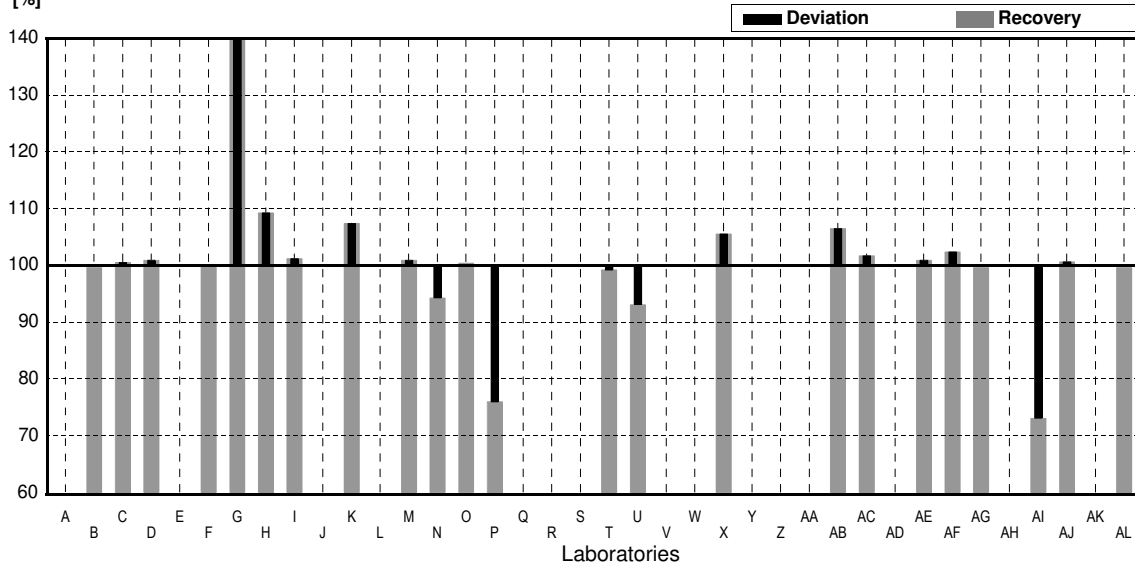
Lab Code	Result	±	Unit	Recovery	z-Score
A			mg/l		
B	0,075	0,02	mg/l	100%	-0,06
C	0,0757	0,011	mg/l	101%	0,08
D	0,0760	0,0114	mg/l	101%	0,14
E			mg/l		
F	0,0752	0,0059	mg/l	100%	-0,02
G	71 *	9,1	mg/l	94290%	13851,40
H	0,0823 *	0,006	mg/l	109%	1,37
I	0,0762	0,000643	mg/l	101%	0,18
J			mg/l		
K	0,0809 *	0,0089	mg/l	107%	1,09
L			mg/l		
M	0,0760		mg/l	101%	0,14
N	0,071 *	0,0100	mg/l	94%	-0,84
O	0,075607		mg/l	100%	0,06
P	0,0572 *	0,0143	mg/l	76%	-3,53
Q			mg/l		
R			mg/l		
S			mg/l		
T	0,0747	0,019	mg/l	99%	-0,12
U	0,07009 *	0,0052	mg/l	93%	-1,02
V			mg/l		
W			mg/l		
X	0,0795	0,0143	mg/l	106%	0,82
Y			mg/l		
Z			mg/l		
AA			mg/l		
AB	0,0802 *	0,001	mg/l	107%	0,96
AC	0,0766	0,0115	mg/l	102%	0,25
AD			mg/l		
AE	0,076	0,001	mg/l	101%	0,14
AF	0,0771	5,54	mg/l	102%	0,35
AG	0,075	0,0113	mg/l	100%	-0,06
AH			mg/l		
AI	0,055 *	0,011	mg/l	73%	-3,96
AJ	0,07578	0,004872	mg/l	101%	0,09
AK			mg/l		
AL	0,075	0,011	mg/l	100%	-0,06

	All results	Outliers excl.	Unit
Mean ± CI(99%)	3,1581 ± 8,6961	0,0760 ± 0,0009	mg/l
Recov. ± CI(99%)	4194,0 ± 11548,	100,9 ± 1,2	%
SD between labs	14,7890	0,0012	mg/l
RSD between labs	468,3	1,6	%
n for calculation	23	15	

Result [mg/l]



Recovery [%]



Sample N181B

Parameter Boron

Assigned value ± U (k=2) 0,0328 mg/l ± 0,0006 mg/l

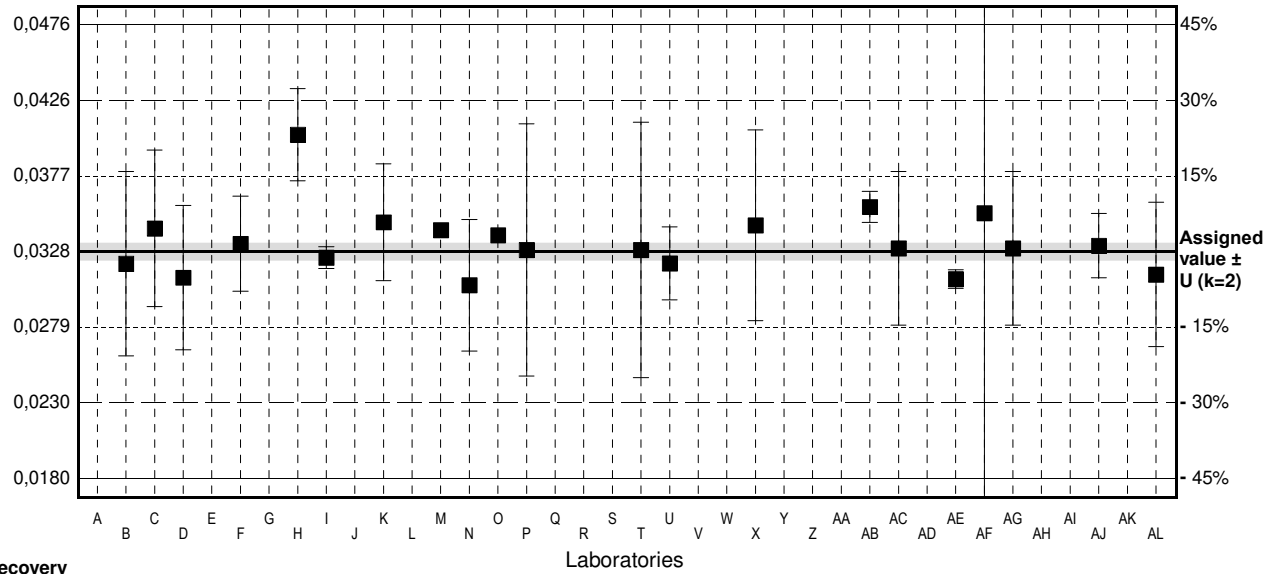
IFA result ± U (k=2) 0,0363 mg/l ± 0,0031 mg/l

Stability test mg/l

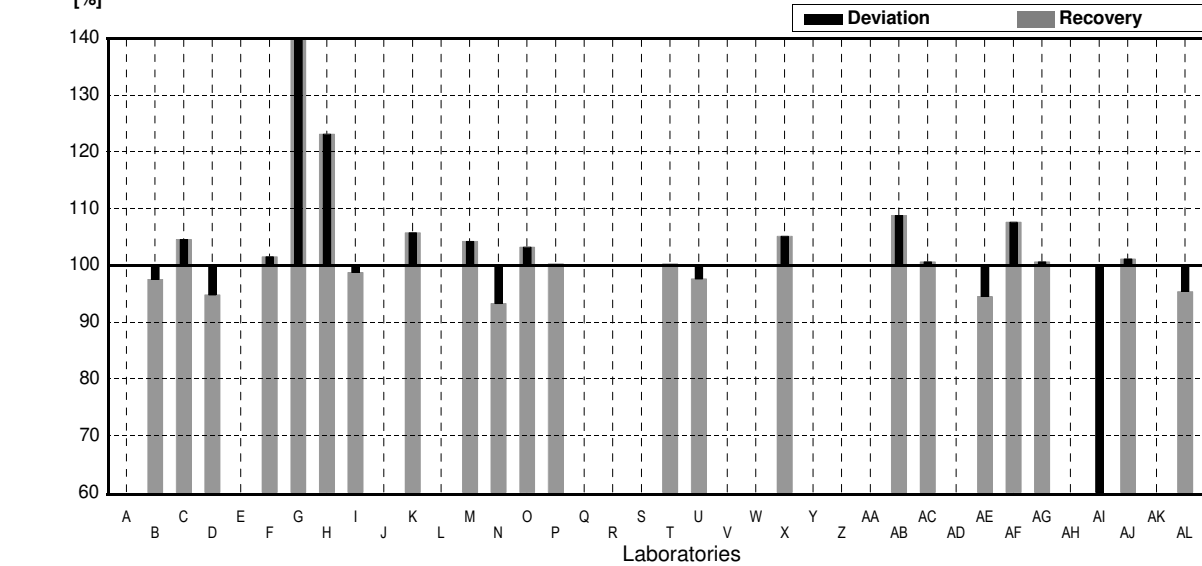
Lab Code	Result	±	Unit	Recovery	z-Score
A			mg/l		
B	0.0320	0.006	mg/l	98%	-0.36
C	0.0343	0.0051	mg/l	105%	0.67
D	0.0311	0.0047	mg/l	95%	-0.76
E			mg/l		
F	0.0333	0.0031	mg/l	102%	0.22
G	33.1 *	4.23	mg/l	100915%	14825.68
H	0.0404 *	0.003	mg/l	123%	3.41
I	0.0324	0.000711	mg/l	99%	-0.18
J			mg/l		
K	0.0347	0.0038	mg/l	106%	0.85
L			mg/l		
M	0.0342		mg/l	104%	0.63
N	0.0306	0.00428	mg/l	93%	-0.99
O	0.033864		mg/l	103%	0.48
P	0.0329	0.0082	mg/l	100%	0.04
Q			mg/l		
R			mg/l		
S			mg/l		
T	0.0329	0.0083	mg/l	100%	0.04
U	0.03202	0.00238	mg/l	98%	-0.35
V			mg/l		
W			mg/l		
X	0.0345	0.0062	mg/l	105%	0.76
Y			mg/l		
Z			mg/l		
AA			mg/l		
AB	0.0357	0.001	mg/l	109%	1.30
AC	0.0330	0.0050	mg/l	101%	0.09
AD			mg/l		
AE	0.0310	0.0006	mg/l	95%	-0.81
AF	0.0353	5.98	mg/l	108%	1.12
AG	0.0330	0.0050	mg/l	101%	0.09
AH			mg/l		
AI	0.0175 *	0.0035	mg/l	53%	-6.86
AJ	0.033175	0.0021	mg/l	101%	0.17
AK			mg/l		
AL	0.0313	0.0047	mg/l	95%	-0.67

	All results	Outliers excl.	Unit
Mean ± CI(99%)	1,4704 ± 4,0543	0,0331 ± 0,0009	mg/l
Recov. ± CI(99%)	4482,9 ± 12360,	100,8 ± 2,8	%
SD between labs	6,8950	0,0015	mg/l
RSD between labs	468,9	4,4	%
n for calculation	23	20	

Result [mg/l]



Recovery [%]



Sample N181A

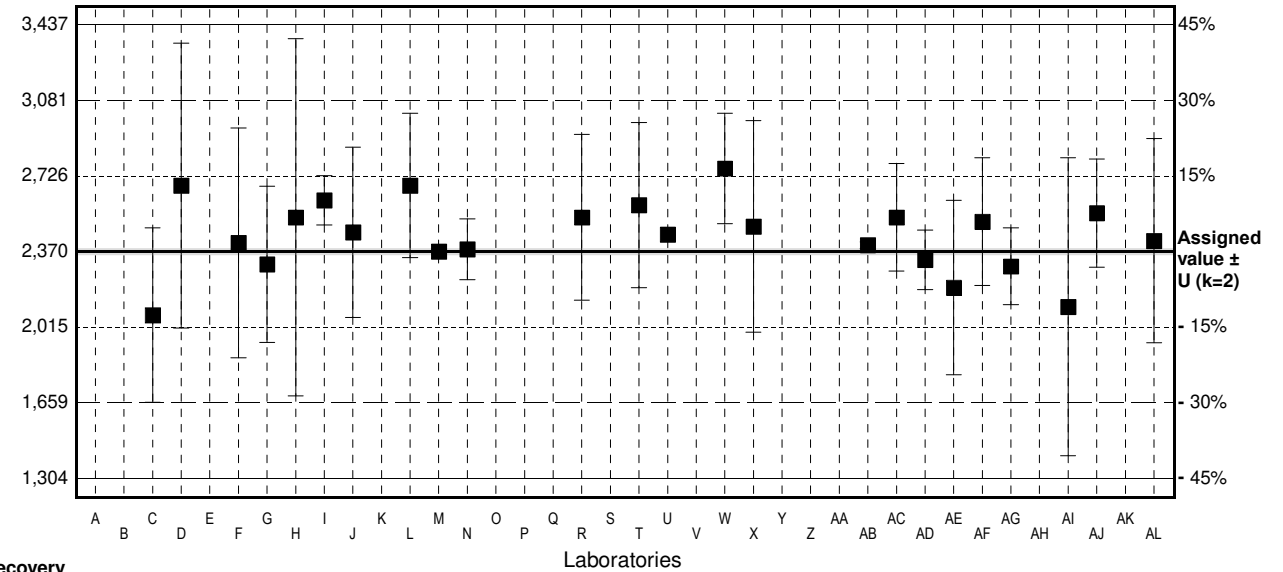
Parameter DOC (as C)

Assigned value ± U (k=2) 2,370 mg/l ± 0,015 mg/l
 IFA result ± U (k=2) 2,32 mg/l ± 0,07 mg/l
 Stability test ± U (k=2) 2,39 mg/l ± 0,07 mg/l

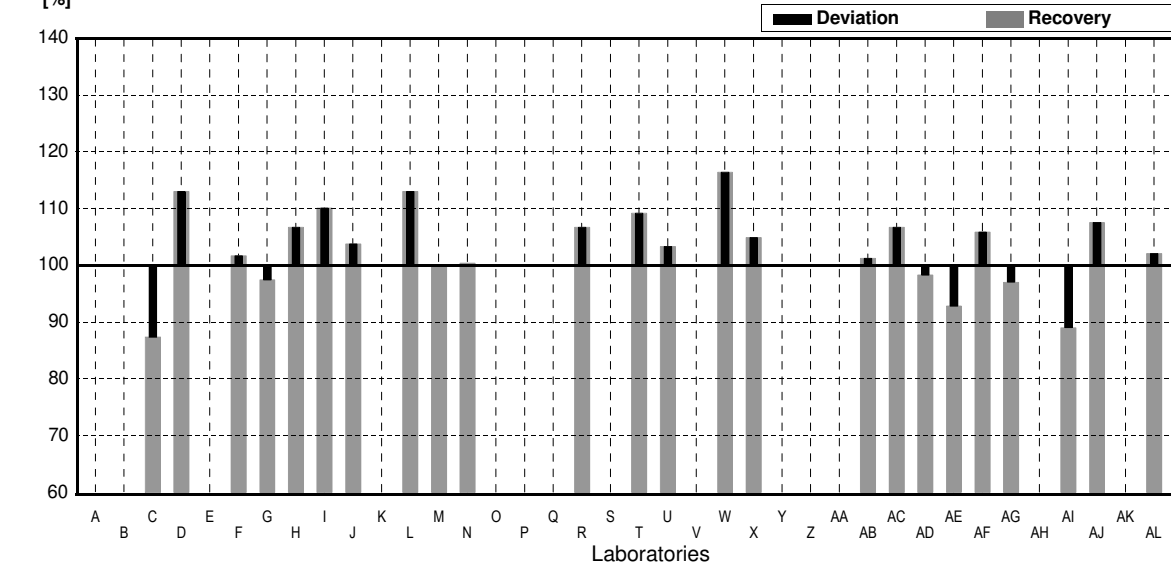
Lab Code	Result	±	Unit	Recovery	z-Score
A			mg/l		
B			mg/l		
C	2.07	0.41	mg/l	87%	-2.39
D	2.68	0.67	mg/l	113%	2.47
E			mg/l		
F	2.41	0.54	mg/l	102%	0.32
G	2.31	0.367	mg/l	97%	-0.48
H	2.53	0.84	mg/l	107%	1.27
I	2.61	0.116	mg/l	110%	1.91
J	2.46	0.4	mg/l	104%	0.72
K			mg/l		
L	2.68	0.34	mg/l	113%	2.47
M	2.37		mg/l	100%	0.00
N	2.38	0.143	mg/l	100%	0.08
O			mg/l		
P			mg/l		
Q			mg/l		
R	2.53	0.39	mg/l	107%	1.27
S			mg/l		
T	2.588	0.388	mg/l	109%	1.74
U	2.45		mg/l	103%	0.64
V			mg/l		
W	2.76	0.26	mg/l	116%	3.10
X	2.487	0.4974	mg/l	105%	0.93
Y			mg/l		
Z			mg/l		
AA			mg/l		
AB	2.40	0.015	mg/l	101%	0.24
AC	2.53	0.253	mg/l	107%	1.27
AD	2.33	0.14	mg/l	98%	-0.32
AE	2.20	0.41	mg/l	93%	-1.35
AF	2.51	0.3	mg/l	106%	1.11
AG	2.30	0.180	mg/l	97%	-0.56
AH			mg/l		
AI	2.11	0.7	mg/l	89%	-2.07
AJ	2.55	0.255	mg/l	108%	1.43
AK			mg/l		
AL	2.42	0.48	mg/l	102%	0.40

	All results	Outliers excl.	Unit
Mean ± CI(99%)	2,444 ± 0,098	2,444 ± 0,098	mg/l
Recov. ± CI(99%)	103,1 ± 4,1	103,1 ± 4,1	%
SD between labs	0,171	0,171	mg/l
RSD between labs	7,0	7,0	%
n for calculation	24	24	

Result [mg/l]



Recovery [%]



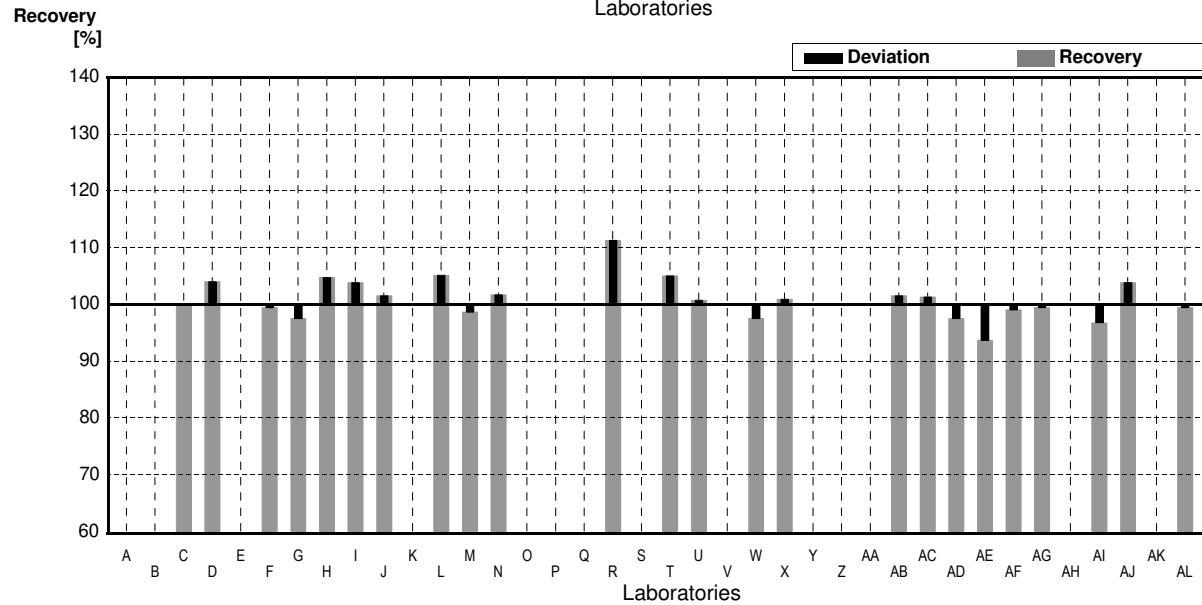
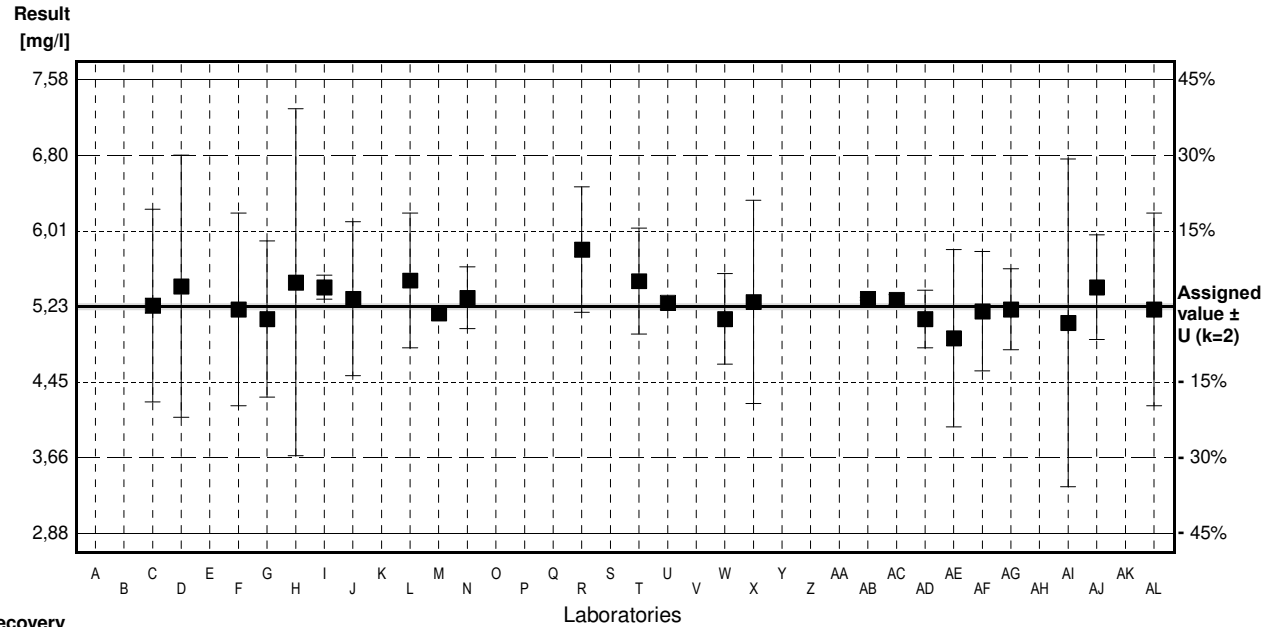
Sample N181B

Parameter DOC (as C)

Assigned value ± U (k=2) 5,23 mg/l ± 0,03 mg/l
 IFA result ± U (k=2) 4,95 mg/l ± 0,10 mg/l
 Stability test ± U (k=2) 5,13 mg/l ± 0,10 mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A			mg/l		
B			mg/l		
C	5,24	1,0	mg/l	100%	0,04
D	5,44	1,36	mg/l	104%	0,76
E			mg/l		
F	5,2	1,0	mg/l	99%	-0,11
G	5,1	0,81	mg/l	98%	-0,47
H	5,48	1,8	mg/l	105%	0,90
I	5,43	0,124	mg/l	104%	0,72
J	5,31	0,8	mg/l	102%	0,29
K			mg/l		
L	5,5	0,7	mg/l	105%	0,97
M	5,16		mg/l	99%	-0,25
N	5,32	0,319	mg/l	102%	0,32
O			mg/l		
P			mg/l		
Q			mg/l		
R	5,82	0,65	mg/l	111%	2,13
S			mg/l		
T	5,493	0,549	mg/l	105%	0,95
U	5,27		mg/l	101%	0,14
V			mg/l		
W	5,1	0,47	mg/l	98%	-0,47
X	5,277	1,055	mg/l	101%	0,17
Y			mg/l		
Z			mg/l		
AA			mg/l		
AB	5,31	0,015	mg/l	102%	0,29
AC	5,3	0,053	mg/l	101%	0,25
AD	5,1	0,3	mg/l	98%	-0,47
AE	4,90	0,92	mg/l	94%	-1,19
AF	5,18	0,62	mg/l	99%	-0,18
AG	5,20	0,420	mg/l	99%	-0,11
AH			mg/l		
AI	5,06	1,7	mg/l	97%	-0,61
AJ	5,43	0,543	mg/l	104%	0,72
AK			mg/l		
AL	5,2	1,0	mg/l	99%	-0,11

	All results	Outliers excl.	Unit
Mean ± CI(99%)	5,28 ± 0,11	5,28 ± 0,11	mg/l
Recov. ± CI(99%)	101,0 ± 2,1	101,0 ± 2,1	%
SD between labs	0,19	0,19	mg/l
RSD between labs	3,6	3,6	%
n for calculation	24	24	



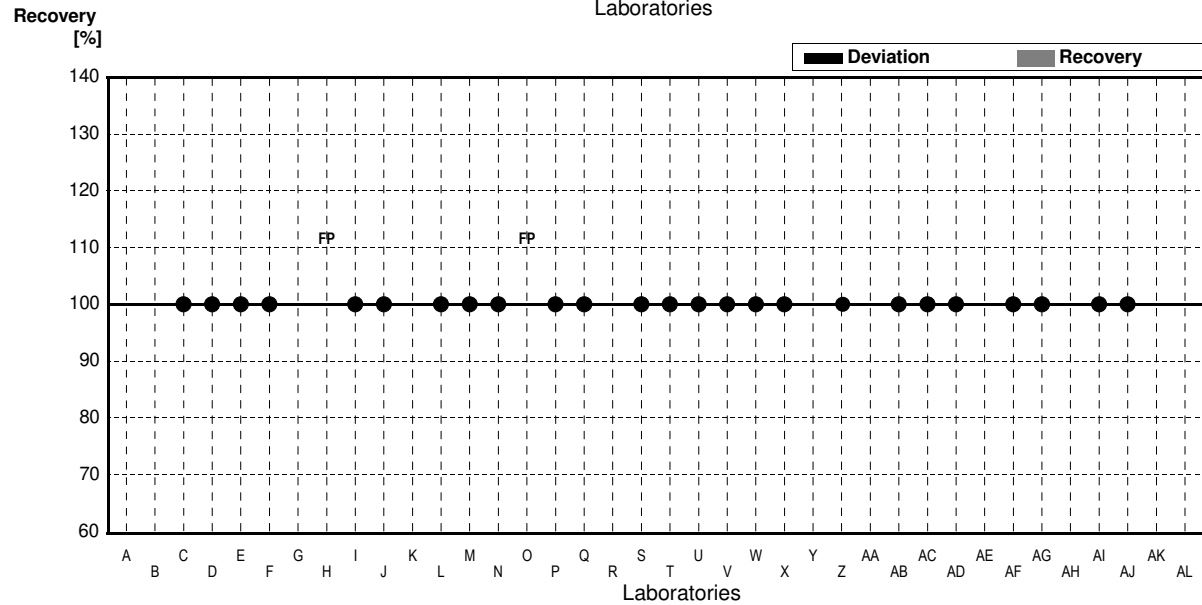
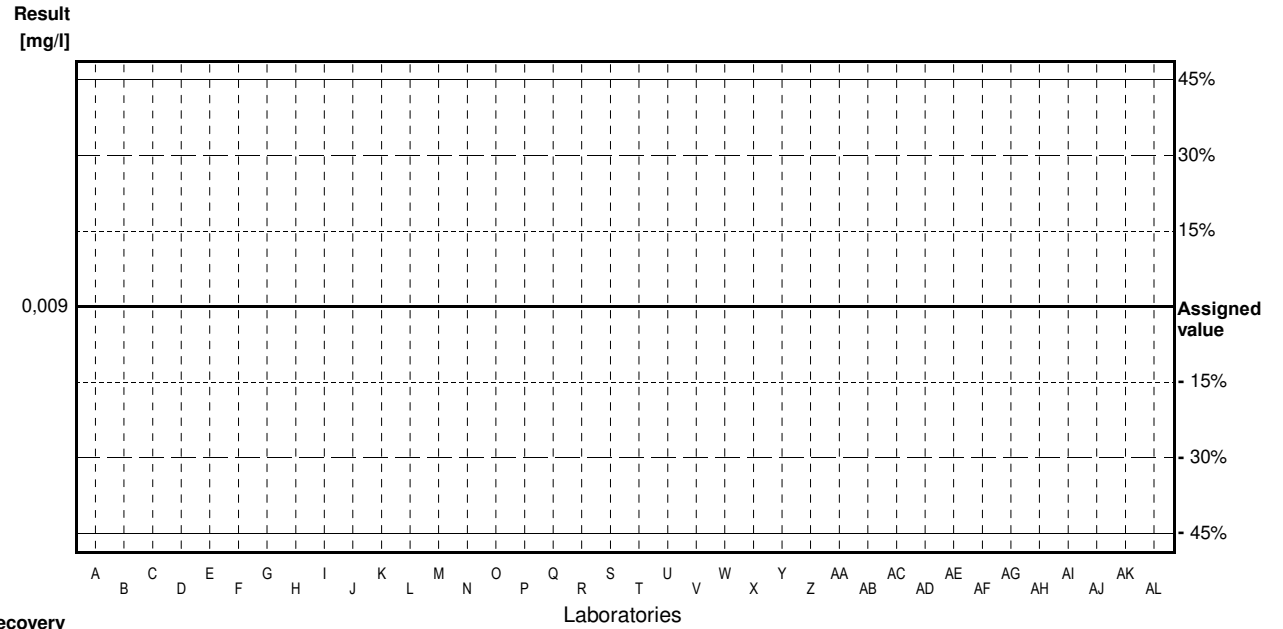
Sample N181A

Parameter Total P (as PO4)

Assigned value <0,009 mg/l
 IFA result <0,009 mg/l
 Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A			mg/l		
B			mg/l		
C	<0.015		mg/l	•	
D	<0.05	0.0016	mg/l	•	
E	<0.030		mg/l	•	
F	<0.010		mg/l	•	
G			mg/l		
H	0.0365	0.001	mg/l	FP	
I	<0.0150		mg/l	•	
J	<0.013		mg/l	•	
K			mg/l		
L	<0.01		mg/l	•	
M	<0.006		mg/l	•	
N	<0.015		mg/l	•	
O	0.0135	0.002	mg/l	FP	
P	<0.03		mg/l	•	
Q	0.0087		mg/l	•	
R			mg/l		
S	<0.006		mg/l	•	
T	<0.009		mg/l	•	
U	0.00400		mg/l	•	
V	0.0060		mg/l	•	
W	<0.01		mg/l	•	
X	<0.010		mg/l	•	
Y			mg/l		
Z	0.340	0.5	mg/l	•	
AA			mg/l		
AB	<0.020		mg/l	•	
AC	<0.0032		mg/l	•	
AD	<0.009		mg/l	•	
AE			mg/l		
AF	<0.03		mg/l	•	
AG	<0.0150		mg/l	•	
AH			mg/l		
AI	<0.005		mg/l	•	
AJ	0.00300	0.002	mg/l	•	
AK			mg/l		
AL			mg/l		

	All results	Outliers excl.	Unit
Mean ± CI(99%)			mg/l
Recov. ± CI(99%)			%
SD between labs			mg/l
RSD between labs			%
n for calculation			



Sample N181B

Parameter Total P (as PO4)

Assigned value ± U (k=2) 0,0578 mg/l ± 0,0014 mg/l

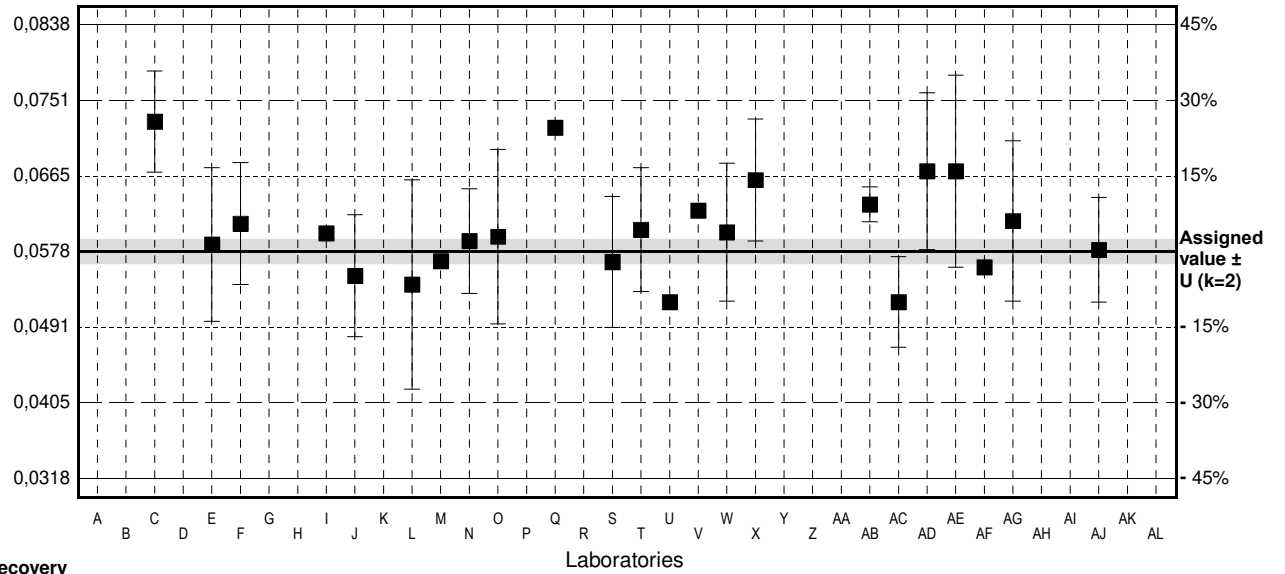
IFA result ± U (k=2) 0,059 mg/l ± 0,014 mg/l

Stability test mg/l

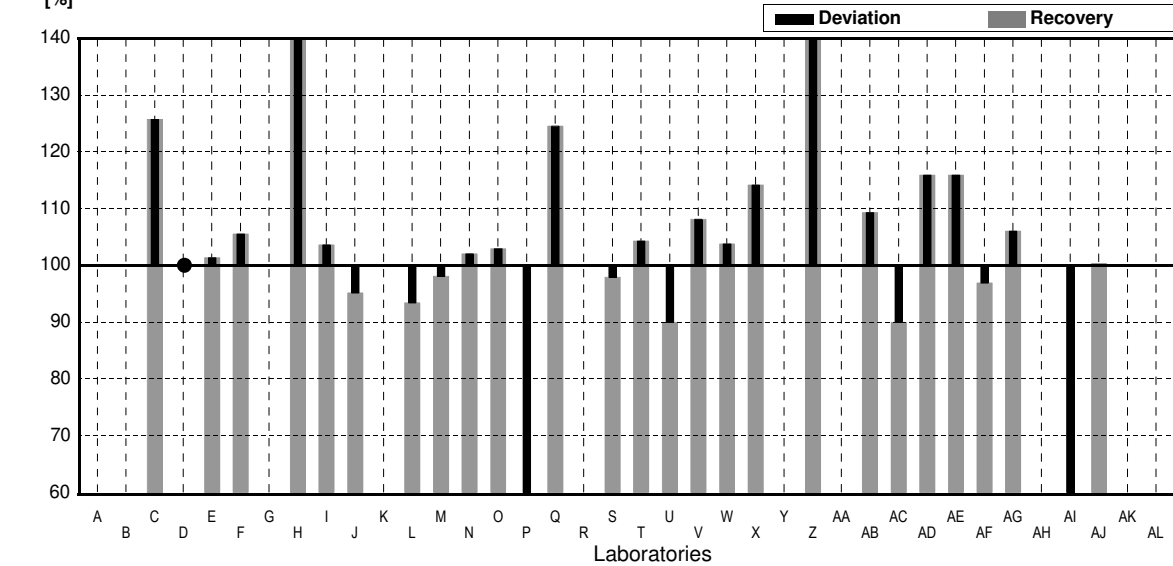
Lab Code	Result	±	Unit	Recovery	z-Score
A			mg/l		
B			mg/l		
C	0,0727	0,0058	mg/l	126%	3.14
D	<0,05	0,0071	mg/l	*	
E	0,0586	0,0088	mg/l	101%	0.17
F	0,061	0,007	mg/l	106%	0.68
G			mg/l		
H	0,0978 *	0,002	mg/l	169%	8.44
I	0,0599	0,000531	mg/l	104%	0.44
J	0,055	0,007	mg/l	95%	-0.59
K			mg/l		
L	0,054	0,012	mg/l	93%	-0.80
M	0,0567		mg/l	98%	-0.23
N	0,059	0,006	mg/l	102%	0.25
O	0,0595	0,01	mg/l	103%	0.36
P	0,0180 *	0,002	mg/l	31%	-8.40
Q	0,072		mg/l	125%	3.00
R			mg/l		
S	0,0566	0,0075	mg/l	98%	-0.25
T	0,0603	0,0071	mg/l	104%	0.53
U	0,052		mg/l	90%	-1.22
V	0,0625		mg/l	108%	0.99
W	0,060	0,0079	mg/l	104%	0.46
X	0,066	0,007	mg/l	114%	1.73
Y			mg/l		
Z	0,175 *	0,5	mg/l	303%	24.73
AA			mg/l		
AB	0,0632	0,002	mg/l	109%	1.14
AC	0,0520	0,0052	mg/l	90%	-1.22
AD	0,067	0,009	mg/l	116%	1.94
AE	0,067	0,011	mg/l	116%	1.94
AF	0,056		mg/l	97%	-0.38
AG	0,0613	0,0092	mg/l	106%	0.74
AH			mg/l		
AI	0,0117 *	0,00133	mg/l	20%	-9.73
AJ	0,058	0,006	mg/l	100%	0.04
AK			mg/l		
AL			mg/l		

	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,0627 ± 0,0146	0,0604 ± 0,0033	mg/l
Recov. ± CI(99%)	108,5 ± 25,2	104,6 ± 5,7	%
SD between labs	0,0272	0,0056	mg/l
RSD between labs	43,4	9,3	%
n for calculation	27	23	

Result [mg/l]



Recovery [%]



Sample N181A

Parameter Silicon

Assigned value \pm U (k=2) 5,79 mg/l \pm 0,03 mg/l

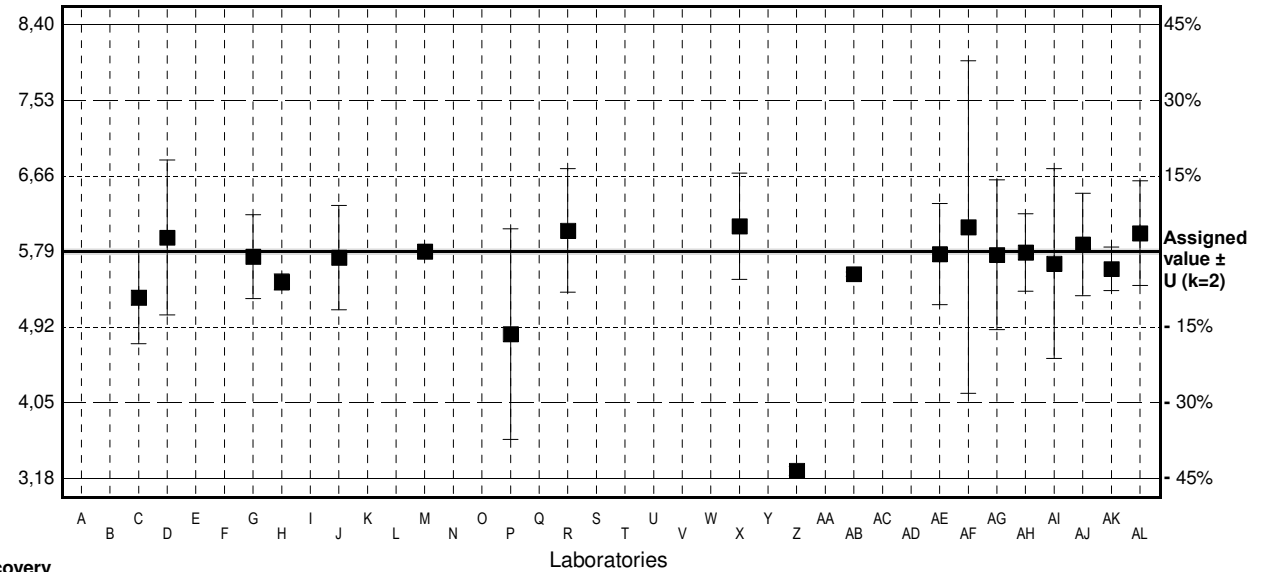
IFA result \pm U (k=2) 5,5 mg/l \pm 0,4 mg/l

Stability test mg/l

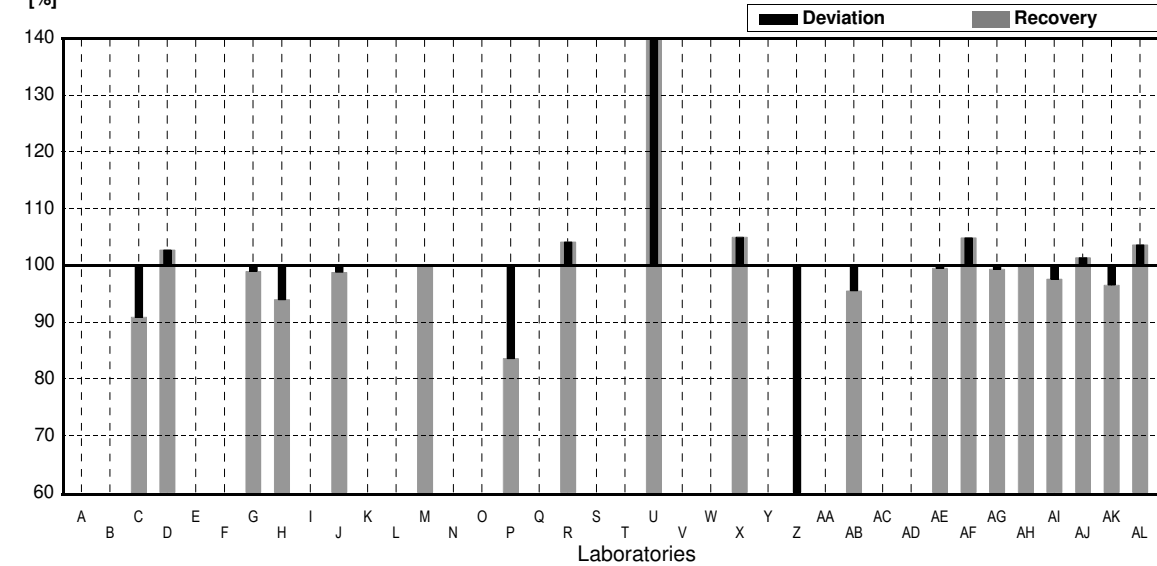
Lab Code	Result	\pm	Unit	Recovery	z-Score
A			mg/l		
B			mg/l		
C	5.26	0.53	mg/l	91%	-1.99
D	5.95	0.89	mg/l	103%	0.60
E			mg/l		
F			mg/l		
G	5.73	0.481	mg/l	99%	-0.23
H	5.44	0.092	mg/l	94%	-1.31
I			mg/l		
J	5.72	0.6	mg/l	99%	-0.26
K			mg/l		
L			mg/l		
M	5.79		mg/l	100%	0.00
N			mg/l		
O			mg/l		
P	4.84	1.21	mg/l	84%	-3.57
Q			mg/l		
R	6.03	0.71	mg/l	104%	0.90
S			mg/l		
T			mg/l		
U	11.75 *		mg/l	203%	22.38
V			mg/l		
W			mg/l		
X	6.079	0.61	mg/l	105%	1.09
Y			mg/l		
Z	3.27 *	0.05	mg/l	56%	-9.46
AA			mg/l		
AB	5.53	0.025	mg/l	96%	-0.98
AC			mg/l		
AD			mg/l		
AE	5.76	0.58	mg/l	99%	-0.11
AF	6.07	1.91	mg/l	105%	1.05
AG	5.75	0.86	mg/l	99%	-0.15
AH	5.7791	0.444	mg/l	100%	-0.04
AI	5.65	1.09	mg/l	98%	-0.53
AJ	5.87	0.587	mg/l	101%	0.30
AK	5.59	0.25	mg/l	97%	-0.75
AL	6.0	0.6	mg/l	104%	0.79

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	5,89 \pm 0,97	5,71 \pm 0,21	mg/l
Recov. \pm CI(99%)	101,8 \pm 16,7	98,7 \pm 3,7	%
SD between labs	1,51	0,31	mg/l
RSD between labs	25,6	5,4	%
n for calculation	20	18	

Result [mg/l]



Recovery [%]



Sample N181B

Parameter Silicon

Assigned value ± U (k=2) 2,537 mg/l ± 0,014 mg/l

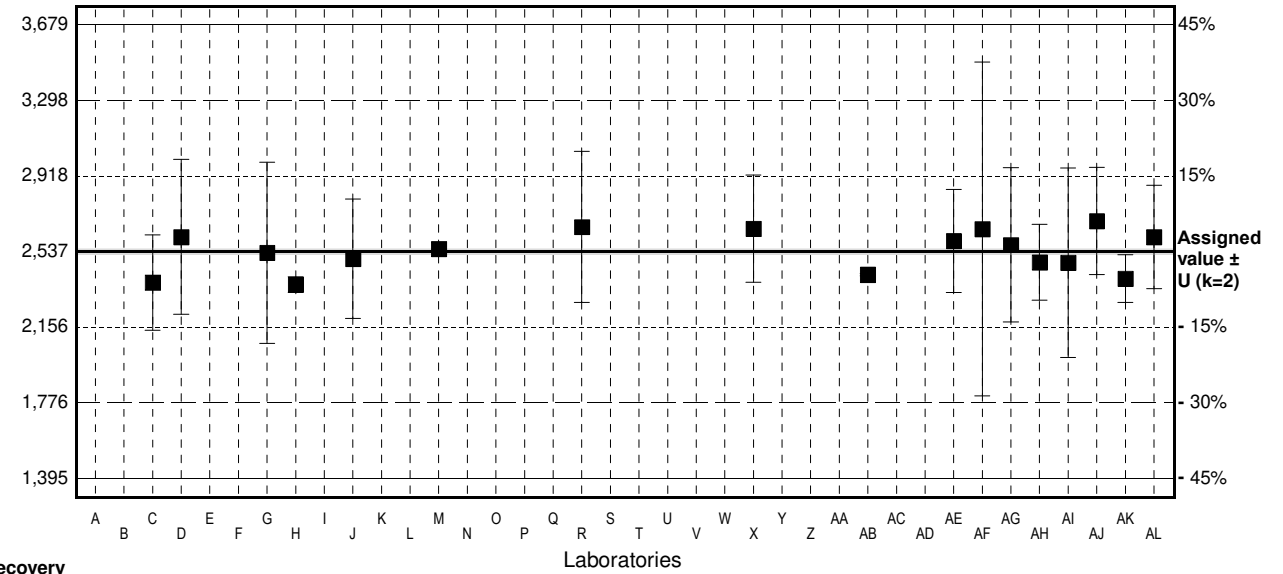
IFA result ± U (k=2) 2,45 mg/l ± 0,18 mg/l

Stability test mg/l

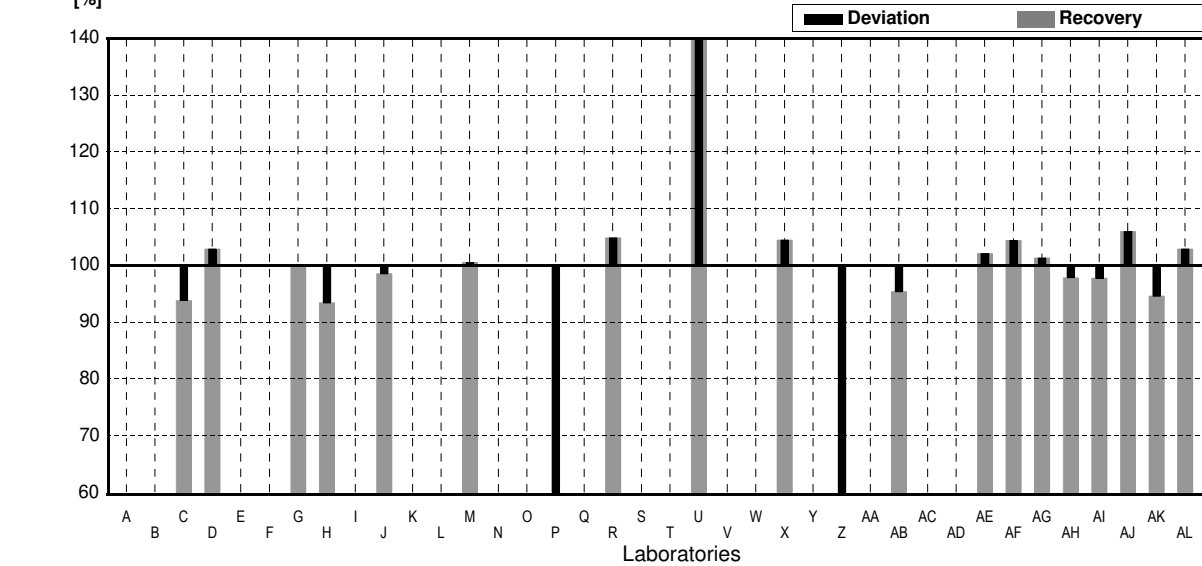
Lab Code	Result	±	Unit	Recovery	z-Score
A			mg/l		
B			mg/l		
C	2.38	0.24	mg/l	94%	-1.35
D	2.61	0.39	mg/l	103%	0.63
E			mg/l		
F			mg/l		
G	2.53	0.456	mg/l	100%	-0.06
H	2.37	0.040	mg/l	93%	-1.43
I			mg/l		
J	2.50	0.3	mg/l	99%	-0.32
K			mg/l		
L			mg/l		
M	2.55		mg/l	101%	0.11
N			mg/l		
O			mg/l		
P	1.31	*	0.33	52%	-10.51
Q			mg/l		
R	2.66	0.38	mg/l	105%	1.05
S			mg/l		
T			mg/l		
U	5.41	*		213%	24.62
V			mg/l		
W			mg/l		
X	2.651	0.27	mg/l	104%	0.98
Y			mg/l		
Z	0.68	*	0.05	27%	-15.91
AA			mg/l		
AB	2.42	0.006	mg/l	95%	-1.00
AC			mg/l		
AD			mg/l		
AE	2.59	0.259	mg/l	102%	0.45
AF	2.65	0.84	mg/l	104%	0.97
AG	2.57	0.388	mg/l	101%	0.28
AH	2.4821	0.191	mg/l	98%	-0.47
AI	2.48	0.477	mg/l	98%	-0.49
AJ	2.69	0.27	mg/l	106%	1.31
AK	2.40	0.12	mg/l	95%	-1.17
AL	2.61	0.26	mg/l	103%	0.63

	All results	Outliers excl.	Unit
Mean ± CI(99%)	2,527 ± 0,537	2,538 ± 0,073	mg/l
Recov. ± CI(99%)	99,6 ± 21,2	100,0 ± 2,9	%
SD between labs	0,839	0,104	mg/l
RSD between labs	33,2	4,1	%
n for calculation	20	17	

Result [mg/l]



Recovery [%]



Sample N181A

Parameter Fluoride

Assigned value ± U (k=2) 0,804 mg/l ± 0,003 mg/l

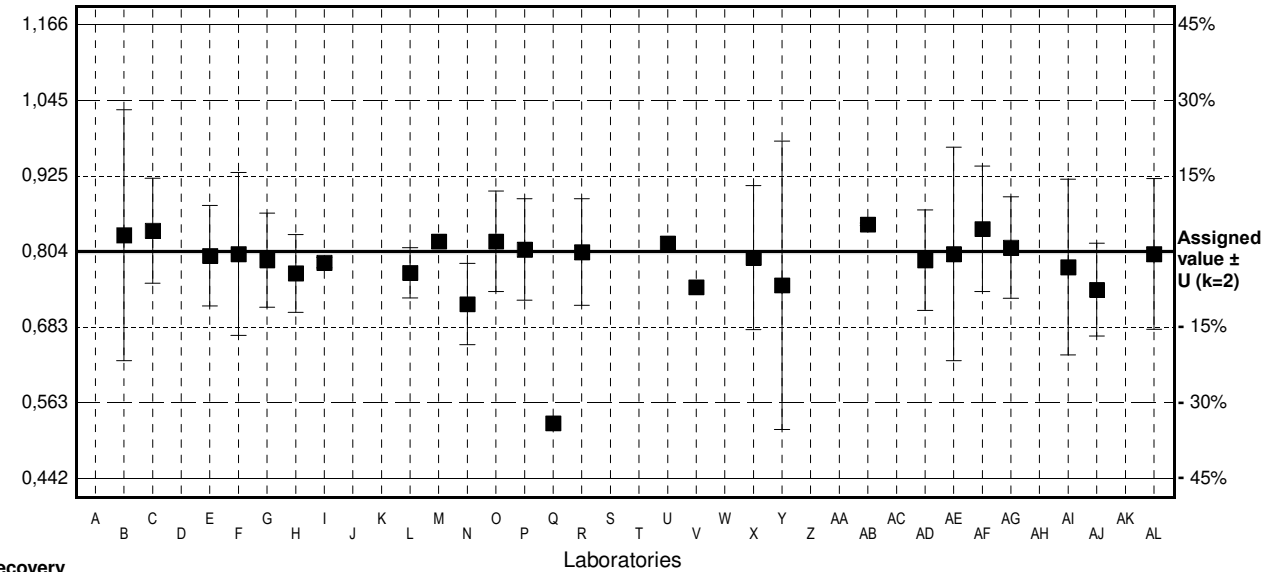
IFA result ± U (k=2) 0,797 mg/l ± 0,015 mg/l

Stability test mg/l

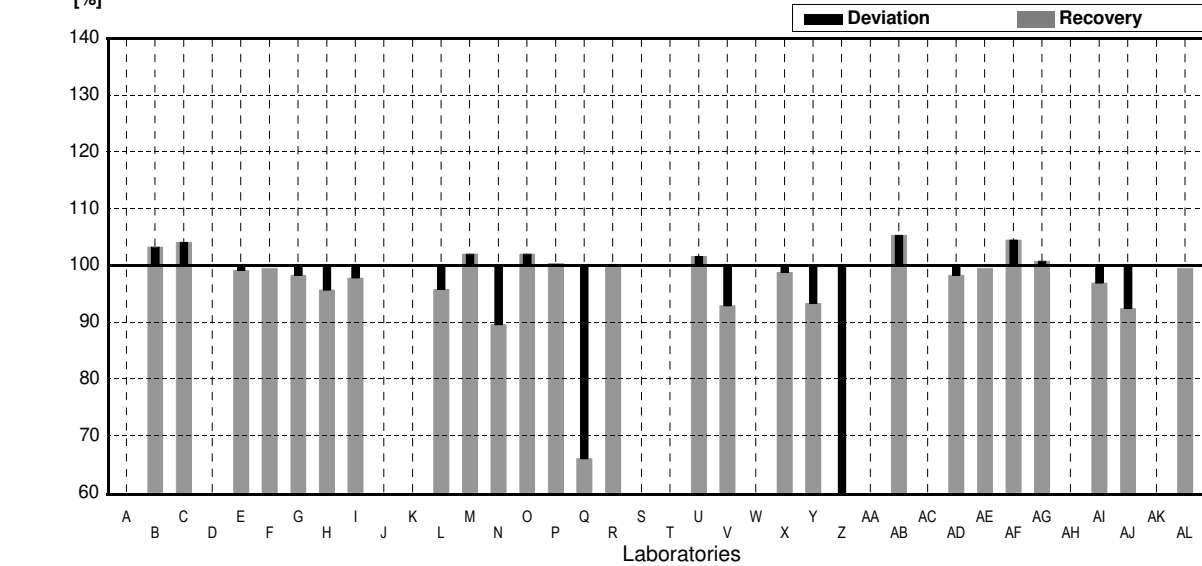
Lab Code	Result	±	Unit	Recovery	z-Score
A			mg/l		
B	0.83	0.2	mg/l	103%	0.46
C	0.837	0.084	mg/l	104%	0.59
D			mg/l		
E	0.797	0.080	mg/l	99%	-0.12
F	0.80	0.13	mg/l	100%	-0.07
G	0.79	0.075	mg/l	98%	-0.25
H	0.769	0.062	mg/l	96%	-0.62
I	0.786	0.00846	mg/l	98%	-0.32
J			mg/l		
K			mg/l		
L	0.77	0.04	mg/l	96%	-0.60
M	0.820		mg/l	102%	0.28
N	0.72	0.065	mg/l	90%	-1.49
O	0.82	0.08	mg/l	102%	0.28
P	0.807	0.081	mg/l	100%	0.05
Q	0.53 *		mg/l	66%	-4.87
R	0.803	0.085	mg/l	100%	-0.02
S			mg/l		
T			mg/l		
U	0.817		mg/l	102%	0.23
V	0.747		mg/l	93%	-1.01
W			mg/l		
X	0.794	0.115	mg/l	99%	-0.18
Y	0.75	0.23	mg/l	93%	-0.96
Z	0.0100 *	0.01	mg/l	1%	-14.11
AA			mg/l		
AB	0.847	0.002	mg/l	105%	0.76
AC			mg/l		
AD	0.79	0.08	mg/l	98%	-0.25
AE	0.80	0.17	mg/l	100%	-0.07
AF	0.84	0.1	mg/l	104%	0.64
AG	0.810	0.081	mg/l	101%	0.11
AH			mg/l		
AI	0.779	0.14	mg/l	97%	-0.44
AJ	0.743	0.074	mg/l	92%	-1.08
AK			mg/l		
AL	0.80	0.12	mg/l	100%	-0.07

	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,756 ± 0,086	0,795 ± 0,018	mg/l
Recov. ± CI(99%)	94,0 ± 10,7	98,8 ± 2,2	%
SD between labs	0,160	0,032	mg/l
RSD between labs	21,2	4,0	%
n for calculation	27	25	

Result [mg/l]



Recovery [%]



Sample N181B

Parameter Fluoride

Assigned value ± U (k=2) 1,194 mg/l ± 0,005 mg/l

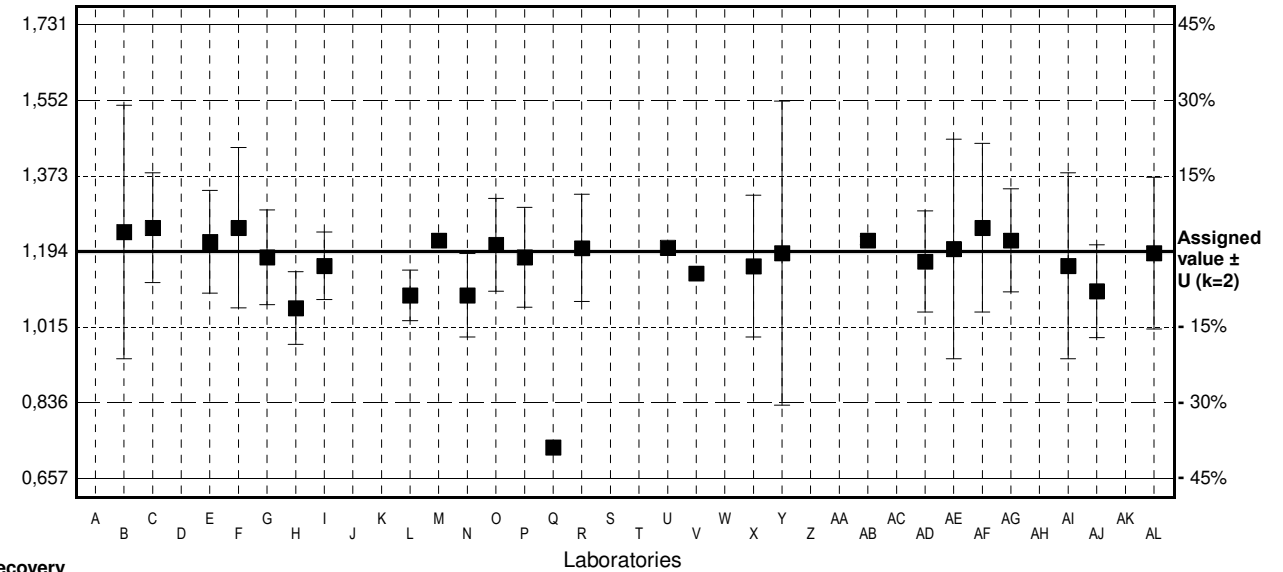
IFA result ± U (k=2) 1,179 mg/l ± 0,019 mg/l

