



IFA-Proficiency Testing Scheme zur Wasseranalytik / for Water Analysis

Endbericht / Final Report
Eignungsprüfungsrunde / Proficiency testing round
N177

Nährstoffe / Major ions

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Allgemeine Informationen

Diese Zusammenfassung beschreibt die 177. Runde der regelmäßigen Eignungsprüfungen zur Parametergruppe „Nährstoffe“. Die Prüfgegenstände N177A und N177B wurden am 12. Mai 2025 an 44 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 6. Juni 2025. Von allen Teilnehmern wurden Ergebnisse übermittelt. Zur Anonymisierung wurde jedem Labor per Zufallsgenerator ein Buchstabencode zugeteilt.

Zusammensetzung der Prüfgegenstände

Die Prüfgegenstände N177A und N177B 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 , $\text{Ca}(\text{NO}_3)_2$, MgSO_4 , $\text{Mg}(\text{NO}_3)_2$, Natriumsalicylat (für KMnO_4 -Index), NaCl , 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 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, DOC und Kaliumpermanganat-Index 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 (N178) 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 und HCO_3^- bis 18 Monate stabil. Für die Parameter NH_4^+ , NO_2^- , o-PO_4^{3-} Gesamt-P, DOC und Kaliumpermanganat-Index 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 425 $\mu\text{S}/\text{cm}$ für N177A und 345 $\mu\text{S}/\text{cm}$ für N177B.

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-}) wurde Ethylphosphonsäurediethylester ($\text{C}_6\text{H}_{15}\text{PO}_3$) verwendet. Diese Substanz kann nur nach einem oxidierenden Aufschluss als Phosphat erfasst werden. 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.

Als Standardsubstanz für den KMnO_4 -Index wurde Natriumsalicylat in den Konzentrationen 2,11 mg/l (N177A) und 1,63 mg/l (N177B) verwendet. Geht man von einer vollständigen Oxidation zu CO_2 , Wasser und Nitrat aus, ergeben sich unter Berücksichtigung von Nitrit theoretische Werte von 2,97 mg/l O_2 (N177A) und 2,29 mg/l O_2 (N177B). Die endgültige Auswertung erfolgte über die Labormittelwerte. Diese waren 2,72 mg/l O_2 für N177A und 2,23 mg/l O_2 für N177B.

Dem Prüfgegenstand N177A wurden keine Phosphorverbindungen und N177B 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 eingestuft 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 96,9 % (Orthophosphat in N177B) und 110,7 % (DOC in N177A). Die aus den ausreißerbereinigten Daten berechneten Standardabweichungen bewegten sich im Bereich von 1,0 % (Leitfähigkeit in N177B) bis 9,5 % (KMnO_4 in N177B).

Zu den Mittelwerten und mittleren Wiederfindungen wurden auch die Vertrauensbereiche ($P=99\%$) angegeben. Diese Vertrauensbereiche der Labormittelwerte enthalten in allen Fällen mit Ausnahme von Säurekapazität in N177A ($97,8 \% \pm 0,8 \%$), DOC in N177A ($110,7 \% \pm 6,0 \%$) und N177B ($105,0 \% \pm 3,2 \%$) 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 Säurekapazität und Nitrat in N177A und N177B und KMnO_4 im Prüfgegenstand N177B der Vorgabe.

Bei diesen Parametern, sowie auch für den DOC in N177A und in N177B 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. Nitrat in N177A und N177B, sowie die Säurekapazität in der Probe N177B entsprachen der Vorgabe:

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

Daher wurden bei diesen Parametern die ermittelten zugewiesenen Werte mit ihren Standardunsicherheiten übernommen.

Erfahrungsgemäß wird die Titration der Säurekapazität zu rasch durchgeführt, sodass hier meist zu niedrige Werte abgegeben werden. Da aber alle Parameter, die für die Säurekapazität zudem noch relevant sind (Gegenionen, Hydrogencarbonat) bei den Überprüfungen unauffällig waren und zudem von den Teilnehmern bestätigt wurden, kann der ermittelte zugewiesene Wert mit seiner Standardunsicherheit auch für die Säurekapazität in der Probe N177A übernommen werden.

Aufgrund erhöhter Blindwerte, verursacht durch Wartungsarbeiten an der Reinstwasserversorgung, wurde der Parameter DOC anhand des Konsenswerts (ausreißerbereinigter Mittelwert der Teilnehmer) ausgewertet.

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 Messwertes eines Labors vom zugewiesenen Wert zu einer vorgegebenen Standardabweichung.

Die Standardabweichungen für die Eignungsbewertung wurden aus den Ergebnissen der im Zeitraum 2014 - 2024 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 5,4 % angegeben. Bezogen auf den zugewiesenen Wert von 6,02 mg/l DOC entsprechen 5,4 % 0,33 mg/l.

$$z = \frac{x_i - X}{\sigma_{pt}} = \frac{7,00 \text{ mg/l} - 6,02 \text{ mg/l}}{0,33 \text{ mg/l}} \approx 3,0 \quad \text{oder} \quad \frac{116 \% - 100 \%}{5,4 \%} \approx 3,0$$

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}	0,33 mg/l entsprechen 5,4 % (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	7,0 %	0,012 mg/l
Calcium	3,1 %	9 mg/l
Chlorid	2,7 %	2 mg/l
DOC	5,4 %	1 mg/l
Gesamthärte	2,7 %	0,1 mmol/l
Gesamt-P (als PO ₄ ³⁻)	8,6 %	0,015 mg/l
Hydrogencarbonat	2,3 %	20 mg/l
Kalium	4,0 %	0,5 mg/l
KMnO ₄ -Index	8,1 %	1 mg/l
Leitfähigkeit	1,2 %	50 µS/cm
Magnesium	3,5 %	1 mg/l
Natrium	3,0 %	1 mg/l
Nitrat	2,9 %	2 mg/l
Nitrit	5,5 %	0,01 mg/l
Orthophosphat	8,7 %	0,015 mg/l
Säurekapazität	1,8 %	0,2 mmol/l
Sulfat	3,1 %	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.

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, ges-P (als PO_4^{3-}) und KMnO_4 -Index 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

Die Prüfmethoden sollten mit den jeweilig im Teilnehmerlabor verwendeten Routineverfahren übereinstimmen. 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, 24. Juni 2025

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

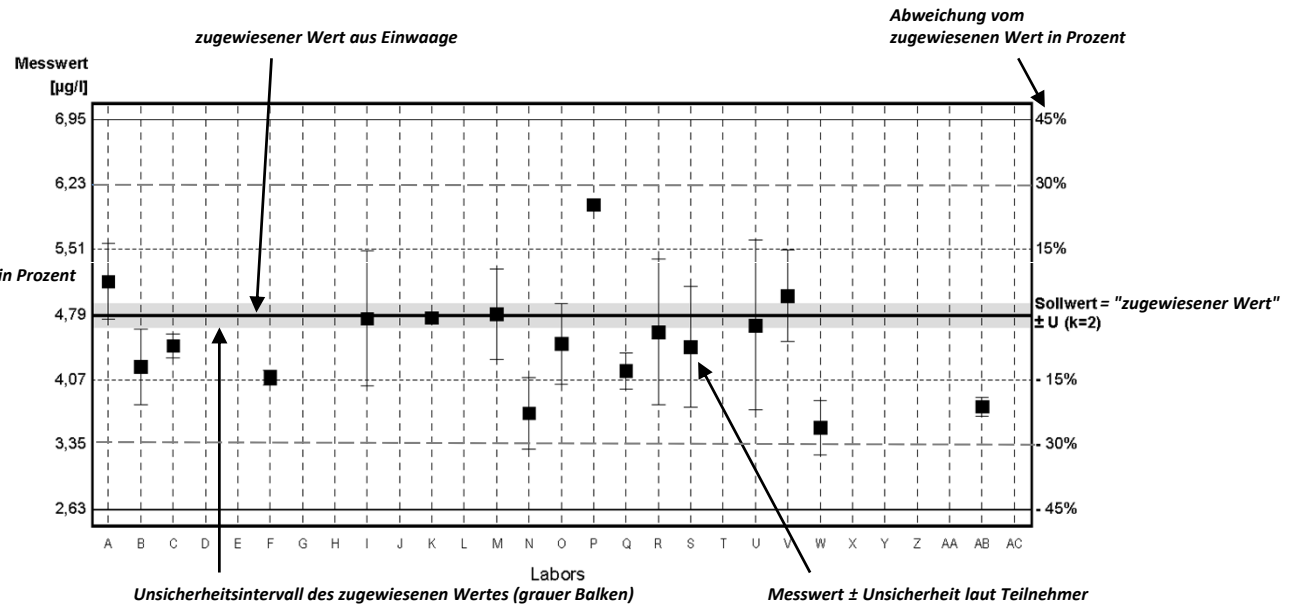
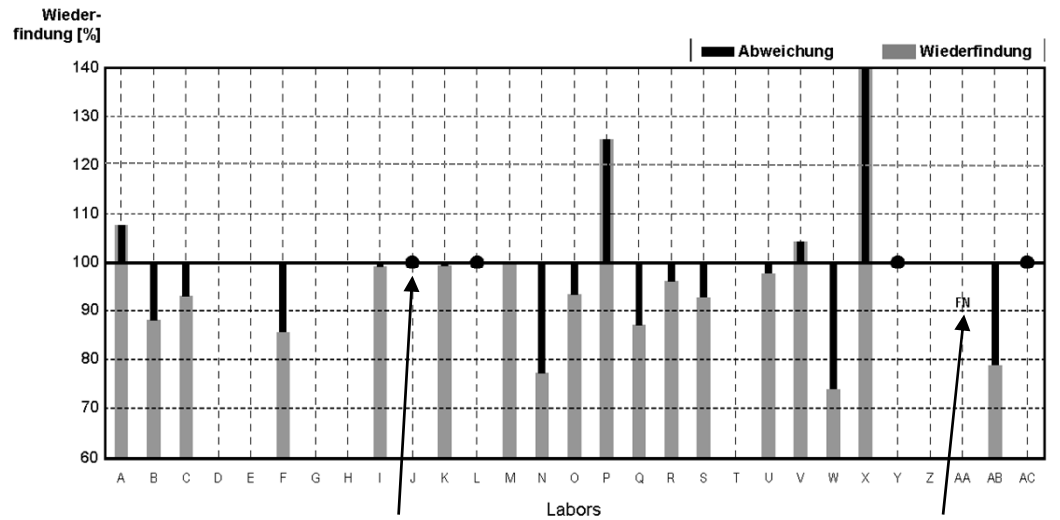


Diagramm 1: Messwerte mit zugehörigen Unsicherheitsintervallen



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

Information

This report summarises the results of round N177 (major ions) within the IFA-Proficiency Testing Scheme for Water Analysis. The proficiency testing items N177A and N177B were distributed to 43 participants on Monday, 12 May 2025. 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, 6 June 2025. 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 , $\text{Ca}(\text{NO}_3)_2$, MgSO_4 , $\text{Mg}(\text{NO}_3)_2$, NaCl , NaHCO_3 , KHCO_3 , diethyl ethylphosphonate ($\text{C}_6\text{H}_{15}\text{PO}_3$, for total-P), potassium hydrogen phthalate (for DOC), sodium salicylate (for KMnO_4 -Index) and certified standard solutions of NaNO_2 , Na_2SiO_3 , NH_4Cl , KH_2PO_4 and H_3BO_3 . Both proficiency testing items, N177A and N177B, 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^- , o-PO_4^{3-} and KMnO_4 -Index were analysed in several proficiency testing items N177A and N177B 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 (N178).

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 and HCO_3^- when stored at 4°C in the dark. For the parameters NH_4^+ , NO_2^- , o-PO_4^{3-} , total-P, DOC and KMnO_4 -Index 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 425 $\mu\text{S}/\text{cm}$ in proficiency testing item N177A and 345 $\mu\text{S}/\text{cm}$ in proficiency testing item N177B.

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 CO_2 , the pH tends to increase slowly over time.

For total phosphorus, diethyl ethylphosphonate ($C_6H_{15}PO_3$) and potassium dihydrogen phosphate (KH_2PO_4) were used for preparation. The assigned values of total P were calculated based on the weights of the two substances, and the results were expressed in mg/L as PO_4^{3-} .

The concentrations of sodium salicylate, which was used as standard substance for the $KMnO_4$ -Index, were 2.11 mg/L in proficiency testing item N177A and 1.63 mg/L in N177B. Assuming complete oxidation to carbon dioxide, nitrate and water (considering nitrite), the theoretical values were 2.97 mg/L O_2 (N177A) and 2.29 mg/L O_2 (N177B). However, the laboratory mean values were taken as reference values in this report: 2.72 mg/L O_2 for N177A and 2.23 mg/L O_2 for N177B.

No phosphorus substances were added to proficiency testing item N177A. Ammonium was not added to N177B to check the analytical blank values. The assigned concentrations were set to <0.01 mg/L NH_4^+ , <0.009 mg/L $o-PO_4^{3-}$ and <0.009 mg/L total-P (as PO_4^{3-}), 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 96.9 % (orthophosphate in N177B) and 110.7 % (DOC in N177A).

The between laboratory CVs covered the range between 1.0 % (conductivity in N177B) and 9.5 % ($KMnO_4$ in N177B).

All confidence intervals of the outlier-corrected laboratory mean values except those for alkalinity in N177A ($97.8 \% \pm 0.8 \%$), DOC in N177A ($110.7 \% \pm 6.0 \%$) and DOC in N177B ($105.0 \% \pm 3.2 \%$) 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

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

and met the requirement in all cases except for alkalinity in N177A and N177B, nitrate in N177A and N177B and $KMnO_4$ in N177B.

For these parameters and additionally for DOC in N177A and N177B, 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. Nitrate in N177A and N177B, as well as alkalinity in sample N177B met the requirement:

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

For these parameters the determined assigned values with their standard uncertainties were adopted.

Based on experience, the alkalinity titration is usually carried out too quickly, resulting in values that are usually too low. However, since all parameters that are also relevant for alkalinity (counterions, hydrogen carbonate) were unremarkable during the checks and were confirmed by the participants, the determined assigned value with its standard uncertainty for alkalinity in N177A can be adopted.

Due to elevated blank values caused by maintenance work on the ultrapure water supply, the DOC parameter was evaluated based on the consensus value (outlier-corrected mean of the participants).

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 2014 to 2024. 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 0.33 mg/L DOC, when based on the assigned value.

$$z = \frac{x_i - X}{\sigma_{PT}} = \frac{7.00 \text{ mg/L} - 6.02 \text{ mg/L}}{0.33 \text{ mg/L}} \approx 3.0 \quad \text{or} \quad \frac{116 \% - 100 \%}{5.4 \%} \approx 3.0$$

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} 0.33 mg/L equivalent to 3.0 % (standard deviation for proficiency assessment, see table below)

In the case of recalculation, deviations in the last digits may occur since rounded values are given in the report 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	7.0 %	0.012 mg/L
Calcium	3.1 %	9 mg/L
Chloride	2.7 %	2 mg/L
el. Conductivity	1.2 %	50 μ S/cm
DOC	5.4 %	1 mg/L
Hydrogen carbonate	2.3 %	20 mg/L
KMnO ₄ -Index	8.1 %	1 mg/L
Magnesium	3.5 %	1 mg/L
Nitrate	2.9 %	2 mg/L
Nitrite	5.5 %	0.01 mg/L
Orthophosphate	8.7 %	0.015 mg/L
Potassium	4.0 %	0.5 mg/L
Sodium	3.0 %	1 mg/L
Sulphate	3.1 %	3 mg/L
Total hardness	2.7 %	0.1 mmol/L
Total-P (as PO ₄ ³⁻)	8.6 %	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 on the basis of 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

The test methods should be consistent with the methods applied in routine. 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, 24 June 2025

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

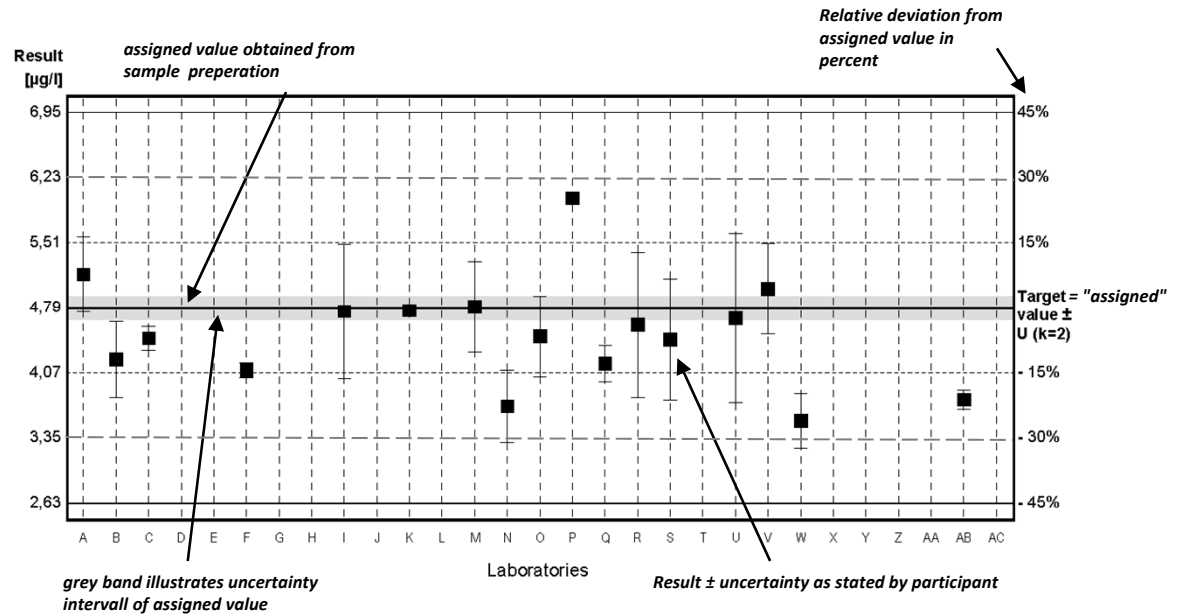
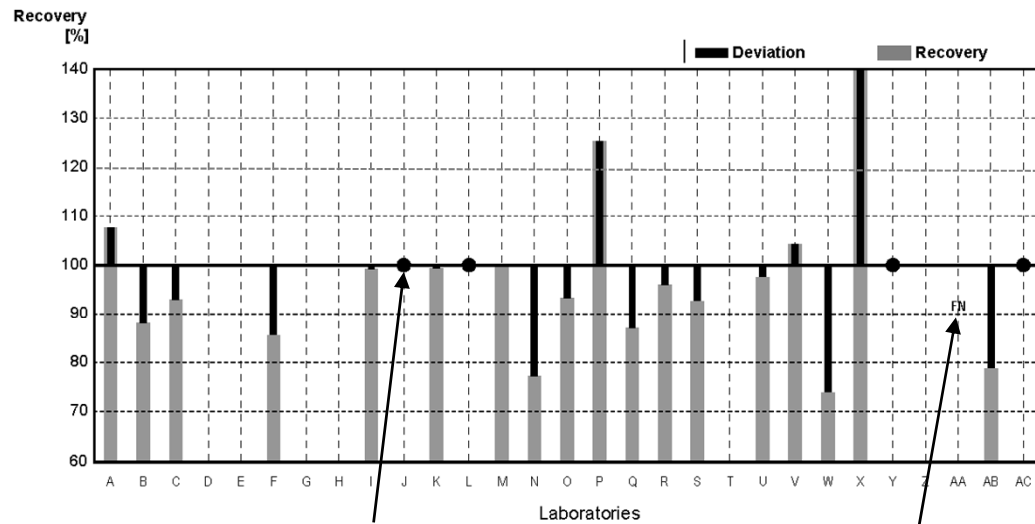


Diagram 1: Measurement results and their uncertainties



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
N177

Nährstoffe
Nutrients / Major ions

Versand / Dispatch: 12. 05. 2025

Results N177A

	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		426	1.453	2.60	155.5	35.6	13.74	29.8	3.94	24.2
IFA result	6.13	432	1.48	2.56	153	36.3	13.9	29.0	3.67	23.4
Stability test										
A	6.07	430	1.44	2.52		34.5	14.0	30.3	4.10	24.21
B	6.1	422	1.43	2.54	152	34.8	13.7	30.3	3.88	23.8
C	6.31	428	1.45	2.54	155	35.6	13.7	28.9	3.70	23.4
D		435	1.40	2.51	153	34.2	13.3	28.2	3.69	23.2
E	6.36	420	1.42	2.48	148	34.4	13.6	29.6	4.25	23.7
F	6.5	446	1.41	2.59	86.6	31.8	12.4	24.9	3.94	23.8
G	6.01	429	1.42	2.605	156	34.17	13.8	30.22	4.02	24.104
H	6.31	422	1.48	2.55	156	36.5	13.8	29.9	3.99	23.8
I	6.26	427		2.55	152					23.2
J										
K	6.05	426	1.43	2.52	154	34.8	13.5	29.6	3.85	23.5
L	6.2	432	1.44	2.52	153.8	34.4	14.0	30.5	4.09	24.29
M				2.507		36.0	14.1	30.4	4.04	24.2
N	6.04	402								24.81
O			1.45	2.51	153	31.9	15.8	31.8	3.91	22.6
P	6.4	427	1.41	2.506	152.9	34.7	13.3	28.4	3.97	24.1
Q								32.97	5.02	
R	5.9	430	1.44	2.47	150.7	35.52	13.49	28.61	3.92	23.697
S	6.60	422	1.41	2.57	153	34.8	13.1	29.3	3.91	24.5
T				2.57						
U		422.6	1.56	2.567		36.4	15.88			24.2
V						35.41	13.48	30.34	3.97	
W	6.11	432	1.46	2.50	153	36.1	13.6	30.0	4.10	23.7
X	6.19	428	1.110		146.448	28.594	9.493	39.0591	3.313	25.264
Y	6.14	425	1.447	2.68	163.53	34.33	14.35	30.26	3.962	23.6
Z	6.11	427	1.48	2.61	159	36.3	13.9	29.5	4.01	24.2
AA	6.87	428		2.525	151.02	36.39	13.69	29.58	4.608	25.78
AB	6.15	414	1.51	2.50	153	36.5	14.5	31.3	4.00	24.0
AC										
AD			1.43							
AE	6.13	416.0								22.85
AF	5.97	428	1.46	2.51	150	36.3	13.4	30.0	3.39	24.7
AG										
AH	7.06	383	1.38	2.64	161	33.4	13.3	29.6	4.03	23.0
AI										
AJ	6.12	432	1.44	2.558	153.0	35.63	13.41	28.73	3.910	24.62
AK	6.91	429	1.45	1.92	117	35.7	13.55	29.75	4.351	24.2
AL	6.60	426.3	1.48			34.07	15.20	28.4	3.60	19.974
AM	6.02	424	1.434	2.519	154	35.75	13.1	26.45	3.68	25.9
AN	6.18	428	1.47	2.57	154	36.1	13.8	29.9	3.88	24.9
AO										24.379
AP			1.43	2.57						
AQ	6.0	428		2.58	157.46					

Measurement Uncertainties N177A

	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	0.017	0.03	1.9	0.6	0.16	0.4	0.03	0.6
IFA result	0.20	7	0.08	0.11	6	2.4	0.7	1.1	0.21	1.2
Stability test										
A	0.1	10	0.29	0.52		7.0	2.8	6.1	0.82	2.5
B				0.18		2.9	1.5	2.6	0.4	3.4
C	0.1	7	0.15	0.08	5	3.2	1.1	1.8	0.38	2.9
D		13	0.07	0.13	12	2.1	1.1	1.7	0.30	1.4
E	0.25	16.8	0.26	0.1	5.92	6.19	2.45	5.33	0.77	2.13
F	0.1	20	0.02	0.16	5.5	3.18	1.24	3.74	0.39	0.3
G	0.19	23.9	0.142	0.143	8.58	1.88	0.48	1.06	0.14	1.83
H	0.006	0.58	0.006	0.012	0.58	0.46	0.20	0.40	0.012	0.12
I	0.01	3		0.072	2.2					1.6
J										
K										
L	0.1	10	0.1	0.3	15.4	7.0	2.8	6.1	0.83	2.4
M										
N	0.004	2.32								0.84
O			0.174	0.326	19.9	3.83	1.90	3.18	0.352	2.49
P	0.2	17	0.067	0.155	9.5	1.4	0.8	1.6	0.21	2.3
Q										
R	0.2	43.0		0.371	22.61	3.552	1.349	2.861	0.392	1.1848
S	0.0660	0.156	0.0170	0.100	3.07	0.332	0.361	0.133	0.0205	0.581
T				0.26						
U		0.55	0.111	0.3		1.64	3.06			0.964
V						3.54	1.35	3.03	0.40	
W	0.18	13	0.22	0.20	12	5.4	1.6	3.9	0.62	2.4
X	0.0054	0.449	0.002		0.01	0.289	0.093	0.419	0.031	0.078
Y	0.38	43	0.088	0.16	9.6	1.11	1.45	2.77	0.587	2.1
Z	0.05	9	0.13	0.12	7	1.6	0.6	1.3	0.16	0.9
AA	0.041	12.4		0.244	14.59	0.96	1.00	1.43	0.228	0.954
AB	0.62	41	0.30	0.25	15	7.3	2.9	6.3	0.80	3.6
AC										
AD			0.04							
AE	0.11	10.98								2.285
AF	0.896	64.2	0.219	0.377	22.5	5.45	2.01	4.50	0.509	3.71
AG										
AH	0.07	8.3	0.11	0.22	7.2	1.7	0.84	2.3	0.14	1.1
AI										
AJ	0.20	9	0.19	0.230	13.8	3.56	1.07	2.59	0.352	2.22
AK										
AL	0.10	21.3	0.10			2.35	0.21	0.2	0.43	1.158
AM	0.04	14	0.025	0.025	10	2	0.4	1	0.2	1
AN	0.3	18	0.1	0.2	7	3	1.7	5	0.6	2
AO										1.336
AP			0.185	0.133						
AQ										

Results N177A

	NO ₂ ⁻	NH ₄ ⁺	Cl ⁻	SO ₄ ²⁻	o-PO ₄ ³⁻	Boron	DOC	total-P (as PO ₄ ³⁻)	KMnO ₄ - Index
Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
assigned value	0.0811	0.071	21.54	35.6	<0.009	0.1006	1.75	<0.009	2.72
IFA result	0.080	0.071	20.9	34.7	<0.009	0.084	1.69	<0.009	2.76
Stability test	0.081	0.075					1.65		2.88
A	0.0804	0.065	20.58	34.74		0.100			2.65
B	0.082	0.072	21.3	35.9	<0.01	0.103	1.78	<0.03	2.53
C	0.0830	0.0680	21.3	35.0	0.0190	0.0780	1.73	0.065	4.11
D	0.080	0.074	20.0	33.7	<0.0090		1.57	<0.0090	2.80
E	0.079	0.075	21.1	34.8	<0.02	0.101	1.61	<0.05	2.53
F	0.235	0.0400	21.3	34.5	<0.05	0.100	2.38	<0.05	
G	0.0840	0.0700	21.711	35.522	<0.01	0.098	1.535	<0.01	2.53
H	0.0850	0.0688	20.4	34.4	<0.009	0.0935	1.72	<0.009	2.66
I	0.08064	0.0771	20.9		<0.006			<0.006	
J	0.0823	0.068			<0.015			<0.005	
K	0.0808	0.0760	21.7	35.4	<0.006	0.0972	1.64	<0.006	
L	0.0810	0.0693	20.63	34.75	<0.009	0.101	2.14	<0.009	
M			21.9	35.5	<0.29		1.831		
N	0.0857	0.06111			0.00169		1.794	0.00482	
O	0.0723			55.6		0.100			2.82
P	0.081	0.067	21.8	35.5	<0.010	0.0958	1.81	<0.010	
Q									
R	0.079	0.059	21.32	37.45	0.0090	0.099	1.70	<0.0153	2.78
S	0.0807	0.0735	21.7	35.4	<0.0150	0.103	1.76	<0.0150	3.15
T							1.46	<0.00613	
U			22.5	22.0					2.909
V						0.1103			
W	0.0804	0.0733	21.2	34.9	<0.015	0.102	2.05	<0.015	2.81
X	0.0904	0.0720	21.182	35.861	0.00799	0.0957		0.00502	
Y	0.0789	0.0749	21.4	34.9	<0.005	0.0991	1.601	<0.005	2.43
Z	0.083	0.069	19.9	35.4	<0.01		1.76	<0.01	2.88
AA	0.08178	0.06002	24.33	33.899	<0.005		1.840	0.01441	2.717
AB	0.0768	0.0850	21.0	36.0	<0.1	0.0943	2.00	<0.062	6.00
AC		0.066							
AD									
AE			21.67	33.71					
AF	0.071	0.067	21.9	35.7	<0.0015	0.0859		<0.011	
AG					<0.015		1.83		
AH	0.082	0.063	18.8	32.8	<0.01		1.62	<0.01	3.68
AI		0.061						<0.1	
AJ	0.0768	0.0693	22.29	35.50	<0.01	0.0997	1.68	<0.01	2.91
AK	0.0504	0.112	22.8	36.9	<0.200	0.09761	2.29	<0.0210	2.49
AL	0.069		20.81	29.41	0.0250		2.345	0.0250	
AM	0.081	0.079	25.75	42.25				0.00100	
AN	0.081	<0.013	21.8	36.2	<0.01		1.76	<0.013	
AO		<0.01			<0.019			<0.02	
AP			22.06	36.0					
AQ					<0.02			<0.05	

Measurement Uncertainties N177A

	NO ₂ ⁻ ±	NH ₄ ⁺ ±	Cl ⁻ ±	SO ₄ ²⁻ ±	o-PO ₄ ³⁻ ±	Boron ±	DOC ±	total-P (as PO ₄ ³⁻) ±	KMnO ₄ - Index
Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
assigned value	0.0003	0.003	0.05	0.4		0.0009	0.07		0.10
IFA result	0.003	0.002	0.7	0.9		0.007	0.07		0.27
Stability test	0.003	0.002					0.06		0.29
A	0.01	0.01	2.1	3.5		0.025			0.66
B	0.01	0.011	3.0	2.9		0.007	0.21		
C	0.005	0.010	1.9	4.5	0.002	0.006	0.45	0.006	1.42
D	0.010	0.016	1.6	2.0			0.22		0.10
E	0.01	0.01	1.90	3.13		0.02	0.14		0.23
F	0.030	0.006	0.2	0.4		0.020	0.1		
G	0.008	0.007	2.28	3.05		0.018	0.321		0.38
H	0.002	0.001	0.10	0.34		0.005	0.044		0.072
I	0.0081	0.0116	0.2						
J	0.0082	0.007							
K						0.00972			
L	0.0117	0.0114	2.1	3.5		0.026	0.321		
M									
N	0.0024	0.00147			0.00018		0.015	0.00101	
O	0.00723			12.2		0.012			0.254
P	0.008	0.012	1.8	2.9		0.0072	0.44		
Q									
R	0.0118	0.0059	2.132	3.745	0.00140	0.0149	0.140		0.445
S	0.000448	0.00156	0.416	0.117		0.000588	0.0486		
T							0.19		
U			2.148	20.0					0.297
V						0.010			
W	0.0088	0.0059	2.1	5.6		0.013	0.40		0.40
X	0.0002	0.002	0.161	0.200	0.001	0.00087		0.00021	
Y	0.015	0.019	1.6	2.2	0.0001	0.0078	0.165	0.0001	0.3
Z	0.006	0.009	0.8	1.4			0.22		0.39
AA	0.00286	0.00318	1.17	1.559			0.107	0.00117	0.27
AB	0.012	0.017	3.2	5.4		0.019	0.60		1.8
AC		0.0099							
AD									
AE			2.17	4.04					
AF	0.0107	0.0101	3.29	5.36		0.0129			
AG					0.002		0.33		
AH	0.0048	0.0046	1.5	2.0			0.15		0.17
AI									
AJ	0.0054	0.0097	2.67	3.55		0.0209	0.12		0.44
AK									
AL	0.013		2.02	3.63	0.004		0.305	0.004	
AM	0.01	0.01	1	1.5				0.05	
AN	0.006		2	3			0.3		
AO									
AP			0.966	4.16					
AQ									

Results N177B

	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		350	1.038	1.410	83.0	30.9	6.47	25.8	3.07	45.4
IFA result	6.14	351	1.08	1.39	82	32.1	6.8	25.8	2.94	43.7
Stability test										
A	6.12	352	1.02	1.38		29.9	6.75	26.6	3.16	46.25
B	6.2	353	1.03	1.38	81.2	31.0	6.30	24.3	2.97	44.7
C	6.70	354	1.04	1.37	83.6	31.1	6.53	25.1	2.87	44.5
D		356	1.01	1.36	83	30.1	6.2	24.9	2.90	44.0
E	6.38	345	1.03	1.37	80.8	30.4	6.66	26.3	3.62	44.6
F	6.5	353	1.00	1.42	158	27.4	5.70	22.7	2.47	44.1
G	6.1	353	1.02	1.426	83.9	29.94	6.57	26.1	3.10	44.974
H	6.40	346	1.04	1.40	85.7	31.2	6.38	25.5	3.10	44.5
I	6.17	351		1.39	82					41.9
J										
K	6.13	351	1.02	1.36	83.0	30.4	6.32	25.7	2.99	44.2
L	6.3	353	1.02	1.38	81.2	29.8	6.69	26.4	3.21	46.44
M				1.362		31.7	6.68	26.8	3.22	44.2
N	6.03	335								46.65
O			1.05	1.36	83.0	28.3	7.21	26.2	3.06	42.4
P	6.3	349	1.02	1.37	83.3	30.1	6.44	24.5	3.11	45.0
Q								28.12	4.14	
R	6.0	352	1.03	1.33	81.2	30.71	6.30	24.94	3.03	44.41
S	6.35	346	0.993	1.39	81.8	29.8	6.10	25.2	3.03	46.4
T				1.39						
U		344	1.03	1.384		31.56	5.97			45.0
V						30.90	6.40	26.29	3.13	
W	6.16	354	1.03	1.36	83.0	30.9	6.35	25.2	3.18	44.3
X	6.22	349	0.932		79.326	27.904	5.633	36.578	3.0851	47.003
Y	6.18	349	1.029	1.46	89.08	29.90	6.873	26.37	3.103	44.4
Z	6.20	349	1.05	1.430	87.2	31.5	6.5	25.6	3.10	45.6
AA	6.20	349		1.405	82.68	29.17	6.445	24.87	3.527	47.49
AB	6.30	339	1.07	1.36	82.9	31.5	6.98	27.0	3.10	45.0
AC										
AD			0.76							
AE	6.20	336.0								43.18
AF	5.99	342	1.04	1.33	78.1	31.5	6.16	25.9	2.65	46.5
AG										
AH	7.04	513	0.98	1.44	88	29.1	6.2	25.3	3.06	41.3
AI										
AJ	6.14	353	1.06	1.383	81.33	31.89	6.305	24.84	3.170	45.59
AK	6.59	351	1.03	1.22	74.0	30.8	6.343	25.42	3.206	44.7
AL	6.73	349.8	1.08			30.06	7.9	24.4	2.60	37.966
AM	6.08	348	1.021	1.382	84	31.35	6.10	22.35	3.10	46.3
AN	6.09	351	1.06	1.39	81.6	31.7	6.58	26.2	3.12	46.7
AO										>30
AP			1.02	1.41						
AQ	6.1	352		1.47	89.80					

Measurement Uncertainties N177B

	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	0.012	0.017	1.0	0.5	0.08	0.2	0.02	1.2
IFA result	0.20	6	0.06	0.06	3	2.1	0.4	1.1	0.19	2.2
Stability test										
A	0.1	10	0.21	0.14		6.0	1.4	4.0	0.64	4.7
B				0.1		2.6	0.7	2.1	0.3	6.3
C	0.1	6	0.10	0.04	2.7	2.8	0.54	1.5	0.30	5.5
D		11	0.05	0.07	7	1.8	0.5	1.5	0.23	2.6
E	0.26	13.8	0.19	0.05	3.23	5.47	1.20	4.73	0.65	4.01
F	0.1	16	0.02	0.09	10	4.11	0.86	3.41	0.37	0.3
G	0.19	19.6	0.102	0.078	4.61	1.65	0.23	0.91	0.11	3.41
H	0.006	0.49	0.004	0.009	0.12	0.43	0.090	0.29	0.015	0.29
I	0.01	2		0.039	1					2.9
J										
K										
L	0.1	10	0.1	0.1	0.8	6.0	1.4	4.0	0.65	4.6
M										
N	0.02	1.38								1.14
O			0.126	0.177	10.8	3.40	0.865	2.62	0.275	4.66
P	0.2	14	0.047	0.1	6.0	1.2	0.42	1.4	0.18	4.3
Q										
R	0.2	35.2		0.200	12.17	3.071	0.630	2.494	0.303	2.2205
S	0.635	0.212	0.00874	0.0768	1.64	0.331	0.0685	0.133	0.0182	0.593
T				0.14						
U		0.55	0.111	0.3		1.64	3.06			0.964
V						3.09	0.64	2.63	0.31	
W	0.18	11	0.15	0.11	6.6	4.6	0.76	3.3	0.48	4.4
X	0.00024	0.512	0.001		0.01	0.446	0.0890	0.598	0.0371	0.076
Y	0.38	35	0.053	0.09	5.2	0.966	0.696	2.41	0.459	4.0
Z	0.05	8	0.09	0.063	3.9	1.4	0.3	1.1	0.12	1.7
AA	0.019	10.1		0.136	7.99	0.77	0.471	1.20	0.174	1.76
AB	0.63	34	0.21	0.14	8.3	6.3	1.4	5.4	0.62	6.8
AC										
AD			0.02							
AE	0.11	8.87								4.318
AF	0.899	51.3	0.156	0.20	11.7	4.73	0.924	3.89	0.398	6.98
AG										
AH	0.07	11	0.080	0.12	3.9	1.5	0.39	1.9	0.11	2.0
AI										
AJ	0.20	7	0.14	0.124	7.32	3.19	0.504	2.24	0.254	4.10
AK										
AL	0.10	17.5	0.08			2.09	0.11	0.2	0.36	2.202
AM	0.04	14	0.025	0.025	10	2	0.4	1	0.2	1
AN	0.3	15	0.1	0.1	4	3	0.8	4	0.5	4
AO										
AP			0.132	0.0729						
AQ										

Results N177B

	NO ₂ ⁻	NH ₄ ⁺	Cl ⁻	SO ₄ ²⁻	o-PO ₄ ³⁻	Boron	DOC	total-P (as PO ₄ ³⁻)	KMnO ₄ - Index
Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
assigned value	0.0406	<0.01	29.31	15.24	0.0909	0.0708	3.64	0.1254	2.23
IFA result	0.0403	<0.01	28.4	14.7	0.0920	0.061	3.57	0.129	2.17
Stability test	0.0407	<0.01			0.0935		3.51		2.28
A	0.0404	<0.010	28.52	14.93		0.0709			2.20
B	0.0451	<0.01	30.6	14.7	0.087	0.070	3.69	0.116	1.99
C	0.0430	0.00800	29.5	14.6	0.0940	0.0460	3.76	0.187	3.82
D	0.0400	<0.02	28.2	14.2	0.091		3.68	0.128	2.10
E	0.0397	<0.01	28.9	14.7	0.084	0.071	3.48	0.120	2.11
F	0.062	<0.025	29.1	14.7	<0.05	0.070	3.94	<0.05	
G	0.0430	<0.010	29.28	14.733	0.088	0.071	3.354	0.126	2.23
H	0.0430	<0.01	28.3	15.4	0.0892	0.0648	3.64	0.116	2.17
I	0.0425	<0.005	29.1		0.087			0.121	
J	0.0418	<0.02			0.129			0.0420	
K	0.0394	<0.008	29.4	15.2	0.0920	0.0691	3.53	0.123	
L	0.0409	<0.010	28.61	14.95	0.0885	0.0700	3.62	0.125	
M			29.3	15.2	<0.29		3.594		
N	0.0447	0.00184			0.08884		3.697	0.12352	
O	<0.0493			31.7		<0.100			2.35
P	0.0411	<0.010	29.2	15.3	0.097	0.0679	3.62	0.130	
Q									
R	0.0430	<0.00515	29.18	16.25	0.086	0.070	3.60	0.1318	2.29
S	0.0405	<0.0100	30.1	15.4	0.0866	0.0724	3.46	0.117	3.61
T							3.41	0.110953	
U			30.1	6.0					2.716
V						0.076			
W	0.0408	<0.01	29.2	14.8	0.0895	0.0709	4.00	0.128	2.12
X	0.0466	0.0331	29.169	15.172	0.0800	0.0788		0.187	
Y	0.0386	<0.01	29.2	15.1	0.0911	0.0707	3.289	0.1215	1.92
Z	0.0402	<0.02	28.2	15.0	0.088		3.65	0.120	2.40
AA	0.04040	<0.0129	29.07	14.138	0.08404		3.762	0.12023	2.399
AB	0.0390	0.0200	29.0	15.1	<0.1	0.0660	3.80	0.126	6.40
AC		<0.01							
AD									
AE			26.97	14.64					
AF	0.0370	<0.0090	30.3	15.6	0.079	0.0610		0.116	
AG					0.0890		3.46		
AH	0.0350	<0.01	26.8	14.4	0.094		3.36	0.159	2.06
AI		<0.05						<0.1	
AJ	0.0399	<0.01	29.87	14.90	0.0851	0.0666	3.60	0.120	2.56
AK	0.0263	0.0374	31.0	15.4	<0.200	0.06683	4.05	0.120	2.08
AL	0.0230		28.22	11.13	0.104		3.975	0.131	
AM	0.0410	0.00400	33.55	17.1				0.115	
AN	0.0410	0.068	29.7	15.5	0.090		3.67	0.123	
AO		0.0639			0.0805			0.114	
AP			29.93	14.86					
AQ					0.092			0.127	

Measurement Uncertainties N177B

	NO ₂ ⁻ ±	NH ₄ ⁺ ±	Cl ⁻ ±	SO ₄ ²⁻ ±	o-PO ₄ ³⁻ ±	Boron ±	DOC ±	total-P (as PO ₄ ³⁻) ±	KMnO ₄ - Index
Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
assigned value	0.0012		0.13	0.18	0.0015	0.0010	0.08	0.0011	0.11
IFA result	0.0017		1.0	0.4	0.0019	0.005	0.09	0.022	0.22
Stability test	0.0017				0.0020		0.08		0.23
A	0.01		2.9	1.5		0.018			0.55
B	0.01		4.4	1.2	0.01	0.004	0.44	0.01	
C	0.003	0.001	2.6	1.9	0.007	0.003	0.99	0.002	1.32
D	0.0050		2.3	1.0	0.017		0.52	0.018	0.10
E	0.007		2.60	1.32	0.02	0.01	0.31	0.02	0.19
F	0.008		0.2	0.4		0.011	0.1		
G	0.004		3.07	1.27	0.009	0.013	0.702	0.013	0.33
H	0.001		0.15	0.15	0.001	0.003	0.092	0.001	0.050
I	0.0042		0.3		0.010			0.016	
J	0.0042				0.013			0.004	
K						0.00691			
L	0.0059		2.9	1.5	0.0104	0.018	0.543	0.0147	
M									
N	0.0016	0.00023			0.00088		0.033	0.00118	
O	0.00493			6.97		0.012			0.212
P	0.0049		2.4	1.4	0.013	0.0054	0.73	0.014	
Q									
R	0.0064		2.918	1.625	0.0129	0.0105	0.290	0.0199	0.366
S	0.000412		0.397	0.114	0.00165	0.000566	0.0476	0.00418	
T							0.44	0.02	
U			2.148	20.0					0.297
V						0.008			
W	0.0045		2.9	2.4	0.0072	0.0092	0.80	0.010	0.32
X	0.0002	0.002	0.060	0.134	0.0027	0.00113		0.00127	
Y	0.007	0.003	2.1	0.9	0.0175	0.0055	0.338	0.0071	0.23
Z	0.0029		1.1	0.6	0.008		0.46	0.026	0.32
AA	0.01414		1.40	1.400	0.00664		0.218	0.00974	0.239
AB	0.0059	0.0040	4.4	2.27		0.013	1.1	0.025	1.9
AC									
AD									
AE			2.68	1.76					
AF	0.0056		4.55	2.34	0.0119	0.009		0.0174	
AG					0.011		0.62		
AH	0.0020		2.1	0.88	0.014		0.31	0.021	0.093
AI									
AJ	0.0028		3.58	1.49	0.0128	0.0140	0.25	0.023	0.38
AK									
AL	0.007		2.25	1.44	0.012		0.517	0.030	
AM	0.01	0.01	1	1.5				0.05	
AN	0.003	0.009	3	1.1	0.018		0.6	0.02	
AO		0.0079			0.0169			0.0187	
AP			1.31	1.71					
AQ									

z-Scores N177A

	Cond.	total-Hardn.	K _{s4.3}	HCO ₃ ⁻	Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	NO ₃ ⁻
A	0.78	-0.33	-1.71		-1.00	0.54	0.56	1.02	0.01
B	-0.78	-0.59	-1.28	-0.98	-0.72	-0.08	0.56	-0.38	-0.57
C	0.39	-0.08	-1.28	-0.14	0.00	-0.08	-1.01	-1.52	-1.14
D	1.76	-1.35	-1.92	-0.70	-1.27	-0.91	-1.79	-1.59	-1.42
E	-1.17	-0.84	-2.56	-2.10	-1.09	-0.29	-0.22	1.97	-0.71
F	3.91	-1.10	-0.21	-19.26	-3.44	-2.79	-5.48	0.00	-0.57
G	0.59	-0.84	0.11	0.14	-1.30	0.12	0.47	0.51	-0.14
H	-0.78	0.69	-1.07	0.14	0.82	0.12	0.11	0.32	-0.57
I	0.20		-1.07	-0.98					-1.42
J									
K	0.00	-0.59	-1.71	-0.42	-0.72	-0.50	-0.22	-0.57	-1.00
L	1.17	-0.33	-1.71	-0.48	-1.09	0.54	0.78	0.95	0.13
M			-1.99		0.36	0.75	0.67	0.63	0.00
N	-4.69								0.87
O		-0.08	-1.92	-0.70	-3.35	4.28	2.24	-0.19	-2.28
P	0.20	-1.10	-2.01	-0.73	-0.82	-0.91	-1.57	0.19	-0.14
Q							3.55	6.85	
R	0.78	-0.33	-2.78	-1.34	-0.07	-0.52	-1.33	-0.13	-0.72
S	-0.78	-1.10	-0.64	-0.70	-0.72	-1.33	-0.56	-0.19	0.43
T			-0.64						
U	-0.67	2.73	-0.71		0.72	4.45			0.00
V					-0.17	-0.54	0.60	0.19	
W	1.17	0.18	-2.14	-0.70	0.45	-0.29	0.22	1.02	-0.71
X	0.39	-8.74		-2.53	-6.35	-8.83	10.36	-3.98	1.52
Y	-0.20	-0.15	1.71	2.25	-1.15	1.27	0.51	0.14	-0.85
Z	0.20	0.69	0.21	0.98	0.63	0.33	-0.34	0.44	0.00
AA	0.39		-1.60	-1.25	0.72	-0.10	-0.25	4.24	2.25
AB	-2.35	1.45	-2.14	-0.70	0.82	1.58	1.68	0.38	-0.28
AC									
AD		-0.59							
AE	-1.96								-1.92
AF	0.39	0.18	-1.92	-1.54	0.63	-0.71	0.22	-3.49	0.71
AG									
AH	-8.41	-1.86	0.85	1.54	-1.99	-0.91	-0.22	0.57	-1.71
AI									
AJ	1.17	-0.33	-0.90	-0.70	0.03	-0.69	-1.20	-0.19	0.60
AK	0.59	-0.08	-14.53	-10.76	0.09	-0.40	-0.06	2.61	0.00
AL	0.06	0.69			-1.39	3.04	-1.57	-2.16	-6.02
AM	-0.39	-0.48	-1.73	-0.42	0.14	-1.33	-3.75	-1.65	2.42
AN	0.39	0.43	-0.64	-0.42	0.45	0.12	0.11	-0.38	1.00
AO									0.26
AP		-0.59	-0.64						
AQ	0.39		-0.43	0.55					

z-Scores N177A

	NO ₂ ⁻	NH ₄ ⁺	Cl ⁻	SO ₄ ²⁻	o-PO ₄ ³⁻	Boron	DOC	total-P (as PO ₄ ³⁻)	KMnO ₄ - Index
A	-0.16	-0.77	-1.65	-0.78		-0.09			-0.32
B	0.20	0.13	-0.41	0.27		0.34	0.32		-0.86
C	0.43	-0.38	-0.41	-0.54		-3.21	-0.21		6.31
D	-0.25	0.38	-2.65	-1.72			-1.90		0.36
E	-0.47	0.51	-0.76	-0.72		0.06	-1.48		-0.86
F	34.50	-3.97	-0.41	-1.00		-0.09	6.67		
G	0.65	-0.13	0.29	-0.07		-0.37	-2.28		-0.86
H	0.87	-0.28	-1.96	-1.09		-1.01	-0.32		-0.27
I	-0.10	0.78	-1.10						
J	0.27	-0.38							
K	-0.07	0.64	0.28	-0.18		-0.48	-1.16		
L	-0.02	-0.22	-1.56	-0.77		0.06	4.13		
M			0.62	-0.09			0.86		
N	1.03	-1.27					0.47		
O	-1.97			18.12		-0.09			0.45
P	-0.02	-0.51	0.45	-0.09		-0.68	0.63		
Q									
R	-0.47	-1.54	-0.38	1.68		-0.23	-0.53		0.27
S	-0.09	0.32	0.28	-0.18		0.34	0.11		1.95
T							-3.07		
U			1.65	-12.32					0.86
V						1.38			
W	-0.16	0.29	-0.58	-0.63		0.20	3.17		0.41
X	2.08	0.13	-0.62	0.24		-0.70			
Y	-0.49	0.50	-0.24	-0.63		-0.21	-1.58		-1.32
Z	0.43	-0.26	-2.82	-0.18			0.11		0.73
AA	0.15	-1.41	4.80	-1.54			0.95		-0.01
AB	-0.96	1.79	-0.93	0.36		-0.89	2.65		14.89
AC		-0.64							
AD									
AE			0.22	-1.71					
AF	-2.26	-0.51	0.62	0.09		-2.09			
AG							0.85		
AH	0.20	-1.02	-4.71	-2.54			-1.38		4.36
AI		-1.28							
AJ	-0.96	-0.22	1.29	-0.09		-0.13	-0.74		0.86
AK	-6.88	5.25	2.17	1.18		-0.42	5.71		-1.04
AL	-2.71		-1.26	-5.61			6.30		
AM	-0.02	1.02	7.24	6.03					
AN	-0.02		0.45	0.54			0.11		
AO									
AP			0.89	0.36					
AQ									

z-Scores N177B

	Cond.	total-Hardn.	K _S 4.3	HCO ₃ ⁻	Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	NO ₃ ⁻
A	0.48	-0.64	-1.18		-1.04	1.24	1.03	0.73	0.65
B	0.71	-0.29	-1.18	-0.94	0.10	-0.75	-1.94	-0.81	-0.53
C	0.95	0.07	-1.58	0.31	0.21	0.26	-0.90	-1.63	-0.68
D	1.43	-1.00	-1.97	0.00	-0.84	-1.19	-1.16	-1.38	-1.06
E	-1.19	-0.29	-1.58	-1.15	-0.52	0.84	0.65	4.48	-0.61
F	0.71	-1.36	0.39	39.29	-3.65	-3.40	-4.01	-4.89	-0.99
G	0.71	-0.64	0.63	0.47	-1.00	0.44	0.39	0.24	-0.32
H	-0.95	0.07	-0.39	1.41	0.31	-0.40	-0.39	0.24	-0.68
I	0.24		-0.79	-0.52					-2.66
J									
K	0.24	-0.64	-1.97	0.00	-0.52	-0.66	-0.13	-0.65	-0.91
L	0.71	-0.64	-1.18	-0.94	-1.15	0.97	0.78	1.14	0.79
M			-1.89		0.84	0.93	1.29	1.22	-0.91
N	-3.57								0.95
O		0.43	-1.97	0.00	-2.71	3.27	0.52	-0.08	-2.28
P	-0.24	-0.64	-1.58	0.16	-0.84	-0.13	-1.68	0.33	-0.30
Q							3.00	8.71	
R	0.48	-0.29	-3.15	-0.94	-0.20	-0.75	-1.11	-0.33	-0.75
S	-0.95	-1.61	-0.79	-0.63	-1.15	-1.63	-0.78	-0.33	0.76
T			-0.79						
U	-1.43	-0.29	-1.02		0.69	-2.21			-0.30
V					0.00	-0.31	0.63	0.49	
W	0.95	-0.29	-1.97	0.00	0.00	-0.53	-0.78	0.90	-0.84
X	-0.24	-3.78		-1.92	-3.13	-3.70	13.93	0.12	1.22
Y	-0.24	-0.32	1.97	3.18	-1.04	1.78	0.74	0.27	-0.76
Z	-0.24	0.43	0.79	2.20	0.63	0.13	-0.26	0.24	0.15
AA	-0.24		-0.20	-0.17	-1.81	-0.11	-1.20	3.72	1.59
AB	-2.62	1.14	-1.97	-0.05	0.63	2.25	1.55	0.24	-0.30
AC									
AD		-9.92							
AE	-3.33								-1.69
AF	-1.90	0.07	-3.15	-2.57	0.63	-1.37	0.13	-3.42	0.84
AG									
AH	38.81	-2.07	1.18	2.62	-1.88	-1.19	-0.65	-0.08	-3.11
AI									
AJ	0.71	0.78	-1.06	-0.87	1.03	-0.73	-1.24	0.81	0.14
AK	0.24	-0.29	-7.49	-4.71	-0.10	-0.56	-0.49	1.11	-0.53
AL	-0.05	1.50			-0.88	6.31	-1.81	-3.83	-5.65
AM	-0.48	-0.61	-1.10	0.52	0.47	-1.63	-4.46	0.24	0.68
AN	0.24	0.78	-0.79	-0.73	0.84	0.49	0.52	0.41	0.99
AO									
AP		-0.64	0.00						
AQ	0.48		2.36	3.56					

z-Scores N177B

	NO ₂ ⁻	NH ₄ ⁺	Cl ⁻	SO ₄ ²⁻	o-PO ₄ ³⁻	Boron	DOC	total-P (as PO ₄ ³⁻)	KMnO ₄ - Index
A	-0.09		-1.00	-0.66		0.02			-0.17
B	2.02		1.63	-1.14	-0.49	-0.16	0.25	-0.87	-1.33
C	1.07		0.24	-1.35	0.39	-5.00	0.61	5.71	8.80
D	-0.27		-1.40	-2.20	0.01		0.20	0.24	-0.72
E	-0.40		-0.52	-1.14	-0.87	0.04	-0.81	-0.50	-0.66
F	9.58		-0.27	-1.14		-0.16	1.53		
G	1.07		-0.04	-1.07	-0.37	0.04	-1.46	0.06	0.00
H	1.07		-1.28	0.34	-0.21	-1.21	0.00	-0.87	-0.33
I	0.85		-0.27		-0.49			-0.41	
J	0.54				4.82			-7.73	
K	-0.54		0.11	-0.08	0.14	-0.34	-0.56	-0.22	
L	0.13		-0.88	-0.61	-0.30	-0.16	-0.10	-0.04	
M			-0.01	-0.08			-0.23		
N	1.84				-0.26		0.29	-0.17	
O				34.84					0.66
P	0.22		-0.14	0.13	0.77	-0.59	-0.10	0.43	
Q									
R	1.07		-0.16	2.14	-0.62	-0.16	-0.20	0.59	0.33
S	-0.04		1.00	0.34	-0.54	0.32	-0.92	-0.78	7.64
T							-1.17	-1.34	
U			1.00	-19.56					2.69
V						1.05			
W	0.09		-0.14	-0.93	-0.18	0.02	1.83	0.24	-0.61
X	2.69		-0.18	-0.14	-1.38	1.61		5.71	
Y	-0.90		-0.14	-0.30	0.03	-0.02	-1.79	-0.36	-1.72
Z	-0.18		-1.40	-0.51	-0.37		0.05	-0.50	0.94
AA	-0.09		-0.30	-2.33	-0.87		0.62	-0.48	0.94
AB	-0.72		-0.39	-0.30		-0.97	0.81	0.06	23.09
AC									
AD									
AE			-2.96	-1.27					
AF	-1.61		1.25	0.76	-1.50	-1.98		-0.87	
AG					-0.24		-0.92		
AH	-2.51		-3.17	-1.78	0.39		-1.42	3.12	-0.94
AI									
AJ	-0.31		0.71	-0.72	-0.73	-0.85	-0.20	-0.50	1.83
AK	-6.40		2.14	0.34		-0.80	2.09	-0.50	-0.83
AL	-7.88		-1.38	-8.70	1.66		1.70	0.52	
AM	0.18		5.36	3.94				-0.96	
AN	0.18		0.49	0.55	-0.11		0.15	-0.22	
AO					-1.32			-1.06	
AP			0.78	-0.80					
AQ					0.14			0.15	