Stability test mg/l

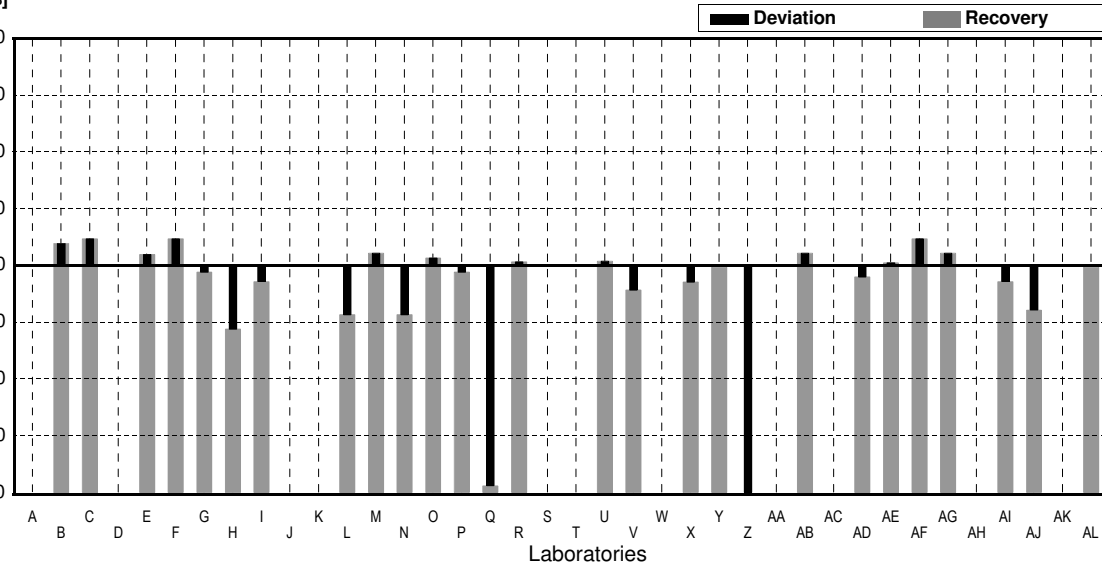
Lab Code	Result	±	Unit	Recovery	z-Score
A			mg/l		
B	1,24	0,3	mg/l	104%	0,55
C	1,25	0,13	mg/l	105%	0,67
D			mg/l		
E	1,217	0,122	mg/l	102%	0,28
F	1,25	0,19	mg/l	105%	0,67
G	1,18	0,112	mg/l	99%	-0,17
H	1,06	0,086	mg/l	89%	-1,60
I	1,16	0,0800	mg/l	97%	-0,41
J			mg/l		
K			mg/l		
L	1,09	0,06	mg/l	91%	-1,24
M	1,22		mg/l	102%	0,31
N	1,09	0,099	mg/l	91%	-1,24
O	1,21	0,11	mg/l	101%	0,19
P	1,18	0,118	mg/l	99%	-0,17
Q	0,73	*	mg/l	61%	-5,55
R	1,202	0,127	mg/l	101%	0,10
S			mg/l		
T			mg/l		
U	1,203		mg/l	101%	0,11
V	1,142		mg/l	96%	-0,62
W			mg/l		
X	1,159	0,168	mg/l	97%	-0,42
Y	1,19	0,36	mg/l	100%	-0,05
Z	0,0100	*	mg/l	1%	-14,17
AA			mg/l		
AB	1,22	0,010	mg/l	102%	0,31
AC			mg/l		
AD	1,17	0,12	mg/l	98%	-0,29
AE	1,20	0,26	mg/l	101%	0,07
AF	1,25	0,2	mg/l	105%	0,67
AG	1,22	0,122	mg/l	102%	0,31
AH			mg/l		
AI	1,16	0,22	mg/l	97%	-0,41
AJ	1,10	0,11	mg/l	92%	-1,12
AK			mg/l		
AL	1,19	0,18	mg/l	100%	-0,05

	All results	Outliers excl.	Unit
Mean ± CI(99%)	1,122 ± 0,131	1,182 ± 0,030	mg/l
Recov. ± CI(99%)	94,0 ± 10,9	99,0 ± 2,5	%
SD between labs	0,244	0,053	mg/l
RSD between labs	21,7	4,5	%
n for calculation	27	25	

Result [mg/l]



Recovery [%]





Labororientierte Auswertung

Laboratory Oriented Part

Eignungsprüfungsrunde / Proficiency testing round
N181

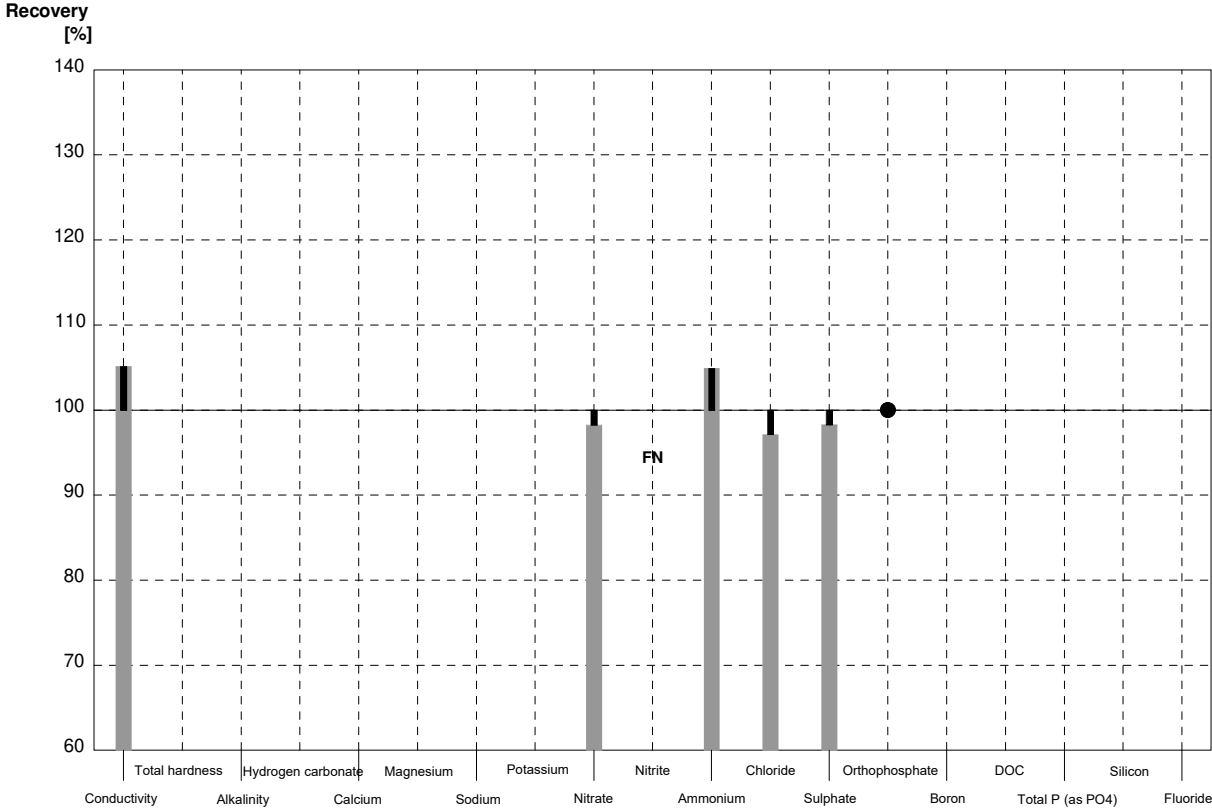
Nährstoffe
Major Ions

Versand / Dispatch: 16.03.2026

Sample N181A
Laboratory A

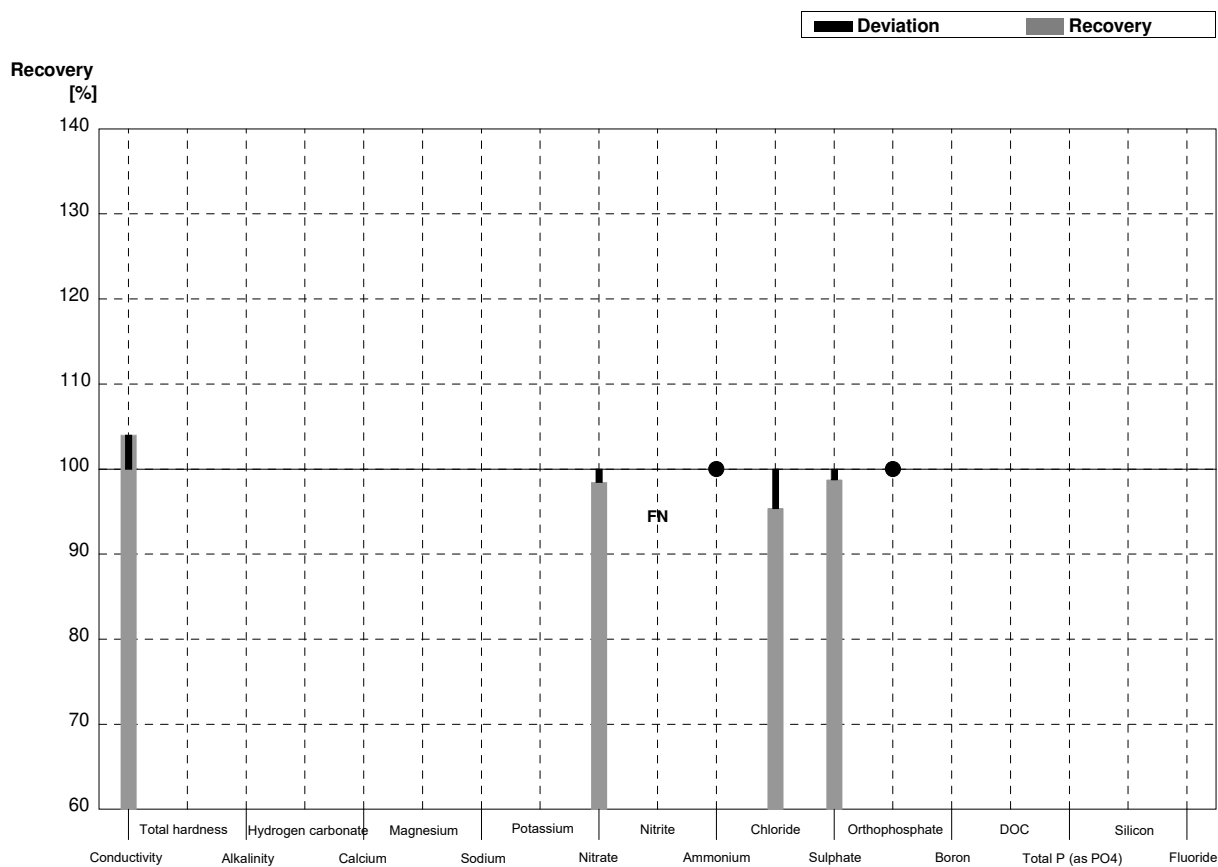
Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	408,95	5,08	µS/cm	105%
Total hardness	1,321	0,017			mmol/l	
Alkalinity	1,144	0,005			mmol/l	
Hydrogen carbonate	66,7	0,3			mg/l	
Calcium	32,3	0,6			mg/l	
Magnesium	12,51	0,13			mg/l	
Sodium	20,14	0,10			mg/l	
Potassium	1,87	0,03			mg/l	
Nitrate (as NO3)	17,9	0,4	17,586	0,011	mg/l	98%
Nitrite (as NO2)	0,0605	0,0002	<0,010		mg/l	FN
Ammonium (as NH4)	0,061	0,003	0,064	0,0004	mg/l	105%
Chloride	48,8	1,1	47,404	0,028	mg/l	97%
Sulphate (as SO4)	35,6	0,4	34,987	0,077	mg/l	98%
Orthophosphate (as PO4)	<0,009		<0,150		mg/l	•
Boron	0,0753	0,0013			mg/l	
DOC (as C)	2,370	0,015			mg/l	
Total P (as PO4)	<0,009				mg/l	
Silicon	5,79	0,03			mg/l	
Fluoride	0,804	0,003			mg/l	

■ Deviation ■ Recovery



Sample N181B
Laboratory A

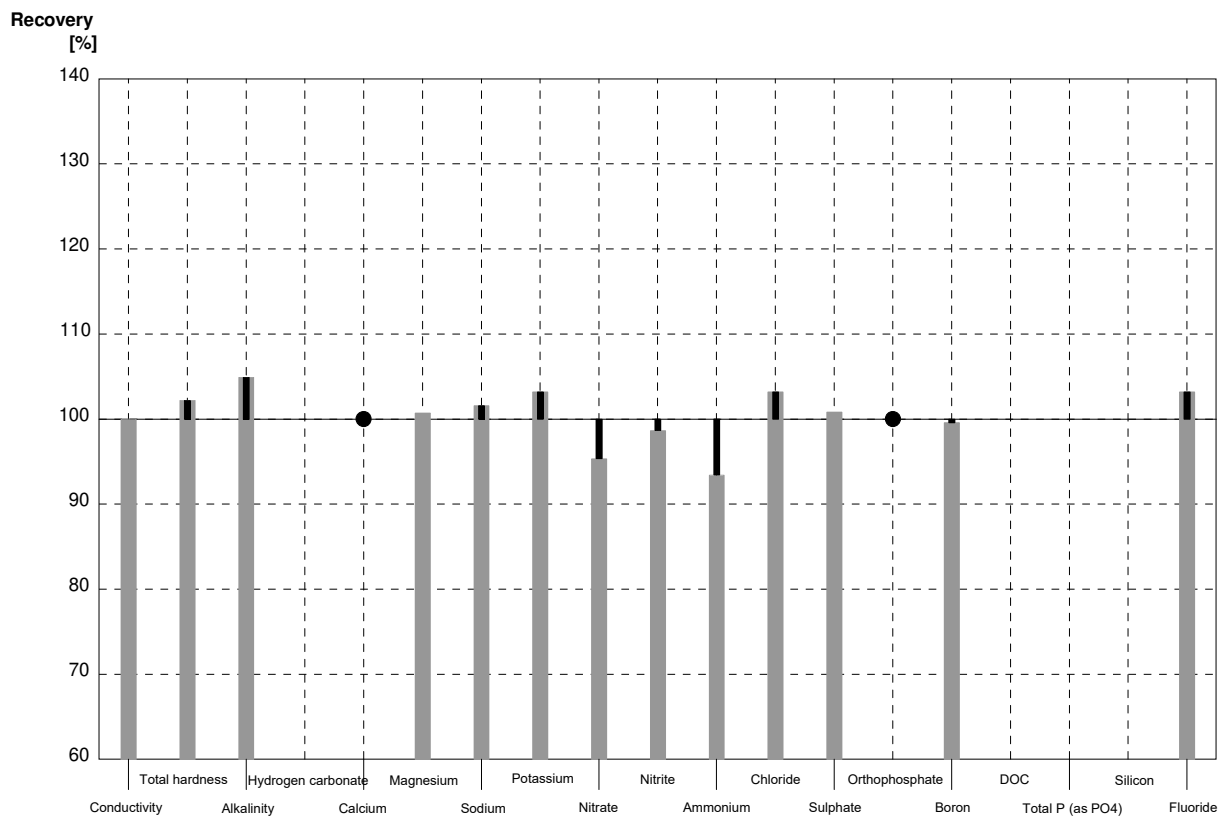
Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	518,02	2,75	µS/cm	104%
Total hardness	2,14	0,02			mmol/l	
Alkalinity	1,92	0,03			mmol/l	
Hydrogen carbonate	114,1	1,5			mg/l	
Calcium	51,0	0,7			mg/l	
Magnesium	21,1	0,3			mg/l	
Sodium	10,4	0,3			mg/l	
Potassium	4,01	0,03			mg/l	
Nitrate (as NO3)	43,6	1,0	42,923	0,218	mg/l	98%
Nitrite (as NO2)	0,02879	0,00011	<0,010		mg/l	FN
Ammonium (as NH4)	<0,01		<0,010		mg/l	•
Chloride	39,5	0,9	37,677	0,161	mg/l	95%
Sulphate (as SO4)	49,5	0,6	48,884	0,248	mg/l	99%
Orthophosphate (as PO4)	0,0394	0,0017	<0,150		mg/l	•
Boron	0,0328	0,0006			mg/l	
DOC (as C)	5,23	0,03			mg/l	
Total P (as PO4)	0,0578	0,0014			mg/l	
Silicon	2,537	0,014			mg/l	
Fluoride	1,194	0,005			mg/l	



Sample N181A
Laboratory B

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	389	11,7	µS/cm	100%
Total hardness	1,321	0,017	1,35	0,07	mmol/l	102%
Alkalinity	1,144	0,005	1,20	0,06	mmol/l	105%
Hydrogen carbonate	66,7	0,3			mg/l	
Calcium	32,3	0,6	<40		mg/l	•
Magnesium	12,51	0,13	12,6	1,26	mg/l	101%
Sodium	20,14	0,10	20,46	2,1	mg/l	102%
Potassium	1,87	0,03	1,93	0,2	mg/l	103%
Nitrate (as NO3)	17,9	0,4	17,07	0,9	mg/l	95%
Nitrite (as NO2)	0,0605	0,0002	0,0597	0,01	mg/l	99%
Ammonium (as NH4)	0,061	0,003	0,057	0,007	mg/l	93%
Chloride	48,8	1,1	50,38	2,5	mg/l	103%
Sulphate (as SO4)	35,6	0,4	35,90	3,6	mg/l	101%
Orthophosphate (as PO4)	<0,009		<0,006		mg/l	•
Boron	0,0753	0,0013	0,075	0,02	mg/l	100%
DOC (as C)	2,370	0,015			mg/l	
Total P (as PO4)	<0,009				mg/l	
Silicon	5,79	0,03			mg/l	
Fluoride	0,804	0,003	0,83	0,2	mg/l	103%

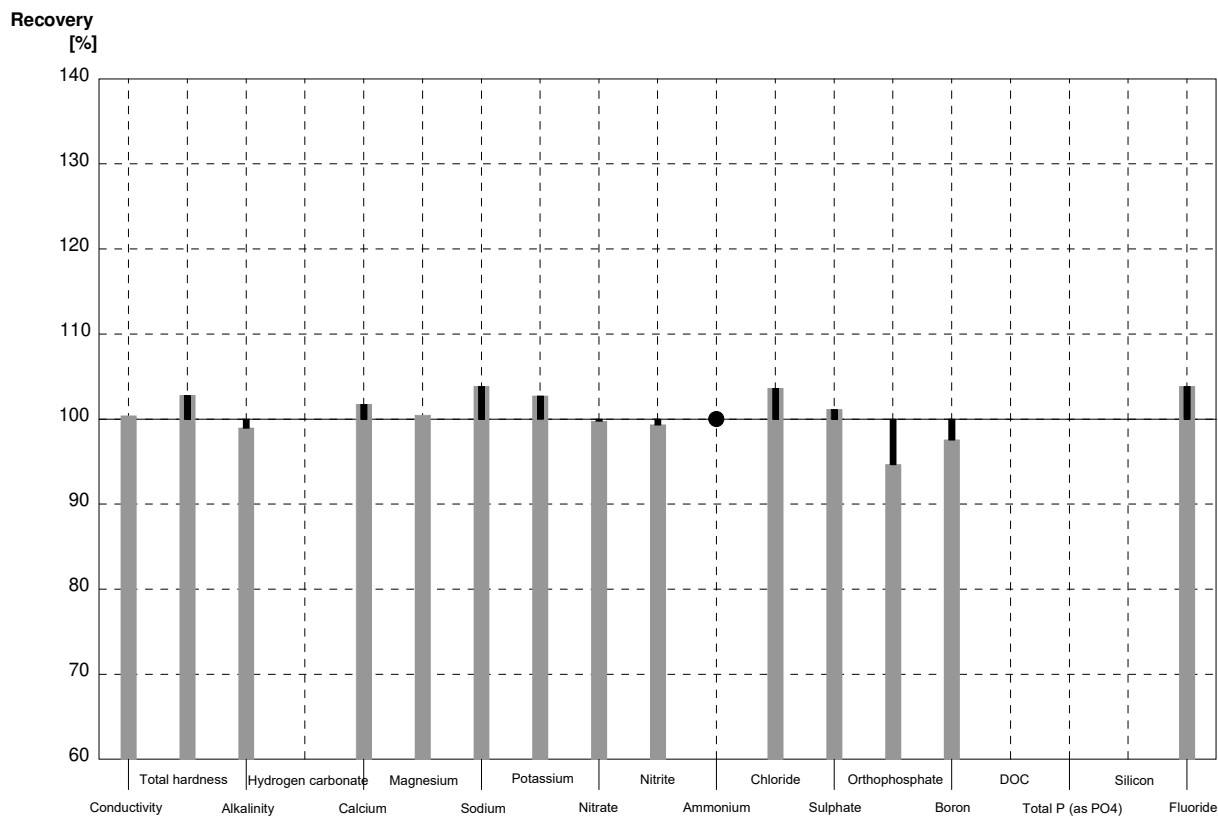
■ Deviation ■ Recovery



Sample N181B
Laboratory B

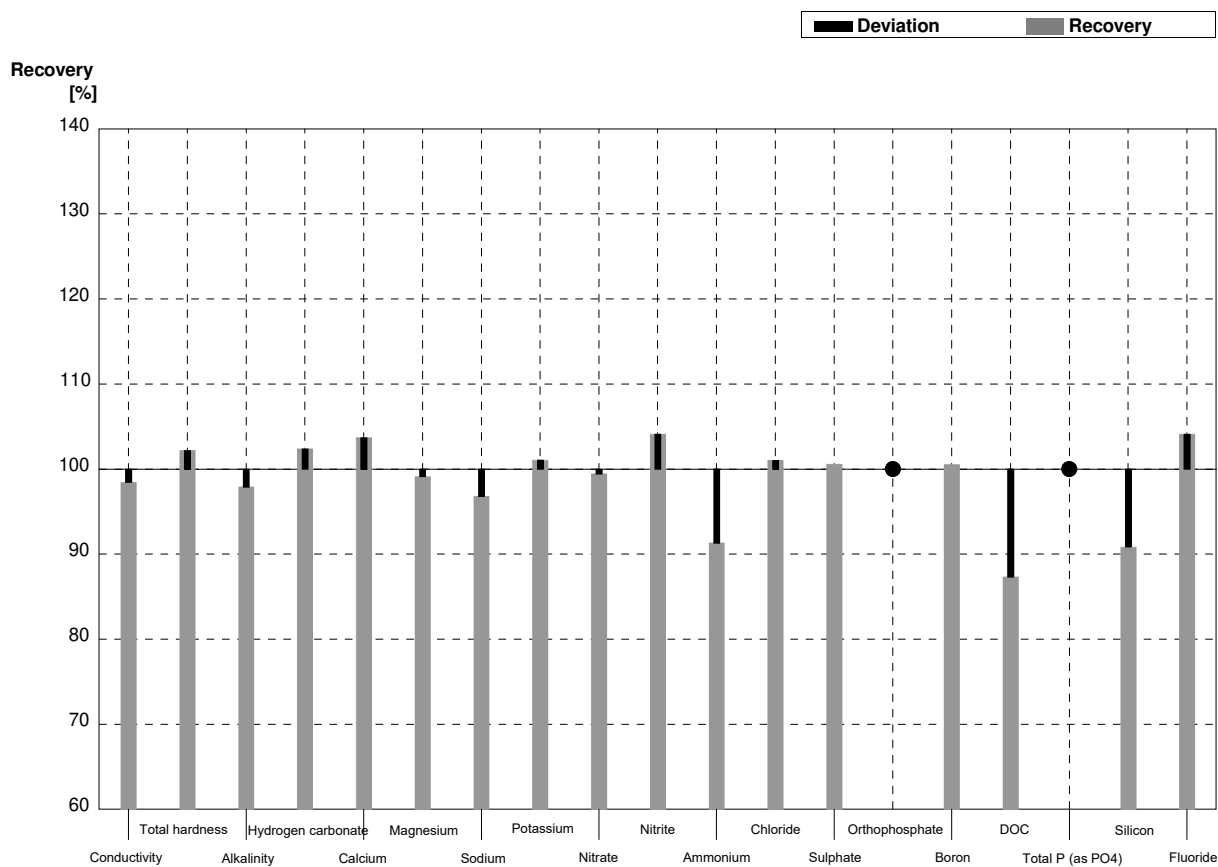
Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	500	15	µS/cm	100%
Total hardness	2,14	0,02	2,20	0,11	mmol/l	103%
Alkalinity	1,92	0,03	1,90	0,10	mmol/l	99%
Hydrogen carbonate	114,1	1,5			mg/l	
Calcium	51,0	0,7	51,9	5,2	mg/l	102%
Magnesium	21,1	0,3	21,2	2,1	mg/l	100%
Sodium	10,4	0,3	10,8	1,1	mg/l	104%
Potassium	4,01	0,03	4,12	0,4	mg/l	103%
Nitrate (as NO3)	43,6	1,0	43,5	2,2	mg/l	100%
Nitrite (as NO2)	0,02879	0,00011	0,0286	0,006	mg/l	99%
Ammonium (as NH4)	<0,01		<0,01		mg/l	•
Chloride	39,5	0,9	40,94	2,1	mg/l	104%
Sulphate (as SO4)	49,5	0,6	50,07	5,0	mg/l	101%
Orthophosphate (as PO4)	0,0394	0,0017	0,0373	0,004	mg/l	95%
Boron	0,0328	0,0006	0,0320	0,006	mg/l	98%
DOC (as C)	5,23	0,03			mg/l	
Total P (as PO4)	0,0578	0,0014			mg/l	
Silicon	2,537	0,014			mg/l	
Fluoride	1,194	0,005	1,24	0,3	mg/l	104%

■ Deviation ■ Recovery



Sample N181A
Laboratory C

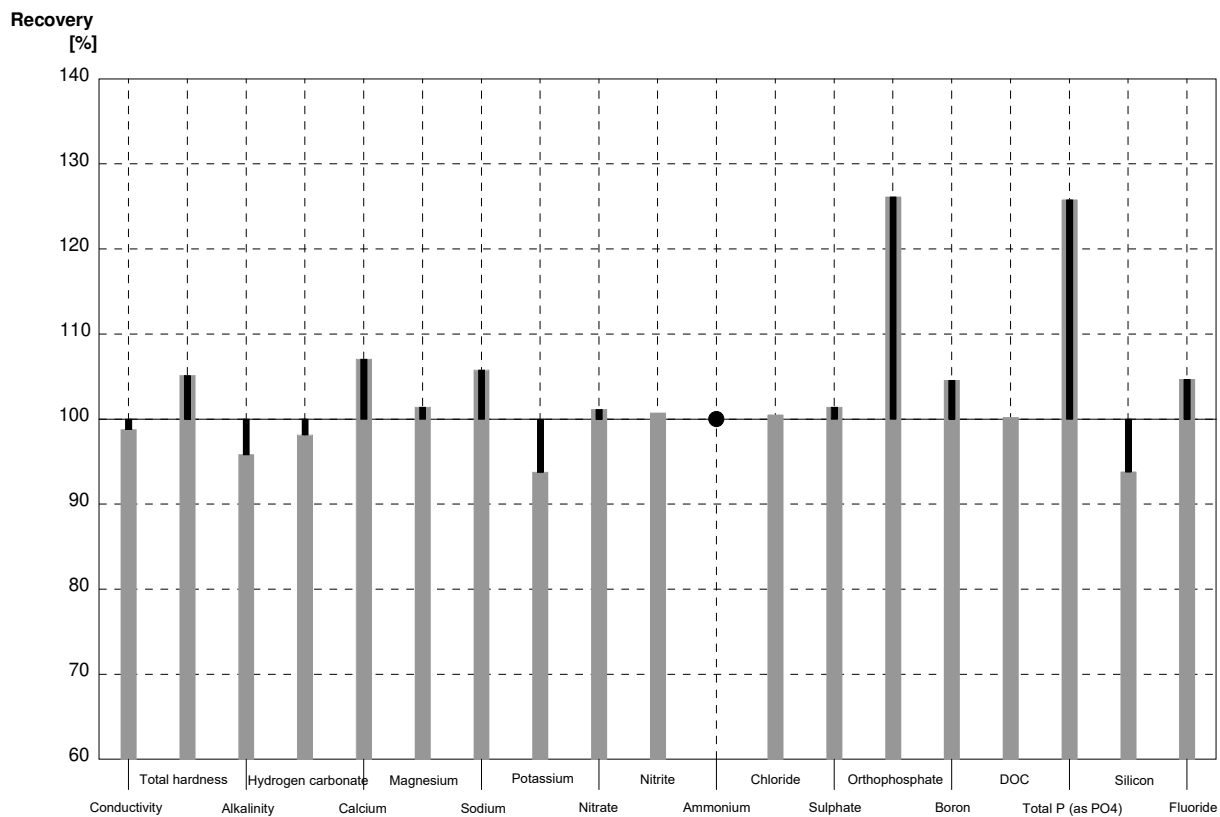
Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	383	11	µS/cm	98%
Total hardness	1,321	0,017	1,35	0,20	mmol/l	102%
Alkalinity	1,144	0,005	1,12	0,090	mmol/l	98%
Hydrogen carbonate	66,7	0,3	68,3	5,5	mg/l	102%
Calcium	32,3	0,6	33,5	5,0	mg/l	104%
Magnesium	12,51	0,13	12,4	1,5	mg/l	99%
Sodium	20,14	0,10	19,5	2,5	mg/l	97%
Potassium	1,87	0,03	1,89	0,28	mg/l	101%
Nitrate (as NO3)	17,9	0,4	17,8	1,8	mg/l	99%
Nitrite (as NO2)	0,0605	0,0002	0,0630	0,0069	mg/l	104%
Ammonium (as NH4)	0,061	0,003	0,0557	0,0045	mg/l	91%
Chloride	48,8	1,1	49,3	4,9	mg/l	101%
Sulphate (as SO4)	35,6	0,4	35,8	5,7	mg/l	101%
Orthophosphate (as PO4)	<0,009		<0,015		mg/l	•
Boron	0,0753	0,0013	0,0757	0,011	mg/l	101%
DOC (as C)	2,370	0,015	2,07	0,41	mg/l	87%
Total P (as PO4)	<0,009		<0,015		mg/l	•
Silicon	5,79	0,03	5,26	0,53	mg/l	91%
Fluoride	0,804	0,003	0,837	0,084	mg/l	104%



Sample N181B
Laboratory C

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	492	15	µS/cm	99%
Total hardness	2,14	0,02	2,25	0,34	mmol/l	105%
Alkalinity	1,92	0,03	1,84	0,15	mmol/l	96%
Hydrogen carbonate	114,1	1,5	112	9,0	mg/l	98%
Calcium	51,0	0,7	54,6	8,2	mg/l	107%
Magnesium	21,1	0,3	21,4	2,6	mg/l	101%
Sodium	10,4	0,3	11,0	1,4	mg/l	106%
Potassium	4,01	0,03	3,76	0,56	mg/l	94%
Nitrate (as NO3)	43,6	1,0	44,1	4,4	mg/l	101%
Nitrite (as NO2)	0,02879	0,00011	0,0290	0,0032	mg/l	101%
Ammonium (as NH4)	<0,01		<0,01		mg/l	•
Chloride	39,5	0,9	39,7	4,0	mg/l	101%
Sulphate (as SO4)	49,5	0,6	50,2	8,0	mg/l	101%
Orthophosphate (as PO4)	0,0394	0,0017	0,0497	0,0040	mg/l	126%
Boron	0,0328	0,0006	0,0343	0,0051	mg/l	105%
DOC (as C)	5,23	0,03	5,24	1,0	mg/l	100%
Total P (as PO4)	0,0578	0,0014	0,0727	0,0058	mg/l	126%
Silicon	2,537	0,014	2,38	0,24	mg/l	94%
Fluoride	1,194	0,005	1,25	0,13	mg/l	105%

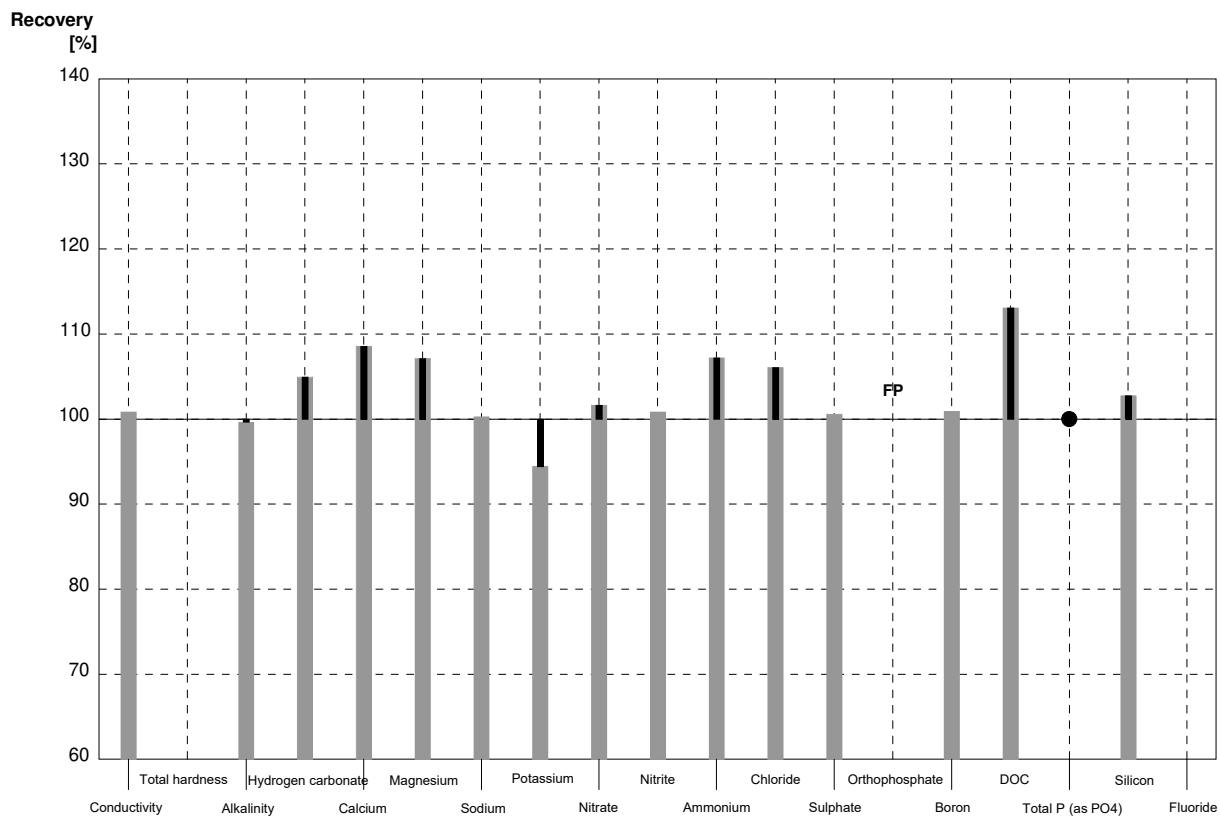
■ Deviation ■ Recovery



Sample N181A
Laboratory D

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	392,30	39,23	µS/cm	101%
Total hardness	1,321	0,017			mmol/l	
Alkalinity	1,144	0,005	1,14	1,39	mmol/l	100%
Hydrogen carbonate	66,7	0,3	70,0	1,4	mg/l	105%
Calcium	32,3	0,6	35,06	5,26	mg/l	109%
Magnesium	12,51	0,13	13,4	2,01	mg/l	107%
Sodium	20,14	0,10	20,20	3,03	mg/l	100%
Potassium	1,87	0,03	1,766	0,26	mg/l	94%
Nitrate (as NO3)	17,9	0,4	18,193	1,455	mg/l	102%
Nitrite (as NO2)	0,0605	0,0002	0,061	0,0061	mg/l	101%
Ammonium (as NH4)	0,061	0,003	0,0654	0,0163	mg/l	107%
Chloride	48,8	1,1	51,77	1,55	mg/l	106%
Sulphate (as SO4)	35,6	0,4	35,80	5,37	mg/l	101%
Orthophosphate (as PO4)	<0,009		0,0113	0,0017	mg/l	FP
Boron	0,0753	0,0013	0,0760	0,0114	mg/l	101%
DOC (as C)	2,370	0,015	2,68	0,67	mg/l	113%
Total P (as PO4)	<0,009		<0,05	0,0016	mg/l	•
Silicon	5,79	0,03	5,95	0,89	mg/l	103%
Fluoride	0,804	0,003			mg/l	

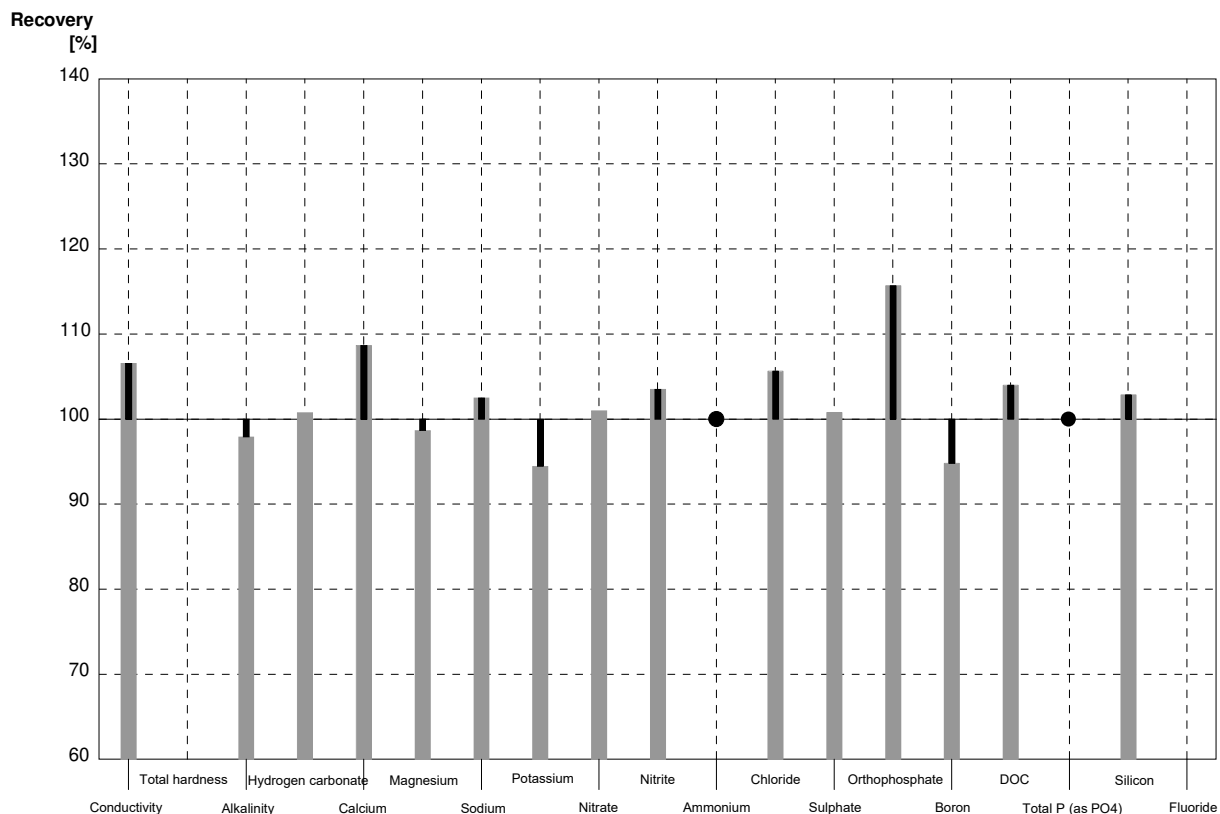
■ Deviation ■ Recovery



Sample N181B
Laboratory D

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	530,70	53,07	µS/cm	107%
Total hardness	2,14	0,02			mmol/l	
Alkalinity	1,92	0,03	1,88	2,29	mmol/l	98%
Hydrogen carbonate	114,1	1,5	115	2,29	mg/l	101%
Calcium	51,0	0,7	55,42	8,31	mg/l	109%
Magnesium	21,1	0,3	20,82	3,12	mg/l	99%
Sodium	10,4	0,3	10,66	1,60	mg/l	103%
Potassium	4,01	0,03	3,788	0,57	mg/l	94%
Nitrate (as NO3)	43,6	1,0	44,031	3,523	mg/l	101%
Nitrite (as NO2)	0,02879	0,00011	0,0298	0,0045	mg/l	104%
Ammonium (as NH4)	<0,01		<0,01	0,0071	mg/l	•
Chloride	39,5	0,9	41,73	1,25	mg/l	106%
Sulphate (as SO4)	49,5	0,6	49,90	7,49	mg/l	101%
Orthophosphate (as PO4)	0,0394	0,0017	0,0456	0,0068	mg/l	116%
Boron	0,0328	0,0006	0,0311	0,0047	mg/l	95%
DOC (as C)	5,23	0,03	5,44	1,36	mg/l	104%
Total P (as PO4)	0,0578	0,0014	<0,05	0,0071	mg/l	•
Silicon	2,537	0,014	2,61	0,39	mg/l	103%
Fluoride	1,194	0,005			mg/l	

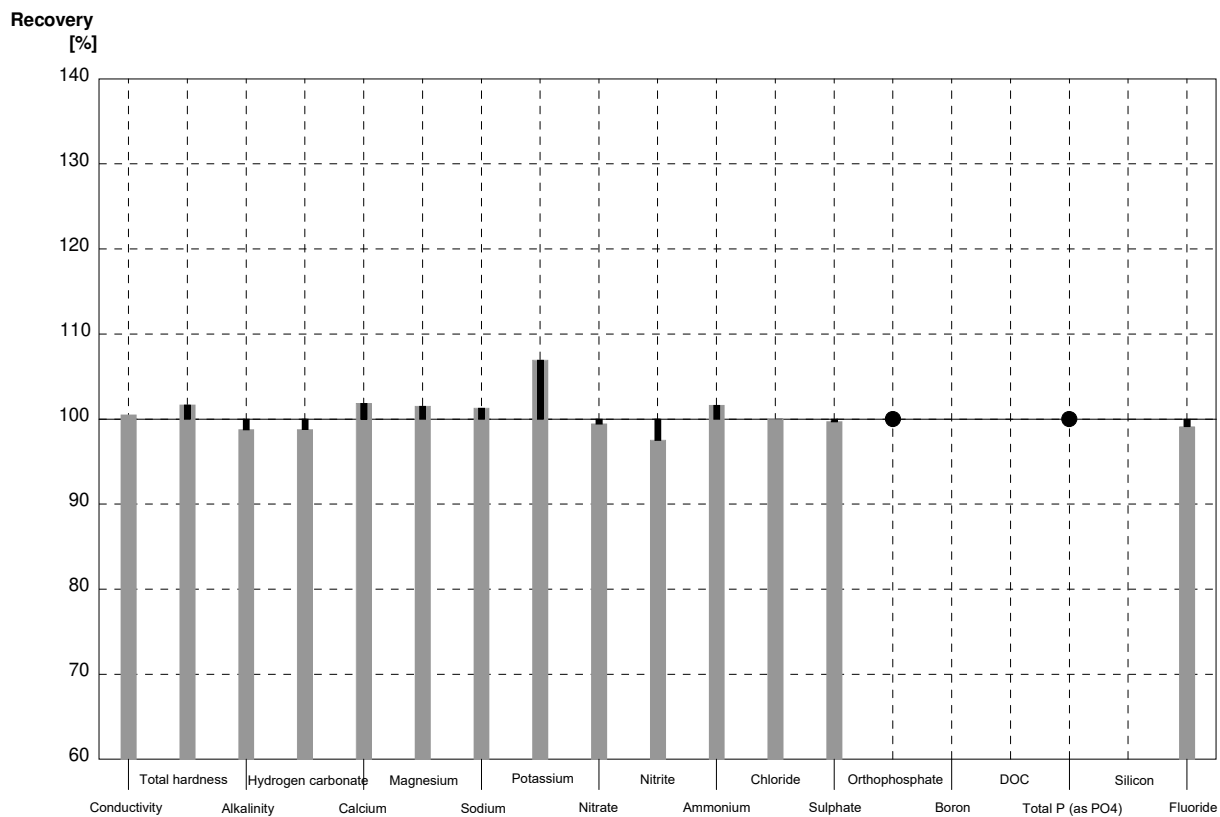
■ Deviation ■ Recovery



Sample N181A
Laboratory E

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	391	19,6	µS/cm	101%
Total hardness	1,321	0,017	1,343		mmol/l	102%
Alkalinity	1,144	0,005	1,13	0,06	mmol/l	99%
Hydrogen carbonate	66,7	0,3	65,9	3,3	mg/l	99%
Calcium	32,3	0,6	32,9	2,0	mg/l	102%
Magnesium	12,51	0,13	12,7	0,8	mg/l	102%
Sodium	20,14	0,10	20,4	1,2	mg/l	101%
Potassium	1,87	0,03	2,00	0,1	mg/l	107%
Nitrate (as NO3)	17,9	0,4	17,8	1,8	mg/l	99%
Nitrite (as NO2)	0,0605	0,0002	0,0590	0,0059	mg/l	98%
Ammonium (as NH4)	0,061	0,003	0,062	0,009	mg/l	102%
Chloride	48,8	1,1	48,8	4,9	mg/l	100%
Sulphate (as SO4)	35,6	0,4	35,5	3,6	mg/l	100%
Orthophosphate (as PO4)	<0,009		<0,0015		mg/l	•
Boron	0,0753	0,0013			mg/l	
DOC (as C)	2,370	0,015			mg/l	
Total P (as PO4)	<0,009		<0,030		mg/l	•
Silicon	5,79	0,03			mg/l	
Fluoride	0,804	0,003	0,797	0,080	mg/l	99%

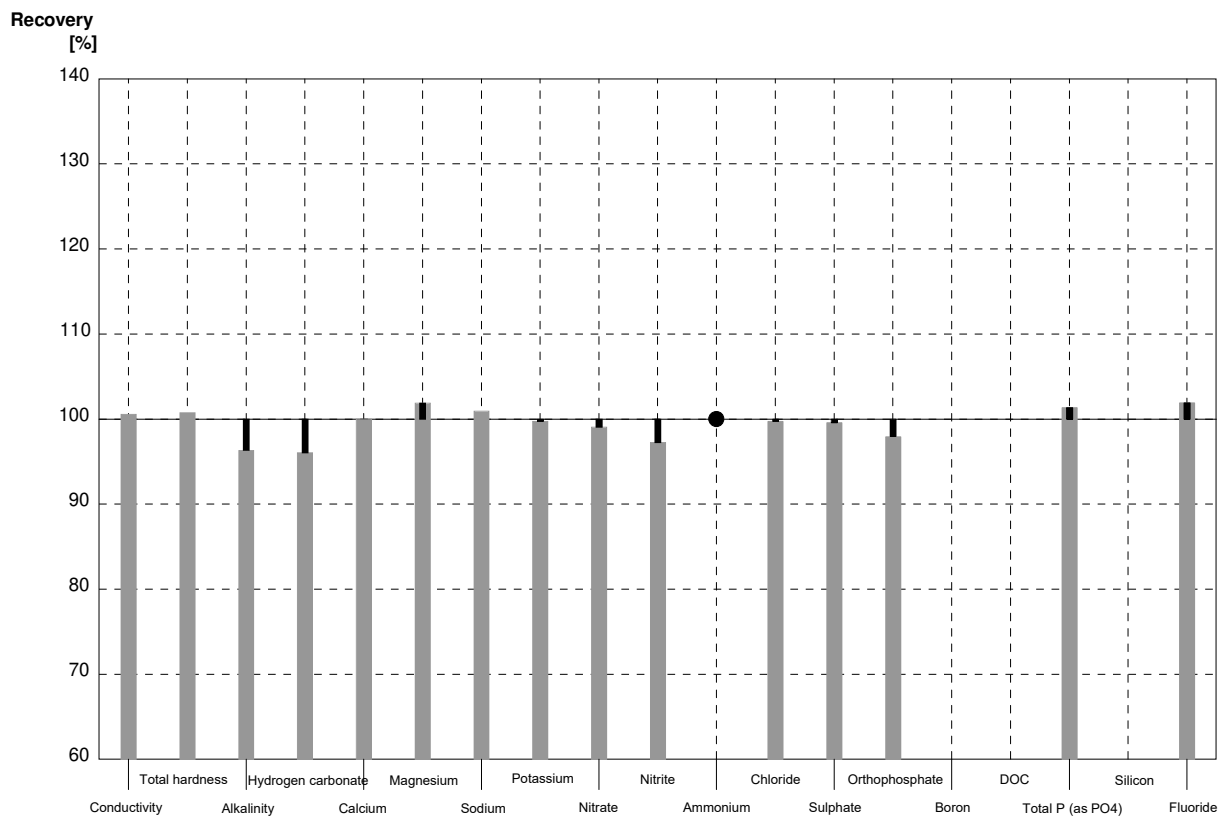
■ Deviation ■ Recovery



Sample N181B
Laboratory E

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Conductivity (25°C)	498	2	501	25,1	$\mu\text{S/cm}$	101%
Total hardness	2,14	0,02	2,157		mmol/l	101%
Alkalinity	1,92	0,03	1,85	0,09	mmol/l	96%
Hydrogen carbonate	114,1	1,5	109,6	5,5	mg/l	96%
Calcium	51,0	0,7	51,0	3,1	mg/l	100%
Magnesium	21,1	0,3	21,5	1,3	mg/l	102%
Sodium	10,4	0,3	10,5	0,6	mg/l	101%
Potassium	4,01	0,03	4,00	0,2	mg/l	100%
Nitrate (as NO ₃)	43,6	1,0	43,2	4,3	mg/l	99%
Nitrite (as NO ₂)	0,02879	0,00011	0,0280	0,0028	mg/l	97%
Ammonium (as NH ₄)	<0,01		<0,02		mg/l	•
Chloride	39,5	0,9	39,4	3,9	mg/l	100%
Sulphate (as SO ₄)	49,5	0,6	49,3	4,9	mg/l	100%
Orthophosphate (as PO ₄)	0,0394	0,0017	0,0386	0,0058	mg/l	98%
Boron	0,0328	0,0006			mg/l	
DOC (as C)	5,23	0,03			mg/l	
Total P (as PO ₄)	0,0578	0,0014	0,0586	0,0088	mg/l	101%
Silicon	2,537	0,014			mg/l	
Fluoride	1,194	0,005	1,217	0,122	mg/l	102%

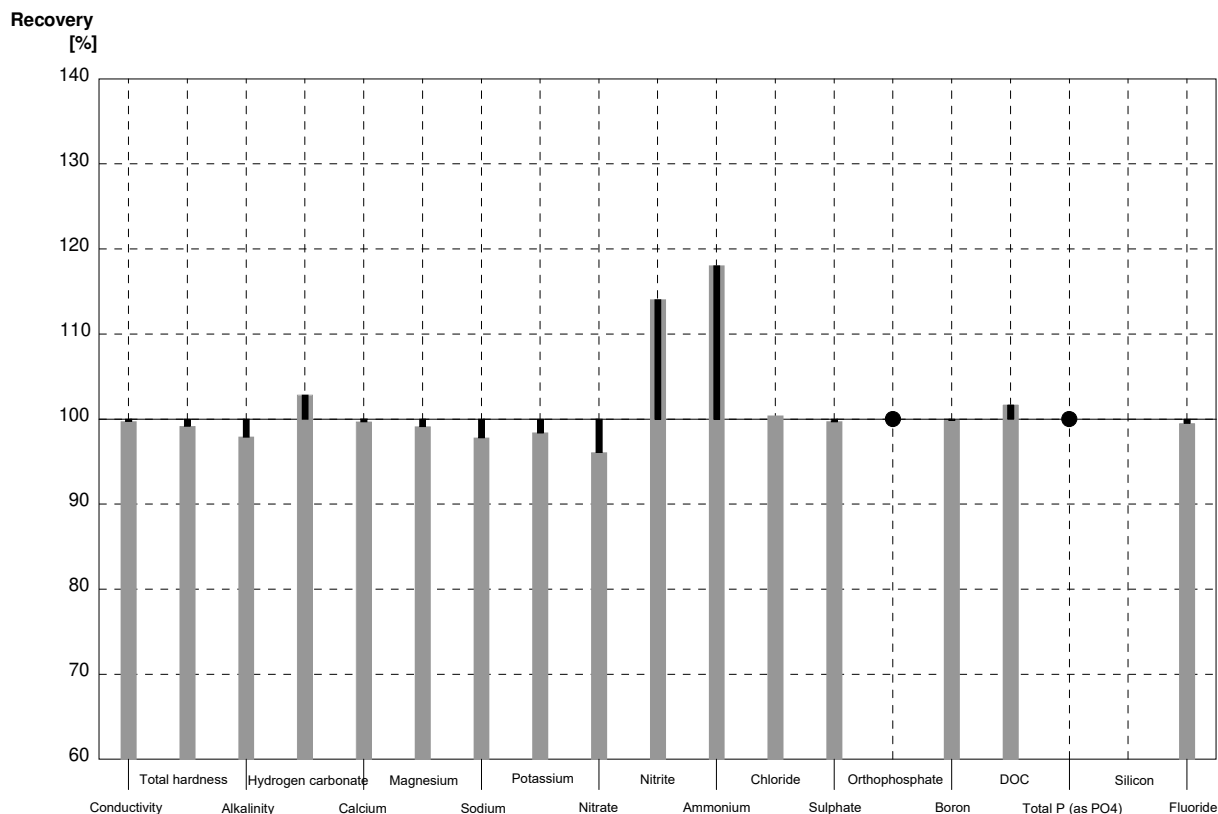
■ Deviation ■ Recovery



Sample N181A
Laboratory F

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	388	16	µS/cm	100%
Total hardness	1,321	0,017	1,31	0,063	mmol/l	99%
Alkalinity	1,144	0,005	1,12	0,09	mmol/l	98%
Hydrogen carbonate	66,7	0,3	68,6	5,3	mg/l	103%
Calcium	32,3	0,6	32,2	1,3	mg/l	100%
Magnesium	12,51	0,13	12,4	0,8	mg/l	99%
Sodium	20,14	0,10	19,7	1,1	mg/l	98%
Potassium	1,87	0,03	1,84	0,13	mg/l	98%
Nitrate (as NO3)	17,9	0,4	17,2	1,7	mg/l	96%
Nitrite (as NO2)	0,0605	0,0002	0,069	0,007	mg/l	114%
Ammonium (as NH4)	0,061	0,003	0,072	0,013	mg/l	118%
Chloride	48,8	1,1	49,0	3,8	mg/l	100%
Sulphate (as SO4)	35,6	0,4	35,5	2,9	mg/l	100%
Orthophosphate (as PO4)	<0,009		<0,010		mg/l	•
Boron	0,0753	0,0013	0,0752	0,0059	mg/l	100%
DOC (as C)	2,370	0,015	2,41	0,54	mg/l	102%
Total P (as PO4)	<0,009		<0,010		mg/l	•
Silicon	5,79	0,03			mg/l	
Fluoride	0,804	0,003	0,80	0,13	mg/l	100%

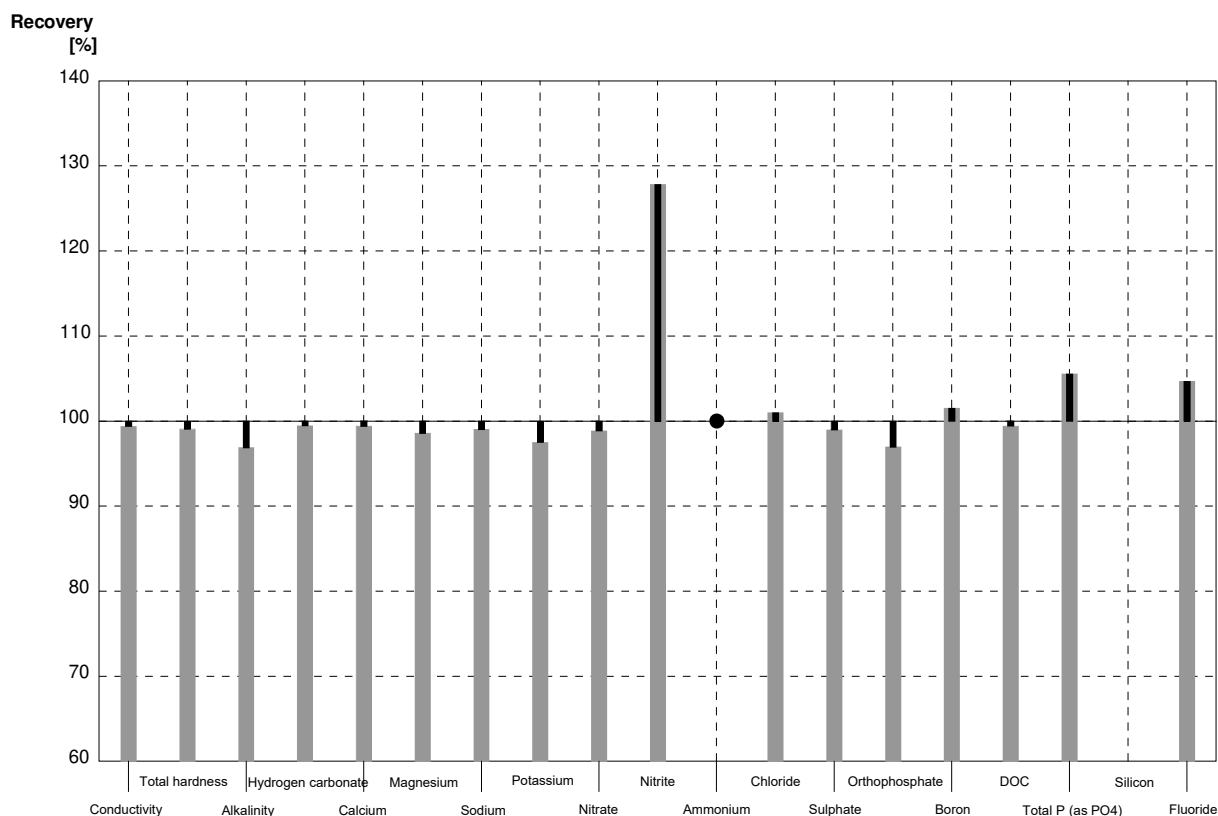
■ Deviation ■ Recovery



Sample N181B
Laboratory F

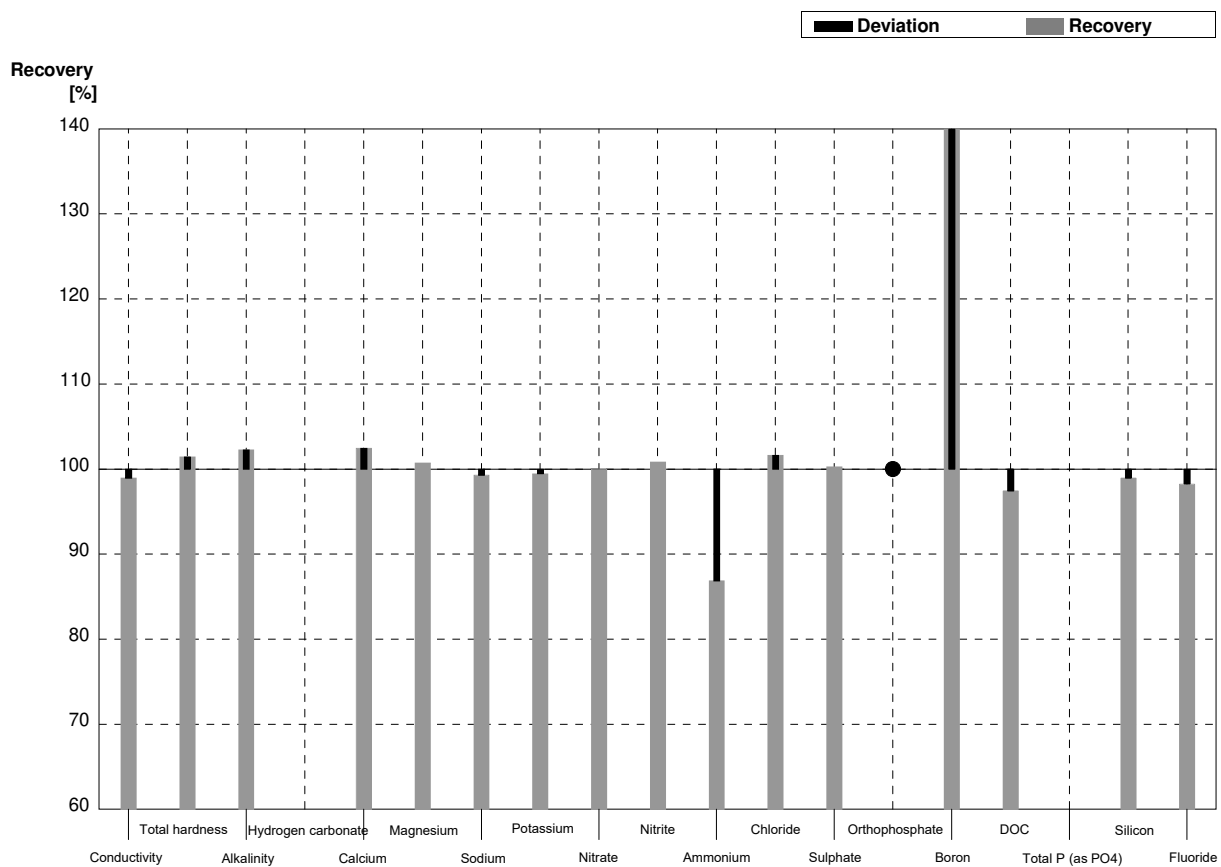
Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	495	20	µS/cm	99%
Total hardness	2,14	0,02	2,12	0,099	mmol/l	99%
Alkalinity	1,92	0,03	1,86	0,12	mmol/l	97%
Hydrogen carbonate	114,1	1,5	113,5	7,5	mg/l	99%
Calcium	51,0	0,7	50,7	1,9	mg/l	99%
Magnesium	21,1	0,3	20,8	1,2	mg/l	99%
Sodium	10,4	0,3	10,3	0,6	mg/l	99%
Potassium	4,01	0,03	3,91	0,21	mg/l	98%
Nitrate (as NO3)	43,6	1,0	43,1	4,2	mg/l	99%
Nitrite (as NO2)	0,02879	0,00011	0,0368	0,0045	mg/l	128%
Ammonium (as NH4)	<0,01		0,0140	0,0041	mg/l	•
Chloride	39,5	0,9	39,9	3,1	mg/l	101%
Sulphate (as SO4)	49,5	0,6	49,0	3,9	mg/l	99%
Orthophosphate (as PO4)	0,0394	0,0017	0,0382	0,0061	mg/l	97%
Boron	0,0328	0,0006	0,0333	0,0031	mg/l	102%
DOC (as C)	5,23	0,03	5,2	1,0	mg/l	99%
Total P (as PO4)	0,0578	0,0014	0,061	0,007	mg/l	106%
Silicon	2,537	0,014			mg/l	
Fluoride	1,194	0,005	1,25	0,19	mg/l	105%

■ Deviation ■ Recovery



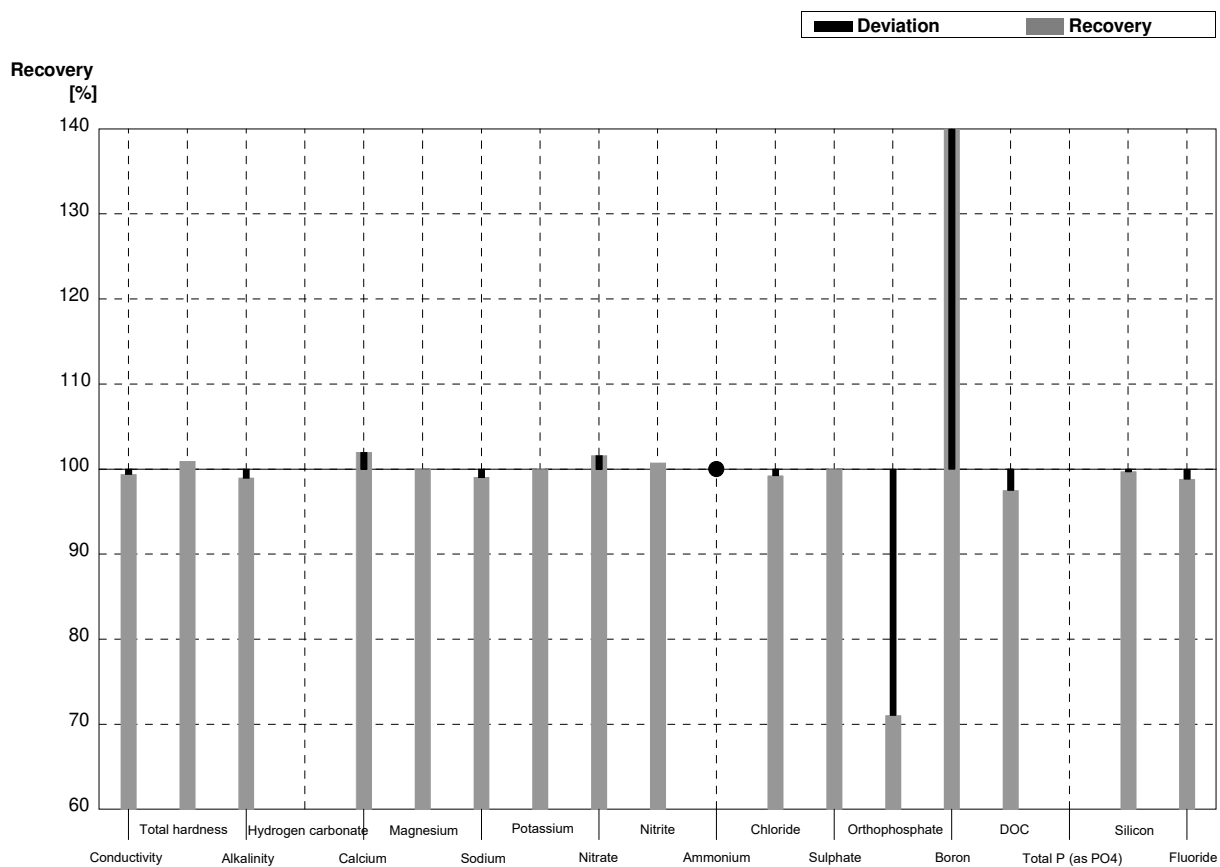
Sample N181A
Laboratory G

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	385	3,50	µS/cm	99%
Total hardness	1,321	0,017	1,34		mmol/l	101%
Alkalinity	1,144	0,005	1,17	0,021	mmol/l	102%
Hydrogen carbonate	66,7	0,3			mg/l	
Calcium	32,3	0,6	33,1	2,42	mg/l	102%
Magnesium	12,51	0,13	12,6	0,60	mg/l	101%
Sodium	20,14	0,10	20,0	1,54	mg/l	99%
Potassium	1,87	0,03	1,86	0,164	mg/l	99%
Nitrate (as NO3)	17,9	0,4	17,9	2,24	mg/l	100%
Nitrite (as NO2)	0,0605	0,0002	0,061	0,0067	mg/l	101%
Ammonium (as NH4)	0,061	0,003	0,053	0,011	mg/l	87%
Chloride	48,8	1,1	49,6	5,7	mg/l	102%
Sulphate (as SO4)	35,6	0,4	35,7	1,93	mg/l	100%
Orthophosphate (as PO4)	<0,009		<0,014		mg/l	•
Boron	0,0753	0,0013	71	9,1	mg/l	94290%
DOC (as C)	2,370	0,015	2,31	0,367	mg/l	97%
Total P (as PO4)	<0,009				mg/l	
Silicon	5,79	0,03	5,73	0,481	mg/l	99%
Fluoride	0,804	0,003	0,79	0,075	mg/l	98%



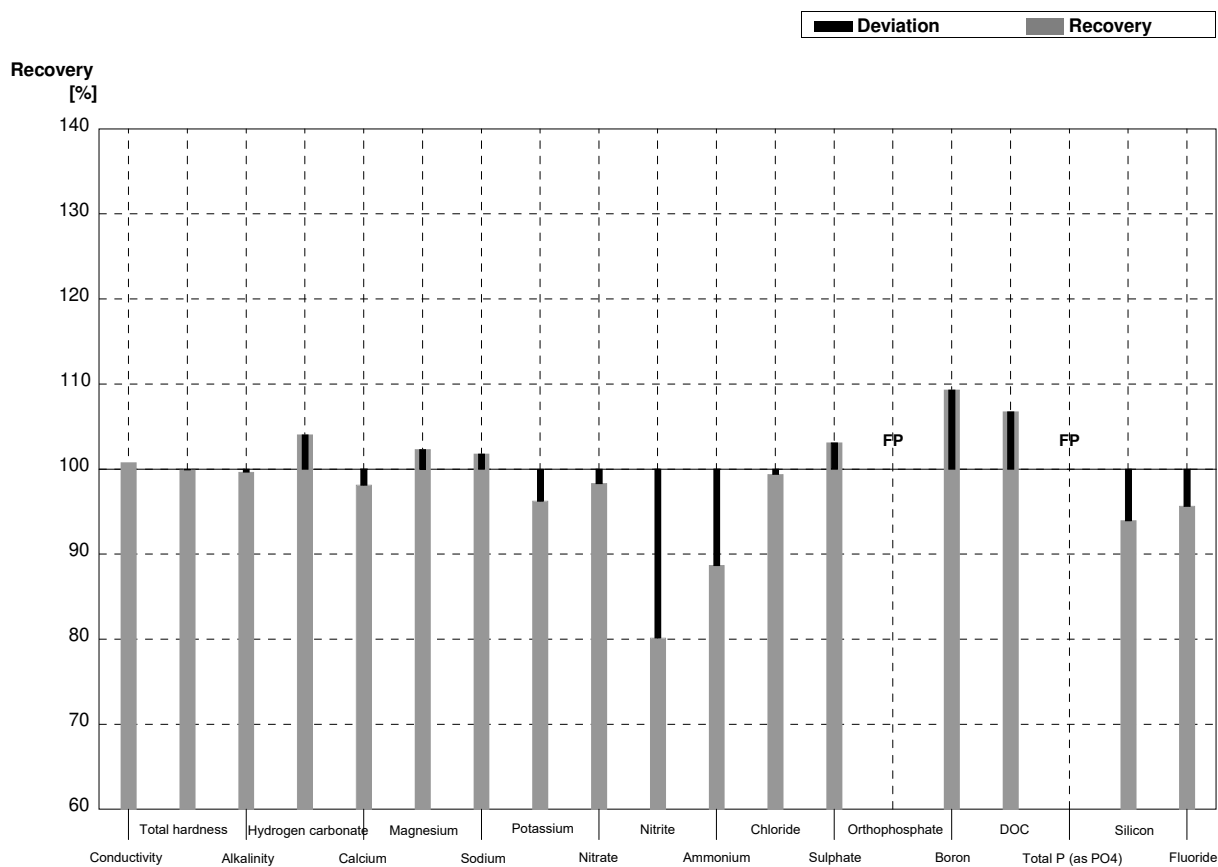
Sample N181B
Laboratory G

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	495	4,50	µS/cm	99%
Total hardness	2,14	0,02	2,16		mmol/l	101%
Alkalinity	1,92	0,03	1,90	0,034	mmol/l	99%
Hydrogen carbonate	114,1	1,5			mg/l	
Calcium	51,0	0,7	52	3,77	mg/l	102%
Magnesium	21,1	0,3	21,1	1,01	mg/l	100%
Sodium	10,4	0,3	10,3	0,80	mg/l	99%
Potassium	4,01	0,03	4,01	0,353	mg/l	100%
Nitrate (as NO3)	43,6	1,0	44,3	5,5	mg/l	102%
Nitrite (as NO2)	0,02879	0,00011	0,0290	0,0032	mg/l	101%
Ammonium (as NH4)	<0,01		<0,004		mg/l	•
Chloride	39,5	0,9	39,2	4,51	mg/l	99%
Sulphate (as SO4)	49,5	0,6	49,5	2,67	mg/l	100%
Orthophosphate (as PO4)	0,0394	0,0017	0,0280	0,0034	mg/l	71%
Boron	0,0328	0,0006	33,1	4,23	mg/l	100915%
DOC (as C)	5,23	0,03	5,1	0,81	mg/l	98%
Total P (as PO4)	0,0578	0,0014			mg/l	
Silicon	2,537	0,014	2,53	0,456	mg/l	100%
Fluoride	1,194	0,005	1,18	0,112	mg/l	99%



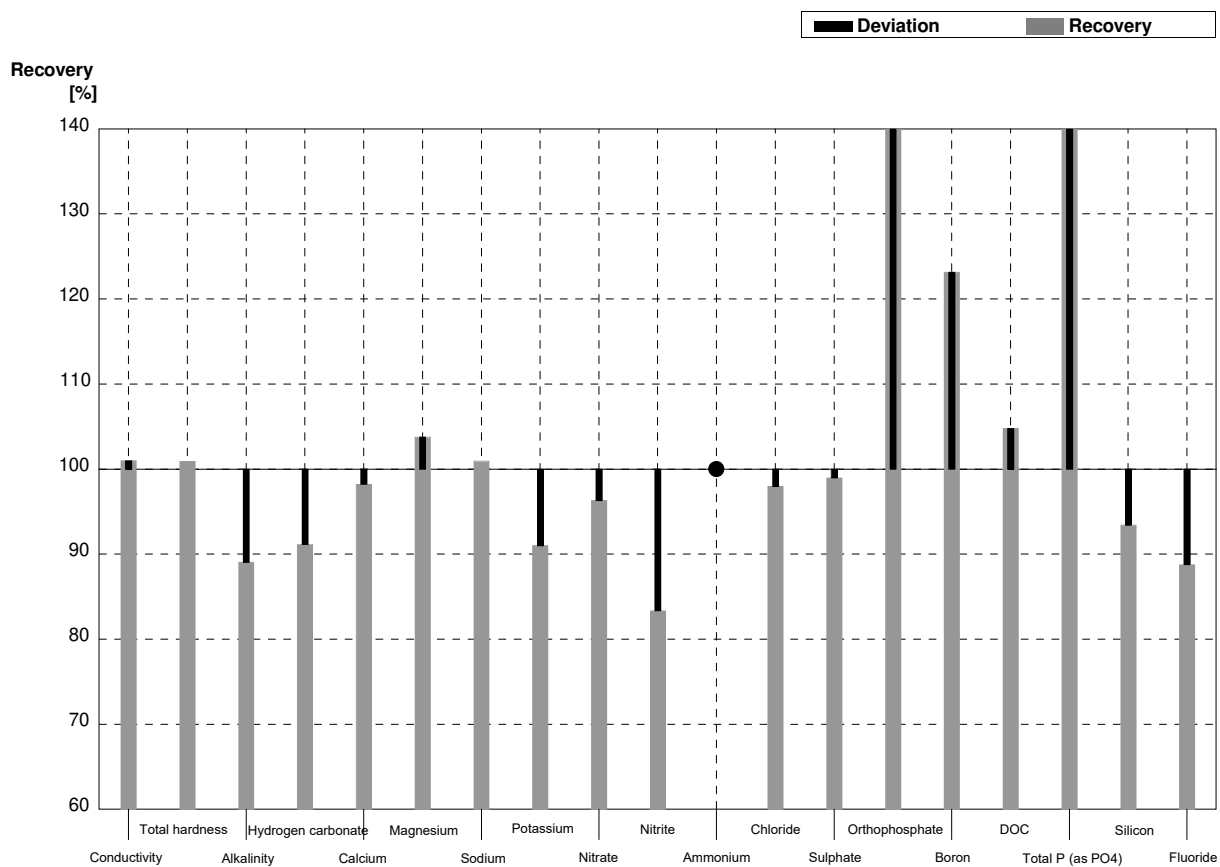
Sample N181A
Laboratory H

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	392	22	µS/cm	101%
Total hardness	1,321	0,017	1,32	0,16	mmol/l	100%
Alkalinity	1,144	0,005	1,14	0,03	mmol/l	100%
Hydrogen carbonate	66,7	0,3	69,4	1,6	mg/l	104%
Calcium	32,3	0,6	31,7	1,5	mg/l	98%
Magnesium	12,51	0,13	12,8	1,0	mg/l	102%
Sodium	20,14	0,10	20,5	1,6	mg/l	102%
Potassium	1,87	0,03	1,80	0,14	mg/l	96%
Nitrate (as NO3)	17,9	0,4	17,6	1,6	mg/l	98%
Nitrite (as NO2)	0,0605	0,0002	0,0485	0,007	mg/l	80%
Ammonium (as NH4)	0,061	0,003	0,0541	0,004	mg/l	89%
Chloride	48,8	1,1	48,5	3,6	mg/l	99%
Sulphate (as SO4)	35,6	0,4	36,7	2,5	mg/l	103%
Orthophosphate (as PO4)	<0,009		0,0365	0,004	mg/l	FP
Boron	0,0753	0,0013	0,0823	0,006	mg/l	109%
DOC (as C)	2,370	0,015	2,53	0,84	mg/l	107%
Total P (as PO4)	<0,009		0,0365	0,001	mg/l	FP
Silicon	5,79	0,03	5,44	0,092	mg/l	94%
Fluoride	0,804	0,003	0,769	0,062	mg/l	96%



Sample N181B
Laboratory H

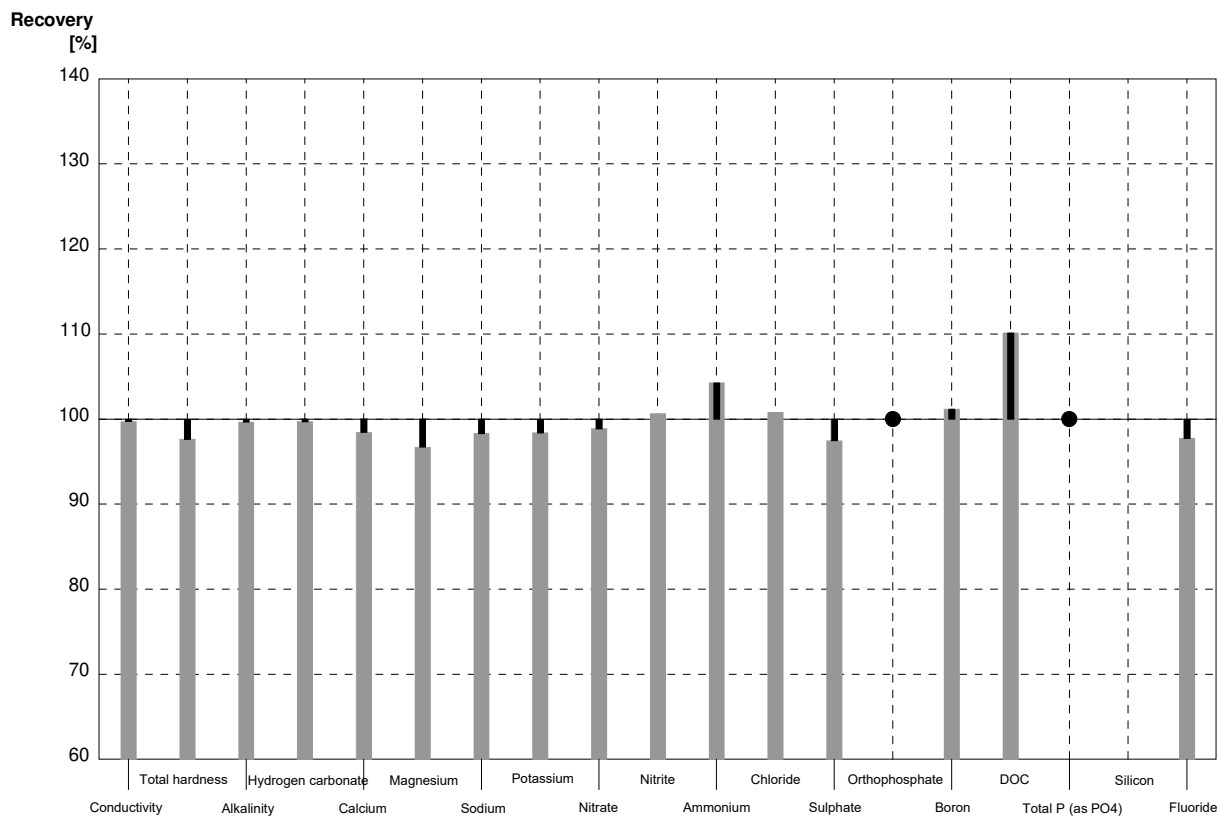
Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	503	29	µS/cm	101%
Total hardness	2,14	0,02	2,16	0,26	mmol/l	101%
Alkalinity	1,92	0,03	1,71	0,04	mmol/l	89%
Hydrogen carbonate	114,1	1,5	104	2,4	mg/l	91%
Calcium	51,0	0,7	50,1	2,4	mg/l	98%
Magnesium	21,1	0,3	21,9	1,6	mg/l	104%
Sodium	10,4	0,3	10,5	0,82	mg/l	101%
Potassium	4,01	0,03	3,65	0,28	mg/l	91%
Nitrate (as NO3)	43,6	1,0	42,0	3,9	mg/l	96%
Nitrite (as NO2)	0,02879	0,00011	0,0240	0,003	mg/l	83%
Ammonium (as NH4)	<0,01		<0,01	0,001	mg/l	•
Chloride	39,5	0,9	38,7	2,9	mg/l	98%
Sulphate (as SO4)	49,5	0,6	49,0	3,3	mg/l	99%
Orthophosphate (as PO4)	0,0394	0,0017	0,0705	0,015	mg/l	179%
Boron	0,0328	0,0006	0,0404	0,003	mg/l	123%
DOC (as C)	5,23	0,03	5,48	1,8	mg/l	105%
Total P (as PO4)	0,0578	0,0014	0,0978	0,002	mg/l	169%
Silicon	2,537	0,014	2,37	0,040	mg/l	93%
Fluoride	1,194	0,005	1,06	0,086	mg/l	89%



Sample N181A
Laboratory I

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Conductivity (25°C)	389	1	388	0,0283	$\mu\text{S/cm}$	100%
Total hardness	1,321	0,017	1,29	0,0118	mmol/l	98%
Alkalinity	1,144	0,005	1,14	0,0718	mmol/l	100%
Hydrogen carbonate	66,7	0,3	66,5	1,33	mg/l	100%
Calcium	32,3	0,6	31,8	0,173	mg/l	98%
Magnesium	12,51	0,13	12,1	0,266	mg/l	97%
Sodium	20,14	0,10	19,8	0,154	mg/l	98%
Potassium	1,87	0,03	1,84	0,0179	mg/l	98%
Nitrate (as NO ₃)	17,9	0,4	17,7	1,22	mg/l	99%
Nitrite (as NO ₂)	0,0605	0,0002	0,0609	0,000904	mg/l	101%
Ammonium (as NH ₄)	0,061	0,003	0,0636	0,00198	mg/l	104%
Chloride	48,8	1,1	49,2	1,14	mg/l	101%
Sulphate (as SO ₄)	35,6	0,4	34,7	1,04	mg/l	97%
Orthophosphate (as PO ₄)	<0,009		<0,0150		mg/l	•
Boron	0,0753	0,0013	0,0762	0,000643	mg/l	101%
DOC (as C)	2,370	0,015	2,61	0,116	mg/l	110%
Total P (as PO ₄)	<0,009		<0,0150		mg/l	•
Silicon	5,79	0,03			mg/l	
Fluoride	0,804	0,003	0,786	0,00846	mg/l	98%

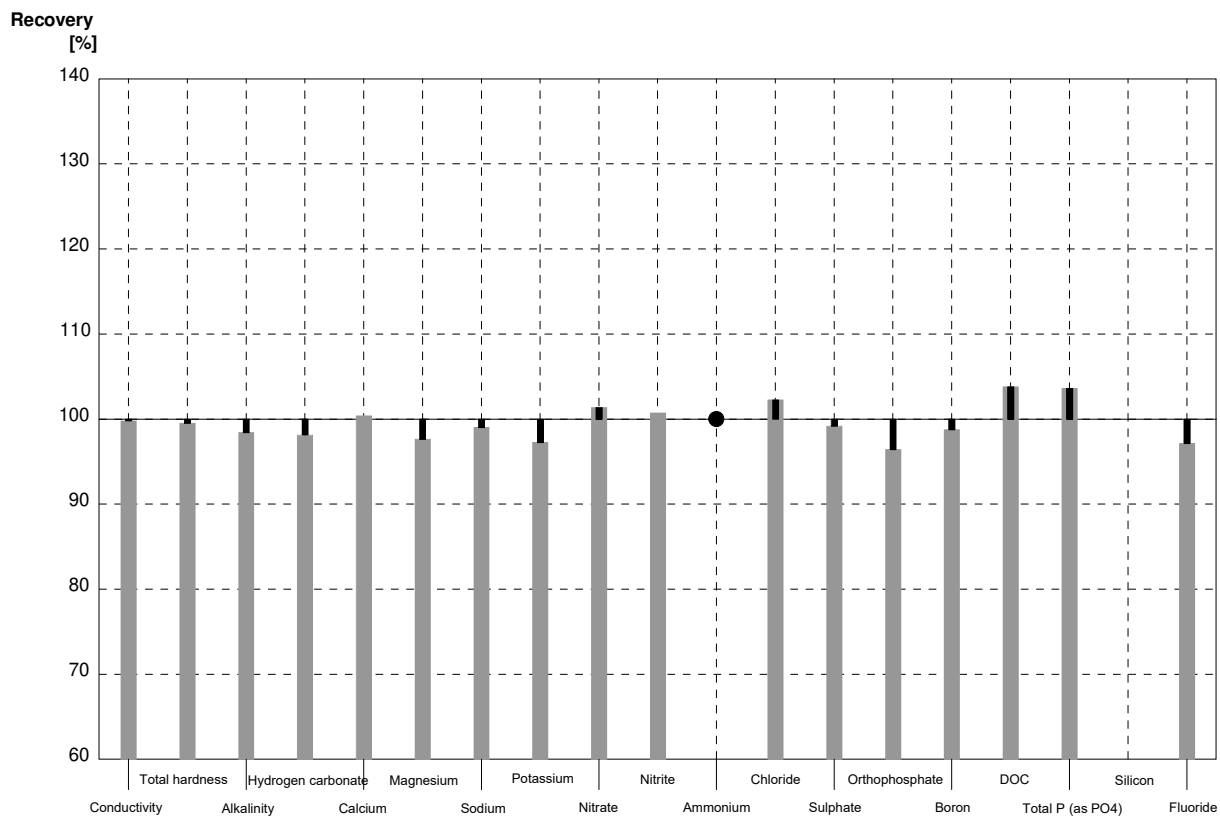
■ Deviation ■ Recovery



Sample N181B
Laboratory I

Parameter	Assigned value	$\pm U$ (k=2)	Result	\pm	Unit	Recovery
Conductivity (25°C)	498	2	497		$\mu\text{S}/\text{cm}$	100%
Total hardness	2,14	0,02	2,13	0,0106	mmol/l	100%
Alkalinity	1,92	0,03	1,89	0,0867	mmol/l	98%
Hydrogen carbonate	114,1	1,5	112	2,24	mg/l	98%
Calcium	51,0	0,7	51,2	0,181	mg/l	100%
Magnesium	21,1	0,3	20,6	0,232	mg/l	98%
Sodium	10,4	0,3	10,3	0,167	mg/l	99%
Potassium	4,01	0,03	3,90	0,0207	mg/l	97%
Nitrate (as NO3)	43,6	1,0	44,2	0,998	mg/l	101%
Nitrite (as NO2)	0,02879	0,00011	0,0290	0,000940	mg/l	101%
Ammonium (as NH4)	<0,01		<0,0100		mg/l	•
Chloride	39,5	0,9	40,4	0,816	mg/l	102%
Sulphate (as SO4)	49,5	0,6	49,1	0,966	mg/l	99%
Orthophosphate (as PO4)	0,0394	0,0017	0,0380	0,000967	mg/l	96%
Boron	0,0328	0,0006	0,0324	0,000711	mg/l	99%
DOC (as C)	5,23	0,03	5,43	0,124	mg/l	104%
Total P (as PO4)	0,0578	0,0014	0,0599	0,000531	mg/l	104%
Silicon	2,537	0,014			mg/l	
Fluoride	1,194	0,005	1,16	0,0800	mg/l	97%

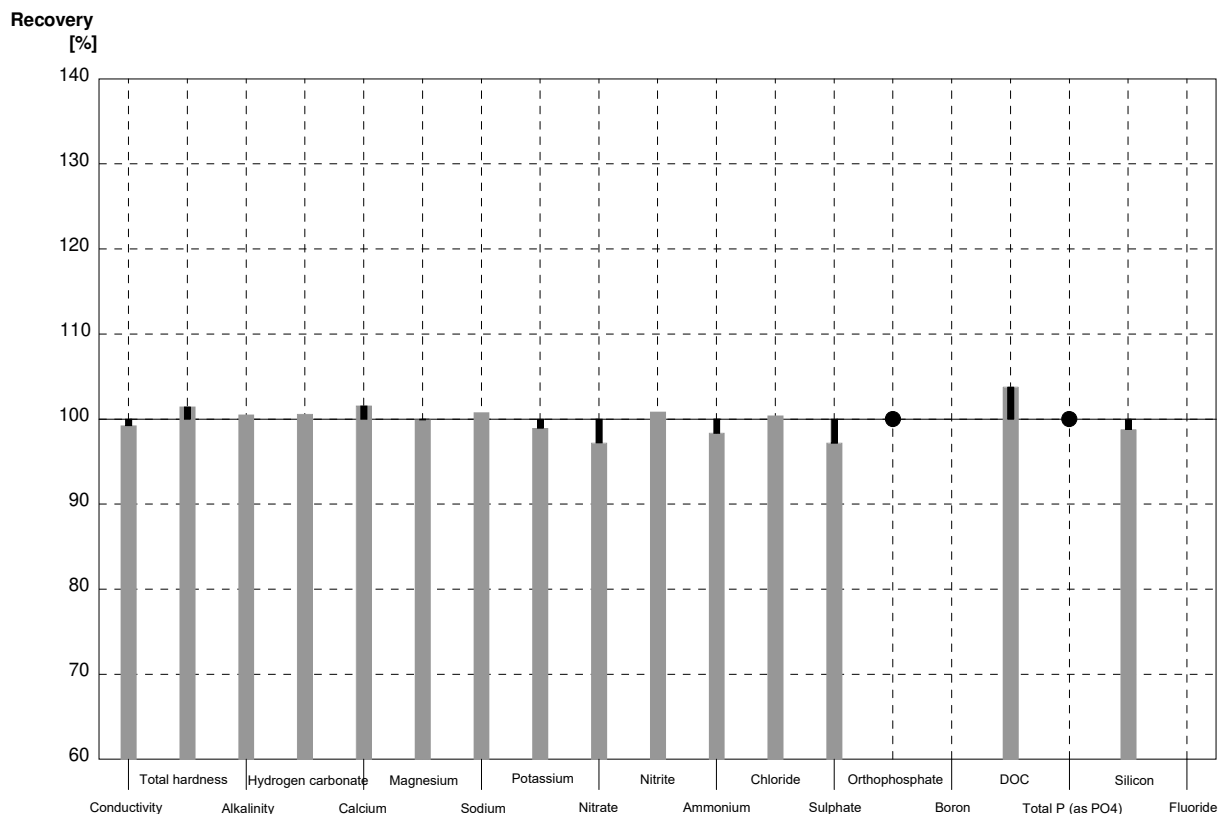
■ Deviation ■ Recovery



Sample N181A
Laboratory J

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	386	16	µS/cm	99%
Total hardness	1,321	0,017	1,34	0,1	mmol/l	101%
Alkalinity	1,144	0,005	1,15	0,1	mmol/l	101%
Hydrogen carbonate	66,7	0,3	67,1	3	mg/l	101%
Calcium	32,3	0,6	32,8	3	mg/l	102%
Magnesium	12,51	0,13	12,5	1,6	mg/l	100%
Sodium	20,14	0,10	20,3	4	mg/l	101%
Potassium	1,87	0,03	1,85	0,3	mg/l	99%
Nitrate (as NO3)	17,9	0,4	17,4	1,4	mg/l	97%
Nitrite (as NO2)	0,0605	0,0002	0,061	0,005	mg/l	101%
Ammonium (as NH4)	0,061	0,003	0,060	0,008	mg/l	98%
Chloride	48,8	1,1	49,0	4	mg/l	100%
Sulphate (as SO4)	35,6	0,4	34,6	3	mg/l	97%
Orthophosphate (as PO4)	<0,009		<0,01		mg/l	•
Boron	0,0753	0,0013			mg/l	
DOC (as C)	2,370	0,015	2,46	0,4	mg/l	104%
Total P (as PO4)	<0,009		<0,013		mg/l	•
Silicon	5,79	0,03	5,72	0,6	mg/l	99%
Fluoride	0,804	0,003			mg/l	

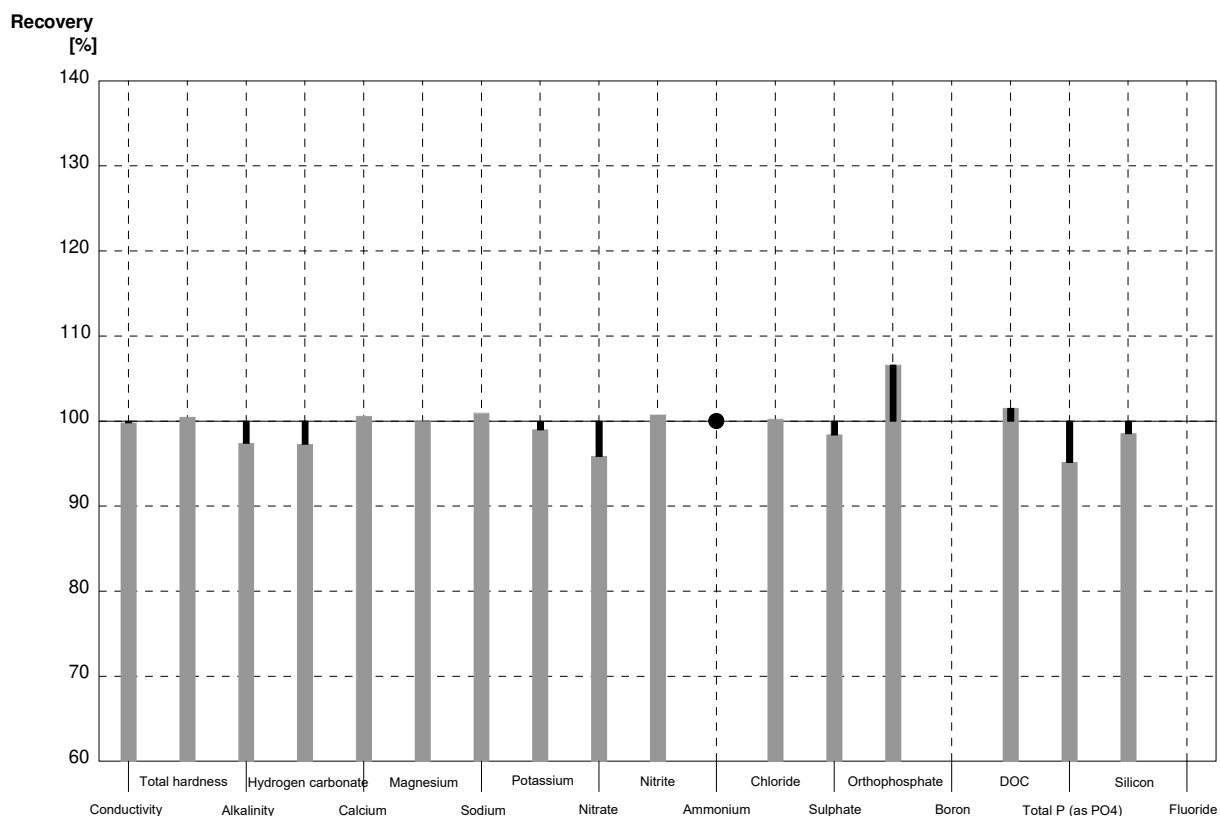
■ Deviation ■ Recovery



Sample N181B
Laboratory J

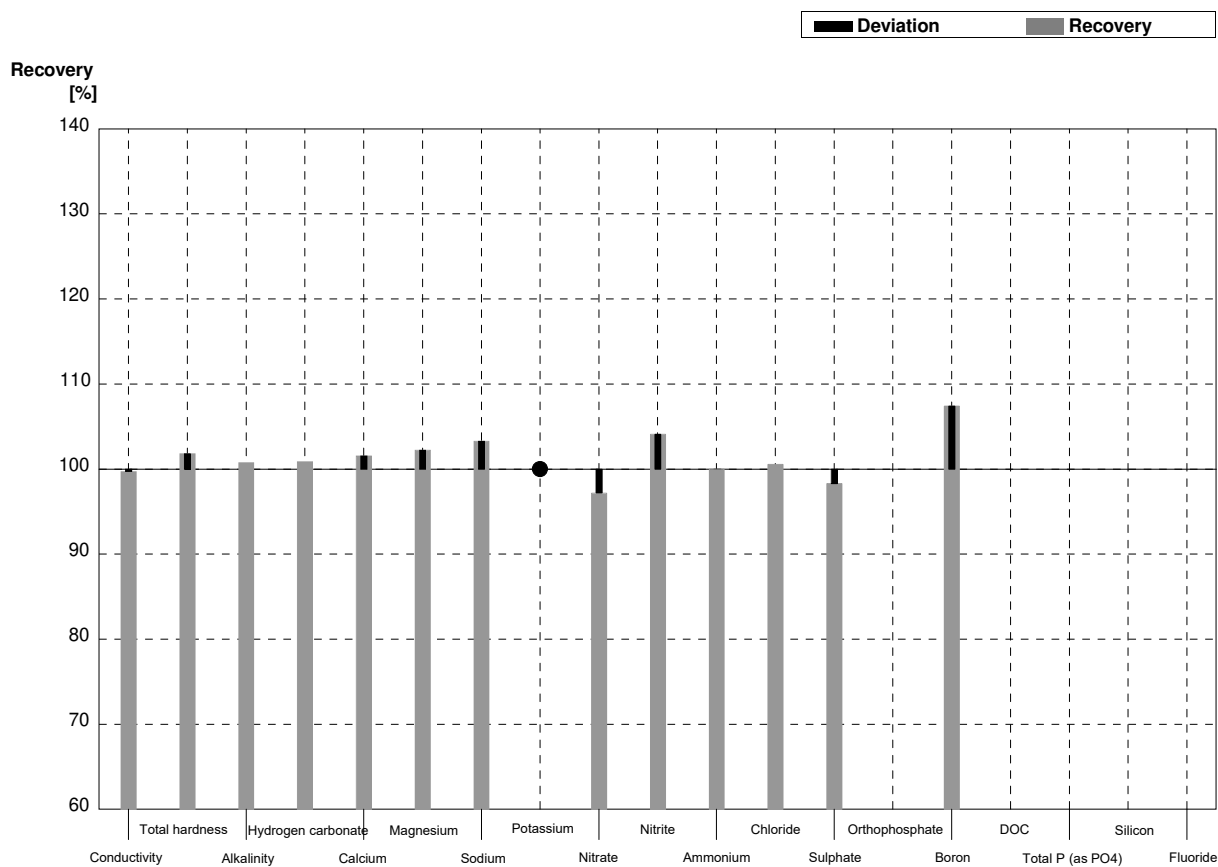
Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	497	20	µS/cm	100%
Total hardness	2,14	0,02	2,15	0,1	mmol/l	100%
Alkalinity	1,92	0,03	1,87	0,1	mmol/l	97%
Hydrogen carbonate	114,1	1,5	111	5	mg/l	97%
Calcium	51,0	0,7	51,3	5	mg/l	101%
Magnesium	21,1	0,3	21,1	3	mg/l	100%
Sodium	10,4	0,3	10,5	1,6	mg/l	101%
Potassium	4,01	0,03	3,97	0,6	mg/l	99%
Nitrate (as NO3)	43,6	1,0	41,8	4	mg/l	96%
Nitrite (as NO2)	0,02879	0,00011	0,0290	0,003	mg/l	101%
Ammonium (as NH4)	<0,01		<0,013		mg/l	•
Chloride	39,5	0,9	39,6	3	mg/l	100%
Sulphate (as SO4)	49,5	0,6	48,7	4	mg/l	98%
Orthophosphate (as PO4)	0,0394	0,0017	0,0420	0,008	mg/l	107%
Boron	0,0328	0,0006			mg/l	
DOC (as C)	5,23	0,03	5,31	0,8	mg/l	102%
Total P (as PO4)	0,0578	0,0014	0,055	0,007	mg/l	95%
Silicon	2,537	0,014	2,50	0,3	mg/l	99%
Fluoride	1,194	0,005			mg/l	

■ Deviation ■ Recovery



Sample N181A
Laboratory K

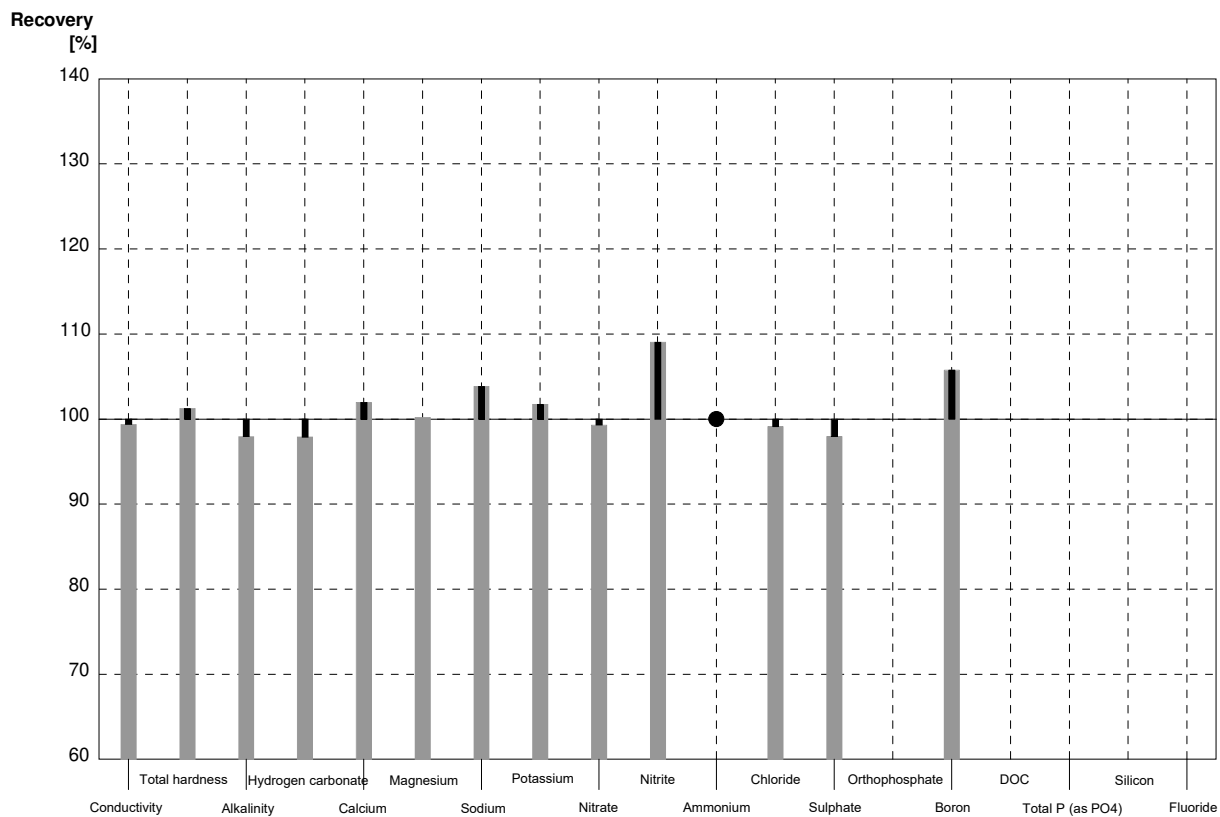
Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	388	8,0	µS/cm	100%
Total hardness	1,321	0,017	1,345		mmol/l	102%
Alkalinity	1,144	0,005	1,153	0,078	mmol/l	101%
Hydrogen carbonate	66,7	0,3	67,3		mg/l	101%
Calcium	32,3	0,6	32,8	2,10	mg/l	102%
Magnesium	12,51	0,13	12,79	1,05	mg/l	102%
Sodium	20,14	0,10	20,8	1,54	mg/l	103%
Potassium	1,87	0,03	<2		mg/l	•
Nitrate (as NO3)	17,9	0,4	17,4	1,20	mg/l	97%
Nitrite (as NO2)	0,0605	0,0002	0,0630	0,0123	mg/l	104%
Ammonium (as NH4)	0,061	0,003	0,0610	0,0234	mg/l	100%
Chloride	48,8	1,1	49,08	6,28	mg/l	101%
Sulphate (as SO4)	35,6	0,4	35,0	1,64	mg/l	98%
Orthophosphate (as PO4)	<0,009				mg/l	
Boron	0,0753	0,0013	0,0809	0,0089	mg/l	107%
DOC (as C)	2,370	0,015			mg/l	
Total P (as PO4)	<0,009				mg/l	
Silicon	5,79	0,03			mg/l	
Fluoride	0,804	0,003			mg/l	



Sample N181B
Laboratory K

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	495	10,0	µS/cm	99%
Total hardness	2,14	0,02	2,167		mmol/l	101%
Alkalinity	1,92	0,03	1,881	0,128	mmol/l	98%
Hydrogen carbonate	114,1	1,5	111,7		mg/l	98%
Calcium	51,0	0,7	52,0	3,33	mg/l	102%
Magnesium	21,1	0,3	21,14	1,73	mg/l	100%
Sodium	10,4	0,3	10,8	0,80	mg/l	104%
Potassium	4,01	0,03	4,08	0,36	mg/l	102%
Nitrate (as NO3)	43,6	1,0	43,3	2,99	mg/l	99%
Nitrite (as NO2)	0,02879	0,00011	0,0314	0,006	mg/l	109%
Ammonium (as NH4)	<0,01		<0,05		mg/l	•
Chloride	39,5	0,9	39,16	5,01	mg/l	99%
Sulphate (as SO4)	49,5	0,6	48,5	2,28	mg/l	98%
Orthophosphate (as PO4)	0,0394	0,0017			mg/l	
Boron	0,0328	0,0006	0,0347	0,0038	mg/l	106%
DOC (as C)	5,23	0,03			mg/l	
Total P (as PO4)	0,0578	0,0014			mg/l	
Silicon	2,537	0,014			mg/l	
Fluoride	1,194	0,005			mg/l	

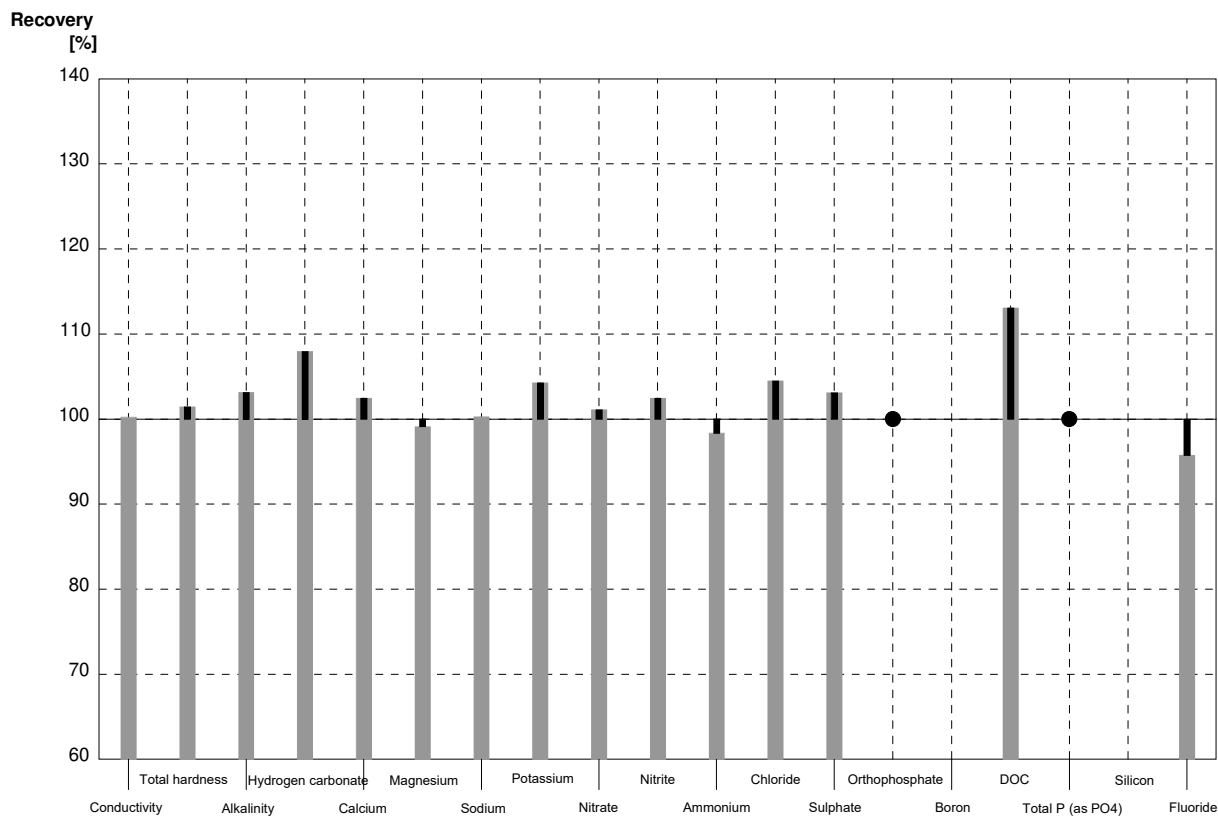
■ Deviation ■ Recovery



Sample N181A
Laboratory L

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	390	9	µS/cm	100%
Total hardness	1,321	0,017	1,34	0,11	mmol/l	101%
Alkalinity	1,144	0,005	1,180	0,052	mmol/l	103%
Hydrogen carbonate	66,7	0,3	72,0	3,2	mg/l	108%
Calcium	32,3	0,6	33,1	1,5	mg/l	102%
Magnesium	12,51	0,13	12,4	0,5	mg/l	99%
Sodium	20,14	0,10	20,2	0,9	mg/l	100%
Potassium	1,87	0,03	1,95	0,08	mg/l	104%
Nitrate (as NO3)	17,9	0,4	18,1	0,7	mg/l	101%
Nitrite (as NO2)	0,0605	0,0002	0,062	0,005	mg/l	102%
Ammonium (as NH4)	0,061	0,003	0,060	0,008	mg/l	98%
Chloride	48,8	1,1	51	2	mg/l	105%
Sulphate (as SO4)	35,6	0,4	36,7	1,4	mg/l	103%
Orthophosphate (as PO4)	<0,009		<0,01		mg/l	•
Boron	0,0753	0,0013			mg/l	
DOC (as C)	2,370	0,015	2,68	0,34	mg/l	113%
Total P (as PO4)	<0,009		<0,01		mg/l	•
Silicon	5,79	0,03			mg/l	
Fluoride	0,804	0,003	0,77	0,04	mg/l	96%

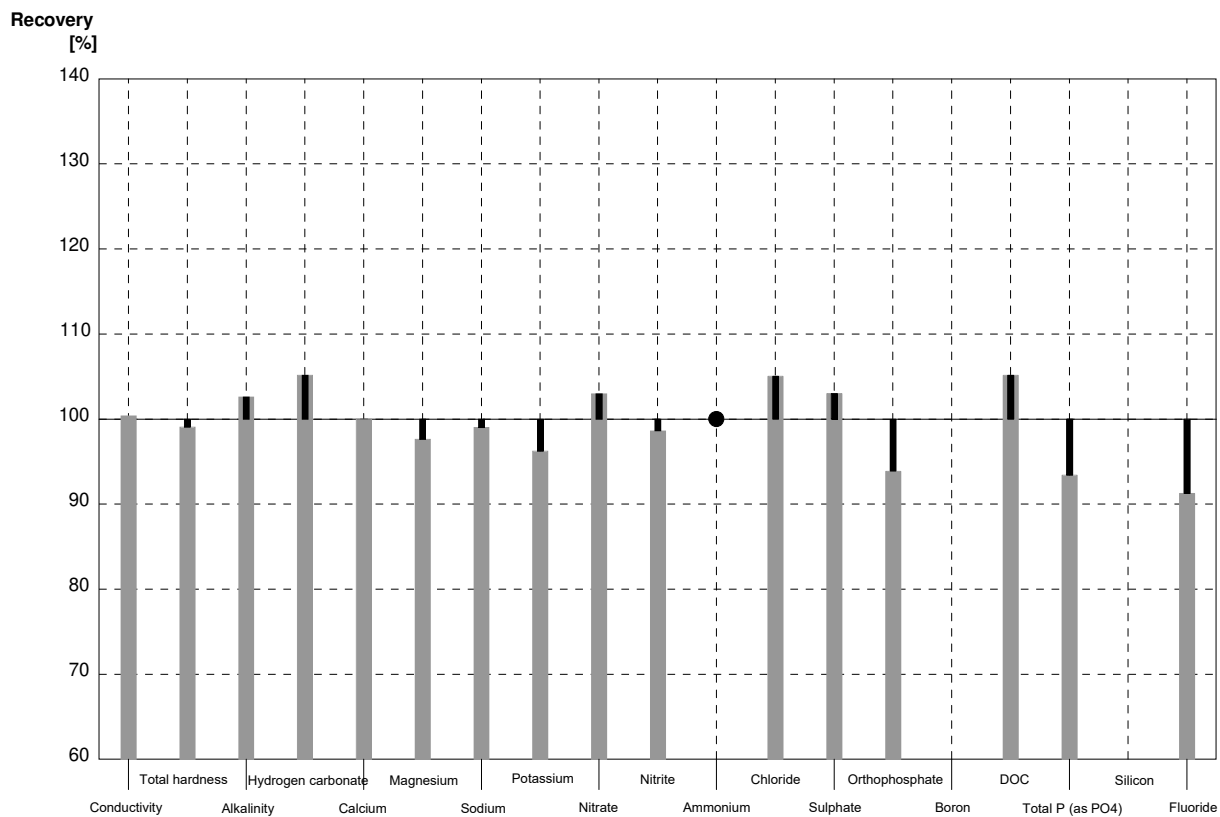
■ Deviation ■ Recovery



Sample N181B
Laboratory L

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	500	11	µS/cm	100%
Total hardness	2,14	0,02	2,12	0,18	mmol/l	99%
Alkalinity	1,92	0,03	1,970	0,087	mmol/l	103%
Hydrogen carbonate	114,1	1,5	120	6	mg/l	105%
Calcium	51,0	0,7	51	3	mg/l	100%
Magnesium	21,1	0,3	20,6	0,8	mg/l	98%
Sodium	10,4	0,3	10,3	0,5	mg/l	99%
Potassium	4,01	0,03	3,86	0,15	mg/l	96%
Nitrate (as NO3)	43,6	1,0	44,9	1,7	mg/l	103%
Nitrite (as NO2)	0,02879	0,00011	0,0284	0,0021	mg/l	99%
Ammonium (as NH4)	<0,01		<0,02		mg/l	•
Chloride	39,5	0,9	41,5	1,6	mg/l	105%
Sulphate (as SO4)	49,5	0,6	51	2	mg/l	103%
Orthophosphate (as PO4)	0,0394	0,0017	0,0370	0,0032	mg/l	94%
Boron	0,0328	0,0006			mg/l	
DOC (as C)	5,23	0,03	5,5	0,7	mg/l	105%
Total P (as PO4)	0,0578	0,0014	0,054	0,012	mg/l	93%
Silicon	2,537	0,014			mg/l	
Fluoride	1,194	0,005	1,09	0,06	mg/l	91%

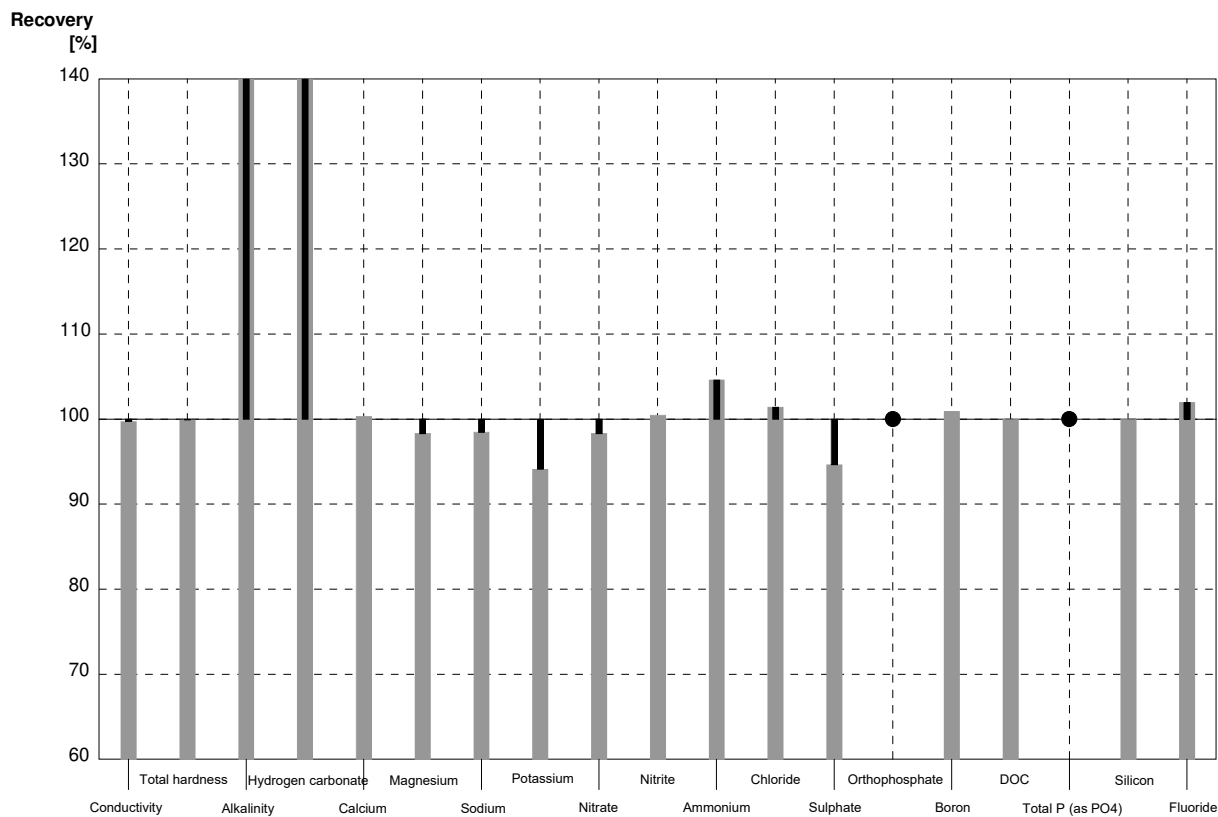
■ Deviation ■ Recovery



Sample N181A
Laboratory M

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	388		µS/cm	100%
Total hardness	1,321	0,017	1,32		mmol/l	100%
Alkalinity	1,144	0,005	1,89		mmol/l	165%
Hydrogen carbonate	66,7	0,3	112,4		mg/l	169%
Calcium	32,3	0,6	32,4		mg/l	100%
Magnesium	12,51	0,13	12,3		mg/l	98%
Sodium	20,14	0,10	19,83		mg/l	98%
Potassium	1,87	0,03	1,76		mg/l	94%
Nitrate (as NO3)	17,9	0,4	17,6		mg/l	98%
Nitrite (as NO2)	0,0605	0,0002	0,0608		mg/l	100%
Ammonium (as NH4)	0,061	0,003	0,0638		mg/l	105%
Chloride	48,8	1,1	49,5		mg/l	101%
Sulphate (as SO4)	35,6	0,4	33,7		mg/l	95%
Orthophosphate (as PO4)	<0,009		<0,006		mg/l	•
Boron	0,0753	0,0013	0,0760		mg/l	101%
DOC (as C)	2,370	0,015	2,37		mg/l	100%
Total P (as PO4)	<0,009		<0,006		mg/l	•
Silicon	5,79	0,03	5,79		mg/l	100%
Fluoride	0,804	0,003	0,820		mg/l	102%

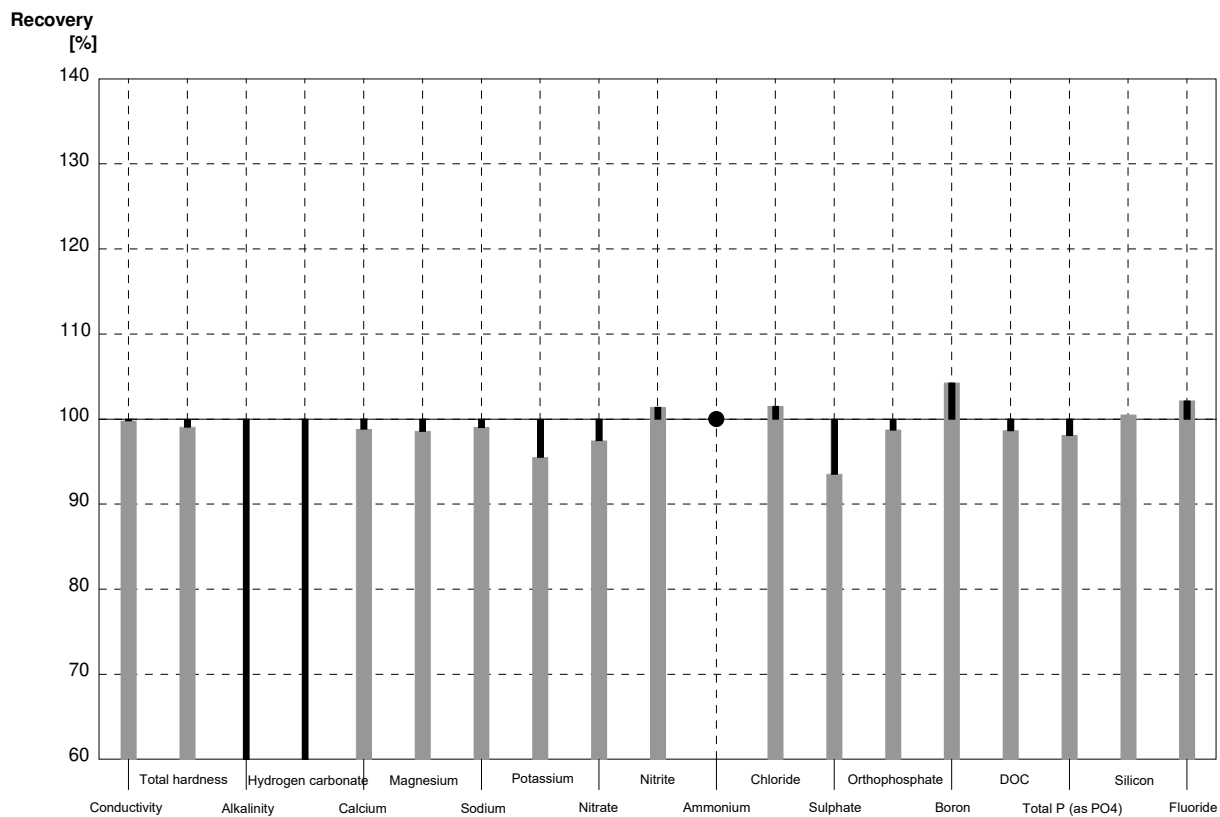
■ Deviation ■ Recovery



Sample N181B
Laboratory M

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Conductivity (25°C)	498	2	497		$\mu\text{S/cm}$	100%
Total hardness	2,14	0,02	2,12		mmol/l	99%
Alkalinity	1,92	0,03	1,14		mmol/l	59%
Hydrogen carbonate	114,1	1,5	66,3		mg/l	58%
Calcium	51,0	0,7	50,4		mg/l	99%
Magnesium	21,1	0,3	20,8		mg/l	99%
Sodium	10,4	0,3	10,3		mg/l	99%
Potassium	4,01	0,03	3,83		mg/l	96%
Nitrate (as NO3)	43,6	1,0	42,5		mg/l	97%
Nitrite (as NO2)	0,02879	0,00011	0,0292		mg/l	101%
Ammonium (as NH4)	<0,01		<0,008		mg/l	•
Chloride	39,5	0,9	40,1		mg/l	102%
Sulphate (as SO4)	49,5	0,6	46,3		mg/l	94%
Orthophosphate (as PO4)	0,0394	0,0017	0,0389		mg/l	99%
Boron	0,0328	0,0006	0,0342		mg/l	104%
DOC (as C)	5,23	0,03	5,16		mg/l	99%
Total P (as PO4)	0,0578	0,0014	0,0567		mg/l	98%
Silicon	2,537	0,014	2,55		mg/l	101%
Fluoride	1,194	0,005	1,22		mg/l	102%