Sample N177A

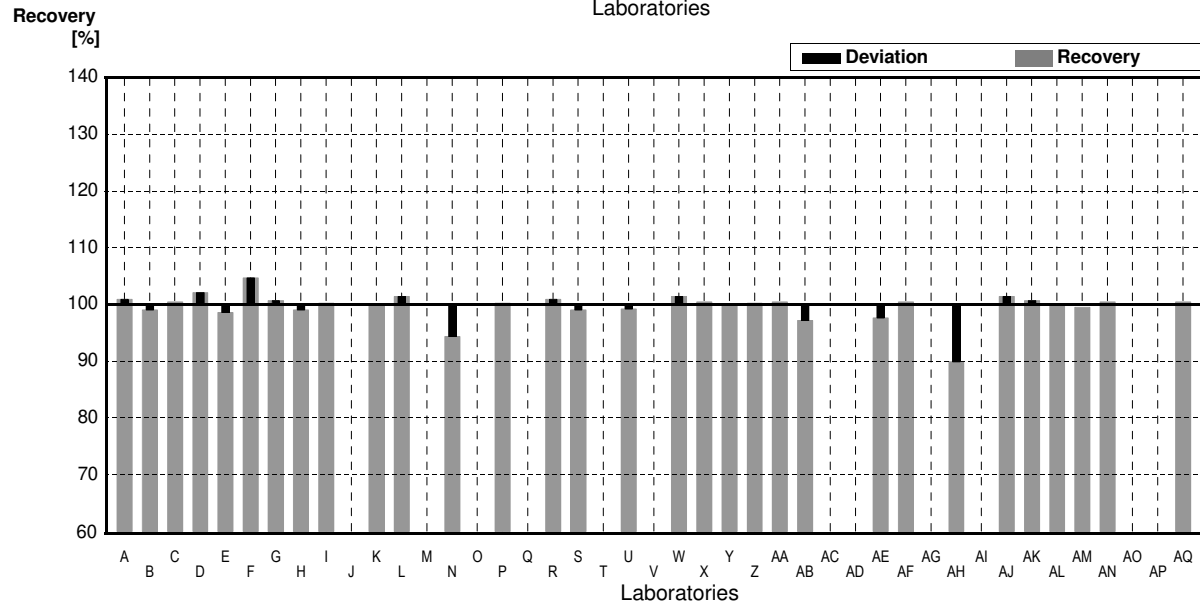
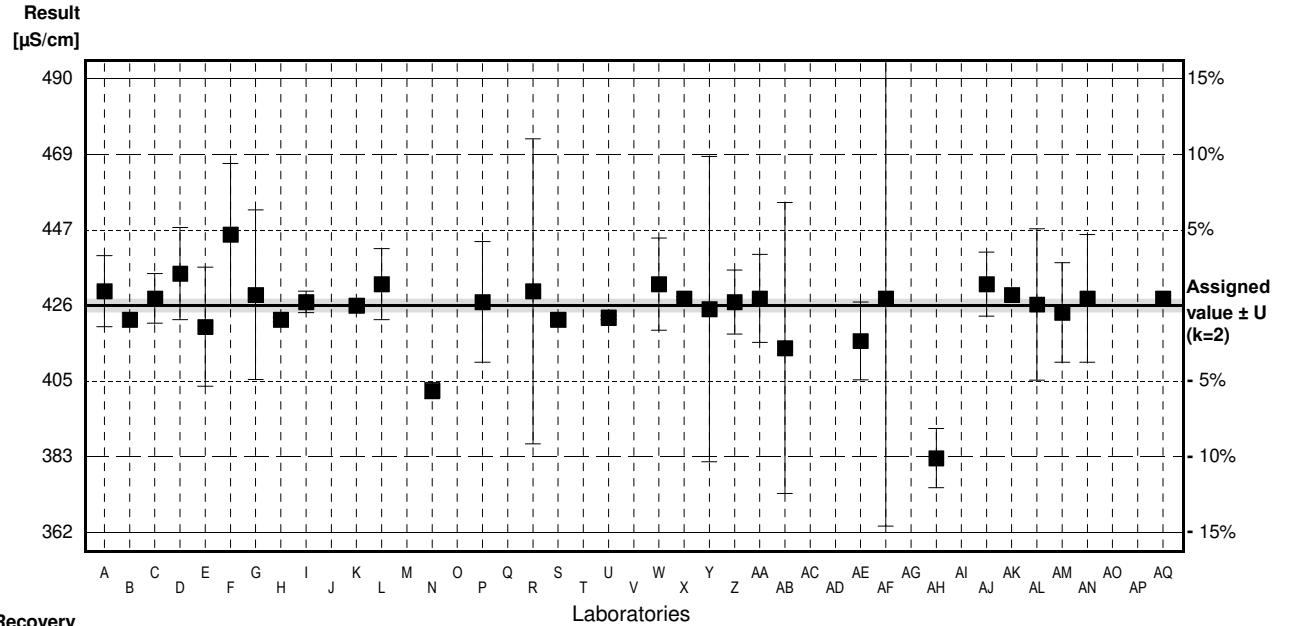
Parameter Electr. Conductivity (25°C)

Assigned value $\pm U$ (k=2) 426 $\mu\text{S/cm}$ \pm 2 $\mu\text{S/cm}$
 IFA result $\pm U$ (k=2) 432 $\mu\text{S/cm}$ \pm 7 $\mu\text{S/cm}$

Stability test $\mu\text{S/cm}$

Lab Code	Result	\pm	Unit	Recovery	z-Score	
A	430	10	$\mu\text{S/cm}$	101%	0.78	
B	422		$\mu\text{S/cm}$	99%	-0.78	
C	428	7	$\mu\text{S/cm}$	100%	0.39	
D	435	13	$\mu\text{S/cm}$	102%	1.76	
E	420	16.8	$\mu\text{S/cm}$	99%	-1.17	
F	446	*	20	$\mu\text{S/cm}$	105%	3.91
G	429	23.9	$\mu\text{S/cm}$	101%	0.59	
H	422	0.58	$\mu\text{S/cm}$	99%	-0.78	
I	427	3	$\mu\text{S/cm}$	100%	0.20	
J			$\mu\text{S/cm}$			
K	426		$\mu\text{S/cm}$	100%	0.00	
L	432	10	$\mu\text{S/cm}$	101%	1.17	
M			$\mu\text{S/cm}$			
N	402	*	2.32	$\mu\text{S/cm}$	94%	-4.69
O			$\mu\text{S/cm}$			
P	427	17	$\mu\text{S/cm}$	100%	0.20	
Q			$\mu\text{S/cm}$			
R	430	43.0	$\mu\text{S/cm}$	101%	0.78	
S	422	0.156	$\mu\text{S/cm}$	99%	-0.78	
T			$\mu\text{S/cm}$			
U	422.6	0.55	$\mu\text{S/cm}$	99%	-0.67	
V			$\mu\text{S/cm}$			
W	432	13	$\mu\text{S/cm}$	101%	1.17	
X	428	0.449	$\mu\text{S/cm}$	100%	0.39	
Y	425	43	$\mu\text{S/cm}$	100%	-0.20	
Z	427	9	$\mu\text{S/cm}$	100%	0.20	
AA	428	12.4	$\mu\text{S/cm}$	100%	0.39	
AB	414	41	$\mu\text{S/cm}$	97%	-2.35	
AC			$\mu\text{S/cm}$			
AD			$\mu\text{S/cm}$			
AE	416.0	10.98	$\mu\text{S/cm}$	98%	-1.96	
AF	428	64.2	$\mu\text{S/cm}$	100%	0.39	
AG			$\mu\text{S/cm}$			
AH	383	*	8.3	$\mu\text{S/cm}$	90%	-8.41
AI			$\mu\text{S/cm}$			
AJ	432	9	$\mu\text{S/cm}$	101%	1.17	
AK	429		$\mu\text{S/cm}$	101%	0.59	
AL	426.3	21.3	$\mu\text{S/cm}$	100%	0.06	
AM	424	14	$\mu\text{S/cm}$	100%	-0.39	
AN	428	18	$\mu\text{S/cm}$	100%	0.39	
AO			$\mu\text{S/cm}$			
AP			$\mu\text{S/cm}$			
AQ	428		$\mu\text{S/cm}$	100%	0.39	

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	425 \pm 5	426 \pm 2	$\mu\text{S/cm}$
Recov. \pm CI(99%)	99,7 \pm 1,2	100,1 \pm 0,6	%
SD between labs	11	5	$\mu\text{S/cm}$
RSD between labs	2,5	1,1	%
n for calculation	31	28	



Sample N177B

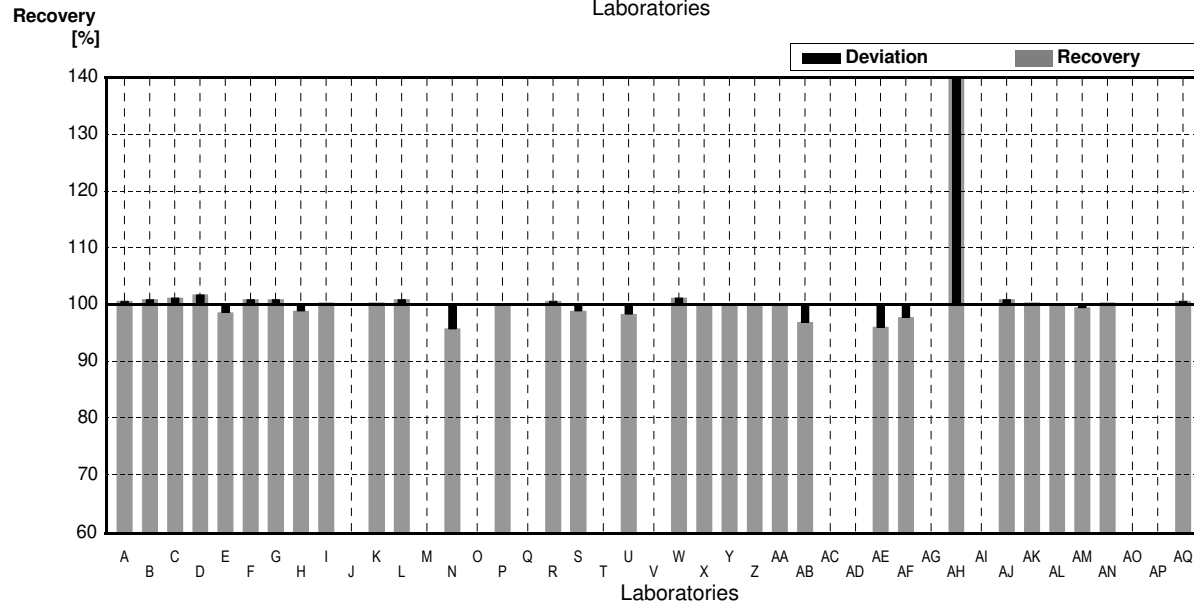
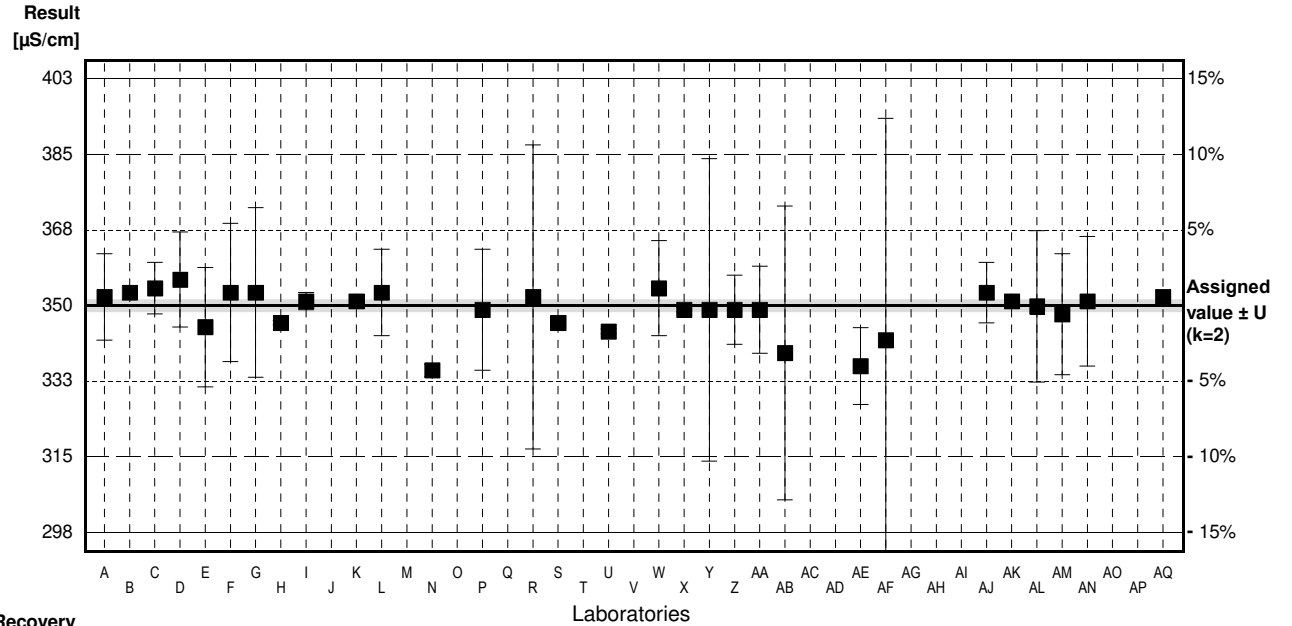
Parameter Electr. Conductivity (25°C)

Assigned value ± U (k=2) 350 μS/cm ± 1 μS/cm
 IFA result ± U (k=2) 351 μS/cm ± 6 μS/cm

Stability test μS/cm

Lab Code	Result	±	Unit	Recovery	z-Score
A	352	10	μS/cm	101%	0.48
B	353		μS/cm	101%	0.71
C	354	6	μS/cm	101%	0.95
D	356	11	μS/cm	102%	1.43
E	345	13.8	μS/cm	99%	-1.19
F	353	16	μS/cm	101%	0.71
G	353	19.6	μS/cm	101%	0.71
H	346	0.49	μS/cm	99%	-0.95
I	351	2	μS/cm	100%	0.24
J			μS/cm		
K	351		μS/cm	100%	0.24
L	353	10	μS/cm	101%	0.71
M			μS/cm		
N	335	*	1.38	96%	-3.57
O			μS/cm		
P	349	14	μS/cm	100%	-0.24
Q			μS/cm		
R	352	35.2	μS/cm	101%	0.48
S	346	0.212	μS/cm	99%	-0.95
T			μS/cm		
U	344	0.55	μS/cm	98%	-1.43
V			μS/cm		
W	354	11	μS/cm	101%	0.95
X	349	0.512	μS/cm	100%	-0.24
Y	349	35	μS/cm	100%	-0.24
Z	349	8	μS/cm	100%	-0.24
AA	349	10.1	μS/cm	100%	-0.24
AB	339	*	34	97%	-2.62
AC			μS/cm		
AD			μS/cm		
AE	336.0	*	8.87	96%	-3.33
AF	342	51.3	μS/cm	98%	-1.90
AG			μS/cm		
AH	513	*	11	147%	38.81
AI			μS/cm		
AJ	353	7	μS/cm	101%	0.71
AK	351		μS/cm	100%	0.24
AL	349.8	17.5	μS/cm	100%	-0.05
AM	348	14	μS/cm	99%	-0.48
AN	351	15	μS/cm	100%	0.24
AO			μS/cm		
AP			μS/cm		
AQ	352		μS/cm	101%	0.48

	All results	Outliers excl.	Unit
Mean ± CI(99%)	354 ± 15	350 ± 2	μS/cm
Recov. ± CI(99%)	101,2 ± 4,2	100,1 ± 0,5	%
SD between labs	30	3	μS/cm
RSD between labs	8.5	1.0	%
n for calculation	31	27	



Sample N177A

Parameter Total hardness

Assigned value ± U (k=2) 1,453 mmol/l ± 0,017 mmol/l

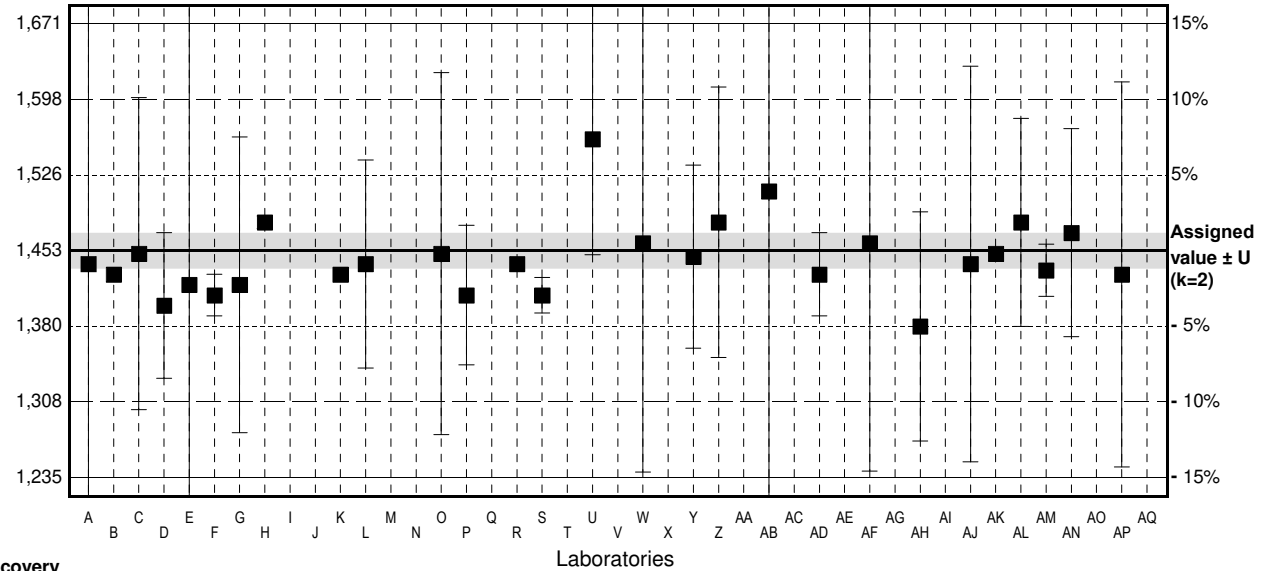
IFA result ± U (k=2) 1,48 mmol/l ± 0,08 mmol/l

Stability test mmol/l

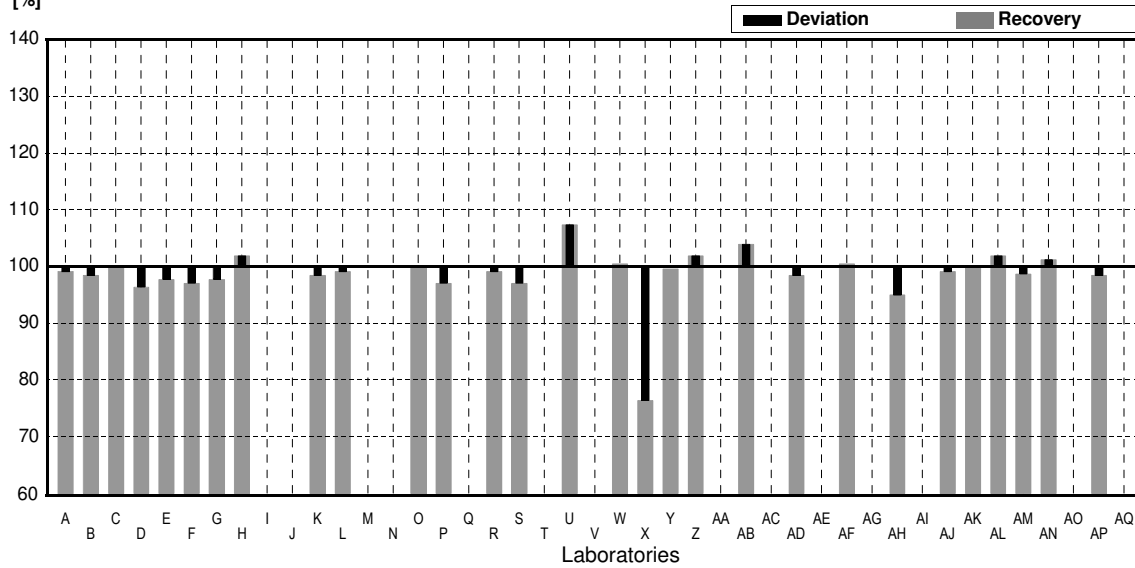
Lab Code	Result	±	Unit	Recovery	z-Score
A	1.44	0,29	mmol/l	99%	-0.33
B	1.43		mmol/l	98%	-0.59
C	1.45	0.15	mmol/l	100%	-0.08
D	1.40	0.07	mmol/l	96%	-1.35
E	1.42	0.26	mmol/l	98%	-0.84
F	1.41	0.02	mmol/l	97%	-1.10
G	1.42	0.142	mmol/l	98%	-0.84
H	1.48	0.006	mmol/l	102%	0.69
I			mmol/l		
J			mmol/l		
K	1.43		mmol/l	98%	-0.59
L	1.44	0.1	mmol/l	99%	-0.33
M			mmol/l		
N			mmol/l		
O	1.45	0.174	mmol/l	100%	-0.08
P	1.41	0.067	mmol/l	97%	-1.10
Q			mmol/l		
R	1.44		mmol/l	99%	-0.33
S	1.41	0.0170	mmol/l	97%	-1.10
T			mmol/l		
U	1.56 *	0.111	mmol/l	107%	2.73
V			mmol/l		
W	1.46	0.22	mmol/l	100%	0.18
X	1.110 *	0.002	mmol/l	76%	-8.74
Y	1.447	0.088	mmol/l	100%	-0.15
Z	1.48	0.13	mmol/l	102%	0.69
AA			mmol/l		
AB	1.51	0.30	mmol/l	104%	1.45
AC			mmol/l		
AD	1.43	0.04	mmol/l	98%	-0.59
AE			mmol/l		
AF	1.46	0.219	mmol/l	100%	0.18
AG			mmol/l		
AH	1.38	0.11	mmol/l	95%	-1.86
AI			mmol/l		
AJ	1.44	0.19	mmol/l	99%	-0.33
AK	1.45		mmol/l	100%	-0.08
AL	1.48	0.10	mmol/l	102%	0.69
AM	1.434	0.025	mmol/l	99%	-0.48
AN	1.47	0.1	mmol/l	101%	0.43
AO			mmol/l		
AP	1.43	0.185	mmol/l	98%	-0.59
AQ			mmol/l		

	All results	Outliers excl.	Unit
Mean ± CI(99%)	1,433 ± 0,037	1,441 ± 0,015	mmol/l
Recov. ± CI(99%)	98,7 ± 2,5	99,2 ± 1,0	%
SD between labs	0,071	0,028	mmol/l
RSD between labs	5,0	2,0	%
n for calculation	29	27	

Result [mmol/l]



Recovery [%]



Sample N177B

Parameter Total hardness

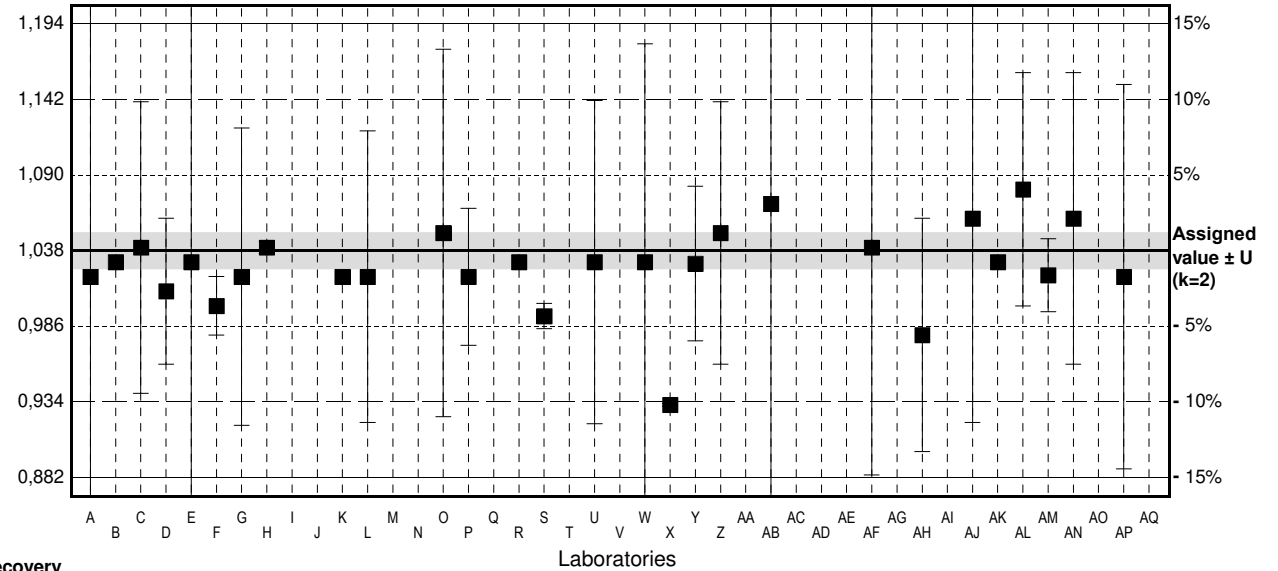
Assigned value ± U (k=2) 1,038 mmol/l ± 0,012 mmol/l

IFA result ± U (k=2) 1,08 mmol/l ± 0,06 mmol/l

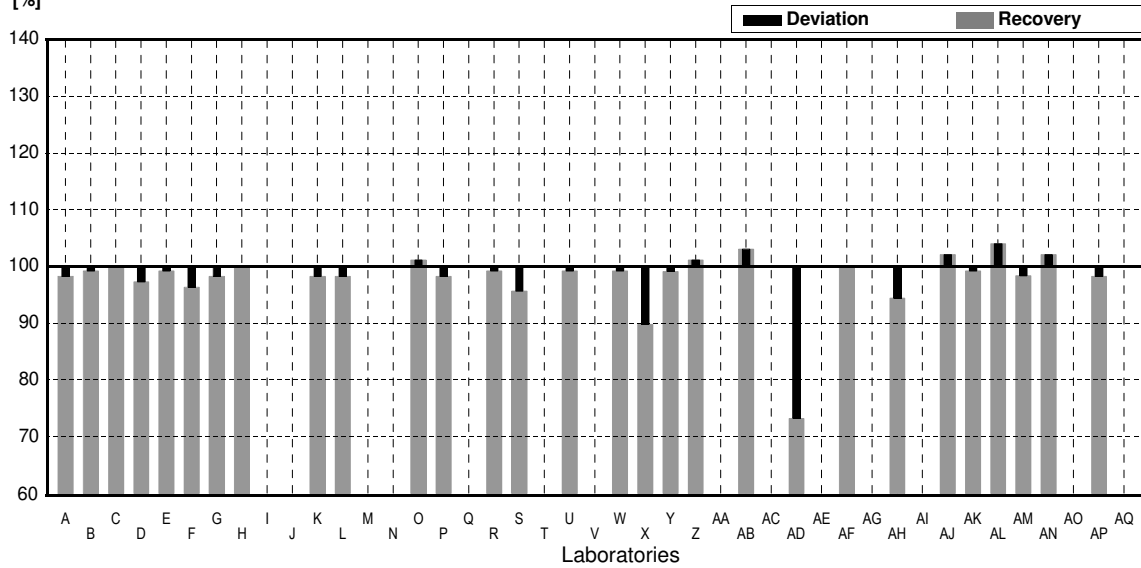
Stability test mmol/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	1.02	0.21	mmol/l	98%	-0.64
B	1.03		mmol/l	99%	-0.29
C	1.04	0.10	mmol/l	100%	0.07
D	1.01	0.05	mmol/l	97%	-1.00
E	1.03	0.19	mmol/l	99%	-0.29
F	1.00	0.02	mmol/l	96%	-1.36
G	1.02	0.102	mmol/l	98%	-0.64
H	1.04	0.004	mmol/l	100%	0.07
I			mmol/l		
J			mmol/l		
K	1.02		mmol/l	98%	-0.64
L	1.02	0.1	mmol/l	98%	-0.64
M			mmol/l		
N			mmol/l		
O	1.05	0.126	mmol/l	101%	0.43
P	1.02	0.047	mmol/l	98%	-0.64
Q			mmol/l		
R	1.03		mmol/l	99%	-0.29
S	0.993	0.00874	mmol/l	96%	-1.61
T			mmol/l		
U	1.03	0.111	mmol/l	99%	-0.29
V			mmol/l		
W	1.03	0.15	mmol/l	99%	-0.29
X	0.932	*	0.001	90%	-3.78
Y	1.029	0.053	mmol/l	99%	-0.32
Z	1.05	0.09	mmol/l	101%	0.43
AA			mmol/l		
AB	1.07	0.21	mmol/l	103%	1.14
AC			mmol/l		
AD	0.76	*	0.02	73%	-9.92
AE			mmol/l		
AF	1.04	0.156	mmol/l	100%	0.07
AG			mmol/l		
AH	0.98	*	0.080	94%	-2.07
AI			mmol/l		
AJ	1.06	0.14	mmol/l	102%	0.78
AK	1.03		mmol/l	99%	-0.29
AL	1.08	*	0.08	104%	1.50
AM	1.021	0.025	mmol/l	98%	-0.61
AN	1.06	0.1	mmol/l	102%	0.78
AO			mmol/l		
AP	1.02	0.132	mmol/l	98%	-0.64
AQ			mmol/l		

Result [mmol/l]



Recovery [%]



	All results	Outliers excl.	Unit
Mean ± CI(99%)	1,018 ± 0,029	1,031 ± 0,010	mmol/l
Recov. ± CI(99%)	98,0 ± 2,8	99,3 ± 1,0	%
SD between labs	0,057	0,018	mmol/l
RSD between labs	5,6	1,8	%
n for calculation	29	25	

Sample N177A

Parameter Alkalinity KS 4,3 (as H+)

Assigned value ± U (k=2) 2,60 mmol/l ± 0,03 mmol/l

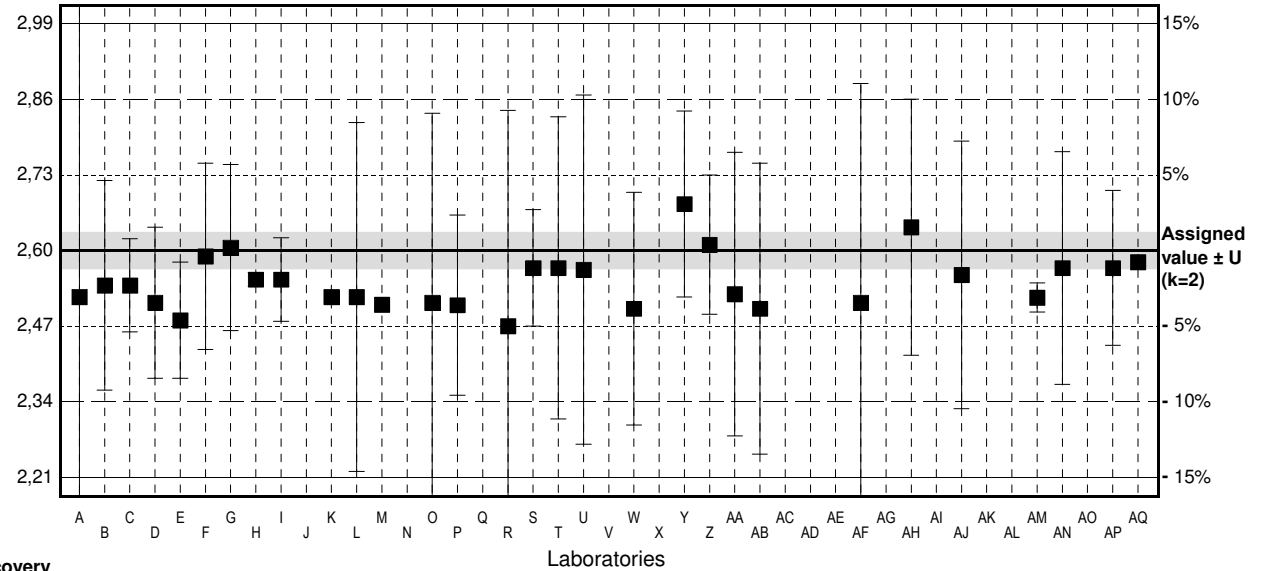
IFA result ± U (k=2) 2,56 mmol/l ± 0,11 mmol/l

Stability test mmol/l

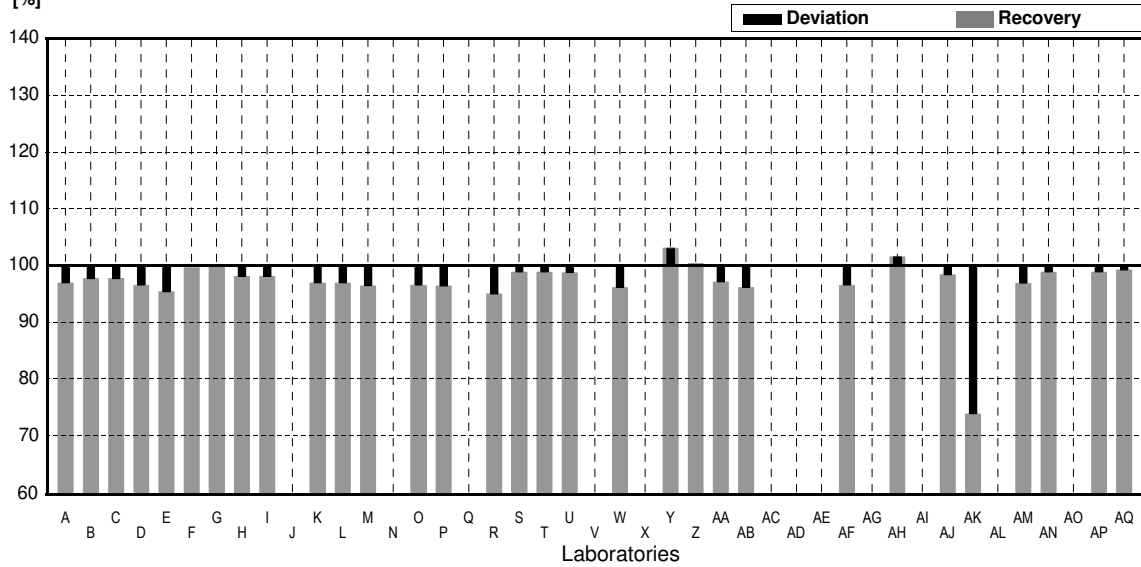
Lab Code	Result	±	Unit	Recovery	z-Score
A	2,52	0,52	mmol/l	97%	-1,71
B	2,54	0,18	mmol/l	98%	-1,28
C	2,54	0,08	mmol/l	98%	-1,28
D	2,51	0,13	mmol/l	97%	-1,92
E	2,48	0,1	mmol/l	95%	-2,56
F	2,59	0,16	mmol/l	100%	-0,21
G	2,605	0,143	mmol/l	100%	0,11
H	2,55	0,012	mmol/l	98%	-1,07
I	2,55	0,072	mmol/l	98%	-1,07
J			mmol/l		
K	2,52		mmol/l	97%	-1,71
L	2,52	0,3	mmol/l	97%	-1,71
M	2,507		mmol/l	96%	-1,99
N			mmol/l		
O	2,51	0,326	mmol/l	97%	-1,92
P	2,506	0,155	mmol/l	96%	-2,01
Q			mmol/l		
R	2,47	0,371	mmol/l	95%	-2,78
S	2,57	0,100	mmol/l	99%	-0,64
T	2,57	0,26	mmol/l	99%	-0,64
U	2,567	0,3	mmol/l	99%	-0,71
V			mmol/l		
W	2,50	0,20	mmol/l	96%	-2,14
X			mmol/l		
Y	2,68 *	0,16	mmol/l	103%	1,71
Z	2,61	0,12	mmol/l	100%	0,21
AA	2,525	0,244	mmol/l	97%	-1,60
AB	2,50	0,25	mmol/l	96%	-2,14
AC			mmol/l		
AD			mmol/l		
AE			mmol/l		
AF	2,51	0,377	mmol/l	97%	-1,92
AG			mmol/l		
AH	2,64	0,22	mmol/l	102%	0,85
AI			mmol/l		
AJ	2,558	0,230	mmol/l	98%	-0,90
AK	1,92 *		mmol/l	74%	-14,53
AL			mmol/l		
AM	2,519	0,025	mmol/l	97%	-1,73
AN	2,57	0,2	mmol/l	99%	-0,64
AO			mmol/l		
AP	2,57	0,133	mmol/l	99%	-0,64
AQ	2,58		mmol/l	99%	-0,43

	All results	Outliers excl.	Unit
Mean ± CI(99%)	2,53 ± 0,06	2,54 ± 0,02	mmol/l
Recov. ± CI(99%)	97,2 ± 2,3	97,8 ± 0,8	%
SD between labs	0,12	0,04	mmol/l
RSD between labs	4,8	1,6	%
n for calculation	31	29	

Result [mmol/l]



Recovery [%]



Sample N177B

Parameter Alkalinity KS 4,3 (as H+)

Assigned value ± U (k=2) 1,410 mmol/l ± 0,017 mmol/l

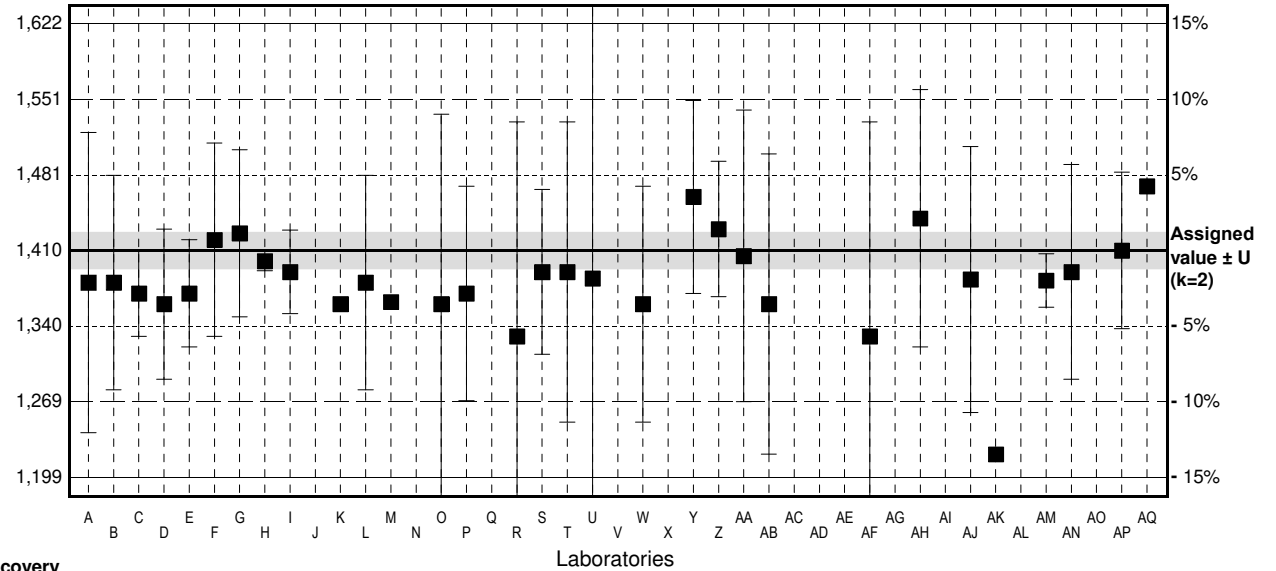
IFA result ± U (k=2) 1,39 mmol/l ± 0,06 mmol/l

Stability test mmol/l

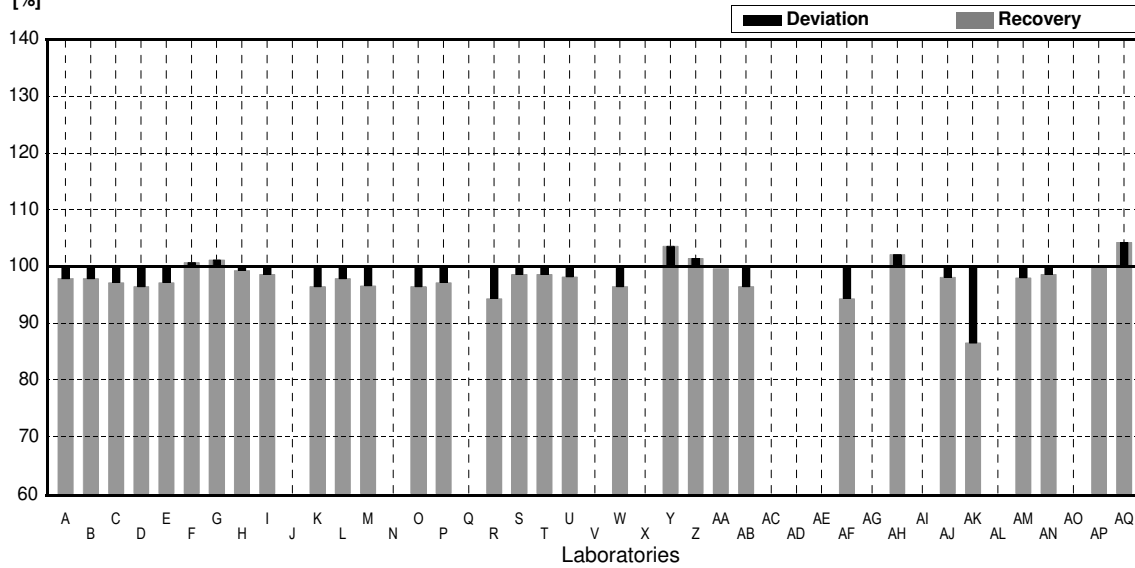
Lab Code	Result	±	Unit	Recovery	z-Score
A	1,38	0,14	mmol/l	98%	-1,18
B	1,38	0,1	mmol/l	98%	-1,18
C	1,37	0,04	mmol/l	97%	-1,58
D	1,36	0,07	mmol/l	96%	-1,97
E	1,37	0,05	mmol/l	97%	-1,58
F	1,42	0,09	mmol/l	101%	0,39
G	1,426	0,078	mmol/l	101%	0,63
H	1,40	0,009	mmol/l	99%	-0,39
I	1,39	0,039	mmol/l	99%	-0,79
J			mmol/l		
K	1,36		mmol/l	96%	-1,97
L	1,38	0,1	mmol/l	98%	-1,18
M	1,362		mmol/l	97%	-1,89
N			mmol/l		
O	1,36	0,177	mmol/l	96%	-1,97
P	1,37	0,1	mmol/l	97%	-1,58
Q			mmol/l		
R	1,33	0,200	mmol/l	94%	-3,15
S	1,39	0,0768	mmol/l	99%	-0,79
T	1,39	0,14	mmol/l	99%	-0,79
U	1,384	0,3	mmol/l	98%	-1,02
V			mmol/l		
W	1,36	0,11	mmol/l	96%	-1,97
X			mmol/l		
Y	1,46	0,09	mmol/l	104%	1,97
Z	1,430	0,063	mmol/l	101%	0,79
AA	1,405	0,136	mmol/l	100%	-0,20
AB	1,36	0,14	mmol/l	96%	-1,97
AC			mmol/l		
AD			mmol/l		
AE			mmol/l		
AF	1,33	0,20	mmol/l	94%	-3,15
AG			mmol/l		
AH	1,44	0,12	mmol/l	102%	1,18
AI			mmol/l		
AJ	1,383	0,124	mmol/l	98%	-1,06
AK	1,22	*	mmol/l	87%	-7,49
AL			mmol/l		
AM	1,382	0,025	mmol/l	98%	-1,10
AN	1,39	0,1	mmol/l	99%	-0,79
AO			mmol/l		
AP	1,41	0,0729	mmol/l	100%	0,00
AQ	1,47		mmol/l	104%	2,36

	All results	Outliers excl.	Unit
Mean ± CI(99%)	1,383 ± 0,022	1,388 ± 0,017	mmol/l
Recov. ± CI(99%)	98,1 ± 1,6	98,4 ± 1,2	%
SD between labs	0,045	0,033	mmol/l
RSD between labs	3,2	2,4	%
n for calculation	31	30	

Result [mmol/l]



Recovery [%]



Sample N177A

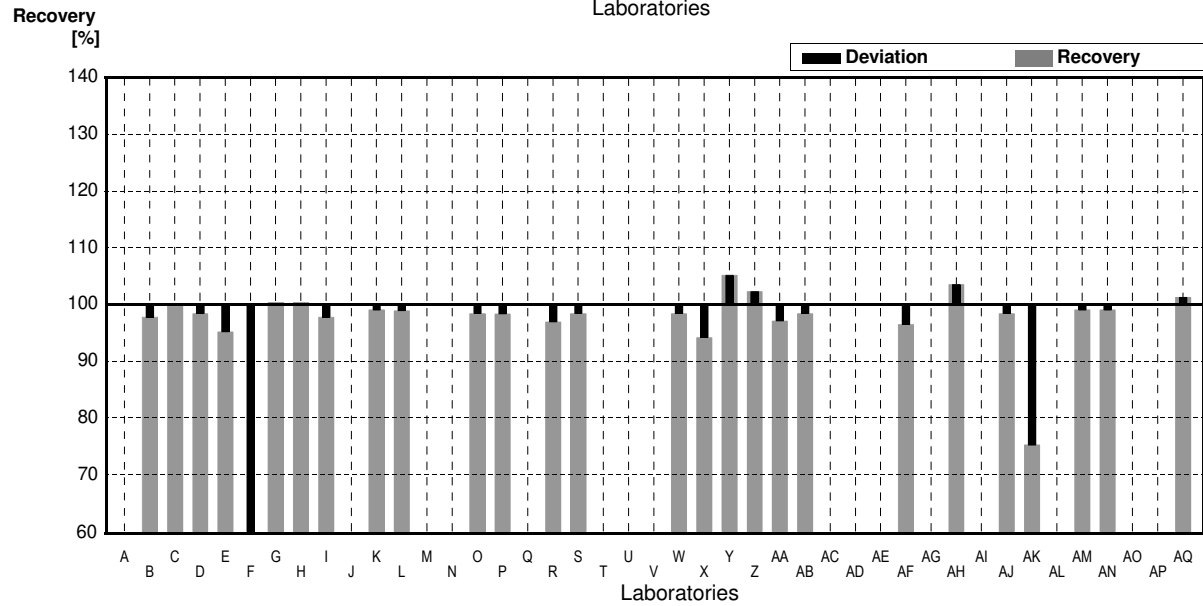
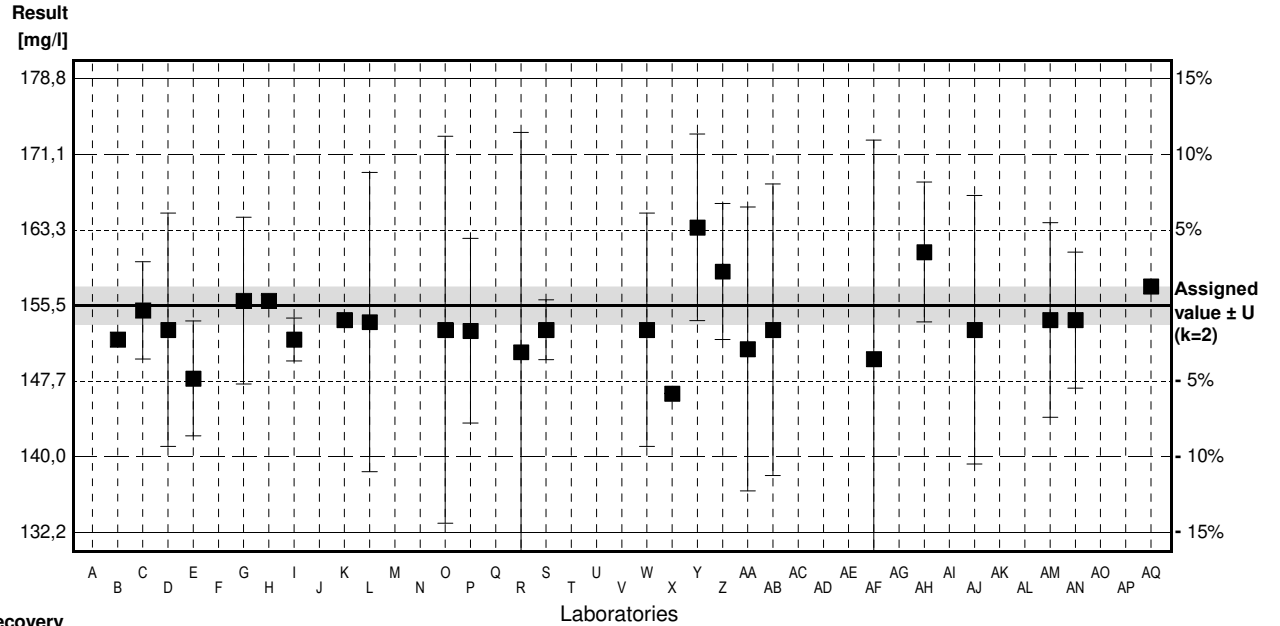
Parameter Hydrogen carbonate

Assigned value ± U (k=2) 155,5 mg/l ± 1,9 mg/l

IFA result ± U (k=2) 153 mg/l ± 6 mg/l

Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A			mg/l		
B	152		mg/l	98%	-0.98
C	155	5	mg/l	100%	-0.14
D	153	12	mg/l	98%	-0.70
E	148	5.92	mg/l	95%	-2.10
F	86.6 *	5.5	mg/l	56%	-19.26
G	156	8.58	mg/l	100%	0.14
H	156	0.58	mg/l	100%	0.14
I	152	2.2	mg/l	98%	-0.98
J			mg/l		
K	154		mg/l	99%	-0.42
L	153.8	15.4	mg/l	99%	-0.48
M			mg/l		
N			mg/l		
O	153	19.9	mg/l	98%	-0.70
P	152.9	9.5	mg/l	98%	-0.73
Q			mg/l		
R	150.7	22.61	mg/l	97%	-1.34
S	153	3.07	mg/l	98%	-0.70
T			mg/l		
U			mg/l		
V			mg/l		
W	153	12	mg/l	98%	-0.70
X	146.448	0.01	mg/l	94%	-2.53
Y	163.53 *	9.6	mg/l	105%	2.25
Z	159	7	mg/l	102%	0.98
AA	151.02	14.59	mg/l	97%	-1.25
AB	153	15	mg/l	98%	-0.70
AC			mg/l		
AD			mg/l		
AE			mg/l		
AF	150	22.5	mg/l	96%	-1.54
AG			mg/l		
AH	161	7.2	mg/l	104%	1.54
AI			mg/l		
AJ	153.0	13.8	mg/l	98%	-0.70
AK	117 *		mg/l	75%	-10.76
AL			mg/l		
AM	154	10	mg/l	99%	-0.42
AN	154	7	mg/l	99%	-0.42
AO			mg/l		
AP			mg/l		
AQ	157.46		mg/l	101%	0.55



	All results	Outliers excl.	Unit
Mean ± CI(99%)	149,9 ± 8,0	153,4 ± 1,8	mg/l
Recov. ± CI(99%)	96,4 ± 5,1	98,6 ± 1,2	%
SD between labs	14,9	3,2	mg/l
RSD between labs	10,0	2,1	%
n for calculation	27	24	

Sample N177B

Parameter Hydrogen carbonate

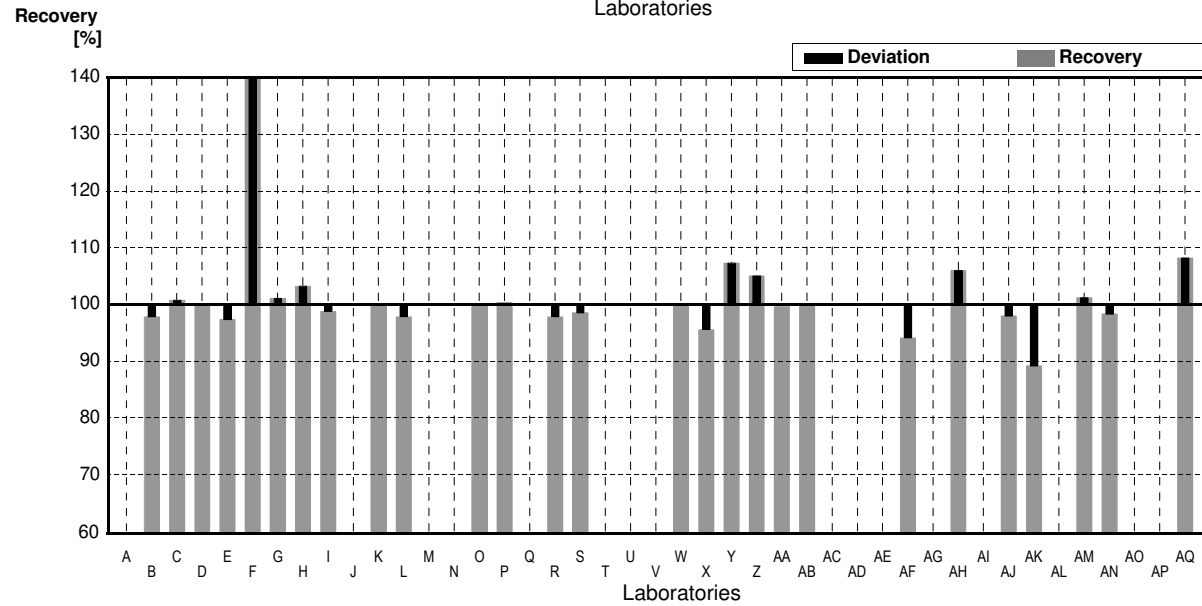
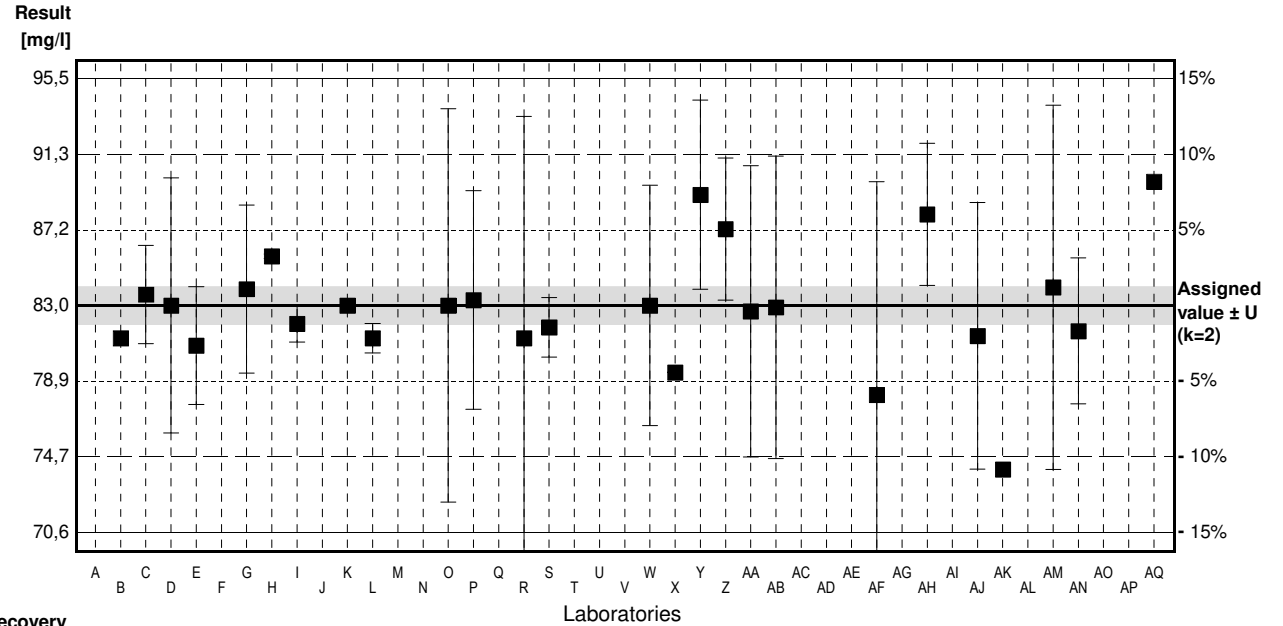
Assigned value ± U (k=2) 83,0 mg/l ± 1,0 mg/l