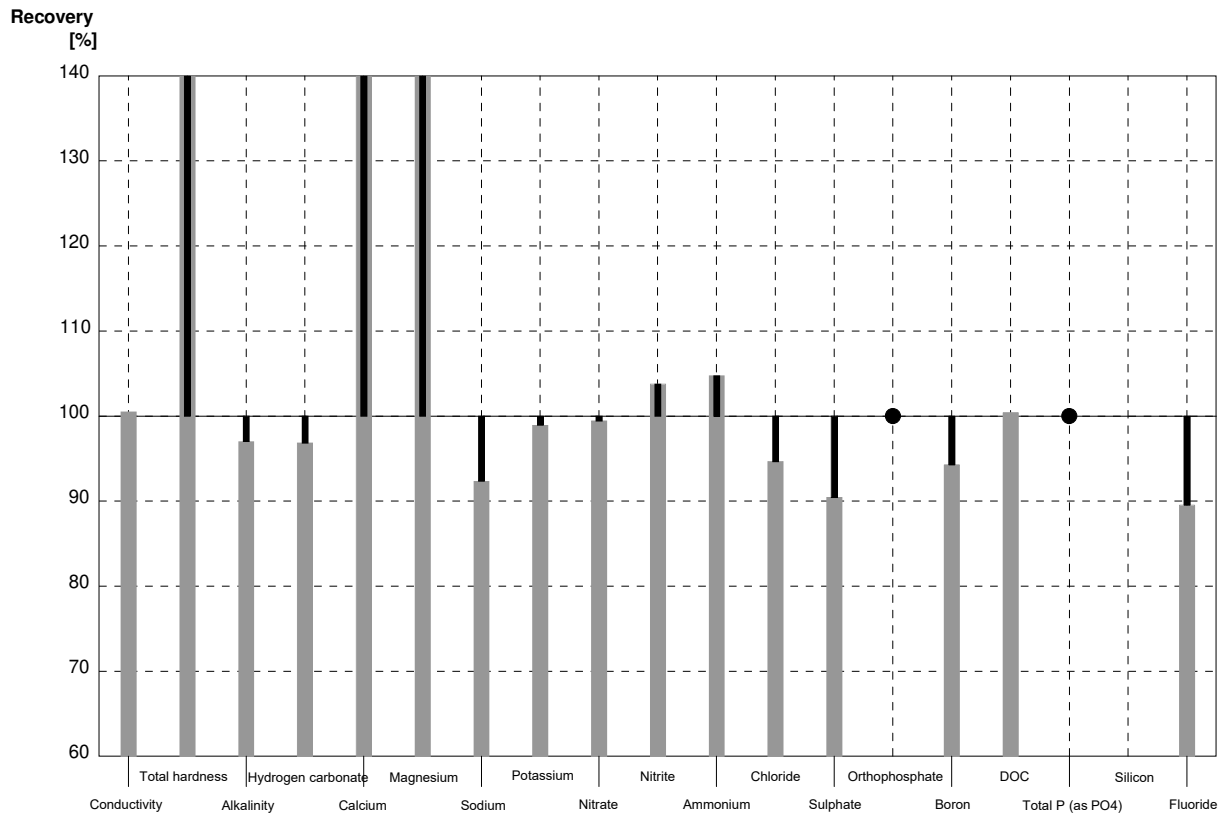
■ Deviation ■ Recovery



Sample N181A
Laboratory N

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	391	23,5	µS/cm	101%
Total hardness	1,321	0,017	3,38	0,254	mmol/l	256%
Alkalinity	1,144	0,005	1,11	0,105	mmol/l	97%
Hydrogen carbonate	66,7	0,3	64,6	6,13	mg/l	97%
Calcium	32,3	0,6	96,0	5,76	mg/l	297%
Magnesium	12,51	0,13	24,0	2,88	mg/l	192%
Sodium	20,14	0,10	18,6	1,21	mg/l	92%
Potassium	1,87	0,03	1,85	0,185	mg/l	99%
Nitrate (as NO3)	17,9	0,4	17,8	1,87	mg/l	99%
Nitrite (as NO2)	0,0605	0,0002	0,0628	0,00628	mg/l	104%
Ammonium (as NH4)	0,061	0,003	0,0639	0,00639	mg/l	105%
Chloride	48,8	1,1	46,2	4,16	mg/l	95%
Sulphate (as SO4)	35,6	0,4	32,2	2,90	mg/l	90%
Orthophosphate (as PO4)	<0,009		<0,015		mg/l	•
Boron	0,0753	0,0013	0,071	0,0100	mg/l	94%
DOC (as C)	2,370	0,015	2,38	0,143	mg/l	100%
Total P (as PO4)	<0,009		<0,015		mg/l	•
Silicon	5,79	0,03			mg/l	
Fluoride	0,804	0,003	0,72	0,065	mg/l	90%

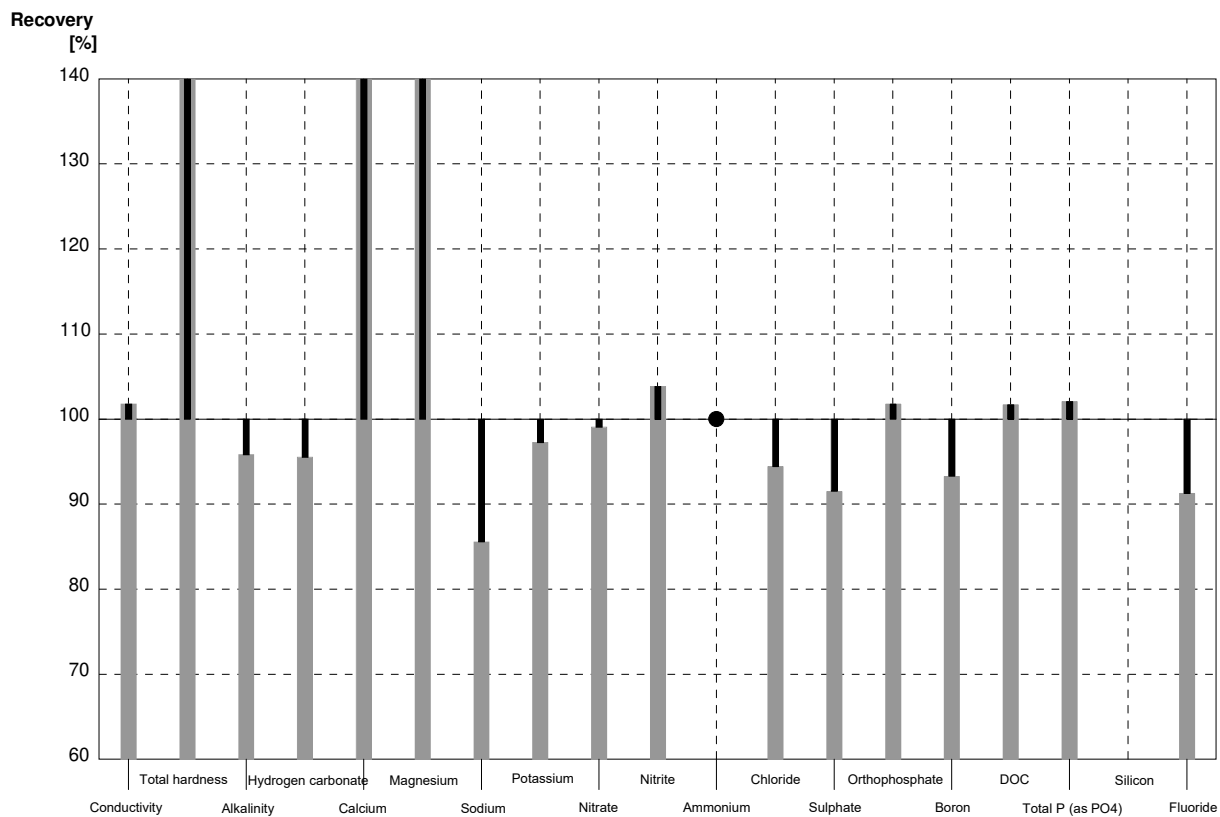
■ Deviation ■ Recovery



Sample N181B
Laboratory N

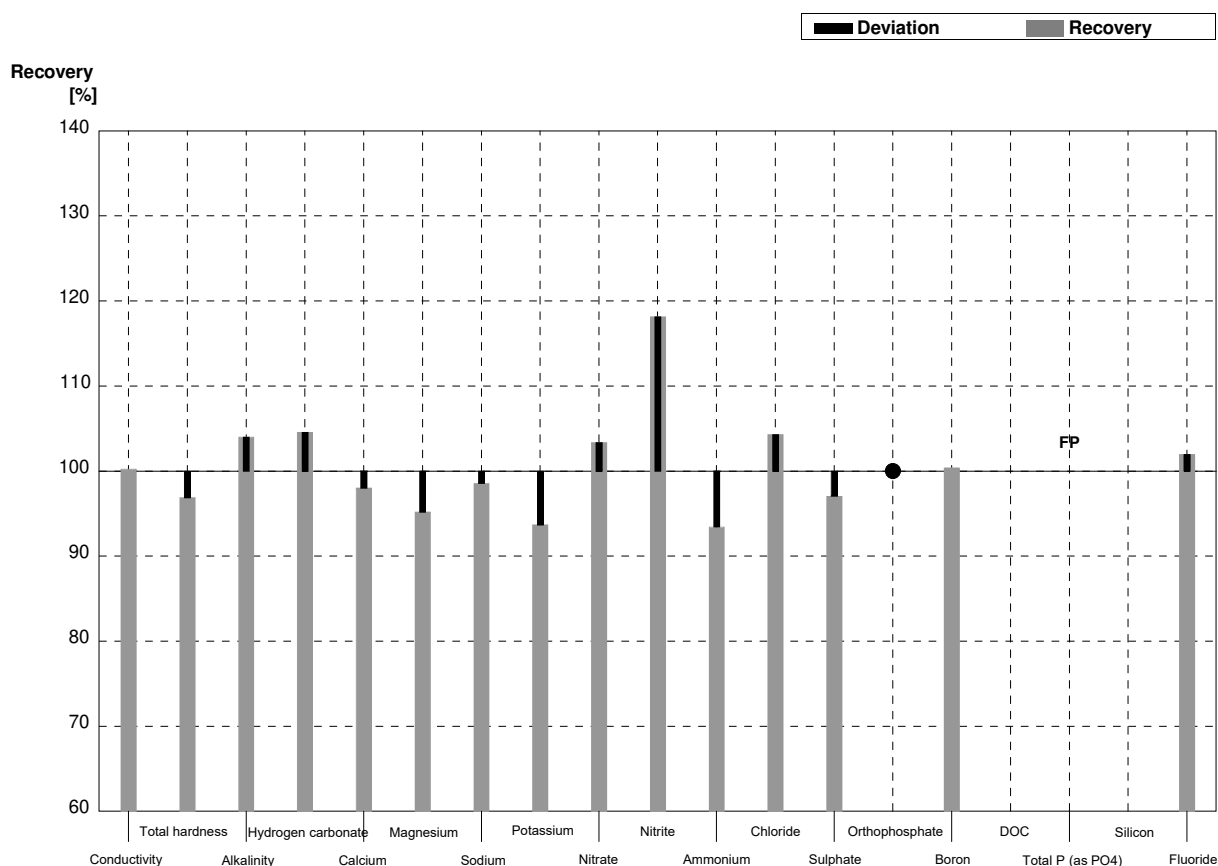
Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	507	30,4	µS/cm	102%
Total hardness	2,14	0,02	4,46	0,334	mmol/l	208%
Alkalinity	1,92	0,03	1,84	0,175	mmol/l	96%
Hydrogen carbonate	114,1	1,5	109,0	10,36	mg/l	96%
Calcium	51,0	0,7	120,6	7,23	mg/l	236%
Magnesium	21,1	0,3	35,2	4,23	mg/l	167%
Sodium	10,4	0,3	8,9	0,58	mg/l	86%
Potassium	4,01	0,03	3,90	0,390	mg/l	97%
Nitrate (as NO3)	43,6	1,0	43,2	4,54	mg/l	99%
Nitrite (as NO2)	0,02879	0,00011	0,0299	0,00299	mg/l	104%
Ammonium (as NH4)	<0,01		<0,006		mg/l	•
Chloride	39,5	0,9	37,3	3,35	mg/l	94%
Sulphate (as SO4)	49,5	0,6	45,3	4,08	mg/l	92%
Orthophosphate (as PO4)	0,0394	0,0017	0,0401	0,00401	mg/l	102%
Boron	0,0328	0,0006	0,0306	0,00428	mg/l	93%
DOC (as C)	5,23	0,03	5,32	0,319	mg/l	102%
Total P (as PO4)	0,0578	0,0014	0,059	0,006	mg/l	102%
Silicon	2,537	0,014			mg/l	
Fluoride	1,194	0,005	1,09	0,099	mg/l	91%

■ Deviation ■ Recovery



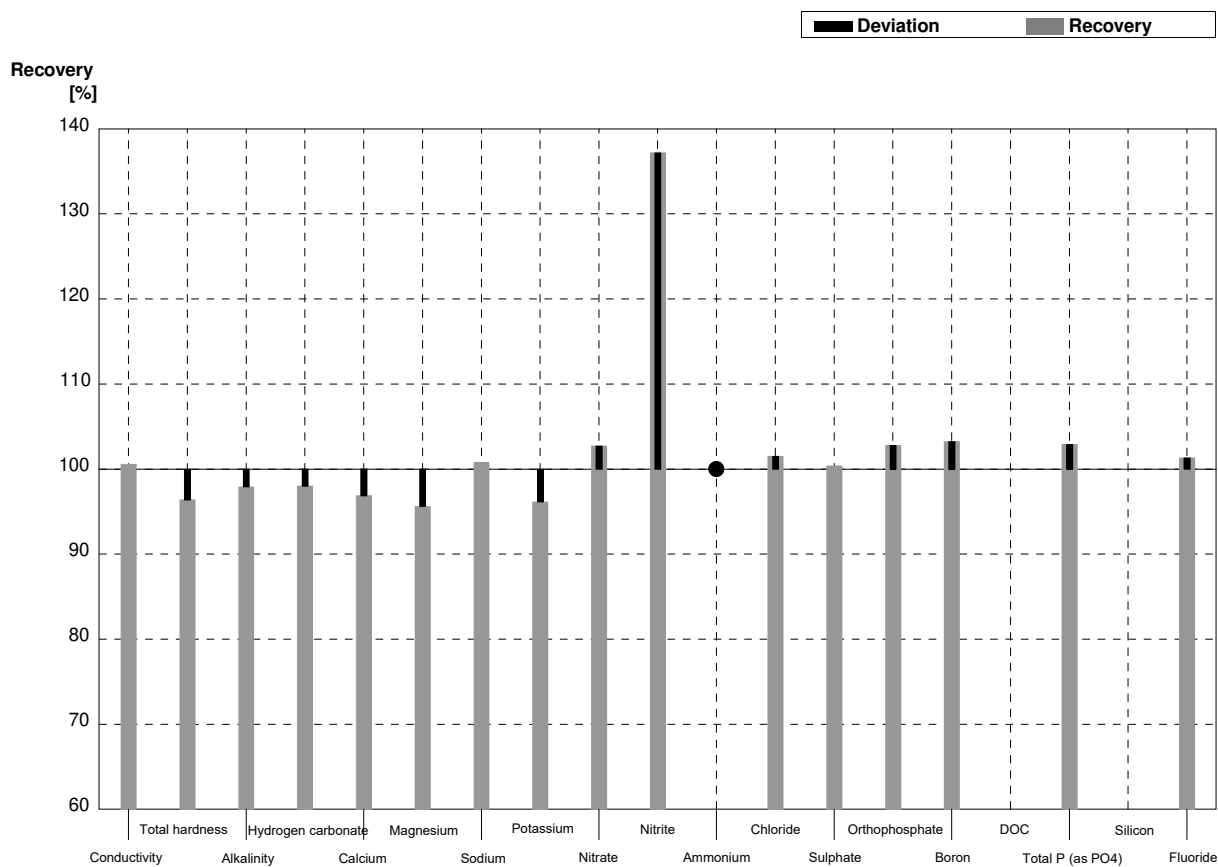
Sample N181A
Laboratory O

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	390	3	µS/cm	100%
Total hardness	1,321	0,017	1,280		mmol/l	97%
Alkalinity	1,144	0,005	1,19	0,022	mmol/l	104%
Hydrogen carbonate	66,7	0,3	69,74		mg/l	105%
Calcium	32,3	0,6	31,66		mg/l	98%
Magnesium	12,51	0,13	11,91		mg/l	95%
Sodium	20,14	0,10	19,85		mg/l	99%
Potassium	1,87	0,03	1,752		mg/l	94%
Nitrate (as NO3)	17,9	0,4	18,5	1,08	mg/l	103%
Nitrite (as NO2)	0,0605	0,0002	0,0715	0,004	mg/l	118%
Ammonium (as NH4)	0,061	0,003	0,057	0,008	mg/l	93%
Chloride	48,8	1,1	50,9	2,16	mg/l	104%
Sulphate (as SO4)	35,6	0,4	34,55	2,2	mg/l	97%
Orthophosphate (as PO4)	<0,009		<0,02		mg/l	•
Boron	0,0753	0,0013	0,075607		mg/l	100%
DOC (as C)	2,370	0,015			mg/l	
Total P (as PO4)	<0,009		0,0135	0,002	mg/l	FP
Silicon	5,79	0,03			mg/l	
Fluoride	0,804	0,003	0,82	0,08	mg/l	102%



Sample N181B
Laboratory O

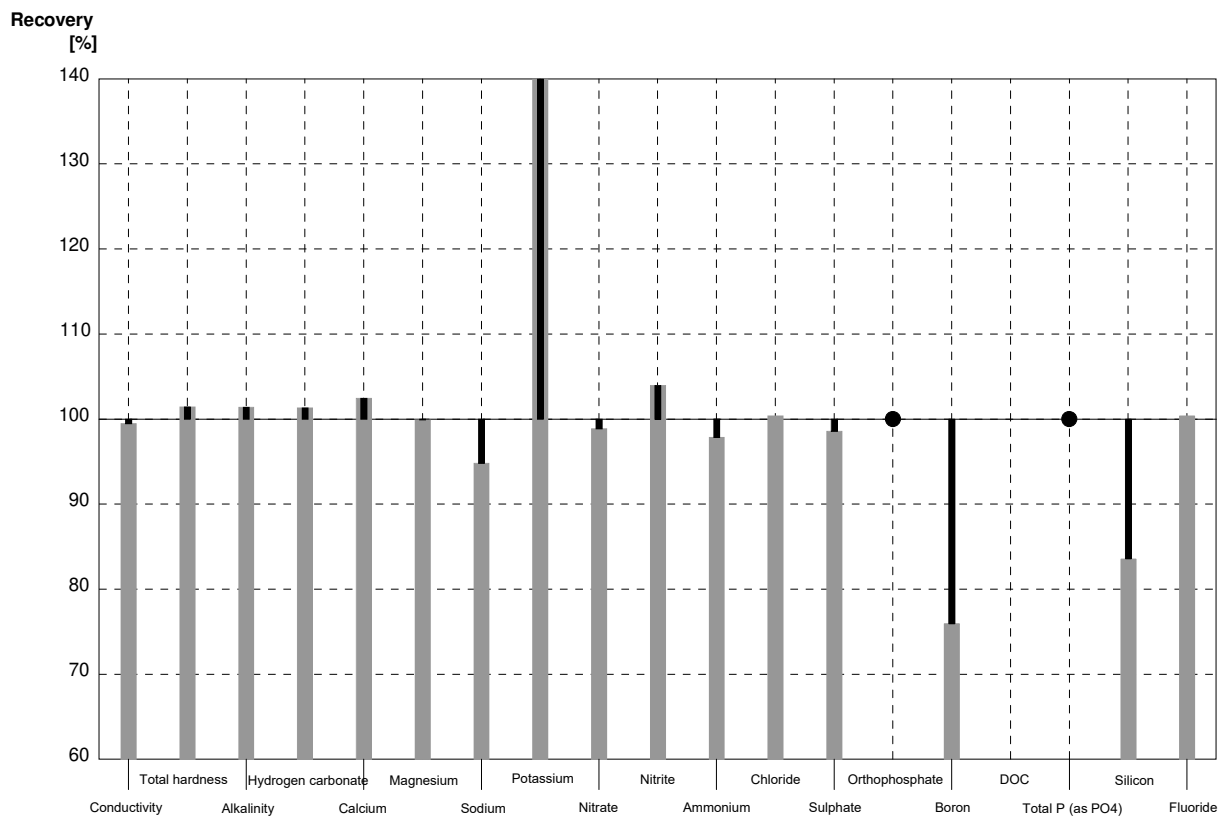
Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	501	4	µS/cm	101%
Total hardness	2,14	0,02	2,063		mmol/l	96%
Alkalinity	1,92	0,03	1,88	0,035	mmol/l	98%
Hydrogen carbonate	114,1	1,5	111,84		mg/l	98%
Calcium	51,0	0,7	49,411		mg/l	97%
Magnesium	21,1	0,3	20,177		mg/l	96%
Sodium	10,4	0,3	10,484		mg/l	101%
Potassium	4,01	0,03	3,856		mg/l	96%
Nitrate (as NO3)	43,6	1,0	44,8	2,62	mg/l	103%
Nitrite (as NO2)	0,02879	0,00011	0,0395	0,002	mg/l	137%
Ammonium (as NH4)	<0,01		<0,03		mg/l	•
Chloride	39,5	0,9	40,1	1,7	mg/l	102%
Sulphate (as SO4)	49,5	0,6	49,7	3,15	mg/l	100%
Orthophosphate (as PO4)	0,0394	0,0017	0,0405	0,007	mg/l	103%
Boron	0,0328	0,0006	0,033864		mg/l	103%
DOC (as C)	5,23	0,03			mg/l	
Total P (as PO4)	0,0578	0,0014	0,0595	0,01	mg/l	103%
Silicon	2,537	0,014			mg/l	
Fluoride	1,194	0,005	1,21	0,11	mg/l	101%



Sample N181A
Laboratory P

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	387	19,4	µS/cm	99%
Total hardness	1,321	0,017	1,34	0,13	mmol/l	101%
Alkalinity	1,144	0,005	1,16	0,07	mmol/l	101%
Hydrogen carbonate	66,7	0,3	67,6	4,06	mg/l	101%
Calcium	32,3	0,6	33,1	3,3	mg/l	102%
Magnesium	12,51	0,13	12,5	1,3	mg/l	100%
Sodium	20,14	0,10	19,1	1,9	mg/l	95%
Potassium	1,87	0,03	2,70	0,3	mg/l	144%
Nitrate (as NO3)	17,9	0,4	17,7	1,8	mg/l	99%
Nitrite (as NO2)	0,0605	0,0002	0,0629	0,0126	mg/l	104%
Ammonium (as NH4)	0,061	0,003	0,0597	0,0060	mg/l	98%
Chloride	48,8	1,1	49,0	4,9	mg/l	100%
Sulphate (as SO4)	35,6	0,4	35,1	3,5	mg/l	99%
Orthophosphate (as PO4)	<0,009		<0,03		mg/l	•
Boron	0,0753	0,0013	0,0572	0,0143	mg/l	76%
DOC (as C)	2,370	0,015			mg/l	
Total P (as PO4)	<0,009		<0,03		mg/l	•
Silicon	5,79	0,03	4,84	1,21	mg/l	84%
Fluoride	0,804	0,003	0,807	0,081	mg/l	100%

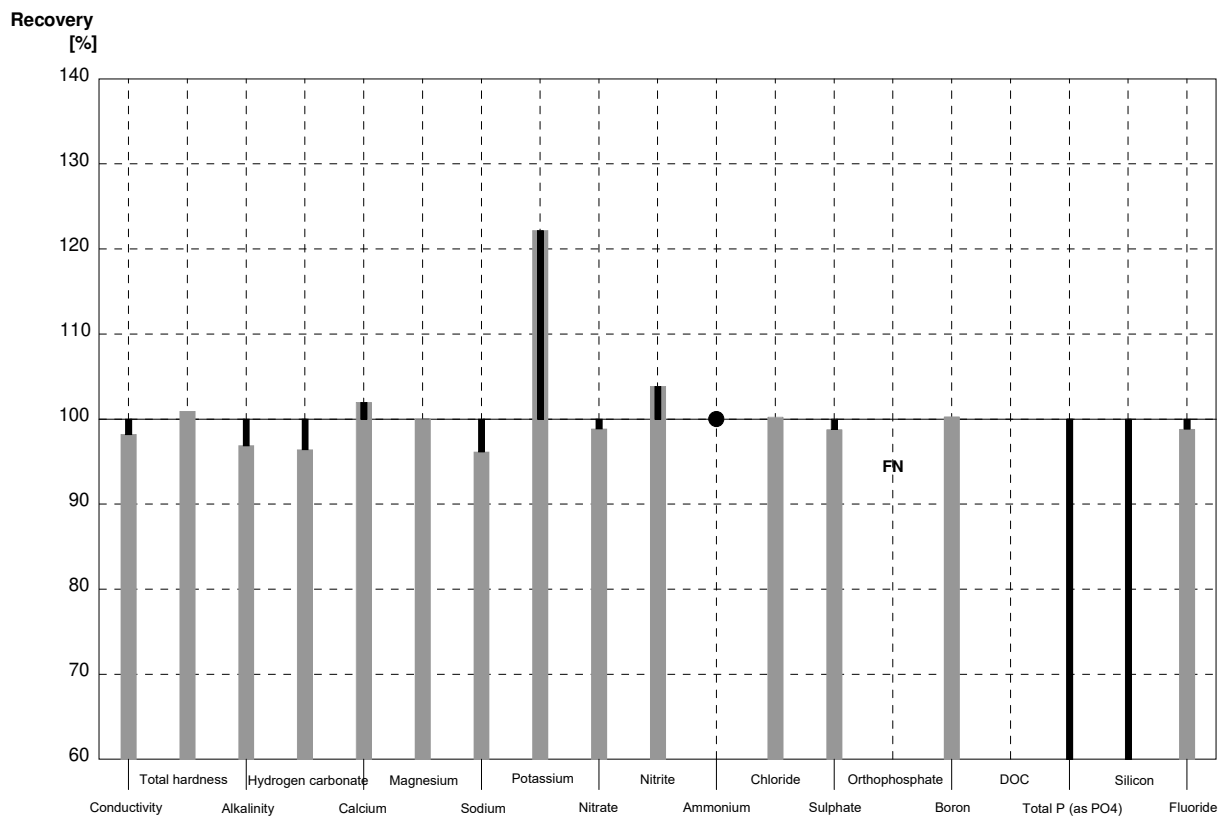
■ Deviation ■ Recovery



Sample N181B
Laboratory P

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	489	24,5	µS/cm	98%
Total hardness	2,14	0,02	2,16	0,22	mmol/l	101%
Alkalinity	1,92	0,03	1,86	0,11	mmol/l	97%
Hydrogen carbonate	114,1	1,5	110,0	6,6	mg/l	96%
Calcium	51,0	0,7	52,0	5,2	mg/l	102%
Magnesium	21,1	0,3	21,1	2,1	mg/l	100%
Sodium	10,4	0,3	10,0	1,0	mg/l	96%
Potassium	4,01	0,03	4,90	0,49	mg/l	122%
Nitrate (as NO3)	43,6	1,0	43,1	4,3	mg/l	99%
Nitrite (as NO2)	0,02879	0,00011	0,0299	0,0060	mg/l	104%
Ammonium (as NH4)	<0,01		<0,05	0,0042	mg/l	•
Chloride	39,5	0,9	39,6	4,0	mg/l	100%
Sulphate (as SO4)	49,5	0,6	48,9	4,9	mg/l	99%
Orthophosphate (as PO4)	0,0394	0,0017	<0,03		mg/l	FN
Boron	0,0328	0,0006	0,0329	0,0082	mg/l	100%
DOC (as C)	5,23	0,03			mg/l	
Total P (as PO4)	0,0578	0,0014	0,0180	0,002	mg/l	31%
Silicon	2,537	0,014	1,31	0,33	mg/l	52%
Fluoride	1,194	0,005	1,18	0,118	mg/l	99%

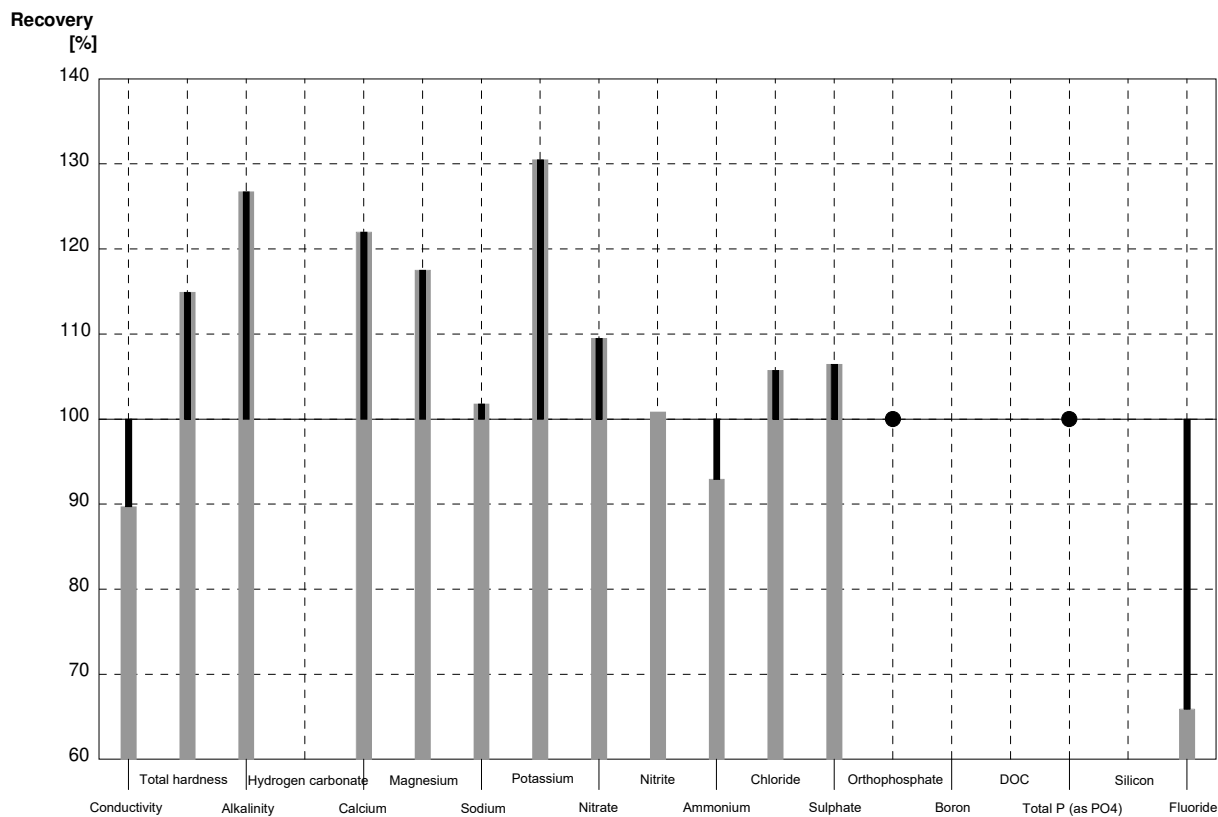
■ Deviation ■ Recovery



Sample N181A
Laboratory Q

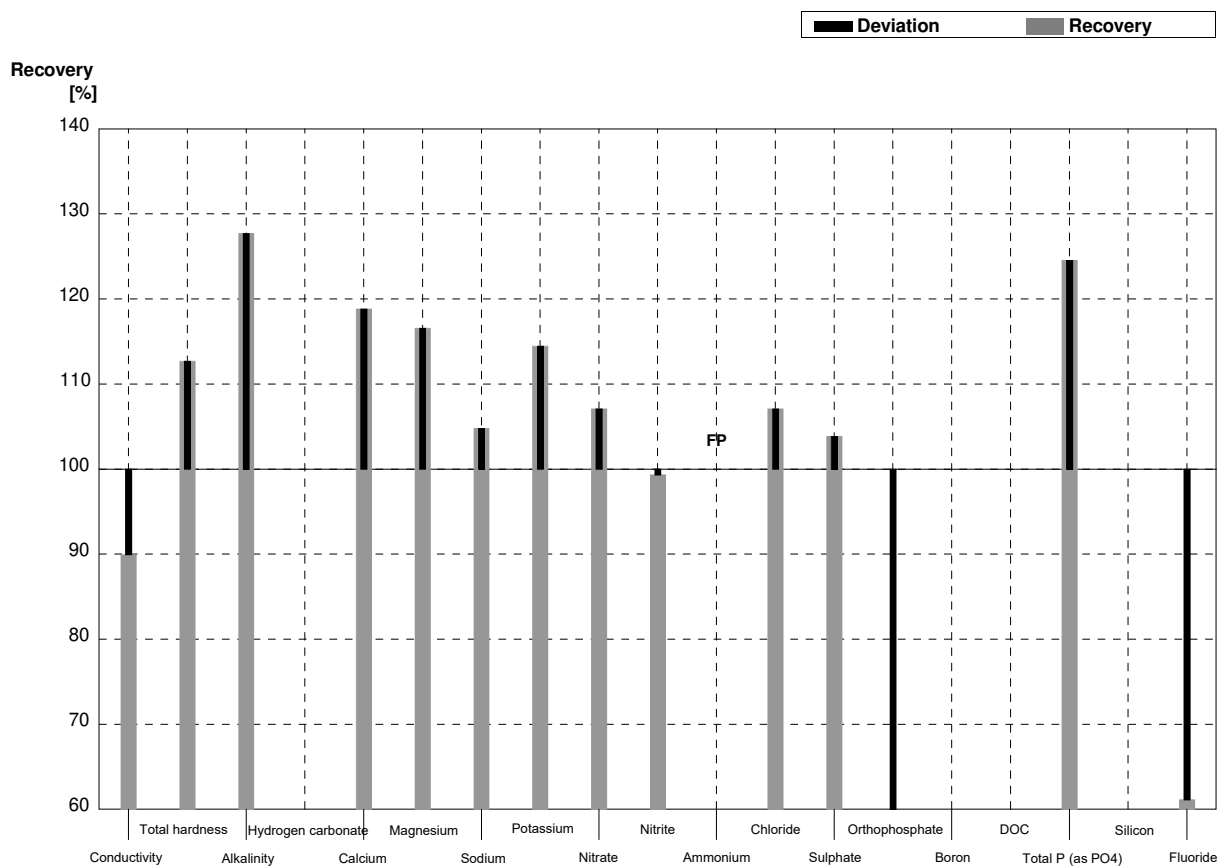
Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	349		µS/cm	90%
Total hardness	1,321	0,017	1,518		mmol/l	115%
Alkalinity	1,144	0,005	1,450		mmol/l	127%
Hydrogen carbonate	66,7	0,3			mg/l	
Calcium	32,3	0,6	39,4		mg/l	122%
Magnesium	12,51	0,13	14,7		mg/l	118%
Sodium	20,14	0,10	20,5		mg/l	102%
Potassium	1,87	0,03	2,44		mg/l	130%
Nitrate (as NO3)	17,9	0,4	19,6		mg/l	109%
Nitrite (as NO2)	0,0605	0,0002	0,061		mg/l	101%
Ammonium (as NH4)	0,061	0,003	0,0567		mg/l	93%
Chloride	48,8	1,1	51,6		mg/l	106%
Sulphate (as SO4)	35,6	0,4	37,9		mg/l	106%
Orthophosphate (as PO4)	<0,009		<0,009		mg/l	•
Boron	0,0753	0,0013			mg/l	
DOC (as C)	2,370	0,015			mg/l	
Total P (as PO4)	<0,009		0,0087		mg/l	•
Silicon	5,79	0,03			mg/l	
Fluoride	0,804	0,003	0,53		mg/l	66%

■ Deviation ■ Recovery



Sample N181B
Laboratory Q

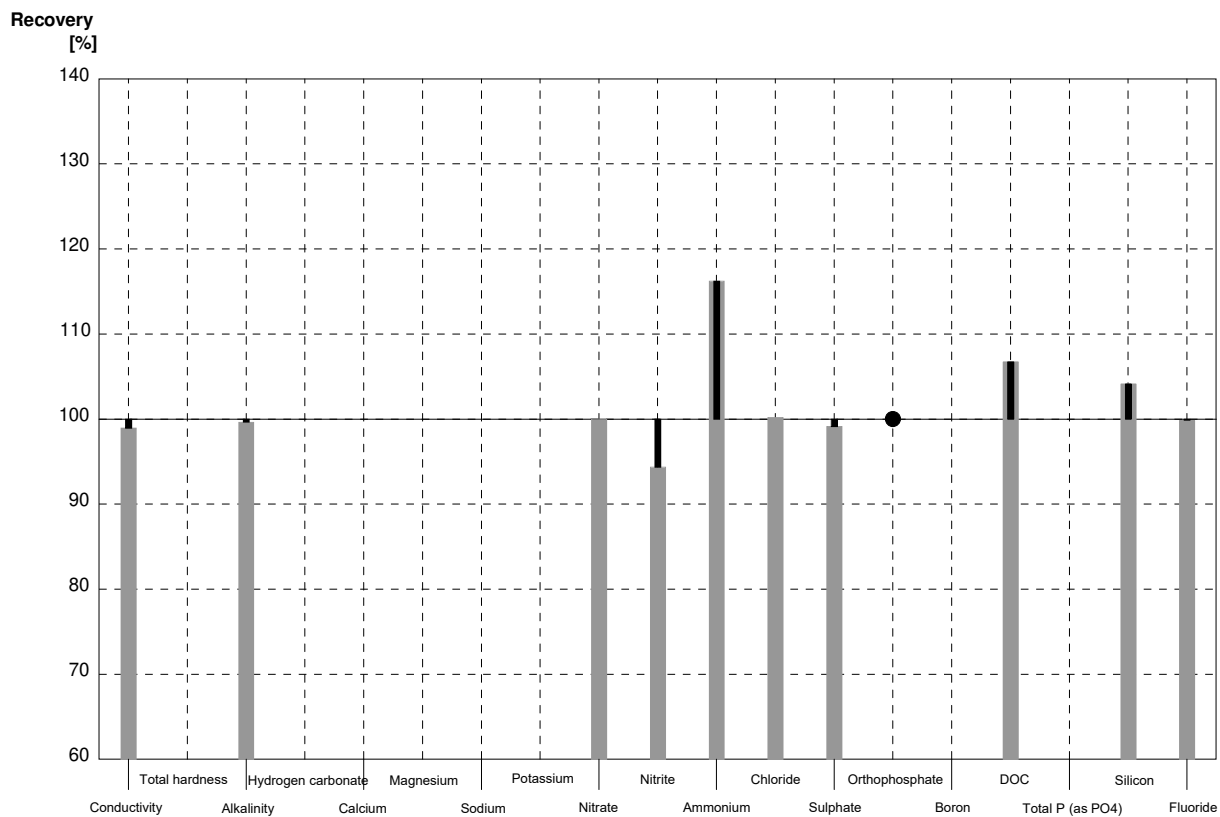
Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	448		µS/cm	90%
Total hardness	2,14	0,02	2,412		mmol/l	113%
Alkalinity	1,92	0,03	2,452		mmol/l	128%
Hydrogen carbonate	114,1	1,5			mg/l	
Calcium	51,0	0,7	60,6		mg/l	119%
Magnesium	21,1	0,3	24,6		mg/l	117%
Sodium	10,4	0,3	10,9		mg/l	105%
Potassium	4,01	0,03	4,59		mg/l	114%
Nitrate (as NO3)	43,6	1,0	46,7		mg/l	107%
Nitrite (as NO2)	0,02879	0,00011	0,0286		mg/l	99%
Ammonium (as NH4)	<0,01		0,1502		mg/l	FP
Chloride	39,5	0,9	42,3		mg/l	107%
Sulphate (as SO4)	49,5	0,6	51,4		mg/l	104%
Orthophosphate (as PO4)	0,0394	0,0017	0,0199		mg/l	51%
Boron	0,0328	0,0006			mg/l	
DOC (as C)	5,23	0,03			mg/l	
Total P (as PO4)	0,0578	0,0014	0,072		mg/l	125%
Silicon	2,537	0,014			mg/l	
Fluoride	1,194	0,005	0,73		mg/l	61%



Sample N181A
Laboratory R

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	385	2	µS/cm	99%
Total hardness	1,321	0,017			mmol/l	
Alkalinity	1,144	0,005	1,14	0,06	mmol/l	100%
Hydrogen carbonate	66,7	0,3			mg/l	
Calcium	32,3	0,6			mg/l	
Magnesium	12,51	0,13			mg/l	
Sodium	20,14	0,10			mg/l	
Potassium	1,87	0,03			mg/l	
Nitrate (as NO3)	17,9	0,4	17,9	2,1	mg/l	100%
Nitrite (as NO2)	0,0605	0,0002	0,0571	0,0081	mg/l	94%
Ammonium (as NH4)	0,061	0,003	0,0709	0,0093	mg/l	116%
Chloride	48,8	1,1	48,9	5,3	mg/l	100%
Sulphate (as SO4)	35,6	0,4	35,3	3,8	mg/l	99%
Orthophosphate (as PO4)	<0,009		<0,02		mg/l	•
Boron	0,0753	0,0013			mg/l	
DOC (as C)	2,370	0,015	2,53	0,39	mg/l	107%
Total P (as PO4)	<0,009				mg/l	
Silicon	5,79	0,03	6,03	0,71	mg/l	104%
Fluoride	0,804	0,003	0,803	0,085	mg/l	100%

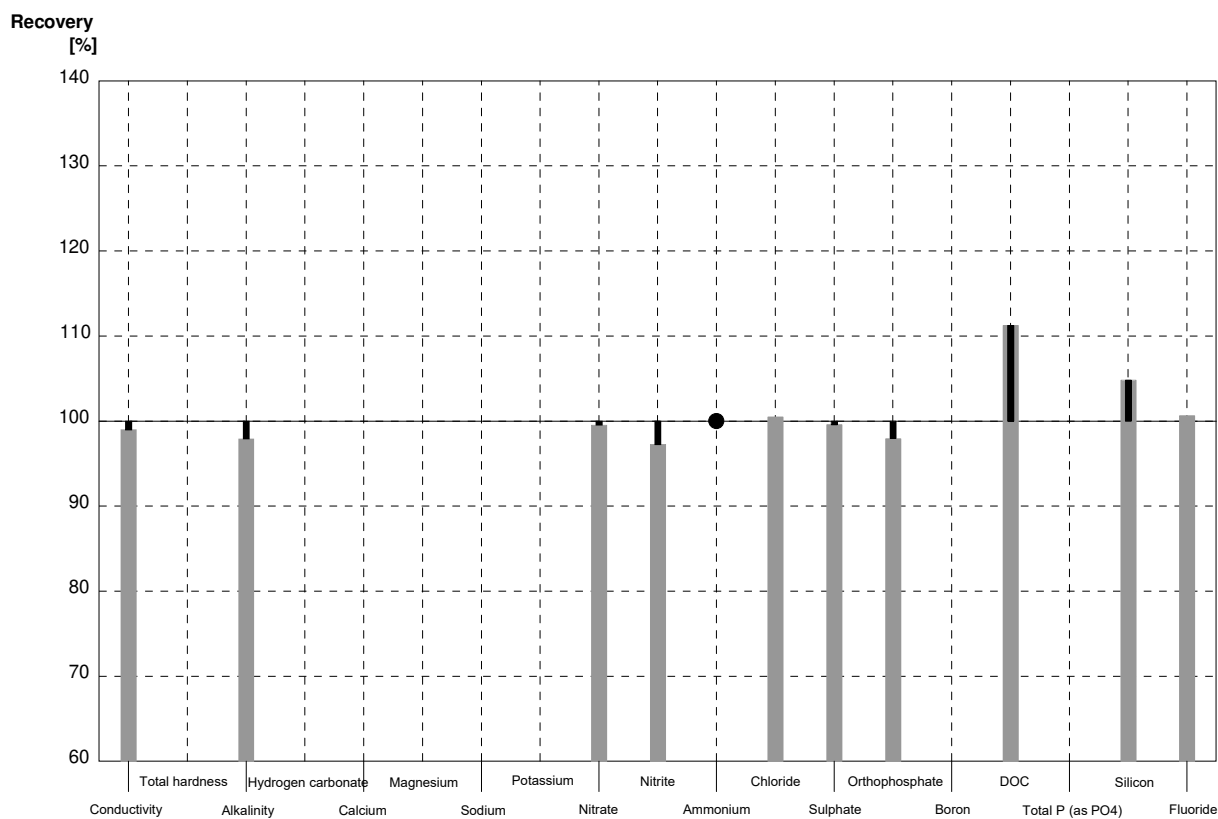
■ Deviation ■ Recovery



Sample N181B
Laboratory R

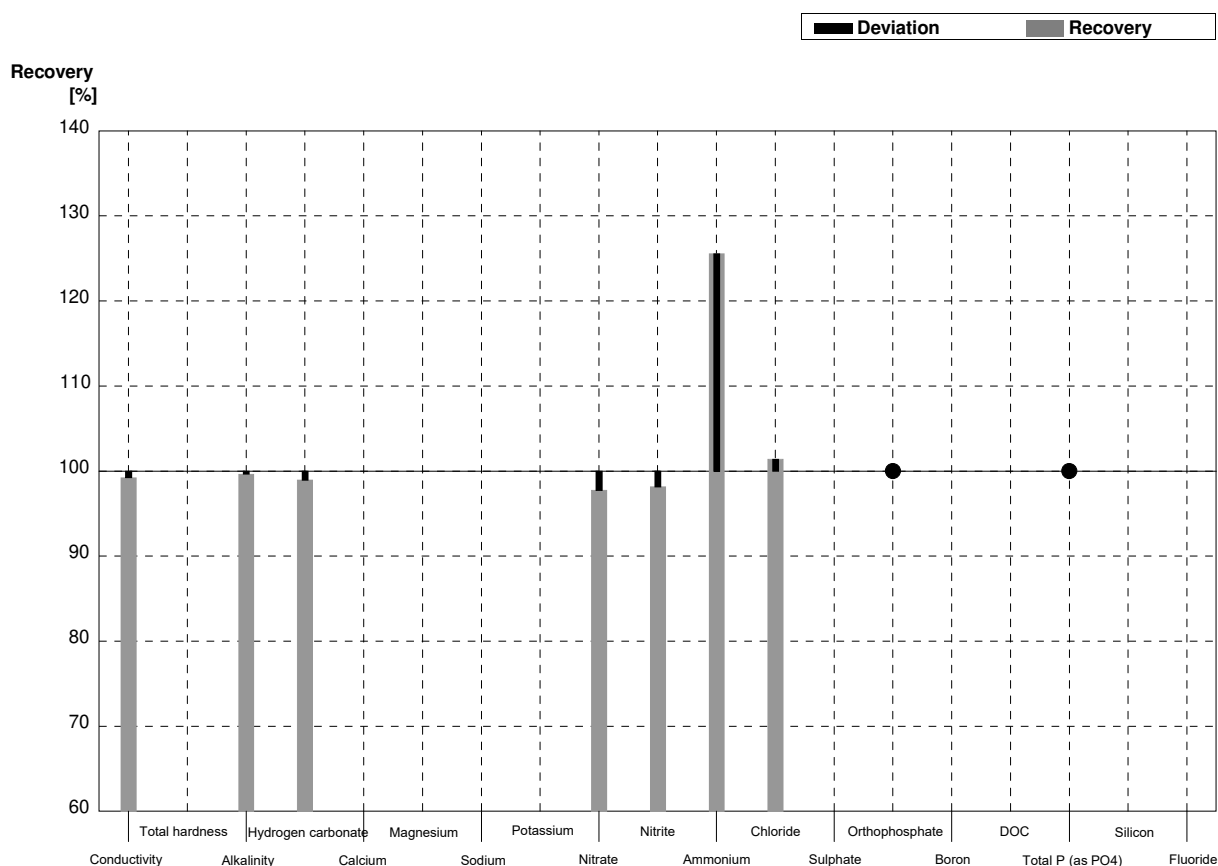
Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	493	4	µS/cm	99%
Total hardness	2,14	0,02			mmol/l	
Alkalinity	1,92	0,03	1,88	0,10	mmol/l	98%
Hydrogen carbonate	114,1	1,5			mg/l	
Calcium	51,0	0,7			mg/l	
Magnesium	21,1	0,3			mg/l	
Sodium	10,4	0,3			mg/l	
Potassium	4,01	0,03			mg/l	
Nitrate (as NO3)	43,6	1,0	43,4	5,1	mg/l	100%
Nitrite (as NO2)	0,02879	0,00011	0,0280	0,0040	mg/l	97%
Ammonium (as NH4)	<0,01		<0,03		mg/l	•
Chloride	39,5	0,9	39,7	4,3	mg/l	101%
Sulphate (as SO4)	49,5	0,6	49,3	5,2	mg/l	100%
Orthophosphate (as PO4)	0,0394	0,0017	0,0386	0,0044	mg/l	98%
Boron	0,0328	0,0006			mg/l	
DOC (as C)	5,23	0,03	5,82	0,65	mg/l	111%
Total P (as PO4)	0,0578	0,0014			mg/l	
Silicon	2,537	0,014	2,66	0,38	mg/l	105%
Fluoride	1,194	0,005	1,202	0,127	mg/l	101%

■ Deviation ■ Recovery



Sample N181A
Laboratory S

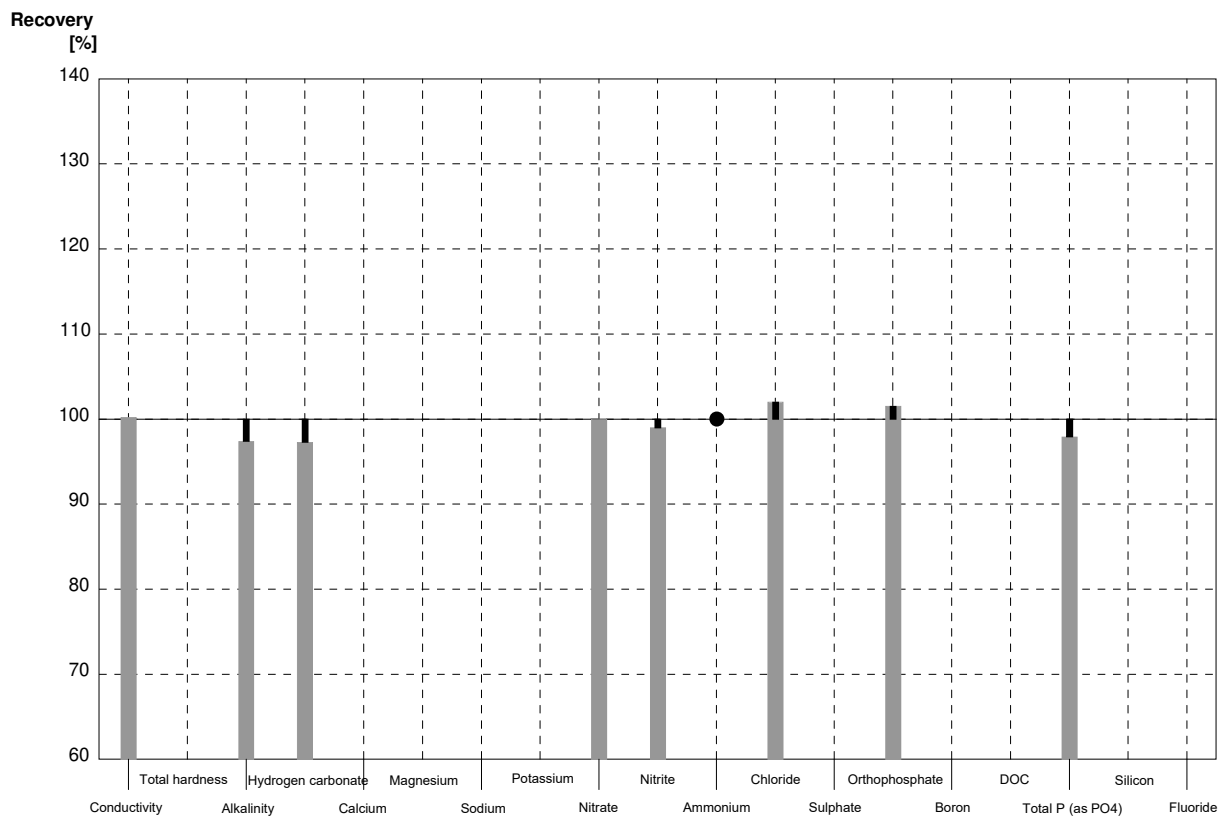
Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	386	3	µS/cm	99%
Total hardness	1,321	0,017			mmol/l	
Alkalinity	1,144	0,005	1,14	0,032	mmol/l	100%
Hydrogen carbonate	66,7	0,3	66	1,0	mg/l	99%
Calcium	32,3	0,6			mg/l	
Magnesium	12,51	0,13			mg/l	
Sodium	20,14	0,10			mg/l	
Potassium	1,87	0,03			mg/l	
Nitrate (as NO3)	17,9	0,4	17,5	1,2	mg/l	98%
Nitrite (as NO2)	0,0605	0,0002	0,05939	0,00594	mg/l	98%
Ammonium (as NH4)	0,061	0,003	0,0766	0,0116	mg/l	126%
Chloride	48,8	1,1	49,5	0,5	mg/l	101%
Sulphate (as SO4)	35,6	0,4			mg/l	
Orthophosphate (as PO4)	<0,009		<0,006		mg/l	•
Boron	0,0753	0,0013			mg/l	
DOC (as C)	2,370	0,015			mg/l	
Total P (as PO4)	<0,009		<0,006		mg/l	•
Silicon	5,79	0,03			mg/l	
Fluoride	0,804	0,003			mg/l	



Sample N181B
Laboratory S

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	499	4	µS/cm	100%
Total hardness	2,14	0,02			mmol/l	
Alkalinity	1,92	0,03	1,87	0,053	mmol/l	97%
Hydrogen carbonate	114,1	1,5	111	2	mg/l	97%
Calcium	51,0	0,7			mg/l	
Magnesium	21,1	0,3			mg/l	
Sodium	10,4	0,3			mg/l	
Potassium	4,01	0,03			mg/l	
Nitrate (as NO3)	43,6	1,0	43,6	3,0	mg/l	100%
Nitrite (as NO2)	0,02879	0,00011	0,0285	0,0029	mg/l	99%
Ammonium (as NH4)	<0,01		0,0107	0,0016	mg/l	•
Chloride	39,5	0,9	40,3	0,4	mg/l	102%
Sulphate (as SO4)	49,5	0,6			mg/l	
Orthophosphate (as PO4)	0,0394	0,0017	0,0400	0,0047	mg/l	102%
Boron	0,0328	0,0006			mg/l	
DOC (as C)	5,23	0,03			mg/l	
Total P (as PO4)	0,0578	0,0014	0,0566	0,0075	mg/l	98%
Silicon	2,537	0,014			mg/l	
Fluoride	1,194	0,005			mg/l	

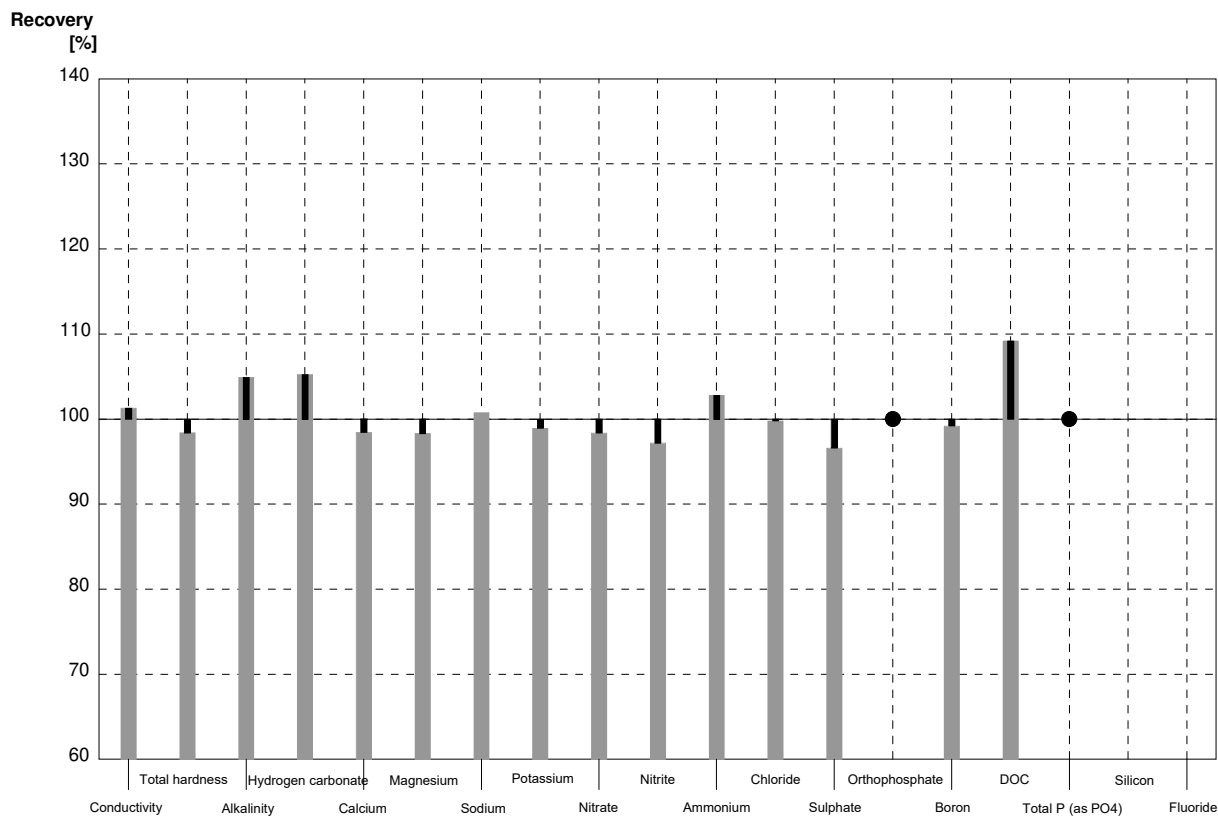
■ Deviation ■ Recovery



Sample N181A
Laboratory T

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	394	10	µS/cm	101%
Total hardness	1,321	0,017	1,30	0,13	mmol/l	98%
Alkalinity	1,144	0,005	1,20	0,12	mmol/l	105%
Hydrogen carbonate	66,7	0,3	70,2	7	mg/l	105%
Calcium	32,3	0,6	31,8	6,4	mg/l	98%
Magnesium	12,51	0,13	12,3	2,5	mg/l	98%
Sodium	20,14	0,10	20,3	3,1	mg/l	101%
Potassium	1,87	0,03	1,85	0,37	mg/l	99%
Nitrate (as NO3)	17,9	0,4	17,61	1,8	mg/l	98%
Nitrite (as NO2)	0,0605	0,0002	0,0588	0,0085	mg/l	97%
Ammonium (as NH4)	0,061	0,003	0,0627	0,0103	mg/l	103%
Chloride	48,8	1,1	48,7	4,9	mg/l	100%
Sulphate (as SO4)	35,6	0,4	34,39	3,5	mg/l	97%
Orthophosphate (as PO4)	<0,009		<0,009		mg/l	•
Boron	0,0753	0,0013	0,0747	0,019	mg/l	99%
DOC (as C)	2,370	0,015	2,588	0,388	mg/l	109%
Total P (as PO4)	<0,009		<0,009		mg/l	•
Silicon	5,79	0,03			mg/l	
Fluoride	0,804	0,003			mg/l	