IFA result ± U (k=2) 82 mg/l ± 3 mg/l

Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A			mg/l		
B	81.2		mg/l	98%	-0.94
C	83.6	2.7	mg/l	101%	0.31
D	83	7	mg/l	100%	0.00
E	80.8	3.23	mg/l	97%	-1.15
F	158 *	10	mg/l	190%	39.29
G	83.9	4.61	mg/l	101%	0.47
H	85.7	0.12	mg/l	103%	1.41
I	82	1	mg/l	99%	-0.52
J			mg/l		
K	83.0		mg/l	100%	0.00
L	81.2	0.8	mg/l	98%	-0.94
M			mg/l		
N			mg/l		
O	83.0	10.8	mg/l	100%	0.00
P	83.3	6.0	mg/l	100%	0.16
Q			mg/l		
R	81.2	12.17	mg/l	98%	-0.94
S	81.8	1.64	mg/l	99%	-0.63
T			mg/l		
U			mg/l		
V			mg/l		
W	83.0	6.6	mg/l	100%	0.00
X	79.326	0.01	mg/l	96%	-1.92
Y	89.08	5.2	mg/l	107%	3.18
Z	87.2	3.9	mg/l	105%	2.20
AA	82.68	7.99	mg/l	100%	-0.17
AB	82.9	8.3	mg/l	100%	-0.05
AC			mg/l		
AD			mg/l		
AE			mg/l		
AF	78.1	11.7	mg/l	94%	-2.57
AG			mg/l		
AH	88	3.9	mg/l	106%	2.62
AI			mg/l		
AJ	81.33	7.32	mg/l	98%	-0.87
AK	74.0 *		mg/l	89%	-4.71
AL			mg/l		
AM	84	10	mg/l	101%	0.52
AN	81.6	4	mg/l	98%	-0.73
AO			mg/l		
AP			mg/l		
AQ	89.80		mg/l	108%	3.56

	All results	Outliers excl.	Unit
Mean ± CI(99%)	85,7 ± 7,9	83,2 ± 1,6	mg/l
Recov. ± CI(99%)	103,2 ± 9,6	100,3 ± 1,9	%
SD between labs	14,8	2,8	mg/l
RSD between labs	17,3	3,4	%
n for calculation	27	25	



Sample N177A

Parameter Calcium

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

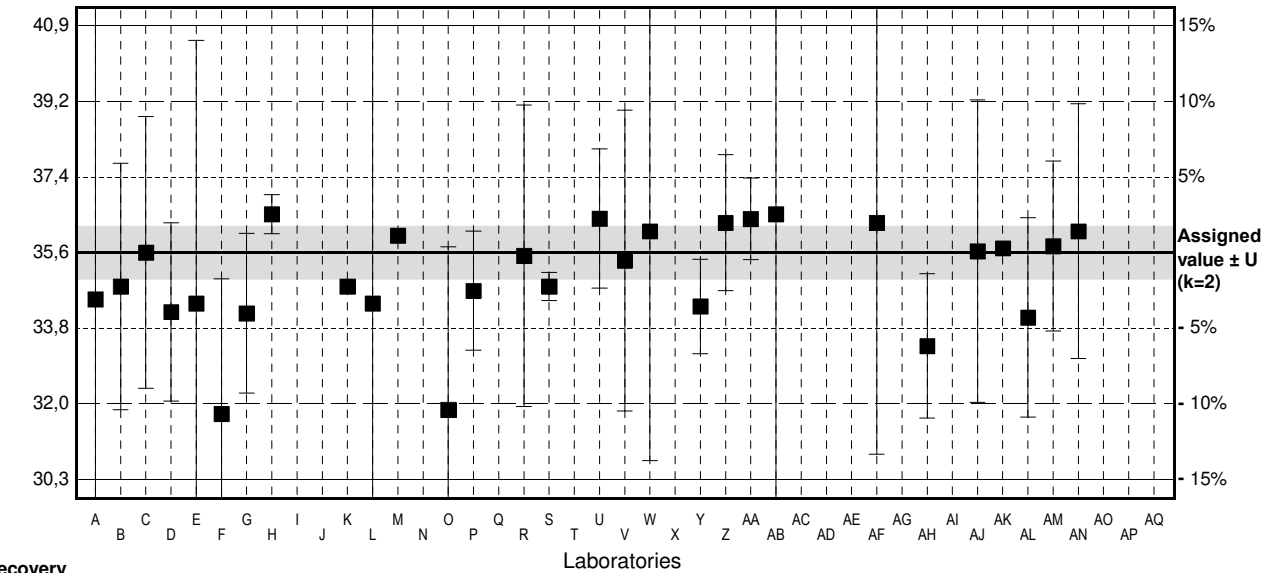
IFA result ± U (k=2) 36,3 mg/l ± 2,4 mg/l

Stability test mg/l

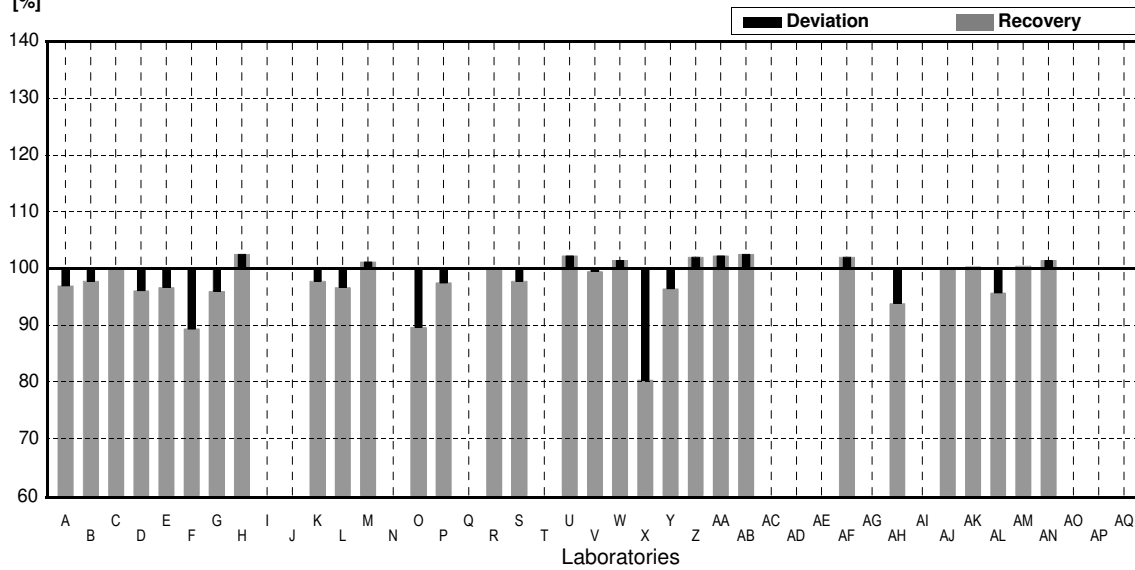
Lab Code	Result	±	Unit	Recovery	z-Score
A	34.5	7.0	mg/l	97%	-1.00
B	34.8	2.9	mg/l	98%	-0.72
C	35.6	3.2	mg/l	100%	0.00
D	34.2	2.1	mg/l	96%	-1.27
E	34.4	6.19	mg/l	97%	-1.09
F	31.8	3.18	mg/l	89%	-3.44
G	34.17	1.88	mg/l	96%	-1.30
H	36.5	0.46	mg/l	103%	0.82
I			mg/l		
J			mg/l		
K	34.8		mg/l	98%	-0.72
L	34.4	7.0	mg/l	97%	-1.09
M	36.0		mg/l	101%	0.36
N			mg/l		
O	31.9	3.83	mg/l	90%	-3.35
P	34.7	1.4	mg/l	97%	-0.82
Q			mg/l		
R	35.52	3.552	mg/l	100%	-0.07
S	34.8	0.332	mg/l	98%	-0.72
T			mg/l		
U	36.4	1.64	mg/l	102%	0.72
V	35.41	3.54	mg/l	99%	-0.17
W	36.1	5.4	mg/l	101%	0.45
X	28.594 *	0.289	mg/l	80%	-6.35
Y	34.33	1.11	mg/l	96%	-1.15
Z	36.3	1.6	mg/l	102%	0.63
AA	36.39	0.96	mg/l	102%	0.72
AB	36.5	7.3	mg/l	103%	0.82
AC			mg/l		
AD			mg/l		
AE			mg/l		
AF	36.3	5.45	mg/l	102%	0.63
AG			mg/l		
AH	33.4	1.7	mg/l	94%	-1.99
AI			mg/l		
AJ	35.63	3.56	mg/l	100%	0.03
AK	35.7		mg/l	100%	0.09
AL	34.07	2.35	mg/l	96%	-1.39
AM	35.75	2	mg/l	100%	0.14
AN	36.1	3	mg/l	101%	0.45
AO			mg/l		
AP			mg/l		
AQ			mg/l		

	All results	Outliers excl.	Unit
Mean ± CI(99%)	34,8 ± 0,9	35,1 ± 0,6	mg/l
Recov. ± CI(99%)	97,9 ± 2,4	98,5 ± 1,8	%
SD between labs	1,7	1,2	mg/l
RSD between labs	4,9	3,6	%
n for calculation	30	29	

Result [mg/l]



Recovery [%]



Sample N177B

Parameter Calcium

Assigned value ± U (k=2) 30,9 mg/l ± 0,5 mg/l

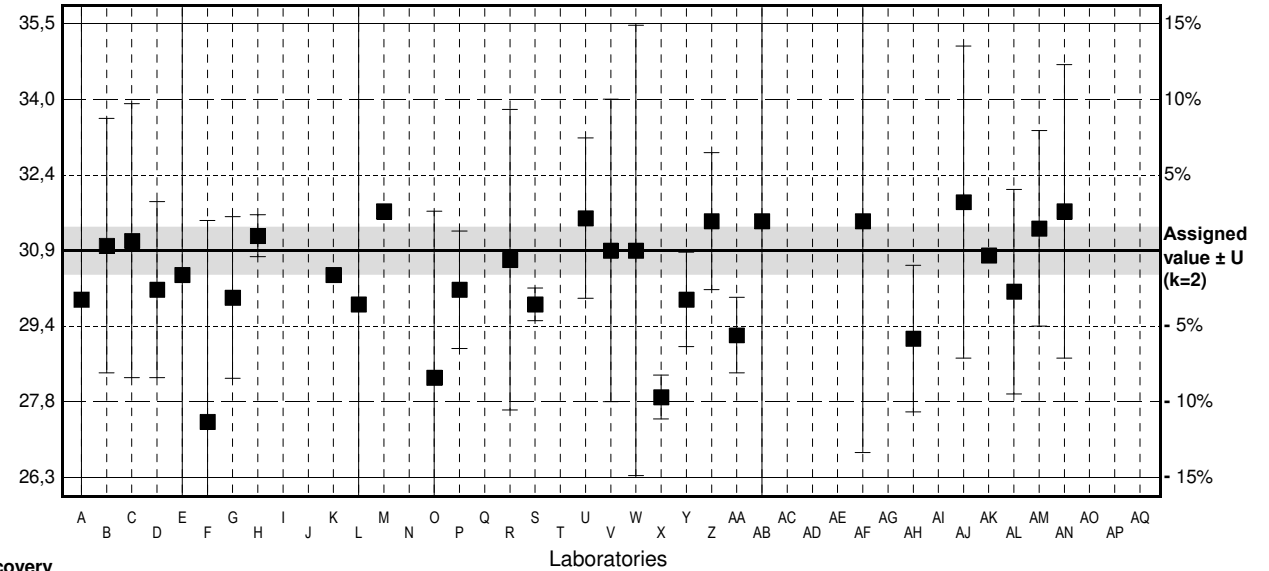
IFA result ± U (k=2) 32,1 mg/l ± 2,1 mg/l

Stability test mg/l

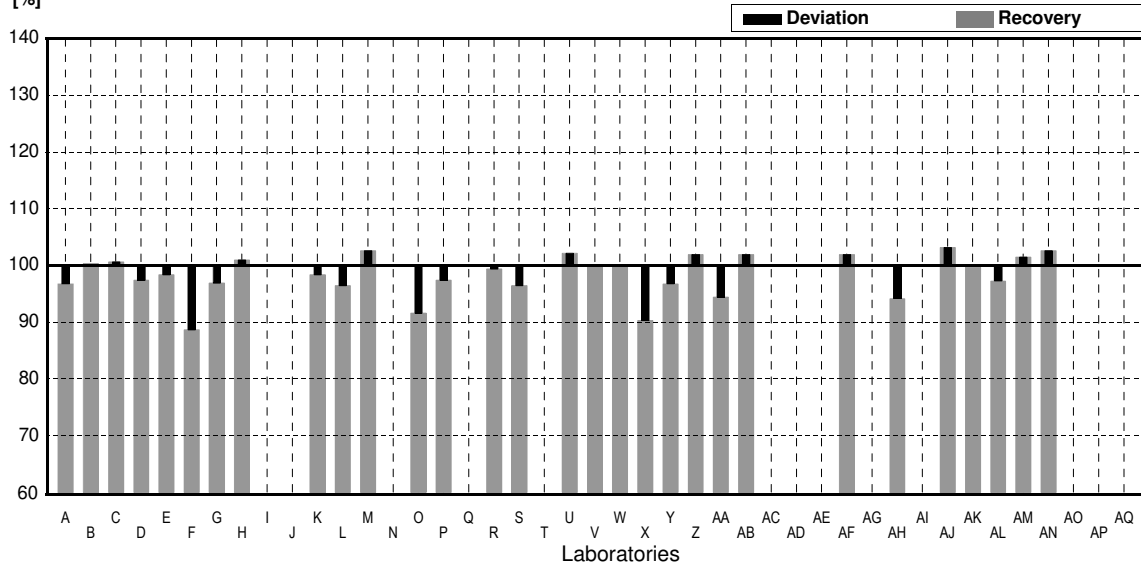
Lab Code	Result	±	Unit	Recovery	z-Score
A	29.9	6.0	mg/l	97%	-1.04
B	31.0	2.6	mg/l	100%	0.10
C	31.1	2.8	mg/l	101%	0.21
D	30.1	1.8	mg/l	97%	-0.84
E	30.4	5.47	mg/l	98%	-0.52
F	27.4	4.11	mg/l	89%	-3.65
G	29.94	1.65	mg/l	97%	-1.00
H	31.2	0.43	mg/l	101%	0.31
I			mg/l		
J			mg/l		
K	30.4		mg/l	98%	-0.52
L	29.8	6.0	mg/l	96%	-1.15
M	31.7		mg/l	103%	0.84
N			mg/l		
O	28.3	3.40	mg/l	92%	-2.71
P	30.1	1.2	mg/l	97%	-0.84
Q			mg/l		
R	30.71	3.071	mg/l	99%	-0.20
S	29.8	0.331	mg/l	96%	-1.15
T			mg/l		
U	31.56	1.64	mg/l	102%	0.69
V	30.90	3.09	mg/l	100%	0.00
W	30.9	4.6	mg/l	100%	0.00
X	27.904	0.446	mg/l	90%	-3.13
Y	29.90	0.966	mg/l	97%	-1.04
Z	31.5	1.4	mg/l	102%	0.63
AA	29.17	0.77	mg/l	94%	-1.81
AB	31.5	6.3	mg/l	102%	0.63
AC			mg/l		
AD			mg/l		
AE			mg/l		
AF	31.5	4.73	mg/l	102%	0.63
AG			mg/l		
AH	29.1	1.5	mg/l	94%	-1.88
AI			mg/l		
AJ	31.89	3.19	mg/l	103%	1.03
AK	30.8		mg/l	100%	-0.10
AL	30.06	2.09	mg/l	97%	-0.88
AM	31.35	2	mg/l	101%	0.47
AN	31.7	3	mg/l	103%	0.84
AO			mg/l		
AP			mg/l		
AQ			mg/l		

	All results	Outliers excl.	Unit
Mean ± CI(99%)	30,4 ± 0,6	30,4 ± 0,6	mg/l
Recov. ± CI(99%)	98,3 ± 1,9	98,3 ± 1,9	%
SD between labs	1,1	1,1	mg/l
RSD between labs	3,8	3,8	%
n for calculation	30	30	

Result [mg/l]



Recovery [%]



Sample N177A

Parameter Magnesium

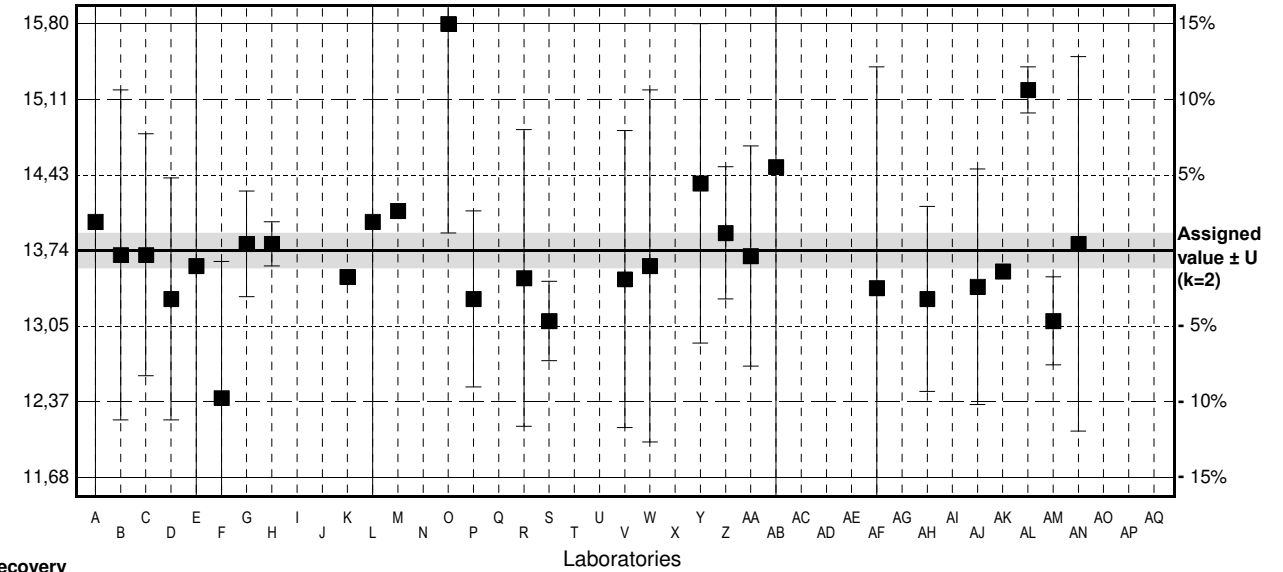
Assigned value ± U (k=2) 13,74 mg/l ± 0,16 mg/l

IFA result ± U (k=2) 13,9 mg/l ± 0,7 mg/l

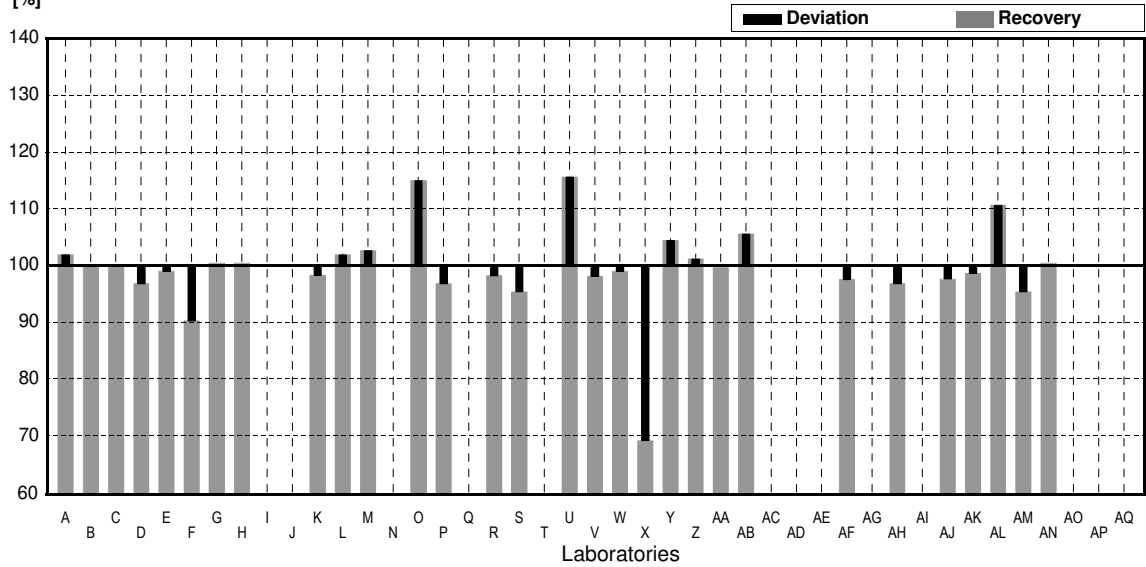
Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	14.0	2.8	mg/l	102%	0.54
B	13.7	1.5	mg/l	100%	-0.08
C	13.7	1.1	mg/l	100%	-0.08
D	13.3	1.1	mg/l	97%	-0.91
E	13.6	2.45	mg/l	99%	-0.29
F	12.4	1.24	mg/l	90%	-2.79
G	13.8	0.48	mg/l	100%	0.12
H	13.8	0.20	mg/l	100%	0.12
I			mg/l		
J			mg/l		
K	13.5		mg/l	98%	-0.50
L	14.0	2.8	mg/l	102%	0.54
M	14.1		mg/l	103%	0.75
N			mg/l		
O	15.8 *	1.90	mg/l	115%	4.28
P	13.3	0.8	mg/l	97%	-0.91
Q			mg/l		
R	13.49	1.349	mg/l	98%	-0.52
S	13.1	0.361	mg/l	95%	-1.33
T			mg/l		
U	15.88 *	3.06	mg/l	116%	4.45
V	13.48	1.35	mg/l	98%	-0.54
W	13.6	1.6	mg/l	99%	-0.29
X	9.493 *	0.093	mg/l	69%	-8.83
Y	14.35	1.45	mg/l	104%	1.27
Z	13.9	0.6	mg/l	101%	0.33
AA	13.69	1.00	mg/l	100%	-0.10
AB	14.5	2.9	mg/l	106%	1.58
AC			mg/l		
AD			mg/l		
AE			mg/l		
AF	13.4	2.01	mg/l	98%	-0.71
AG			mg/l		
AH	13.3	0.84	mg/l	97%	-0.91
AI			mg/l		
AJ	13.41	1.07	mg/l	98%	-0.69
AK	13.55		mg/l	99%	-0.40
AL	15.20 *	0.21	mg/l	111%	3.04
AM	13.1	0.4	mg/l	95%	-1.33
AN	13.8	1.7	mg/l	100%	0.12
AO			mg/l		
AP			mg/l		
AQ			mg/l		

Result [mg/l]



Recovery [%]



	All results	Outliers excl.	Unit
Mean ± CI(99%)	13,67 ± 0,54	13,61 ± 0,23	mg/l
Recov. ± CI(99%)	99,5 ± 4,0	99,1 ± 1,7	%
SD between labs	1,08	0,42	mg/l
RSD between labs	7,9	3,1	%
n for calculation	30	26	

Sample N177B

Parameter Magnesium

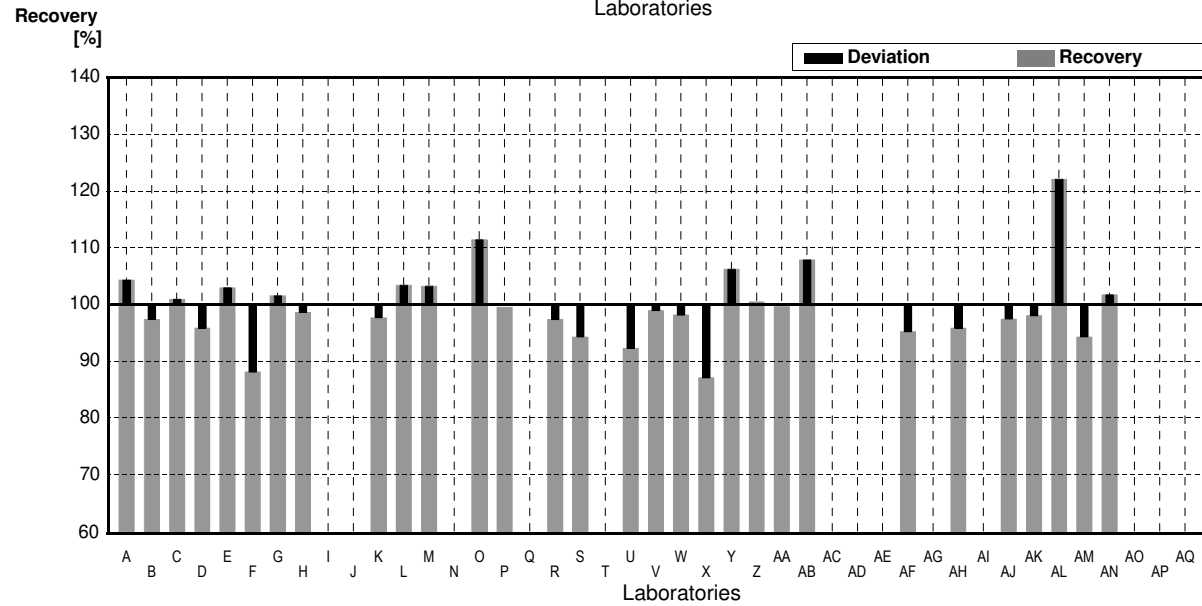
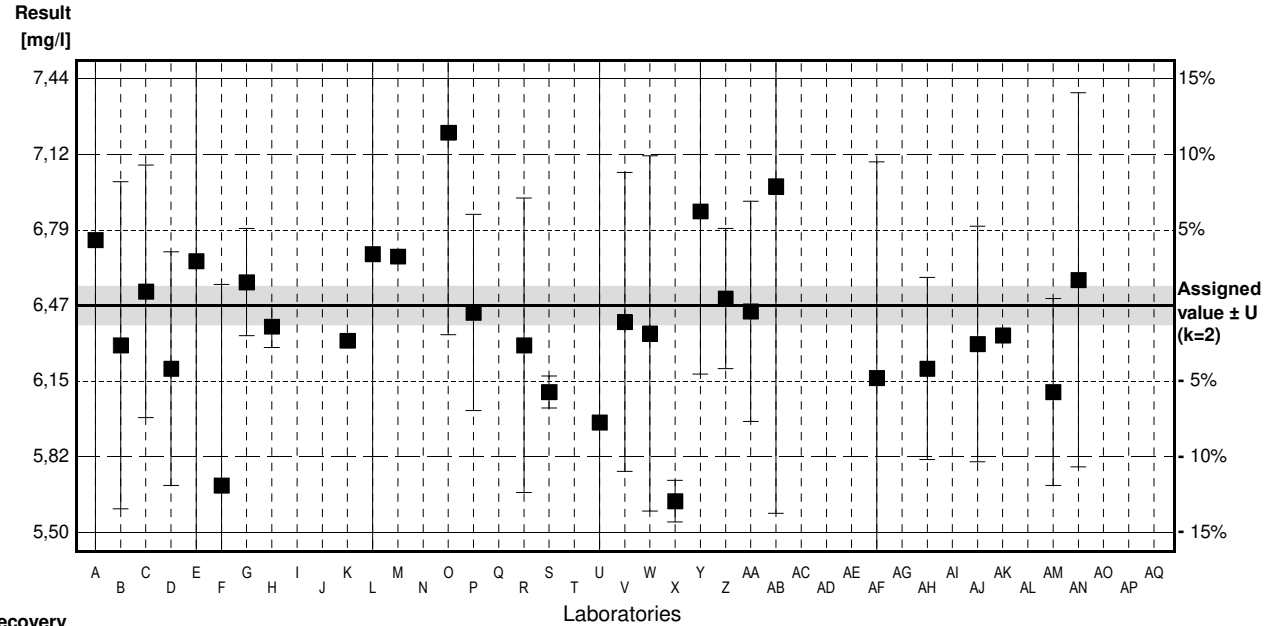
Assigned value ± U (k=2) 6,47 mg/l ± 0,08 mg/l

IFA result ± U (k=2) 6,8 mg/l ± 0,4 mg/l

Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	6.75	1.4	mg/l	104%	1.24
B	6.30	0.7	mg/l	97%	-0.75
C	6.53	0.54	mg/l	101%	0.26
D	6.2	0.5	mg/l	96%	-1.19
E	6.66	1.20	mg/l	103%	0.84
F	5.70	0.86	mg/l	88%	-3.40
G	6.57	0.23	mg/l	102%	0.44
H	6.38	0.090	mg/l	99%	-0.40
I			mg/l		
J			mg/l		
K	6.32		mg/l	98%	-0.66
L	6.69	1.4	mg/l	103%	0.97
M	6.68		mg/l	103%	0.93
N			mg/l		
O	7.21	0.865	mg/l	111%	3.27
P	6.44	0.42	mg/l	100%	-0.13
Q			mg/l		
R	6.30	0.630	mg/l	97%	-0.75
S	6.10	0.0685	mg/l	94%	-1.63
T			mg/l		
U	5.97	3.06	mg/l	92%	-2.21
V	6.40	0.64	mg/l	99%	-0.31
W	6.35	0.76	mg/l	98%	-0.53
X	5.633	0.0890	mg/l	87%	-3.70
Y	6.873	0.696	mg/l	106%	1.78
Z	6.5	0.3	mg/l	100%	0.13
AA	6.445	0.471	mg/l	100%	-0.11
AB	6.98	1.4	mg/l	108%	2.25
AC			mg/l		
AD			mg/l		
AE			mg/l		
AF	6.16	0.924	mg/l	95%	-1.37
AG			mg/l		
AH	6.2	0.39	mg/l	96%	-1.19
AI			mg/l		
AJ	6.305	0.504	mg/l	97%	-0.73
AK	6.343		mg/l	98%	-0.56
AL	7.9	0.11	mg/l	122%	6.31
AM	6.10	0.4	mg/l	94%	-1.63
AN	6.58	0.8	mg/l	102%	0.49
AO			mg/l		
AP			mg/l		
AQ			mg/l		

	All results	Outliers excl.	Unit
Mean ± CI(99%)	6,45 ± 0,22	6,40 ± 0,18	mg/l
Recov. ± CI(99%)	99,7 ± 3,4	99,0 ± 2,7	%
SD between labs	0,43	0,34	mg/l
RSD between labs	6,7	5,3	%
n for calculation	30	29	



Sample N177A
Parameter Sodium

Assigned value ± U (k=2) 29,8 mg/l ± 0,4 mg/l

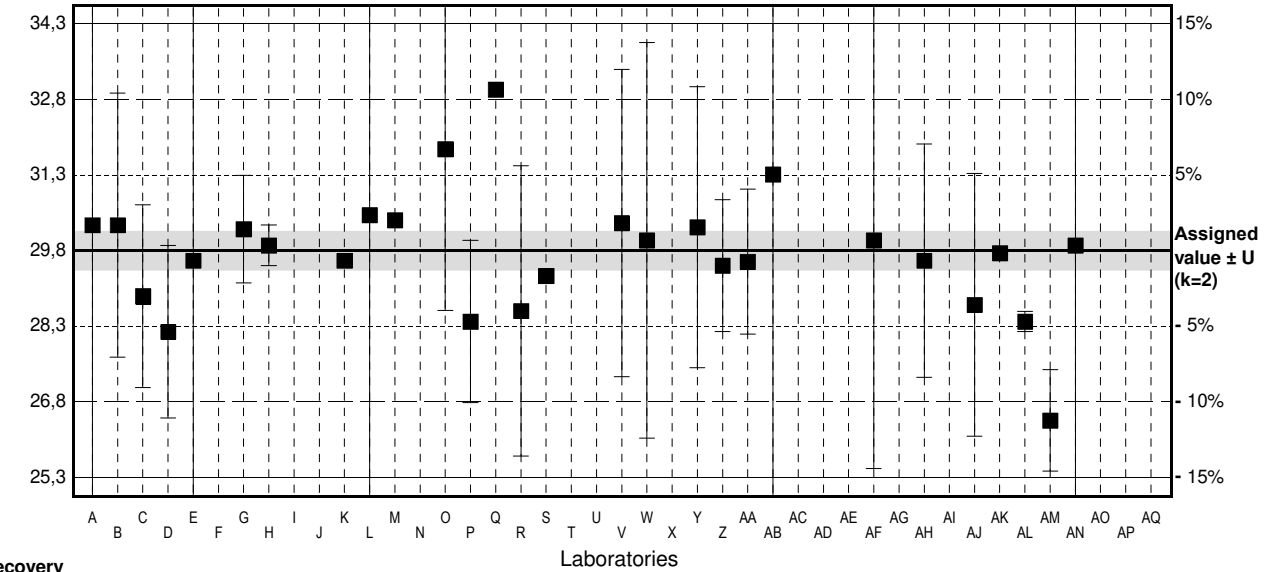
IFA result ± U (k=2) 29,0 mg/l ± 1,1 mg/l

Stability test mg/l

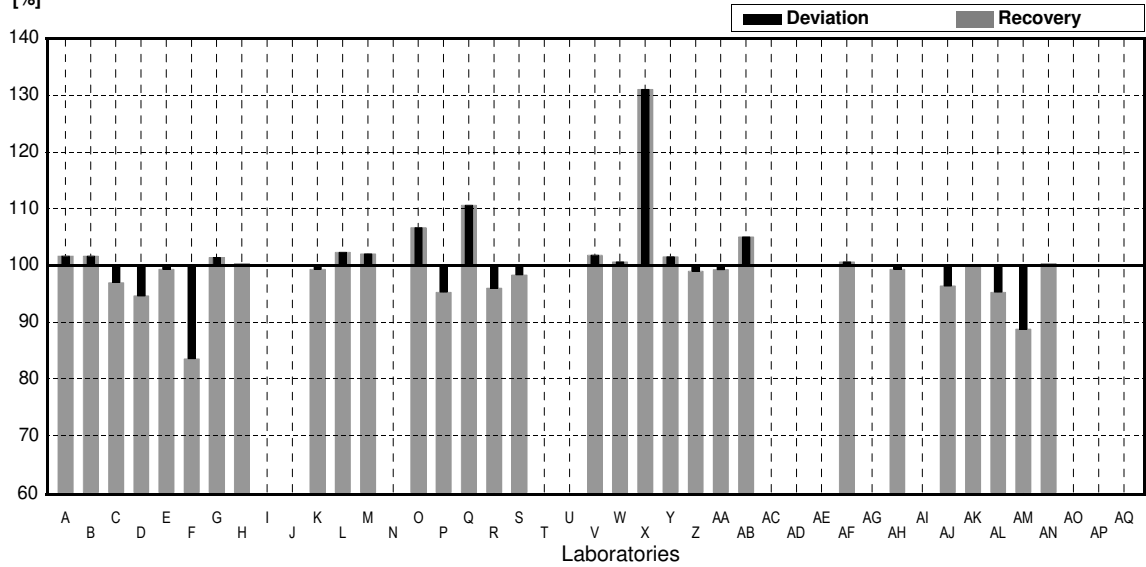
Lab Code	Result	±	Unit	Recovery	z-Score
A	30.3	6.1	mg/l	102%	0.56
B	30.3	2.6	mg/l	102%	0.56
C	28.9	1.8	mg/l	97%	-1.01
D	28.2	1.7	mg/l	95%	-1.79
E	29.6	5.33	mg/l	99%	-0.22
F	24.9 *	3.74	mg/l	84%	-5.48
G	30.22	1.06	mg/l	101%	0.47
H	29.9	0.40	mg/l	100%	0.11
I			mg/l		
J			mg/l		
K	29.6		mg/l	99%	-0.22
L	30.5	6.1	mg/l	102%	0.78
M	30.4		mg/l	102%	0.67
N			mg/l		
O	31.8	3.18	mg/l	107%	2.24
P	28.4	1.6	mg/l	95%	-1.57
Q	32.97 *		mg/l	111%	3.55
R	28.61	2.861	mg/l	96%	-1.33
S	29.3	0.133	mg/l	98%	-0.56
T			mg/l		
U			mg/l		
V	30.34	3.03	mg/l	102%	0.60
W	30.0	3.9	mg/l	101%	0.22
X	39.0591 *	0.419	mg/l	131%	10.36
Y	30.26	2.77	mg/l	102%	0.51
Z	29.5	1.3	mg/l	99%	-0.34
AA	29.58	1.43	mg/l	99%	-0.25
AB	31.3	6.3	mg/l	105%	1.68
AC			mg/l		
AD			mg/l		
AE			mg/l		
AF	30.0	4.50	mg/l	101%	0.22
AG			mg/l		
AH	29.6	2.3	mg/l	99%	-0.22
AI			mg/l		
AJ	28.73	2.59	mg/l	96%	-1.20
AK	29.75		mg/l	100%	-0.06
AL	28.4	0.2	mg/l	95%	-1.57
AM	26.45 *	1	mg/l	89%	-3.75
AN	29.9	5	mg/l	100%	0.11
AO			mg/l		
AP			mg/l		
AQ			mg/l		

	All results	Outliers excl.	Unit
Mean ± CI(99%)	29,9 ± 1,1	29,7 ± 0,5	mg/l
Recov. ± CI(99%)	100,3 ± 3,8	99,8 ± 1,6	%
SD between labs	2,3	0,9	mg/l
RSD between labs	7,6	2,9	%
n for calculation	30	26	

Result [mg/l]



Recovery [%]



Sample N177B

Parameter Sodium

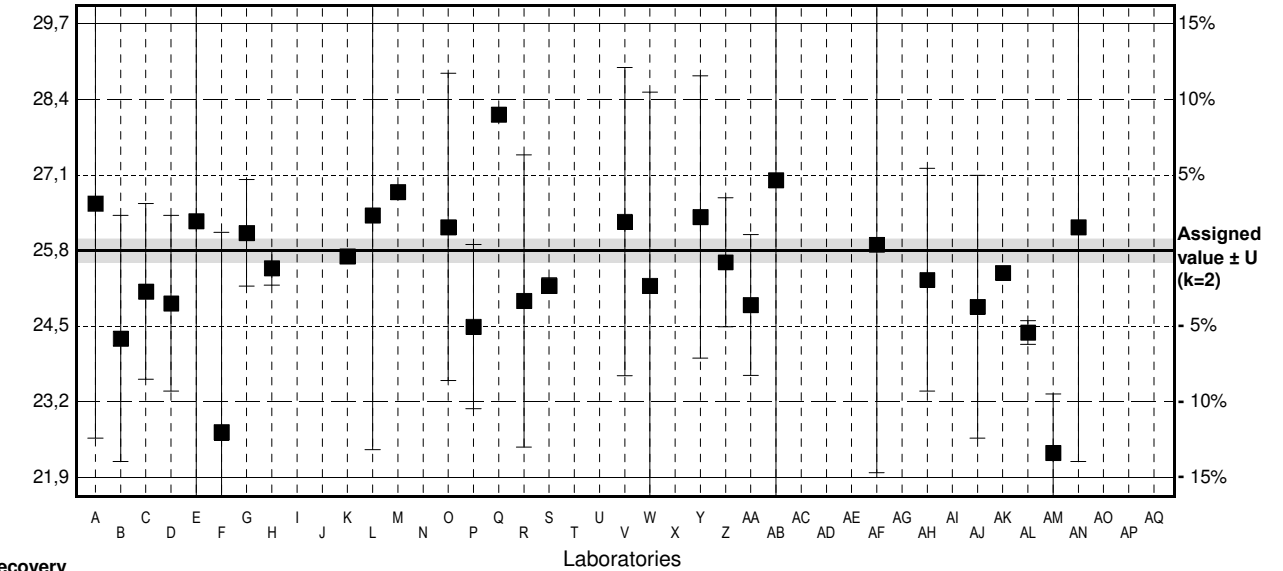
Assigned value $\pm U$ (k=2) 25,8 mg/l \pm 0,2 mg/l

IFA result $\pm U$ (k=2) 25,8 mg/l \pm 1,1 mg/l

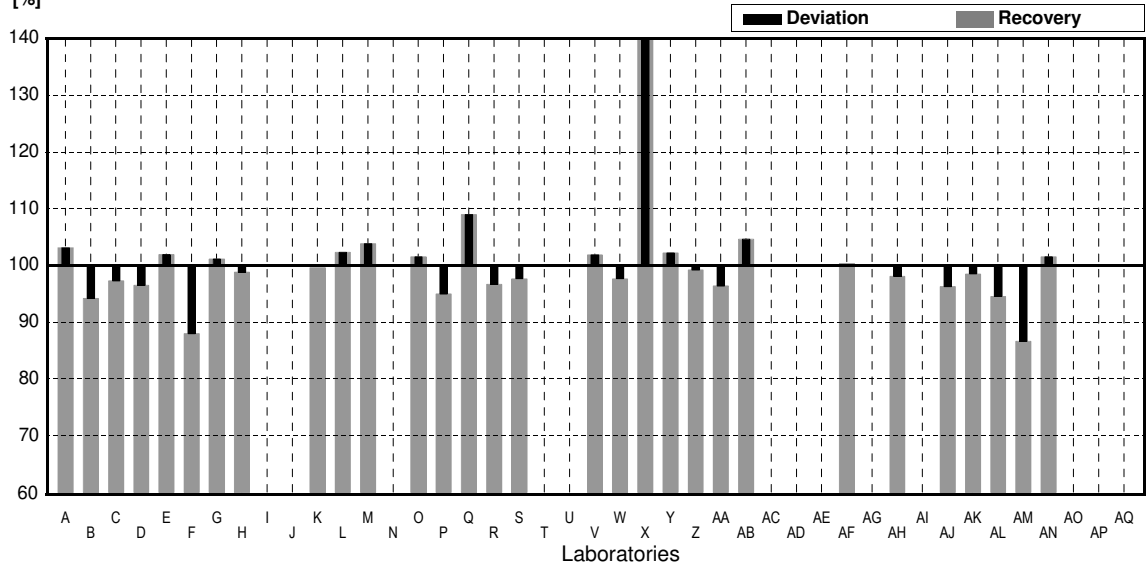
Stability test mg/l

Lab Code	Result	\pm	Unit	Recovery	z-Score
A	26.6	4.0	mg/l	103%	1.03
B	24.3	2.1	mg/l	94%	-1.94
C	25.1	1.5	mg/l	97%	-0.90
D	24.9	1.5	mg/l	97%	-1.16
E	26.3	4.73	mg/l	102%	0.65
F	22.7	3.41	mg/l	88%	-4.01
G	26.1	0.91	mg/l	101%	0.39
H	25.5	0.29	mg/l	99%	-0.39
I			mg/l		
J			mg/l		
K	25.7		mg/l	100%	-0.13
L	26.4	4.0	mg/l	102%	0.78
M	26.8		mg/l	104%	1.29
N			mg/l		
O	26.2	2.62	mg/l	102%	0.52
P	24.5	1.4	mg/l	95%	-1.68
Q	28.12		mg/l	109%	3.00
R	24.94	2.494	mg/l	97%	-1.11
S	25.2	0.133	mg/l	98%	-0.78
T			mg/l		
U			mg/l		
V	26.29	2.63	mg/l	102%	0.63
W	25.2	3.3	mg/l	98%	-0.78
X	36.578 *	0.598	mg/l	142%	13.93
Y	26.37	2.41	mg/l	102%	0.74
Z	25.6	1.1	mg/l	99%	-0.26
AA	24.87	1.20	mg/l	96%	-1.20
AB	27.0	5.4	mg/l	105%	1.55
AC			mg/l		
AD			mg/l		
AE			mg/l		
AF	25.9	3.89	mg/l	100%	0.13
AG			mg/l		
AH	25.3	1.9	mg/l	98%	-0.65
AI			mg/l		
AJ	24.84	2.24	mg/l	96%	-1.24
AK	25.42		mg/l	99%	-0.49
AL	24.4	0.2	mg/l	95%	-1.81
AM	22.35 *	1	mg/l	87%	-4.46
AN	26.2	4	mg/l	102%	0.52
AO			mg/l		
AP			mg/l		
AQ			mg/l		

Result [mg/l]



Recovery [%]



	All results	Outliers excl.	Unit
Mean \pm CI(99%)	25,9 \pm 1,2	25,6 \pm 0,5	mg/l
Recov. \pm CI(99%)	100,2 \pm 4,6	99,2 \pm 2,1	%
SD between labs	2,3	1,0	mg/l
RSD between labs	9,0	4,1	%
n for calculation	30	28	

Sample N177A

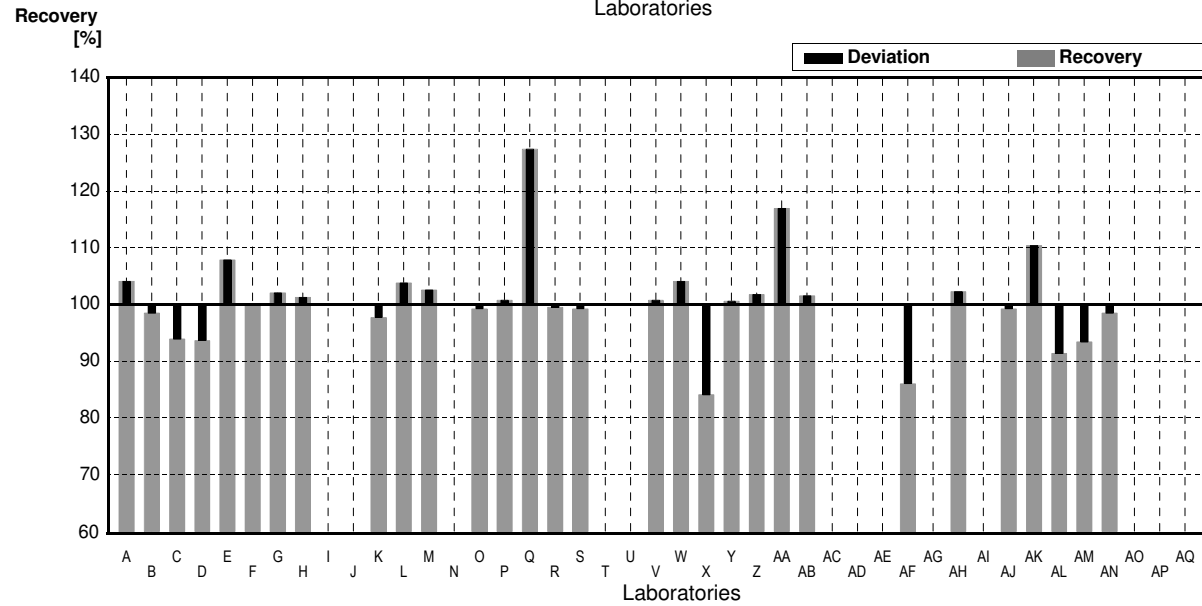
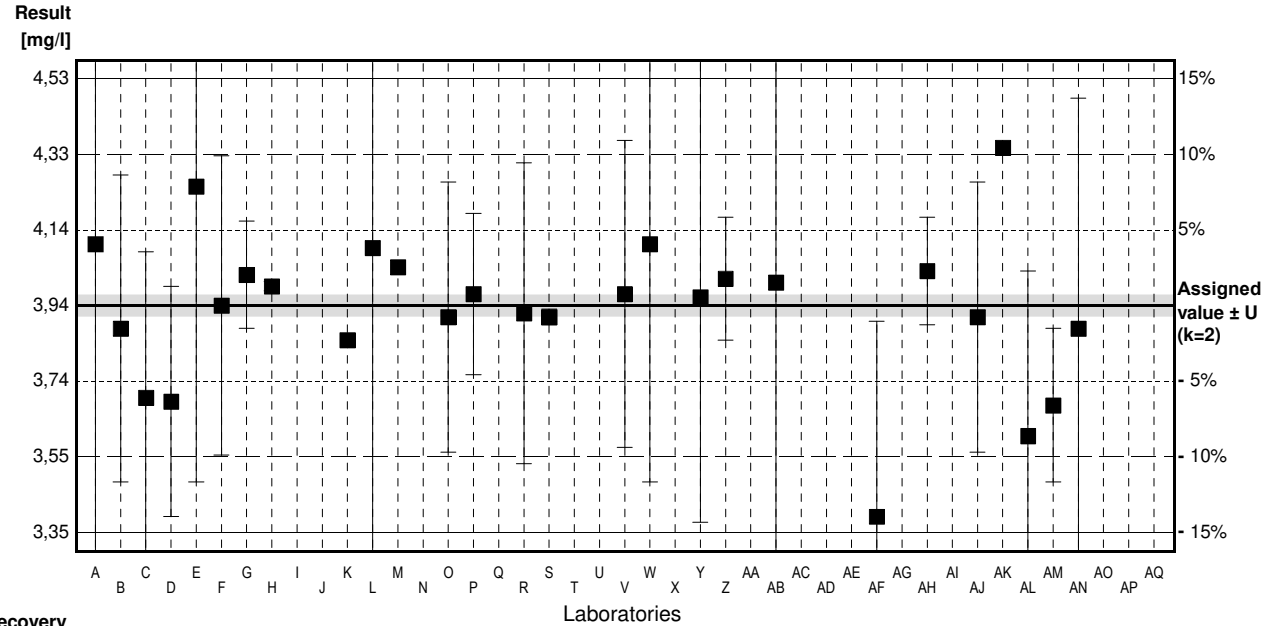
Parameter Potassium

Assigned value ± U (k=2) 3,94 mg/l ± 0,03 mg/l

IFA result ± U (k=2) 3,67 mg/l ± 0,21 mg/l

Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	4.10	0,82	mg/l	104%	1.02
B	3.88	0,4	mg/l	98%	-0.38
C	3.70	0,38	mg/l	94%	-1.52
D	3.69	0,30	mg/l	94%	-1.59
E	4.25	0,77	mg/l	108%	1.97
F	3.94	0,39	mg/l	100%	0.00
G	4.02	0,14	mg/l	102%	0.51
H	3.99	0,012	mg/l	101%	0.32
I			mg/l		
J			mg/l		
K	3.85		mg/l	98%	-0.57
L	4.09	0,83	mg/l	104%	0.95
M	4.04		mg/l	103%	0.63
N			mg/l		
O	3.91	0,352	mg/l	99%	-0.19
P	3.97	0,21	mg/l	101%	0.19
Q	5.02 *		mg/l	127%	6.85
R	3.92	0,392	mg/l	99%	-0.13
S	3.91	0,0205	mg/l	99%	-0.19
T			mg/l		
U			mg/l		
V	3.97	0,40	mg/l	101%	0.19
W	4.10	0,62	mg/l	104%	1.02
X	3.313 *	0,031	mg/l	84%	-3.98
Y	3.962	0,587	mg/l	101%	0.14
Z	4.01	0,16	mg/l	102%	0.44
AA	4.608 *	0,228	mg/l	117%	4.24
AB	4.00	0,80	mg/l	102%	0.38
AC			mg/l		
AD			mg/l		
AE			mg/l		
AF	3.39 *	0,509	mg/l	86%	-3.49
AG			mg/l		
AH	4.03	0,14	mg/l	102%	0.57
AI			mg/l		
AJ	3.910	0,352	mg/l	99%	-0.19
AK	4.351		mg/l	110%	2.61
AL	3.60	0,43	mg/l	91%	-2.16
AM	3.68	0,2	mg/l	93%	-1.65
AN	3.88	0,6	mg/l	98%	-0.38
AO			mg/l		
AP			mg/l		
AQ			mg/l		



	All results	Outliers excl.	Unit
Mean ± CI(99%)	3,97 ± 0,16	3,95 ± 0,09	mg/l
Recov. ± CI(99%)	100,7 ± 4,1	100,3 ± 2,3	%
SD between labs	0,32	0,17	mg/l
RSD between labs	8,1	4,2	%
n for calculation	30	26	

Sample N177B

Parameter Potassium

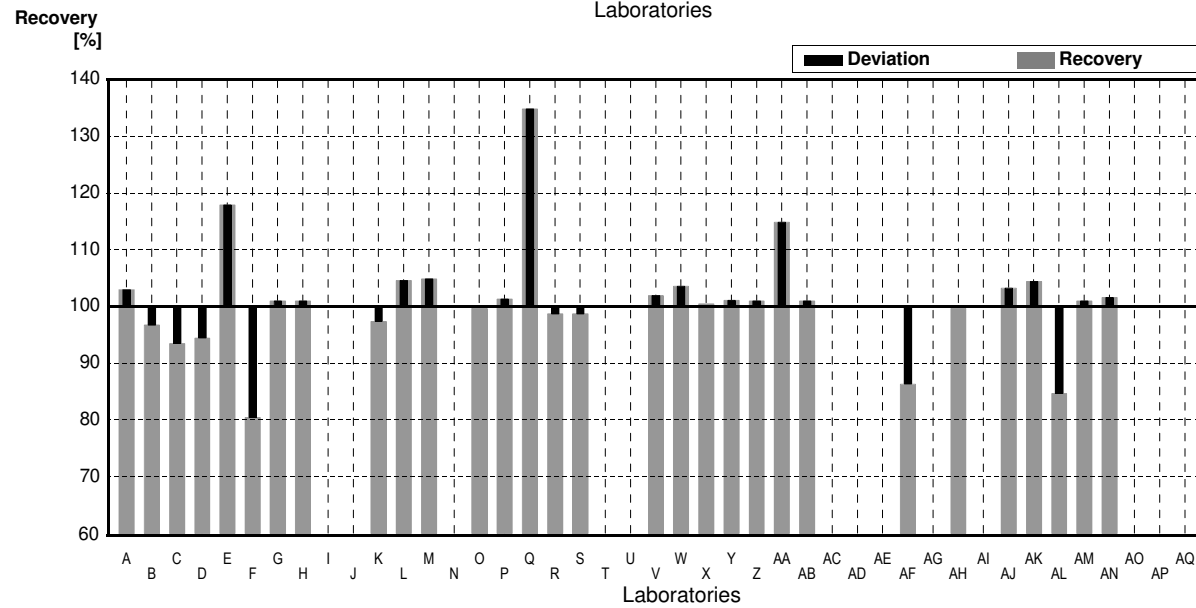
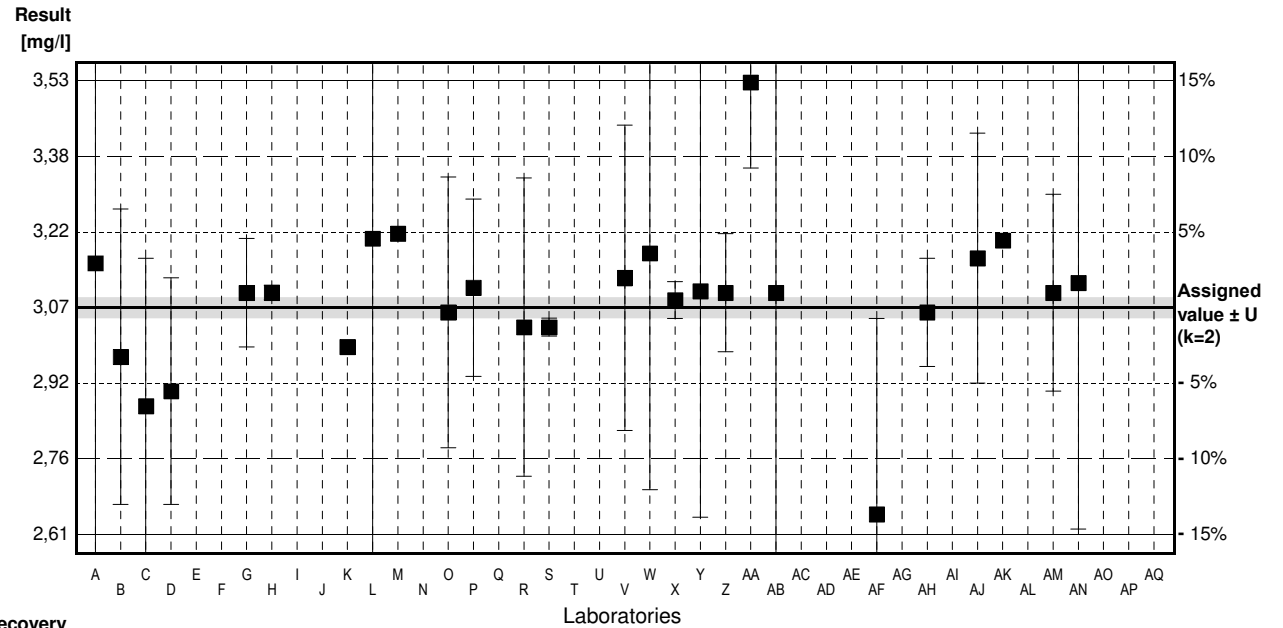
Assigned value ± U (k=2) 3,07 mg/l ± 0,02 mg/l