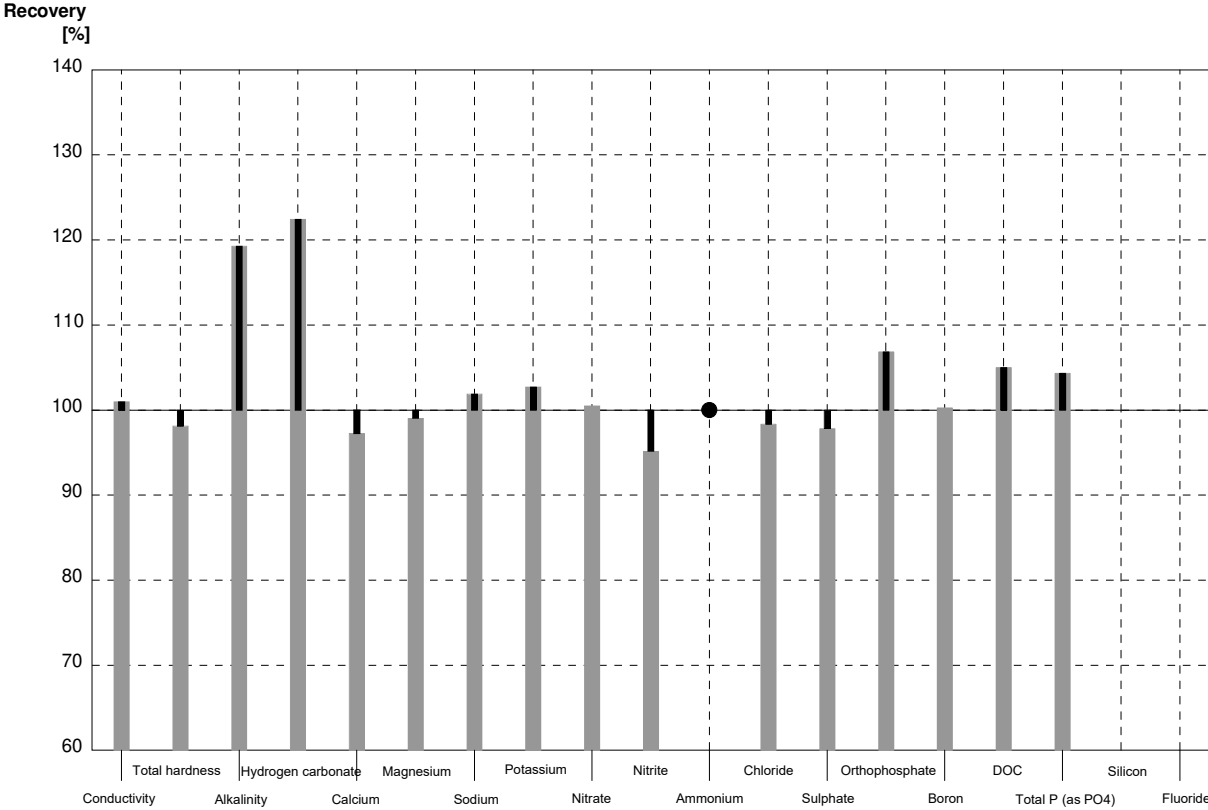
■ Deviation ■ Recovery



Sample N181B
Laboratory T

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	503	10	µS/cm	101%
Total hardness	2,14	0,02	2,10	0,21	mmol/l	98%
Alkalinity	1,92	0,03	2,29	0,23	mmol/l	119%
Hydrogen carbonate	114,1	1,5	139,7	14	mg/l	122%
Calcium	51,0	0,7	49,6	10	mg/l	97%
Magnesium	21,1	0,3	20,9	4,2	mg/l	99%
Sodium	10,4	0,3	10,6	1,6	mg/l	102%
Potassium	4,01	0,03	4,12	0,83	mg/l	103%
Nitrate (as NO3)	43,6	1,0	43,83	4,4	mg/l	101%
Nitrite (as NO2)	0,02879	0,00011	0,0274	0,0040	mg/l	95%
Ammonium (as NH4)	<0,01		<0,010		mg/l	•
Chloride	39,5	0,9	38,85	3,9	mg/l	98%
Sulphate (as SO4)	49,5	0,6	48,44	4,9	mg/l	98%
Orthophosphate (as PO4)	0,0394	0,0017	0,0421	0,0050	mg/l	107%
Boron	0,0328	0,0006	0,0329	0,0083	mg/l	100%
DOC (as C)	5,23	0,03	5,493	0,549	mg/l	105%
Total P (as PO4)	0,0578	0,0014	0,0603	0,0071	mg/l	104%
Silicon	2,537	0,014			mg/l	
Fluoride	1,194	0,005			mg/l	

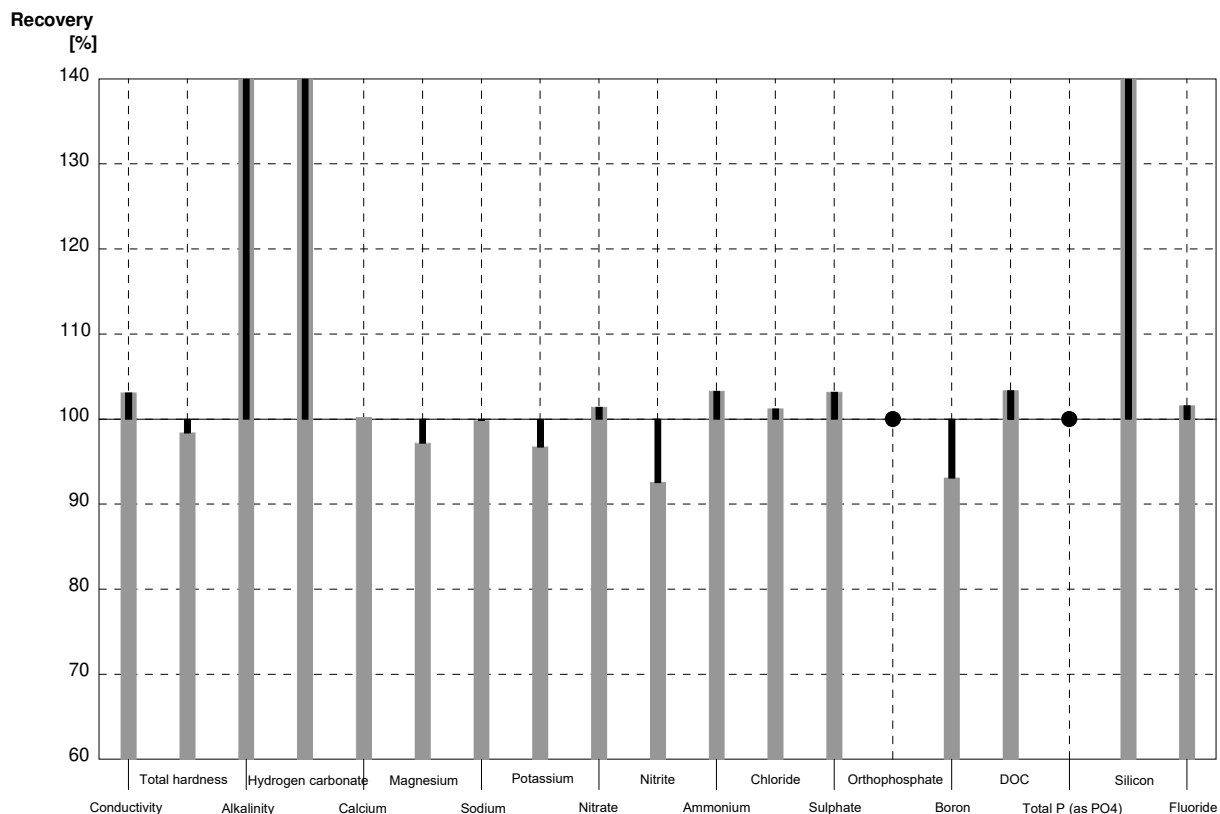
■ Deviation ■ Recovery



Sample N181A
Laboratory U

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	401	11,99	µS/cm	103%
Total hardness	1,321	0,017	1,30		mmol/l	98%
Alkalinity	1,144	0,005	2,255		mmol/l	197%
Hydrogen carbonate	66,7	0,3	137,56		mg/l	206%
Calcium	32,3	0,6	32,36	3,013	mg/l	100%
Magnesium	12,51	0,13	12,16	0,546	mg/l	97%
Sodium	20,14	0,10	20,11	0,825	mg/l	100%
Potassium	1,87	0,03	1,809	0,097	mg/l	97%
Nitrate (as NO3)	17,9	0,4	18,15		mg/l	101%
Nitrite (as NO2)	0,0605	0,0002	0,056		mg/l	93%
Ammonium (as NH4)	0,061	0,003	0,063		mg/l	103%
Chloride	48,8	1,1	49,40		mg/l	101%
Sulphate (as SO4)	35,6	0,4	36,728		mg/l	103%
Orthophosphate (as PO4)	<0,009		0,00300		mg/l	•
Boron	0,0753	0,0013	0,07009	0,0052	mg/l	93%
DOC (as C)	2,370	0,015	2,45		mg/l	103%
Total P (as PO4)	<0,009		0,00400		mg/l	•
Silicon	5,79	0,03	11,75		mg/l	203%
Fluoride	0,804	0,003	0,817		mg/l	102%

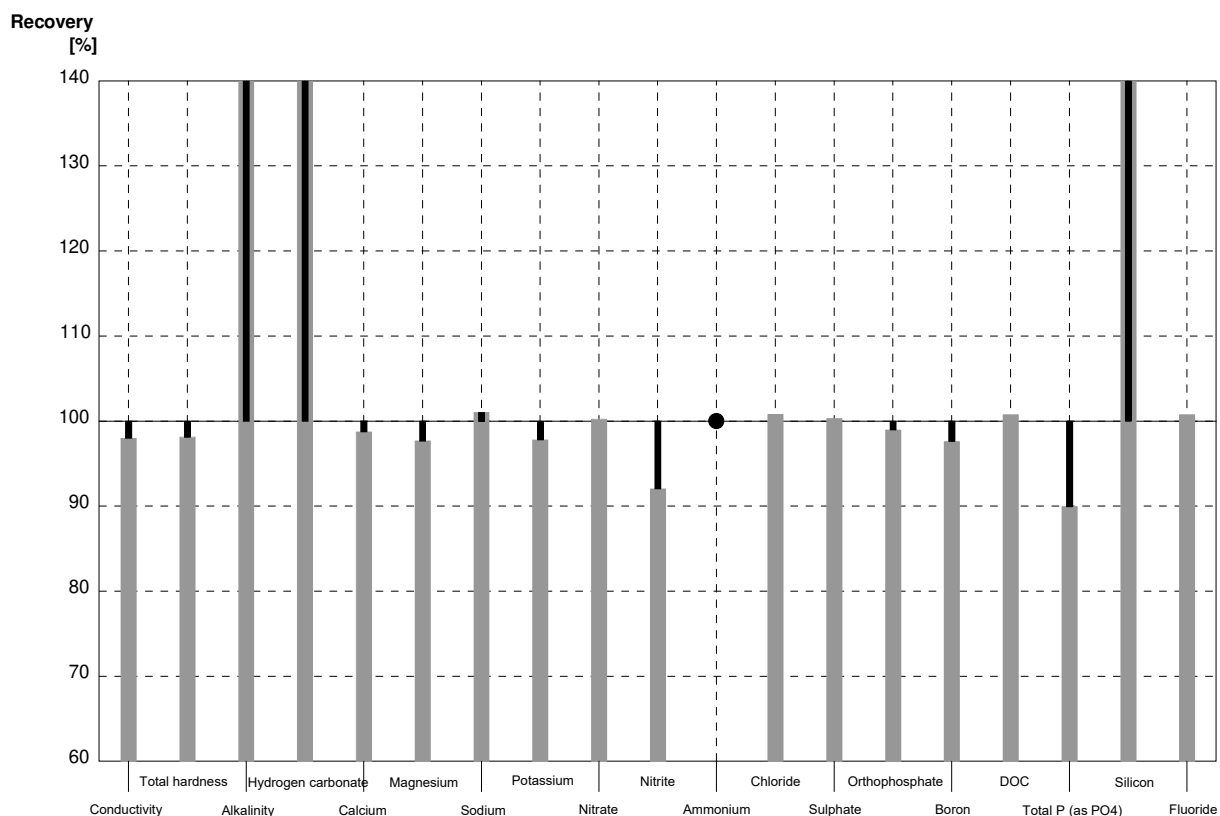
■ Deviation ■ Recovery



Sample N181B
Laboratory U

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	488	14,59	µS/cm	98%
Total hardness	2,14	0,02	2,10		mmol/l	98%
Alkalinity	1,92	0,03	3,79		mmol/l	197%
Hydrogen carbonate	114,1	1,5	230,89		mg/l	202%
Calcium	51,0	0,7	50,36	4,689	mg/l	99%
Magnesium	21,1	0,3	20,61	0,925	mg/l	98%
Sodium	10,4	0,3	10,51	0,431	mg/l	101%
Potassium	4,01	0,03	3,922	0,210	mg/l	98%
Nitrate (as NO3)	43,6	1,0	43,71		mg/l	100%
Nitrite (as NO2)	0,02879	0,00011	0,0265		mg/l	92%
Ammonium (as NH4)	<0,01		0,00700		mg/l	•
Chloride	39,5	0,9	39,82		mg/l	101%
Sulphate (as SO4)	49,5	0,6	49,657		mg/l	100%
Orthophosphate (as PO4)	0,0394	0,0017	0,0390		mg/l	99%
Boron	0,0328	0,0006	0,03202	0,00238	mg/l	98%
DOC (as C)	5,23	0,03	5,27		mg/l	101%
Total P (as PO4)	0,0578	0,0014	0,052		mg/l	90%
Silicon	2,537	0,014	5,41		mg/l	213%
Fluoride	1,194	0,005	1,203		mg/l	101%

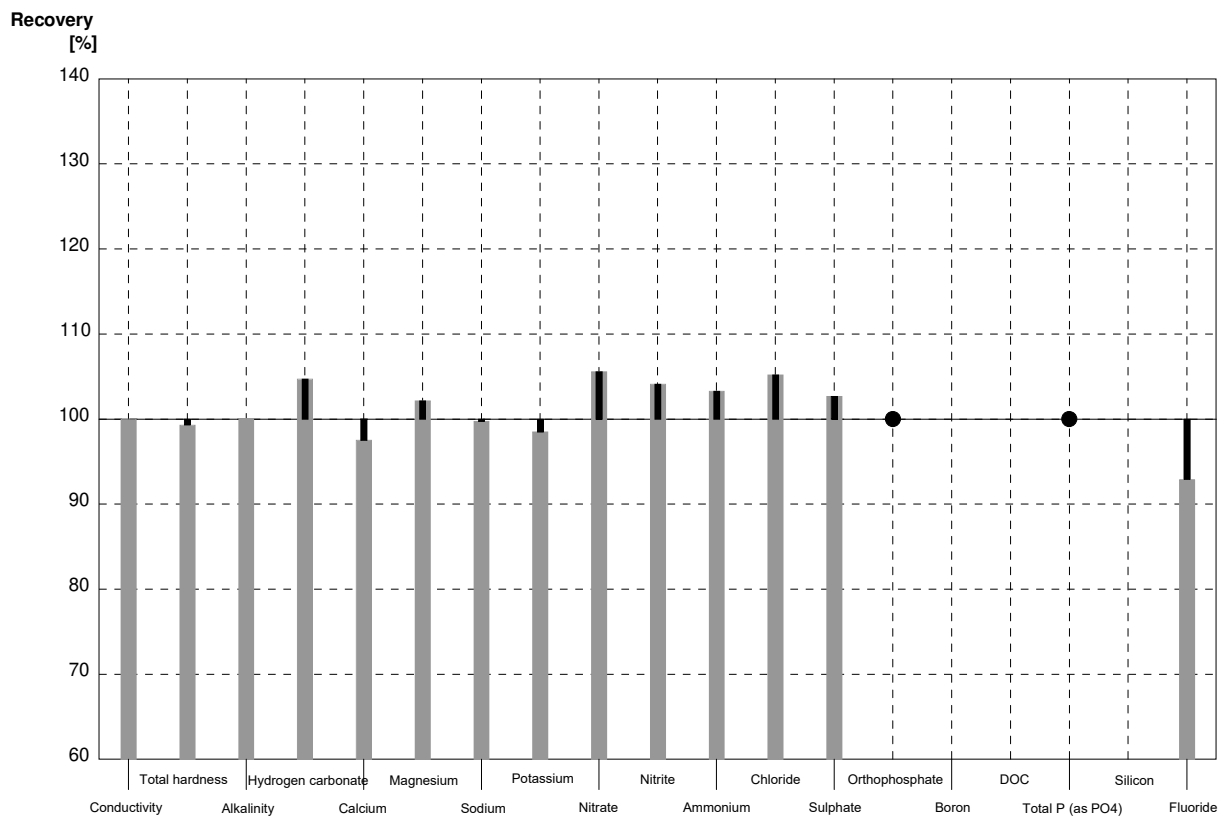
■ Deviation ■ Recovery



Sample N181A
Laboratory V

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	389		µS/cm	100%
Total hardness	1,321	0,017	1,312		mmol/l	99%
Alkalinity	1,144	0,005	1,145		mmol/l	100%
Hydrogen carbonate	66,7	0,3	69,86		mg/l	105%
Calcium	32,3	0,6	31,50		mg/l	98%
Magnesium	12,51	0,13	12,78		mg/l	102%
Sodium	20,14	0,10	20,09		mg/l	100%
Potassium	1,87	0,03	1,842		mg/l	99%
Nitrate (as NO3)	17,9	0,4	18,9		mg/l	106%
Nitrite (as NO2)	0,0605	0,0002	0,063		mg/l	104%
Ammonium (as NH4)	0,061	0,003	0,063		mg/l	103%
Chloride	48,8	1,1	51,34		mg/l	105%
Sulphate (as SO4)	35,6	0,4	36,56		mg/l	103%
Orthophosphate (as PO4)	<0,009		0,00200		mg/l	•
Boron	0,0753	0,0013			mg/l	
DOC (as C)	2,370	0,015			mg/l	
Total P (as PO4)	<0,009		0,0060		mg/l	•
Silicon	5,79	0,03			mg/l	
Fluoride	0,804	0,003	0,747		mg/l	93%

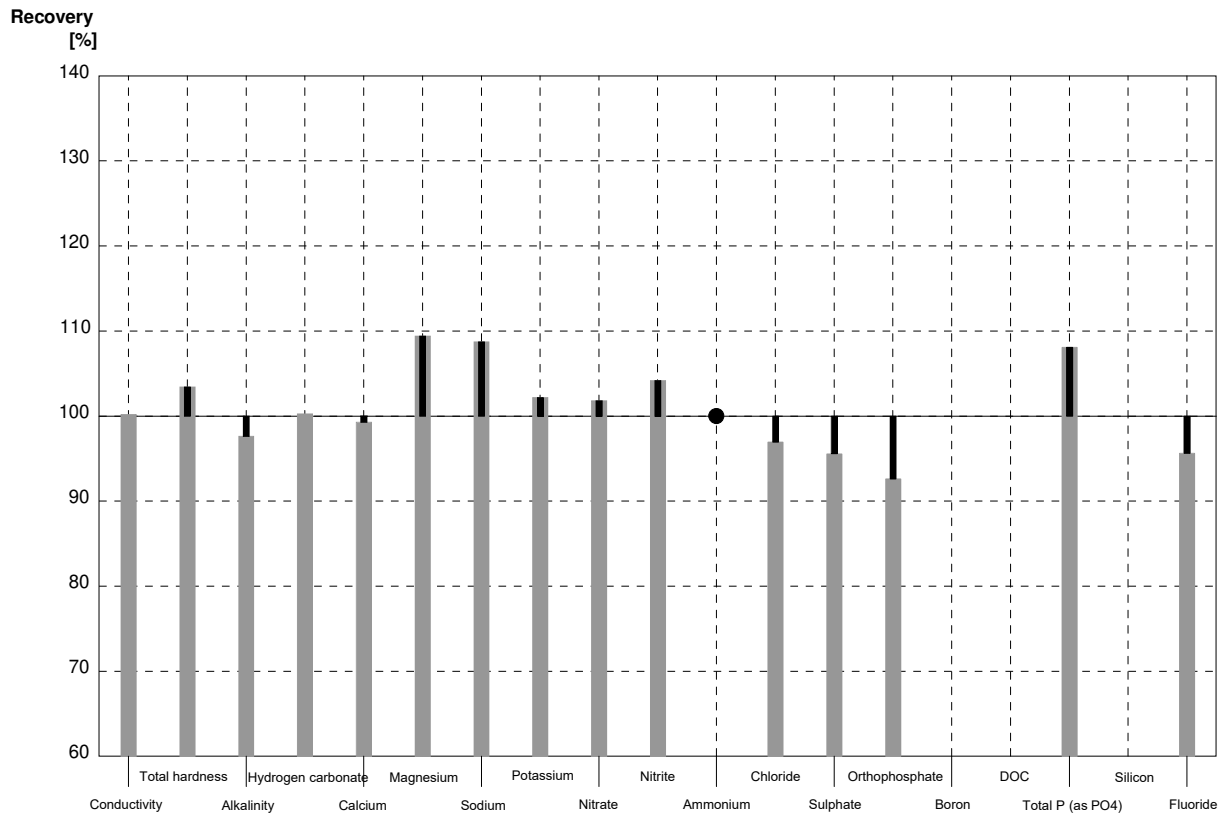
■ Deviation ■ Recovery



Sample N181B
Laboratory V

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	499		µS/cm	100%
Total hardness	2,14	0,02	2,214		mmol/l	103%
Alkalinity	1,92	0,03	1,875		mmol/l	98%
Hydrogen carbonate	114,1	1,5	114,40		mg/l	100%
Calcium	51,0	0,7	50,64		mg/l	99%
Magnesium	21,1	0,3	23,09		mg/l	109%
Sodium	10,4	0,3	11,31		mg/l	109%
Potassium	4,01	0,03	4,098		mg/l	102%
Nitrate (as NO3)	43,6	1,0	44,4		mg/l	102%
Nitrite (as NO2)	0,02879	0,00011	0,0300		mg/l	104%
Ammonium (as NH4)	<0,01		0,00300		mg/l	•
Chloride	39,5	0,9	38,3		mg/l	97%
Sulphate (as SO4)	49,5	0,6	47,32		mg/l	96%
Orthophosphate (as PO4)	0,0394	0,0017	0,0365		mg/l	93%
Boron	0,0328	0,0006			mg/l	
DOC (as C)	5,23	0,03			mg/l	
Total P (as PO4)	0,0578	0,0014	0,0625		mg/l	108%
Silicon	2,537	0,014			mg/l	
Fluoride	1,194	0,005	1,142		mg/l	96%

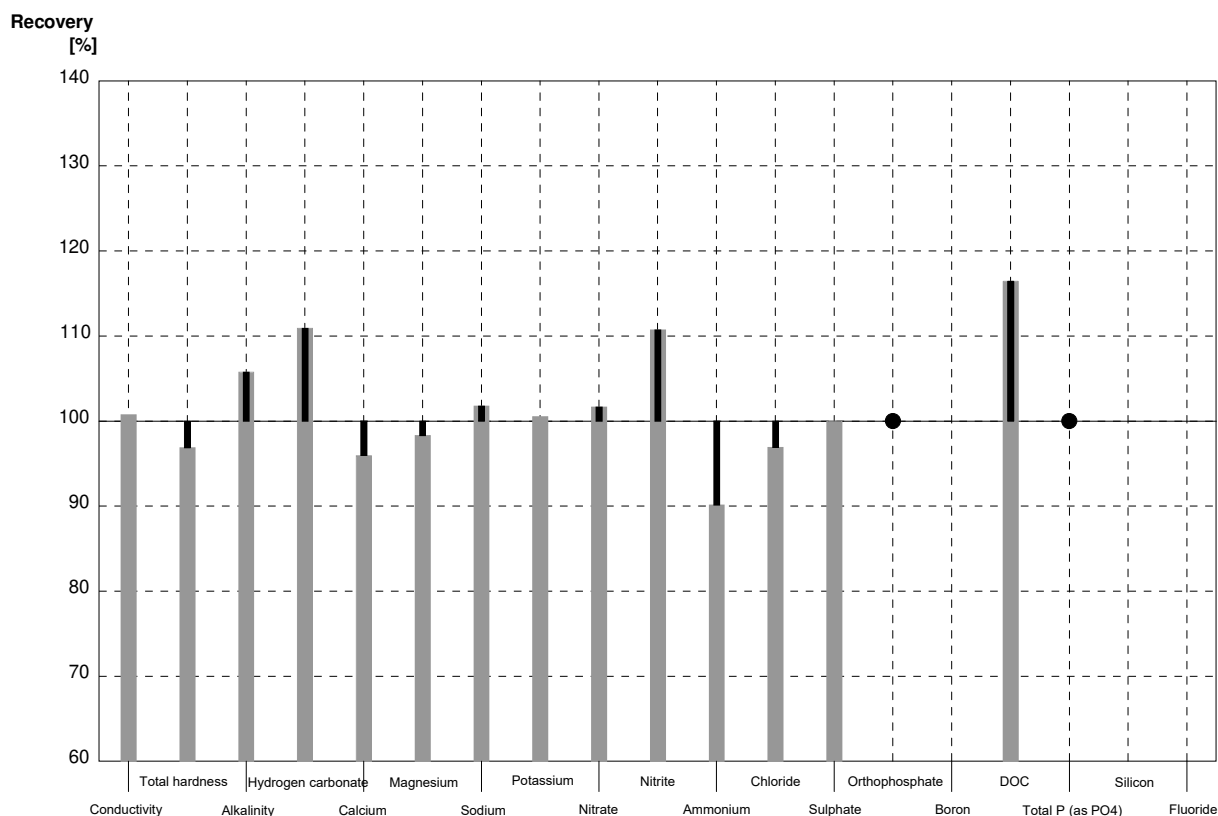
■ Deviation ■ Recovery



Sample N181A
Laboratory W

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	392	8,5	µS/cm	101%
Total hardness	1,321	0,017	1,28	0,10	mmol/l	97%
Alkalinity	1,144	0,005	1,21	0,10	mmol/l	106%
Hydrogen carbonate	66,7	0,3	74	3,3	mg/l	111%
Calcium	32,3	0,6	31,0	1,6	mg/l	96%
Magnesium	12,51	0,13	12,3	0,78	mg/l	98%
Sodium	20,14	0,10	20,5	1,6	mg/l	102%
Potassium	1,87	0,03	1,88	0,07	mg/l	101%
Nitrate (as NO3)	17,9	0,4	18,2	0,88	mg/l	102%
Nitrite (as NO2)	0,0605	0,0002	0,067	0,0039	mg/l	111%
Ammonium (as NH4)	0,061	0,003	0,055	0,0041	mg/l	90%
Chloride	48,8	1,1	47,3	3,7	mg/l	97%
Sulphate (as SO4)	35,6	0,4	35,6	2,2	mg/l	100%
Orthophosphate (as PO4)	<0,009		<0,01		mg/l	•
Boron	0,0753	0,0013			mg/l	
DOC (as C)	2,370	0,015	2,76	0,26	mg/l	116%
Total P (as PO4)	<0,009		<0,01		mg/l	•
Silicon	5,79	0,03			mg/l	
Fluoride	0,804	0,003			mg/l	

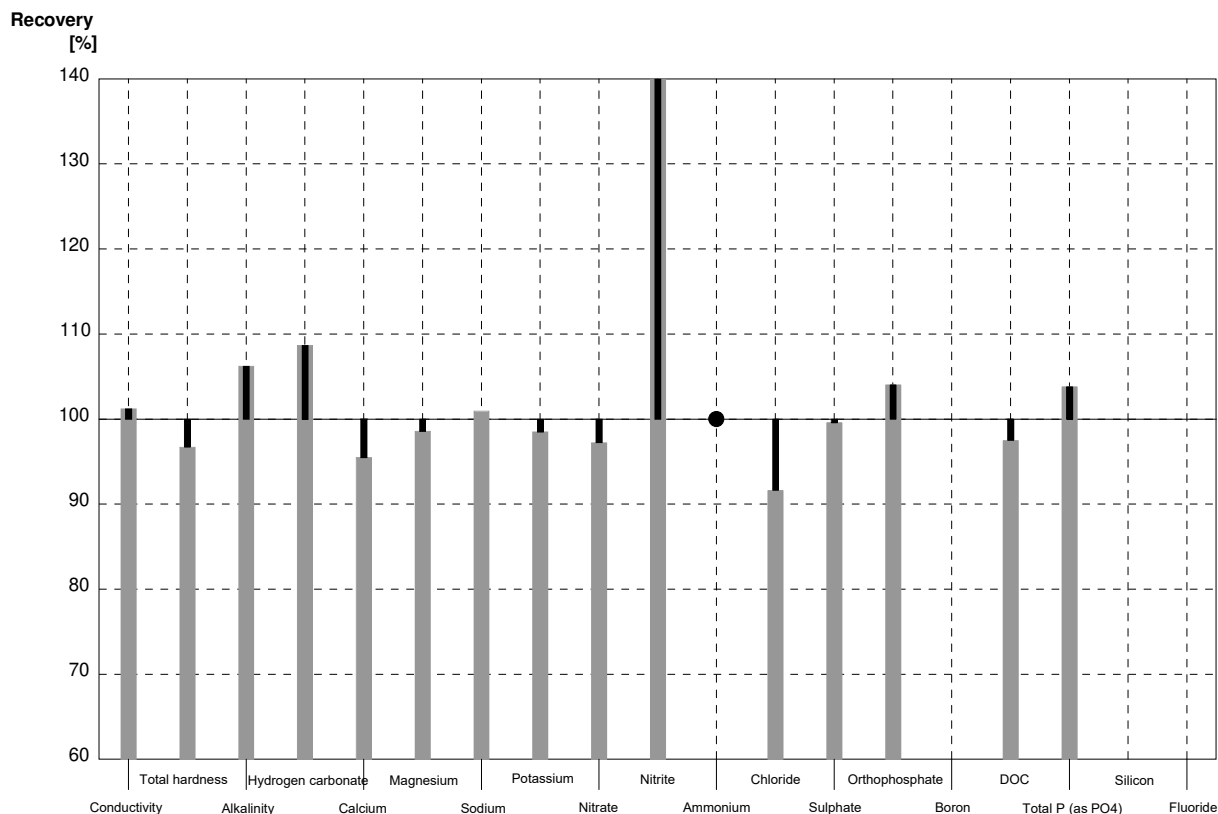
■ Deviation ■ Recovery



Sample N181B
Laboratory W

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	504	11	µS/cm	101%
Total hardness	2,14	0,02	2,07	0,17	mmol/l	97%
Alkalinity	1,92	0,03	2,04	0,17	mmol/l	106%
Hydrogen carbonate	114,1	1,5	124	5,6	mg/l	109%
Calcium	51,0	0,7	48,7	2,5	mg/l	95%
Magnesium	21,1	0,3	20,8	1,3	mg/l	99%
Sodium	10,4	0,3	10,5	0,80	mg/l	101%
Potassium	4,01	0,03	3,95	0,14	mg/l	99%
Nitrate (as NO3)	43,6	1,0	42,4	2,0	mg/l	97%
Nitrite (as NO2)	0,02879	0,00011	0,0410	0,0024	mg/l	142%
Ammonium (as NH4)	<0,01		<0,01		mg/l	•
Chloride	39,5	0,9	36,2	2,9	mg/l	92%
Sulphate (as SO4)	49,5	0,6	49,3	3,0	mg/l	100%
Orthophosphate (as PO4)	0,0394	0,0017	0,0410	0,0061	mg/l	104%
Boron	0,0328	0,0006			mg/l	
DOC (as C)	5,23	0,03	5,1	0,47	mg/l	98%
Total P (as PO4)	0,0578	0,0014	0,060	0,0079	mg/l	104%
Silicon	2,537	0,014			mg/l	
Fluoride	1,194	0,005			mg/l	

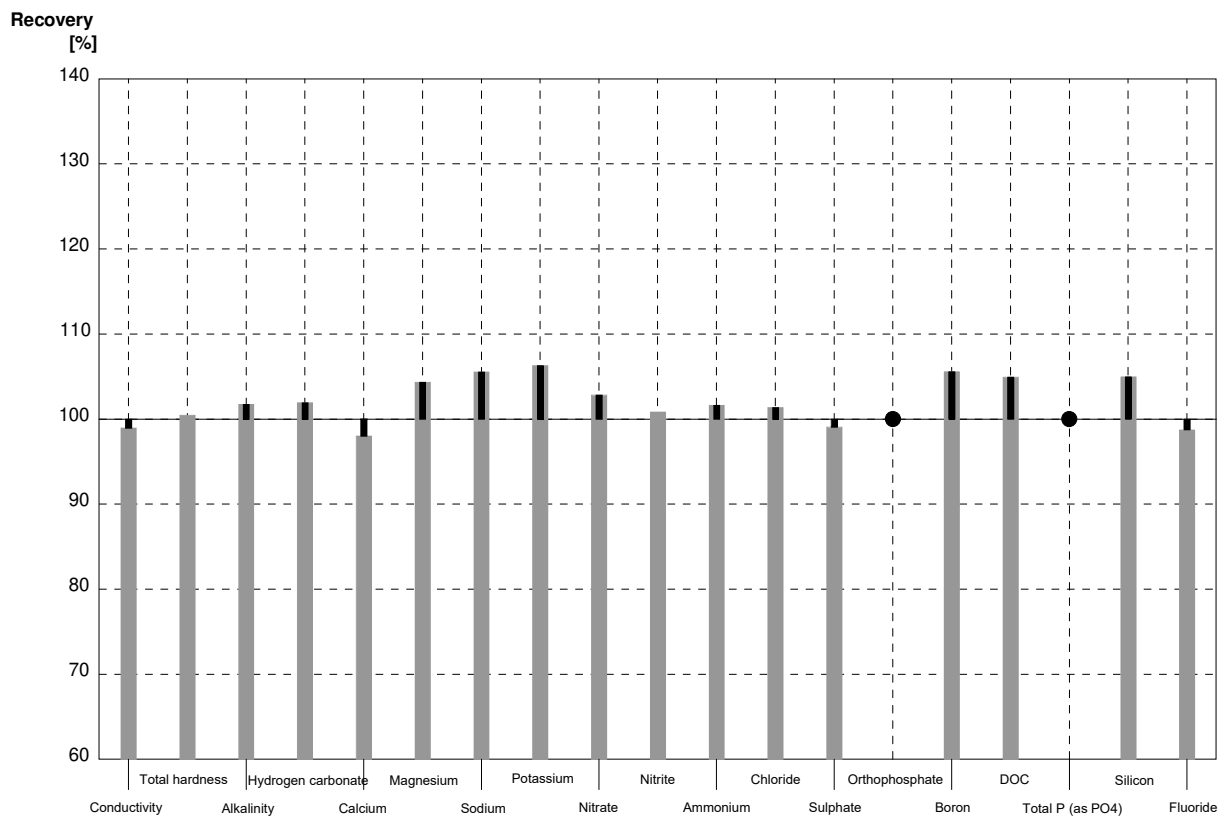
■ Deviation ■ Recovery



Sample N181A
Laboratory X

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	385	21,4	µS/cm	99%
Total hardness	1,321	0,017	1,327	0,13	mmol/l	100%
Alkalinity	1,144	0,005	1,164	0,064	mmol/l	102%
Hydrogen carbonate	66,7	0,3	68	3,74	mg/l	102%
Calcium	32,3	0,6	31,662	1,741	mg/l	98%
Magnesium	12,51	0,13	13,056	0,457	mg/l	104%
Sodium	20,14	0,10	21,259	0,744	mg/l	106%
Potassium	1,87	0,03	1,988	0,07	mg/l	106%
Nitrate (as NO3)	17,9	0,4	18,41	1,4	mg/l	103%
Nitrite (as NO2)	0,0605	0,0002	0,061	0,006	mg/l	101%
Ammonium (as NH4)	0,061	0,003	0,062	0,006	mg/l	102%
Chloride	48,8	1,1	49,47	5,19	mg/l	101%
Sulphate (as SO4)	35,6	0,4	35,27	3,03	mg/l	99%
Orthophosphate (as PO4)	<0,009		<0,01		mg/l	•
Boron	0,0753	0,0013	0,0795	0,0143	mg/l	106%
DOC (as C)	2,370	0,015	2,487	0,4974	mg/l	105%
Total P (as PO4)	<0,009		<0,010		mg/l	•
Silicon	5,79	0,03	6,079	0,61	mg/l	105%
Fluoride	0,804	0,003	0,794	0,115	mg/l	99%

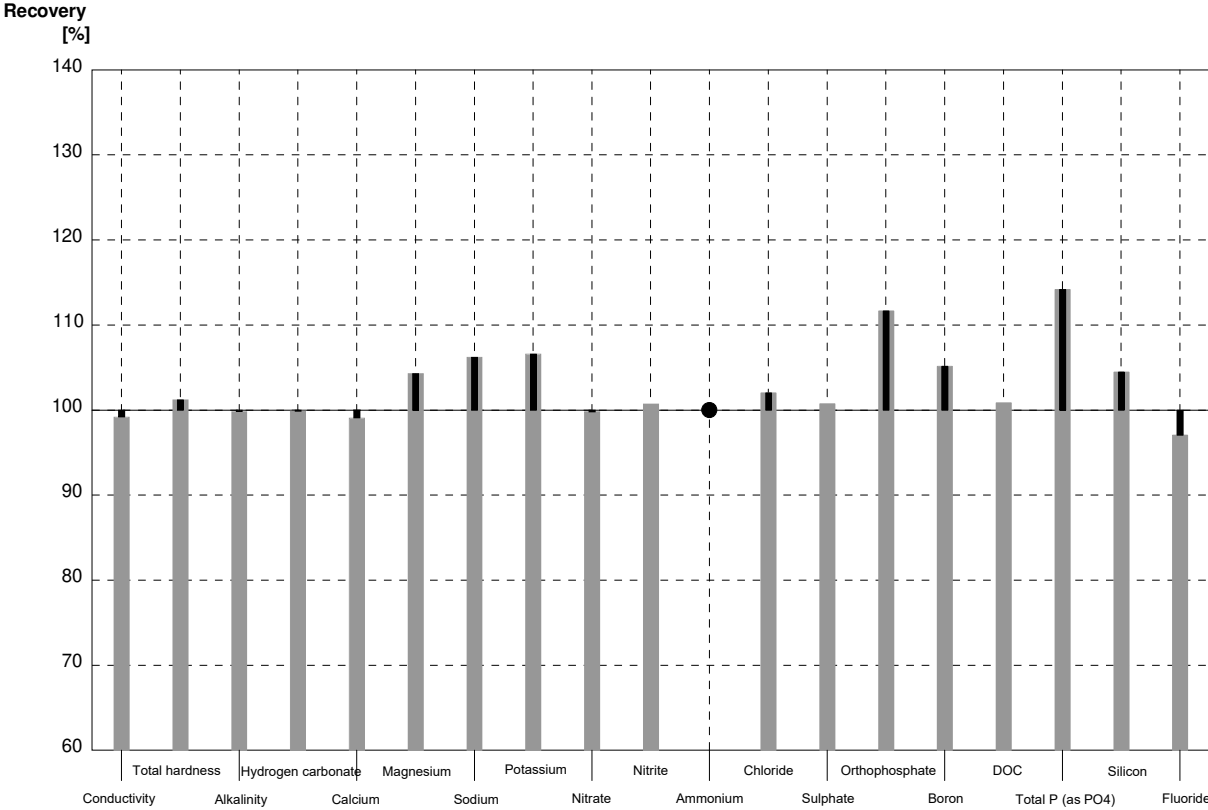
■ Deviation ■ Recovery



Sample N181B
Laboratory X

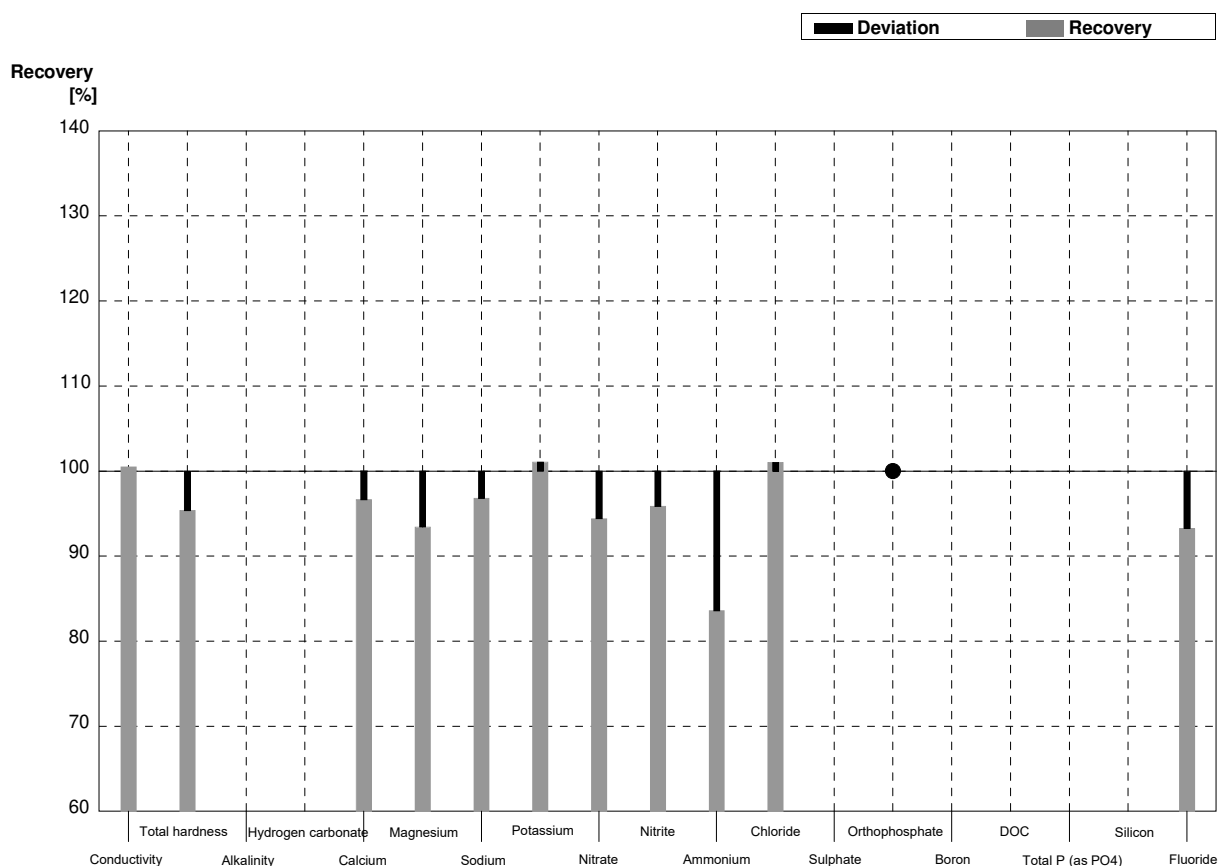
Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	494	27,5	µS/cm	99%
Total hardness	2,14	0,02	2,166	0,21	mmol/l	101%
Alkalinity	1,92	0,03	1,917	0,105	mmol/l	100%
Hydrogen carbonate	114,1	1,5	114	6,27	mg/l	100%
Calcium	51,0	0,7	50,537	2,779	mg/l	99%
Magnesium	21,1	0,3	22,007	0,77	mg/l	104%
Sodium	10,4	0,3	11,048	0,387	mg/l	106%
Potassium	4,01	0,03	4,274	0,149	mg/l	107%
Nitrate (as NO3)	43,6	1,0	43,52	3,31	mg/l	100%
Nitrite (as NO2)	0,02879	0,00011	0,0290	0,003	mg/l	101%
Ammonium (as NH4)	<0,01		<0,0100		mg/l	•
Chloride	39,5	0,9	40,31	4,23	mg/l	102%
Sulphate (as SO4)	49,5	0,6	49,88	4,29	mg/l	101%
Orthophosphate (as PO4)	0,0394	0,0017	0,0440	0,004	mg/l	112%
Boron	0,0328	0,0006	0,0345	0,0062	mg/l	105%
DOC (as C)	5,23	0,03	5,277	1,055	mg/l	101%
Total P (as PO4)	0,0578	0,0014	0,066	0,007	mg/l	114%
Silicon	2,537	0,014	2,651	0,27	mg/l	104%
Fluoride	1,194	0,005	1,159	0,168	mg/l	97%

■ Deviation ■ Recovery



Sample N181A
Laboratory Y

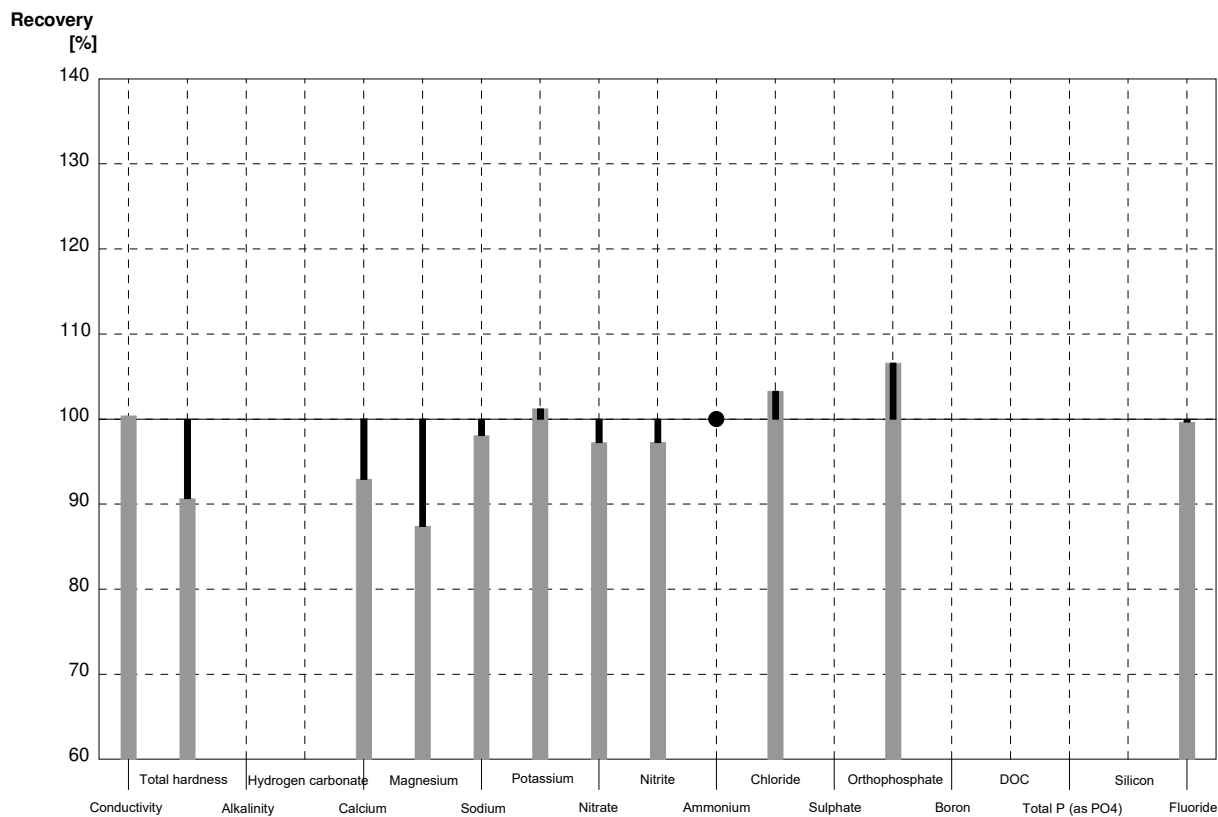
Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	391	11	µS/cm	101%
Total hardness	1,321	0,017	1,26	0,38	mmol/l	95%
Alkalinity	1,144	0,005			mmol/l	
Hydrogen carbonate	66,7	0,3			mg/l	
Calcium	32,3	0,6	31,22	5,00	mg/l	97%
Magnesium	12,51	0,13	11,69	1,64	mg/l	93%
Sodium	20,14	0,10	19,5	2,0	mg/l	97%
Potassium	1,87	0,03	1,89	0,38	mg/l	101%
Nitrate (as NO3)	17,9	0,4	16,9	0,8	mg/l	94%
Nitrite (as NO2)	0,0605	0,0002	0,058	0,012	mg/l	96%
Ammonium (as NH4)	0,061	0,003	0,051	0,020	mg/l	84%
Chloride	48,8	1,1	49,3	4,9	mg/l	101%
Sulphate (as SO4)	35,6	0,4			mg/l	
Orthophosphate (as PO4)	<0,009		0,0070	0,0014	mg/l	•
Boron	0,0753	0,0013			mg/l	
DOC (as C)	2,370	0,015			mg/l	
Total P (as PO4)	<0,009				mg/l	
Silicon	5,79	0,03			mg/l	
Fluoride	0,804	0,003	0,75	0,23	mg/l	93%



Sample N181B
Laboratory Y

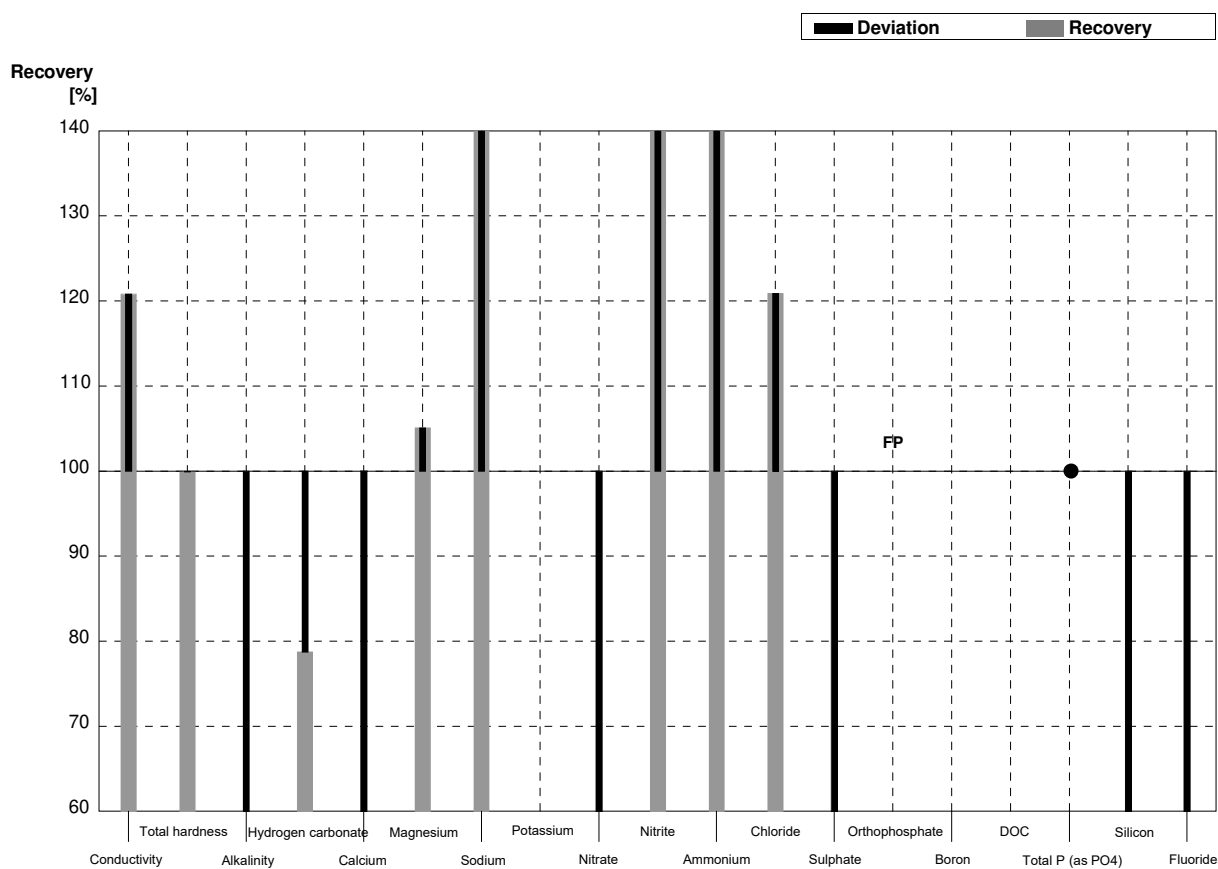
Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	500	15	µS/cm	100%
Total hardness	2,14	0,02	1,94	0,58	mmol/l	91%
Alkalinity	1,92	0,03			mmol/l	
Hydrogen carbonate	114,1	1,5			mg/l	
Calcium	51,0	0,7	47,40	7,58	mg/l	93%
Magnesium	21,1	0,3	18,44	2,58	mg/l	87%
Sodium	10,4	0,3	10,2	1,0	mg/l	98%
Potassium	4,01	0,03	4,06	0,81	mg/l	101%
Nitrate (as NO3)	43,6	1,0	42,4	2,1	mg/l	97%
Nitrite (as NO2)	0,02879	0,00011	0,0280	0,006	mg/l	97%
Ammonium (as NH4)	<0,01		0,0060	0,0024	mg/l	•
Chloride	39,5	0,9	40,8	4,1	mg/l	103%
Sulphate (as SO4)	49,5	0,6			mg/l	
Orthophosphate (as PO4)	0,0394	0,0017	0,0420	0,0084	mg/l	107%
Boron	0,0328	0,0006			mg/l	
DOC (as C)	5,23	0,03			mg/l	
Total P (as PO4)	0,0578	0,0014			mg/l	
Silicon	2,537	0,014			mg/l	
Fluoride	1,194	0,005	1,19	0,36	mg/l	100%

■ Deviation ■ Recovery



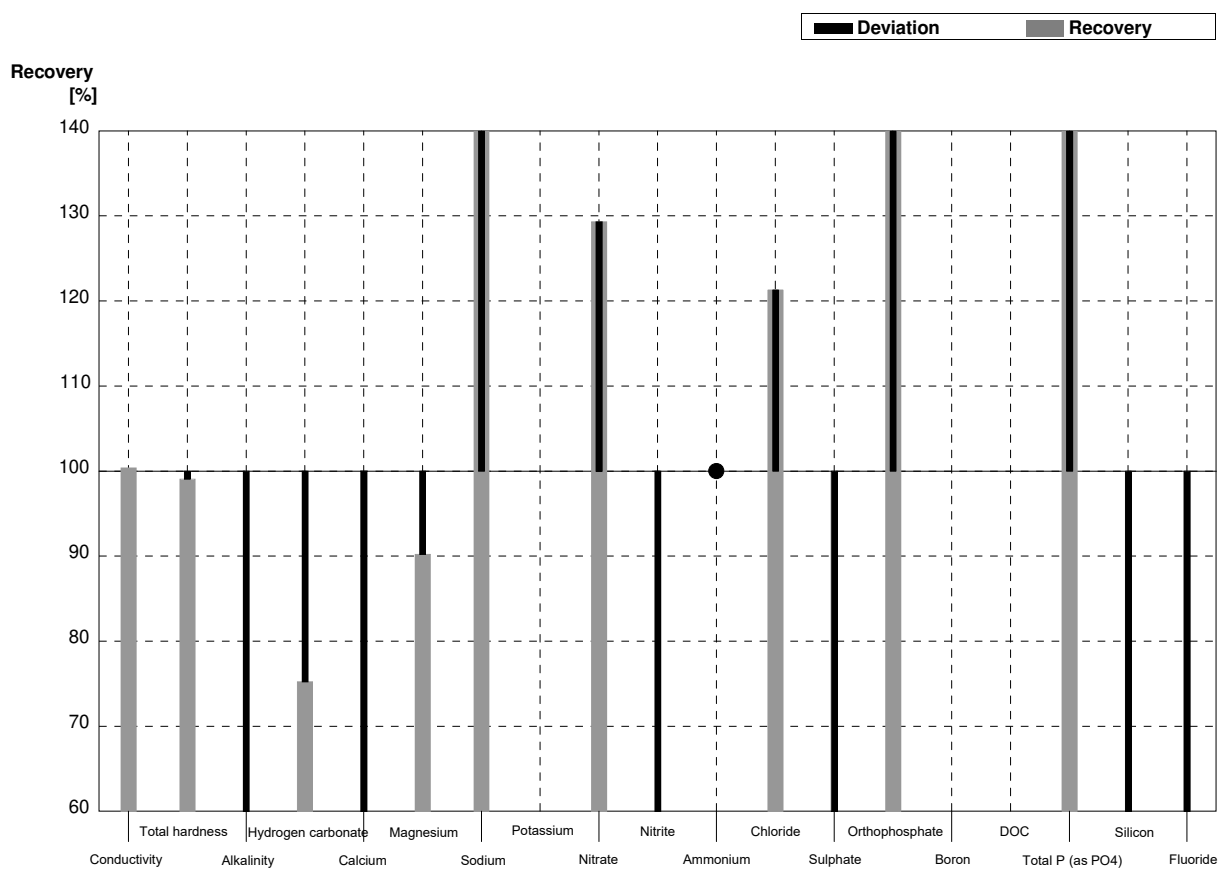
Sample N181A
Laboratory Z

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	470,00	0,5	µS/cm	121%
Total hardness	1,321	0,017	1,32	0,65	mmol/l	100%
Alkalinity	1,144	0,005	0,53	2,0	mmol/l	46%
Hydrogen carbonate	66,7	0,3	52,52	2,0	mg/l	79%
Calcium	32,3	0,6	16,55	0,3	mg/l	51%
Magnesium	12,51	0,13	13,15	0,3	mg/l	105%
Sodium	20,14	0,10	35,39	1,5	mg/l	176%
Potassium	1,87	0,03			mg/l	
Nitrate (as NO3)	17,9	0,4	7,05	0,5	mg/l	39%
Nitrite (as NO2)	0,0605	0,0002	0,094	0,01	mg/l	155%
Ammonium (as NH4)	0,061	0,003	3,31	1,0	mg/l	5426%
Chloride	48,8	1,1	58,99	2,0	mg/l	121%
Sulphate (as SO4)	35,6	0,4	10,00	0,05	mg/l	28%
Orthophosphate (as PO4)	<0,009		1,04	0,5	mg/l	FP
Boron	0,0753	0,0013			mg/l	
DOC (as C)	2,370	0,015			mg/l	
Total P (as PO4)	<0,009		0,340	0,5	mg/l	•
Silicon	5,79	0,03	3,27	0,05	mg/l	56%
Fluoride	0,804	0,003	0,0100	0,01	mg/l	1%



Sample N181B
Laboratory Z

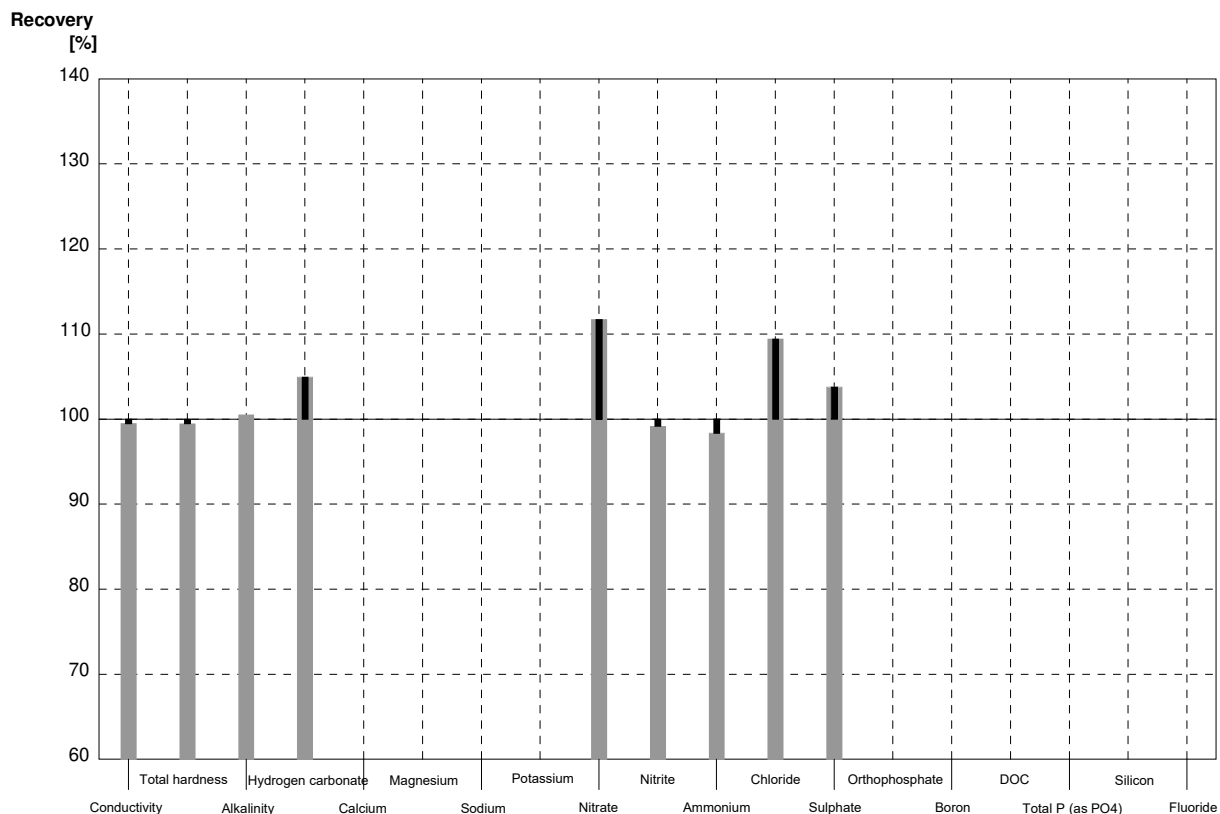
Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	500,00	0,5	µS/cm	100%
Total hardness	2,14	0,02	2,12	0,65	mmol/l	99%
Alkalinity	1,92	0,03	0,86	2,0	mmol/l	45%
Hydrogen carbonate	114,1	1,5	85,85	2,0	mg/l	75%
Calcium	51,0	0,7	28,11	0,3	mg/l	55%
Magnesium	21,1	0,3	19,04	0,3	mg/l	90%
Sodium	10,4	0,3	28,75	1,5	mg/l	276%
Potassium	4,01	0,03			mg/l	
Nitrate (as NO3)	43,6	1,0	56,39	0,5	mg/l	129%
Nitrite (as NO2)	0,02879	0,00011	0,00200	0,001	mg/l	7%
Ammonium (as NH4)	<0,01		0,0100	0,001	mg/l	•
Chloride	39,5	0,9	47,92	2,0	mg/l	121%
Sulphate (as SO4)	49,5	0,6	13,00	0,05	mg/l	26%
Orthophosphate (as PO4)	0,0394	0,0017	0,54	0,5	mg/l	1371%
Boron	0,0328	0,0006			mg/l	
DOC (as C)	5,23	0,03			mg/l	
Total P (as PO4)	0,0578	0,0014	0,175	0,5	mg/l	303%
Silicon	2,537	0,014	0,68	0,05	mg/l	27%
Fluoride	1,194	0,005	0,0100	0,01	mg/l	1%



Sample N181A
Laboratory AA

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	387	14	µS/cm	99%
Total hardness	1,321	0,017	1,314	0,025	mmol/l	99%
Alkalinity	1,144	0,005	1,15	0,025	mmol/l	101%
Hydrogen carbonate	66,7	0,3	70	10	mg/l	105%
Calcium	32,3	0,6			mg/l	
Magnesium	12,51	0,13			mg/l	
Sodium	20,14	0,10			mg/l	
Potassium	1,87	0,03			mg/l	
Nitrate (as NO3)	17,9	0,4	20,0	1	mg/l	112%
Nitrite (as NO2)	0,0605	0,0002	0,060	0,01	mg/l	99%
Ammonium (as NH4)	0,061	0,003	0,060	0,01	mg/l	98%
Chloride	48,8	1,1	53,4	1	mg/l	109%
Sulphate (as SO4)	35,6	0,4	36,95	1,5	mg/l	104%
Orthophosphate (as PO4)	<0,009				mg/l	
Boron	0,0753	0,0013			mg/l	
DOC (as C)	2,370	0,015			mg/l	
Total P (as PO4)	<0,009				mg/l	
Silicon	5,79	0,03			mg/l	
Fluoride	0,804	0,003			mg/l	

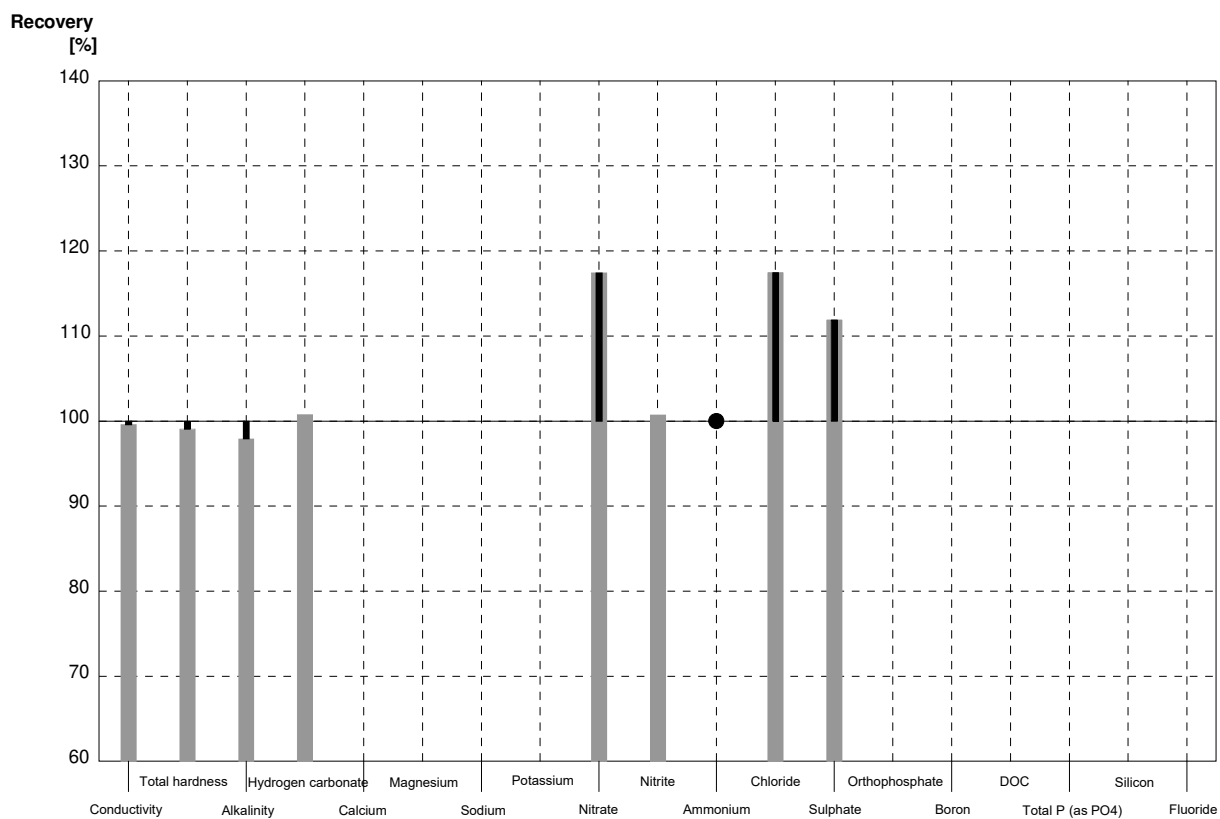
■ Deviation ■ Recovery



Sample N181B
Laboratory AA

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	496	14	µS/cm	100%
Total hardness	2,14	0,02	2,12	0,025	mmol/l	99%
Alkalinity	1,92	0,03	1,88	0,025	mmol/l	98%
Hydrogen carbonate	114,1	1,5	115	10	mg/l	101%
Calcium	51,0	0,7			mg/l	
Magnesium	21,1	0,3			mg/l	
Sodium	10,4	0,3			mg/l	
Potassium	4,01	0,03			mg/l	
Nitrate (as NO3)	43,6	1,0	51,2	1	mg/l	117%
Nitrite (as NO2)	0,02879	0,00011	0,0290	0,1	mg/l	101%
Ammonium (as NH4)	<0,01		<0,01	0,01	mg/l	•
Chloride	39,5	0,9	46,4	1	mg/l	117%
Sulphate (as SO4)	49,5	0,6	55,4	1,5	mg/l	112%
Orthophosphate (as PO4)	0,0394	0,0017			mg/l	
Boron	0,0328	0,0006			mg/l	
DOC (as C)	5,23	0,03			mg/l	
Total P (as PO4)	0,0578	0,0014			mg/l	
Silicon	2,537	0,014			mg/l	
Fluoride	1,194	0,005			mg/l	

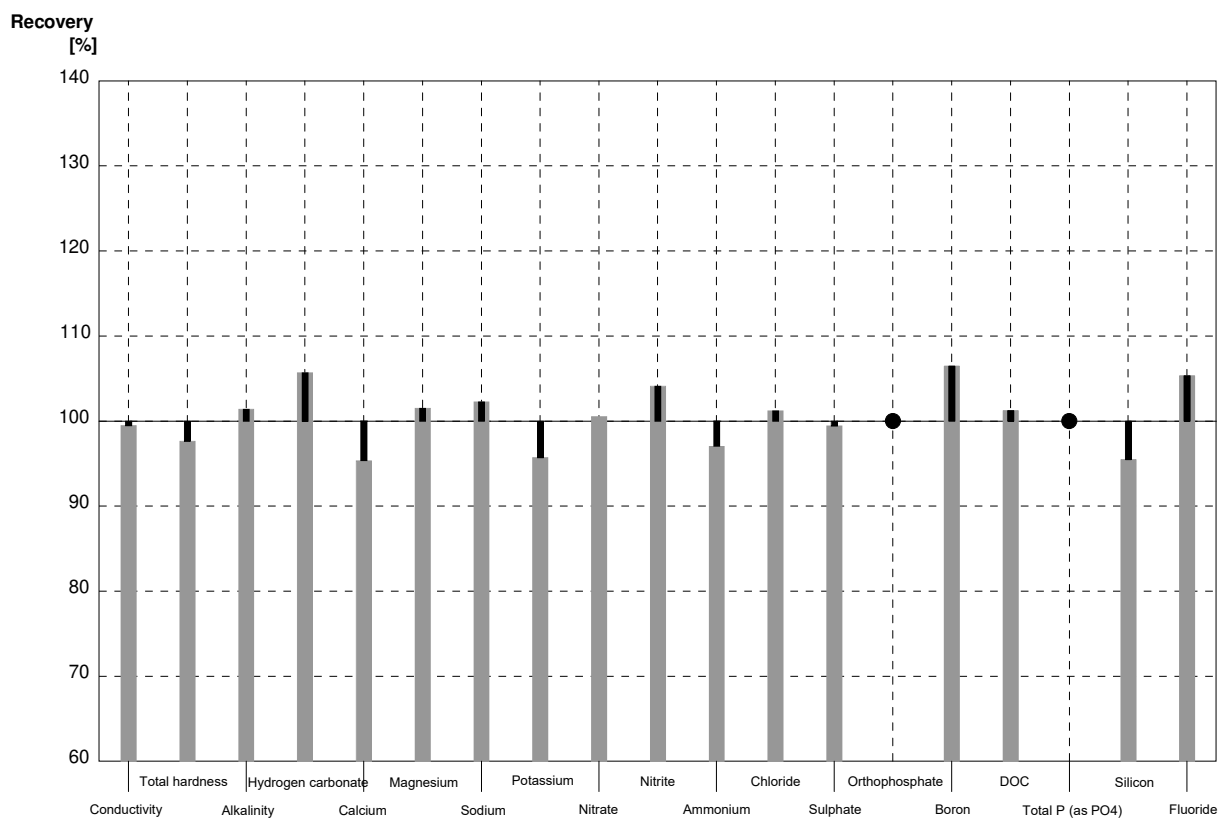
■ Deviation ■ Recovery



Sample N181A
Laboratory AB

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	387	0,577	µS/cm	99%
Total hardness	1,321	0,017	1,29	0,015	mmol/l	98%
Alkalinity	1,144	0,005	1,16	0,006	mmol/l	101%
Hydrogen carbonate	66,7	0,3	70,5	0,153	mg/l	106%
Calcium	32,3	0,6	30,8	0,666	mg/l	95%
Magnesium	12,51	0,13	12,7	0,115	mg/l	102%
Sodium	20,14	0,10	20,6	0,153	mg/l	102%
Potassium	1,87	0,03	1,79	0,006	mg/l	96%
Nitrate (as NO3)	17,9	0,4	18,0	0,115	mg/l	101%
Nitrite (as NO2)	0,0605	0,0002	0,0630	0,001	mg/l	104%
Ammonium (as NH4)	0,061	0,003	0,0592	0,001	mg/l	97%
Chloride	48,8	1,1	49,4	0,289	mg/l	101%
Sulphate (as SO4)	35,6	0,4	35,4	0,173	mg/l	99%
Orthophosphate (as PO4)	<0,009		<0,020		mg/l	•
Boron	0,0753	0,0013	0,0802	0,001	mg/l	107%
DOC (as C)	2,370	0,015	2,40	0,015	mg/l	101%
Total P (as PO4)	<0,009		<0,020		mg/l	•
Silicon	5,79	0,03	5,53	0,025	mg/l	96%
Fluoride	0,804	0,003	0,847	0,002	mg/l	105%

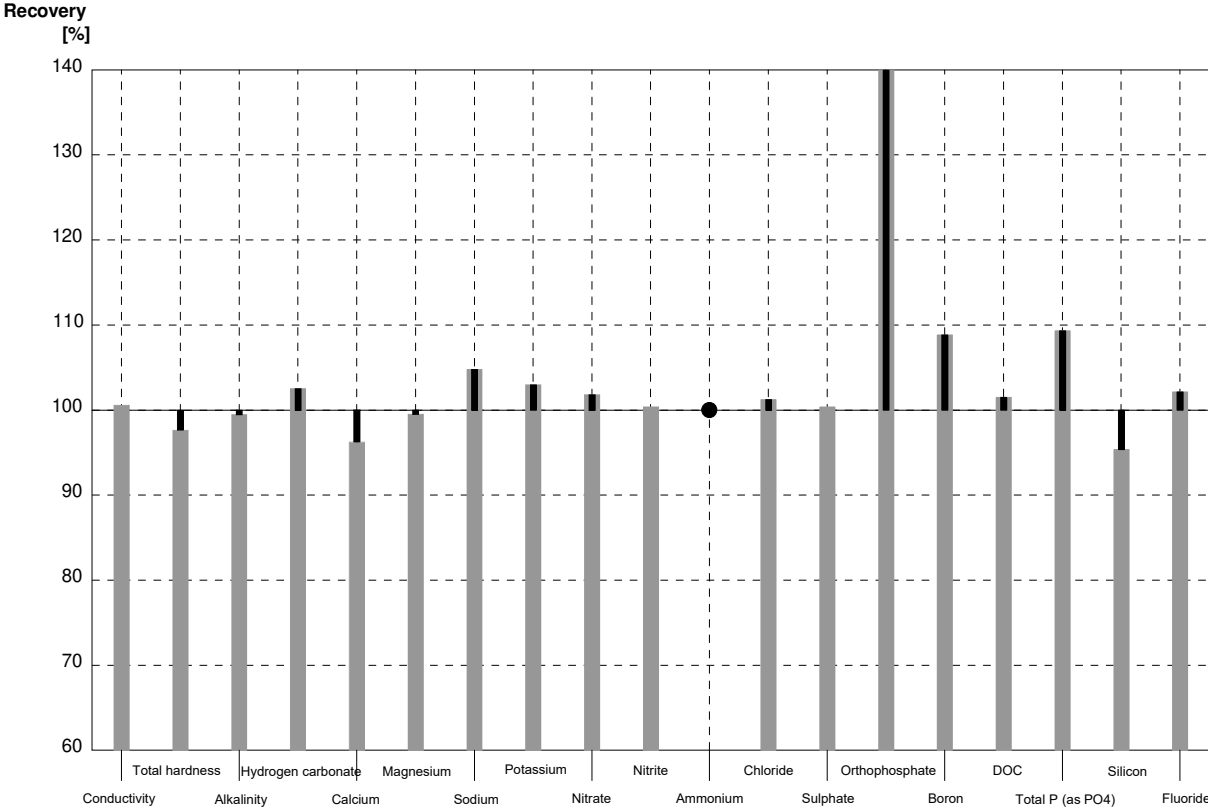
■ Deviation ■ Recovery



Sample N181B
Laboratory AB

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	501	0,577	µS/cm	101%
Total hardness	2,14	0,02	2,09	0,006	mmol/l	98%
Alkalinity	1,92	0,03	1,91	0,001	mmol/l	99%
Hydrogen carbonate	114,1	1,5	117	0,001	mg/l	103%
Calcium	51,0	0,7	49,1	0,611	mg/l	96%
Magnesium	21,1	0,3	21,0	0,306	mg/l	100%
Sodium	10,4	0,3	10,9	0,115	mg/l	105%
Potassium	4,01	0,03	4,13	0,066	mg/l	103%
Nitrate (as NO3)	43,6	1,0	44,4	0,361	mg/l	102%
Nitrite (as NO2)	0,02879	0,00011	0,0289	0,001	mg/l	100%
Ammonium (as NH4)	<0,01		<0,015		mg/l	•
Chloride	39,5	0,9	40,0	0,306	mg/l	101%
Sulphate (as SO4)	49,5	0,6	49,7	0,404	mg/l	100%
Orthophosphate (as PO4)	0,0394	0,0017	0,402	0,001	mg/l	1020%
Boron	0,0328	0,0006	0,0357	0,001	mg/l	109%
DOC (as C)	5,23	0,03	5,31	0,015	mg/l	102%
Total P (as PO4)	0,0578	0,0014	0,0632	0,002	mg/l	109%
Silicon	2,537	0,014	2,42	0,006	mg/l	95%
Fluoride	1,194	0,005	1,22	0,010	mg/l	102%

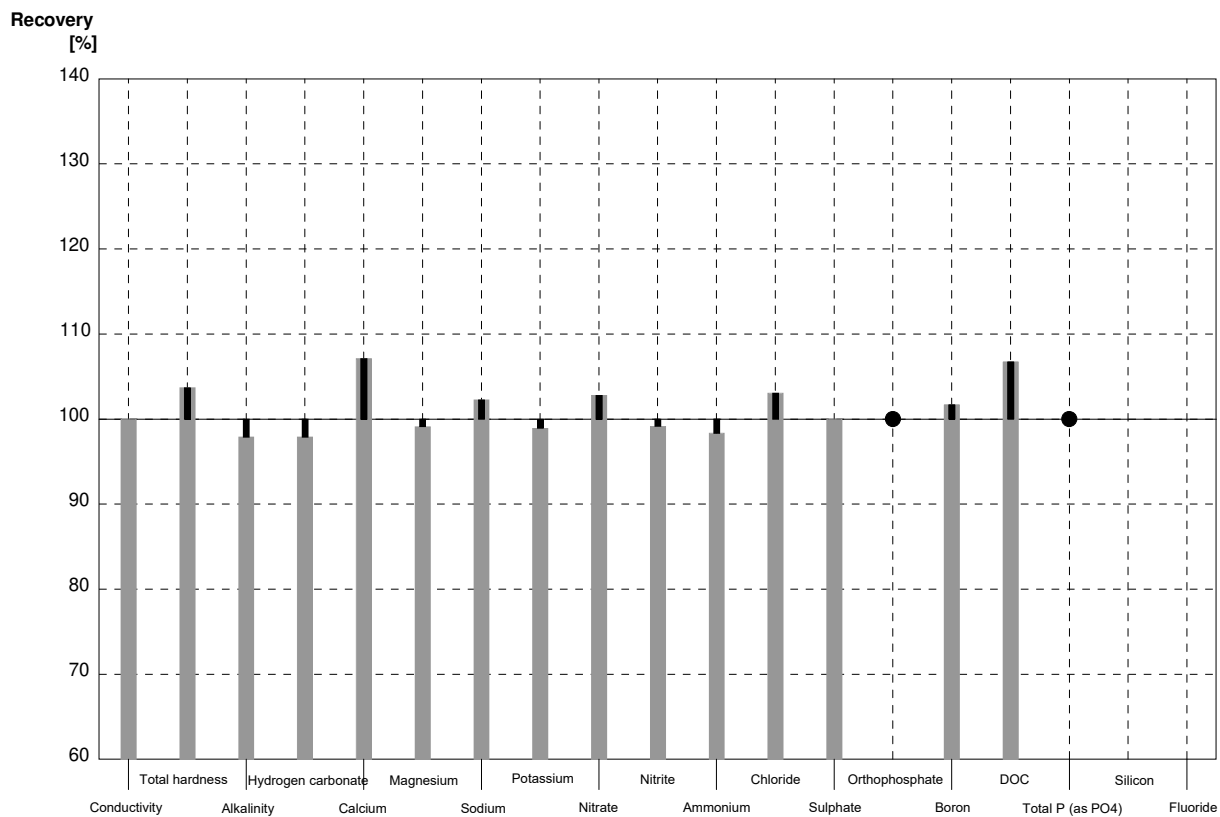
■ Deviation ■ Recovery



Sample N181A
Laboratory AC

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	389	38,9	µS/cm	100%
Total hardness	1,321	0,017	1,37	0,137	mmol/l	104%
Alkalinity	1,144	0,005	1,12	0,112	mmol/l	98%
Hydrogen carbonate	66,7	0,3	65,3	6,53	mg/l	98%
Calcium	32,3	0,6	34,6	3,46	mg/l	107%
Magnesium	12,51	0,13	12,4	1,24	mg/l	99%
Sodium	20,14	0,10	20,6	2,06	mg/l	102%
Potassium	1,87	0,03	1,85	0,185	mg/l	99%
Nitrate (as NO3)	17,9	0,4	18,4	1,84	mg/l	103%
Nitrite (as NO2)	0,0605	0,0002	0,060	0,0060	mg/l	99%
Ammonium (as NH4)	0,061	0,003	0,060	0,0060	mg/l	98%
Chloride	48,8	1,1	50,3	0,503	mg/l	103%
Sulphate (as SO4)	35,6	0,4	35,6	3,56	mg/l	100%
Orthophosphate (as PO4)	<0,009		0,0061	0,00061	mg/l	•
Boron	0,0753	0,0013	0,0766	0,0115	mg/l	102%
DOC (as C)	2,370	0,015	2,53	0,253	mg/l	107%
Total P (as PO4)	<0,009		<0,0032		mg/l	•
Silicon	5,79	0,03			mg/l	
Fluoride	0,804	0,003			mg/l	

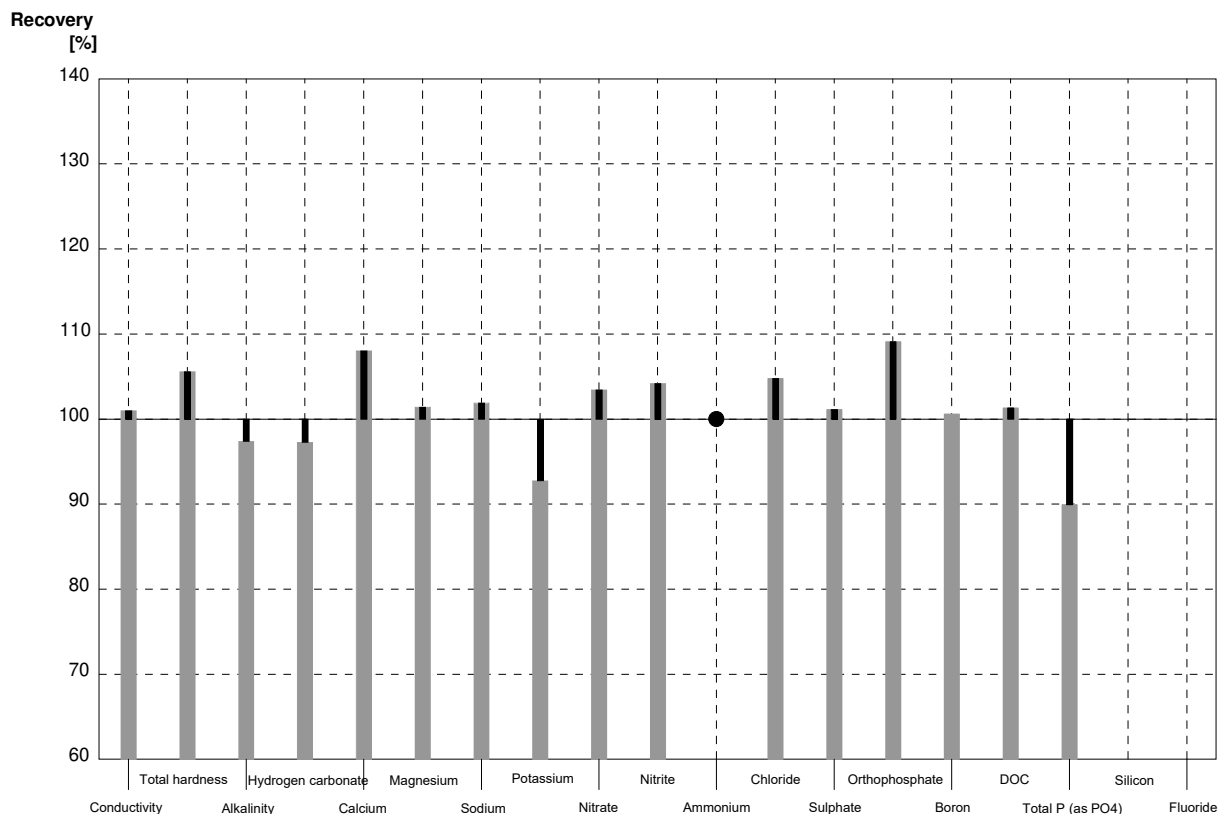
■ Deviation ■ Recovery



Sample N181B
Laboratory AC

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	503	50,3	µS/cm	101%
Total hardness	2,14	0,02	2,26	0,226	mmol/l	106%
Alkalinity	1,92	0,03	1,87	0,187	mmol/l	97%
Hydrogen carbonate	114,1	1,5	111	11,1	mg/l	97%
Calcium	51,0	0,7	55,1	5,51	mg/l	108%
Magnesium	21,1	0,3	21,4	2,14	mg/l	101%
Sodium	10,4	0,3	10,6	1,06	mg/l	102%
Potassium	4,01	0,03	3,72	0,372	mg/l	93%
Nitrate (as NO3)	43,6	1,0	45,1	4,51	mg/l	103%
Nitrite (as NO2)	0,02879	0,00011	0,0300	0,0030	mg/l	104%
Ammonium (as NH4)	<0,01		<0,009		mg/l	•
Chloride	39,5	0,9	41,4	0,414	mg/l	105%
Sulphate (as SO4)	49,5	0,6	50,07	5,07	mg/l	101%
Orthophosphate (as PO4)	0,0394	0,0017	0,0430	0,00430	mg/l	109%
Boron	0,0328	0,0006	0,0330	0,0050	mg/l	101%
DOC (as C)	5,23	0,03	5,3	0,053	mg/l	101%
Total P (as PO4)	0,0578	0,0014	0,0520	0,0052	mg/l	90%
Silicon	2,537	0,014			mg/l	
Fluoride	1,194	0,005			mg/l	

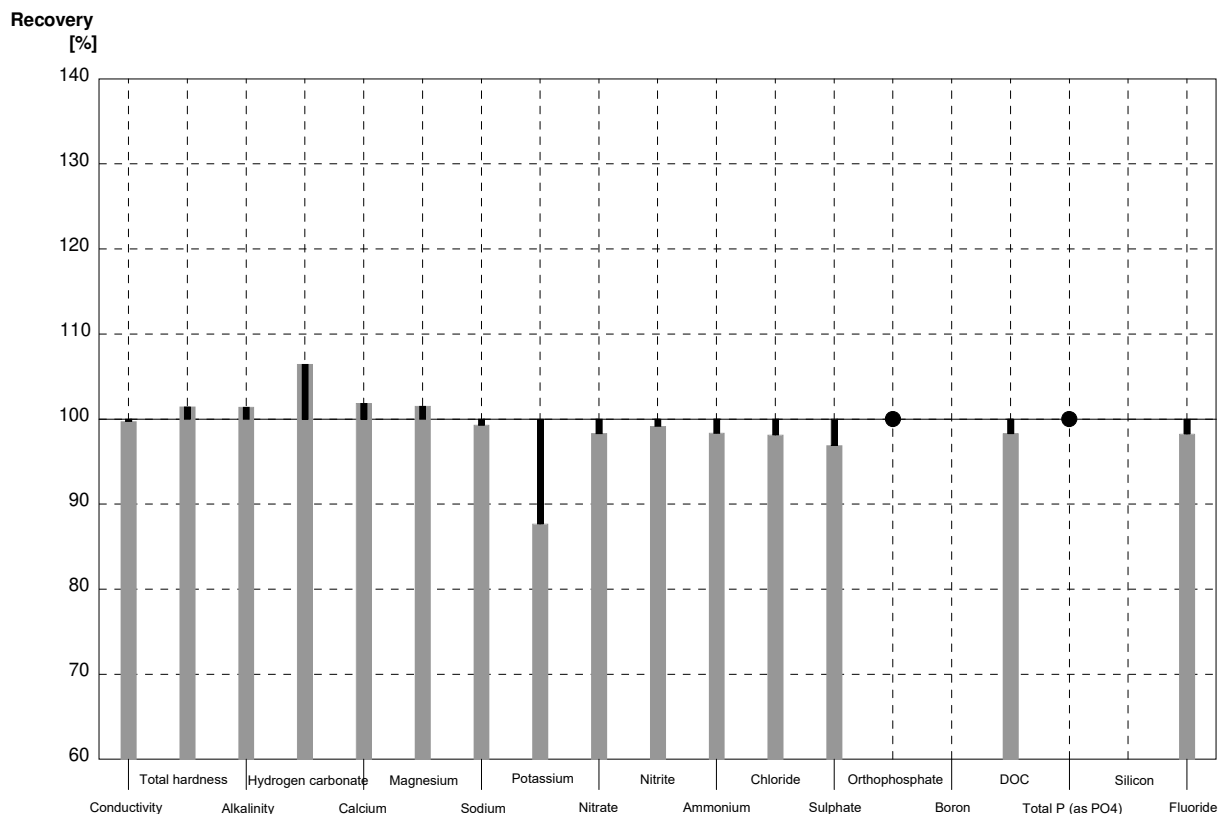
■ Deviation ■ Recovery



Sample N181A
Laboratory AD

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	388	12	µS/cm	100%
Total hardness	1,321	0,017	1,34	0,07	mmol/l	101%
Alkalinity	1,144	0,005	1,16	0,06	mmol/l	101%
Hydrogen carbonate	66,7	0,3	71	5,6	mg/l	106%
Calcium	32,3	0,6	32,9	2,0	mg/l	102%
Magnesium	12,51	0,13	12,7	1,0	mg/l	102%
Sodium	20,14	0,10	20,0	1,6	mg/l	99%
Potassium	1,87	0,03	1,64	0,13	mg/l	88%
Nitrate (as NO3)	17,9	0,4	17,6	1,1	mg/l	98%
Nitrite (as NO2)	0,0605	0,0002	0,060	0,008	mg/l	99%
Ammonium (as NH4)	0,061	0,003	0,060	0,0126	mg/l	98%
Chloride	48,8	1,1	47,9	3,8	mg/l	98%
Sulphate (as SO4)	35,6	0,4	34,5	2,1	mg/l	97%
Orthophosphate (as PO4)	<0,009		<0,009		mg/l	•
Boron	0,0753	0,0013			mg/l	
DOC (as C)	2,370	0,015	2,33	0,14	mg/l	98%
Total P (as PO4)	<0,009		<0,009		mg/l	•
Silicon	5,79	0,03			mg/l	
Fluoride	0,804	0,003	0,79	0,08	mg/l	98%

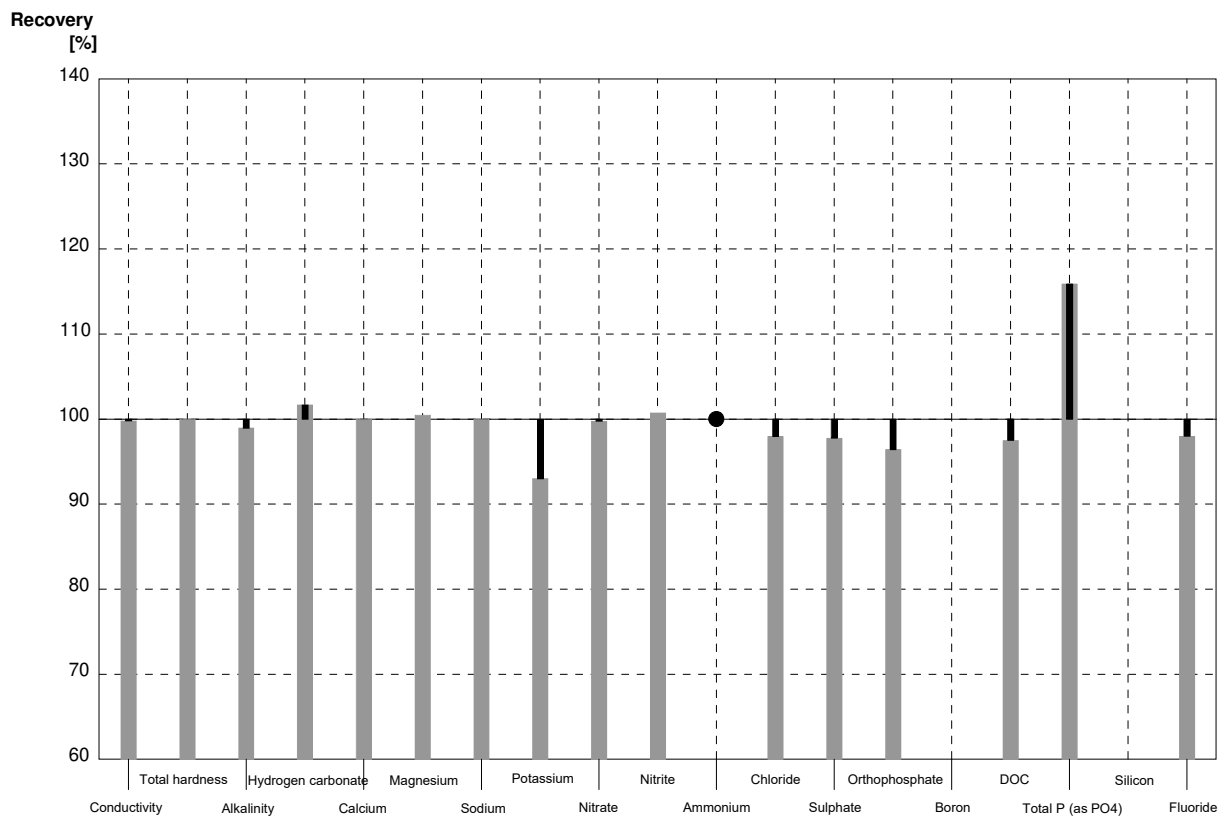
■ Deviation ■ Recovery



Sample N181B
Laboratory AD

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	497	15	µS/cm	100%
Total hardness	2,14	0,02	2,14	0,11	mmol/l	100%
Alkalinity	1,92	0,03	1,90	0,10	mmol/l	99%
Hydrogen carbonate	114,1	1,5	116	9	mg/l	102%
Calcium	51,0	0,7	51	3	mg/l	100%
Magnesium	21,1	0,3	21,2	1,7	mg/l	100%
Sodium	10,4	0,3	10,4	0,8	mg/l	100%
Potassium	4,01	0,03	3,73	0,30	mg/l	93%
Nitrate (as NO3)	43,6	1,0	43,5	2,61	mg/l	100%
Nitrite (as NO2)	0,02879	0,00011	0,0290	0,004	mg/l	101%
Ammonium (as NH4)	<0,01		<0,02		mg/l	•
Chloride	39,5	0,9	38,7	3,1	mg/l	98%
Sulphate (as SO4)	49,5	0,6	48,4	2,9	mg/l	98%
Orthophosphate (as PO4)	0,0394	0,0017	0,0380	0,007	mg/l	96%
Boron	0,0328	0,0006			mg/l	
DOC (as C)	5,23	0,03	5,1	0,3	mg/l	98%
Total P (as PO4)	0,0578	0,0014	0,067	0,009	mg/l	116%
Silicon	2,537	0,014			mg/l	
Fluoride	1,194	0,005	1,17	0,12	mg/l	98%

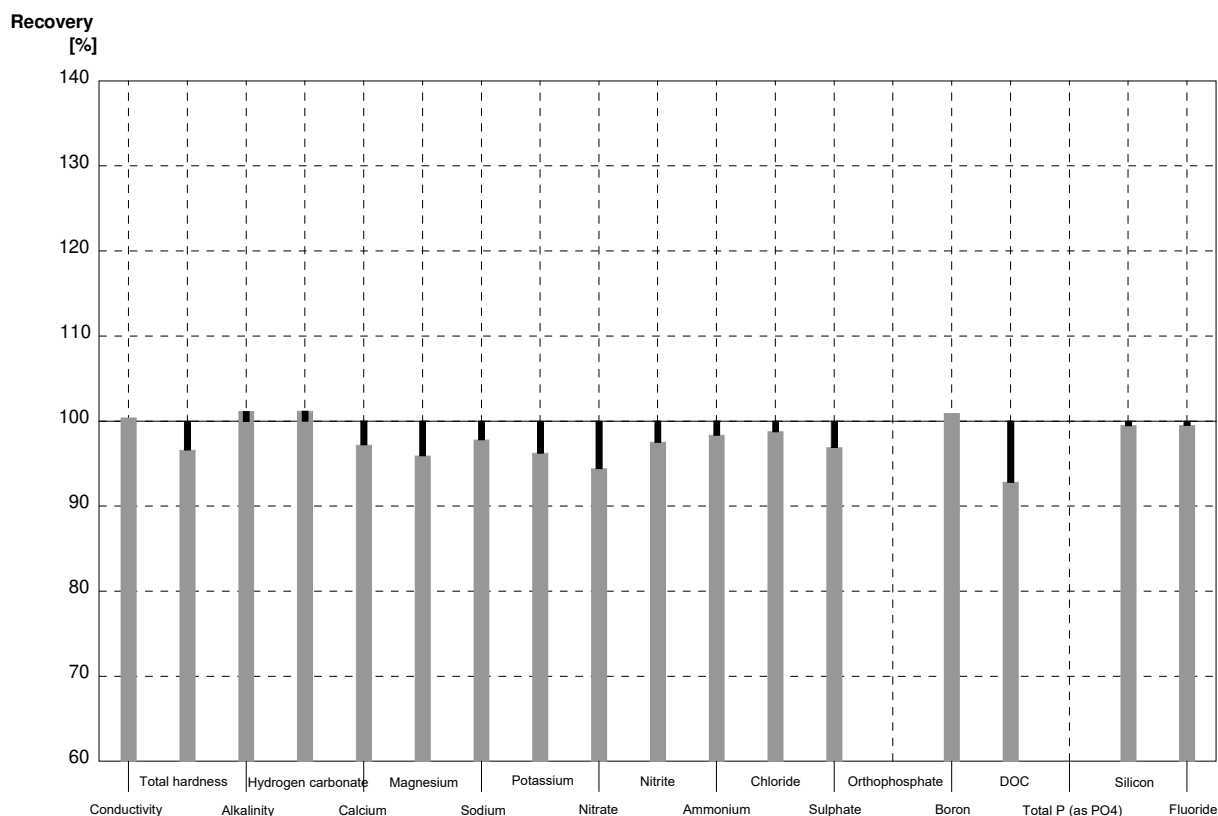
■ Deviation ■ Recovery



Sample N181A
Laboratory AE

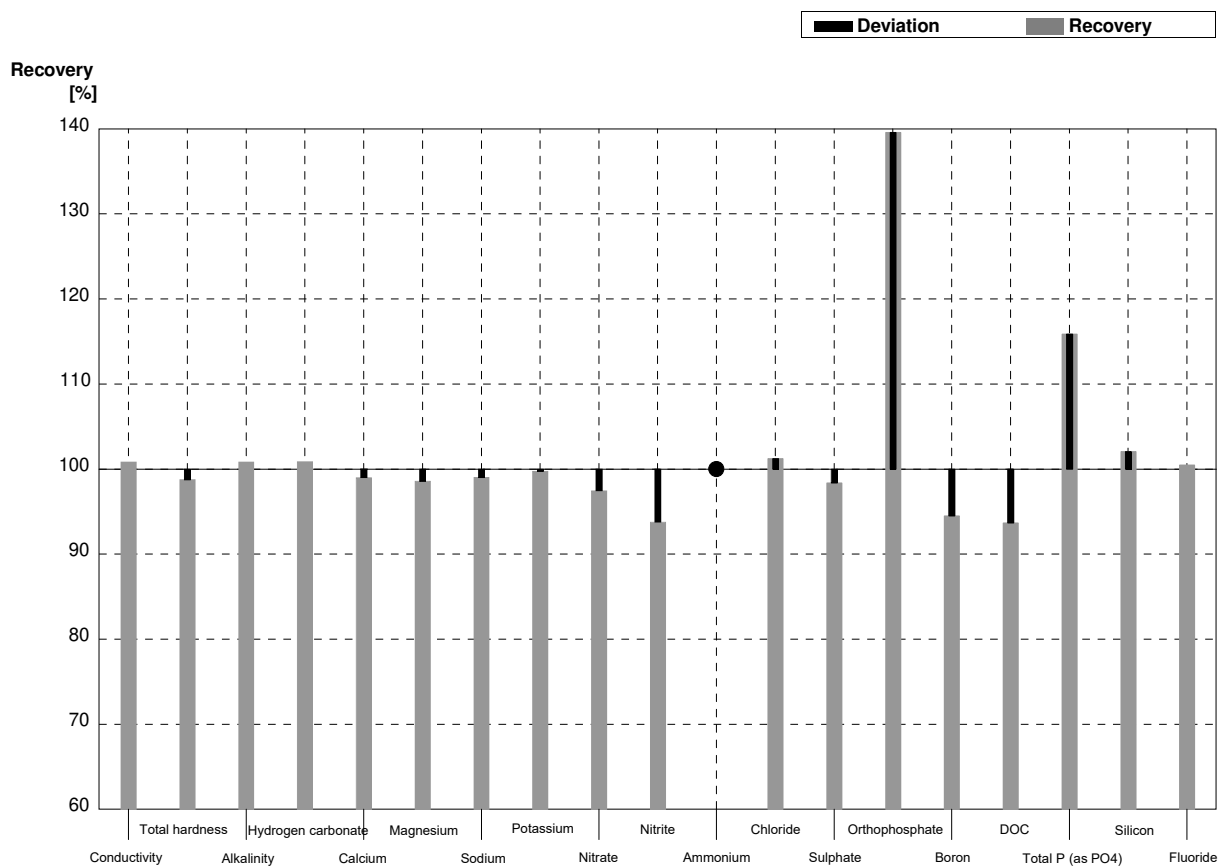
Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	390,6	22	µS/cm	100%
Total hardness	1,321	0,017	1,276	0,17	mmol/l	97%
Alkalinity	1,144	0,005	1,157		mmol/l	101%
Hydrogen carbonate	66,7	0,3	67,5		mg/l	101%
Calcium	32,3	0,6	31,4	4,19	mg/l	97%
Magnesium	12,51	0,13	12,0	1,59	mg/l	96%
Sodium	20,14	0,10	19,7	3,48	mg/l	98%
Potassium	1,87	0,03	1,80	0,30	mg/l	96%
Nitrate (as NO3)	17,9	0,4	16,9	1,43	mg/l	94%
Nitrite (as NO2)	0,0605	0,0002	0,059	0,01	mg/l	98%
Ammonium (as NH4)	0,061	0,003	0,060	0,01	mg/l	98%
Chloride	48,8	1,1	48,2	4,02	mg/l	99%
Sulphate (as SO4)	35,6	0,4	34,5	2,23	mg/l	97%
Orthophosphate (as PO4)	<0,009				mg/l	
Boron	0,0753	0,0013	0,076	0,001	mg/l	101%
DOC (as C)	2,370	0,015	2,20	0,41	mg/l	93%
Total P (as PO4)	<0,009				mg/l	
Silicon	5,79	0,03	5,76	0,58	mg/l	99%
Fluoride	0,804	0,003	0,80	0,17	mg/l	100%

■ Deviation ■ Recovery



Sample N181B
Laboratory AE

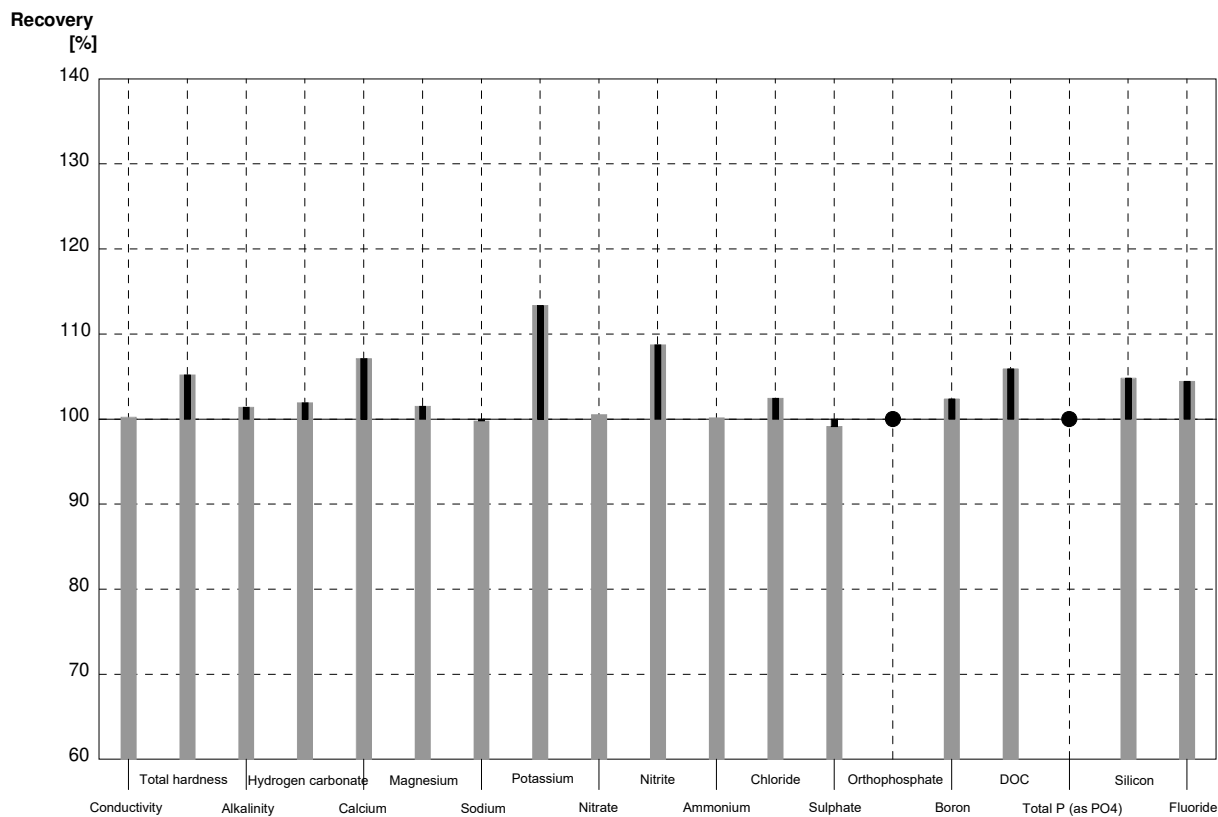
Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	502,2	28	µS/cm	101%
Total hardness	2,14	0,02	2,114	0,281	mmol/l	99%
Alkalinity	1,92	0,03	1,936		mmol/l	101%
Hydrogen carbonate	114,1	1,5	115,1		mg/l	101%
Calcium	51,0	0,7	50,5	6,74	mg/l	99%
Magnesium	21,1	0,3	20,8	2,75	mg/l	99%
Sodium	10,4	0,3	10,3	1,82	mg/l	99%
Potassium	4,01	0,03	4,00	0,66	mg/l	100%
Nitrate (as NO3)	43,6	1,0	42,5	3,59	mg/l	97%
Nitrite (as NO2)	0,02879	0,00011	0,0270	0,0029	mg/l	94%
Ammonium (as NH4)	<0,01		<0,03		mg/l	•
Chloride	39,5	0,9	40,0	3,34	mg/l	101%
Sulphate (as SO4)	49,5	0,6	48,7	3,14	mg/l	98%
Orthophosphate (as PO4)	0,0394	0,0017	0,055	0,0151	mg/l	140%
Boron	0,0328	0,0006	0,0310	0,0006	mg/l	95%
DOC (as C)	5,23	0,03	4,90	0,92	mg/l	94%
Total P (as PO4)	0,0578	0,0014	0,067	0,011	mg/l	116%
Silicon	2,537	0,014	2,59	0,259	mg/l	102%
Fluoride	1,194	0,005	1,20	0,26	mg/l	101%



Sample N181A
Laboratory AF

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	390		µS/cm	100%
Total hardness	1,321	0,017	1,39		mmol/l	105%
Alkalinity	1,144	0,005	1,16	0,08	mmol/l	101%
Hydrogen carbonate	66,7	0,3	68		mg/l	102%
Calcium	32,3	0,6	34,6	2,9	mg/l	107%
Magnesium	12,51	0,13	12,7	1,4	mg/l	102%
Sodium	20,14	0,10	20,1	1,7	mg/l	100%
Potassium	1,87	0,03	2,12	0,2	mg/l	113%
Nitrate (as NO3)	17,9	0,4	18,0	2,6	mg/l	101%
Nitrite (as NO2)	0,0605	0,0002	0,0658	0,01	mg/l	109%
Ammonium (as NH4)	0,061	0,003	0,0611	0,009	mg/l	100%
Chloride	48,8	1,1	50,0	7,1	mg/l	102%
Sulphate (as SO4)	35,6	0,4	35,3	2,9	mg/l	99%
Orthophosphate (as PO4)	<0,009		<0,01		mg/l	•
Boron	0,0753	0,0013	0,0771	5,54	mg/l	102%
DOC (as C)	2,370	0,015	2,51	0,3	mg/l	106%
Total P (as PO4)	<0,009		<0,03		mg/l	•
Silicon	5,79	0,03	6,07	1,91	mg/l	105%
Fluoride	0,804	0,003	0,84	0,1	mg/l	104%

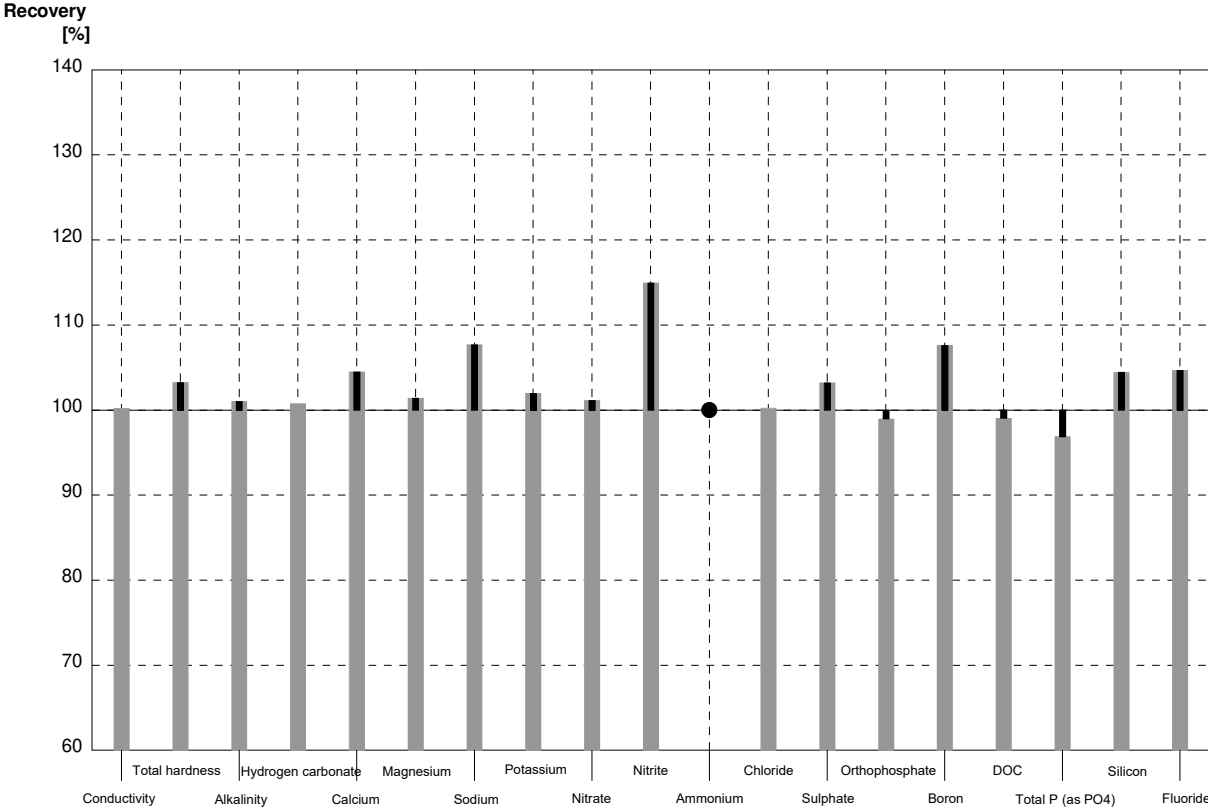
■ Deviation ■ Recovery



Sample N181B
Laboratory AF

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Conductivity (25°C)	498	2	499		$\mu\text{S/cm}$	100%
Total hardness	2,14	0,02	2,21		mmol/l	103%
Alkalinity	1,92	0,03	1,94	0,14	mmol/l	101%
Hydrogen carbonate	114,1	1,5	115		mg/l	101%
Calcium	51,0	0,7	53,3	4,5	mg/l	105%
Magnesium	21,1	0,3	21,4	2,3	mg/l	101%
Sodium	10,4	0,3	11,2	1,0	mg/l	108%
Potassium	4,01	0,03	4,09	0,4	mg/l	102%
Nitrate (as NO ₃)	43,6	1,0	44,1	6,3	mg/l	101%
Nitrite (as NO ₂)	0,02879	0,00011	0,0331	0,01	mg/l	115%
Ammonium (as NH ₄)	<0,01		<0,01		mg/l	•
Chloride	39,5	0,9	39,6	5,6	mg/l	100%
Sulphate (as SO ₄)	49,5	0,6	51,1	4,1	mg/l	103%
Orthophosphate (as PO ₄)	0,0394	0,0017	0,0390		mg/l	99%
Boron	0,0328	0,0006	0,0353	5,98	mg/l	108%
DOC (as C)	5,23	0,03	5,18	0,62	mg/l	99%
Total P (as PO ₄)	0,0578	0,0014	0,056		mg/l	97%
Silicon	2,537	0,014	2,65	0,84	mg/l	104%
Fluoride	1,194	0,005	1,25	0,2	mg/l	105%

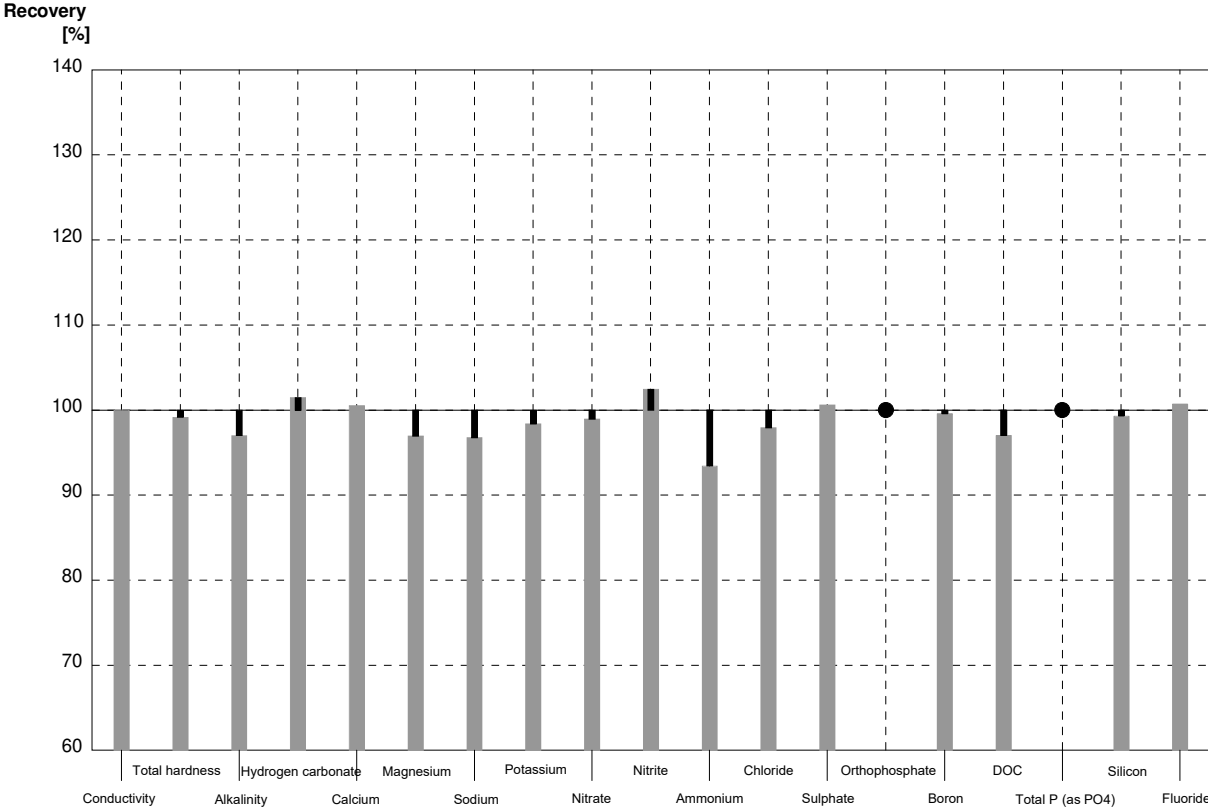
■ Deviation ■ Recovery



Sample N181A
Laboratory AG

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	389	38,9	µS/cm	100%
Total hardness	1,321	0,017	1,31		mmol/l	99%
Alkalinity	1,144	0,005	1,11	0,167	mmol/l	97%
Hydrogen carbonate	66,7	0,3	67,7	10,16	mg/l	101%
Calcium	32,3	0,6	32,48	3,248	mg/l	101%
Magnesium	12,51	0,13	12,13	1,213	mg/l	97%
Sodium	20,14	0,10	19,49	1,949	mg/l	97%
Potassium	1,87	0,03	1,84	0,184	mg/l	98%
Nitrate (as NO3)	17,9	0,4	17,712	0,8856	mg/l	99%
Nitrite (as NO2)	0,0605	0,0002	0,062	0,0094	mg/l	102%
Ammonium (as NH4)	0,061	0,003	0,0570	0,00570	mg/l	93%
Chloride	48,8	1,1	47,80	4,780	mg/l	98%
Sulphate (as SO4)	35,6	0,4	35,82	3,582	mg/l	101%
Orthophosphate (as PO4)	<0,009		0,0060	0,00090	mg/l	•
Boron	0,0753	0,0013	0,075	0,0113	mg/l	100%
DOC (as C)	2,370	0,015	2,30	0,180	mg/l	97%
Total P (as PO4)	<0,009		<0,0150		mg/l	•
Silicon	5,79	0,03	5,75	0,86	mg/l	99%
Fluoride	0,804	0,003	0,810	0,081	mg/l	101%

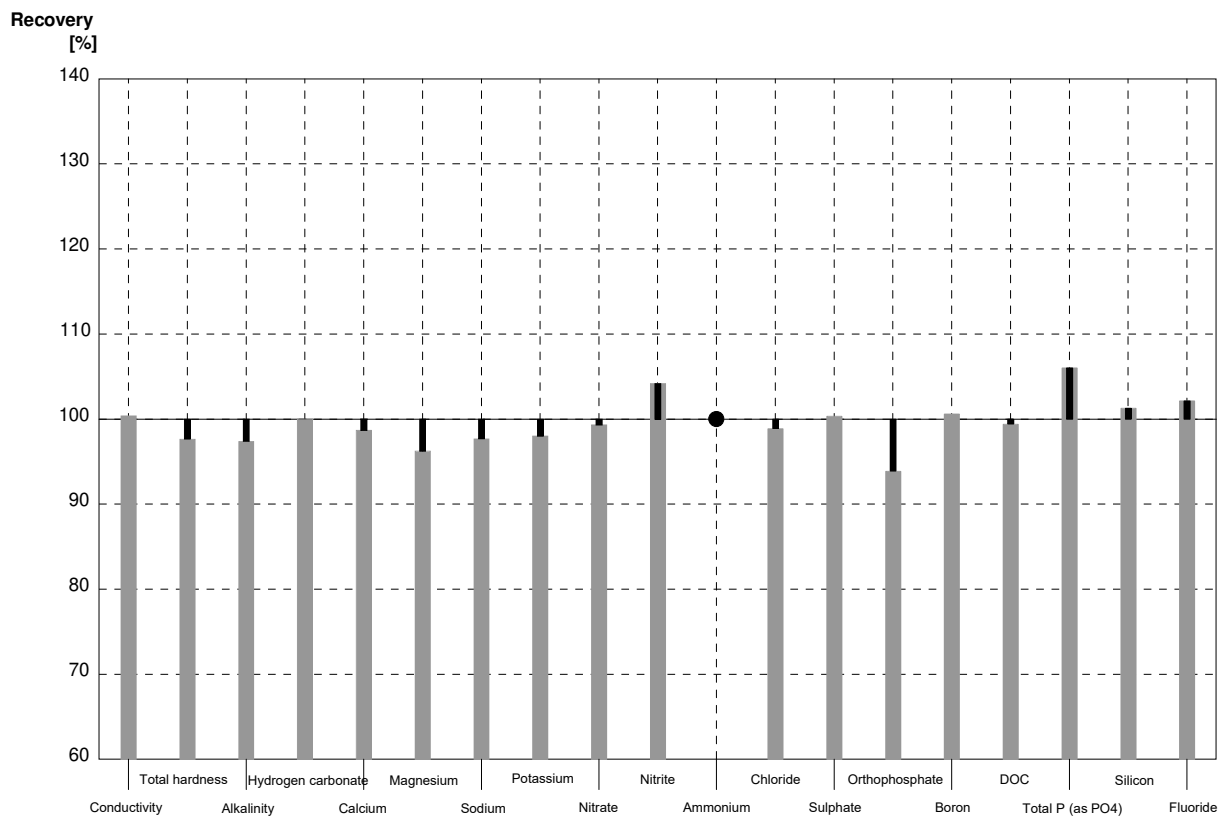
■ Deviation ■ Recovery



Sample N181B
Laboratory AG

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	500	50,0	µS/cm	100%
Total hardness	2,14	0,02	2,09		mmol/l	98%
Alkalinity	1,92	0,03	1,87	0,281	mmol/l	97%
Hydrogen carbonate	114,1	1,5	114,1	17,12	mg/l	100%
Calcium	51,0	0,7	50,34	5,034	mg/l	99%
Magnesium	21,1	0,3	20,31	2,031	mg/l	96%
Sodium	10,4	0,3	10,16	1,016	mg/l	98%
Potassium	4,01	0,03	3,93	0,393	mg/l	98%
Nitrate (as NO3)	43,6	1,0	43,316	2,1658	mg/l	99%
Nitrite (as NO2)	0,02879	0,00011	0,0300	0,00440	mg/l	104%
Ammonium (as NH4)	<0,01		<0,00052		mg/l	•
Chloride	39,5	0,9	39,07	3,907	mg/l	99%
Sulphate (as SO4)	49,5	0,6	49,67	4,967	mg/l	100%
Orthophosphate (as PO4)	0,0394	0,0017	0,0370	0,00550	mg/l	94%
Boron	0,0328	0,0006	0,0330	0,0050	mg/l	101%
DOC (as C)	5,23	0,03	5,20	0,420	mg/l	99%
Total P (as PO4)	0,0578	0,0014	0,0613	0,0092	mg/l	106%
Silicon	2,537	0,014	2,57	0,388	mg/l	101%
Fluoride	1,194	0,005	1,22	0,122	mg/l	102%