IFA result ± U (k=2) 2,94 mg/l ± 0,19 mg/l

Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	3.16	0.64	mg/l	103%	0.73
B	2.97	0.3	mg/l	97%	-0.81
C	2.87	0.30	mg/l	93%	-1.63
D	2.90	0.23	mg/l	94%	-1.38
E	3.62 *	0.65	mg/l	118%	4.48
F	2.47 *	0.37	mg/l	80%	-4.89
G	3.10	0.11	mg/l	101%	0.24
H	3.10	0.015	mg/l	101%	0.24
I			mg/l		
J			mg/l		
K	2.99		mg/l	97%	-0.65
L	3.21	0.65	mg/l	105%	1.14
M	3.22		mg/l	105%	1.22
N			mg/l		
O	3.06	0.275	mg/l	100%	-0.08
P	3.11	0.18	mg/l	101%	0.33
Q	4.14 *		mg/l	135%	8.71
R	3.03	0.303	mg/l	99%	-0.33
S	3.03	0.0182	mg/l	99%	-0.33
T			mg/l		
U			mg/l		
V	3.13	0.31	mg/l	102%	0.49
W	3.18	0.48	mg/l	104%	0.90
X	3.0851	0.0371	mg/l	100%	0.12
Y	3.103	0.459	mg/l	101%	0.27
Z	3.10	0.12	mg/l	101%	0.24
AA	3.527 *	0.174	mg/l	115%	3.72
AB	3.10	0.62	mg/l	101%	0.24
AC			mg/l		
AD			mg/l		
AE			mg/l		
AF	2.65 *	0.398	mg/l	86%	-3.42
AG			mg/l		
AH	3.06	0.11	mg/l	100%	-0.08
AI			mg/l		
AJ	3.170	0.254	mg/l	103%	0.81
AK	3.206		mg/l	104%	1.11
AL	2.60 *	0.36	mg/l	85%	-3.83
AM	3.10	0.2	mg/l	101%	0.24
AN	3.12	0.5	mg/l	102%	0.41
AO			mg/l		
AP			mg/l		
AQ			mg/l		

	All results	Outliers excl.	Unit
Mean ± CI(99%)	3,10 ± 0,15	3,09 ± 0,05	mg/l
Recov. ± CI(99%)	101,1 ± 4,9	100,6 ± 1,7	%
SD between labs	0,30	0,09	mg/l
RSD between labs	9,6	2,9	%
n for calculation	30	24	



Sample N177A

Parameter Nitrate (as NO3)

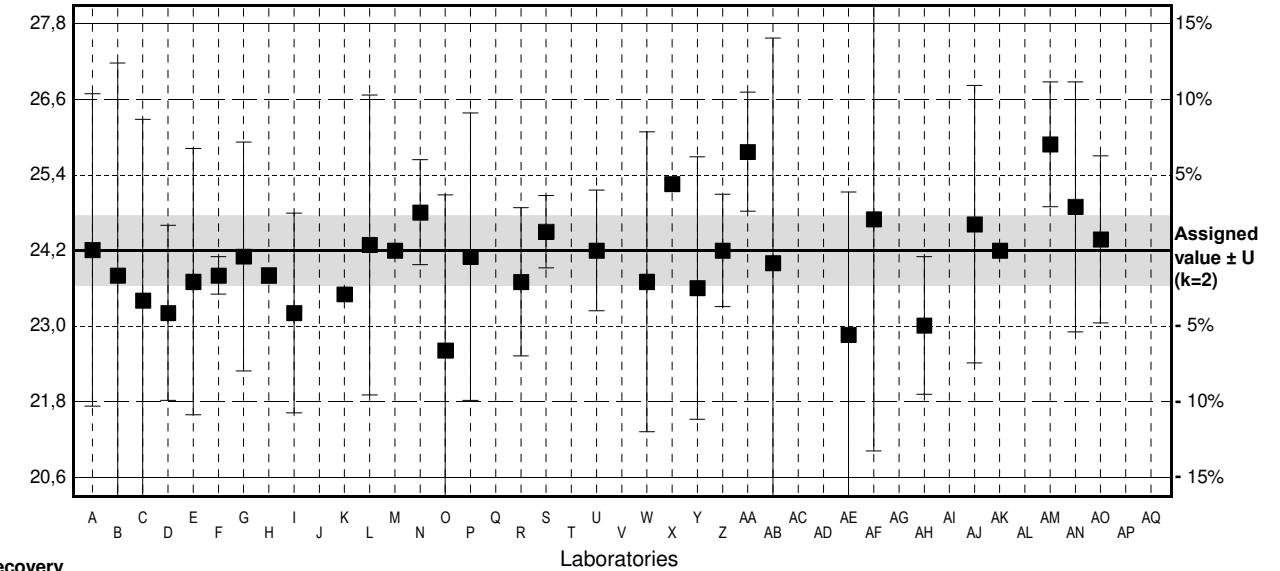
Assigned value ± U (k=2) 24,2 mg/l ± 0,6 mg/l

IFA result ± U (k=2) 23,4 mg/l ± 1,2 mg/l

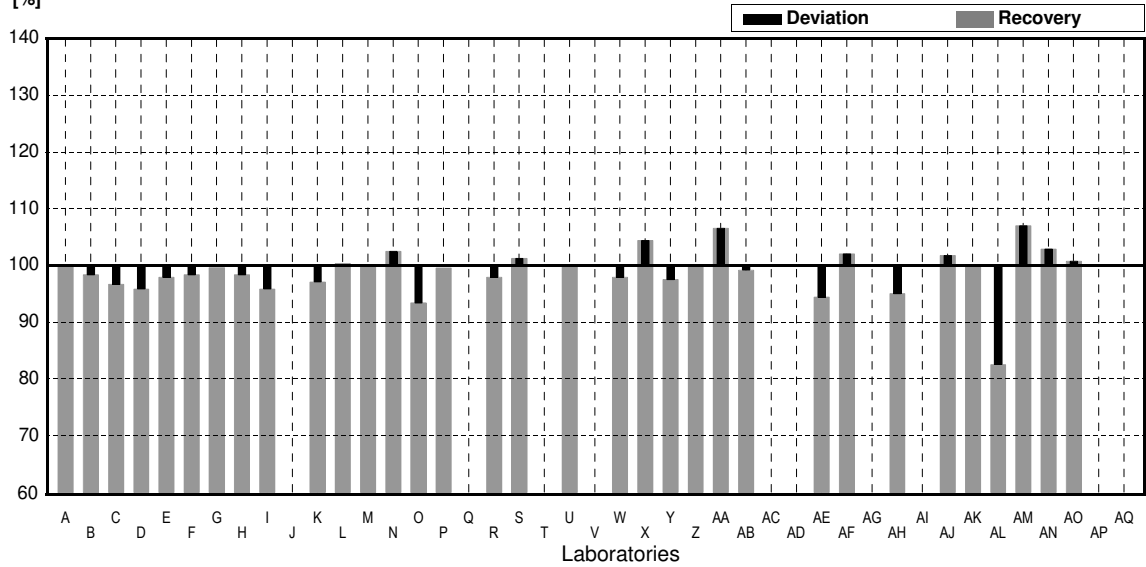
Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	24.21	2.5	mg/l	100%	0.01
B	23.8	3.4	mg/l	98%	-0.57
C	23.4	2.9	mg/l	97%	-1.14
D	23.2	1.4	mg/l	96%	-1.42
E	23.7	2.13	mg/l	98%	-0.71
F	23.8	0.3	mg/l	98%	-0.57
G	24.104	1.83	mg/l	100%	-0.14
H	23.8	0.12	mg/l	98%	-0.57
I	23.2	1.6	mg/l	96%	-1.42
J			mg/l		
K	23.5		mg/l	97%	-1.00
L	24.29	2.4	mg/l	100%	0.13
M	24.2		mg/l	100%	0.00
N	24.81	0.84	mg/l	103%	0.87
O	22.6	2.49	mg/l	93%	-2.28
P	24.1	2.3	mg/l	100%	-0.14
Q			mg/l		
R	23.697	1.1848	mg/l	98%	-0.72
S	24.5	0.581	mg/l	101%	0.43
T			mg/l		
U	24.2	0.964	mg/l	100%	0.00
V			mg/l		
W	23.7	2.4	mg/l	98%	-0.71
X	25.264	0.078	mg/l	104%	1.52
Y	23.6	2.1	mg/l	98%	-0.85
Z	24.2	0.9	mg/l	100%	0.00
AA	25.78	0.954	mg/l	107%	2.25
AB	24.0	3.6	mg/l	99%	-0.28
AC			mg/l		
AD			mg/l		
AE	22.85	2.285	mg/l	94%	-1.92
AF	24.7	3.71	mg/l	102%	0.71
AG			mg/l		
AH	23.0	1.1	mg/l	95%	-1.71
AI			mg/l		
AJ	24.62	2.22	mg/l	102%	0.60
AK	24.2		mg/l	100%	0.00
AL	19.974 *	1.158	mg/l	83%	-6.02
AM	25.9	1	mg/l	107%	2.42
AN	24.9	2	mg/l	103%	1.00
AO	24.379	1.336	mg/l	101%	0.26
AP			mg/l		
AQ			mg/l		

Result [mg/l]



Recovery [%]



	All results	Outliers excl.	Unit
Mean ± CI(99%)	23,9 ± 0,5	24,1 ± 0,4	mg/l
Recov. ± CI(99%)	98,9 ± 2,0	99,5 ± 1,5	%
SD between labs	1,0	0,8	mg/l
RSD between labs	4,3	3,2	%
n for calculation	33	32	

Sample N177B

Parameter Nitrate (as NO3)

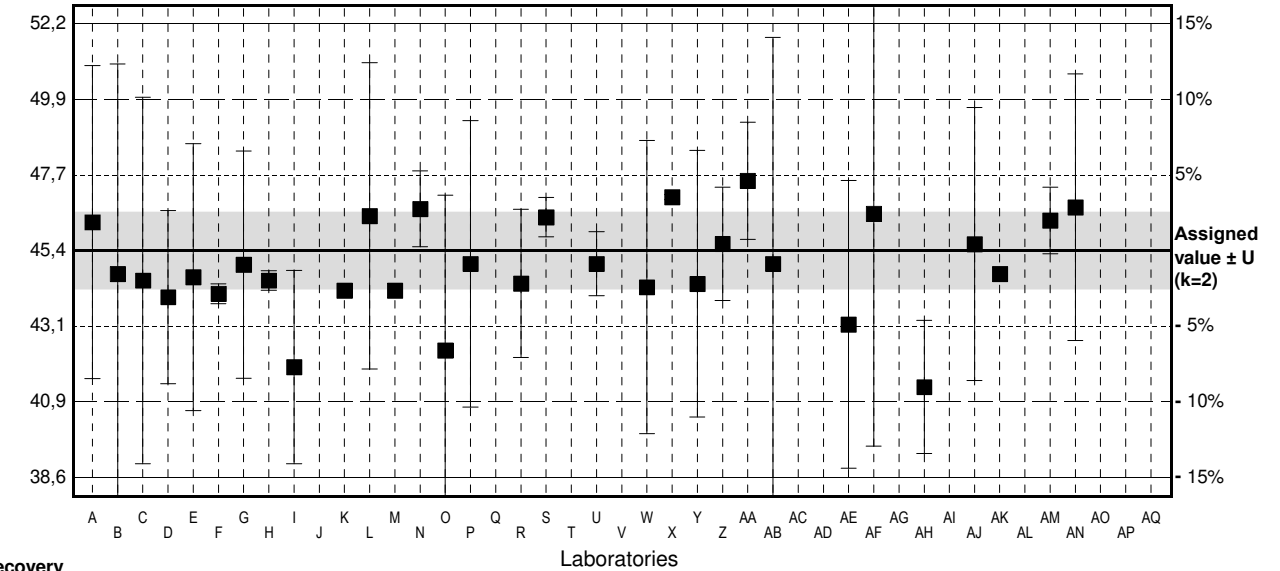
Assigned value ± U (k=2) 45,4 mg/l ± 1,2 mg/l

IFA result ± U (k=2) 43,7 mg/l ± 2,2 mg/l

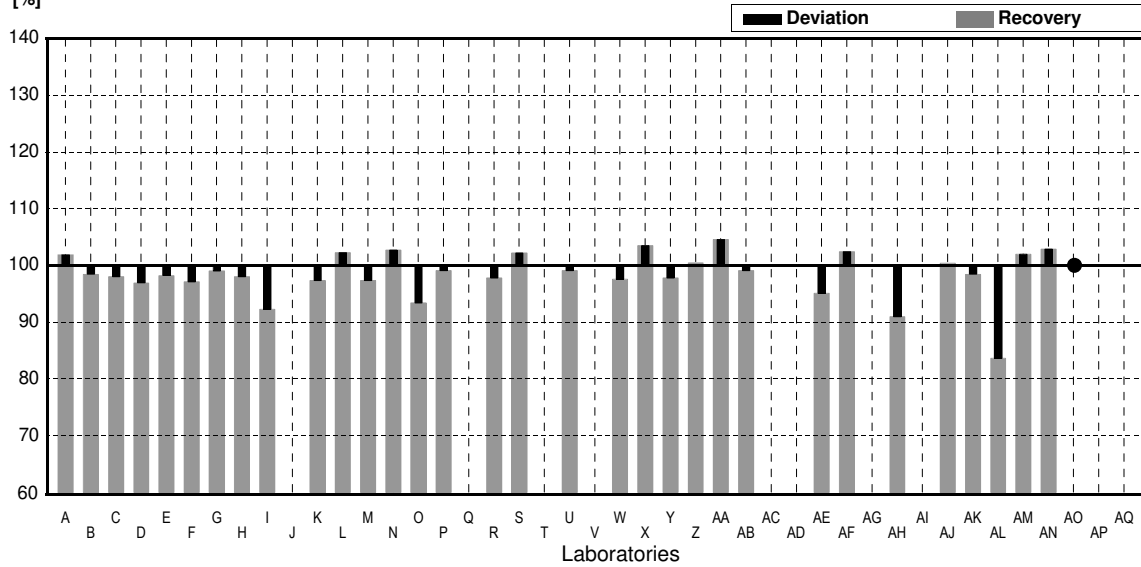
Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	46,25	4,7	mg/l	102%	0,65
B	44,7	6,3	mg/l	98%	-0,53
C	44,5	5,5	mg/l	98%	-0,68
D	44,0	2,6	mg/l	97%	-1,06
E	44,6	4,01	mg/l	98%	-0,61
F	44,1	0,3	mg/l	97%	-0,99
G	44,974	3,41	mg/l	99%	-0,32
H	44,5	0,29	mg/l	98%	-0,68
I	41,9	2,9	mg/l	92%	-2,66
J			mg/l		
K	44,2		mg/l	97%	-0,91
L	46,44	4,6	mg/l	102%	0,79
M	44,2		mg/l	97%	-0,91
N	46,65	1,14	mg/l	103%	0,95
O	42,4	4,66	mg/l	93%	-2,28
P	45,0	4,3	mg/l	99%	-0,30
Q			mg/l		
R	44,41	2,2205	mg/l	98%	-0,75
S	46,4	0,593	mg/l	102%	0,76
T			mg/l		
U	45,0	0,964	mg/l	99%	-0,30
V			mg/l		
W	44,3	4,4	mg/l	98%	-0,84
X	47,003	0,076	mg/l	104%	1,22
Y	44,4	4,0	mg/l	98%	-0,76
Z	45,6	1,7	mg/l	100%	0,15
AA	47,49	1,76	mg/l	105%	1,59
AB	45,0	6,8	mg/l	99%	-0,30
AC			mg/l		
AD			mg/l		
AE	43,18	4,318	mg/l	95%	-1,69
AF	46,5	6,98	mg/l	102%	0,84
AG			mg/l		
AH	41,3	2,0	mg/l	91%	-3,11
AI			mg/l		
AJ	45,59	4,10	mg/l	100%	0,14
AK	44,7		mg/l	98%	-0,53
AL	37,966 *	2,202	mg/l	84%	-5,65
AM	46,3	1	mg/l	102%	0,68
AN	46,7	4	mg/l	103%	0,99
AO	>30		mg/l	*	
AP			mg/l		
AQ			mg/l		

Result [mg/l]



Recovery [%]



	All results	Outliers excl.	Unit
Mean ± CI(99%)	44,7 ± 0,9	44,9 ± 0,7	mg/l
Recov. ± CI(99%)	98,4 ± 2,0	98,9 ± 1,6	%
SD between labs	1,9	1,5	mg/l
RSD between labs	4,2	3,3	%
n for calculation	32	31	

Sample N177A

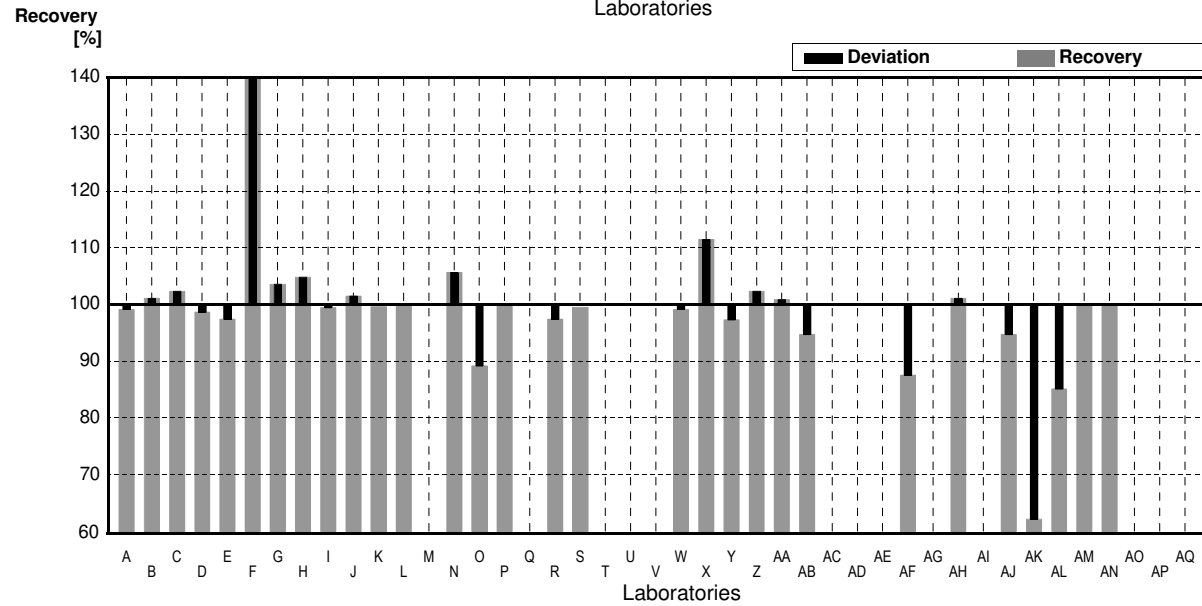
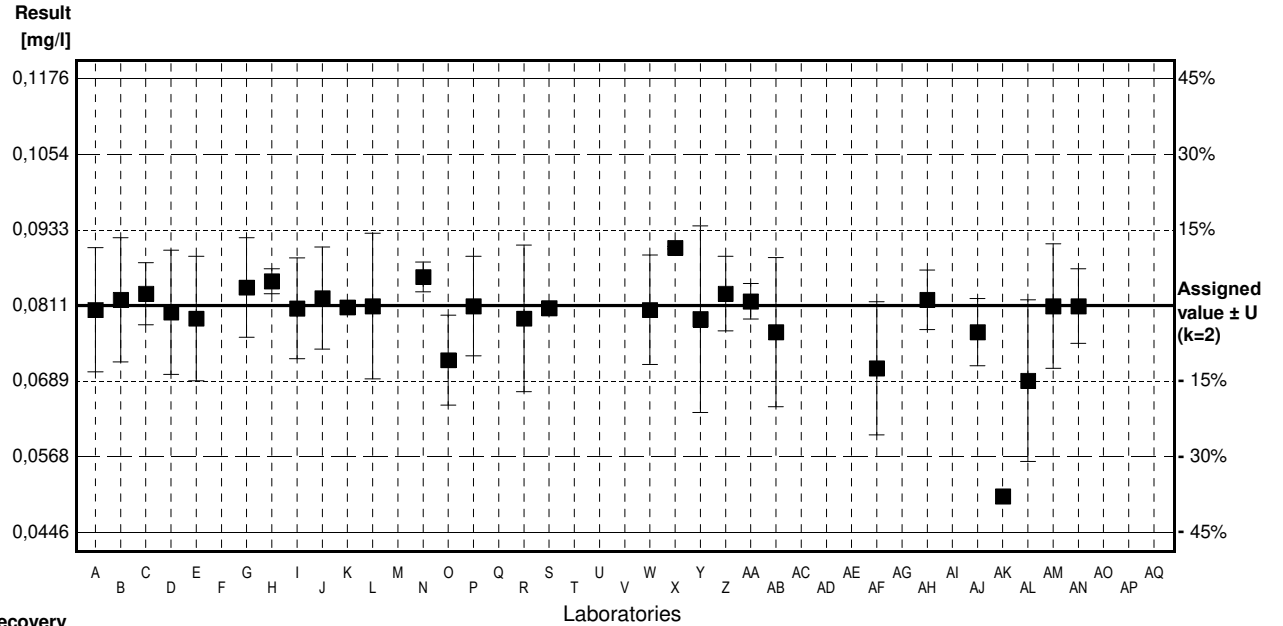
Parameter Nitrite (as NO2)

Assigned value ± U (k=2) 0,0811 mg/l ± 0,0003 mg/l

IFA result ± U (k=2) 0,080 mg/l ± 0,003 mg/l

Stability test ± U (k=2) 0,081 mg/l ± 0,003 mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	0.0804	0.01	mg/l	99%	-0.16
B	0.082	0.01	mg/l	101%	0.20
C	0.0830	0.005	mg/l	102%	0.43
D	0.080	0.010	mg/l	99%	-0.25
E	0.079	0.01	mg/l	97%	-0.47
F	0.235 *	0.030	mg/l	290%	34.50
G	0.0840	0.008	mg/l	104%	0.65
H	0.0850	0.002	mg/l	105%	0.87
I	0.08064	0.0081	mg/l	99%	-0.10
J	0.0823	0.0082	mg/l	101%	0.27
K	0.0808		mg/l	100%	-0.07
L	0.0810	0.0117	mg/l	100%	-0.02
M			mg/l		
N	0.0857	0.0024	mg/l	106%	1.03
O	0.0723	0.00723	mg/l	89%	-1.97
P	0.081	0.008	mg/l	100%	-0.02
Q			mg/l		
R	0.079	0.0118	mg/l	97%	-0.47
S	0.0807	0.000448	mg/l	100%	-0.09
T			mg/l		
U			mg/l		
V			mg/l		
W	0.0804	0.0088	mg/l	99%	-0.16
X	0.0904 *	0.0002	mg/l	111%	2.08
Y	0.0789	0.015	mg/l	97%	-0.49
Z	0.083	0.006	mg/l	102%	0.43
AA	0.08178	0.00286	mg/l	101%	0.15
AB	0.0768	0.012	mg/l	95%	-0.96
AC			mg/l		
AD			mg/l		
AE			mg/l		
AF	0.071 *	0.0107	mg/l	88%	-2.26
AG			mg/l		
AH	0.082	0.0048	mg/l	101%	0.20
AI			mg/l		
AJ	0.0768	0.0054	mg/l	95%	-0.96
AK	0.0504 *		mg/l	62%	-6.88
AL	0.069 *	0.013	mg/l	85%	-2.71
AM	0.081	0.01	mg/l	100%	-0.02
AN	0.081	0.006	mg/l	100%	-0.02
AO			mg/l		
AP			mg/l		
AQ			mg/l		



	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,0845 ± 0,0147	0,0807 ± 0,0015	mg/l
Recov. ± CI(99%)	104,2 ± 18,2	99,6 ± 1,9	%
SD between labs	0,0292	0,0028	mg/l
RSD between labs	34,6	3,4	%
n for calculation	30	25	

Sample N177B

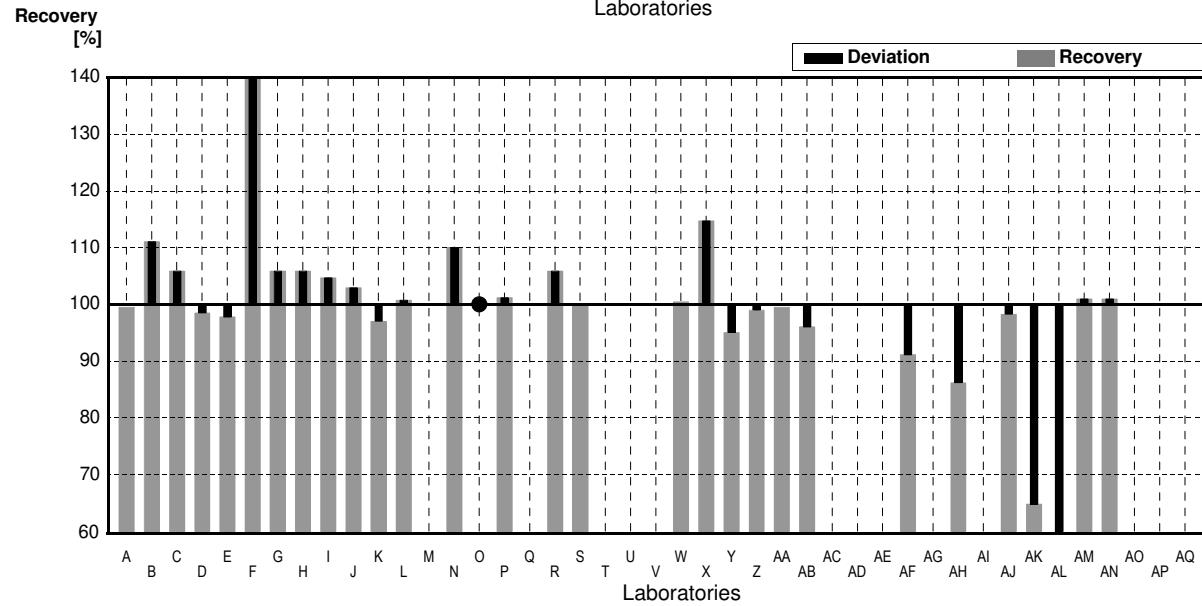
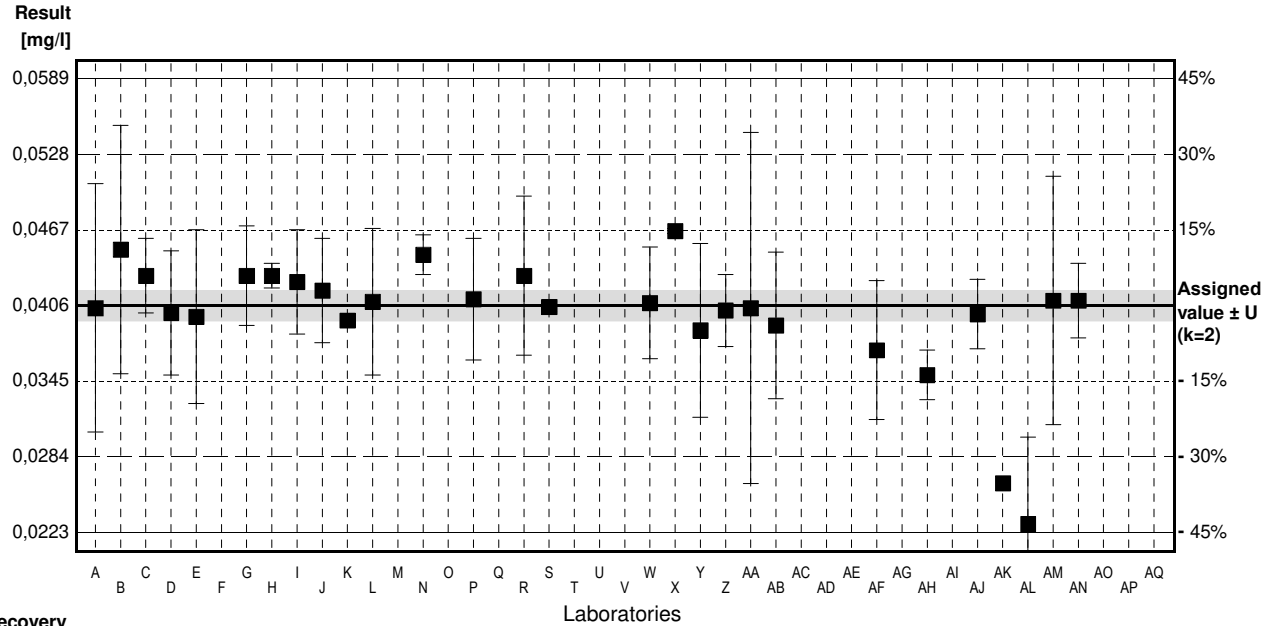
Parameter Nitrite (as NO2)

Assigned value ± U (k=2) 0,0406 mg/l ± 0,0012 mg/l

IFA result ± U (k=2) 0,0403 mg/l ± 0,0017 mg/l

Stability test ± U (k=2) 0,0407 mg/l ± 0,0017 mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	0.0404	0.01	mg/l	100%	-0.09
B	0.0451	0.01	mg/l	111%	2.02
C	0.0430	0.003	mg/l	106%	1.07
D	0.0400	0.0050	mg/l	99%	-0.27
E	0.0397	0.007	mg/l	98%	-0.40
F	0.062 *	0.008	mg/l	153%	9.58
G	0.0430	0.004	mg/l	106%	1.07
H	0.0430	0.001	mg/l	106%	1.07
I	0.0425	0.0042	mg/l	105%	0.85
J	0.0418	0.0042	mg/l	103%	0.54
K	0.0394		mg/l	97%	-0.54
L	0.0409	0.0059	mg/l	101%	0.13
M			mg/l		
N	0.0447	0.0016	mg/l	110%	1.84
O	<0.0493	0.00493	mg/l	*	
P	0.0411	0.0049	mg/l	101%	0.22
Q			mg/l		
R	0.0430	0.0064	mg/l	106%	1.07
S	0.0405	0.000412	mg/l	100%	-0.04
T			mg/l		
U			mg/l		
V			mg/l		
W	0.0408	0.0045	mg/l	100%	0.09
X	0.0466	0.002	mg/l	115%	2.69
Y	0.0386	0.007	mg/l	95%	-0.90
Z	0.0402	0.0029	mg/l	99%	-0.18
AA	0.04040	0.01414	mg/l	100%	-0.09
AB	0.0390	0.0059	mg/l	96%	-0.72
AC			mg/l		
AD			mg/l		
AE			mg/l		
AF	0.0370	0.0056	mg/l	91%	-1.61
AG			mg/l		
AH	0.0350	0.0020	mg/l	86%	-2.51
AI			mg/l		
AJ	0.0399	0.0028	mg/l	98%	-0.31
AK	0.0263 *		mg/l	65%	-6.40
AL	0.0230 *	0.007	mg/l	57%	-7.88
AM	0.0410	0.01	mg/l	101%	0.18
AN	0.0410	0.003	mg/l	101%	0.18
AO			mg/l		
AP			mg/l		
AQ			mg/l		



	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,0407 ± 0,0033	0,0411 ± 0,0013	mg/l
Recov. ± CI(99%)	100,1 ± 8,0	101,1 ± 3,3	%
SD between labs	0,0063	0,0025	mg/l
RSD between labs	15,6	6,0	%
n for calculation	29	26	

Sample N177A

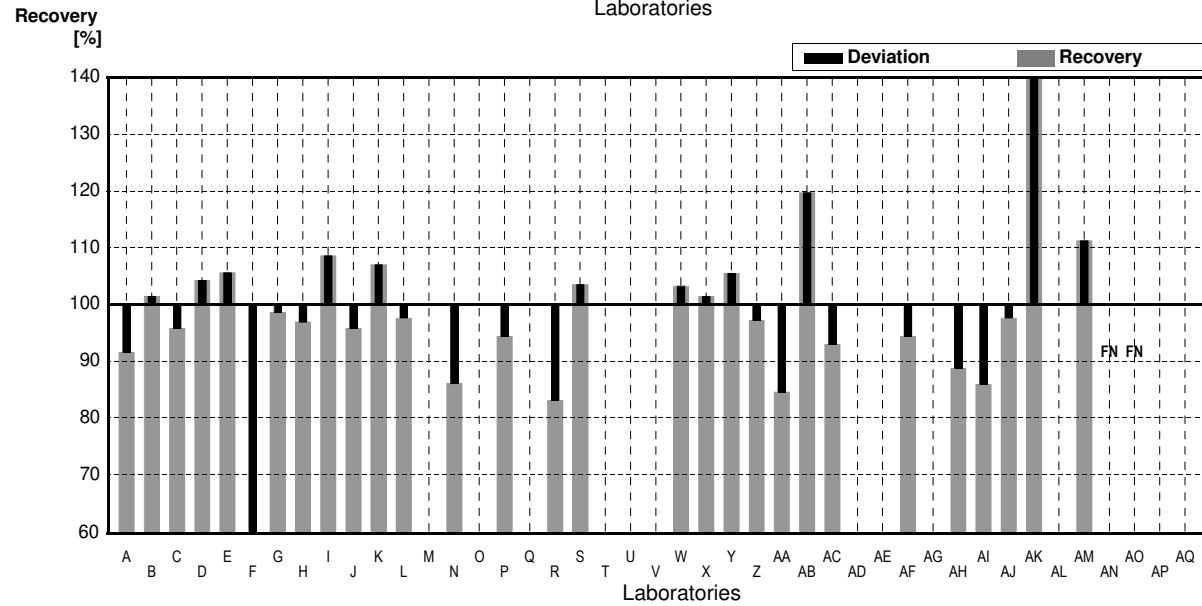
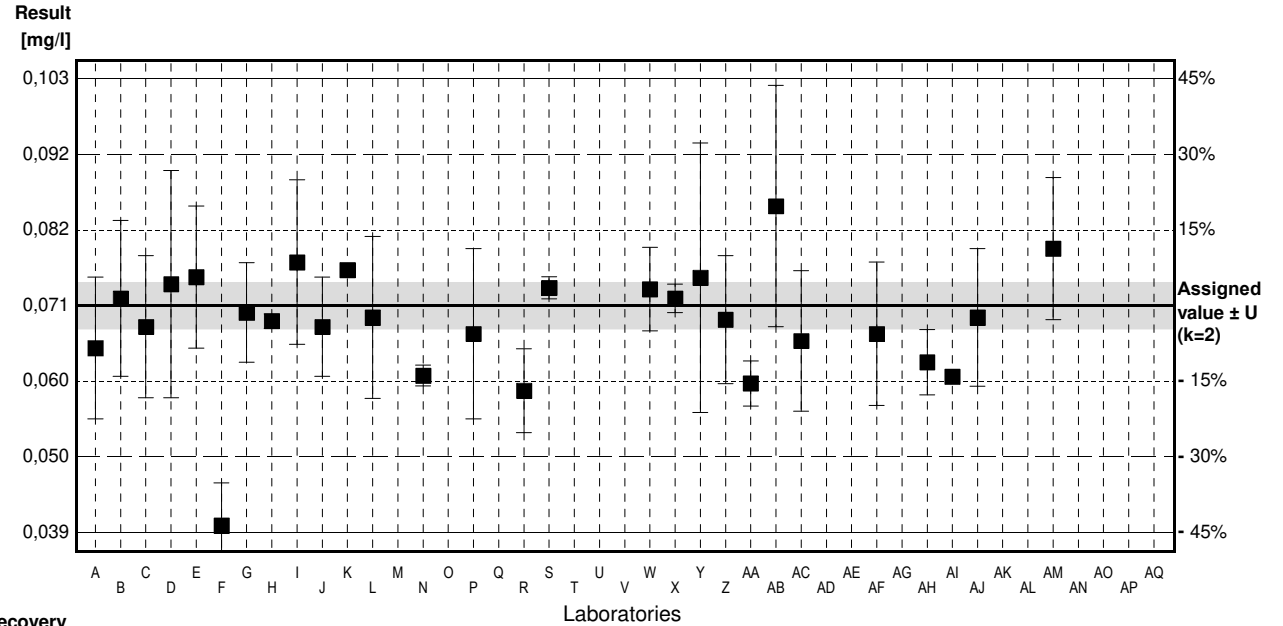
Parameter Ammonium (as NH4)

Assigned value ± U (k=2) 0,071 mg/l ± 0,003 mg/l

IFA result ± U (k=2) 0,071 mg/l ± 0,002 mg/l

Stability test ± U (k=2) 0,075 mg/l ± 0,002 mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	0.065	0.01	mg/l	92%	-0.77
B	0.072	0.011	mg/l	101%	0.13
C	0.0680	0.010	mg/l	96%	-0.38
D	0.074	0.016	mg/l	104%	0.38
E	0.075	0.01	mg/l	106%	0.51
F	0.0400 *	0.006	mg/l	56%	-3.97
G	0.0700	0.007	mg/l	99%	-0.13
H	0.0688	0.001	mg/l	97%	-0.28
I	0.0771	0.0116	mg/l	109%	0.78
J	0.068	0.007	mg/l	96%	-0.38
K	0.0760		mg/l	107%	0.64
L	0.0693	0.0114	mg/l	98%	-0.22
M			mg/l		
N	0.06111	0.00147	mg/l	86%	-1.27
O			mg/l		
P	0.067	0.012	mg/l	94%	-0.51
Q			mg/l		
R	0.059	0.0059	mg/l	83%	-1.54
S	0.0735	0.00156	mg/l	104%	0.32
T			mg/l		
U			mg/l		
V			mg/l		
W	0.0733	0.0059	mg/l	103%	0.29
X	0.0720	0.002	mg/l	101%	0.13
Y	0.0749	0.019	mg/l	105%	0.50
Z	0.069	0.009	mg/l	97%	-0.26
AA	0.06002	0.00318	mg/l	85%	-1.41
AB	0.0850	0.017	mg/l	120%	1.79
AC	0.066	0.0099	mg/l	93%	-0.64
AD			mg/l		
AE			mg/l		
AF	0.067	0.0101	mg/l	94%	-0.51
AG			mg/l		
AH	0.063	0.0046	mg/l	89%	-1.02
AI	0.061		mg/l	86%	-1.28
AJ	0.0693	0.0097	mg/l	98%	-0.22
AK	0.112 *		mg/l	158%	5.25
AL			mg/l		
AM	0.079	0.01	mg/l	111%	1.02
AN	<0.013		mg/l	FN	
AO	<0.01		mg/l	FN	
AP			mg/l		
AQ			mg/l		



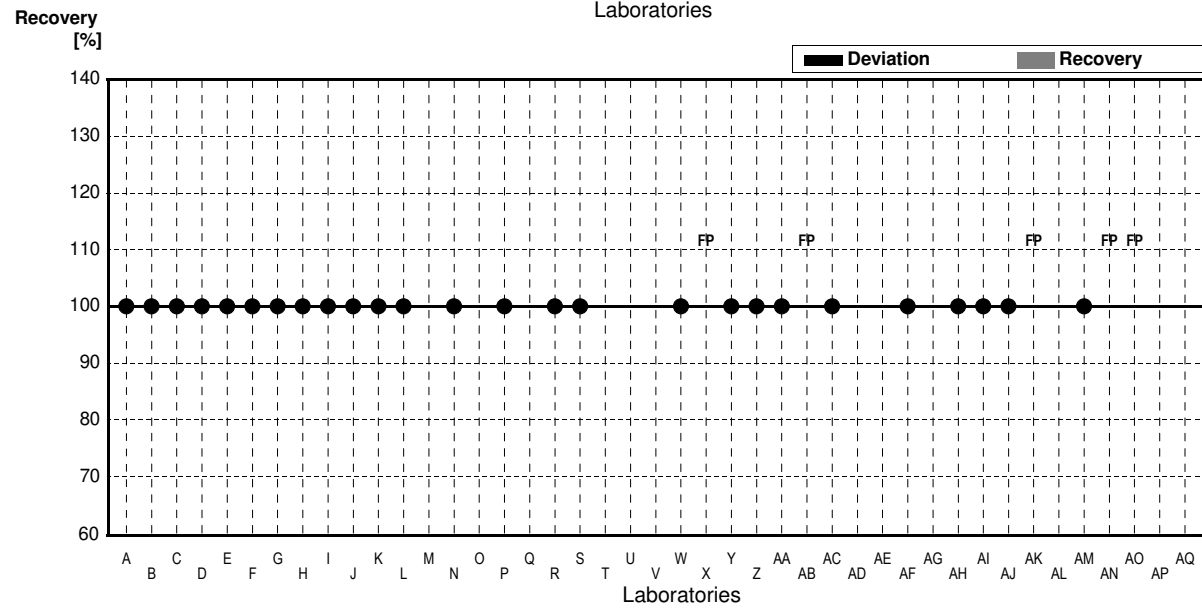
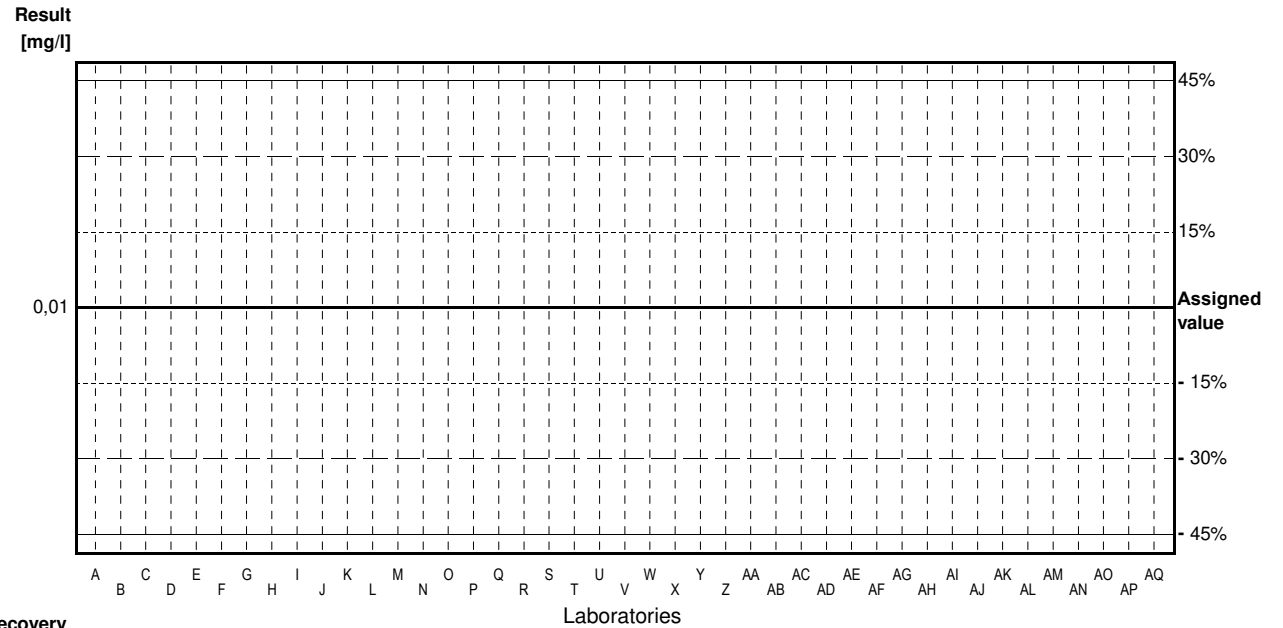
	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,070 ± 0,006	0,070 ± 0,003	mg/l
Recov. ± CI(99%)	98,9 ± 8,2	98,2 ± 4,6	%
SD between labs	0,011	0,006	mg/l
RSD between labs	16,3	8,8	%
n for calculation	29	27	

Sample N177B

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	0,00800	0,001	mg/l	•	
D	<0,02		mg/l	•	
E	<0,01		mg/l	•	
F	<0,025		mg/l	•	
G	<0,010		mg/l	•	
H	<0,01		mg/l	•	
I	<0,005		mg/l	•	
J	<0,02		mg/l	•	
K	<0,008		mg/l	•	
L	<0,010		mg/l	•	
M			mg/l		
N	0,00184	0,00023	mg/l	•	
O			mg/l		
P	<0,010		mg/l	•	
Q			mg/l		
R	<0,00515		mg/l	•	
S	<0,0100		mg/l	•	
T			mg/l		
U			mg/l		
V			mg/l		
W	<0,01		mg/l	•	
X	0,0331	0,002	mg/l	FP	
Y	<0,01	0,003	mg/l	•	
Z	<0,02		mg/l	•	
AA	<0,0129		mg/l	•	
AB	0,0200	0,0040	mg/l	FP	
AC	<0,01		mg/l	•	
AD			mg/l		
AE			mg/l		
AF	<0,0090		mg/l	•	
AG			mg/l		
AH	<0,01		mg/l	•	
AI	<0,05		mg/l	•	
AJ	<0,01		mg/l	•	
AK	0,0374		mg/l	FP	
AL			mg/l		
AM	0,00400	0,01	mg/l	•	
AN	0,068	0,009	mg/l	FP	
AO	0,0639	0,0079	mg/l	FP	
AP			mg/l		
AQ			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 N177A
Parameter Chloride

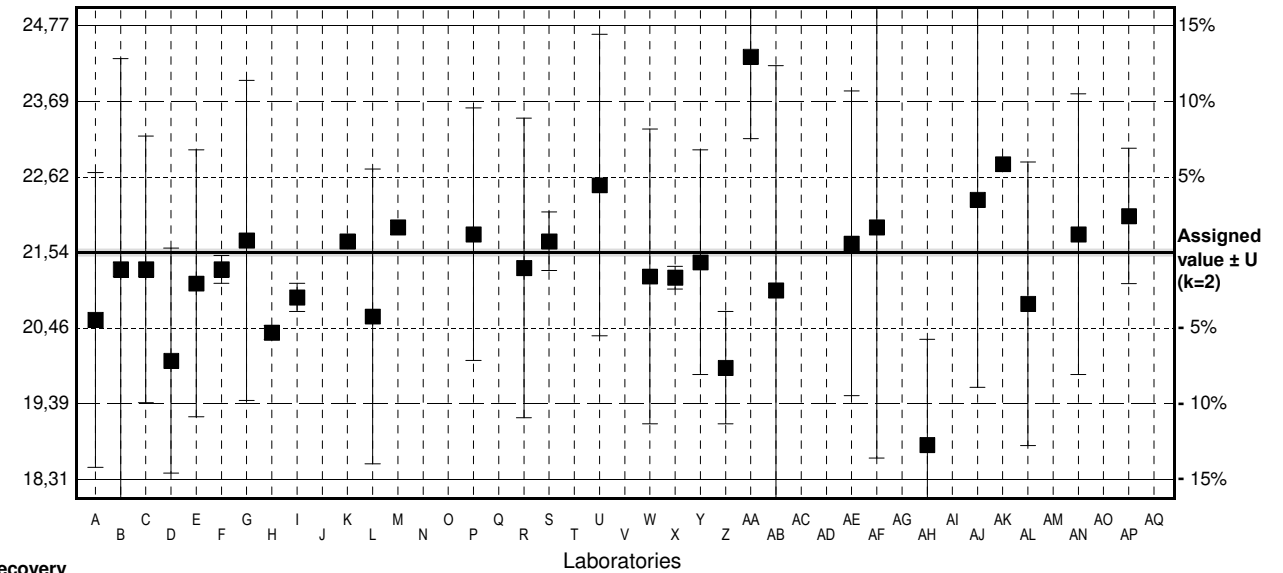
Assigned value ± U (k=2) 21,54 mg/l ± 0,05 mg/l
IFA result ± U (k=2) 20,9 mg/l ± 0,7 mg/l

Stability test mg/l

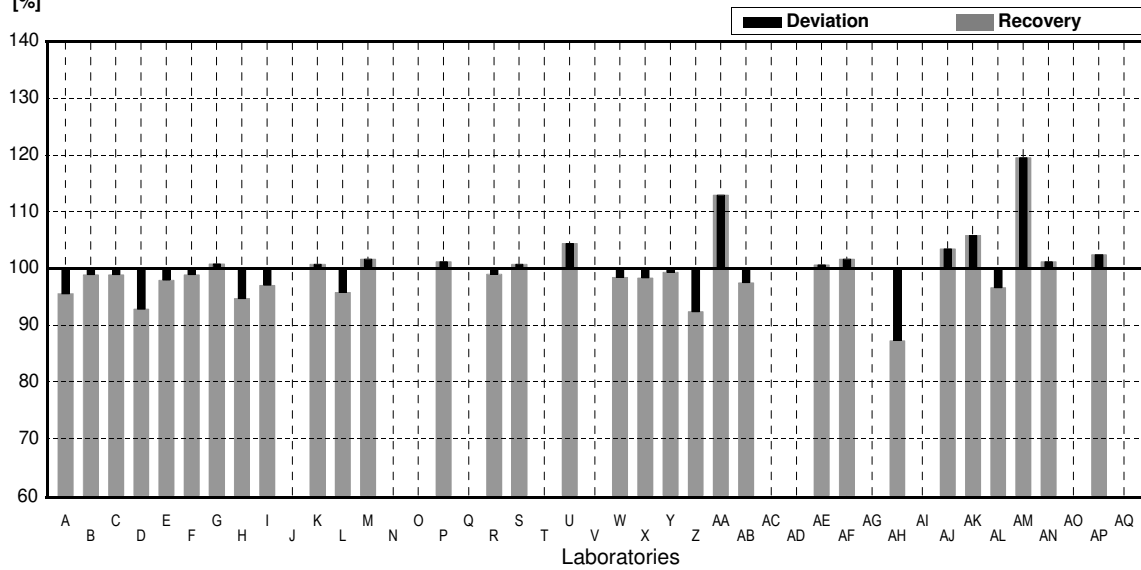
Lab Code	Result	±	Unit	Recovery	z-Score
A	20.58	2.1	mg/l	96%	-1.65
B	21.3	3.0	mg/l	99%	-0.41
C	21.3	1.9	mg/l	99%	-0.41
D	20.0	1.6	mg/l	93%	-2.65
E	21.1	1.90	mg/l	98%	-0.76
F	21.3	0.2	mg/l	99%	-0.41
G	21.711	2.28	mg/l	101%	0.29
H	20.4	0.10	mg/l	95%	-1.96
I	20.9	0.2	mg/l	97%	-1.10
J			mg/l		
K	21.7		mg/l	101%	0.28
L	20.63	2.1	mg/l	96%	-1.56
M	21.9		mg/l	102%	0.62
N			mg/l		
O			mg/l		
P	21.8	1.8	mg/l	101%	0.45
Q			mg/l		
R	21.32	2.132	mg/l	99%	-0.38
S	21.7	0.416	mg/l	101%	0.28
T			mg/l		
U	22.5	2.148	mg/l	104%	1.65
V			mg/l		
W	21.2	2.1	mg/l	98%	-0.58
X	21.182	0.161	mg/l	98%	-0.62
Y	21.4	1.6	mg/l	99%	-0.24
Z	19.9	0.8	mg/l	92%	-2.82
AA	24.33 *	1.17	mg/l	113%	4.80
AB	21.0	3.2	mg/l	97%	-0.93
AC			mg/l		
AD			mg/l		
AE	21.67	2.17	mg/l	101%	0.22
AF	21.9	3.29	mg/l	102%	0.62
AG			mg/l		
AH	18.8 *	1.5	mg/l	87%	-4.71
AI			mg/l		
AJ	22.29	2.67	mg/l	103%	1.29
AK	22.8		mg/l	106%	2.17
AL	20.81	2.02	mg/l	97%	-1.26
AM	25.75 *	1	mg/l	120%	7.24
AN	21.8	2	mg/l	101%	0.45
AO			mg/l		
AP	22.06	0.966	mg/l	102%	0.89
AQ			mg/l		

	All results	Outliers excl.	Unit
Mean ± CI(99%)	21,52 ± 0,62	21,36 ± 0,36	mg/l
Recov. ± CI(99%)	99,9 ± 2,9	99,2 ± 1,7	%
SD between labs	1,25	0,69	mg/l
RSD between labs	5,8	3,2	%
n for calculation	31	28	

Result [mg/l]



Recovery [%]



Sample N177B Parameter Chloride

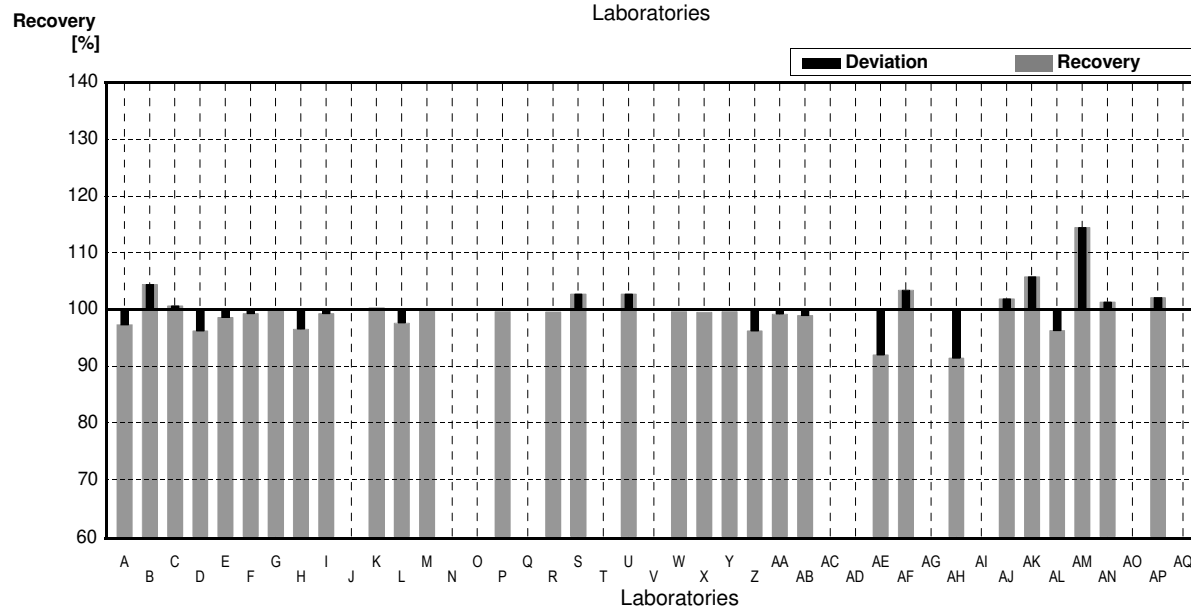
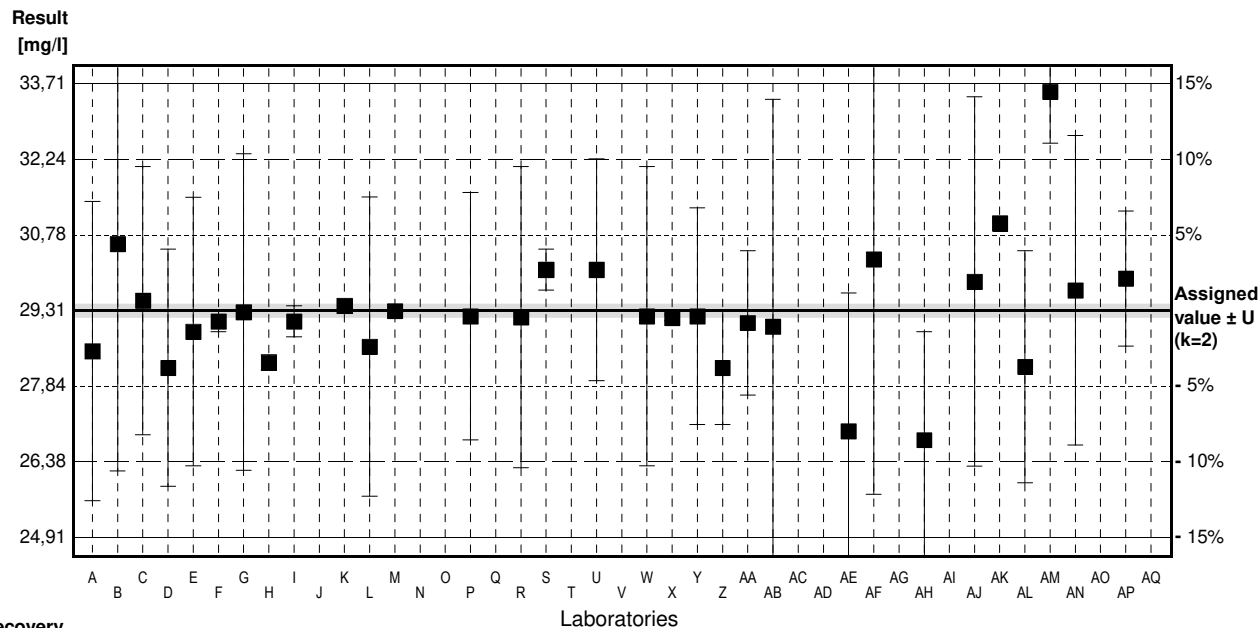
Assigned value ± U (k=2) 29,31 mg/l ± 0,13 mg/l

IFA result ± U (k=2) 28,4 mg/l ± 1,0 mg/l

Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	28,52	2,9	mg/l	97%	-1,00
B	30,6	4,4	mg/l	104%	1,63
C	29,5	2,6	mg/l	101%	0,24
D	28,2	2,3	mg/l	96%	-1,40
E	28,9	2,60	mg/l	99%	-0,52
F	29,1	0,2	mg/l	99%	-0,27
G	29,28	3,07	mg/l	100%	-0,04
H	28,3	0,15	mg/l	97%	-1,28
I	29,1	0,3	mg/l	99%	-0,27
J			mg/l		
K	29,4		mg/l	100%	0,11
L	28,61	2,9	mg/l	98%	-0,88
M	29,3		mg/l	100%	-0,01
N			mg/l		
O			mg/l		
P	29,2	2,4	mg/l	100%	-0,14
Q			mg/l		
R	29,18	2,918	mg/l	100%	-0,16
S	30,1	0,397	mg/l	103%	1,00
T			mg/l		
U	30,1	2,148	mg/l	103%	1,00
V			mg/l		
W	29,2	2,9	mg/l	100%	-0,14
X	29,169	0,060	mg/l	100%	-0,18
Y	29,2	2,1	mg/l	100%	-0,14
Z	28,2	1,1	mg/l	96%	-1,40
AA	29,07	1,40	mg/l	99%	-0,30
AB	29,0	4,4	mg/l	99%	-0,39
AC			mg/l		
AD			mg/l		
AE	26,97	2,68	mg/l	92%	-2,96
AF	30,3	4,55	mg/l	103%	1,25
AG			mg/l		
AH	26,8	2,1	mg/l	91%	-3,17
AI			mg/l		
AJ	29,87	3,58	mg/l	102%	0,71
AK	31,0		mg/l	106%	2,14
AL	28,22	2,25	mg/l	96%	-1,38
AM	33,55 *	1	mg/l	114%	5,36
AN	29,7	3	mg/l	101%	0,49
AO			mg/l		
AP	29,93	1,31	mg/l	102%	0,78
AQ			mg/l		

	All results	Outliers excl.	Unit
Mean ± CI(99%)	29,28 ± 0,60	29,13 ± 0,47	mg/l
Recov. ± CI(99%)	99,9 ± 2,0	99,4 ± 1,6	%
SD between labs	1,21	0,92	mg/l
RSD between labs	4,1	3,2	%
n for calculation	31	30	



Sample N177A

Parameter Sulphate (as SO4)

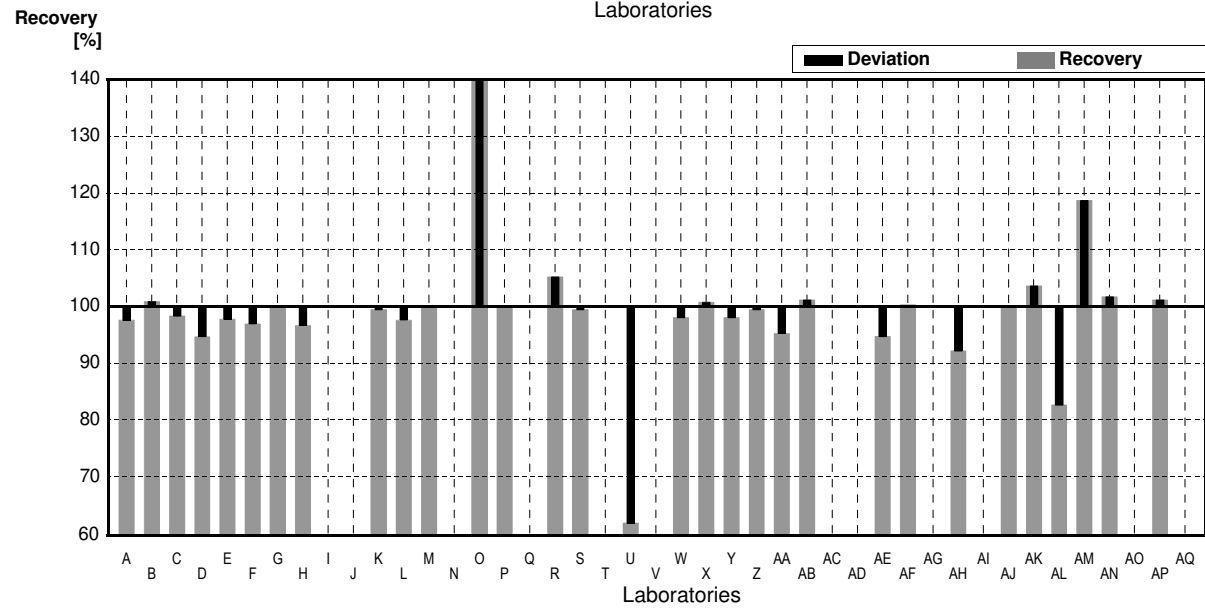
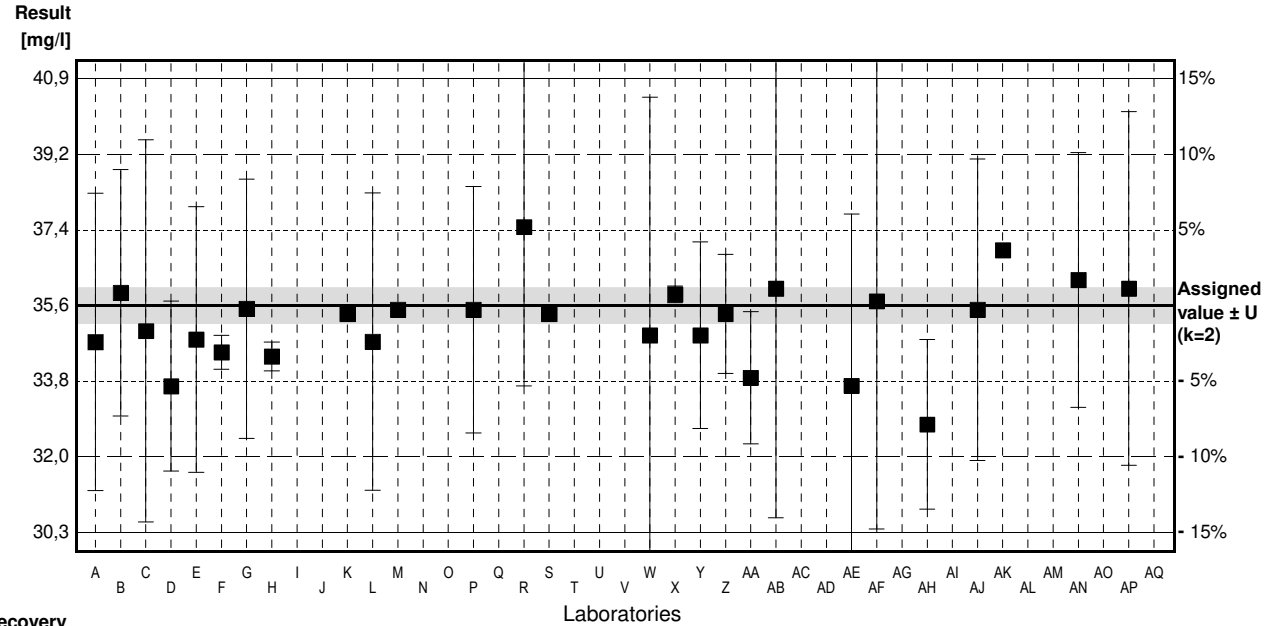
Assigned value ± U (k=2) 35,6 mg/l ± 0,4 mg/l

IFA result ± U (k=2) 34,7 mg/l ± 0,9 mg/l

Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	34.74	3.5	mg/l	98%	-0.78
B	35.9	2.9	mg/l	101%	0.27
C	35.0	4.5	mg/l	98%	-0.54
D	33.7	2.0	mg/l	95%	-1.72
E	34.8	3.13	mg/l	98%	-0.72
F	34.5	0.4	mg/l	97%	-1.00
G	35.522	3.05	mg/l	100%	-0.07
H	34.4	0.34	mg/l	97%	-1.09
I			mg/l		
J			mg/l		
K	35.4		mg/l	99%	-0.18
L	34.75	3.5	mg/l	98%	-0.77
M	35.5		mg/l	100%	-0.09
N			mg/l		
O	55.6 *	12.2	mg/l	156%	18.12
P	35.5	2.9	mg/l	100%	-0.09
Q			mg/l		
R	37.45	3.745	mg/l	105%	1.68
S	35.4	0.117	mg/l	99%	-0.18
T			mg/l		
U	22.0 *	20.0	mg/l	62%	-12.32
V			mg/l		
W	34.9	5.6	mg/l	98%	-0.63
X	35.861	0.200	mg/l	101%	0.24
Y	34.9	2.2	mg/l	98%	-0.63
Z	35.4	1.4	mg/l	99%	-0.18
AA	33.899	1.559	mg/l	95%	-1.54
AB	36.0	5.4	mg/l	101%	0.36
AC			mg/l		
AD			mg/l		
AE	33.71	4.04	mg/l	95%	-1.71
AF	35.7	5.36	mg/l	100%	0.09
AG			mg/l		
AH	32.8	2.0	mg/l	92%	-2.54
AI			mg/l		
AJ	35.50	3.55	mg/l	100%	-0.09
AK	36.9		mg/l	104%	1.18
AL	29.41 *	3.63	mg/l	83%	-5.61
AM	42.25 *	1.5	mg/l	119%	6.03
AN	36.2	3	mg/l	102%	0.54
AO			mg/l		
AP	36.0	4.16	mg/l	101%	0.36
AQ			mg/l		

	All results	Outliers excl.	Unit
Mean ± CI(99%)	35,5 ± 2,4	35,2 ± 0,5	mg/l
Recov. ± CI(99%)	99,6 ± 6,7	98,9 ± 1,5	%
SD between labs	4,8	1,0	mg/l
RSD between labs	13,6	2,8	%
n for calculation	31	27	



Sample N177B
Parameter Sulphate (as SO4)

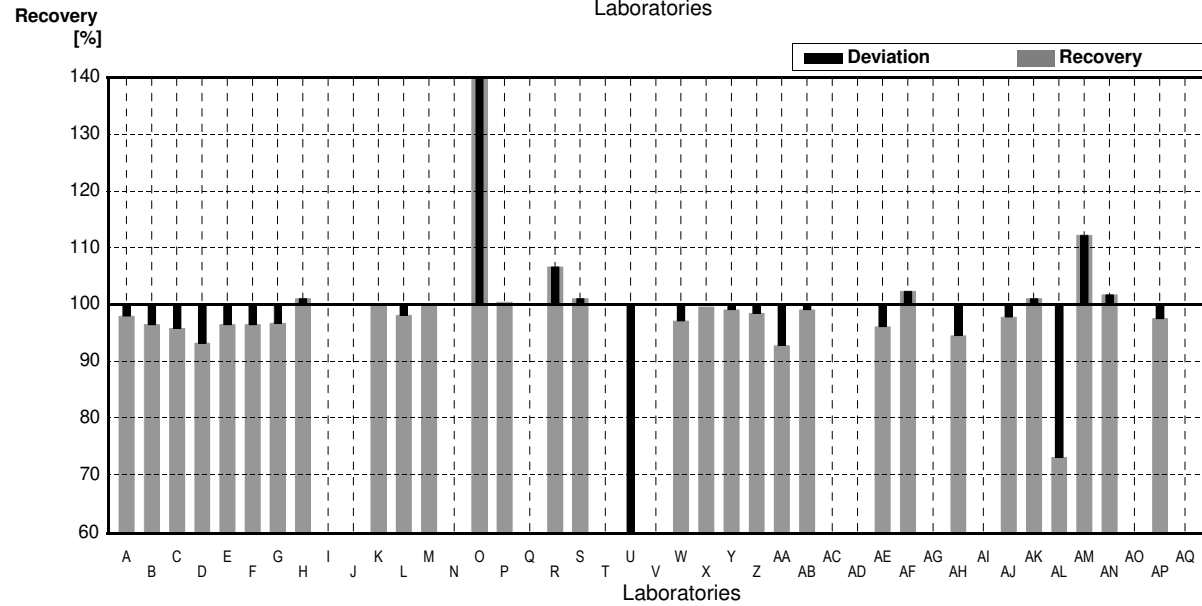
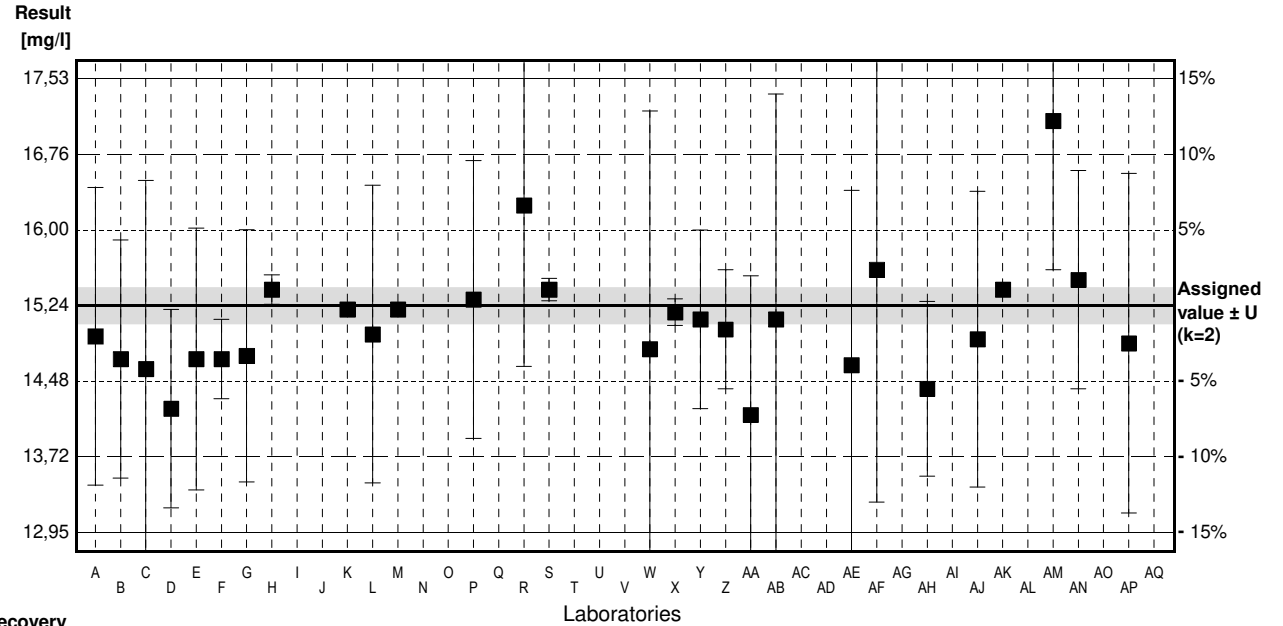
Assigned value ± U (k=2) 15,24 mg/l ± 0,18 mg/l

IFA result ± U (k=2) 14,7 mg/l ± 0,4 mg/l

Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	14,93	1,5	mg/l	98%	-0,66
B	14,7	1,2	mg/l	96%	-1,14
C	14,6	1,9	mg/l	96%	-1,35
D	14,2	1,0	mg/l	93%	-2,20
E	14,7	1,32	mg/l	96%	-1,14
F	14,7	0,4	mg/l	96%	-1,14
G	14,733	1,27	mg/l	97%	-1,07
H	15,4	0,15	mg/l	101%	0,34
I			mg/l		
J			mg/l		
K	15,2		mg/l	100%	-0,08
L	14,95	1,5	mg/l	98%	-0,61
M	15,2		mg/l	100%	-0,08
N			mg/l		
O	31,7 *	6,97	mg/l	208%	34,84
P	15,3	1,4	mg/l	100%	0,13
Q			mg/l		
R	16,25	1,625	mg/l	107%	2,14
S	15,4	0,114	mg/l	101%	0,34
T			mg/l		
U	6,0 *	20,0	mg/l	39%	-19,56
V			mg/l		
W	14,8	2,4	mg/l	97%	-0,93
X	15,172	0,134	mg/l	100%	-0,14
Y	15,1	0,9	mg/l	99%	-0,30
Z	15,0	0,6	mg/l	98%	-0,51
AA	14,138	1,400	mg/l	93%	-2,33
AB	15,1	2,27	mg/l	99%	-0,30
AC			mg/l		
AD			mg/l		
AE	14,64	1,76	mg/l	96%	-1,27
AF	15,6	2,34	mg/l	102%	0,76
AG			mg/l		
AH	14,4	0,88	mg/l	94%	-1,78
AI			mg/l		
AJ	14,90	1,49	mg/l	98%	-0,72
AK	15,4		mg/l	101%	0,34
AL	11,13 *	1,44	mg/l	73%	-8,70
AM	17,1 *	1,5	mg/l	112%	3,94
AN	15,5	1,1	mg/l	102%	0,55
AO			mg/l		
AP	14,86	1,71	mg/l	98%	-0,80
AQ			mg/l		

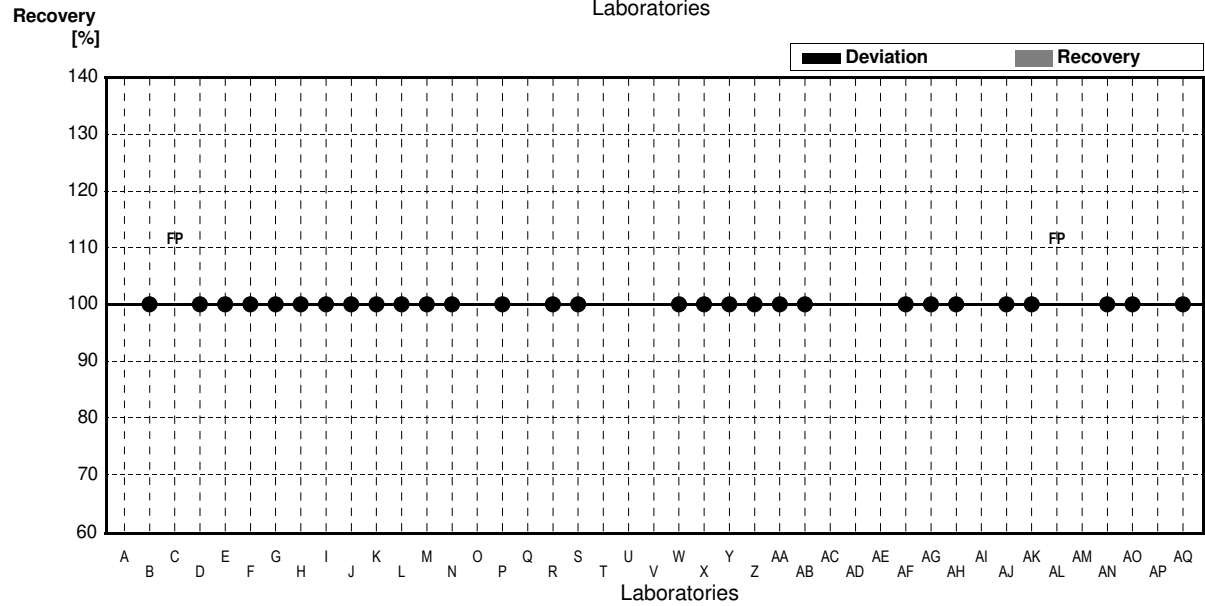
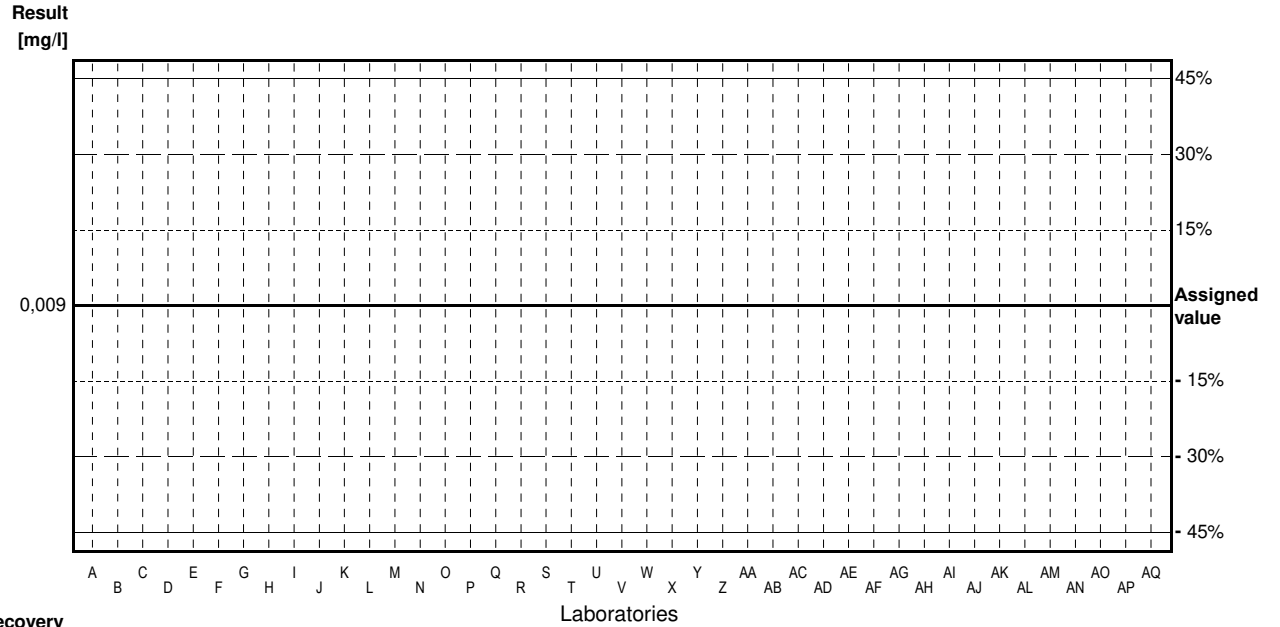
	All results	Outliers excl.	Unit
Mean ± CI(99%)	15,19 ± 1,77	15,00 ± 0,24	mg/l
Recov. ± CI(99%)	99,7 ± 11,6	98,4 ± 1,6	%
SD between labs	3,58	0,45	mg/l
RSD between labs	23,5	3,0	%
n for calculation	31	27	



Sample N177A
Parameter Orthophosphate (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	<0.01		mg/l	•	
C	0.0190	0.002	mg/l	FP	
D	<0.0090		mg/l	•	
E	<0.02		mg/l	•	
F	<0.05		mg/l	•	
G	<0.01		mg/l	•	
H	<0.009		mg/l	•	
I	<0.006		mg/l	•	
J	<0.015		mg/l	•	
K	<0.006		mg/l	•	
L	<0.009		mg/l	•	
M	<0.29		mg/l	•	
N	0.00169	0.00018	mg/l	•	
O			mg/l		
P	<0.010		mg/l	•	
Q			mg/l		
R	0.0090	0.00140	mg/l	•	
S	<0.0150		mg/l	•	
T			mg/l		
U			mg/l		
V			mg/l		
W	<0.015		mg/l	•	
X	0.00799	0.001	mg/l	•	
Y	<0.005	0.0001	mg/l	•	
Z	<0.01		mg/l	•	
AA	<0.005		mg/l	•	
AB	<0.1		mg/l	•	
AC			mg/l		
AD			mg/l		
AE			mg/l		
AF	<0.0015		mg/l	•	
AG	<0.015	0.002	mg/l	•	
AH	<0.01		mg/l	•	
AI			mg/l		
AJ	<0.01		mg/l	•	
AK	<0.200		mg/l	•	
AL	0.0250	0.004	mg/l	FP	
AM			mg/l		
AN	<0.01		mg/l	•	
AO	<0.019		mg/l	•	
AP			mg/l		
AQ	<0.02		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 N177B

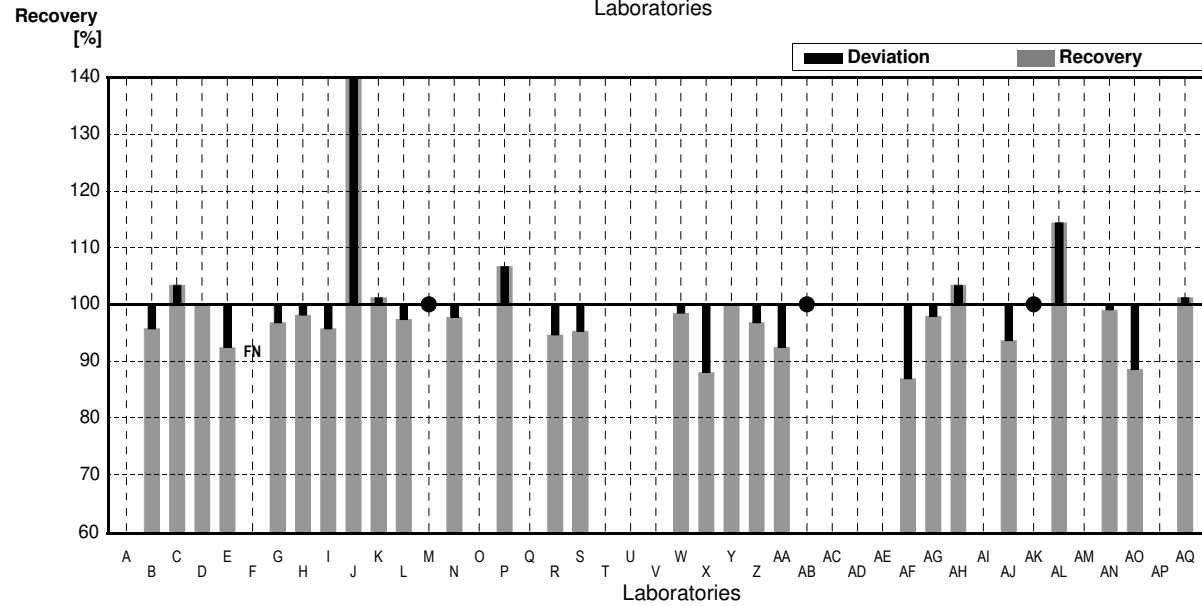
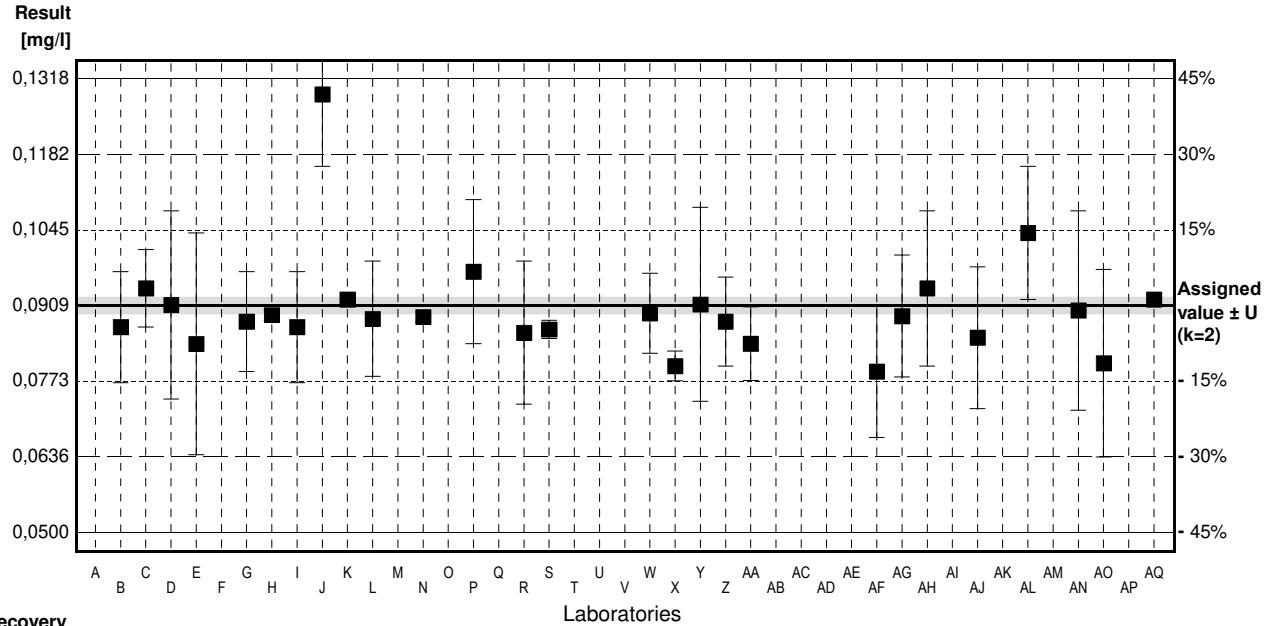
Parameter Orthophosphate (as PO4)

Assigned value ± U (k=2) 0,0909 mg/l ± 0,0015 mg/l

IFA result ± U (k=2) 0,0920 mg/l ± 0,0019 mg/l

Stability test ± U (k=2) 0,0935 mg/l ± 0,0020 mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A			mg/l		
B	0,087	0,01	mg/l	96%	-0,49
C	0,0940	0,007	mg/l	103%	0,39
D	0,091	0,017	mg/l	100%	0,01
E	0,084	0,02	mg/l	92%	-0,87
F	<0,05		mg/l	FN	
G	0,088	0,009	mg/l	97%	-0,37
H	0,0892	0,001	mg/l	98%	-0,21
I	0,087	0,010	mg/l	96%	-0,49
J	0,129 *	0,013	mg/l	142%	4,82
K	0,0920		mg/l	101%	0,14
L	0,0885	0,0104	mg/l	97%	-0,30
M	<0,29		mg/l	.	
N	0,08884	0,00088	mg/l	98%	-0,26
O			mg/l		
P	0,097	0,013	mg/l	107%	0,77
Q			mg/l		
R	0,086	0,0129	mg/l	95%	-0,62
S	0,0866	0,00165	mg/l	95%	-0,54
T			mg/l		
U			mg/l		
V			mg/l		
W	0,0895	0,0072	mg/l	98%	-0,18
X	0,0800	0,0027	mg/l	88%	-1,38
Y	0,0911	0,0175	mg/l	100%	0,03
Z	0,088	0,008	mg/l	97%	-0,37
AA	0,08404	0,00664	mg/l	92%	-0,87
AB	<0,1		mg/l	.	
AC			mg/l		
AD			mg/l		
AE			mg/l		
AF	0,079	0,0119	mg/l	87%	-1,50
AG	0,0890	0,011	mg/l	98%	-0,24
AH	0,094	0,014	mg/l	103%	0,39
AI			mg/l		
AJ	0,0851	0,0128	mg/l	94%	-0,73
AK	<0,200		mg/l	.	
AL	0,104 *	0,012	mg/l	114%	1,66
AM			mg/l		
AN	0,090	0,018	mg/l	99%	-0,11
AO	0,0805	0,0169	mg/l	89%	-1,32
AP			mg/l		
AQ	0,092		mg/l	101%	0,14



	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,0902 ± 0,0050	0,0881 ± 0,0025	mg/l
Recov. ± CI(99%)	99,2 ± 5,5	96,9 ± 2,7	%
SD between labs	0,0094	0,0044	mg/l
RSD between labs	10,4	5,0	%
n for calculation	27	25	

Sample N177A

Parameter Boron

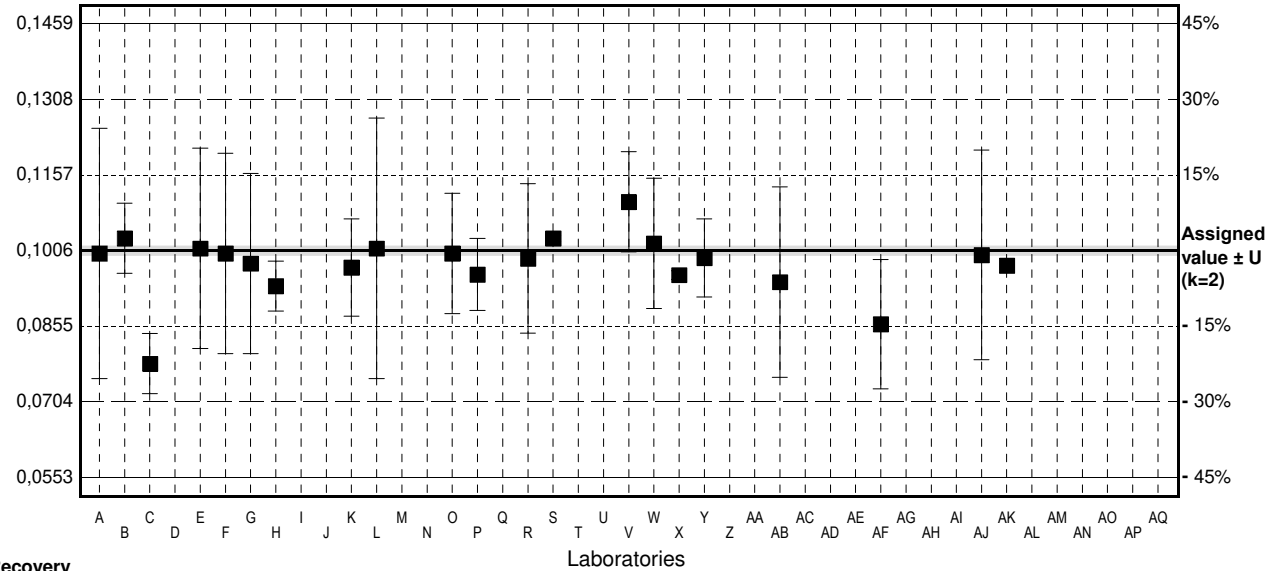
Assigned value ± U (k=2) 0,1006 mg/l ± 0,0009 mg/l

IFA result ± U (k=2) 0,084 mg/l ± 0,007 mg/l

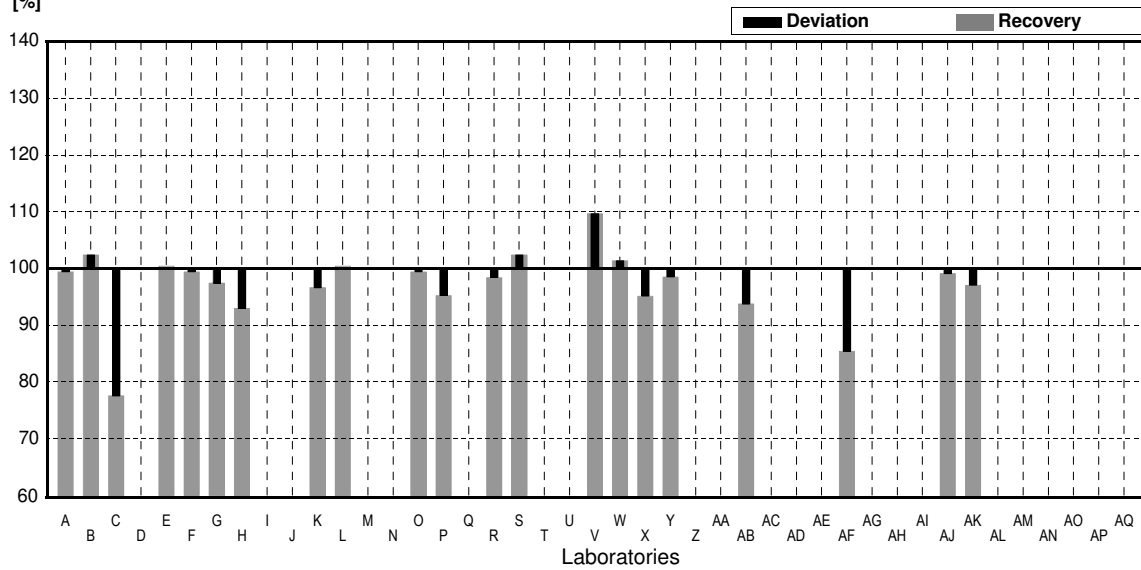
Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	0.100	0.025	mg/l	99%	-0.09
B	0.103	0.007	mg/l	102%	0.34
C	0.0780 *	0.006	mg/l	78%	-3.21
D			mg/l		
E	0.101	0.02	mg/l	100%	0.06
F	0.100	0.020	mg/l	99%	-0.09
G	0.098	0.018	mg/l	97%	-0.37
H	0.0935	0.005	mg/l	93%	-1.01
I			mg/l		
J			mg/l		
K	0.0972	0.00972	mg/l	97%	-0.48
L	0.101	0.026	mg/l	100%	0.06
M			mg/l		
N			mg/l		
O	0.100	0.012	mg/l	99%	-0.09
P	0.0958	0.0072	mg/l	95%	-0.68
Q			mg/l		
R	0.099	0.0149	mg/l	98%	-0.23
S	0.103	0.000588	mg/l	102%	0.34
T			mg/l		
U			mg/l		
V	0.1103 *	0.010	mg/l	110%	1.38
W	0.102	0.013	mg/l	101%	0.20
X	0.0957	0.00087	mg/l	95%	-0.70
Y	0.0991	0.0078	mg/l	99%	-0.21
Z			mg/l		
AA			mg/l		
AB	0.0943	0.019	mg/l	94%	-0.89
AC			mg/l		
AD			mg/l		
AE			mg/l		
AF	0.0859 *	0.0129	mg/l	85%	-2.09
AG			mg/l		
AH			mg/l		
AI			mg/l		
AJ	0.0997	0.0209	mg/l	99%	-0.13
AK	0.09761		mg/l	97%	-0.42
AL			mg/l		
AM			mg/l		
AN			mg/l		
AO			mg/l		
AP			mg/l		
AQ			mg/l		

Result [mg/l]



Recovery [%]



	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,0978 ± 0,0040	0,0989 ± 0,0019	mg/l
Recov. ± CI(99%)	97,2 ± 4,0	98,3 ± 1,9	%
SD between labs	0,0065	0,0028	mg/l
RSD between labs	6,6	2,8	%
n for calculation	21	18	

Sample N177B

Parameter Boron

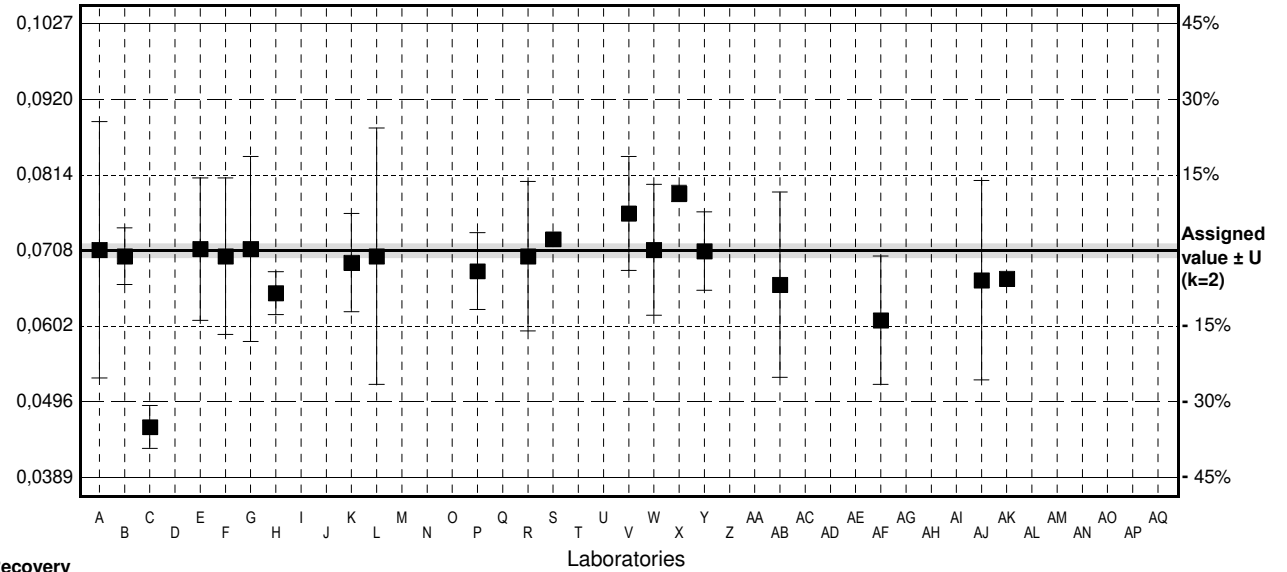
Assigned value ± U (k=2) 0,0708 mg/l ± 0,0010 mg/l

IFA result ± U (k=2) 0,061 mg/l ± 0,005 mg/l

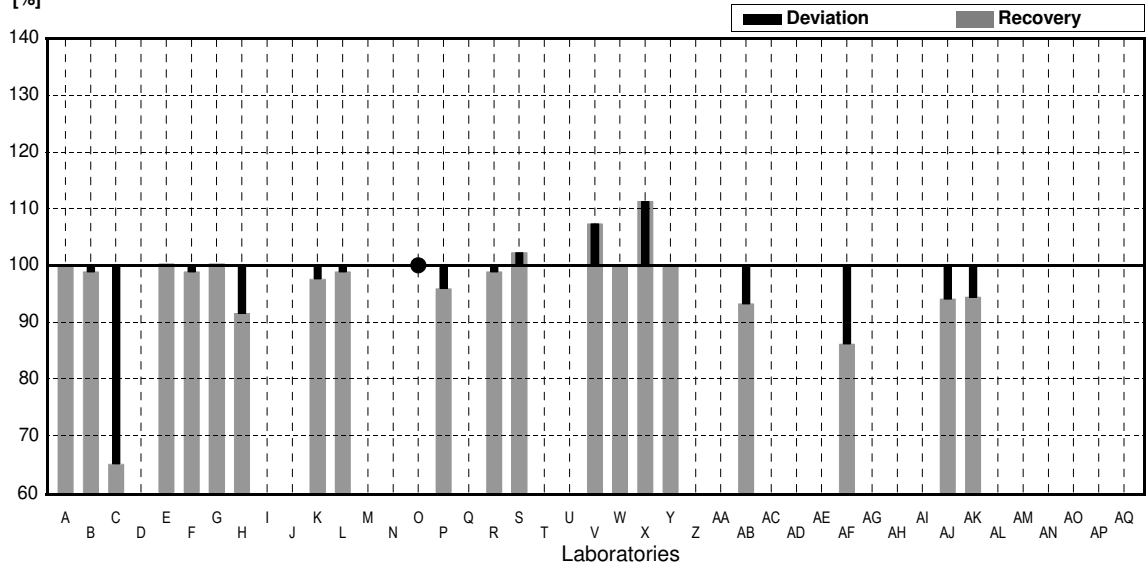
Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	0.0709	0.018	mg/l	100%	0.02
B	0.070	0.004	mg/l	99%	-0.16
C	0.0460 *	0.003	mg/l	65%	-5.00
D			mg/l		
E	0.071	0.01	mg/l	100%	0.04
F	0.070	0.011	mg/l	99%	-0.16
G	0.071	0.013	mg/l	100%	0.04
H	0.0648	0.003	mg/l	92%	-1.21
I			mg/l		
J			mg/l		
K	0.0691	0.00691	mg/l	98%	-0.34
L	0.0700	0.018	mg/l	99%	-0.16
M			mg/l		
N			mg/l		
O	<0.100	0.012	mg/l	*	
P	0.0679	0.0054	mg/l	96%	-0.59
Q			mg/l		
R	0.070	0.0105	mg/l	99%	-0.16
S	0.0724	0.000566	mg/l	102%	0.32
T			mg/l		
U			mg/l		
V	0.076	0.008	mg/l	107%	1.05
W	0.0709	0.0092	mg/l	100%	0.02
X	0.0788 *	0.00113	mg/l	111%	1.61
Y	0.0707	0.0055	mg/l	100%	-0.02
Z			mg/l		
AA			mg/l		
AB	0.0660	0.013	mg/l	93%	-0.97
AC			mg/l		
AD			mg/l		
AE			mg/l		
AF	0.0610 *	0.009	mg/l	86%	-1.98
AG			mg/l		
AH			mg/l		
AI			mg/l		
AJ	0.0666	0.0140	mg/l	94%	-0.85
AK	0.06683		mg/l	94%	-0.80
AL			mg/l		
AM			mg/l		
AN			mg/l		
AO			mg/l		
AP			mg/l		
AQ			mg/l		

Result [mg/l]



Recovery [%]



	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,0685 ± 0,0042	0,0697 ± 0,0019	mg/l
Recov. ± CI(99%)	96,7 ± 5,9	98,4 ± 2,7	%
SD between labs	0,0065	0,0027	mg/l
RSD between labs	9,5	3,8	%
n for calculation	20	17	

Sample N177A

Parameter DOC (as C)

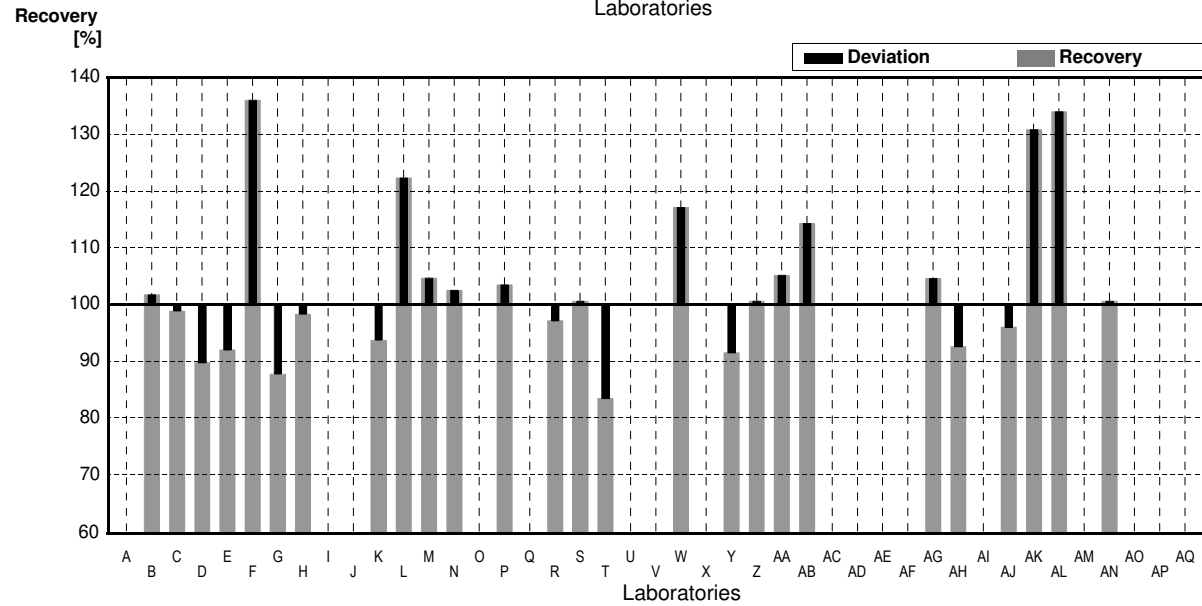
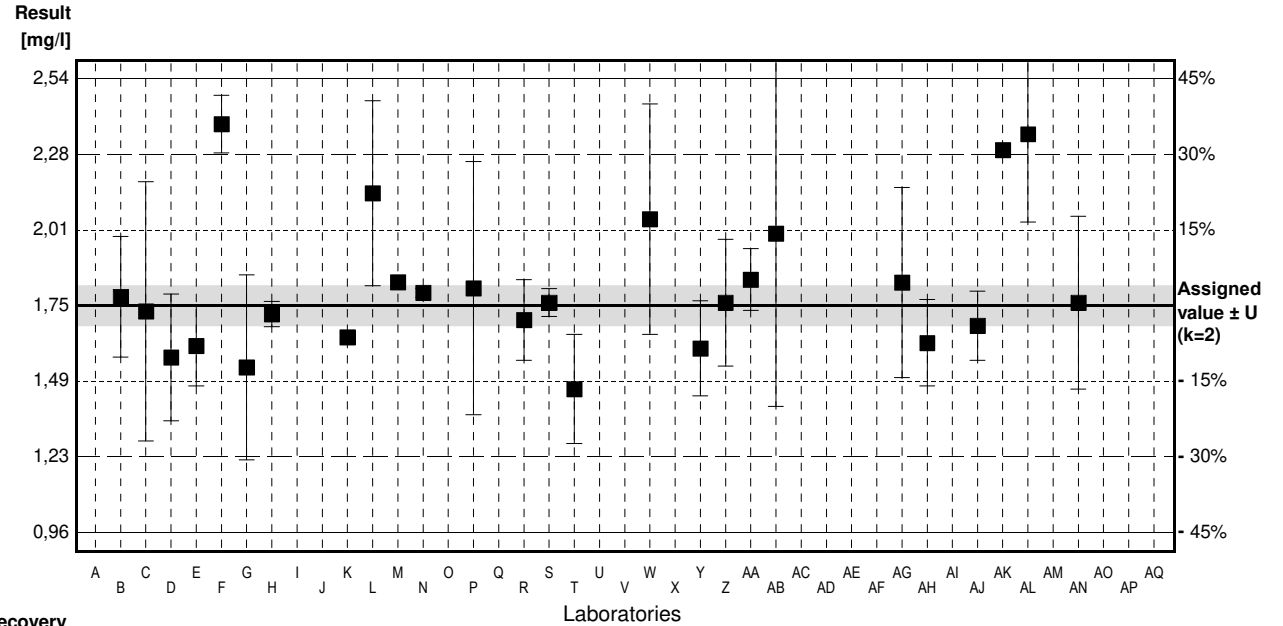
Assigned value ± U (k=2) 1,75 mg/l ± 0,07 mg/l

IFA result ± U (k=2) 1,69 mg/l ± 0,07 mg/l

Stability test ± U (k=2) 1,65 mg/l ± 0,06 mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A			mg/l		
B	1,78	0,21	mg/l	102%	0,32
C	1,73	0,45	mg/l	99%	-0,21
D	1,57	0,22	mg/l	90%	-1,90
E	1,61	0,14	mg/l	92%	-1,48
F	2,38 *	0,1	mg/l	136%	6,67
G	1,535	0,321	mg/l	88%	-2,28
H	1,72	0,044	mg/l	98%	-0,32
I			mg/l		
J			mg/l		
K	1,64		mg/l	94%	-1,16
L	2,14	0,321	mg/l	122%	4,13
M	1,831		mg/l	105%	0,86
N	1,794	0,015	mg/l	103%	0,47
O			mg/l		
P	1,81	0,44	mg/l	103%	0,63
Q			mg/l		
R	1,70	0,140	mg/l	97%	-0,53
S	1,76	0,0486	mg/l	101%	0,11
T	1,46	0,19	mg/l	83%	-3,07
U			mg/l		
V			mg/l		
W	2,05	0,40	mg/l	117%	3,17
X			mg/l		
Y	1,601	0,165	mg/l	91%	-1,58
Z	1,76	0,22	mg/l	101%	0,11
AA	1,840	0,107	mg/l	105%	0,95
AB	2,00	0,60	mg/l	114%	2,65
AC			mg/l		
AD			mg/l		
AE			mg/l		
AF			mg/l		
AG	1,83	0,33	mg/l	105%	0,85
AH	1,62	0,15	mg/l	93%	-1,38
AI			mg/l		
AJ	1,68	0,12	mg/l	96%	-0,74
AK	2,29 *		mg/l	131%	5,71
AL	2,345 *	0,305	mg/l	134%	6,30
AM			mg/l		
AN	1,76	0,3	mg/l	101%	0,11
AO			mg/l		
AP			mg/l		
AQ			mg/l		

	All results	Outliers excl.	Unit
Mean ± CI(99%)	1,82 ± 0,13	1,75 ± 0,10	mg/l
Recov. ± CI(99%)	103,8 ± 7,7	99,9 ± 5,4	%
SD between labs	0,25	0,16	mg/l
RSD between labs	13,5	9,2	%
n for calculation	26	23	