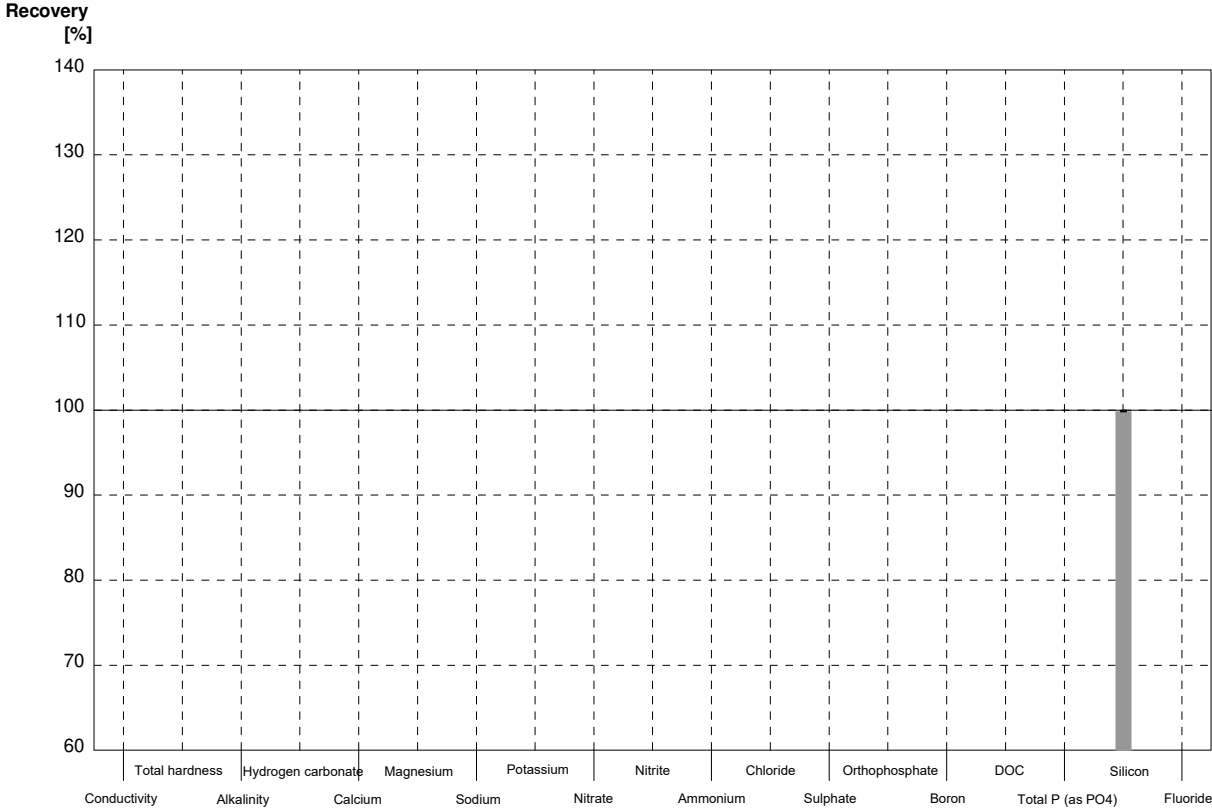
■ Deviation ■ Recovery



Sample N181A
Laboratory AH

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1			µS/cm	
Total hardness	1,321	0,017			mmol/l	
Alkalinity	1,144	0,005			mmol/l	
Hydrogen carbonate	66,7	0,3			mg/l	
Calcium	32,3	0,6			mg/l	
Magnesium	12,51	0,13			mg/l	
Sodium	20,14	0,10			mg/l	
Potassium	1,87	0,03			mg/l	
Nitrate (as NO3)	17,9	0,4			mg/l	
Nitrite (as NO2)	0,0605	0,0002			mg/l	
Ammonium (as NH4)	0,061	0,003			mg/l	
Chloride	48,8	1,1			mg/l	
Sulphate (as SO4)	35,6	0,4			mg/l	
Orthophosphate (as PO4)	<0,009				mg/l	
Boron	0,0753	0,0013			mg/l	
DOC (as C)	2,370	0,015			mg/l	
Total P (as PO4)	<0,009				mg/l	
Silicon	5,79	0,03	5,7791	0,444	mg/l	100%
Fluoride	0,804	0,003			mg/l	

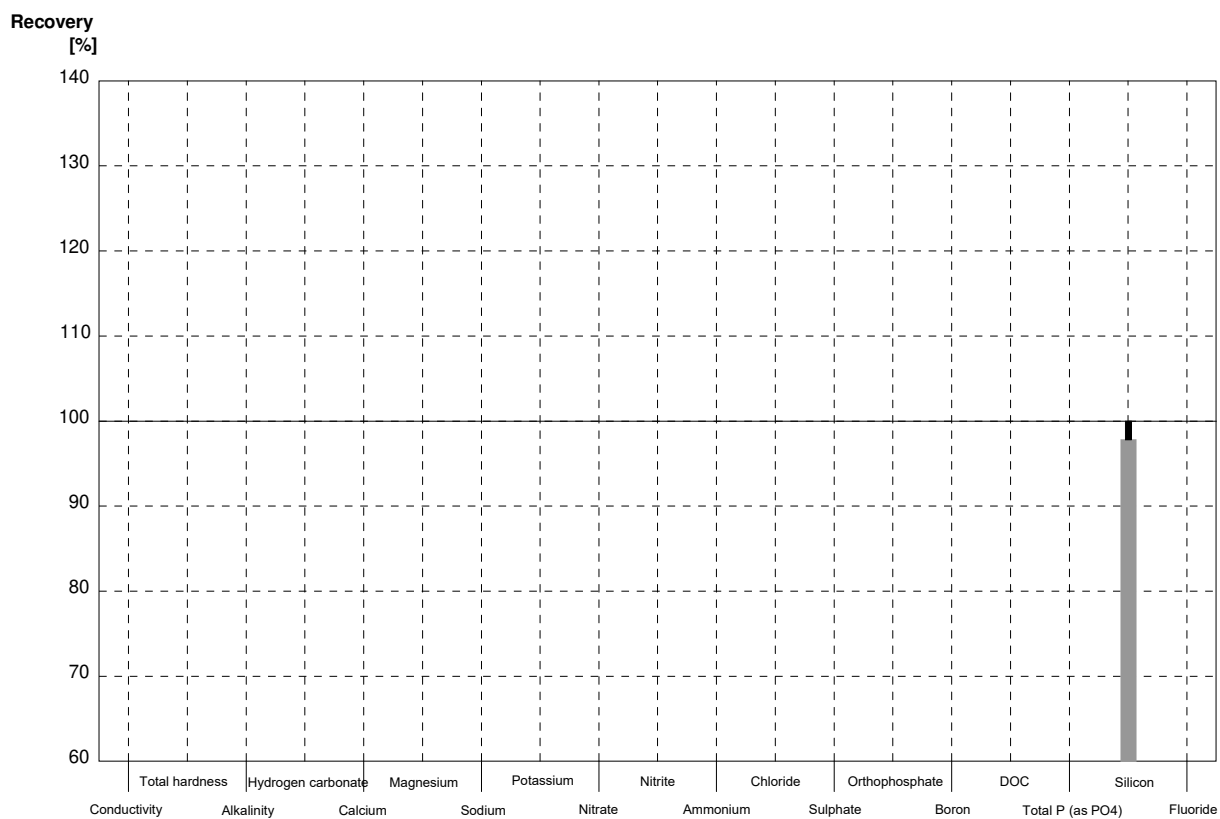
■ Deviation ■ Recovery



Sample N181B
Laboratory AH

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2			µS/cm	
Total hardness	2,14	0,02			mmol/l	
Alkalinity	1,92	0,03			mmol/l	
Hydrogen carbonate	114,1	1,5			mg/l	
Calcium	51,0	0,7			mg/l	
Magnesium	21,1	0,3			mg/l	
Sodium	10,4	0,3			mg/l	
Potassium	4,01	0,03			mg/l	
Nitrate (as NO3)	43,6	1,0			mg/l	
Nitrite (as NO2)	0,02879	0,00011			mg/l	
Ammonium (as NH4)	<0,01				mg/l	
Chloride	39,5	0,9			mg/l	
Sulphate (as SO4)	49,5	0,6			mg/l	
Orthophosphate (as PO4)	0,0394	0,0017			mg/l	
Boron	0,0328	0,0006			mg/l	
DOC (as C)	5,23	0,03			mg/l	
Total P (as PO4)	0,0578	0,0014			mg/l	
Silicon	2,537	0,014	2,4821	0,191	mg/l	98%
Fluoride	1,194	0,005			mg/l	

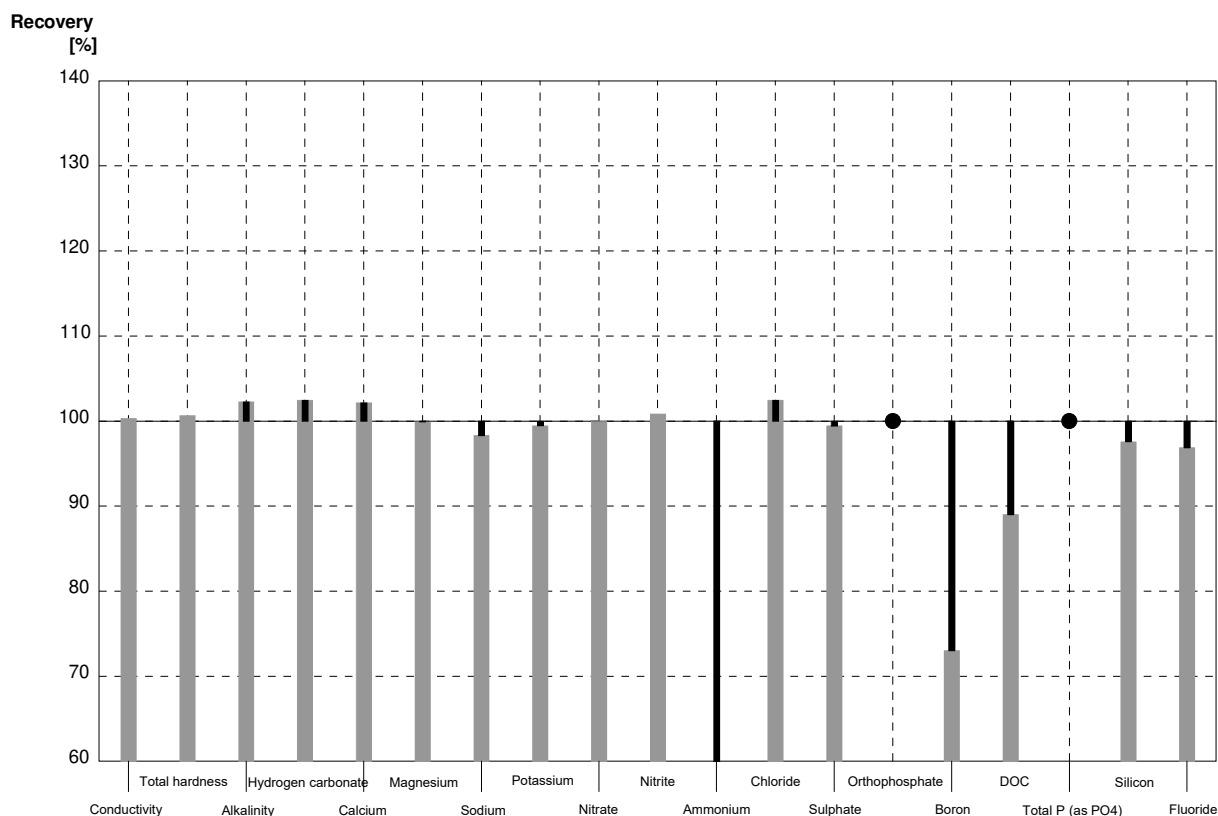
■ Deviation ■ Recovery



Sample N181A
Laboratory AI

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	390,21	39	µS/cm	100%
Total hardness	1,321	0,017	1,33	0,13	mmol/l	101%
Alkalinity	1,144	0,005	1,17	0,283	mmol/l	102%
Hydrogen carbonate	66,7	0,3	68,34	6,83	mg/l	102%
Calcium	32,3	0,6	33,00	4,94	mg/l	102%
Magnesium	12,51	0,13	12,50	4,04	mg/l	100%
Sodium	20,14	0,10	19,80	3,2	mg/l	98%
Potassium	1,87	0,03	1,86	0,246	mg/l	99%
Nitrate (as NO3)	17,9	0,4	17,9	4,97	mg/l	100%
Nitrite (as NO2)	0,0605	0,0002	0,061	0,0213	mg/l	101%
Ammonium (as NH4)	0,061	0,003	0,0339	0,0142	mg/l	56%
Chloride	48,8	1,1	50,00	10,2	mg/l	102%
Sulphate (as SO4)	35,6	0,4	35,4	6,52	mg/l	99%
Orthophosphate (as PO4)	<0,009		<0,1		mg/l	•
Boron	0,0753	0,0013	0,055	0,011	mg/l	73%
DOC (as C)	2,370	0,015	2,11	0,7	mg/l	89%
Total P (as PO4)	<0,009		<0,005		mg/l	•
Silicon	5,79	0,03	5,65	1,09	mg/l	98%
Fluoride	0,804	0,003	0,779	0,14	mg/l	97%

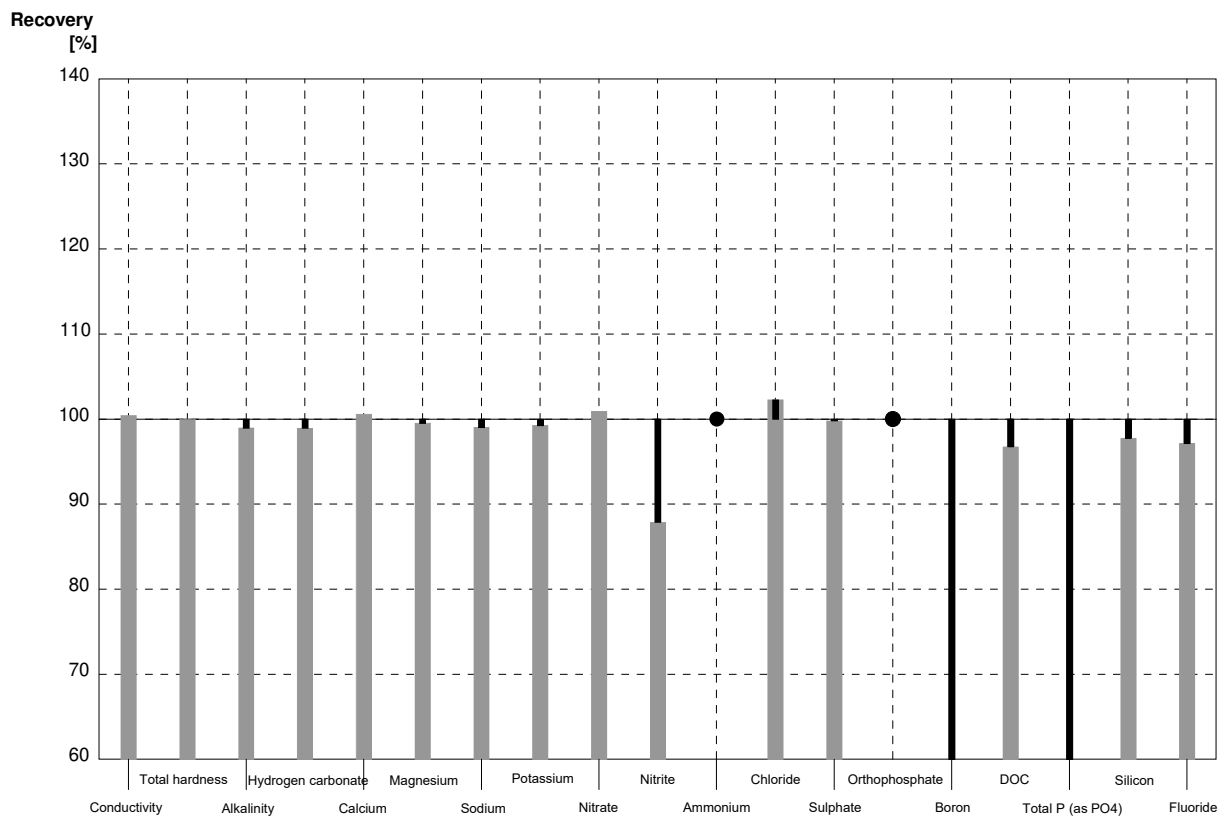
■ Deviation ■ Recovery



Sample N181B
Laboratory AI

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	500,1	50	µS/cm	100%
Total hardness	2,14	0,02	2,14	0,214	mmol/l	100%
Alkalinity	1,92	0,03	1,90	0,459	mmol/l	99%
Hydrogen carbonate	114,1	1,5	112,88	11,28	mg/l	99%
Calcium	51,0	0,7	51,3	7,68	mg/l	101%
Magnesium	21,1	0,3	21,00	6,78	mg/l	100%
Sodium	10,4	0,3	10,3	1,66	mg/l	99%
Potassium	4,01	0,03	3,98	0,526	mg/l	99%
Nitrate (as NO3)	43,6	1,0	44,00	12,2	mg/l	101%
Nitrite (as NO2)	0,02879	0,00011	0,0253	0,00883	mg/l	88%
Ammonium (as NH4)	<0,01		0,0147	0,00615	mg/l	•
Chloride	39,5	0,9	40,4	8,27	mg/l	102%
Sulphate (as SO4)	49,5	0,6	49,4	9,1	mg/l	100%
Orthophosphate (as PO4)	0,0394	0,0017	<0,1		mg/l	•
Boron	0,0328	0,0006	0,0175	0,0035	mg/l	53%
DOC (as C)	5,23	0,03	5,06	1,7	mg/l	97%
Total P (as PO4)	0,0578	0,0014	0,0117	0,00133	mg/l	20%
Silicon	2,537	0,014	2,48	0,477	mg/l	98%
Fluoride	1,194	0,005	1,16	0,22	mg/l	97%

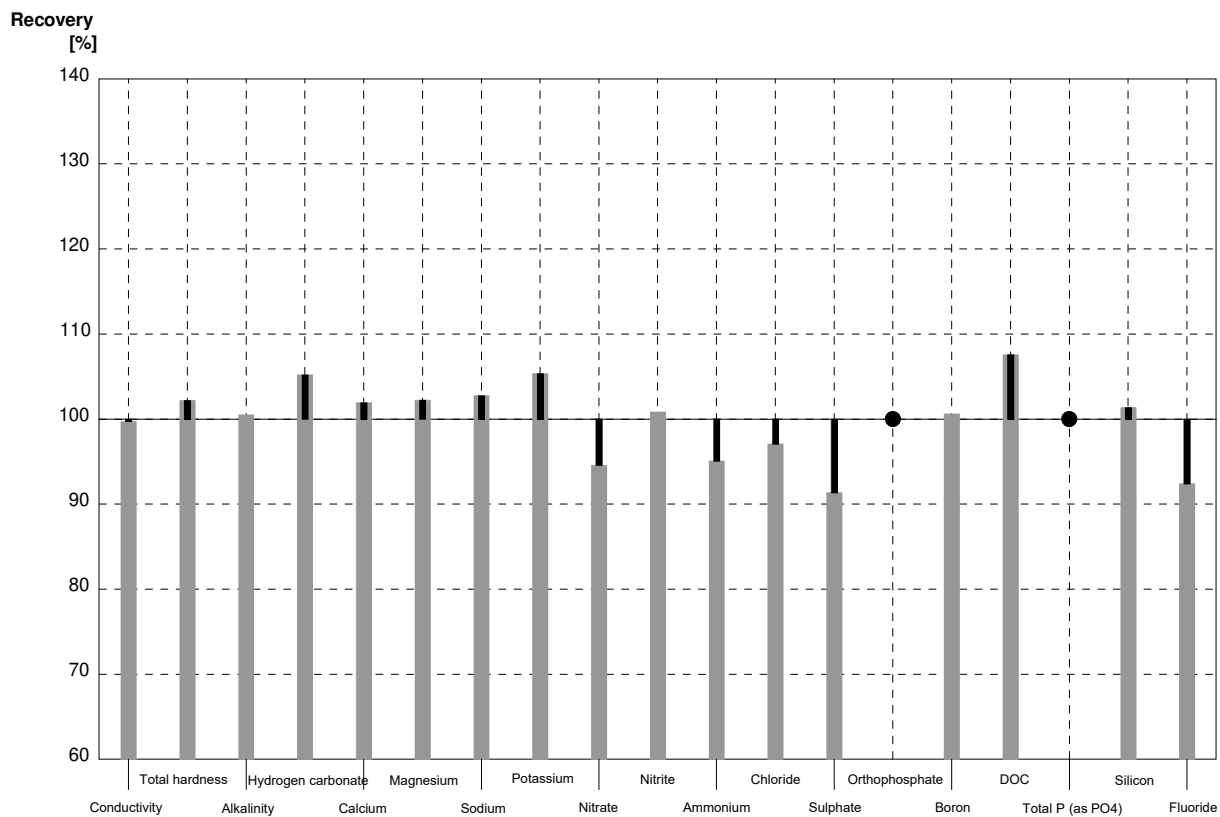
■ Deviation ■ Recovery



Sample N181A
Laboratory AJ

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	388	2,9	µS/cm	100%
Total hardness	1,321	0,017	1,35	0,135	mmol/l	102%
Alkalinity	1,144	0,005	1,15	0,115	mmol/l	101%
Hydrogen carbonate	66,7	0,3	70,17	7,02	mg/l	105%
Calcium	32,3	0,6	32,93	3,34	mg/l	102%
Magnesium	12,51	0,13	12,79	0,98	mg/l	102%
Sodium	20,14	0,10	20,70	1,44	mg/l	103%
Potassium	1,87	0,03	1,97	0,145	mg/l	105%
Nitrate (as NO3)	17,9	0,4	16,93	1,7	mg/l	95%
Nitrite (as NO2)	0,0605	0,0002	0,061	0,006	mg/l	101%
Ammonium (as NH4)	0,061	0,003	0,058	0,006	mg/l	95%
Chloride	48,8	1,1	47,37	4,74	mg/l	97%
Sulphate (as SO4)	35,6	0,4	32,52	3,25	mg/l	91%
Orthophosphate (as PO4)	<0,009		0,00100	0,001	mg/l	•
Boron	0,0753	0,0013	0,07578	0,004872	mg/l	101%
DOC (as C)	2,370	0,015	2,55	0,255	mg/l	108%
Total P (as PO4)	<0,009		0,00300	0,002	mg/l	•
Silicon	5,79	0,03	5,87	0,587	mg/l	101%
Fluoride	0,804	0,003	0,743	0,074	mg/l	92%

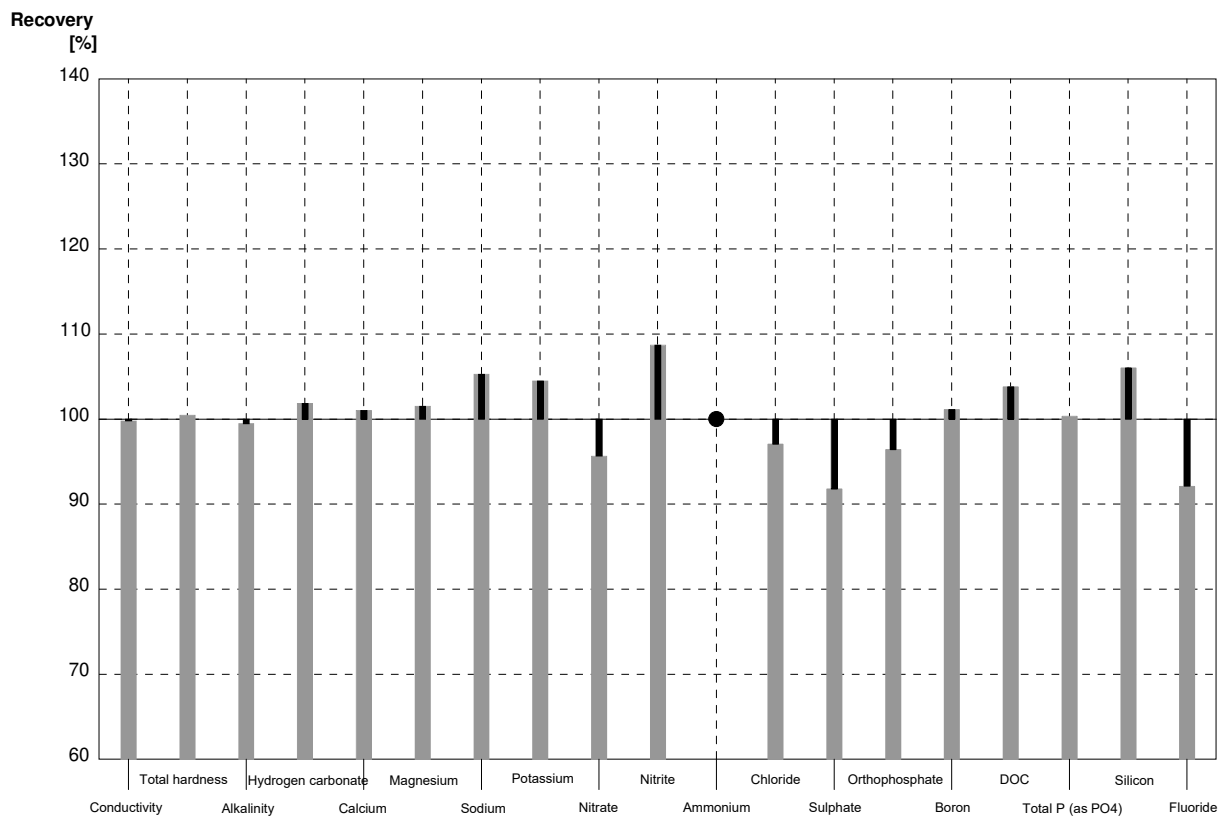
■ Deviation ■ Recovery



Sample N181B
Laboratory AJ

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	497	3,5	µS/cm	100%
Total hardness	2,14	0,02	2,15	0,22	mmol/l	100%
Alkalinity	1,92	0,03	1,91	0,2	mmol/l	99%
Hydrogen carbonate	114,1	1,5	116,24	11,624	mg/l	102%
Calcium	51,0	0,7	51,52	5,224	mg/l	101%
Magnesium	21,1	0,3	21,42	1,641	mg/l	102%
Sodium	10,4	0,3	10,95	0,76	mg/l	105%
Potassium	4,01	0,03	4,19	0,31	mg/l	104%
Nitrate (as NO3)	43,6	1,0	41,71	4,2	mg/l	96%
Nitrite (as NO2)	0,02879	0,00011	0,0313	0,003	mg/l	109%
Ammonium (as NH4)	<0,01		0,00350	0,002	mg/l	•
Chloride	39,5	0,9	38,35	3,84	mg/l	97%
Sulphate (as SO4)	49,5	0,6	45,44	4,544	mg/l	92%
Orthophosphate (as PO4)	0,0394	0,0017	0,0380	0,004	mg/l	96%
Boron	0,0328	0,0006	0,033175	0,0021	mg/l	101%
DOC (as C)	5,23	0,03	5,43	0,543	mg/l	104%
Total P (as PO4)	0,0578	0,0014	0,058	0,006	mg/l	100%
Silicon	2,537	0,014	2,69	0,27	mg/l	106%
Fluoride	1,194	0,005	1,10	0,11	mg/l	92%

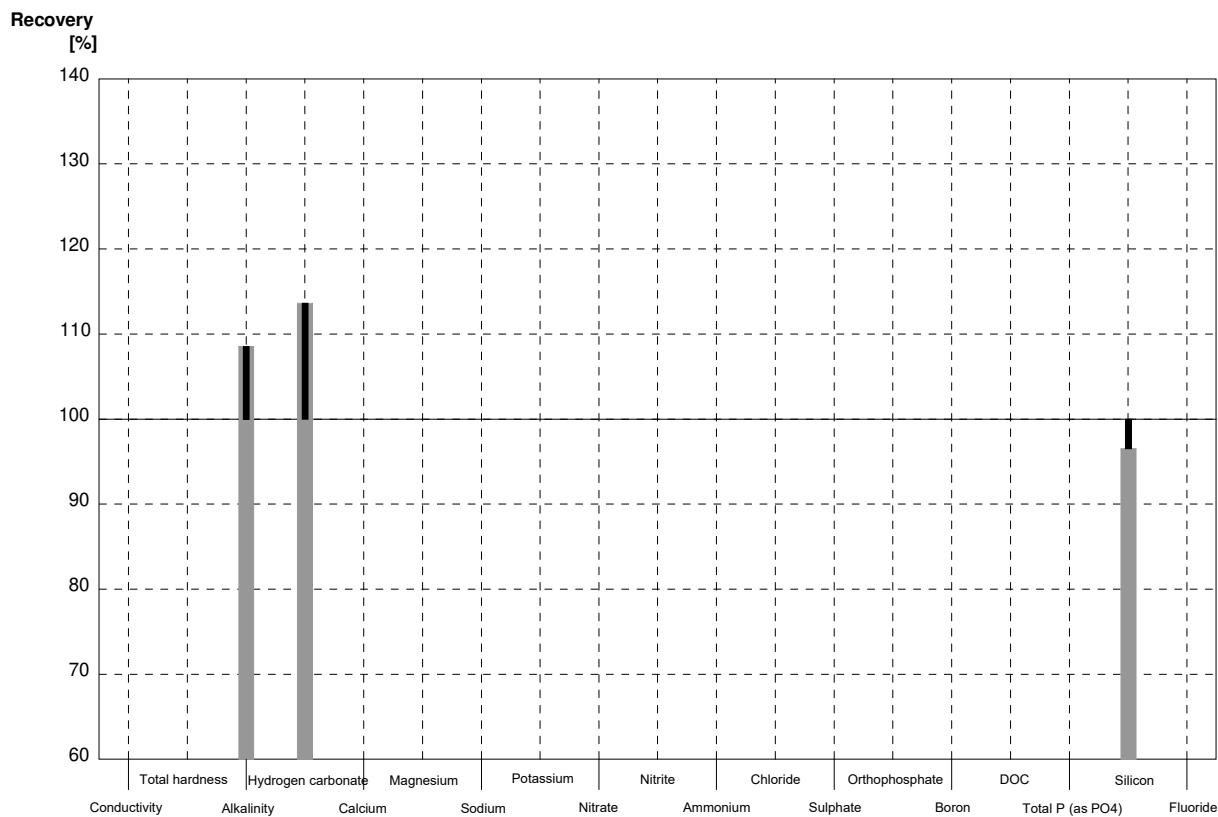
■ Deviation ■ Recovery



Sample N181A
Laboratory AK

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1			µS/cm	
Total hardness	1,321	0,017			mmol/l	
Alkalinity	1,144	0,005	1,242	0,1	mmol/l	109%
Hydrogen carbonate	66,7	0,3	75,8	2,5	mg/l	114%
Calcium	32,3	0,6			mg/l	
Magnesium	12,51	0,13			mg/l	
Sodium	20,14	0,10			mg/l	
Potassium	1,87	0,03			mg/l	
Nitrate (as NO3)	17,9	0,4			mg/l	
Nitrite (as NO2)	0,0605	0,0002			mg/l	
Ammonium (as NH4)	0,061	0,003			mg/l	
Chloride	48,8	1,1			mg/l	
Sulphate (as SO4)	35,6	0,4			mg/l	
Orthophosphate (as PO4)	<0,009				mg/l	
Boron	0,0753	0,0013			mg/l	
DOC (as C)	2,370	0,015			mg/l	
Total P (as PO4)	<0,009				mg/l	
Silicon	5,79	0,03	5,59	0,25	mg/l	97%
Fluoride	0,804	0,003			mg/l	

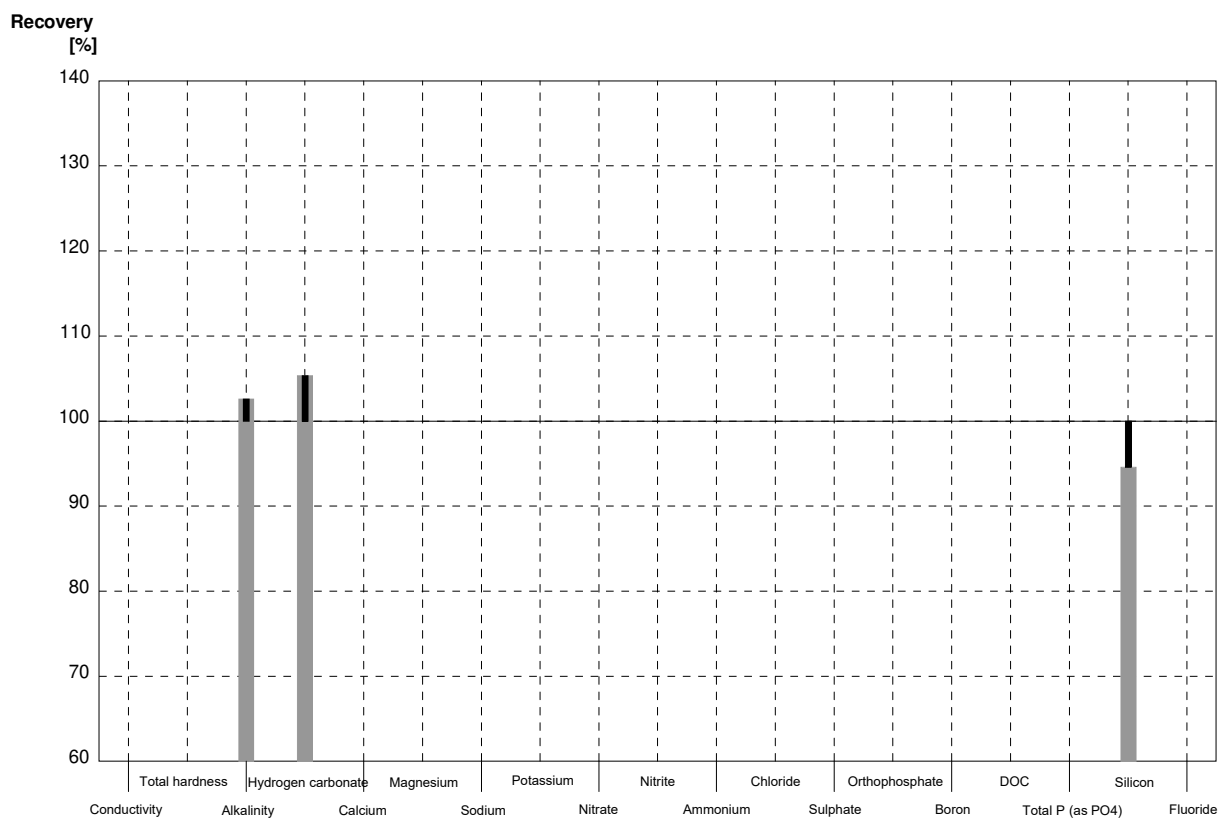
■ Deviation ■ Recovery



Sample N181B
Laboratory AK

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2			µS/cm	
Total hardness	2,14	0,02			mmol/l	
Alkalinity	1,92	0,03	1,970	0,1	mmol/l	103%
Hydrogen carbonate	114,1	1,5	120,2	3,6	mg/l	105%
Calcium	51,0	0,7			mg/l	
Magnesium	21,1	0,3			mg/l	
Sodium	10,4	0,3			mg/l	
Potassium	4,01	0,03			mg/l	
Nitrate (as NO3)	43,6	1,0			mg/l	
Nitrite (as NO2)	0,02879	0,00011			mg/l	
Ammonium (as NH4)	<0,01				mg/l	
Chloride	39,5	0,9			mg/l	
Sulphate (as SO4)	49,5	0,6			mg/l	
Orthophosphate (as PO4)	0,0394	0,0017			mg/l	
Boron	0,0328	0,0006			mg/l	
DOC (as C)	5,23	0,03			mg/l	
Total P (as PO4)	0,0578	0,0014			mg/l	
Silicon	2,537	0,014	2,40	0,12	mg/l	95%
Fluoride	1,194	0,005			mg/l	

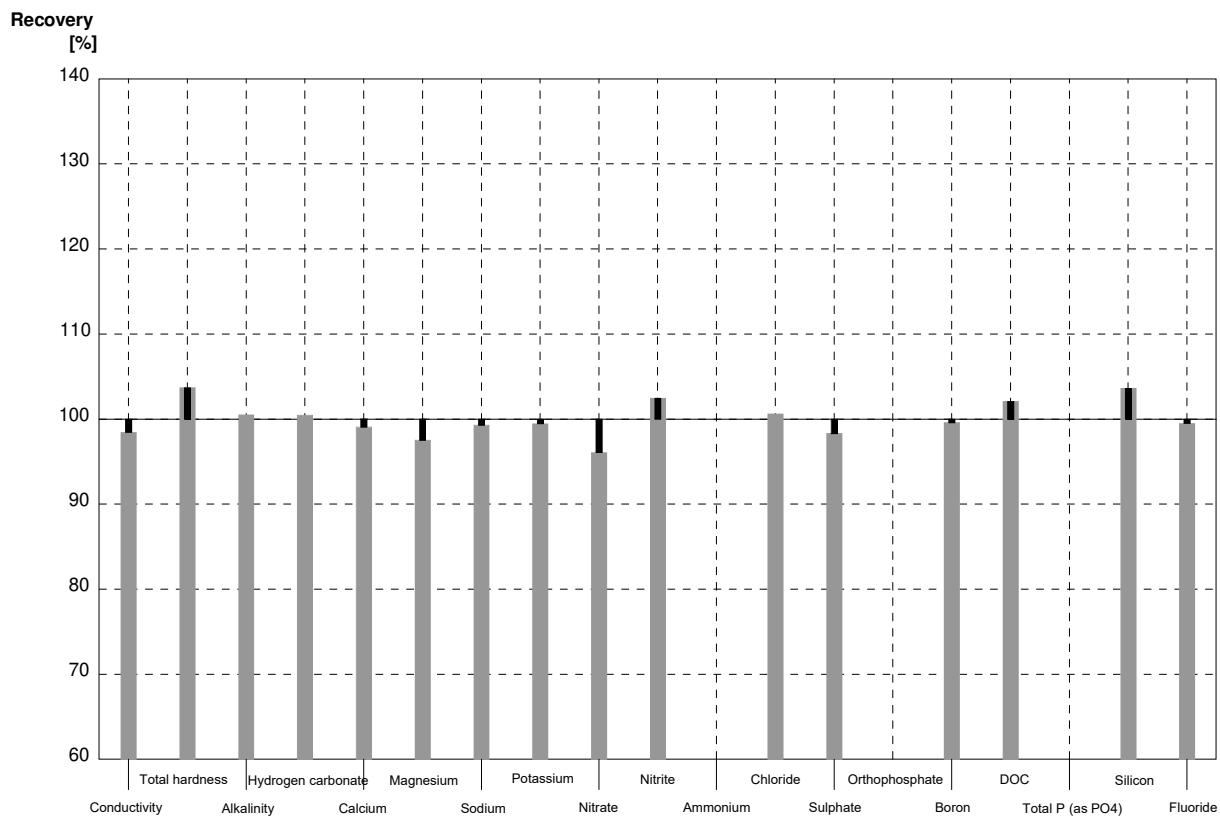
■ Deviation ■ Recovery



Sample N181A
Laboratory AL

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	389	1	383	11	µS/cm	98%
Total hardness	1,321	0,017	1,37		mmol/l	104%
Alkalinity	1,144	0,005	1,15	0,12	mmol/l	101%
Hydrogen carbonate	66,7	0,3	67		mg/l	100%
Calcium	32,3	0,6	32,0	3,2	mg/l	99%
Magnesium	12,51	0,13	12,2	1,2	mg/l	98%
Sodium	20,14	0,10	20,0	2,0	mg/l	99%
Potassium	1,87	0,03	1,86	0,28	mg/l	99%
Nitrate (as NO3)	17,9	0,4	17,2	0,9	mg/l	96%
Nitrite (as NO2)	0,0605	0,0002	0,062	0,012	mg/l	102%
Ammonium (as NH4)	0,061	0,003			mg/l	
Chloride	48,8	1,1	49,1	4,9	mg/l	101%
Sulphate (as SO4)	35,6	0,4	35,0	3,5	mg/l	98%
Orthophosphate (as PO4)	<0,009				mg/l	
Boron	0,0753	0,0013	0,075	0,011	mg/l	100%
DOC (as C)	2,370	0,015	2,42	0,48	mg/l	102%
Total P (as PO4)	<0,009				mg/l	
Silicon	5,79	0,03	6,0	0,6	mg/l	104%
Fluoride	0,804	0,003	0,80	0,12	mg/l	100%

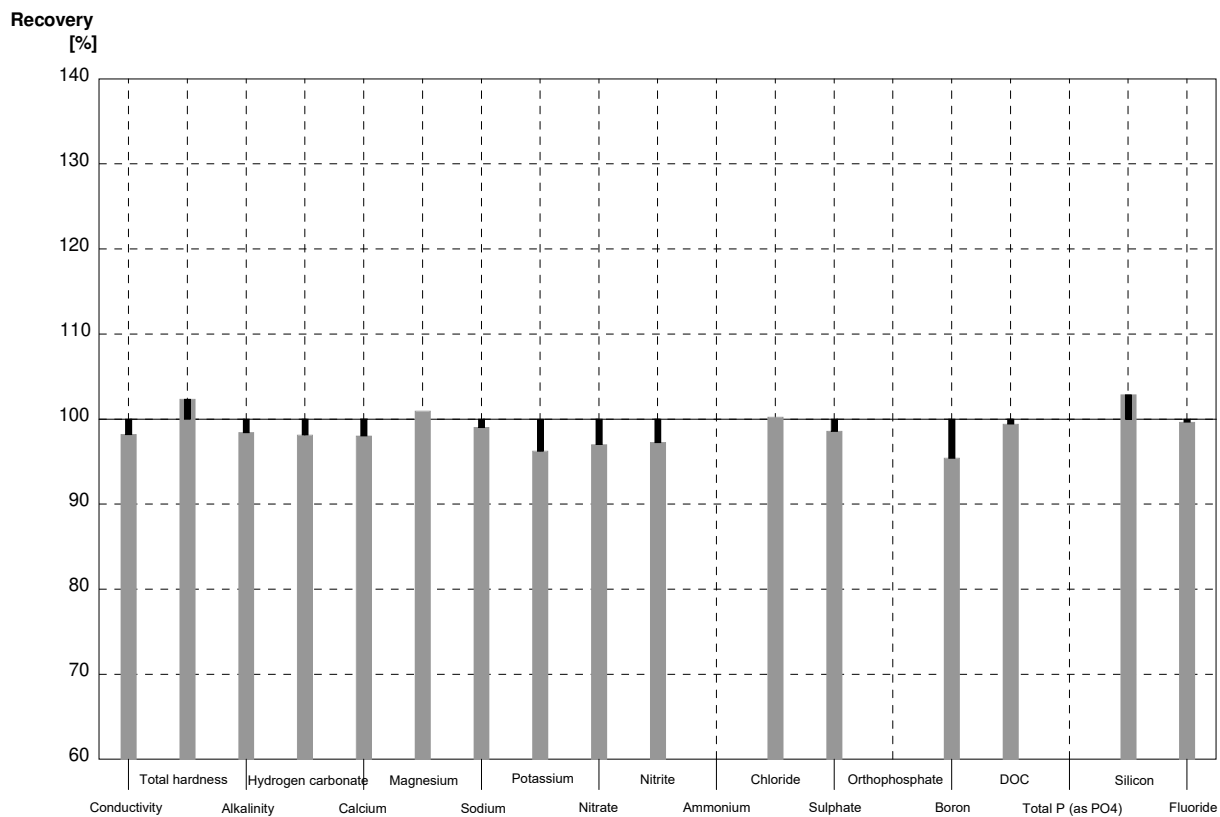
■ Deviation ■ Recovery



Sample N181B
Laboratory AL

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Conductivity (25°C)	498	2	489	15	µS/cm	98%
Total hardness	2,14	0,02	2,19		mmol/l	102%
Alkalinity	1,92	0,03	1,89	0,19	mmol/l	98%
Hydrogen carbonate	114,1	1,5	112		mg/l	98%
Calcium	51,0	0,7	50	5	mg/l	98%
Magnesium	21,1	0,3	21,3	2,1	mg/l	101%
Sodium	10,4	0,3	10,3	1,0	mg/l	99%
Potassium	4,01	0,03	3,86	0,58	mg/l	96%
Nitrate (as NO3)	43,6	1,0	42,3	2,1	mg/l	97%
Nitrite (as NO2)	0,02879	0,00011	0,0280	0,0056	mg/l	97%
Ammonium (as NH4)	<0,01				mg/l	
Chloride	39,5	0,9	39,6	4,0	mg/l	100%
Sulphate (as SO4)	49,5	0,6	48,8	4,9	mg/l	99%
Orthophosphate (as PO4)	0,0394	0,0017			mg/l	
Boron	0,0328	0,0006	0,0313	0,0047	mg/l	95%
DOC (as C)	5,23	0,03	5,2	1,0	mg/l	99%
Total P (as PO4)	0,0578	0,0014			mg/l	
Silicon	2,537	0,014	2,61	0,26	mg/l	103%
Fluoride	1,194	0,005	1,19	0,18	mg/l	100%

■ Deviation ■ Recovery





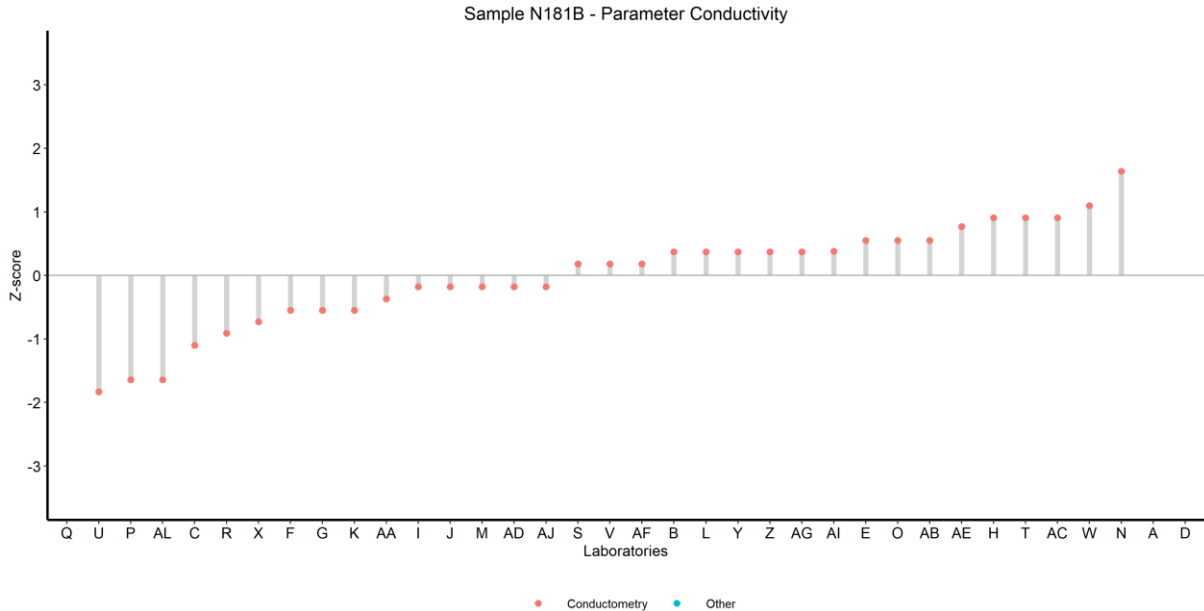
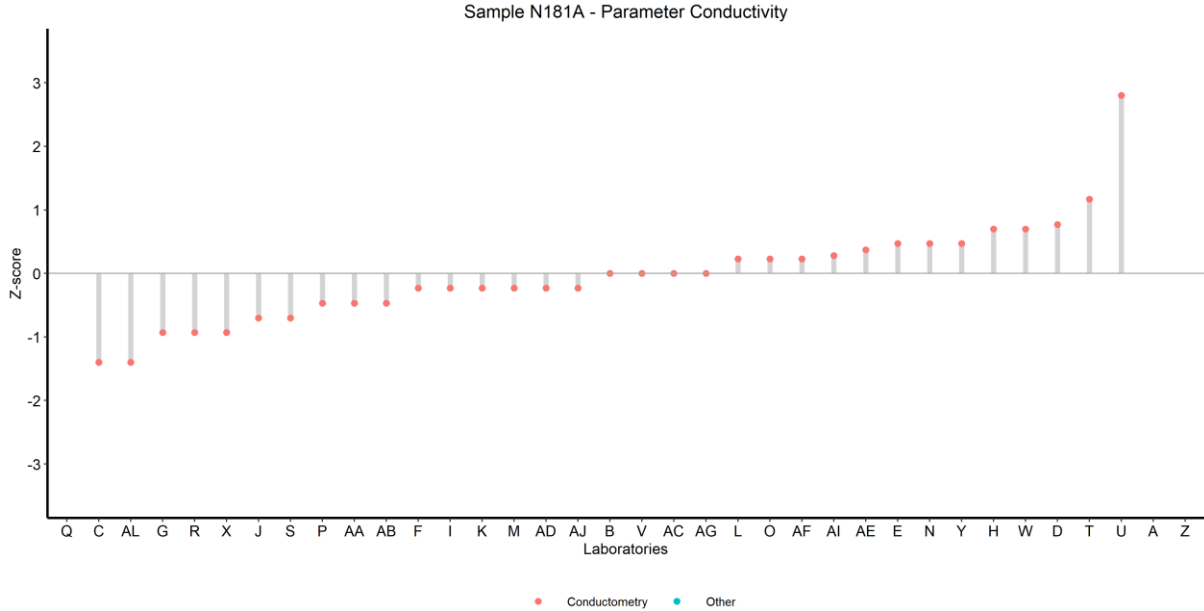
Methodenvergleich
Method comparison

Eignungsprüfungsrunde / Proficiency testing round
N181

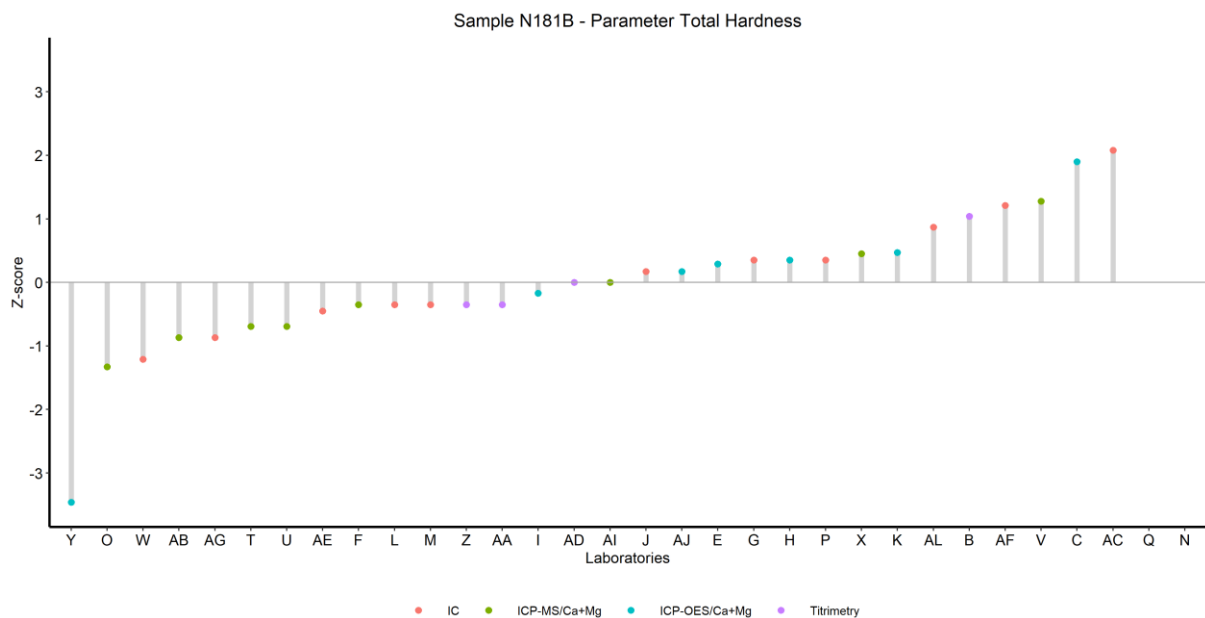
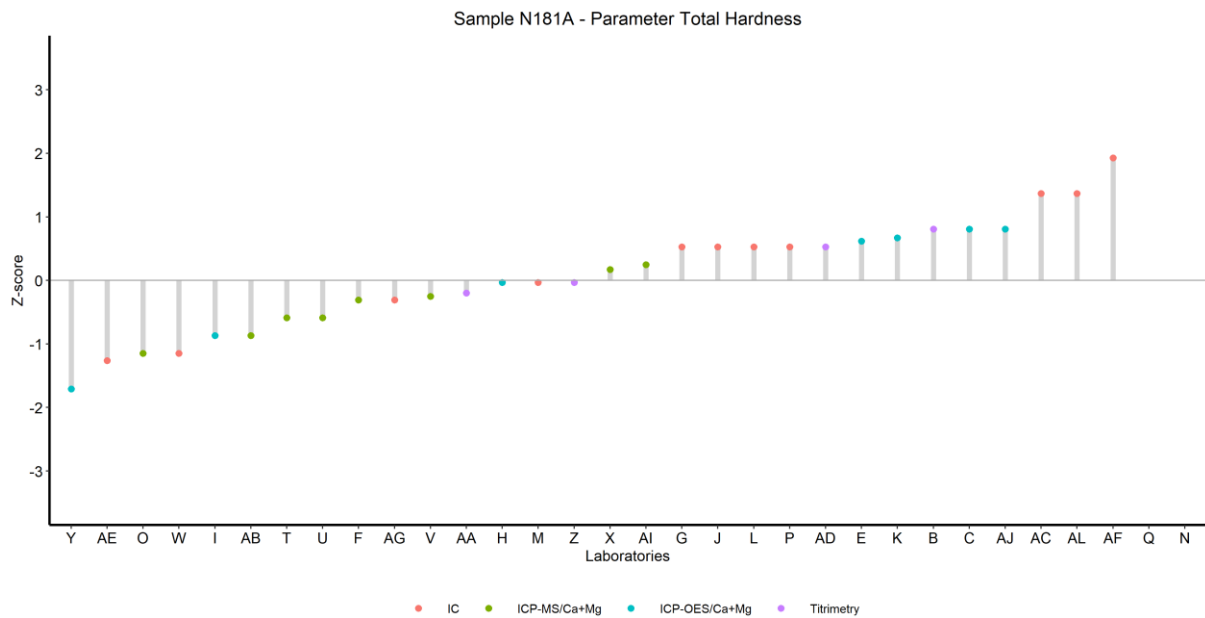
Nährstoffe
Major ions

Versand / Dispatch: 16.03.2026

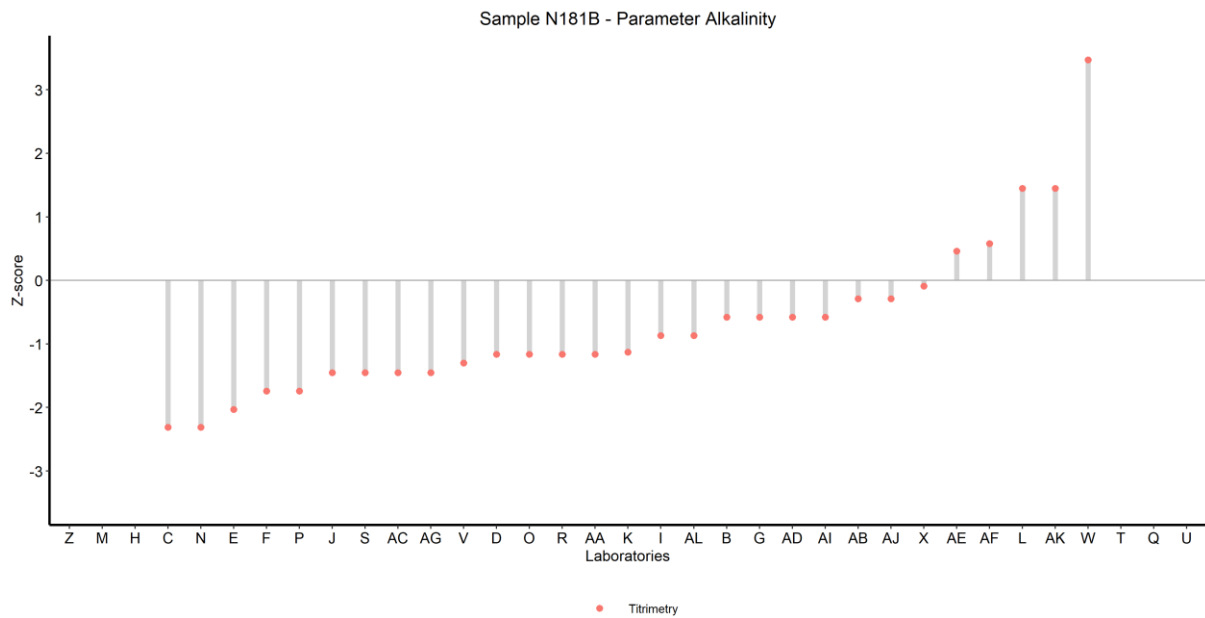
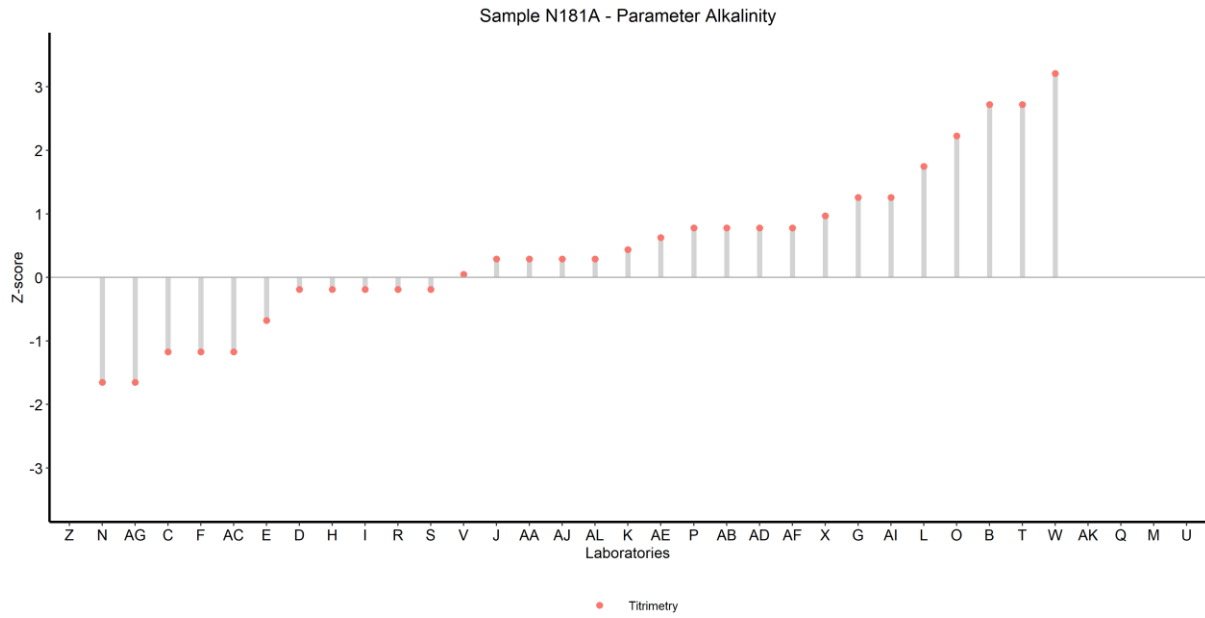
Conductivity