Sample N177B

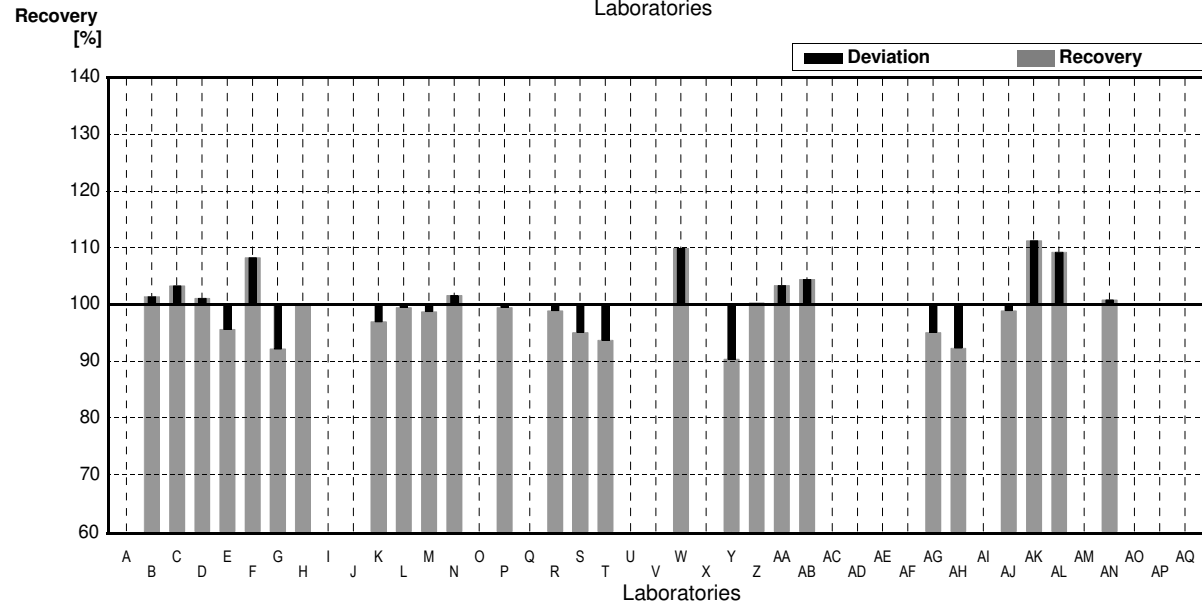
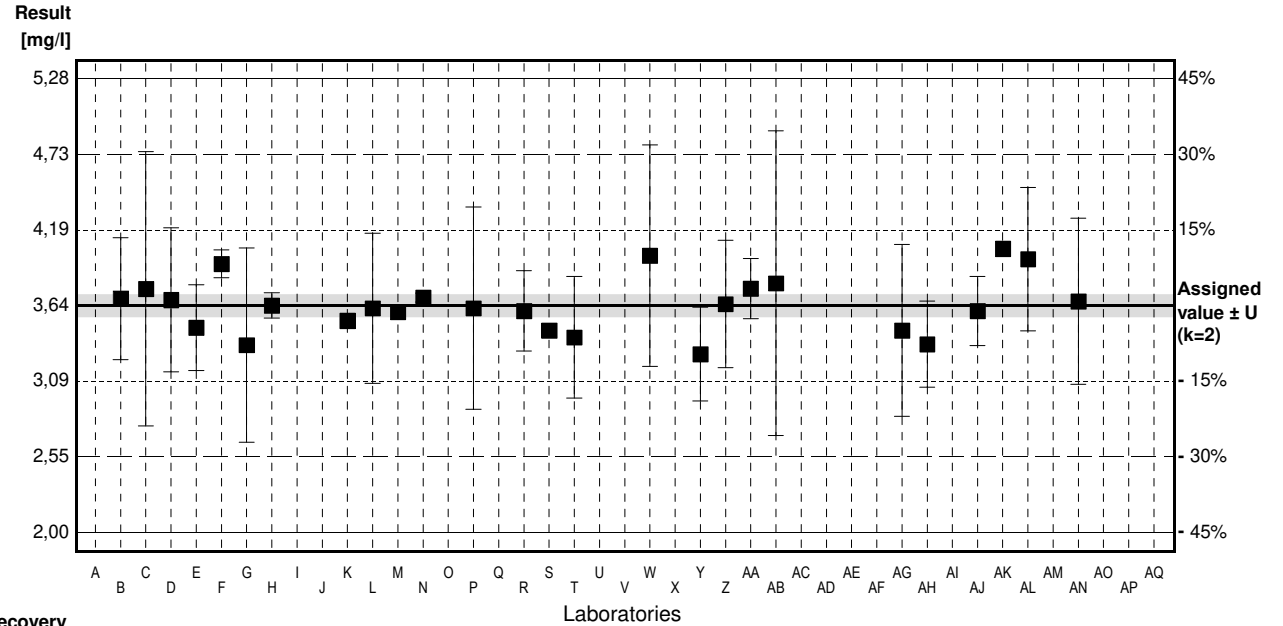
Parameter DOC (as C)

Assigned value ± U (k=2) 3,64 mg/l ± 0,08 mg/l

IFA result ± U (k=2) 3,57 mg/l ± 0,09 mg/l

Stability test ± U (k=2) 3,51 mg/l ± 0,08 mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A			mg/l		
B	3,69	0,44	mg/l	101%	0,25
C	3,76	0,99	mg/l	103%	0,61
D	3,68	0,52	mg/l	101%	0,20
E	3,48	0,31	mg/l	96%	-0,81
F	3,94	0,1	mg/l	108%	1,53
G	3,354	0,702	mg/l	92%	-1,46
H	3,64	0,092	mg/l	100%	0,00
I			mg/l		
J			mg/l		
K	3,53		mg/l	97%	-0,56
L	3,62	0,543	mg/l	99%	-0,10
M	3,594		mg/l	99%	-0,23
N	3,697	0,033	mg/l	102%	0,29
O			mg/l		
P	3,62	0,73	mg/l	99%	-0,10
Q			mg/l		
R	3,60	0,290	mg/l	99%	-0,20
S	3,46	0,0476	mg/l	95%	-0,92
T	3,41	0,44	mg/l	94%	-1,17
U			mg/l		
V			mg/l		
W	4,00	0,80	mg/l	110%	1,83
X			mg/l		
Y	3,289	0,338	mg/l	90%	-1,79
Z	3,65	0,46	mg/l	100%	0,05
AA	3,762	0,218	mg/l	103%	0,62
AB	3,80	1,1	mg/l	104%	0,81
AC			mg/l		
AD			mg/l		
AE			mg/l		
AF			mg/l		
AG	3,46	0,62	mg/l	95%	-0,92
AH	3,36	0,31	mg/l	92%	-1,42
AI			mg/l		
AJ	3,60	0,25	mg/l	99%	-0,20
AK	4,05		mg/l	111%	2,09
AL	3,975	0,517	mg/l	109%	1,70
AM			mg/l		
AN	3,67	0,6	mg/l	101%	0,15
AO			mg/l		
AP			mg/l		
AQ			mg/l		

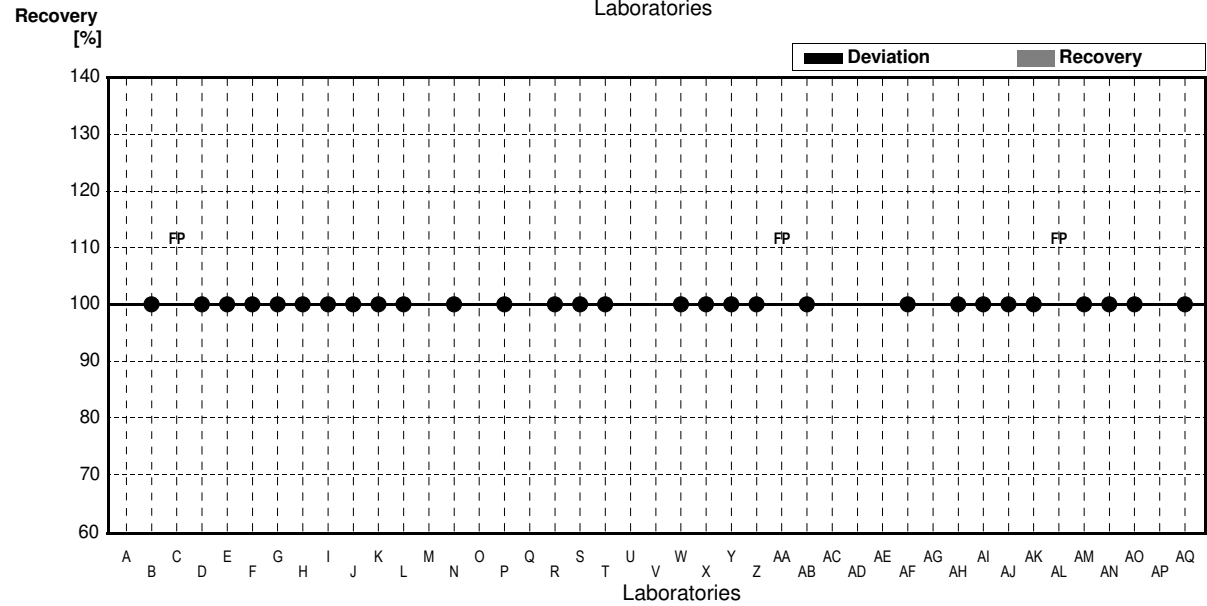
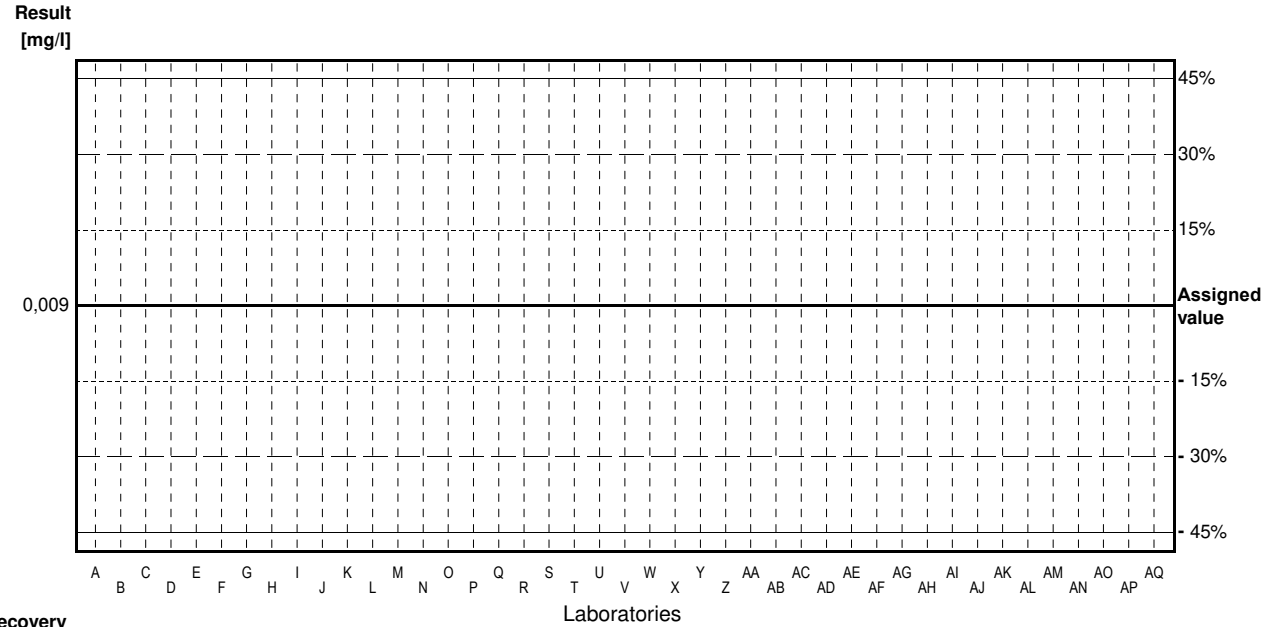


	All results	Outliers excl.	Unit
Mean ± CI(99%)	3,64 ± 0,11	3,64 ± 0,11	mg/l
Recov. ± CI(99%)	100,1 ± 3,0	100,1 ± 3,0	%
SD between labs	0,20	0,20	mg/l
RSD between labs	5,5	5,5	%
n for calculation	26	26	

Sample N177A
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	<0.03		mg/l	•	
C	0.065	0.006	mg/l	FP	
D	<0.0090		mg/l	•	
E	<0.05		mg/l	•	
F	<0.05		mg/l	•	
G	<0.01		mg/l	•	
H	<0.009		mg/l	•	
I	<0.006		mg/l	•	
J	<0.005		mg/l	•	
K	<0.006		mg/l	•	
L	<0.009		mg/l	•	
M			mg/l		
N	0.00482	0.00101	mg/l	•	
O			mg/l		
P	<0.010		mg/l	•	
Q			mg/l		
R	<0.0153		mg/l	•	
S	<0.0150		mg/l	•	
T	<0.00613		mg/l	•	
U			mg/l		
V			mg/l		
W	<0.015		mg/l	•	
X	0.00502	0.00021	mg/l	•	
Y	<0.005	0.0001	mg/l	•	
Z	<0.01		mg/l	•	
AA	0.01441	0.00117	mg/l	FP	
AB	<0.062		mg/l	•	
AC			mg/l		
AD			mg/l		
AE			mg/l		
AF	<0.011		mg/l	•	
AG			mg/l		
AH	<0.01		mg/l	•	
AI	<0.1		mg/l	•	
AJ	<0.01		mg/l	•	
AK	<0.0210		mg/l	•	
AL	0.0250	0.004	mg/l	FP	
AM	0.00100	0.05	mg/l	•	
AN	<0.013		mg/l	•	
AO	<0.02		mg/l	•	
AP			mg/l		
AQ	<0.05		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 N177B

Parameter Total P (as PO4)

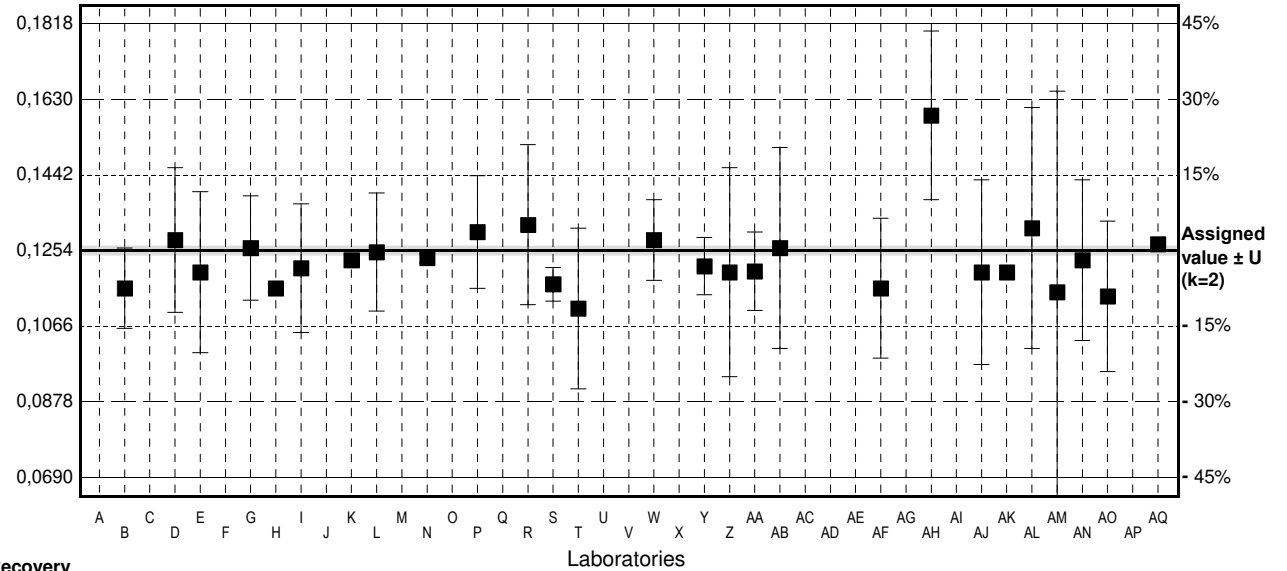
Assigned value ± U (k=2) 0,1254 mg/l ± 0,0011 mg/l

IFA result ± U (k=2) 0,129 mg/l ± 0,022 mg/l

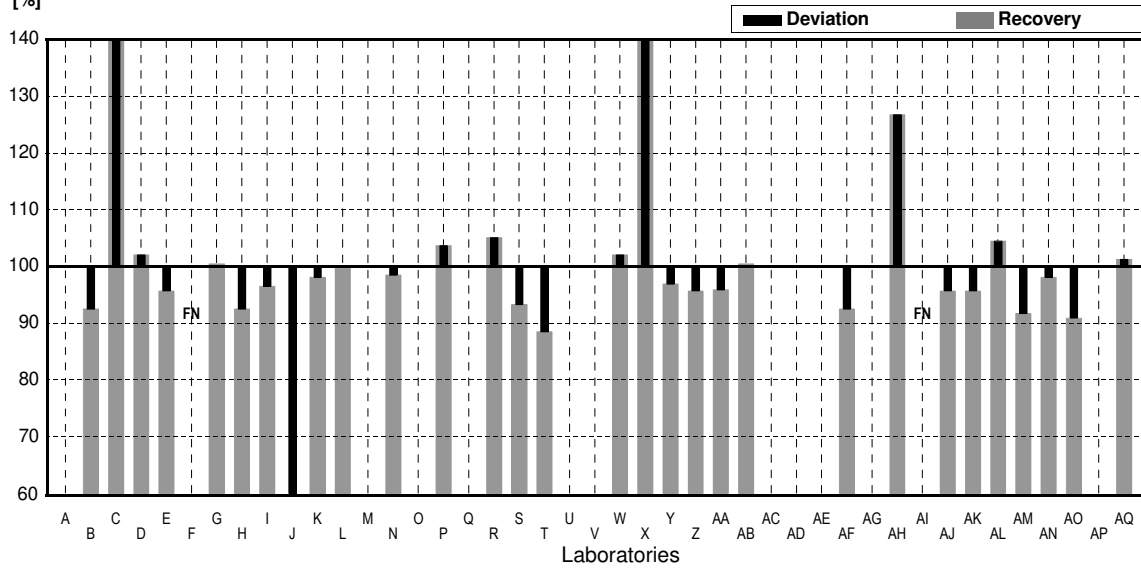
Stability test mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A			mg/l		
B	0.116	0.01	mg/l	93%	-0.87
C	0.187 *	0.002	mg/l	149%	5.71
D	0.128	0.018	mg/l	102%	0.24
E	0.120	0.02	mg/l	96%	-0.50
F	<0.05		mg/l	FN	
G	0.126	0.013	mg/l	100%	0.06
H	0.116	0.001	mg/l	93%	-0.87
I	0.121	0.016	mg/l	96%	-0.41
J	0.0420 *	0.004	mg/l	33%	-7.73
K	0.123		mg/l	98%	-0.22
L	0.125	0.0147	mg/l	100%	-0.04
M			mg/l		
N	0.12352	0.00118	mg/l	99%	-0.17
O			mg/l		
P	0.130	0.014	mg/l	104%	0.43
Q			mg/l		
R	0.1318	0.0199	mg/l	105%	0.59
S	0.117	0.00418	mg/l	93%	-0.78
T	0.110953	0.02	mg/l	88%	-1.34
U			mg/l		
V			mg/l		
W	0.128	0.010	mg/l	102%	0.24
X	0.187 *	0.00127	mg/l	149%	5.71
Y	0.1215	0.0071	mg/l	97%	-0.36
Z	0.120	0.026	mg/l	96%	-0.50
AA	0.12023	0.00974	mg/l	96%	-0.48
AB	0.126	0.025	mg/l	100%	0.06
AC			mg/l		
AD			mg/l		
AE			mg/l		
AF	0.116	0.0174	mg/l	93%	-0.87
AG			mg/l		
AH	0.159 *	0.021	mg/l	127%	3.12
AI	<0.1		mg/l	FN	
AJ	0.120	0.023	mg/l	96%	-0.50
AK	0.120		mg/l	96%	-0.50
AL	0.131	0.030	mg/l	104%	0.52
AM	0.115	0.05	mg/l	92%	-0.96
AN	0.123	0.02	mg/l	98%	-0.22
AO	0.114	0.0187	mg/l	91%	-1.06
AP			mg/l		
AQ	0.127		mg/l	101%	0.15

Result [mg/l]



Recovery [%]



	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,1248 ± 0,0121	0,1219 ± 0,0030	mg/l
Recov. ± CI(99%)	99,5 ± 9,7	97,2 ± 2,4	%
SD between labs	0,0240	0,0056	mg/l
RSD between labs	19,3	4,6	%
n for calculation	30	26	

Sample N177A

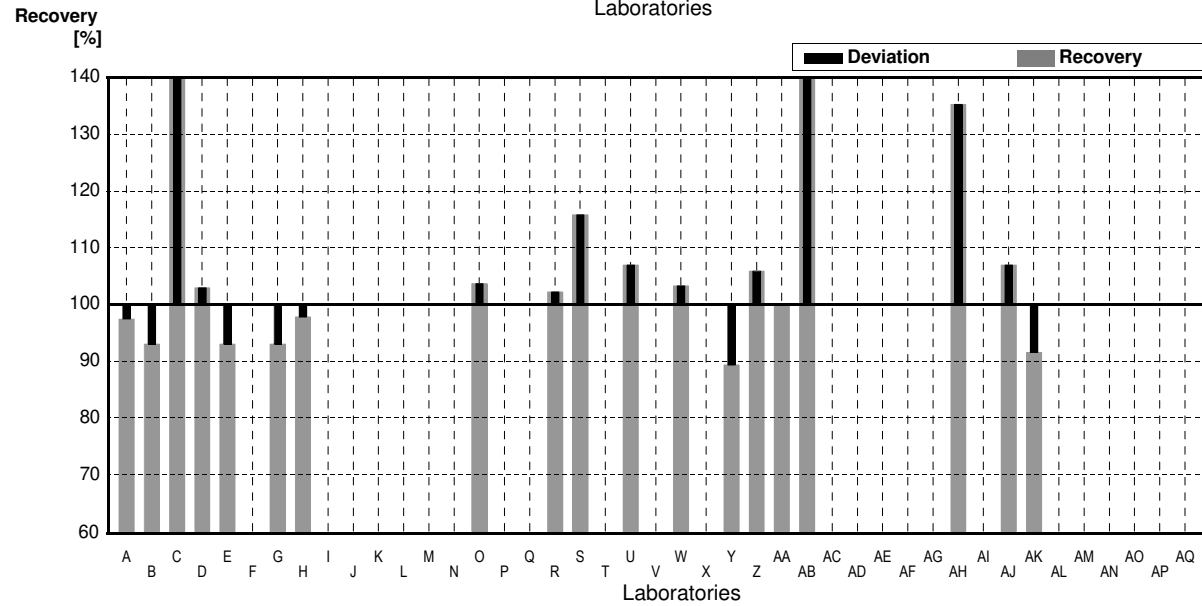
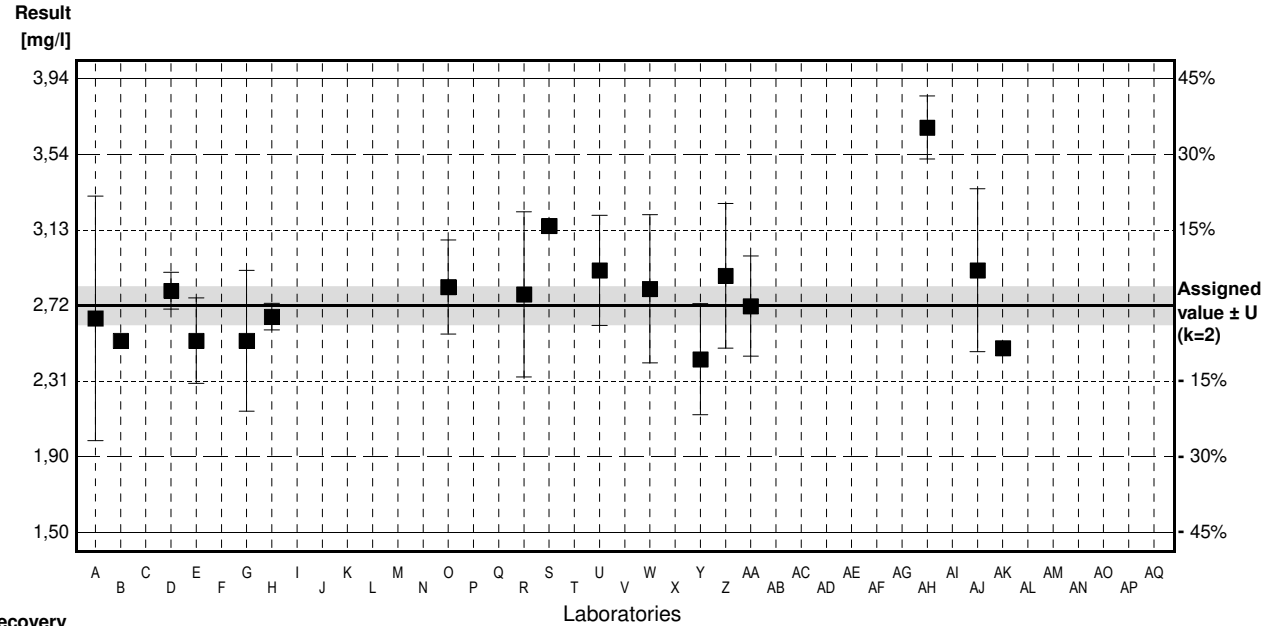
Parameter KMnO4-Index (as O2)

Assigned value ± U (k=2) 2,72 mg/l ± 0,10 mg/l

IFA result ± U (k=2) 2,76 mg/l ± 0,27 mg/l

Stability test ± U (k=2) 2,88 mg/l ± 0,29 mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	2,65	0,66	mg/l	97%	-0,32
B	2,53		mg/l	93%	-0,86
C	4,11 *	1,42	mg/l	151%	6,31
D	2,80	0,10	mg/l	103%	0,36
E	2,53	0,23	mg/l	93%	-0,86
F			mg/l		
G	2,53	0,38	mg/l	93%	-0,86
H	2,66	0,072	mg/l	98%	-0,27
I			mg/l		
J			mg/l		
K			mg/l		
L			mg/l		
M			mg/l		
N			mg/l		
O	2,82	0,254	mg/l	104%	0,45
P			mg/l		
Q			mg/l		
R	2,78	0,445	mg/l	102%	0,27
S	3,15		mg/l	116%	1,95
T			mg/l		
U	2,909	0,297	mg/l	107%	0,86
V			mg/l		
W	2,81	0,40	mg/l	103%	0,41
X			mg/l		
Y	2,43	0,3	mg/l	89%	-1,32
Z	2,88	0,39	mg/l	106%	0,73
AA	2,717	0,27	mg/l	100%	-0,01
AB	6,00 *	1,8	mg/l	221%	14,89
AC			mg/l		
AD			mg/l		
AE			mg/l		
AF			mg/l		
AG			mg/l		
AH	3,68 *	0,17	mg/l	135%	4,36
AI			mg/l		
AJ	2,91	0,44	mg/l	107%	0,86
AK	2,49		mg/l	92%	-1,04
AL			mg/l		
AM			mg/l		
AN			mg/l		
AO			mg/l		
AP			mg/l		
AQ			mg/l		



	All results	Outliers excl.	Unit
Mean ± CI(99%)	3,02 ± 0,55	2,72 ± 0,14	mg/l
Recov. ± CI(99%)	111,0 ± 20,2	100,2 ± 5,3	%
SD between labs	0,83	0,19	mg/l
RSD between labs	27,5	7,1	%
n for calculation	19	16	

Sample N177B

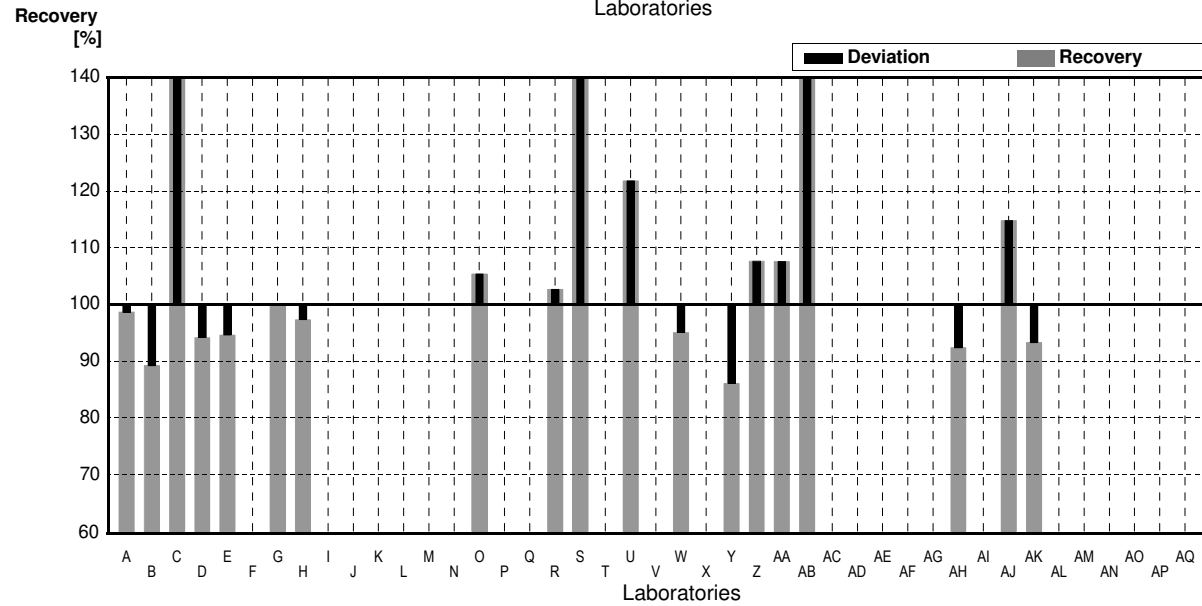
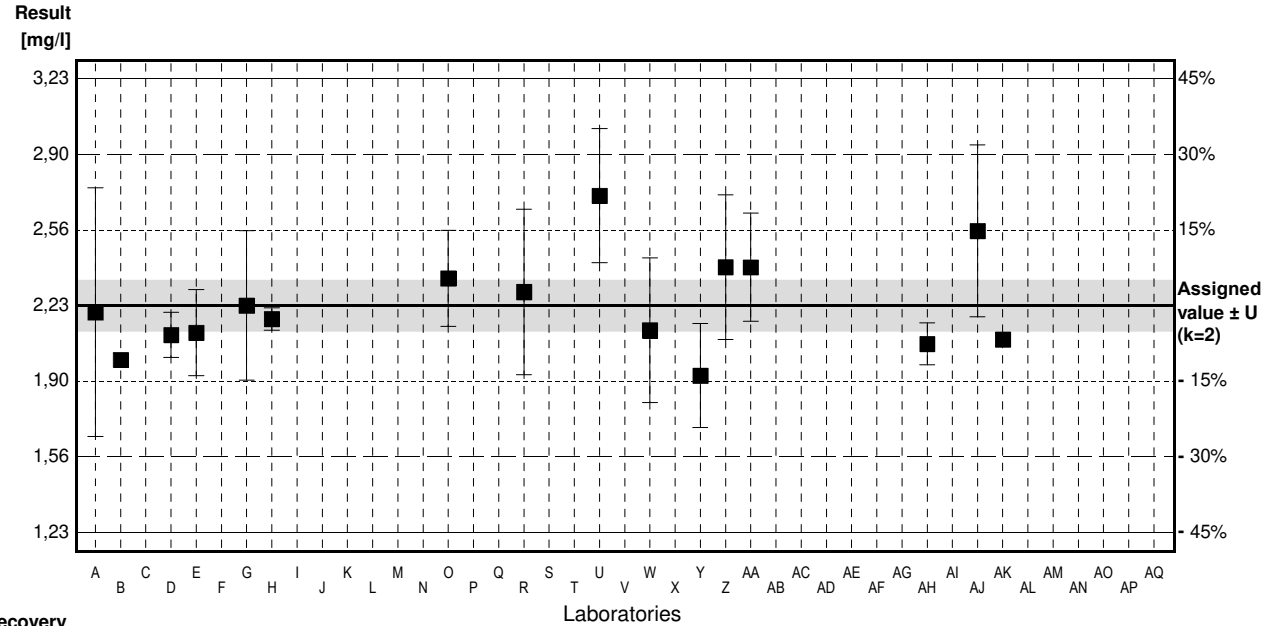
Parameter KMnO4-Index (as O2)

Assigned value ± U (k=2) 2,23 mg/l ± 0,11 mg/l

IFA result ± U (k=2) 2,17 mg/l ± 0,22 mg/l

Stability test ± U (k=2) 2,28 mg/l ± 0,23 mg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	2,20	0,55	mg/l	99%	-0,17
B	1,99		mg/l	89%	-1,33
C	3,82 *	1,32	mg/l	171%	8,80
D	2,10	0,10	mg/l	94%	-0,72
E	2,11	0,19	mg/l	95%	-0,66
F			mg/l		
G	2,23	0,33	mg/l	100%	0,00
H	2,17	0,050	mg/l	97%	-0,33
I			mg/l		
J			mg/l		
K			mg/l		
L			mg/l		
M			mg/l		
N			mg/l		
O	2,35	0,212	mg/l	105%	0,66
P			mg/l		
Q			mg/l		
R	2,29	0,366	mg/l	103%	0,33
S	3,61 *		mg/l	162%	7,64
T			mg/l		
U	2,716	0,297	mg/l	122%	2,69
V			mg/l		
W	2,12	0,32	mg/l	95%	-0,61
X			mg/l		
Y	1,92	0,23	mg/l	86%	-1,72
Z	2,40	0,32	mg/l	108%	0,94
AA	2,399	0,239	mg/l	108%	0,94
AB	6,40 *	1,9	mg/l	287%	23,09
AC			mg/l		
AD			mg/l		
AE			mg/l		
AF			mg/l		
AG			mg/l		
AH	2,06	0,093	mg/l	92%	-0,94
AI			mg/l		
AJ	2,56	0,38	mg/l	115%	1,83
AK	2,08		mg/l	93%	-0,83
AL			mg/l		
AM			mg/l		
AN			mg/l		
AO			mg/l		
AP			mg/l		
AQ			mg/l		



	All results	Outliers excl.	Unit
Mean ± CI(99%)	2,61 ± 0,69	2,23 ± 0,16	mg/l
Recov. ± CI(99%)	116,9 ± 31,1	100,0 ± 7,0	%
SD between labs	1,05	0,21	mg/l
RSD between labs	40,2	9,5	%
n for calculation	19	16	



Labororientierte Auswertung
Laboratory Oriented Part

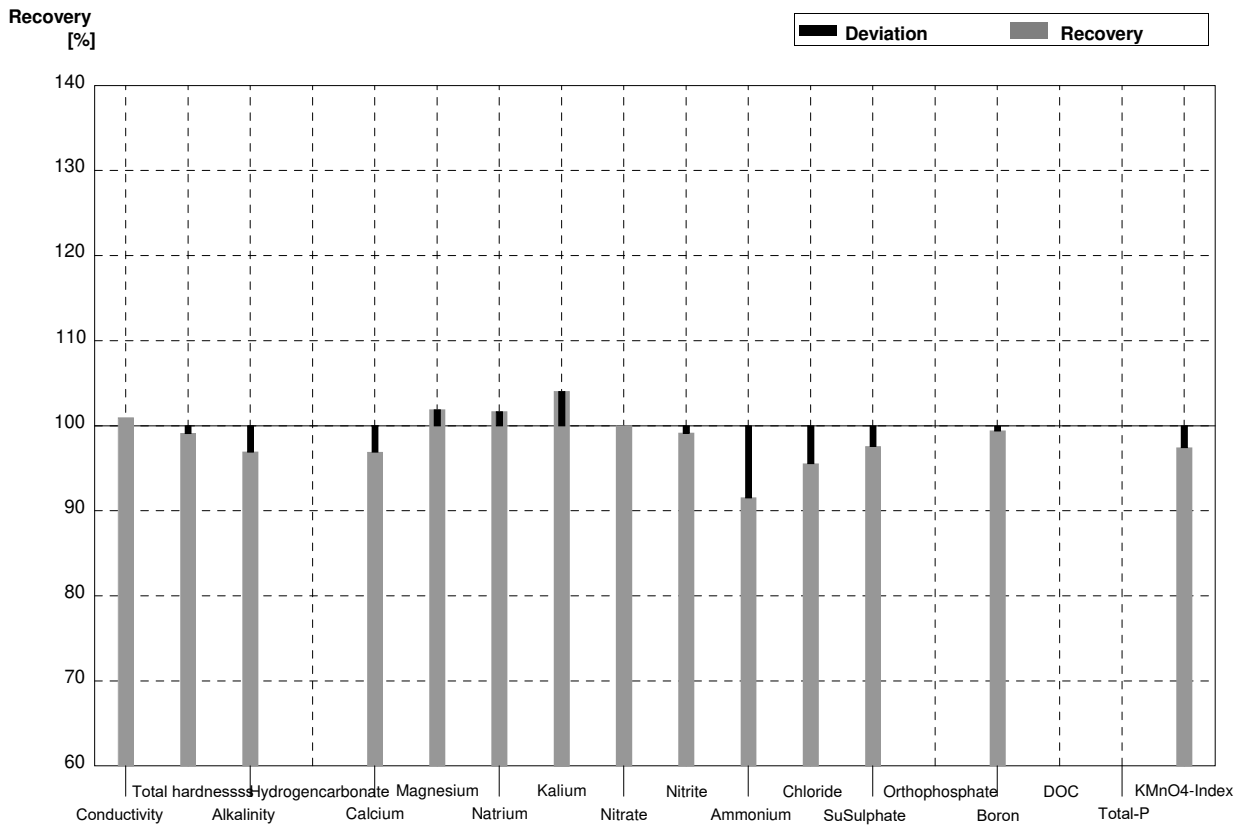
Eignungsprüfungsrunde / Proficiency testing round
N177

Nährstoffe
Nutrients / Major Ions

Versand / Dispatch: 12. 05. 2025

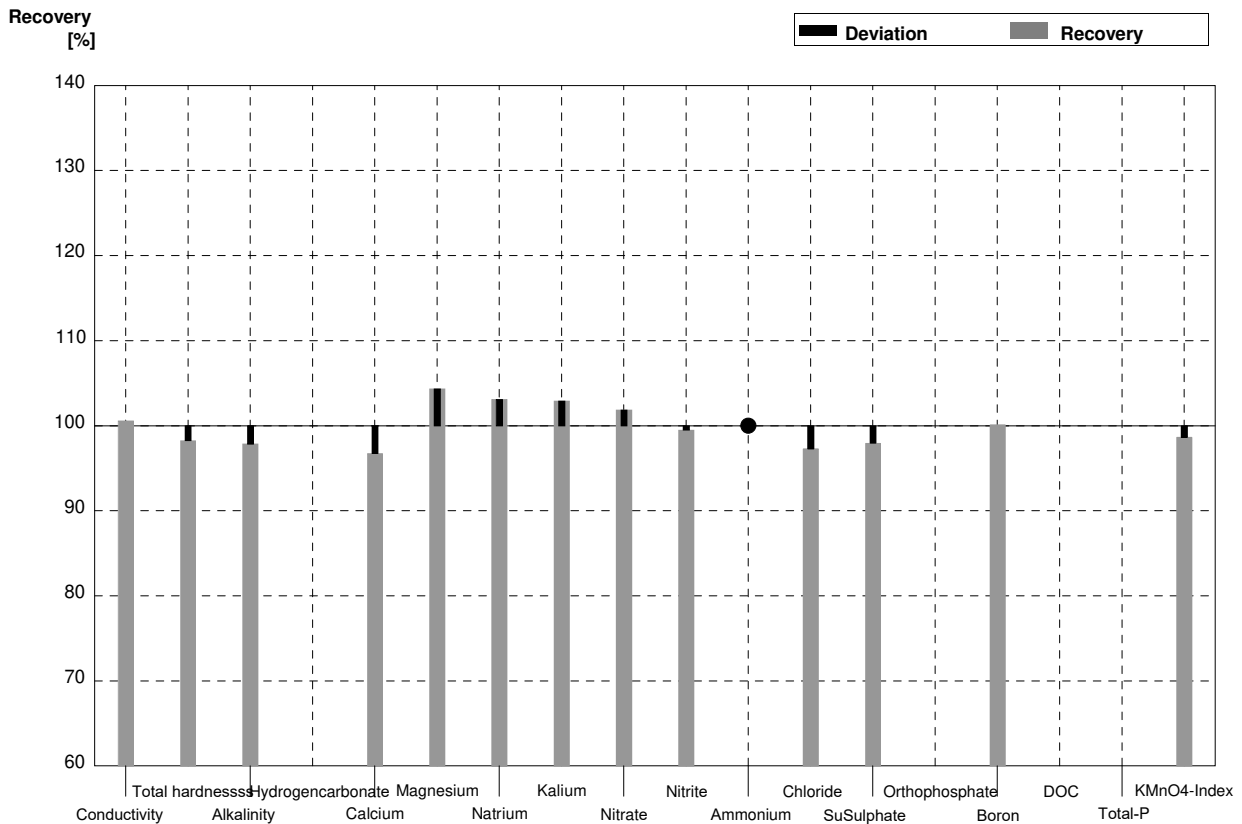
Sample N177A
Laboratory A

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	430	10	µS/cm	101%
Total hardness	1,453	0,017	1,44	0,29	mmol/l	99%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,52	0,52	mmol/l	97%
Hydrogen carbonate	155,5	1,9			mg/l	
Calcium	35,6	0,6	34,5	7,0	mg/l	97%
Magnesium	13,74	0,16	14,0	2,8	mg/l	102%
Sodium	29,8	0,4	30,3	6,1	mg/l	102%
Potassium	3,94	0,03	4,10	0,82	mg/l	104%
Nitrate (as NO3)	24,2	0,6	24,21	2,5	mg/l	100%
Nitrite (as NO2)	0,0811	0,0003	0,0804	0,01	mg/l	99%
Ammonium (as NH4)	0,071	0,003	0,065	0,01	mg/l	92%
Chloride	21,54	0,05	20,58	2,1	mg/l	96%
Sulphate (as SO4)	35,6	0,4	34,74	3,5	mg/l	98%
Orthophosphate (as PO4)	<0,009				mg/l	
Boron	0,1006	0,0009	0,100	0,025	mg/l	99%
DOC (as C)	1,75	0,07			mg/l	
Total P (as PO4)	<0,009				mg/l	
KMnO4-Index (as O2)	2,72	0,10	2,65	0,66	mg/l	97%



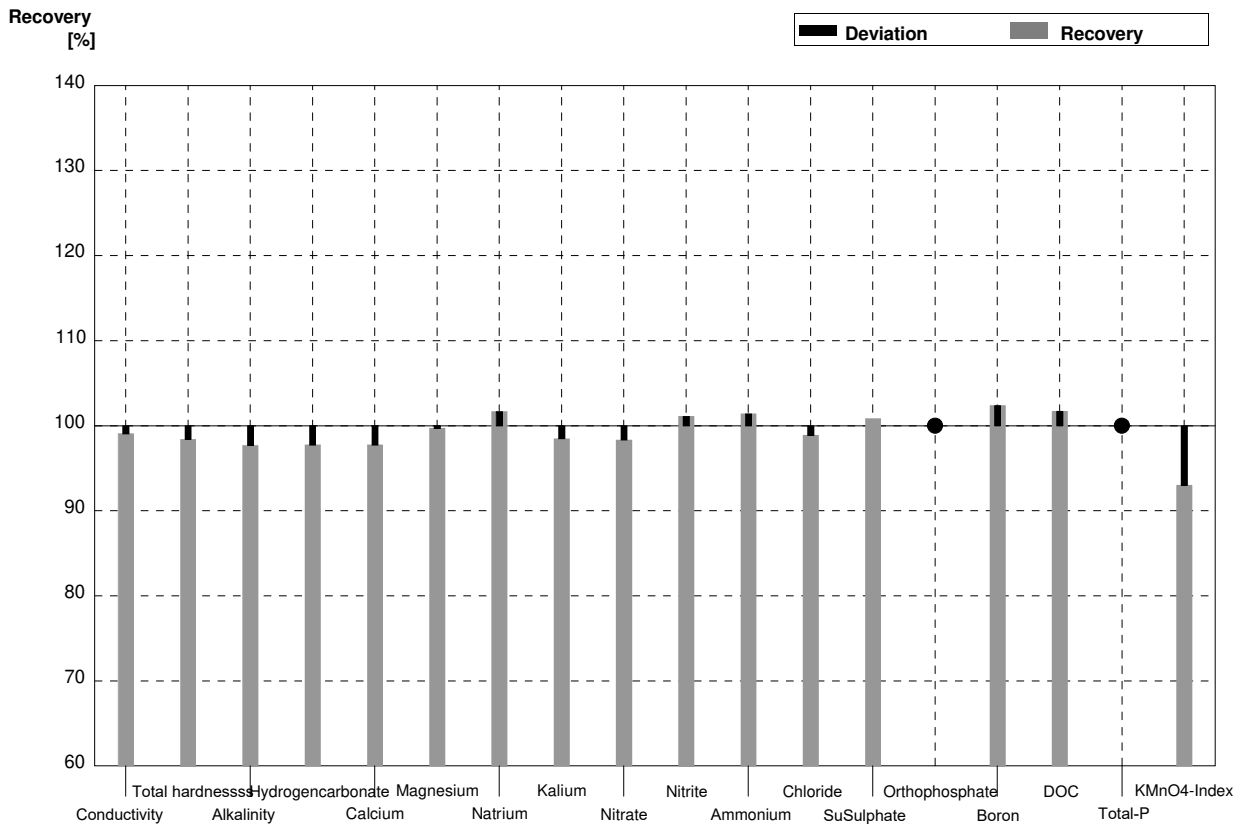
Sample N177B
Laboratory A

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	352	10	µS/cm	101%
Total hardness	1,038	0,012	1,02	0,21	mmol/l	98%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,38	0,14	mmol/l	98%
Hydrogen carbonate	83,0	1,0			mg/l	
Calcium	30,9	0,5	29,9	6,0	mg/l	97%
Magnesium	6,47	0,08	6,75	1,4	mg/l	104%
Sodium	25,8	0,2	26,6	4,0	mg/l	103%
Potassium	3,07	0,02	3,16	0,64	mg/l	103%
Nitrate (as NO3)	45,4	1,2	46,25	4,7	mg/l	102%
Nitrite (as NO2)	0,0406	0,0012	0,0404	0,01	mg/l	100%
Ammonium (as NH4)	<0,01		<0,010		mg/l	•
Chloride	29,31	0,13	28,52	2,9	mg/l	97%
Sulphate (as SO4)	15,24	0,18	14,93	1,5	mg/l	98%
Orthophosphate (as PO4)	0,0909	0,0015			mg/l	
Boron	0,0708	0,0010	0,0709	0,018	mg/l	100%
DOC (as C)	3,64	0,08			mg/l	
Total P (as PO4)	0,1254	0,0011			mg/l	
KMnO4-Index (as O2)	2,23	0,11	2,20	0,55	mg/l	99%



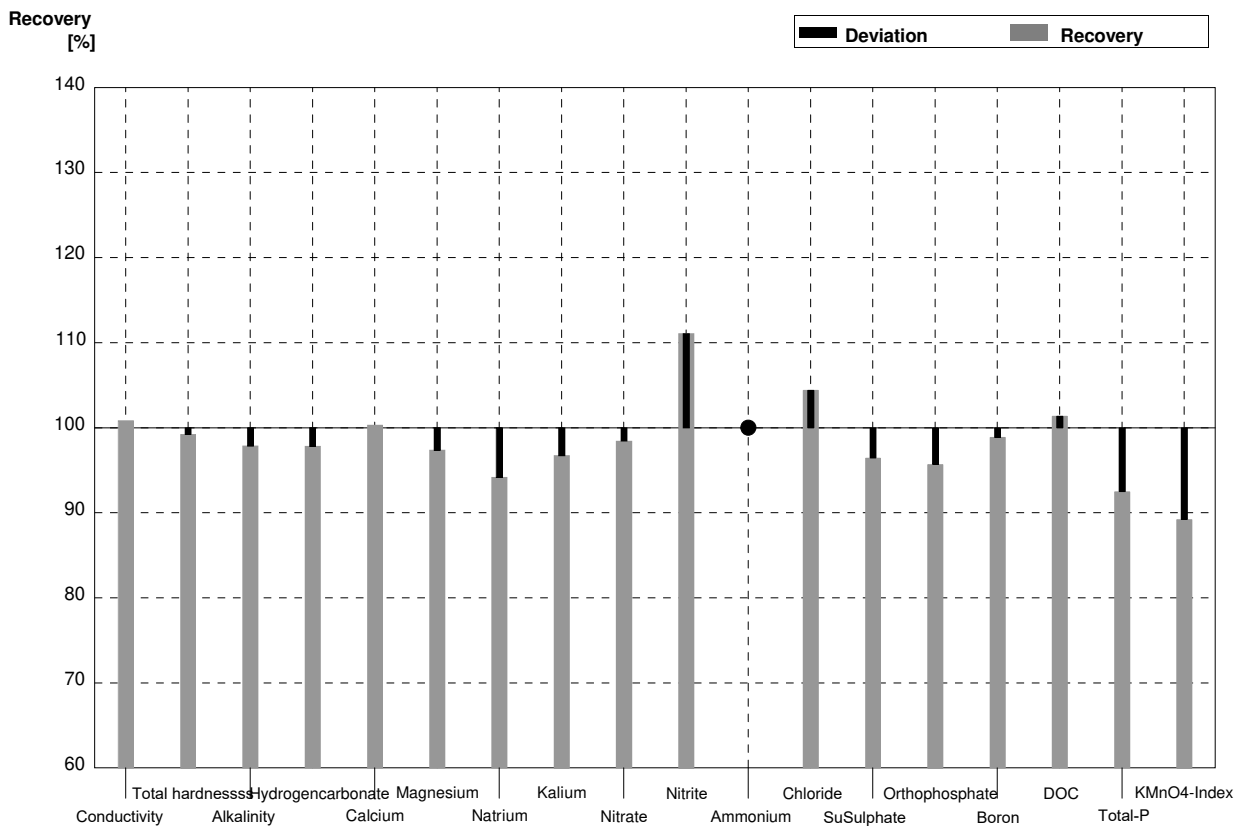
Sample N177A
Laboratory B

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	422		µS/cm	99%
Total hardness	1,453	0,017	1,43		mmol/l	98%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,54	0,18	mmol/l	98%
Hydrogen carbonate	155,5	1,9	152		mg/l	98%
Calcium	35,6	0,6	34,8	2,9	mg/l	98%
Magnesium	13,74	0,16	13,7	1,5	mg/l	100%
Sodium	29,8	0,4	30,3	2,6	mg/l	102%
Potassium	3,94	0,03	3,88	0,4	mg/l	98%
Nitrate (as NO3)	24,2	0,6	23,8	3,4	mg/l	98%
Nitrite (as NO2)	0,0811	0,0003	0,082	0,01	mg/l	101%
Ammonium (as NH4)	0,071	0,003	0,072	0,011	mg/l	101%
Chloride	21,54	0,05	21,3	3,0	mg/l	99%
Sulphate (as SO4)	35,6	0,4	35,9	2,9	mg/l	101%
Orthophosphate (as PO4)	<0,009		<0,01		mg/l	•
Boron	0,1006	0,0009	0,103	0,007	mg/l	102%
DOC (as C)	1,75	0,07	1,78	0,21	mg/l	102%
Total P (as PO4)	<0,009		<0,03		mg/l	•
KMnO4-Index (as O2)	2,72	0,10	2,53		mg/l	93%



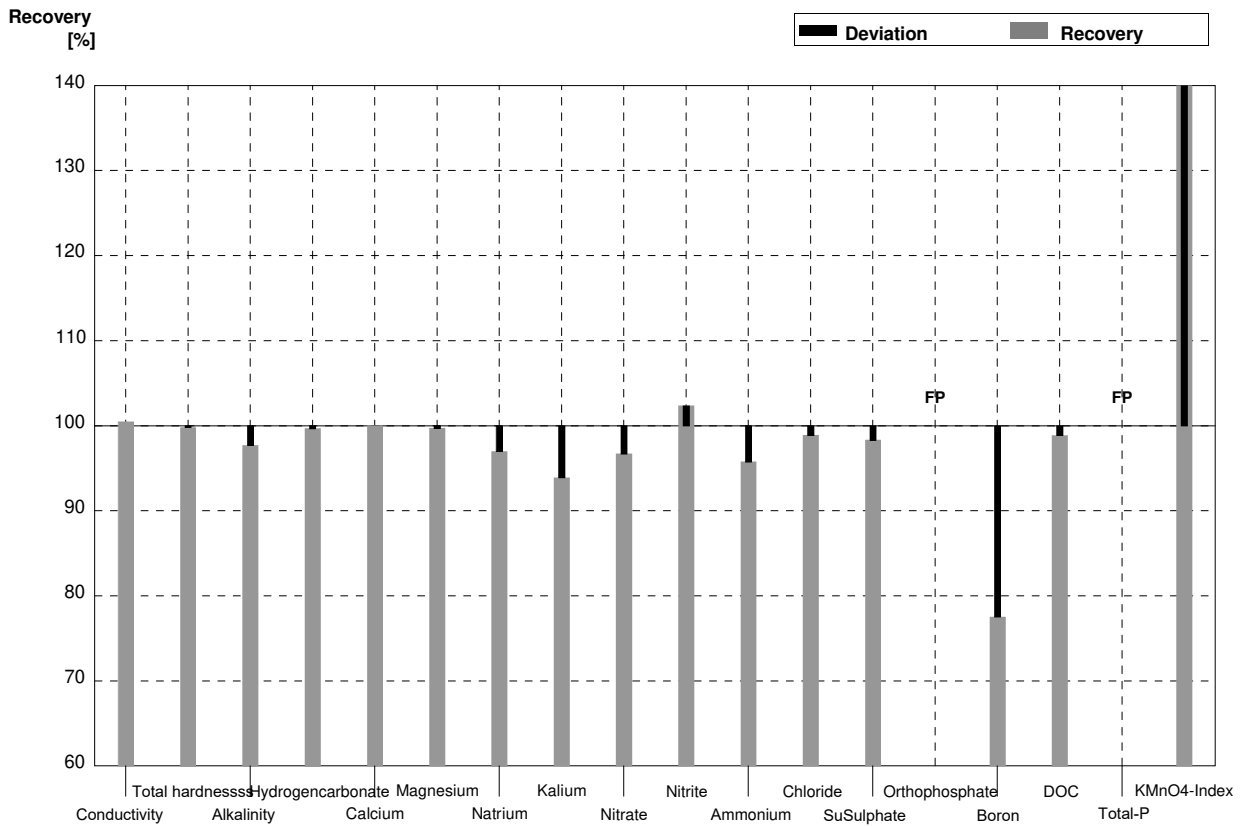
Sample N177B
Laboratory B

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	353		µS/cm	101%
Total hardness	1,038	0,012	1,03		mmol/l	99%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,38	0,1	mmol/l	98%
Hydrogen carbonate	83,0	1,0	81,2		mg/l	98%
Calcium	30,9	0,5	31,0	2,6	mg/l	100%
Magnesium	6,47	0,08	6,30	0,7	mg/l	97%
Sodium	25,8	0,2	24,3	2,1	mg/l	94%
Potassium	3,07	0,02	2,97	0,3	mg/l	97%
Nitrate (as NO3)	45,4	1,2	44,7	6,3	mg/l	98%
Nitrite (as NO2)	0,0406	0,0012	0,0451	0,01	mg/l	111%
Ammonium (as NH4)	<0,01		<0,01		mg/l	•
Chloride	29,31	0,13	30,6	4,4	mg/l	104%
Sulphate (as SO4)	15,24	0,18	14,7	1,2	mg/l	96%
Orthophosphate (as PO4)	0,0909	0,0015	0,087	0,01	mg/l	96%
Boron	0,0708	0,0010	0,070	0,004	mg/l	99%
DOC (as C)	3,64	0,08	3,69	0,44	mg/l	101%
Total P (as PO4)	0,1254	0,0011	0,116	0,01	mg/l	93%
KMnO4-Index (as O2)	2,23	0,11	1,99		mg/l	89%



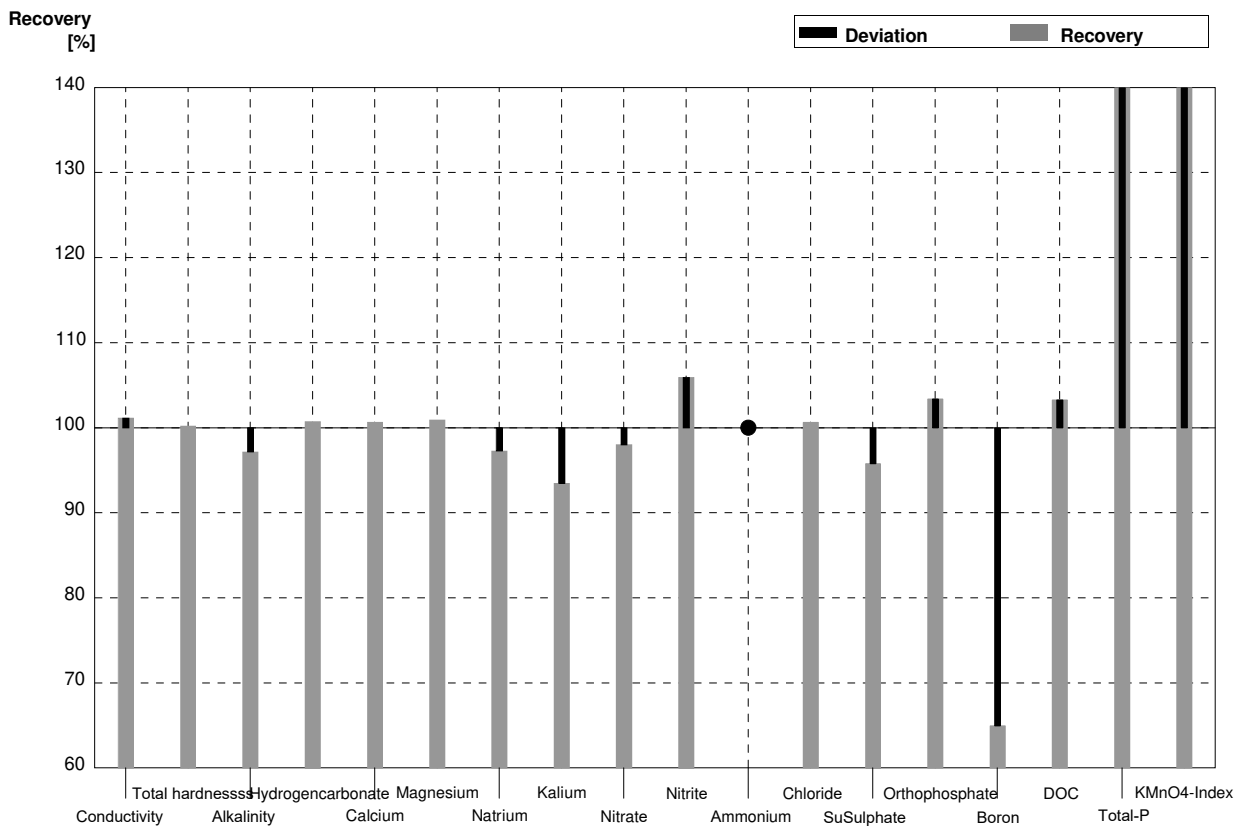
Sample N177A
Laboratory C

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	428	7	µS/cm	100%
Total hardness	1,453	0,017	1,45	0,15	mmol/l	100%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,54	0,08	mmol/l	98%
Hydrogen carbonate	155,5	1,9	155	5	mg/l	100%
Calcium	35,6	0,6	35,6	3,2	mg/l	100%
Magnesium	13,74	0,16	13,7	1,1	mg/l	100%
Sodium	29,8	0,4	28,9	1,8	mg/l	97%
Potassium	3,94	0,03	3,70	0,38	mg/l	94%
Nitrate (as NO3)	24,2	0,6	23,4	2,9	mg/l	97%
Nitrite (as NO2)	0,0811	0,0003	0,0830	0,005	mg/l	102%
Ammonium (as NH4)	0,071	0,003	0,0680	0,010	mg/l	96%
Chloride	21,54	0,05	21,3	1,9	mg/l	99%
Sulphate (as SO4)	35,6	0,4	35,0	4,5	mg/l	98%
Orthophosphate (as PO4)	<0,009		0,0190	0,002	mg/l	FP
Boron	0,1006	0,0009	0,0780	0,006	mg/l	78%
DOC (as C)	1,75	0,07	1,73	0,45	mg/l	99%
Total P (as PO4)	<0,009		0,065	0,006	mg/l	FP
KMnO4-Index (as O2)	2,72	0,10	4,11	1,42	mg/l	151%



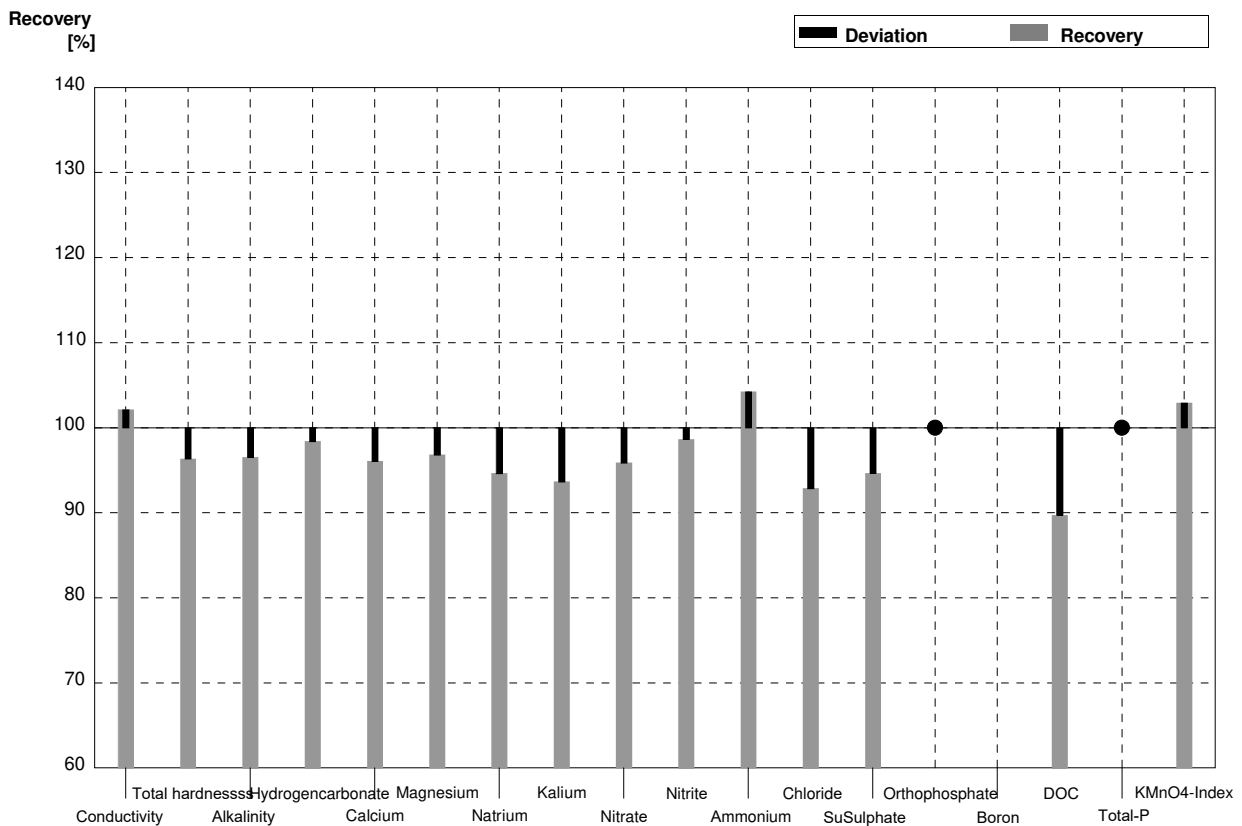
Sample N177B
Laboratory C

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	354	6	µS/cm	101%
Total hardness	1,038	0,012	1,04	0,10	mmol/l	100%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,37	0,04	mmol/l	97%
Hydrogen carbonate	83,0	1,0	83,6	2,7	mg/l	101%
Calcium	30,9	0,5	31,1	2,8	mg/l	101%
Magnesium	6,47	0,08	6,53	0,54	mg/l	101%
Sodium	25,8	0,2	25,1	1,5	mg/l	97%
Potassium	3,07	0,02	2,87	0,30	mg/l	93%
Nitrate (as NO3)	45,4	1,2	44,5	5,5	mg/l	98%
Nitrite (as NO2)	0,0406	0,0012	0,0430	0,003	mg/l	106%
Ammonium (as NH4)	<0,01		0,00800	0,001	mg/l	•
Chloride	29,31	0,13	29,5	2,6	mg/l	101%
Sulphate (as SO4)	15,24	0,18	14,6	1,9	mg/l	96%
Orthophosphate (as PO4)	0,0909	0,0015	0,0940	0,007	mg/l	103%
Boron	0,0708	0,0010	0,0460	0,003	mg/l	65%
DOC (as C)	3,64	0,08	3,76	0,99	mg/l	103%
Total P (as PO4)	0,1254	0,0011	0,187	0,002	mg/l	149%
KMnO4-Index (as O2)	2,23	0,11	3,82	1,32	mg/l	171%



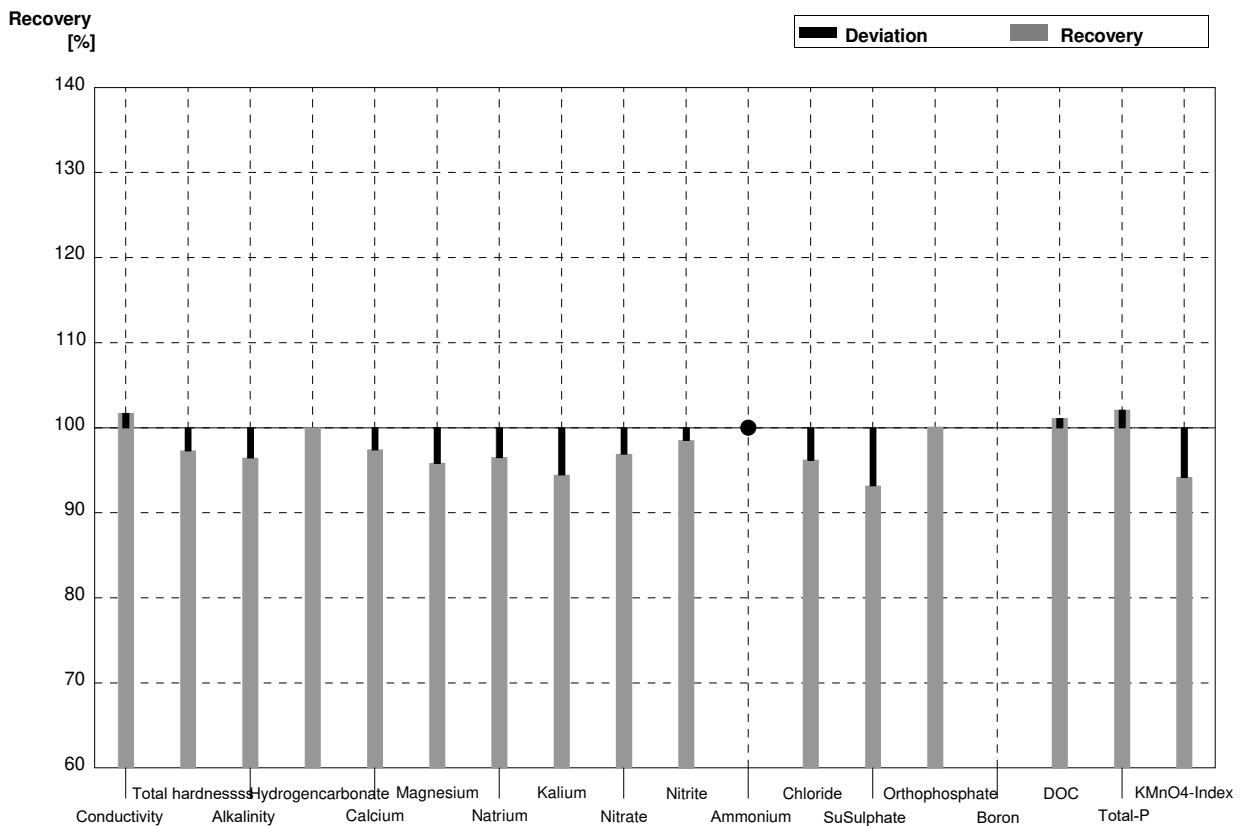
Sample N177A
Laboratory D

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	435	13	µS/cm	102%
Total hardness	1,453	0,017	1,40	0,07	mmol/l	96%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,51	0,13	mmol/l	97%
Hydrogen carbonate	155,5	1,9	153	12	mg/l	98%
Calcium	35,6	0,6	34,2	2,1	mg/l	96%
Magnesium	13,74	0,16	13,3	1,1	mg/l	97%
Sodium	29,8	0,4	28,2	1,7	mg/l	95%
Potassium	3,94	0,03	3,69	0,30	mg/l	94%
Nitrate (as NO3)	24,2	0,6	23,2	1,4	mg/l	96%
Nitrite (as NO2)	0,0811	0,0003	0,080	0,010	mg/l	99%
Ammonium (as NH4)	0,071	0,003	0,074	0,016	mg/l	104%
Chloride	21,54	0,05	20,0	1,6	mg/l	93%
Sulphate (as SO4)	35,6	0,4	33,7	2,0	mg/l	95%
Orthophosphate (as PO4)	<0,009		<0,0090		mg/l	•
Boron	0,1006	0,0009			mg/l	
DOC (as C)	1,75	0,07	1,57	0,22	mg/l	90%
Total P (as PO4)	<0,009		<0,0090		mg/l	•
KMnO4-Index (as O2)	2,72	0,10	2,80	0,10	mg/l	103%



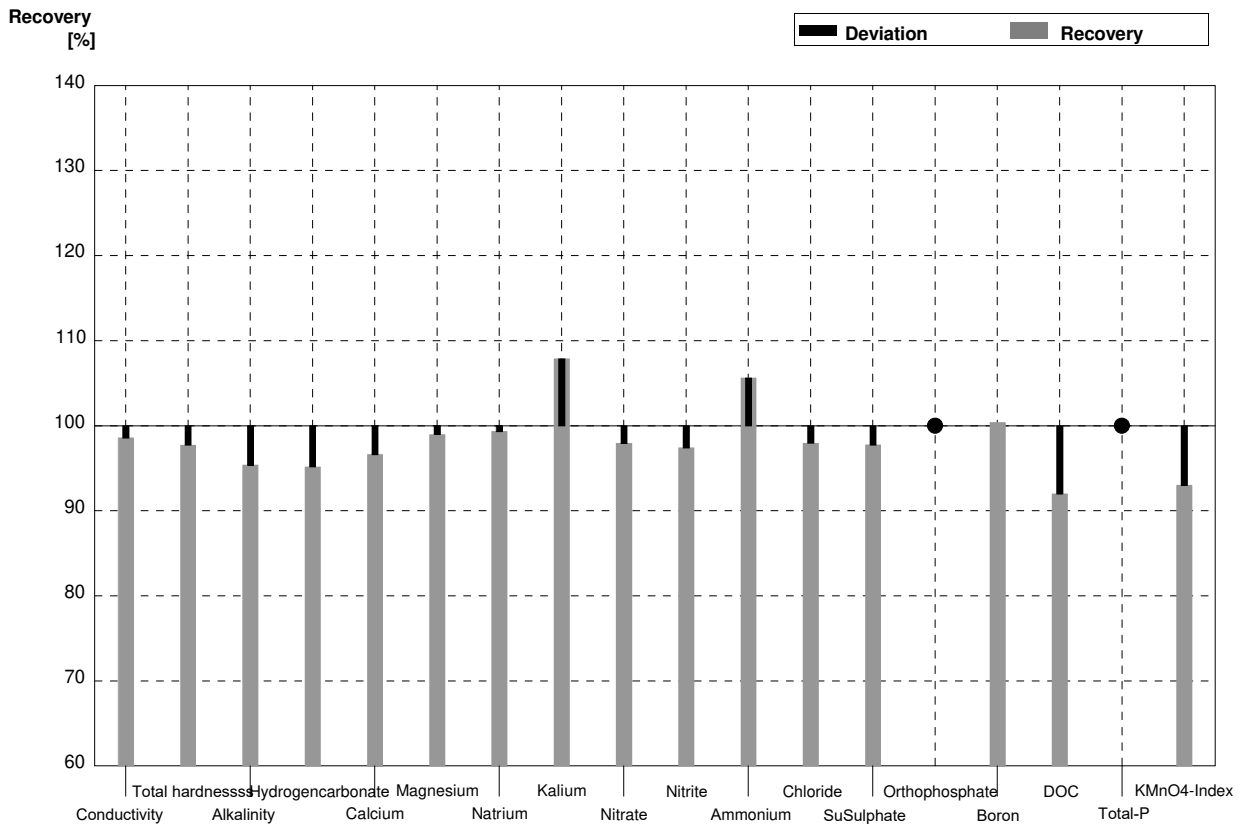
Sample N177B
Laboratory D

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	356	11	µS/cm	102%
Total hardness	1,038	0,012	1,01	0,05	mmol/l	97%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,36	0,07	mmol/l	96%
Hydrogen carbonate	83,0	1,0	83	7	mg/l	100%
Calcium	30,9	0,5	30,1	1,8	mg/l	97%
Magnesium	6,47	0,08	6,2	0,5	mg/l	96%
Sodium	25,8	0,2	24,9	1,5	mg/l	97%
Potassium	3,07	0,02	2,90	0,23	mg/l	94%
Nitrate (as NO3)	45,4	1,2	44,0	2,6	mg/l	97%
Nitrite (as NO2)	0,0406	0,0012	0,0400	0,0050	mg/l	99%
Ammonium (as NH4)	<0,01		<0,02		mg/l	•
Chloride	29,31	0,13	28,2	2,3	mg/l	96%
Sulphate (as SO4)	15,24	0,18	14,2	1,0	mg/l	93%
Orthophosphate (as PO4)	0,0909	0,0015	0,091	0,017	mg/l	100%
Boron	0,0708	0,0010			mg/l	
DOC (as C)	3,64	0,08	3,68	0,52	mg/l	101%
Total P (as PO4)	0,1254	0,0011	0,128	0,018	mg/l	102%
KMnO4-Index (as O2)	2,23	0,11	2,10	0,10	mg/l	94%



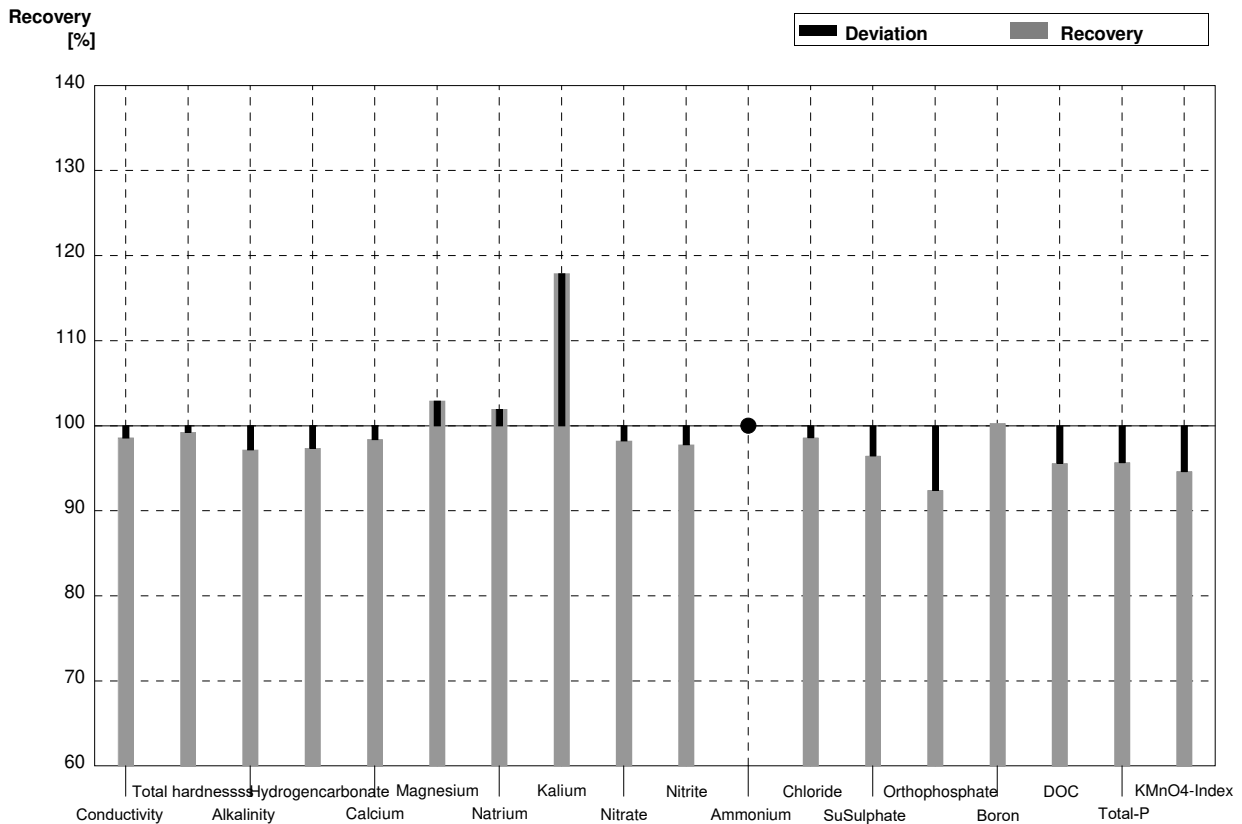
Sample N177A
Laboratory E

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	420	16,8	µS/cm	99%
Total hardness	1,453	0,017	1,42	0,26	mmol/l	98%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,48	0,1	mmol/l	95%
Hydrogen carbonate	155,5	1,9	148	5,92	mg/l	95%
Calcium	35,6	0,6	34,4	6,19	mg/l	97%
Magnesium	13,74	0,16	13,6	2,45	mg/l	99%
Sodium	29,8	0,4	29,6	5,33	mg/l	99%
Potassium	3,94	0,03	4,25	0,77	mg/l	108%
Nitrate (as NO3)	24,2	0,6	23,7	2,13	mg/l	98%
Nitrite (as NO2)	0,0811	0,0003	0,079	0,01	mg/l	97%
Ammonium (as NH4)	0,071	0,003	0,075	0,01	mg/l	106%
Chloride	21,54	0,05	21,1	1,90	mg/l	98%
Sulphate (as SO4)	35,6	0,4	34,8	3,13	mg/l	98%
Orthophosphate (as PO4)	<0,009		<0,02		mg/l	•
Boron	0,1006	0,0009	0,101	0,02	mg/l	100%
DOC (as C)	1,75	0,07	1,61	0,14	mg/l	92%
Total P (as PO4)	<0,009		<0,05		mg/l	•
KMnO4-Index (as O2)	2,72	0,10	2,53	0,23	mg/l	93%



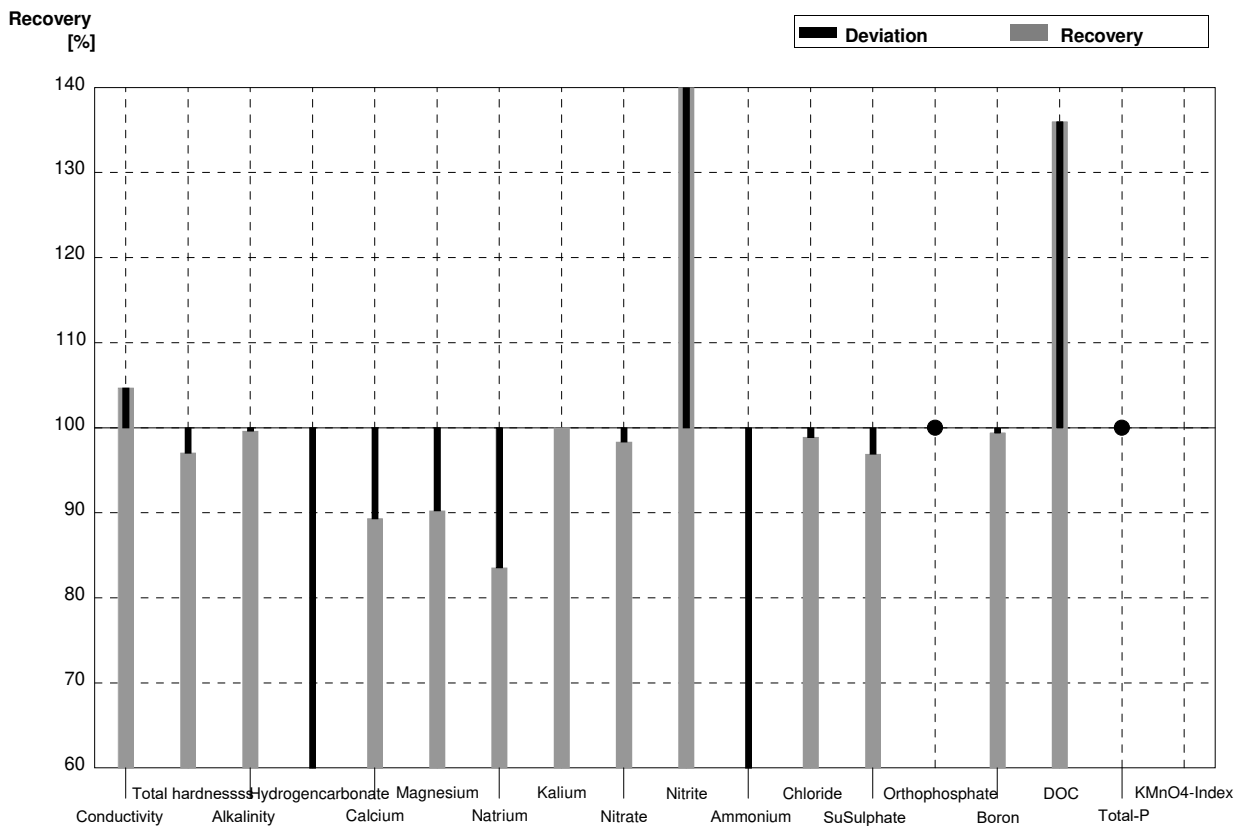
Sample N177B
Laboratory E

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity (25°C)	350	1	345	13,8	µS/cm	99%
Total hardness	1,038	0,012	1,03	0,19	mmol/l	99%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,37	0,05	mmol/l	97%
Hydrogen carbonate	83,0	1,0	80,8	3,23	mg/l	97%
Calcium	30,9	0,5	30,4	5,47	mg/l	98%
Magnesium	6,47	0,08	6,66	1,20	mg/l	103%
Sodium	25,8	0,2	26,3	4,73	mg/l	102%
Potassium	3,07	0,02	3,62	0,65	mg/l	118%
Nitrate (as NO3)	45,4	1,2	44,6	4,01	mg/l	98%
Nitrite (as NO2)	0,0406	0,0012	0,0397	0,007	mg/l	98%
Ammonium (as NH4)	<0,01		<0,01		mg/l	•
Chloride	29,31	0,13	28,9	2,60	mg/l	99%
Sulphate (as SO4)	15,24	0,18	14,7	1,32	mg/l	96%
Orthophosphate (as PO4)	0,0909	0,0015	0,084	0,02	mg/l	92%
Boron	0,0708	0,0010	0,071	0,01	mg/l	100%
DOC (as C)	3,64	0,08	3,48	0,31	mg/l	96%
Total P (as PO4)	0,1254	0,0011	0,120	0,02	mg/l	96%
KMnO4-Index (as O2)	2,23	0,11	2,11	0,19	mg/l	95%



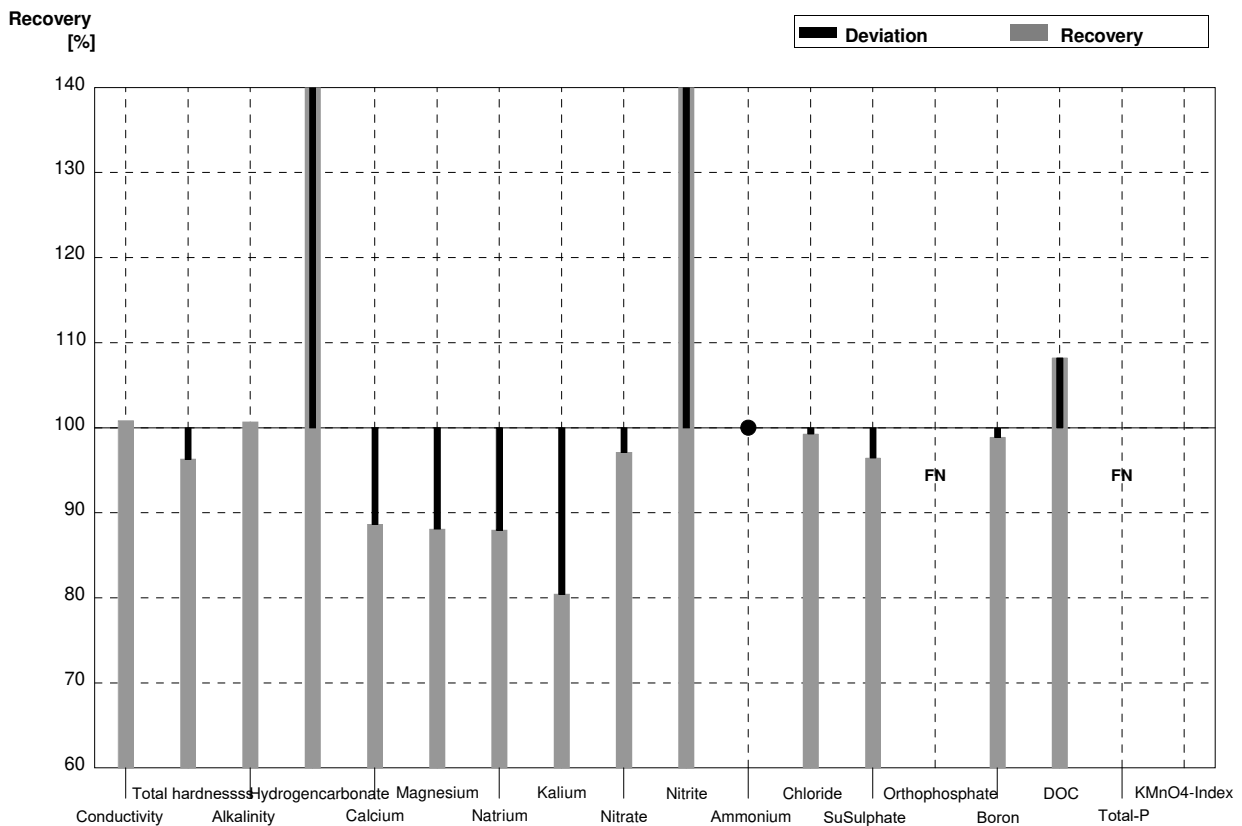
Sample N177A
Laboratory F

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	446	20	µS/cm	105%
Total hardness	1,453	0,017	1,41	0,02	mmol/l	97%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,59	0,16	mmol/l	100%
Hydrogen carbonate	155,5	1,9	86,6	5,5	mg/l	56%
Calcium	35,6	0,6	31,8	3,18	mg/l	89%
Magnesium	13,74	0,16	12,4	1,24	mg/l	90%
Sodium	29,8	0,4	24,9	3,74	mg/l	84%
Potassium	3,94	0,03	3,94	0,39	mg/l	100%
Nitrate (as NO3)	24,2	0,6	23,8	0,3	mg/l	98%
Nitrite (as NO2)	0,0811	0,0003	0,235	0,030	mg/l	290%
Ammonium (as NH4)	0,071	0,003	0,0400	0,006	mg/l	56%
Chloride	21,54	0,05	21,3	0,2	mg/l	99%
Sulphate (as SO4)	35,6	0,4	34,5	0,4	mg/l	97%
Orthophosphate (as PO4)	<0,009		<0,05		mg/l	•
Boron	0,1006	0,0009	0,100	0,020	mg/l	99%
DOC (as C)	1,75	0,07	2,38	0,1	mg/l	136%
Total P (as PO4)	<0,009		<0,05		mg/l	•
KMnO4-Index (as O2)	2,72	0,10			mg/l	



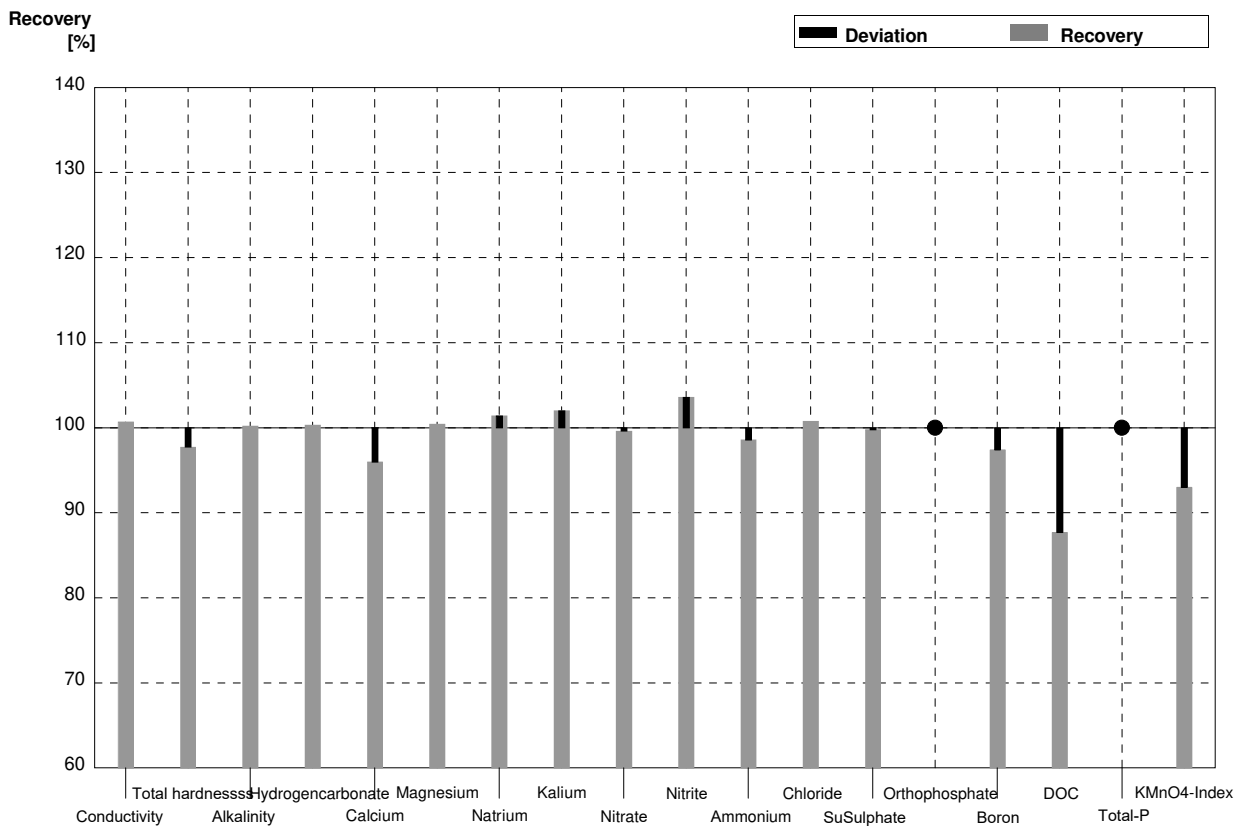
Sample N177B
Laboratory F

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	353	16	µS/cm	101%
Total hardness	1,038	0,012	1,00	0,02	mmol/l	96%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,42	0,09	mmol/l	101%
Hydrogen carbonate	83,0	1,0	158	10	mg/l	190%
Calcium	30,9	0,5	27,4	4,11	mg/l	89%
Magnesium	6,47	0,08	5,70	0,86	mg/l	88%
Sodium	25,8	0,2	22,7	3,41	mg/l	88%
Potassium	3,07	0,02	2,47	0,37	mg/l	80%
Nitrate (as NO3)	45,4	1,2	44,1	0,3	mg/l	97%
Nitrite (as NO2)	0,0406	0,0012	0,062	0,008	mg/l	153%
Ammonium (as NH4)	<0,01		<0,025		mg/l	•
Chloride	29,31	0,13	29,1	0,2	mg/l	99%
Sulphate (as SO4)	15,24	0,18	14,7	0,4	mg/l	96%
Orthophosphate (as PO4)	0,0909	0,0015	<0,05		mg/l	FN
Boron	0,0708	0,0010	0,070	0,011	mg/l	99%
DOC (as C)	3,64	0,08	3,94	0,1	mg/l	108%
Total P (as PO4)	0,1254	0,0011	<0,05		mg/l	FN
KMnO4-Index (as O2)	2,23	0,11			mg/l	



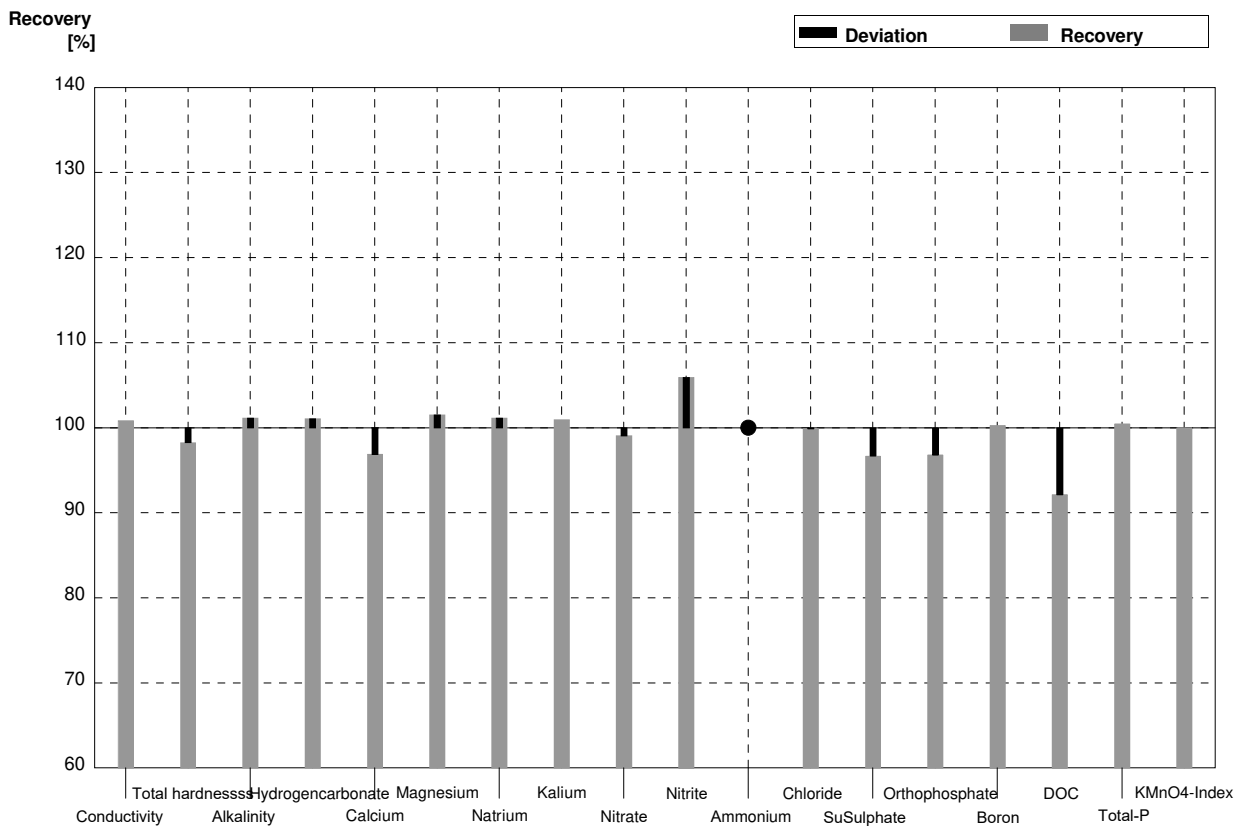
Sample N177A
Laboratory G

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	429	23,9	µS/cm	101%
Total hardness	1,453	0,017	1,42	0,142	mmol/l	98%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,605	0,143	mmol/l	100%
Hydrogen carbonate	155,5	1,9	156	8,58	mg/l	100%
Calcium	35,6	0,6	34,17	1,88	mg/l	96%
Magnesium	13,74	0,16	13,8	0,48	mg/l	100%
Sodium	29,8	0,4	30,22	1,06	mg/l	101%
Potassium	3,94	0,03	4,02	0,14	mg/l	102%
Nitrate (as NO3)	24,2	0,6	24,104	1,83	mg/l	100%
Nitrite (as NO2)	0,0811	0,0003	0,0840	0,008	mg/l	104%
Ammonium (as NH4)	0,071	0,003	0,0700	0,007	mg/l	99%
Chloride	21,54	0,05	21,711	2,28	mg/l	101%
Sulphate (as SO4)	35,6	0,4	35,522	3,05	mg/l	100%
Orthophosphate (as PO4)	<0,009		<0,01		mg/l	•
Boron	0,1006	0,0009	0,098	0,018	mg/l	97%
DOC (as C)	1,75	0,07	1,535	0,321	mg/l	88%
Total P (as PO4)	<0,009		<0,01		mg/l	•
KMnO4-Index (as O2)	2,72	0,10	2,53	0,38	mg/l	93%



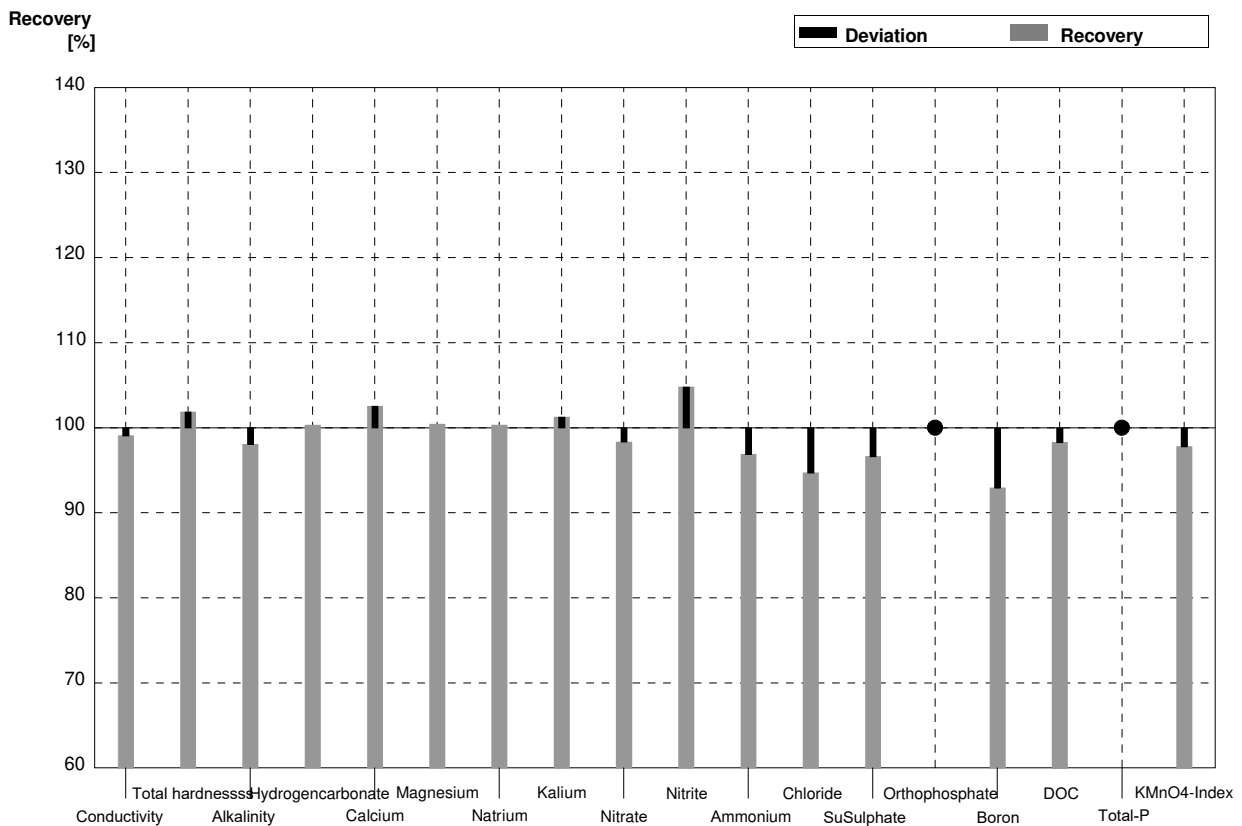
Sample N177B
Laboratory G

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	353	19,6	µS/cm	101%
Total hardness	1,038	0,012	1,02	0,102	mmol/l	98%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,426	0,078	mmol/l	101%
Hydrogen carbonate	83,0	1,0	83,9	4,61	mg/l	101%
Calcium	30,9	0,5	29,94	1,65	mg/l	97%
Magnesium	6,47	0,08	6,57	0,23	mg/l	102%
Sodium	25,8	0,2	26,1	0,91	mg/l	101%
Potassium	3,07	0,02	3,10	0,11	mg/l	101%
Nitrate (as NO3)	45,4	1,2	44,974	3,41	mg/l	99%
Nitrite (as NO2)	0,0406	0,0012	0,0430	0,004	mg/l	106%
Ammonium (as NH4)	<0,01		<0,010		mg/l	•
Chloride	29,31	0,13	29,28	3,07	mg/l	100%
Sulphate (as SO4)	15,24	0,18	14,733	1,27	mg/l	97%
Orthophosphate (as PO4)	0,0909	0,0015	0,088	0,009	mg/l	97%
Boron	0,0708	0,0010	0,071	0,013	mg/l	100%
DOC (as C)	3,64	0,08	3,354	0,702	mg/l	92%
Total P (as PO4)	0,1254	0,0011	0,126	0,013	mg/l	100%
KMnO4-Index (as O2)	2,23	0,11	2,23	0,33	mg/l	100%



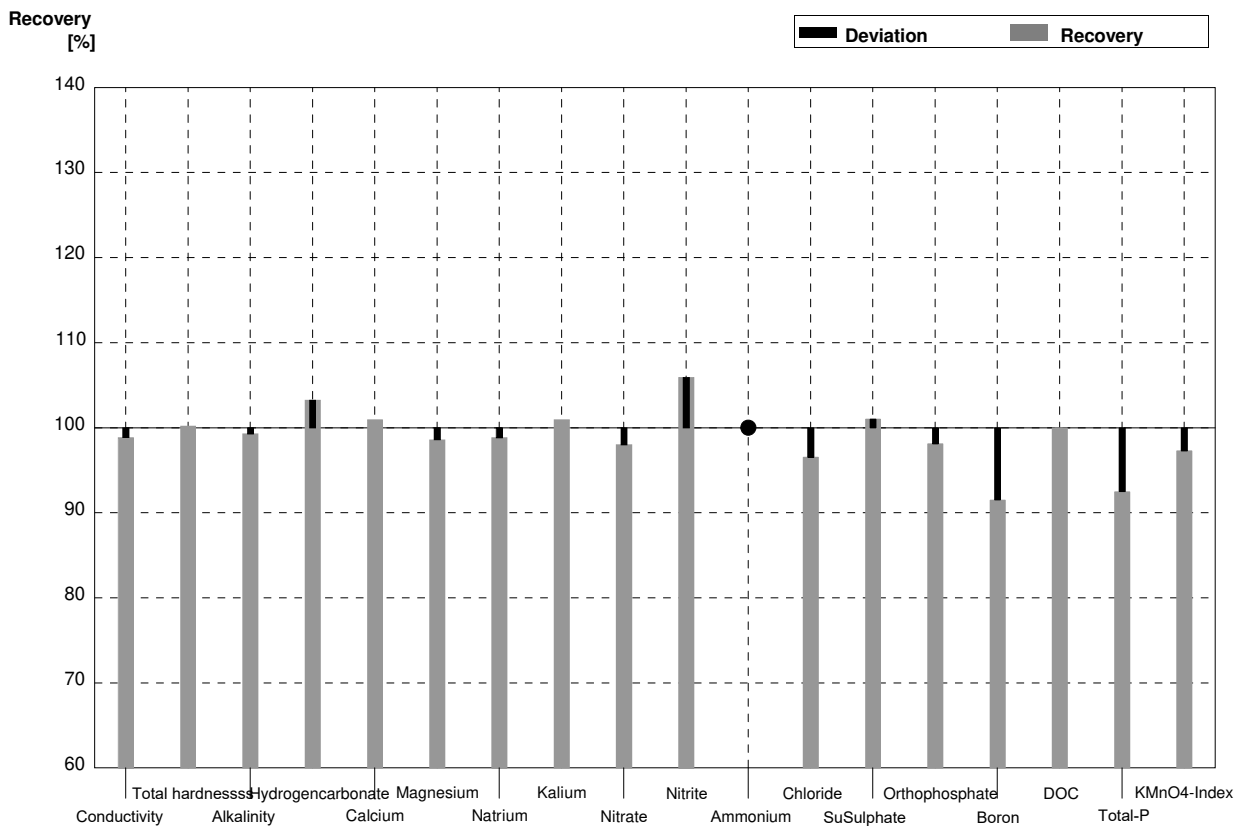
Sample N177A
Laboratory H

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	422	0,58	µS/cm	99%
Total hardness	1,453	0,017	1,48	0,006	mmol/l	102%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,55	0,012	mmol/l	98%
Hydrogen carbonate	155,5	1,9	156	0,58	mg/l	100%
Calcium	35,6	0,6	36,5	0,46	mg/l	103%
Magnesium	13,74	0,16	13,8	0,20	mg/l	100%
Sodium	29,8	0,4	29,9	0,40	mg/l	100%
Potassium	3,94	0,03	3,99	0,012	mg/l	101%
Nitrate (as NO3)	24,2	0,6	23,8	0,12	mg/l	98%
Nitrite (as NO2)	0,0811	0,0003	0,0850	0,002	mg/l	105%
Ammonium (as NH4)	0,071	0,003	0,0688	0,001	mg/l	97%
Chloride	21,54	0,05	20,4	0,10	mg/l	95%
Sulphate (as SO4)	35,6	0,4	34,4	0,34	mg/l	97%
Orthophosphate (as PO4)	<0,009		<0,009		mg/l	•
Boron	0,1006	0,0009	0,0935	0,005	mg/l	93%
DOC (as C)	1,75	0,07	1,72	0,044	mg/l	98%
Total P (as PO4)	<0,009		<0,009		mg/l	•
KMnO4-Index (as O2)	2,72	0,10	2,66	0,072	mg/l	98%



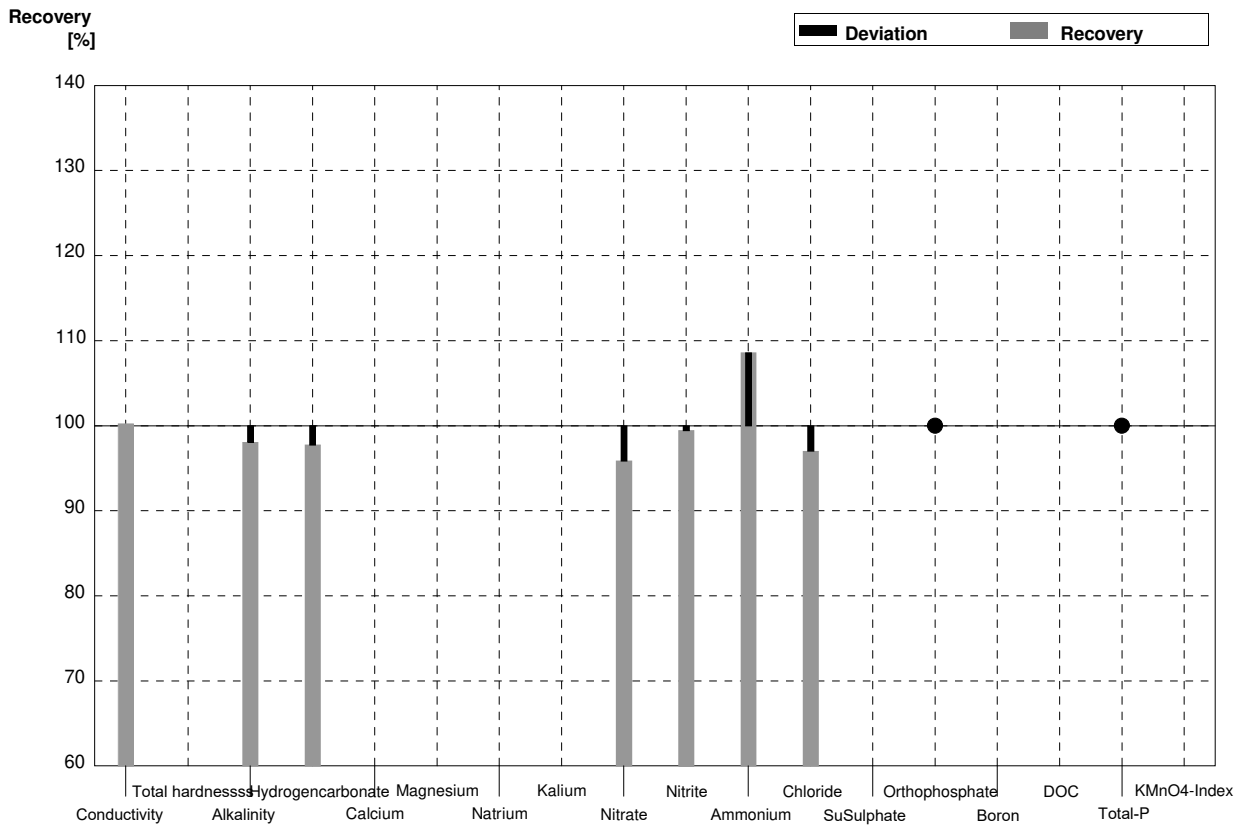
Sample N177B
Laboratory H

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	346	0,49	µS/cm	99%
Total hardness	1,038	0,012	1,04	0,004	mmol/l	100%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,40	0,009	mmol/l	99%
Hydrogen carbonate	83,0	1,0	85,7	0,12	mg/l	103%
Calcium	30,9	0,5	31,2	0,43	mg/l	101%
Magnesium	6,47	0,08	6,38	0,090	mg/l	99%
Sodium	25,8	0,2	25,5	0,29	mg/l	99%
Potassium	3,07	0,02	3,10	0,015	mg/l	101%
Nitrate (as NO3)	45,4	1,2	44,5	0,29	mg/l	98%
Nitrite (as NO2)	0,0406	0,0012	0,0430	0,001	mg/l	106%
Ammonium (as NH4)	<0,01		<0,01		mg/l	•
Chloride	29,31	0,13	28,3	0,15	mg/l	97%
Sulphate (as SO4)	15,24	0,18	15,4	0,15	mg/l	101%
Orthophosphate (as PO4)	0,0909	0,0015	0,0892	0,001	mg/l	98%
Boron	0,0708	0,0010	0,0648	0,003	mg/l	92%
DOC (as C)	3,64	0,08	3,64	0,092	mg/l	100%
Total P (as PO4)	0,1254	0,0011	0,116	0,001	mg/l	93%
KMnO4-Index (as O2)	2,23	0,11	2,17	0,050	mg/l	97%