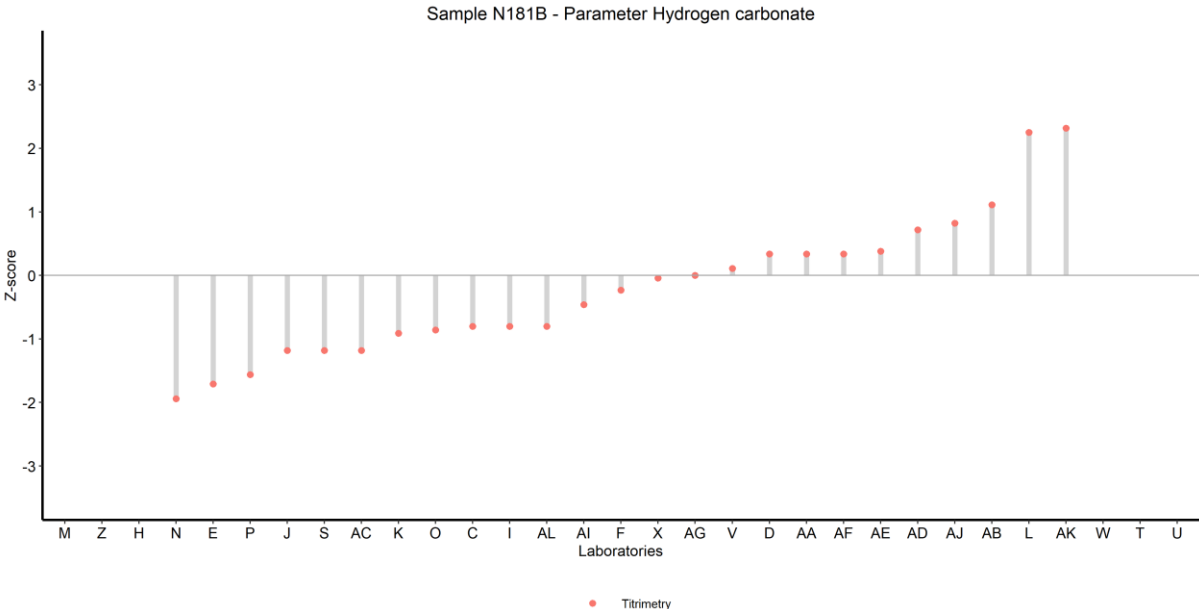
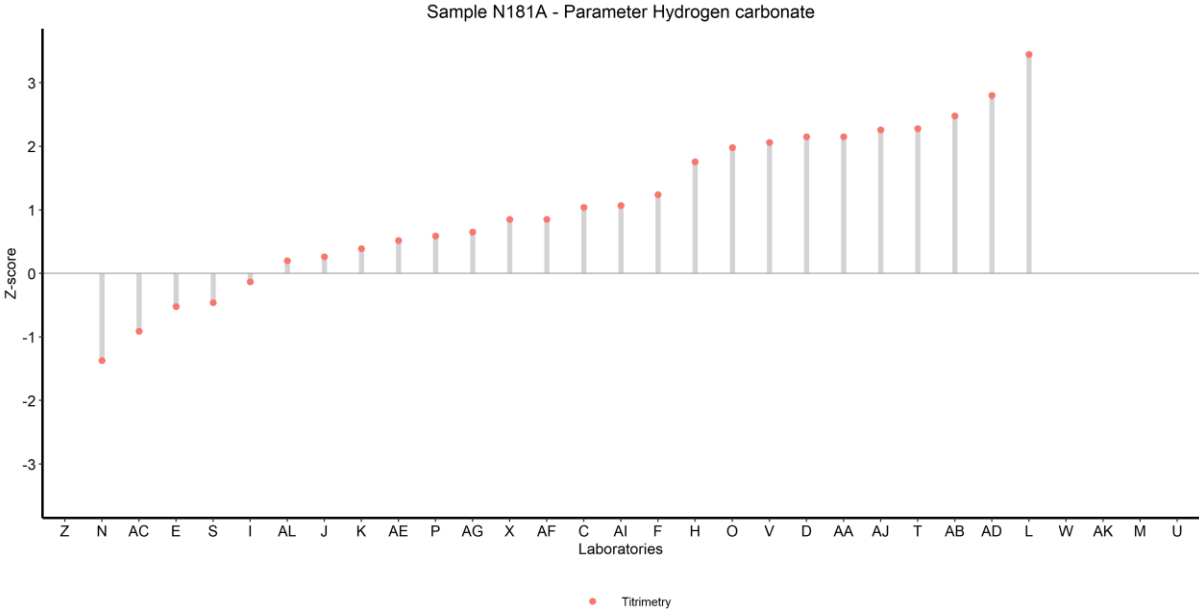
Total Hardness



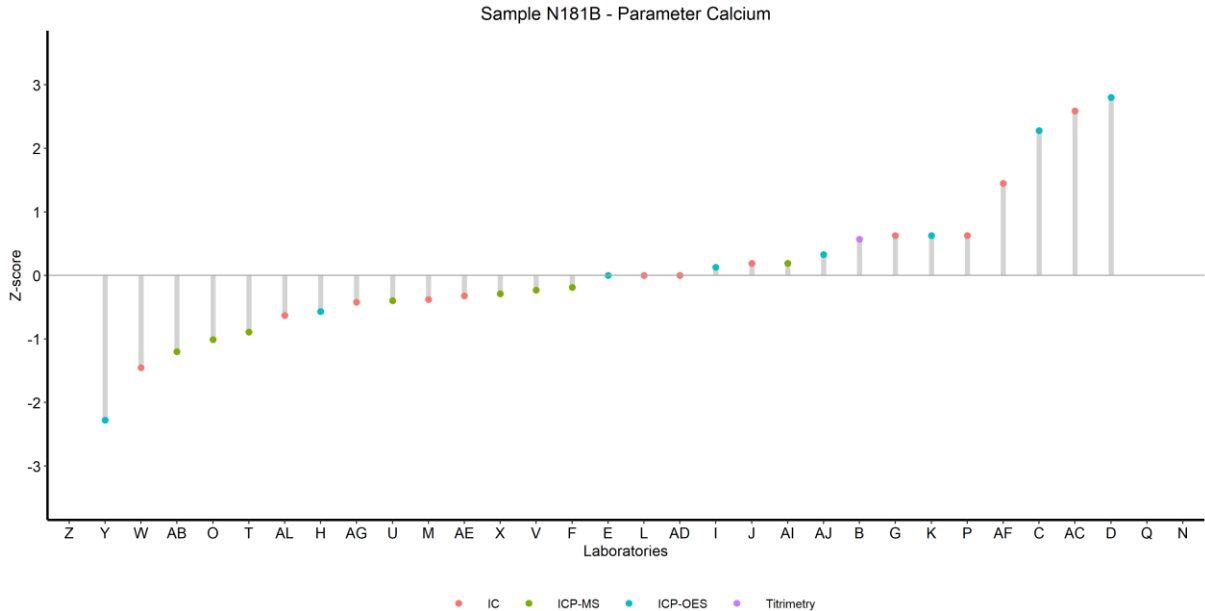
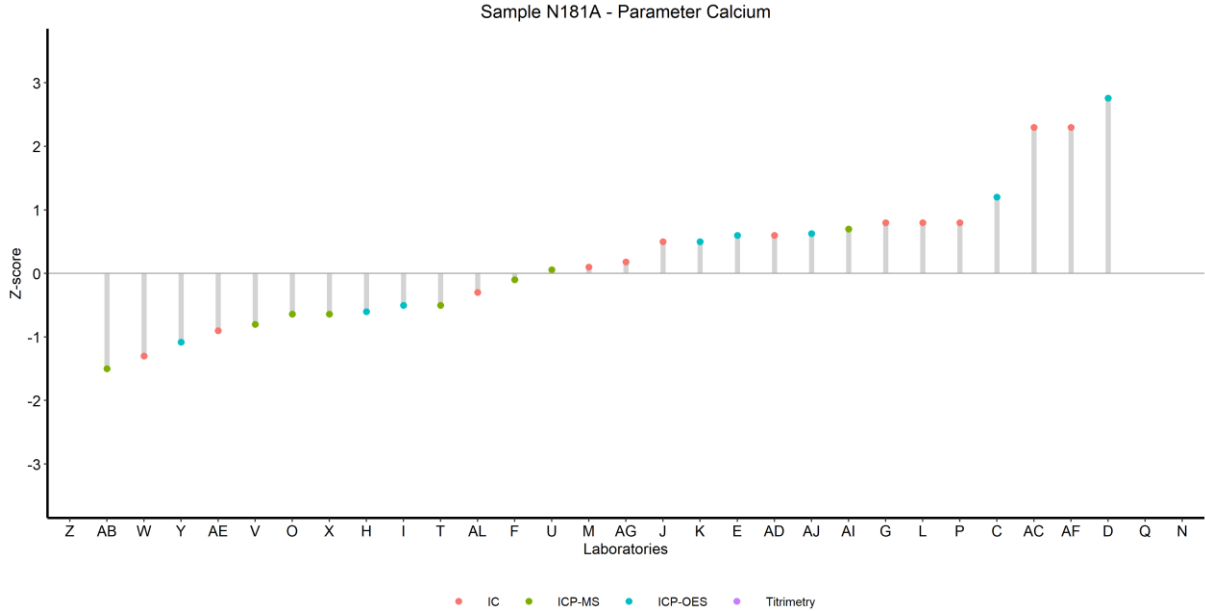
Alkalinity $K_{S 4.3}$ (as H^+)



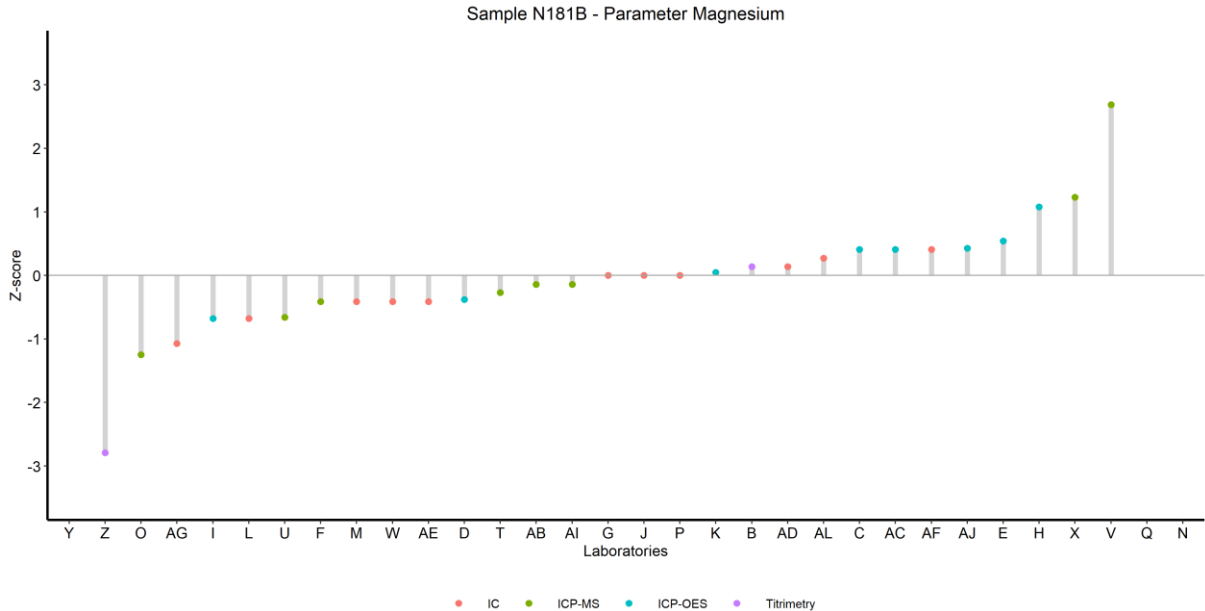
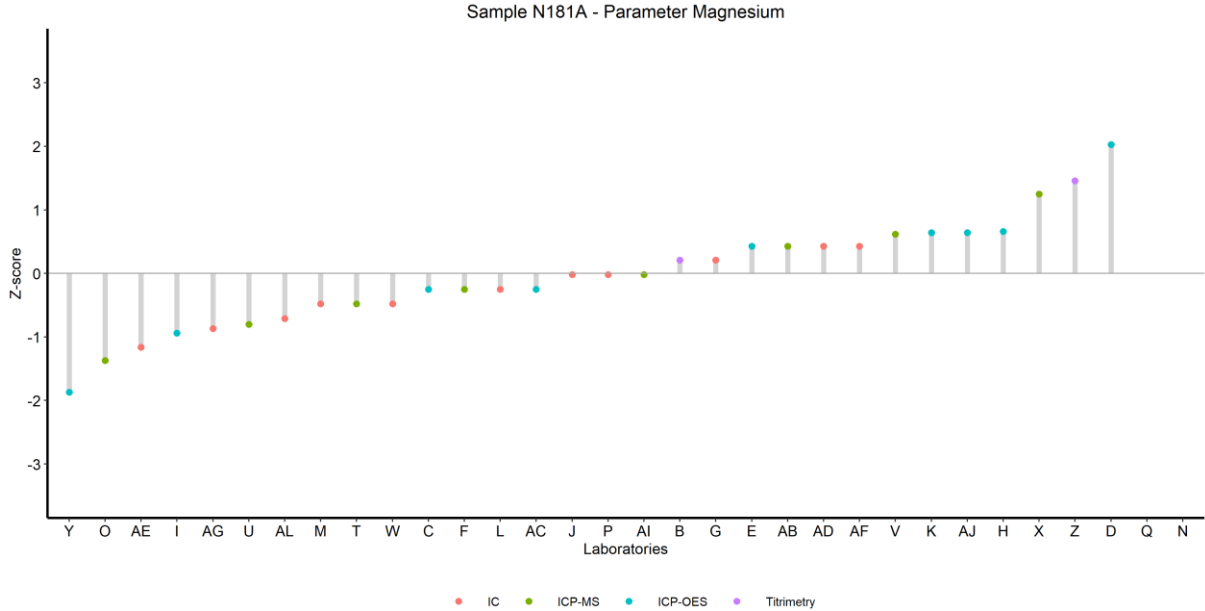
Hydrogen carbonate



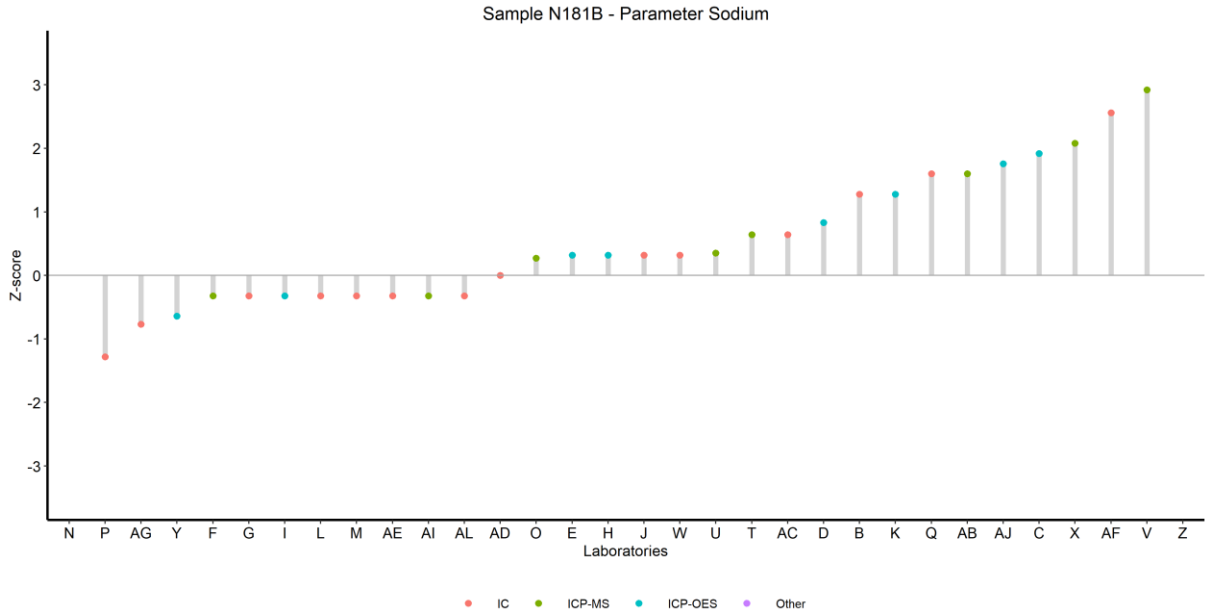
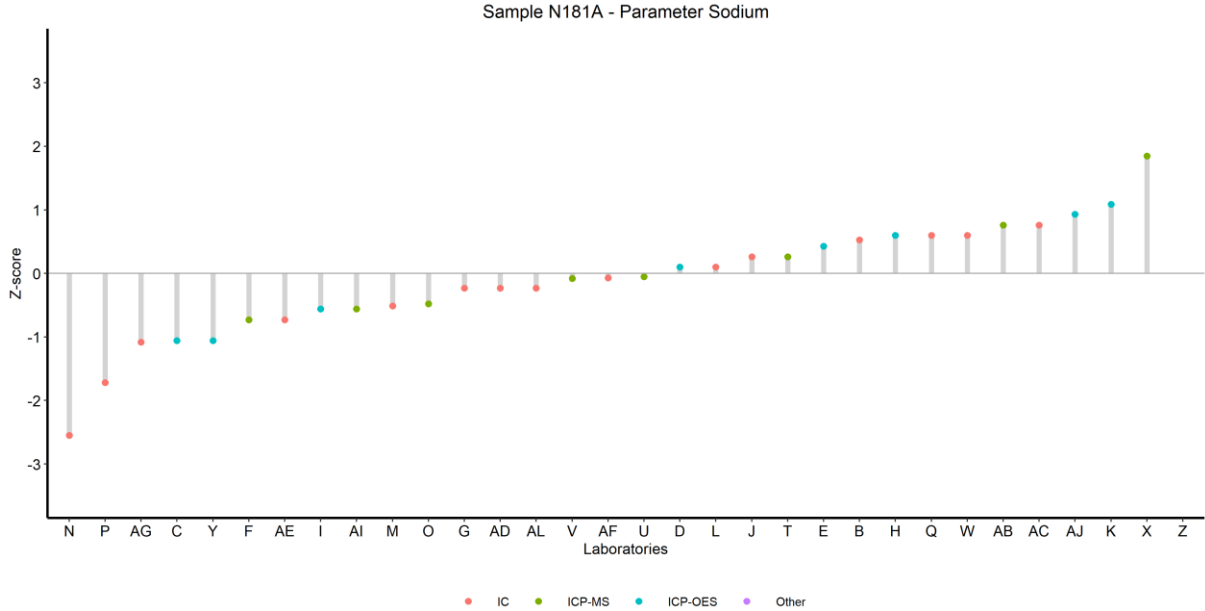
Calcium



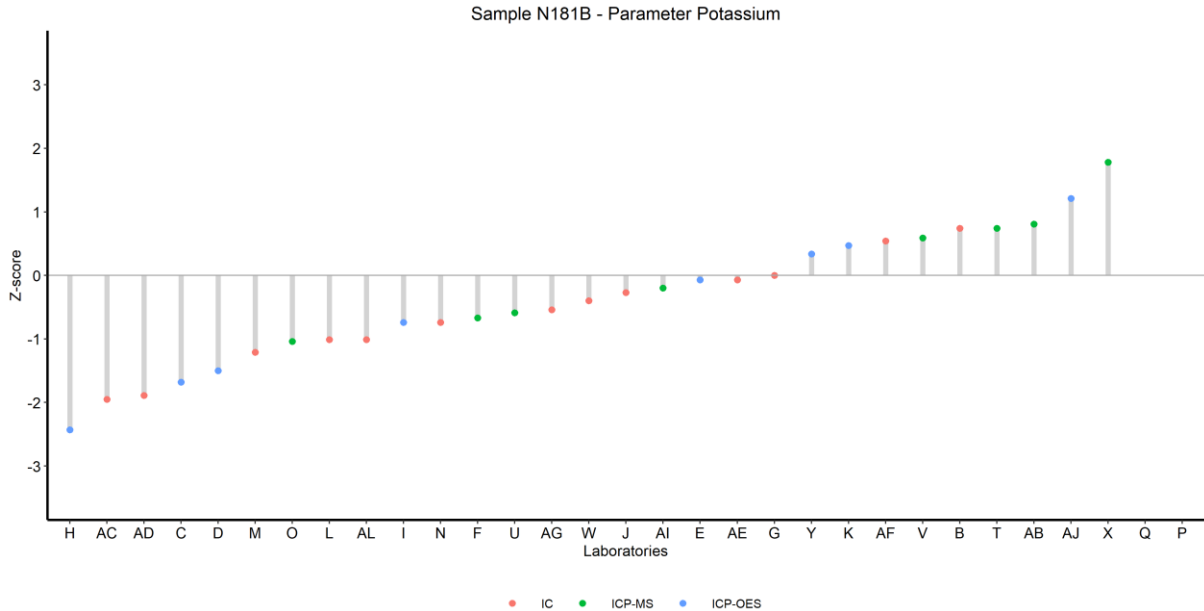
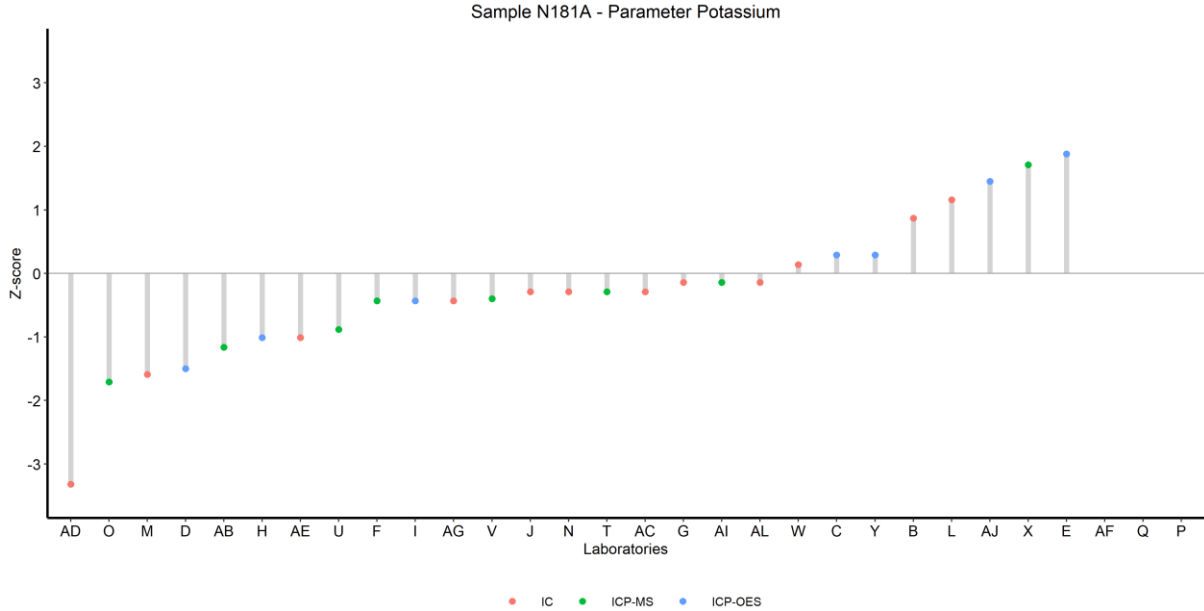
Magnesium



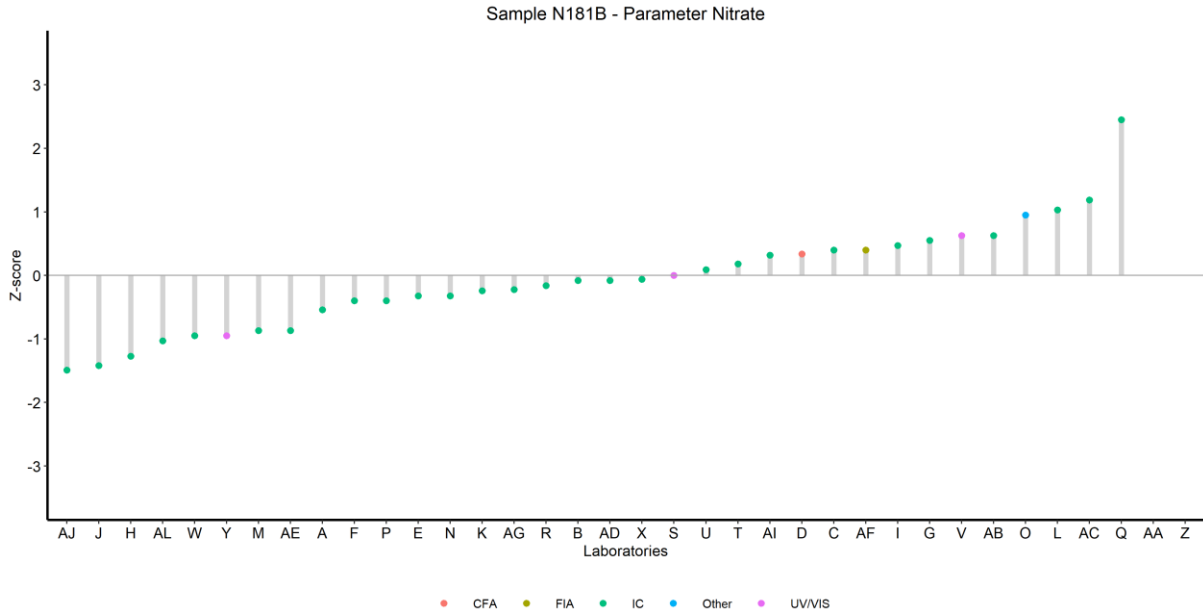
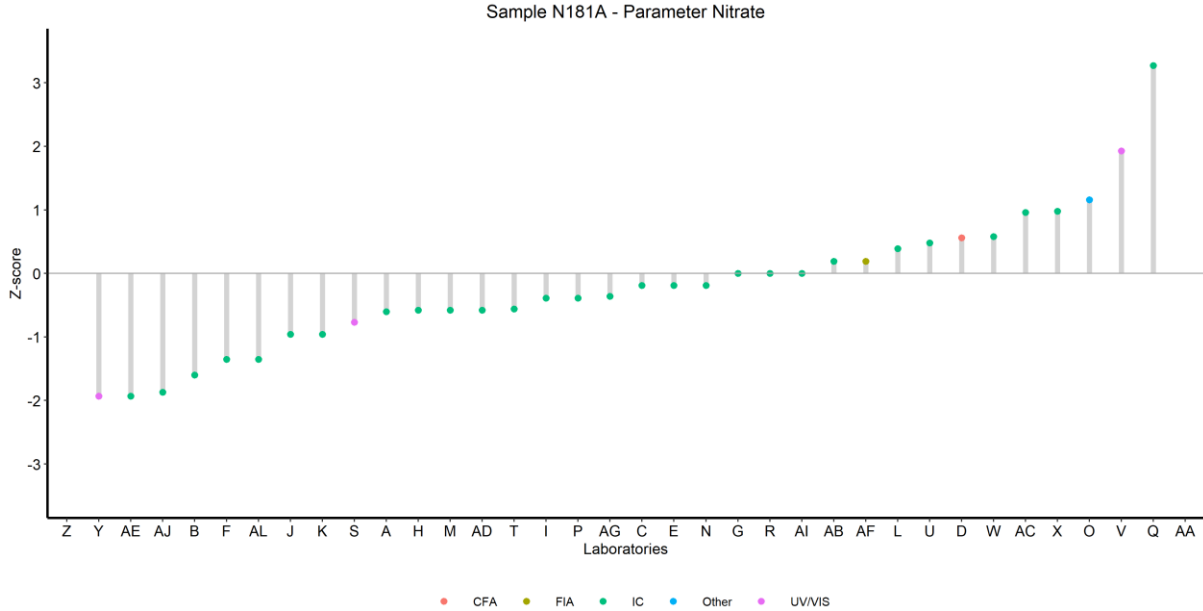
Sodium



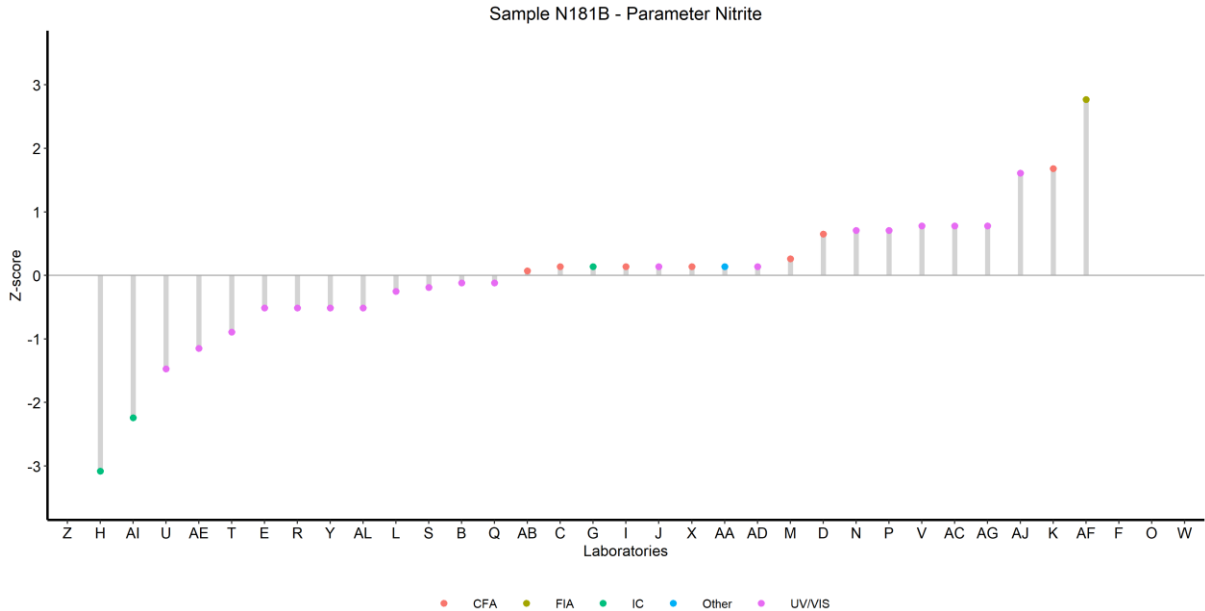
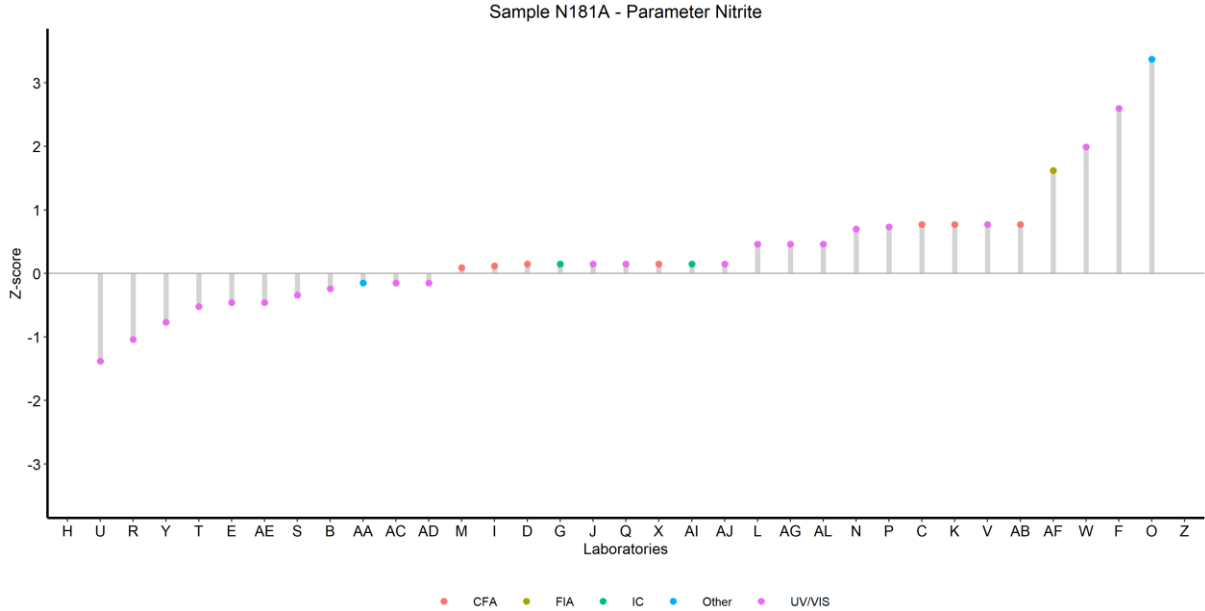
Potassium



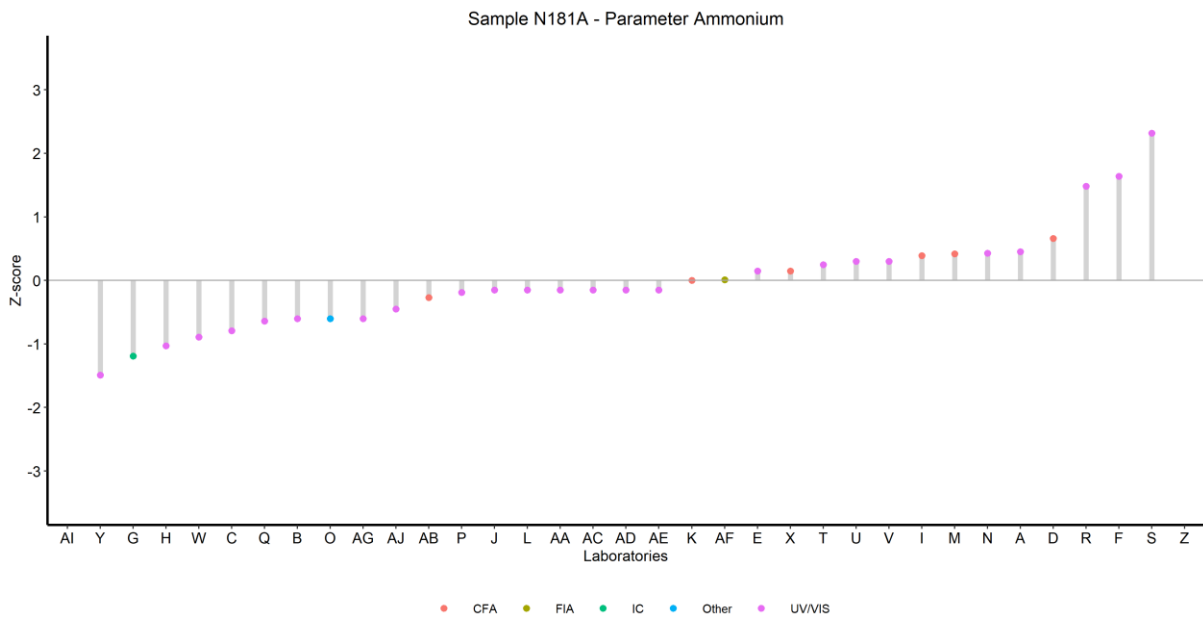
Nitrate (as NO₃⁻)



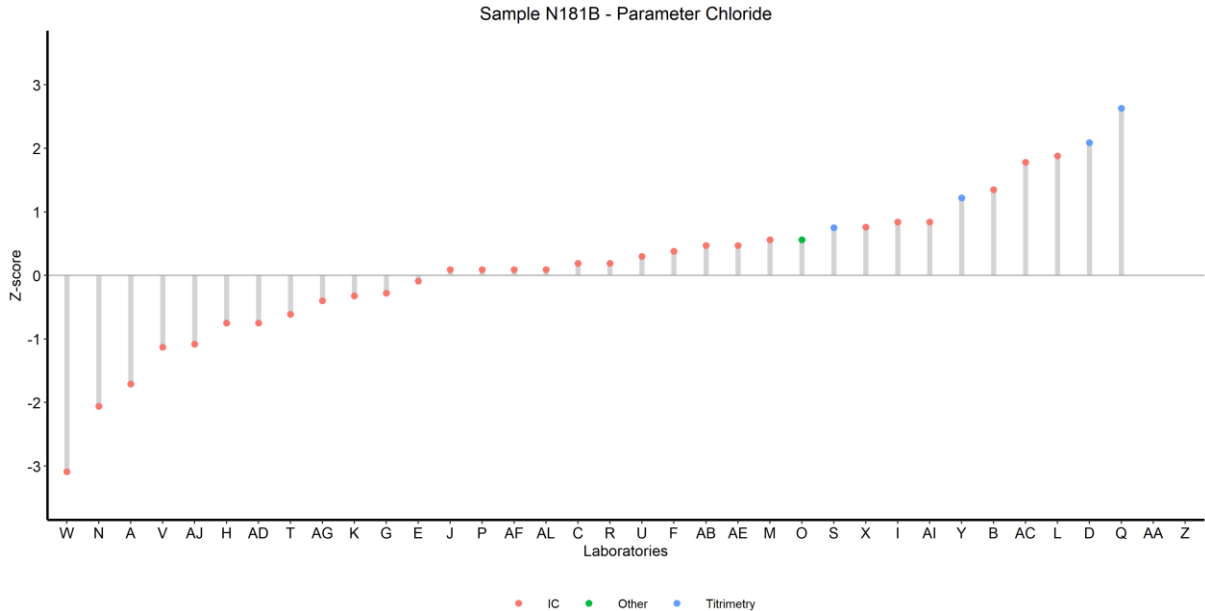
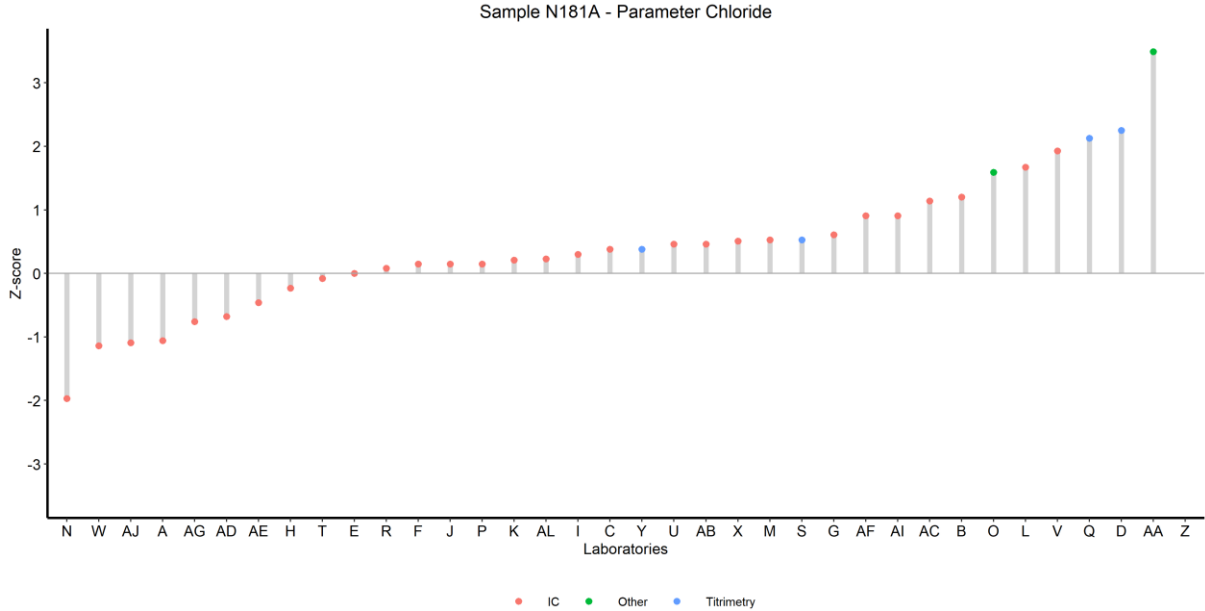
Nitrite (as NO₂⁻)



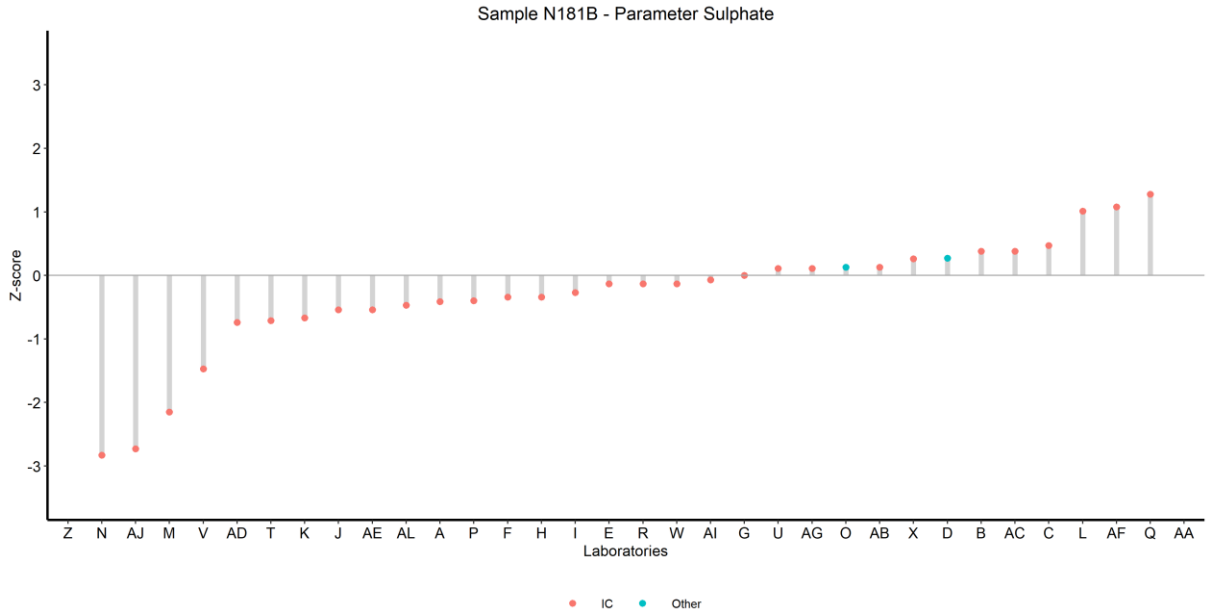
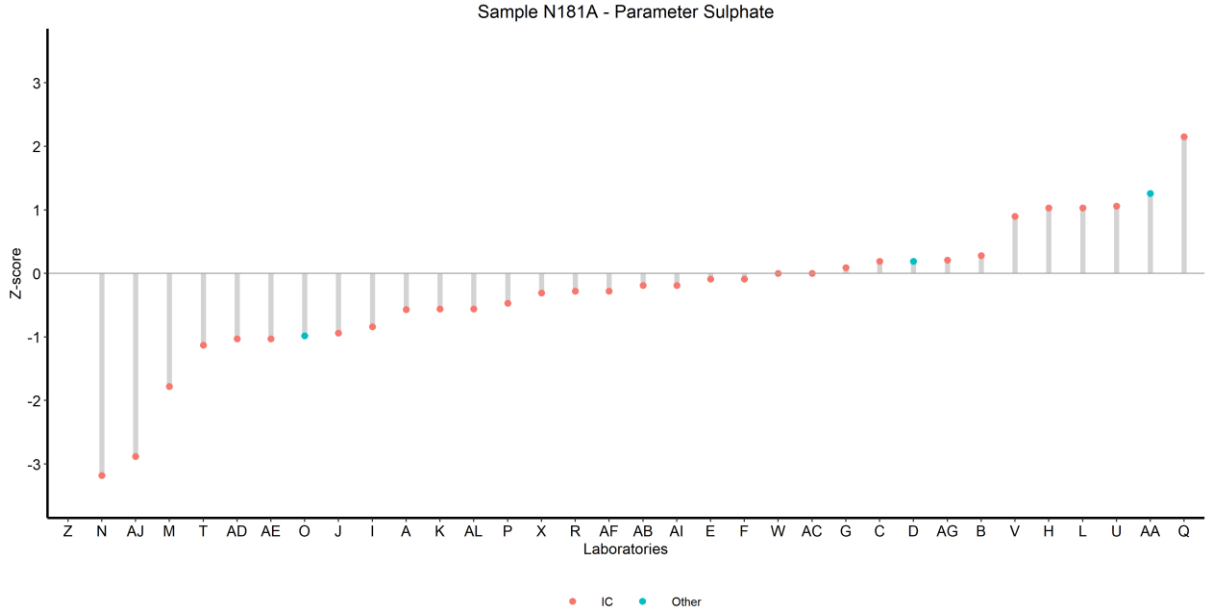
Ammonium (as NH₄⁺)



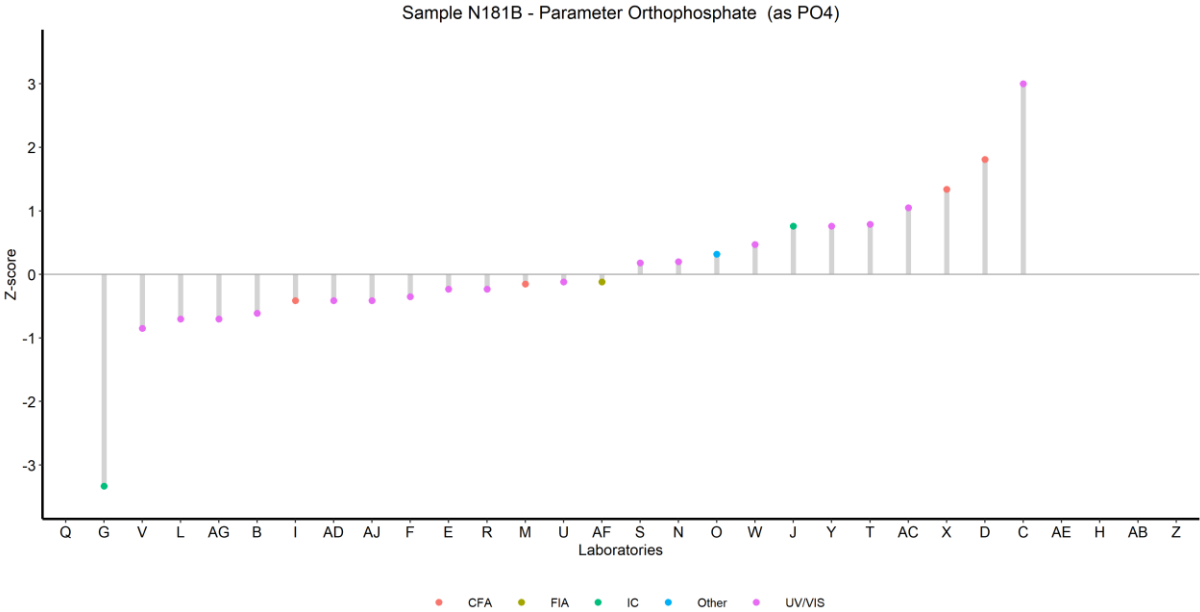
Chloride



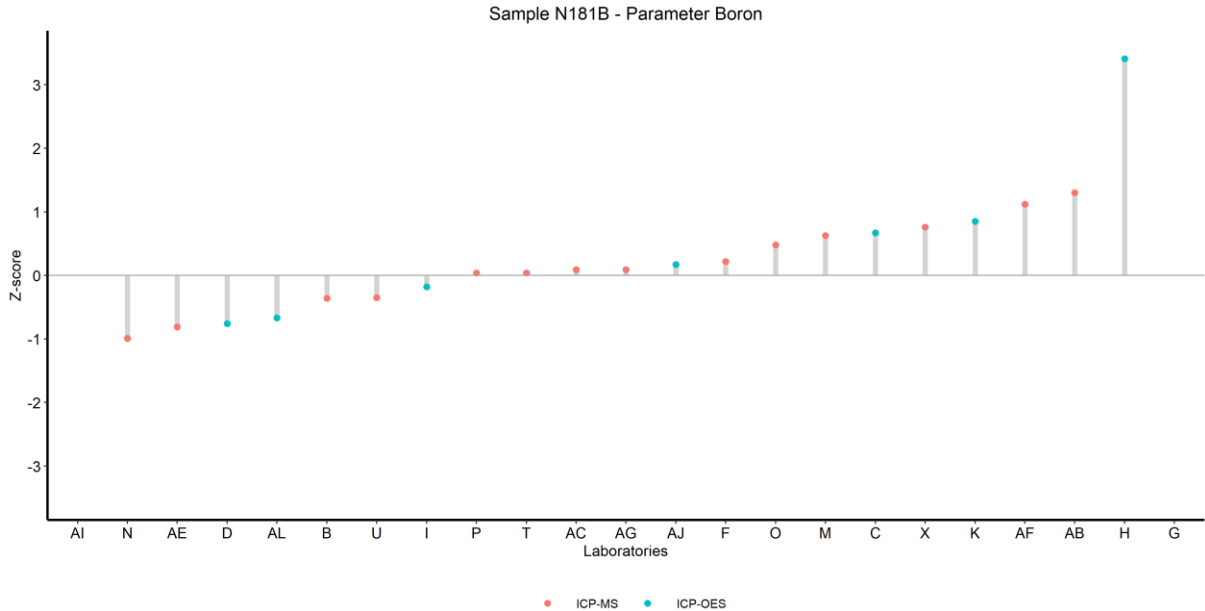
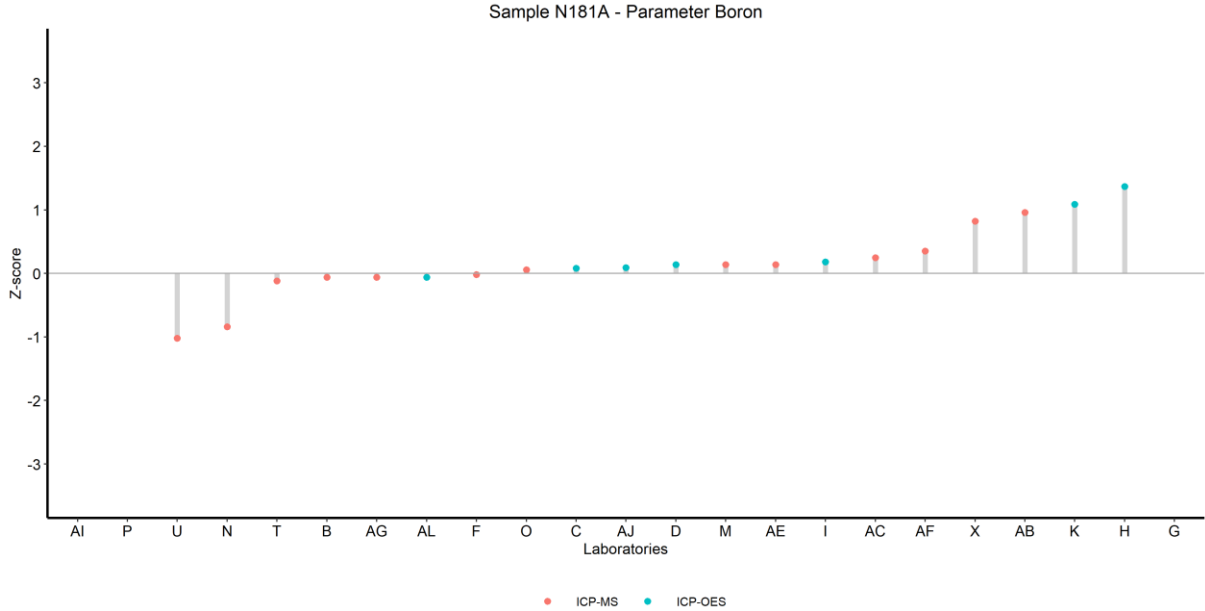
Sulphate (as SO₄²⁻)



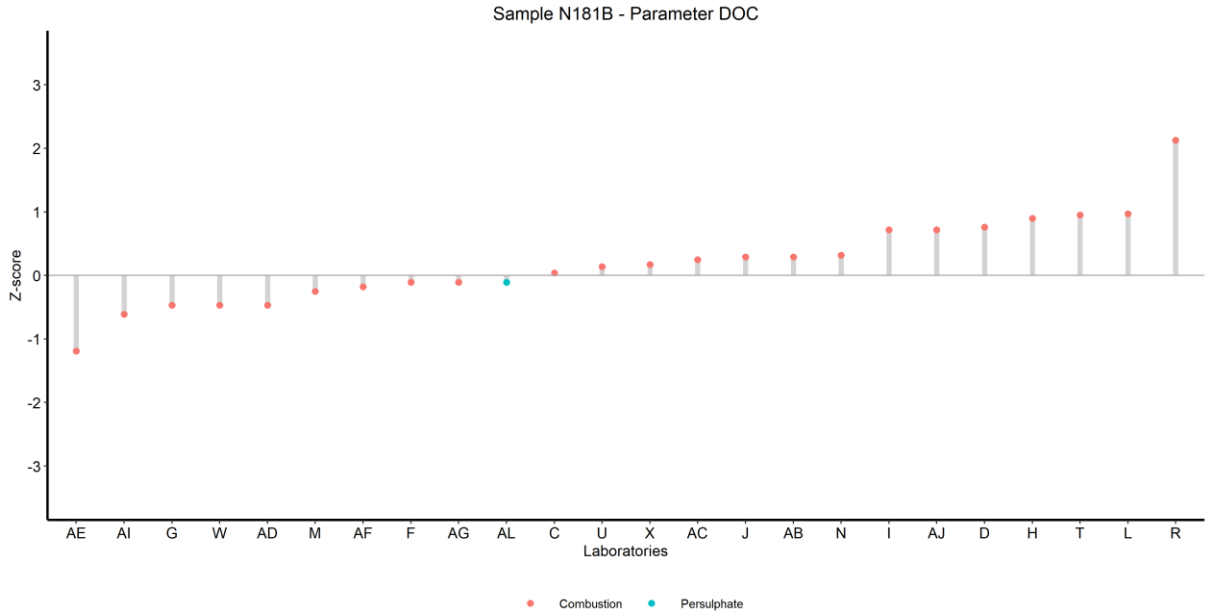
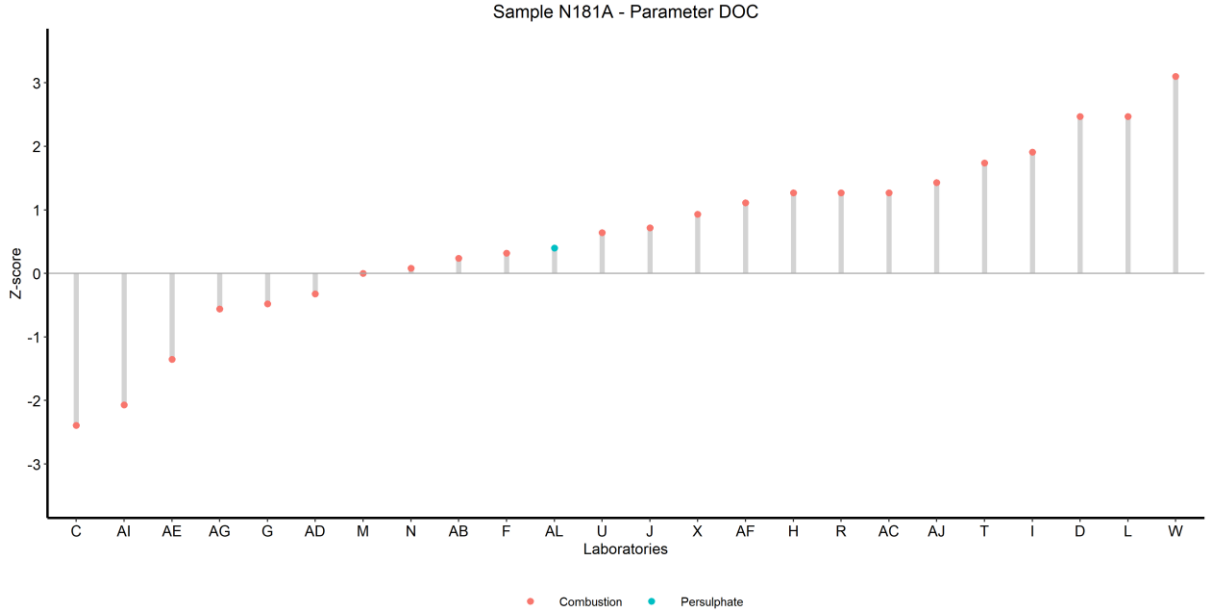
Orthophosphate (as PO₄³⁻)



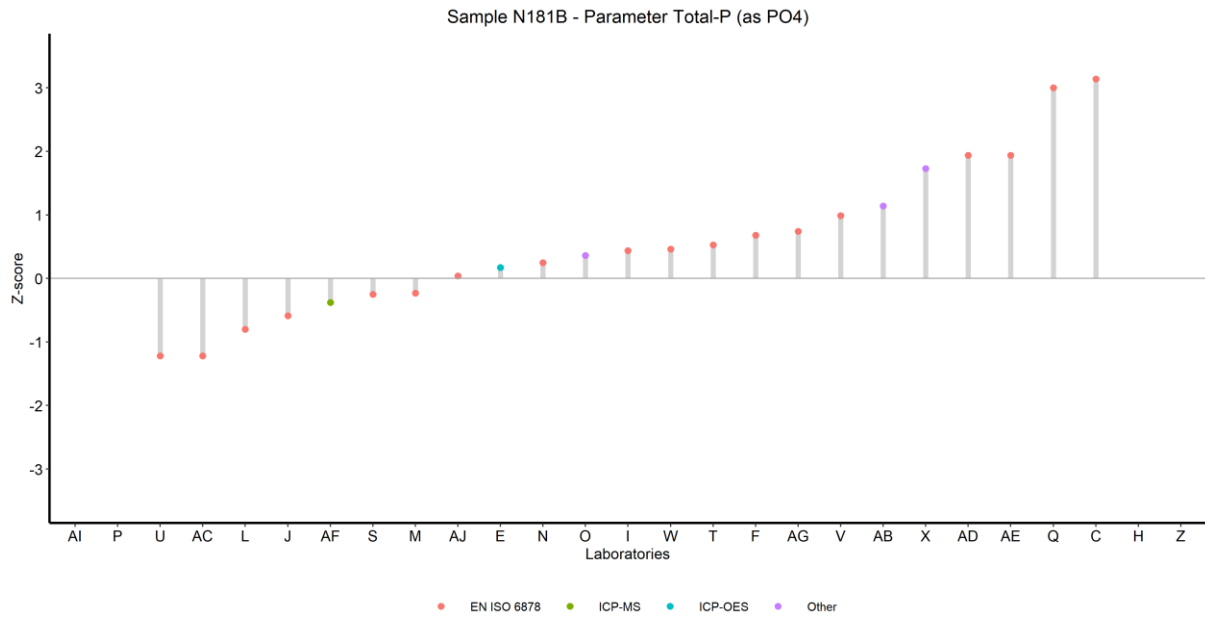
Boron



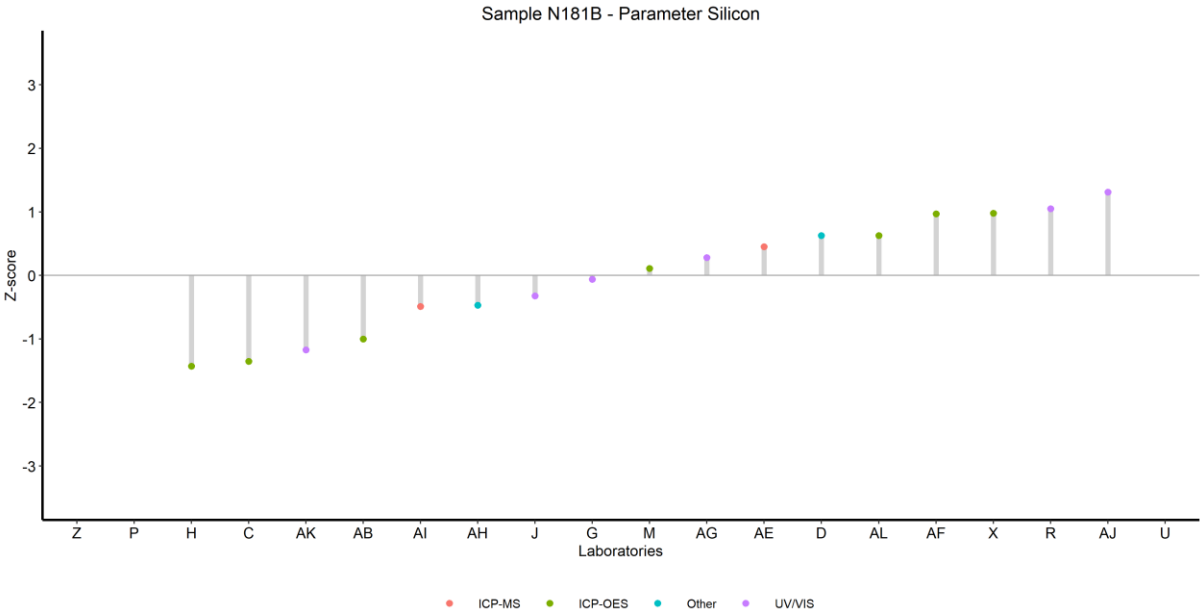
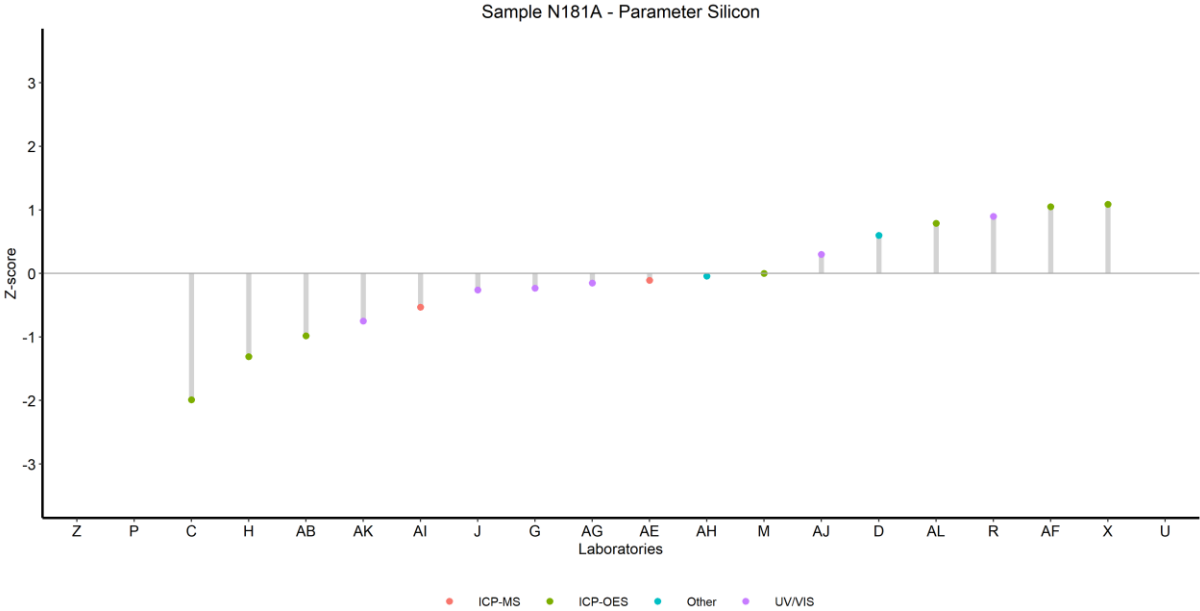
DOC (as C)



Total-P (as PO₄³⁻)



Silicon



Fluoride