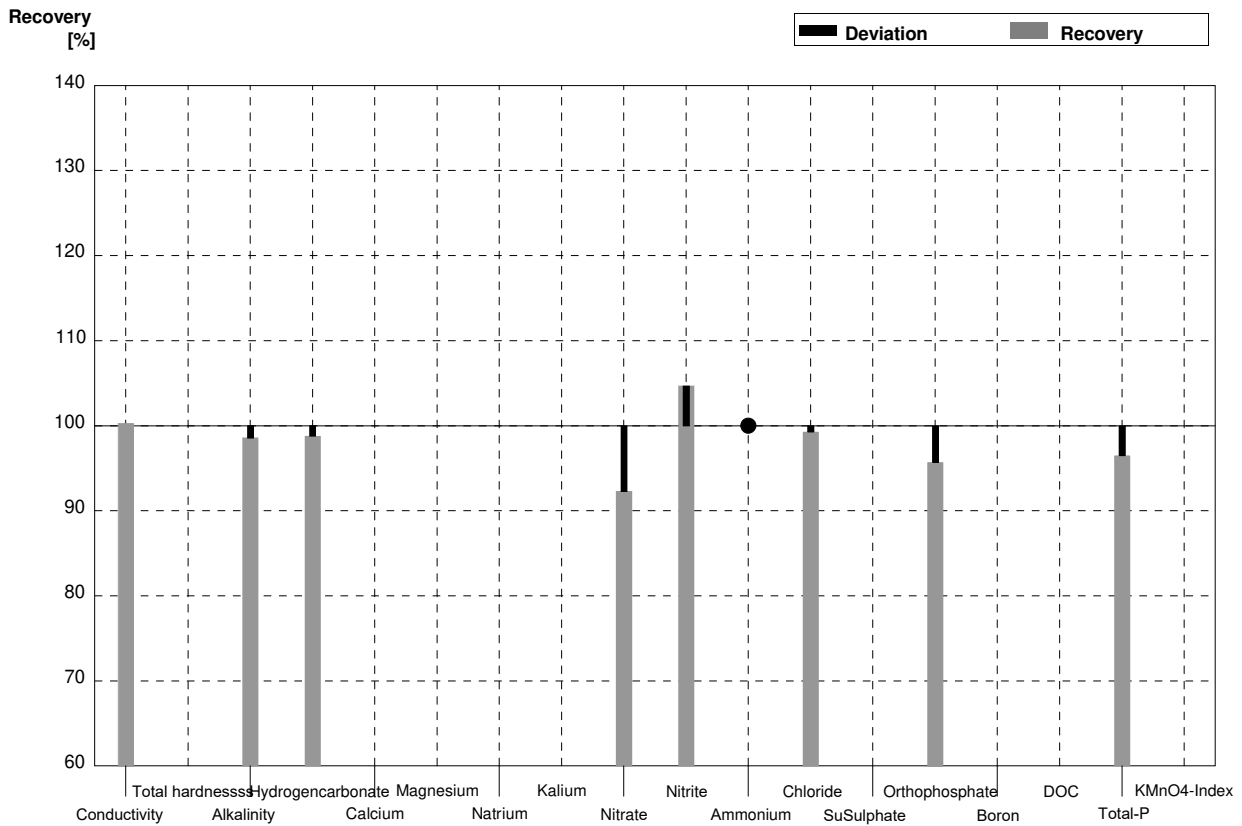
Sample N177A
Laboratory I

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	427	3	µS/cm	100%
Total hardness	1,453	0,017			mmol/l	
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,55	0,072	mmol/l	98%
Hydrogen carbonate	155,5	1,9	152	2,2	mg/l	98%
Calcium	35,6	0,6			mg/l	
Magnesium	13,74	0,16			mg/l	
Sodium	29,8	0,4			mg/l	
Potassium	3,94	0,03			mg/l	
Nitrate (as NO3)	24,2	0,6	23,2	1,6	mg/l	96%
Nitrite (as NO2)	0,0811	0,0003	0,08064	0,0081	mg/l	99%
Ammonium (as NH4)	0,071	0,003	0,0771	0,0116	mg/l	109%
Chloride	21,54	0,05	20,9	0,2	mg/l	97%
Sulphate (as SO4)	35,6	0,4			mg/l	
Orthophosphate (as PO4)	<0,009		<0,006		mg/l	•
Boron	0,1006	0,0009			mg/l	
DOC (as C)	1,75	0,07			mg/l	
Total P (as PO4)	<0,009		<0,006		mg/l	•
KMnO4-Index (as O2)	2,72	0,10			mg/l	



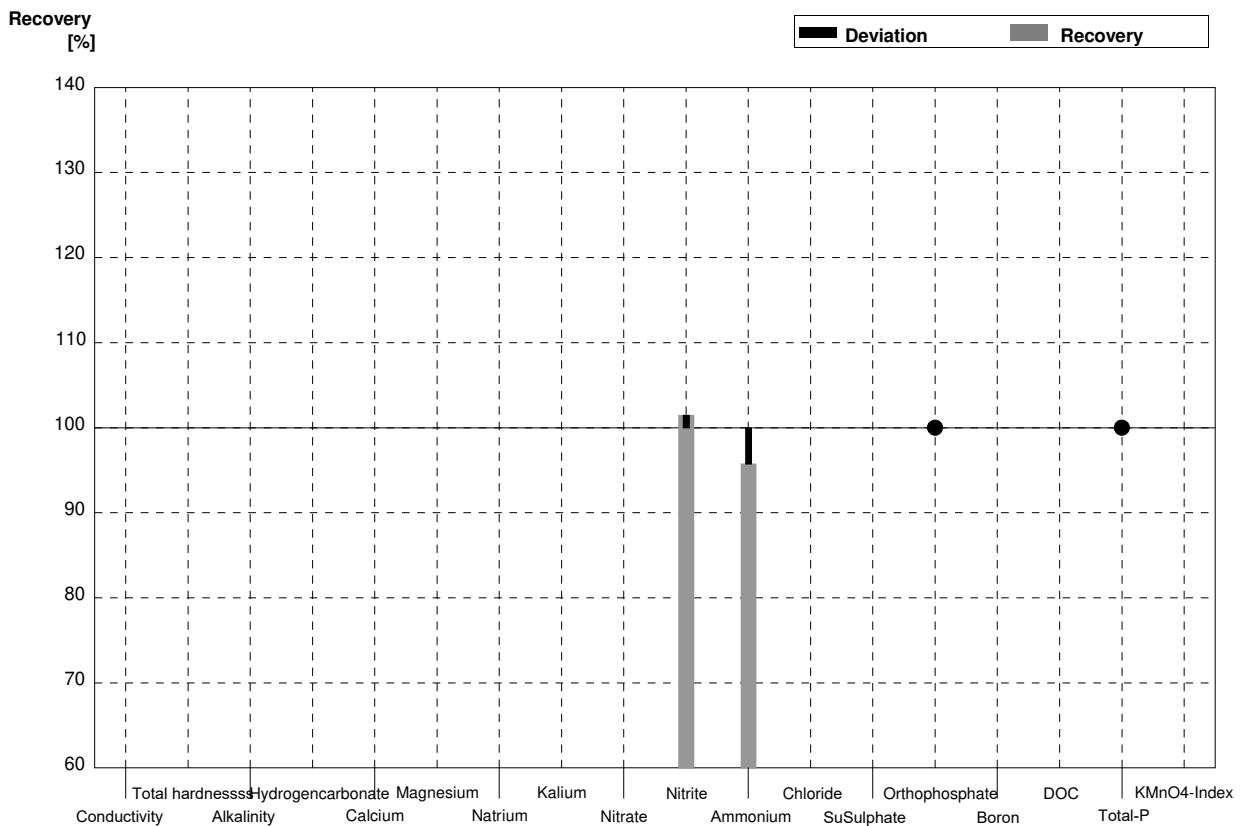
Sample N177B
Laboratory I

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	351	2	µS/cm	100%
Total hardness	1,038	0,012			mmol/l	
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,39	0,039	mmol/l	99%
Hydrogen carbonate	83,0	1,0	82	1	mg/l	99%
Calcium	30,9	0,5			mg/l	
Magnesium	6,47	0,08			mg/l	
Sodium	25,8	0,2			mg/l	
Potassium	3,07	0,02			mg/l	
Nitrate (as NO3)	45,4	1,2	41,9	2,9	mg/l	92%
Nitrite (as NO2)	0,0406	0,0012	0,0425	0,0042	mg/l	105%
Ammonium (as NH4)	<0,01		<0,005		mg/l	•
Chloride	29,31	0,13	29,1	0,3	mg/l	99%
Sulphate (as SO4)	15,24	0,18			mg/l	
Orthophosphate (as PO4)	0,0909	0,0015	0,087	0,010	mg/l	96%
Boron	0,0708	0,0010			mg/l	
DOC (as C)	3,64	0,08			mg/l	
Total P (as PO4)	0,1254	0,0011	0,121	0,016	mg/l	96%
KMnO4-Index (as O2)	2,23	0,11			mg/l	



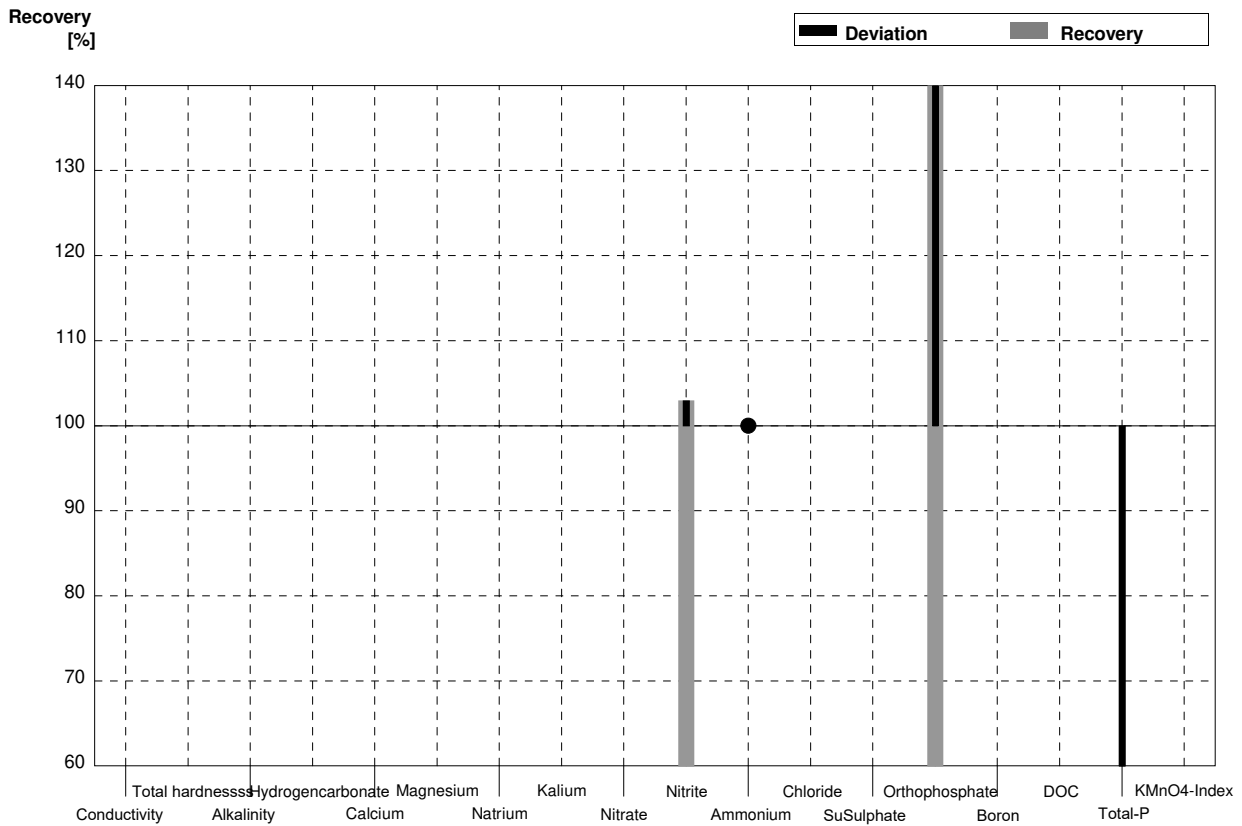
Sample N177A
Laboratory J

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity (25°C)	426	2			µS/cm	
Total hardness	1,453	0,017			mmol/l	
Alkalinity KS 4,3 (as H+)	2,60	0,03			mmol/l	
Hydrogen carbonate	155,5	1,9			mg/l	
Calcium	35,6	0,6			mg/l	
Magnesium	13,74	0,16			mg/l	
Sodium	29,8	0,4			mg/l	
Potassium	3,94	0,03			mg/l	
Nitrate (as NO3)	24,2	0,6			mg/l	
Nitrite (as NO2)	0,0811	0,0003	0,0823	0,0082	mg/l	101%
Ammonium (as NH4)	0,071	0,003	0,068	0,007	mg/l	96%
Chloride	21,54	0,05			mg/l	
Sulphate (as SO4)	35,6	0,4			mg/l	
Orthophosphate (as PO4)	<0,009		<0,015		mg/l	•
Boron	0,1006	0,0009			mg/l	
DOC (as C)	1,75	0,07			mg/l	
Total P (as PO4)	<0,009		<0,005		mg/l	•
KMnO4-Index (as O2)	2,72	0,10			mg/l	



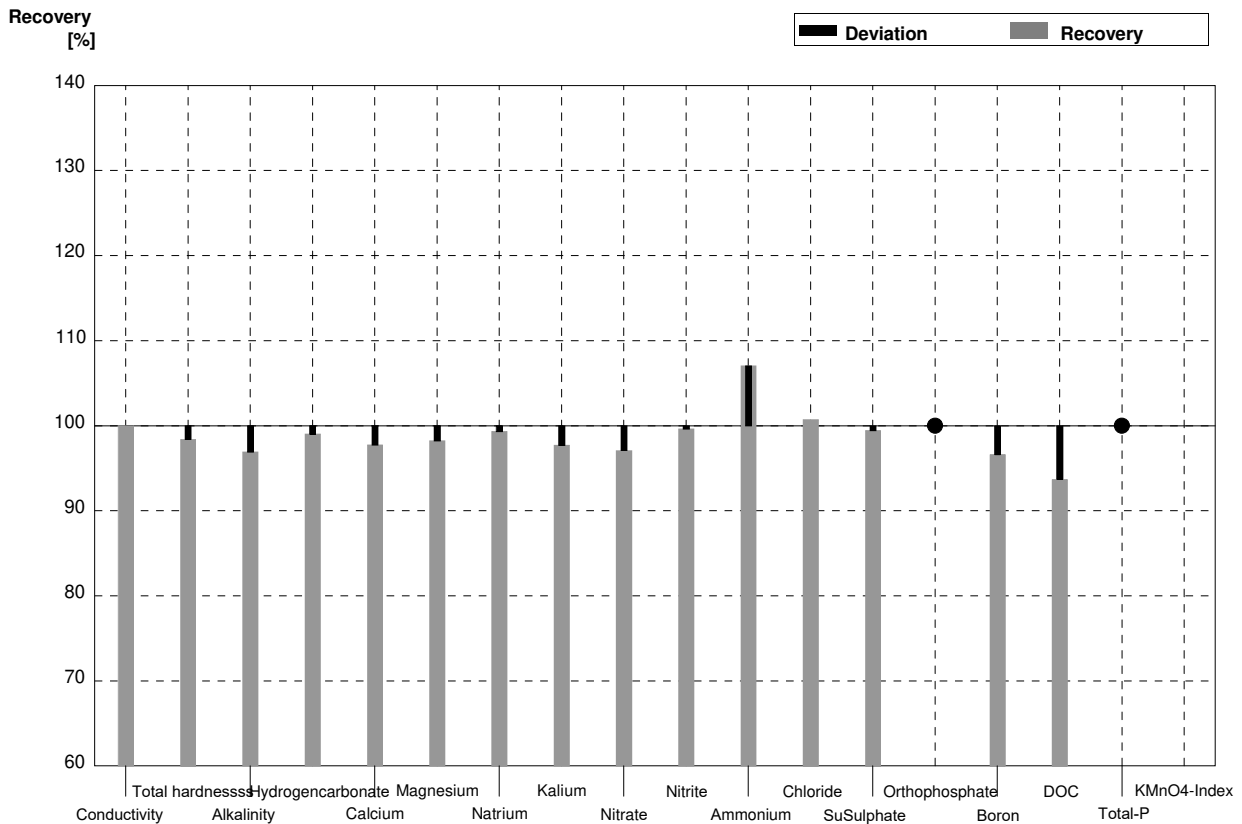
Sample N177B
Laboratory J

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1			µS/cm	
Total hardness	1,038	0,012			mmol/l	
Alkalinity KS 4,3 (as H+)	1,410	0,017			mmol/l	
Hydrogen carbonate	83,0	1,0			mg/l	
Calcium	30,9	0,5			mg/l	
Magnesium	6,47	0,08			mg/l	
Sodium	25,8	0,2			mg/l	
Potassium	3,07	0,02			mg/l	
Nitrate (as NO3)	45,4	1,2			mg/l	
Nitrite (as NO2)	0,0406	0,0012	0,0418	0,0042	mg/l	103%
Ammonium (as NH4)	<0,01		<0,02		mg/l	•
Chloride	29,31	0,13			mg/l	
Sulphate (as SO4)	15,24	0,18			mg/l	
Orthophosphate (as PO4)	0,0909	0,0015	0,129	0,013	mg/l	142%
Boron	0,0708	0,0010			mg/l	
DOC (as C)	3,64	0,08			mg/l	
Total P (as PO4)	0,1254	0,0011	0,0420	0,004	mg/l	33%
KMnO4-Index (as O2)	2,23	0,11			mg/l	



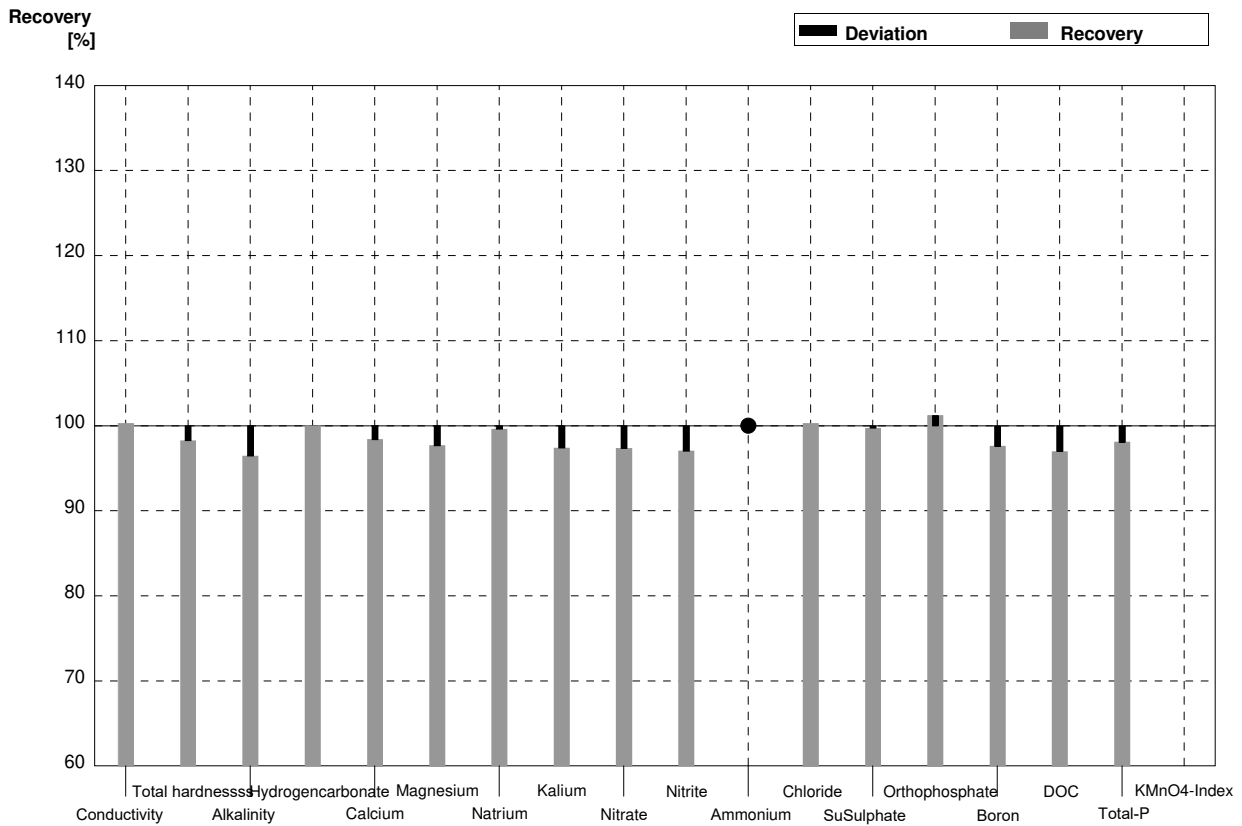
Sample N177A
Laboratory K

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	426		µS/cm	100%
Total hardness	1,453	0,017	1,43		mmol/l	98%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,52		mmol/l	97%
Hydrogen carbonate	155,5	1,9	154		mg/l	99%
Calcium	35,6	0,6	34,8		mg/l	98%
Magnesium	13,74	0,16	13,5		mg/l	98%
Sodium	29,8	0,4	29,6		mg/l	99%
Potassium	3,94	0,03	3,85		mg/l	98%
Nitrate (as NO3)	24,2	0,6	23,5		mg/l	97%
Nitrite (as NO2)	0,0811	0,0003	0,0808		mg/l	100%
Ammonium (as NH4)	0,071	0,003	0,0760		mg/l	107%
Chloride	21,54	0,05	21,7		mg/l	101%
Sulphate (as SO4)	35,6	0,4	35,4		mg/l	99%
Orthophosphate (as PO4)	<0,009		<0,006		mg/l	•
Boron	0,1006	0,0009	0,0972	0,00972	mg/l	97%
DOC (as C)	1,75	0,07	1,64		mg/l	94%
Total P (as PO4)	<0,009		<0,006		mg/l	•
KMnO4-Index (as O2)	2,72	0,10			mg/l	



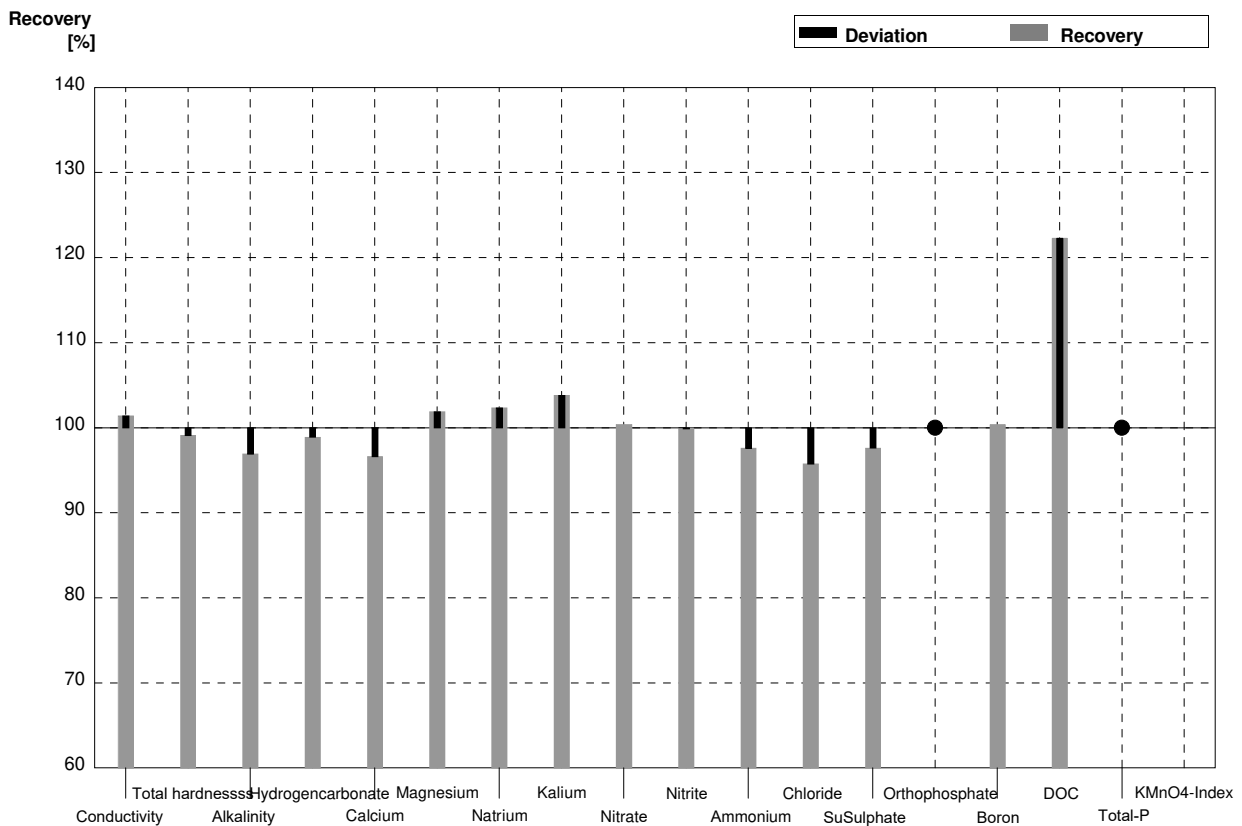
Sample N177B
Laboratory K

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	351		µS/cm	100%
Total hardness	1,038	0,012	1,02		mmol/l	98%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,36		mmol/l	96%
Hydrogen carbonate	83,0	1,0	83,0		mg/l	100%
Calcium	30,9	0,5	30,4		mg/l	98%
Magnesium	6,47	0,08	6,32		mg/l	98%
Sodium	25,8	0,2	25,7		mg/l	100%
Potassium	3,07	0,02	2,99		mg/l	97%
Nitrate (as NO3)	45,4	1,2	44,2		mg/l	97%
Nitrite (as NO2)	0,0406	0,0012	0,0394		mg/l	97%
Ammonium (as NH4)	<0,01		<0,008		mg/l	•
Chloride	29,31	0,13	29,4		mg/l	100%
Sulphate (as SO4)	15,24	0,18	15,2		mg/l	100%
Orthophosphate (as PO4)	0,0909	0,0015	0,0920		mg/l	101%
Boron	0,0708	0,0010	0,0691	0,00691	mg/l	98%
DOC (as C)	3,64	0,08	3,53		mg/l	97%
Total P (as PO4)	0,1254	0,0011	0,123		mg/l	98%
KMnO4-Index (as O2)	2,23	0,11			mg/l	



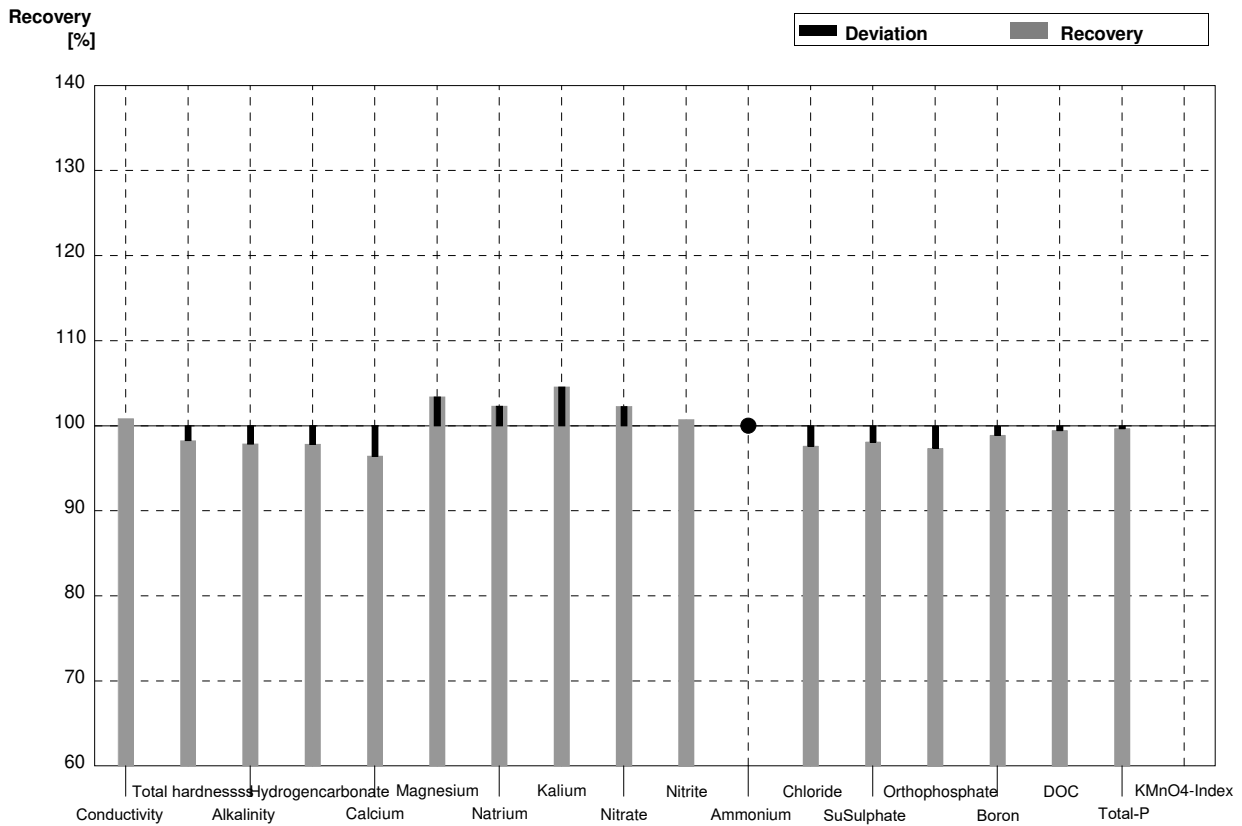
Sample N177A
Laboratory L

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	432	10	µS/cm	101%
Total hardness	1,453	0,017	1,44	0,1	mmol/l	99%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,52	0,3	mmol/l	97%
Hydrogen carbonate	155,5	1,9	153,8	15,4	mg/l	99%
Calcium	35,6	0,6	34,4	7,0	mg/l	97%
Magnesium	13,74	0,16	14,0	2,8	mg/l	102%
Sodium	29,8	0,4	30,5	6,1	mg/l	102%
Potassium	3,94	0,03	4,09	0,83	mg/l	104%
Nitrate (as NO3)	24,2	0,6	24,29	2,4	mg/l	100%
Nitrite (as NO2)	0,0811	0,0003	0,0810	0,0117	mg/l	100%
Ammonium (as NH4)	0,071	0,003	0,0693	0,0114	mg/l	98%
Chloride	21,54	0,05	20,63	2,1	mg/l	96%
Sulphate (as SO4)	35,6	0,4	34,75	3,5	mg/l	98%
Orthophosphate (as PO4)	<0,009		<0,009		mg/l	•
Boron	0,1006	0,0009	0,101	0,026	mg/l	100%
DOC (as C)	1,75	0,07	2,14	0,321	mg/l	122%
Total P (as PO4)	<0,009		<0,009		mg/l	•
KMnO4-Index (as O2)	2,72	0,10			mg/l	



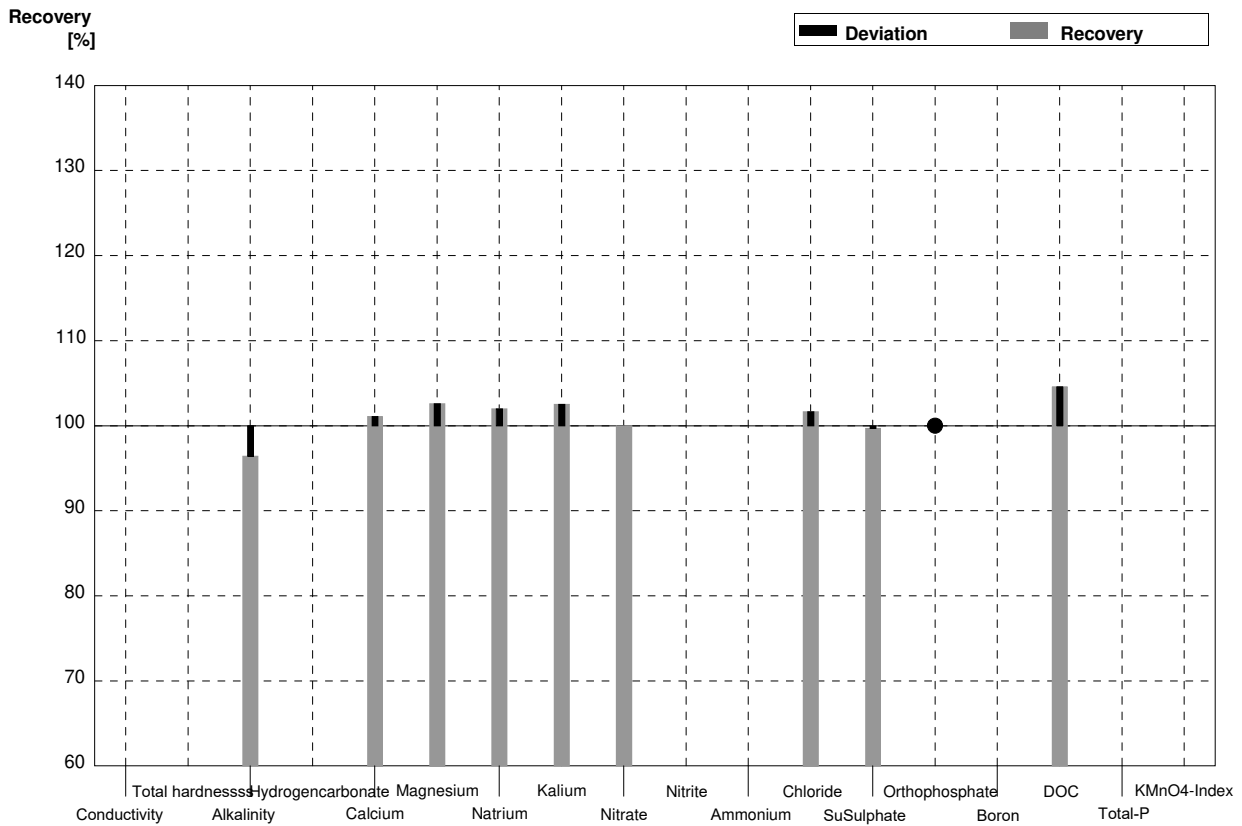
Sample N177B
Laboratory L

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity (25°C)	350	1	353	10	µS/cm	101%
Total hardness	1,038	0,012	1,02	0,1	mmol/l	98%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,38	0,1	mmol/l	98%
Hydrogen carbonate	83,0	1,0	81,2	0,8	mg/l	98%
Calcium	30,9	0,5	29,8	6,0	mg/l	96%
Magnesium	6,47	0,08	6,69	1,4	mg/l	103%
Sodium	25,8	0,2	26,4	4,0	mg/l	102%
Potassium	3,07	0,02	3,21	0,65	mg/l	105%
Nitrate (as NO3)	45,4	1,2	46,44	4,6	mg/l	102%
Nitrite (as NO2)	0,0406	0,0012	0,0409	0,0059	mg/l	101%
Ammonium (as NH4)	<0,01		<0,010		mg/l	•
Chloride	29,31	0,13	28,61	2,9	mg/l	98%
Sulphate (as SO4)	15,24	0,18	14,95	1,5	mg/l	98%
Orthophosphate (as PO4)	0,0909	0,0015	0,0885	0,0104	mg/l	97%
Boron	0,0708	0,0010	0,0700	0,018	mg/l	99%
DOC (as C)	3,64	0,08	3,62	0,543	mg/l	99%
Total P (as PO4)	0,1254	0,0011	0,125	0,0147	mg/l	100%
KMnO4-Index (as O2)	2,23	0,11			mg/l	



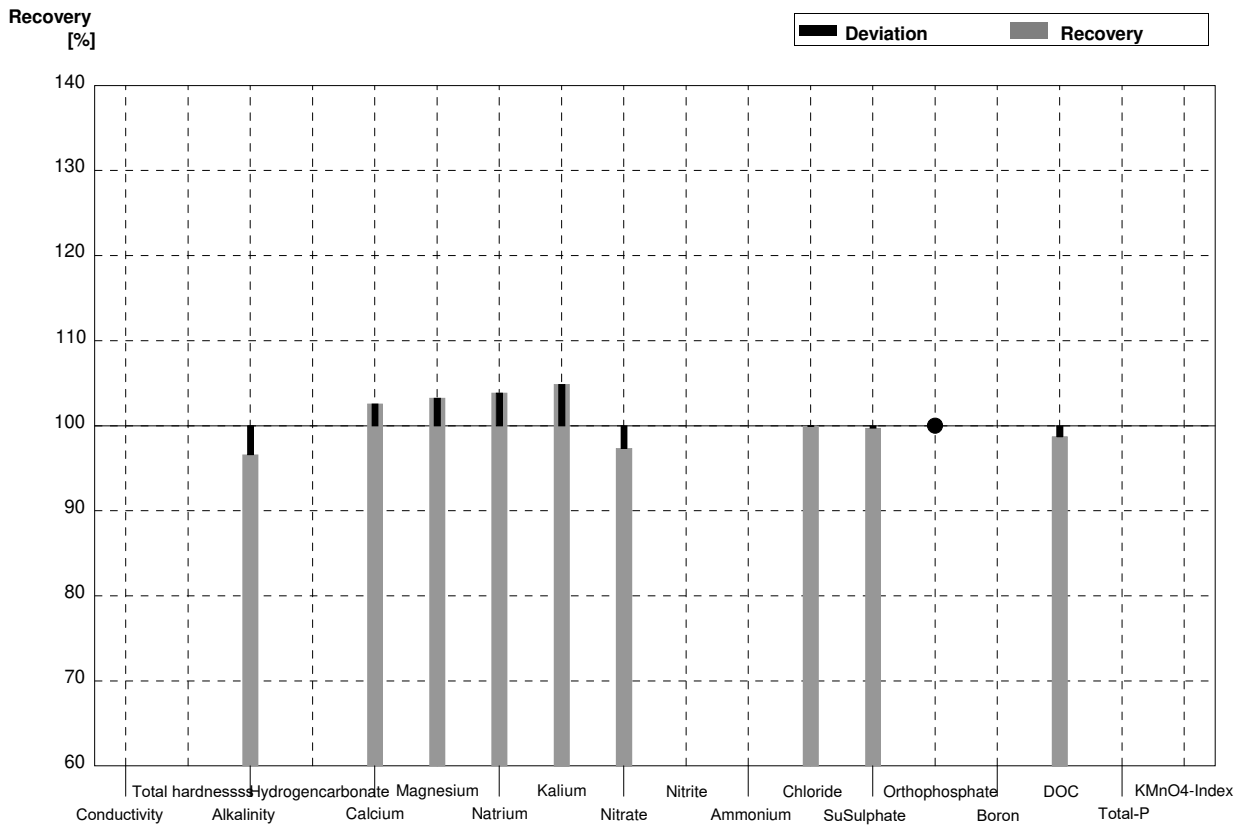
Sample N177A
Laboratory M

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2			µS/cm	
Total hardness	1,453	0,017			mmol/l	
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,507		mmol/l	96%
Hydrogen carbonate	155,5	1,9			mg/l	
Calcium	35,6	0,6	36,0		mg/l	101%
Magnesium	13,74	0,16	14,1		mg/l	103%
Sodium	29,8	0,4	30,4		mg/l	102%
Potassium	3,94	0,03	4,04		mg/l	103%
Nitrate (as NO3)	24,2	0,6	24,2		mg/l	100%
Nitrite (as NO2)	0,0811	0,0003			mg/l	
Ammonium (as NH4)	0,071	0,003			mg/l	
Chloride	21,54	0,05	21,9		mg/l	102%
Sulphate (as SO4)	35,6	0,4	35,5		mg/l	100%
Orthophosphate (as PO4)	<0,009		<0,29		mg/l	•
Boron	0,1006	0,0009			mg/l	
DOC (as C)	1,75	0,07	1,831		mg/l	105%
Total P (as PO4)	<0,009				mg/l	
KMnO4-Index (as O2)	2,72	0,10			mg/l	



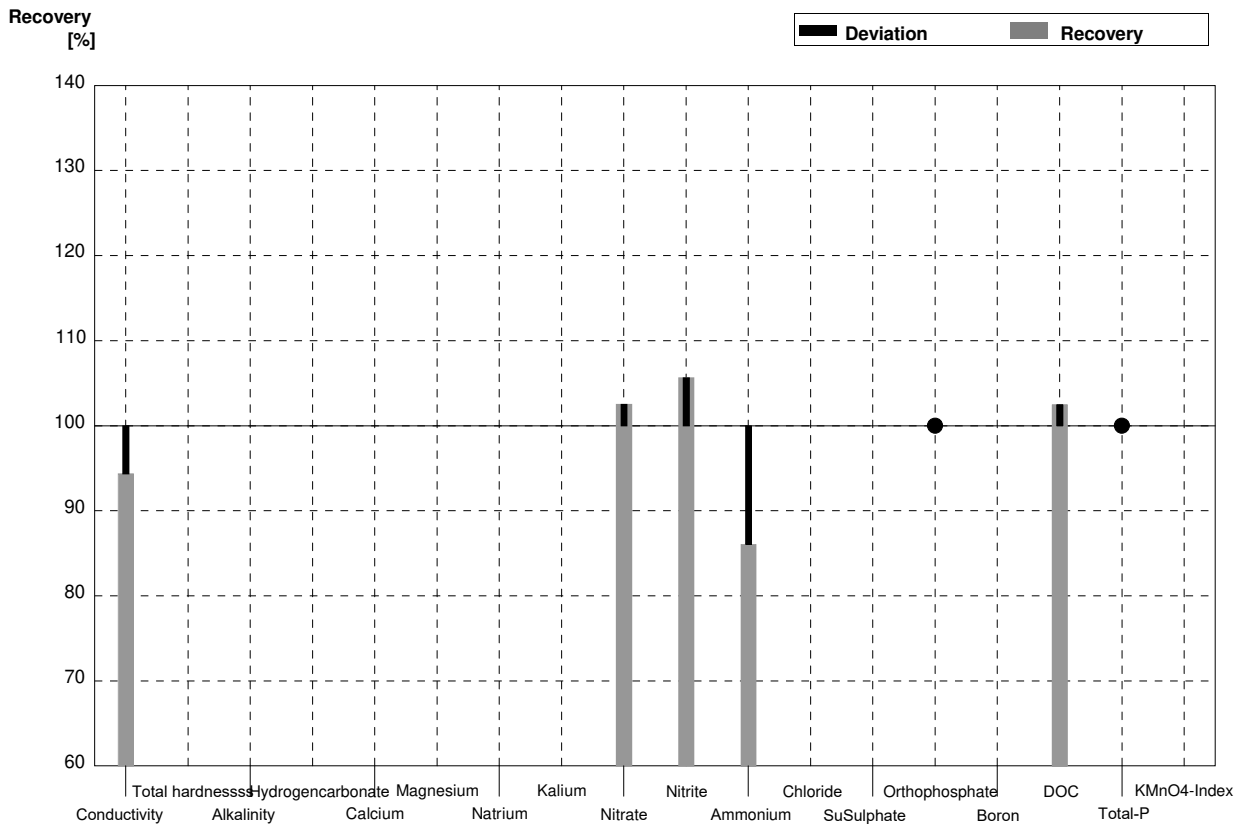
Sample N177B
Laboratory M

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1			µS/cm	
Total hardness	1,038	0,012			mmol/l	
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,362		mmol/l	97%
Hydrogen carbonate	83,0	1,0			mg/l	
Calcium	30,9	0,5	31,7		mg/l	103%
Magnesium	6,47	0,08	6,68		mg/l	103%
Sodium	25,8	0,2	26,8		mg/l	104%
Potassium	3,07	0,02	3,22		mg/l	105%
Nitrate (as NO3)	45,4	1,2	44,2		mg/l	97%
Nitrite (as NO2)	0,0406	0,0012			mg/l	
Ammonium (as NH4)	<0,01				mg/l	
Chloride	29,31	0,13	29,3		mg/l	100%
Sulphate (as SO4)	15,24	0,18	15,2		mg/l	100%
Orthophosphate (as PO4)	0,0909	0,0015	<0,29		mg/l	•
Boron	0,0708	0,0010			mg/l	
DOC (as C)	3,64	0,08	3,594		mg/l	99%
Total P (as PO4)	0,1254	0,0011			mg/l	
KMnO4-Index (as O2)	2,23	0,11			mg/l	



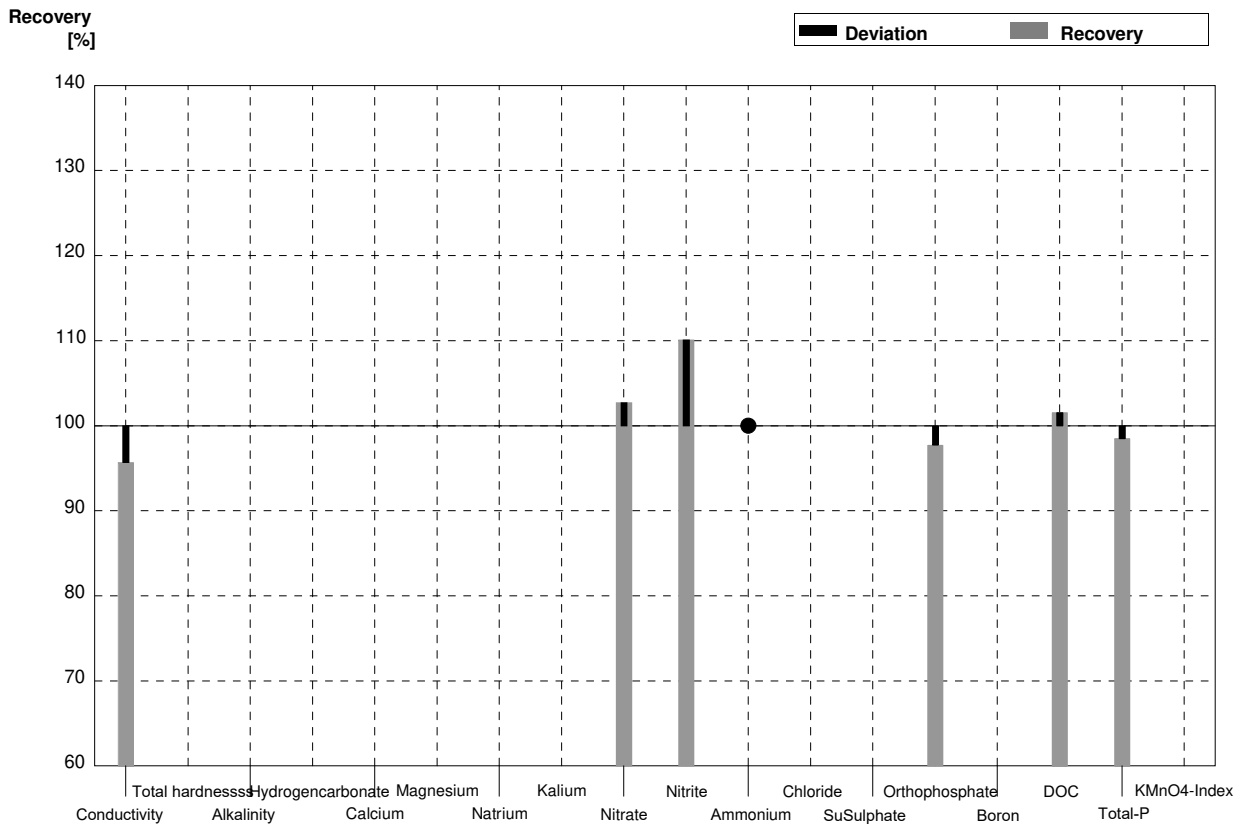
Sample N177A
Laboratory N

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	402	2,32	µS/cm	94%
Total hardness	1,453	0,017			mmol/l	
Alkalinity KS 4,3 (as H+)	2,60	0,03			mmol/l	
Hydrogen carbonate	155,5	1,9			mg/l	
Calcium	35,6	0,6			mg/l	
Magnesium	13,74	0,16			mg/l	
Sodium	29,8	0,4			mg/l	
Potassium	3,94	0,03			mg/l	
Nitrate (as NO3)	24,2	0,6	24,81	0,84	mg/l	103%
Nitrite (as NO2)	0,0811	0,0003	0,0857	0,0024	mg/l	106%
Ammonium (as NH4)	0,071	0,003	0,06111	0,00147	mg/l	86%
Chloride	21,54	0,05			mg/l	
Sulphate (as SO4)	35,6	0,4			mg/l	
Orthophosphate (as PO4)	<0,009		0,00169	0,00018	mg/l	•
Boron	0,1006	0,0009			mg/l	
DOC (as C)	1,75	0,07	1,794	0,015	mg/l	103%
Total P (as PO4)	<0,009		0,00482	0,00101	mg/l	•
KMnO4-Index (as O2)	2,72	0,10			mg/l	



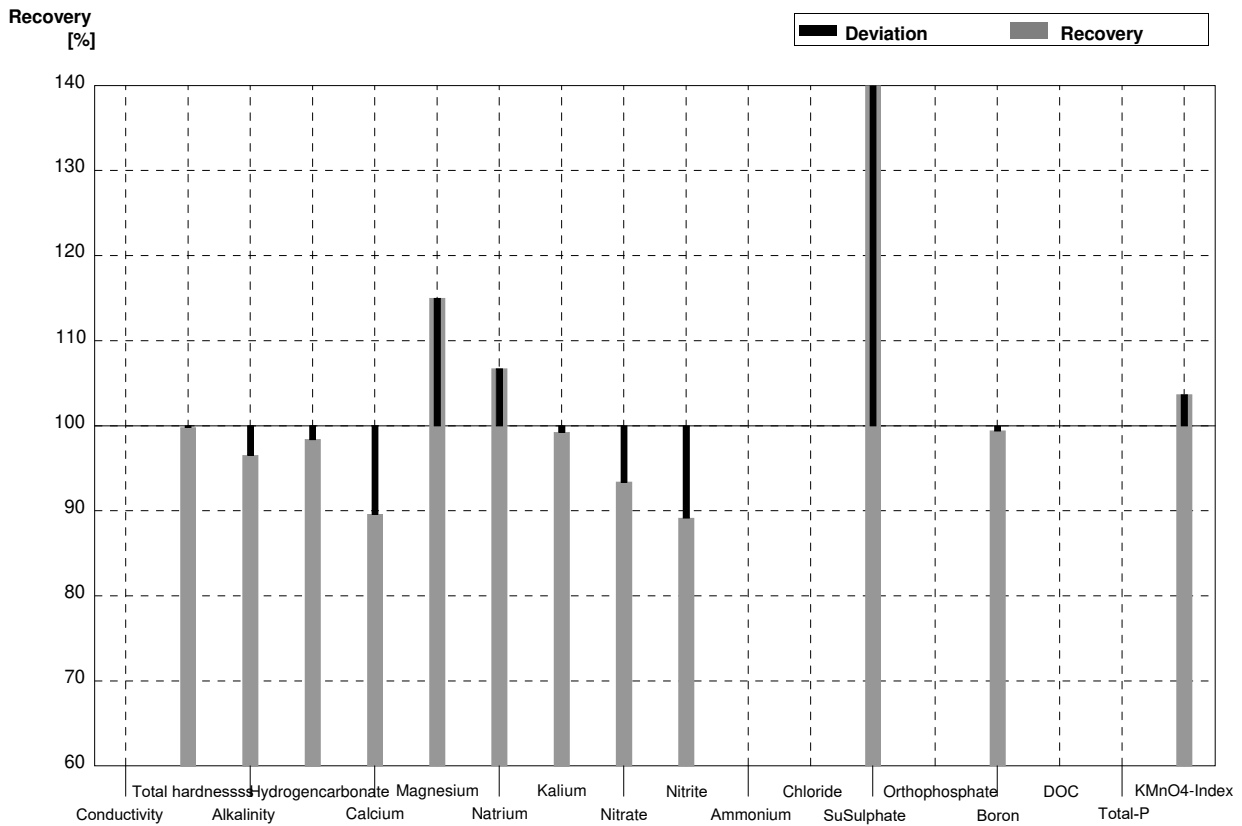
Sample N177B
Laboratory N

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	335	1,38	µS/cm	96%
Total hardness	1,038	0,012			mmol/l	
Alkalinity KS 4,3 (as H+)	1,410	0,017			mmol/l	
Hydrogen carbonate	83,0	1,0			mg/l	
Calcium	30,9	0,5			mg/l	
Magnesium	6,47	0,08			mg/l	
Sodium	25,8	0,2			mg/l	
Potassium	3,07	0,02			mg/l	
Nitrate (as NO3)	45,4	1,2	46,65	1,14	mg/l	103%
Nitrite (as NO2)	0,0406	0,0012	0,0447	0,0016	mg/l	110%
Ammonium (as NH4)	<0,01		0,00184	0,00023	mg/l	•
Chloride	29,31	0,13			mg/l	
Sulphate (as SO4)	15,24	0,18			mg/l	
Orthophosphate (as PO4)	0,0909	0,0015	0,08884	0,00088	mg/l	98%
Boron	0,0708	0,0010			mg/l	
DOC (as C)	3,64	0,08	3,697	0,033	mg/l	102%
Total P (as PO4)	0,1254	0,0011	0,12352	0,00118	mg/l	99%
KMnO4-Index (as O2)	2,23	0,11			mg/l	



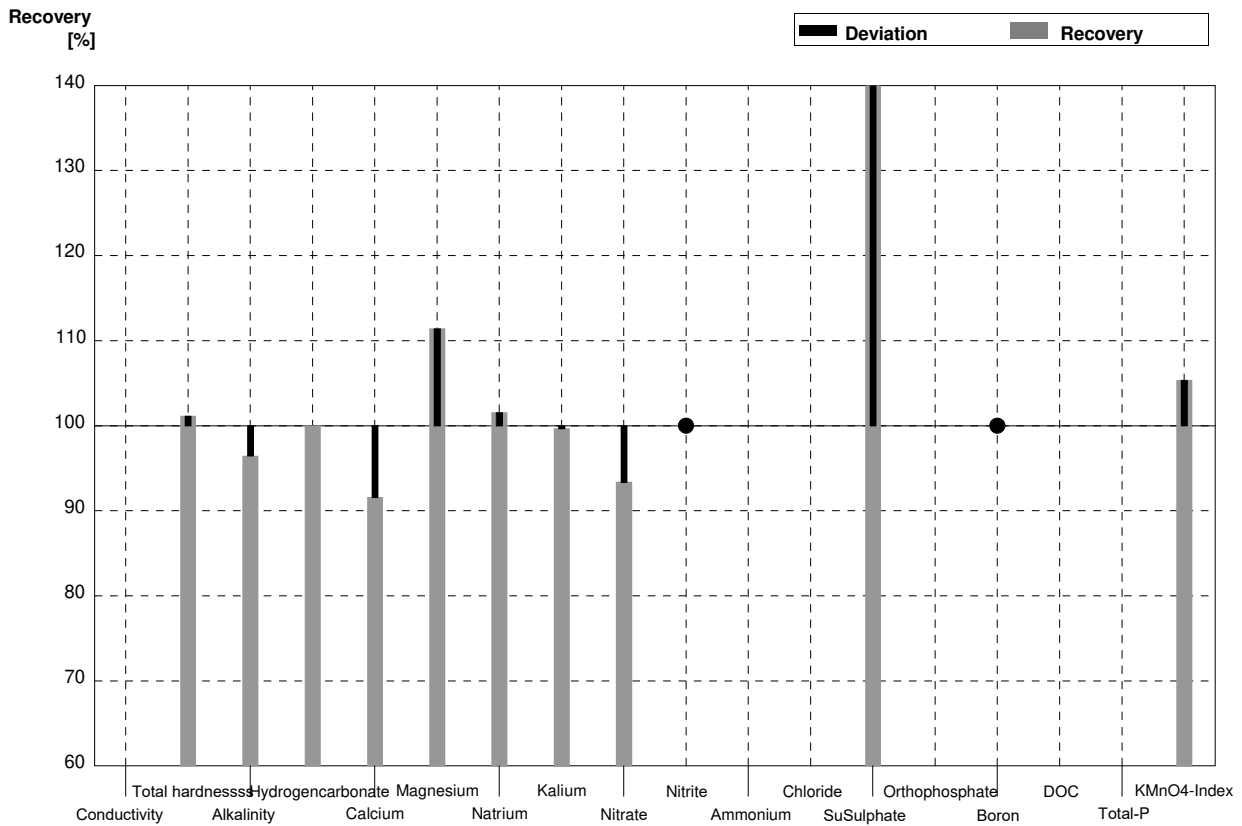
Sample N177A
Laboratory O

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2			µS/cm	
Total hardness	1,453	0,017	1,45	0,174	mmol/l	100%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,51	0,326	mmol/l	97%
Hydrogen carbonate	155,5	1,9	153	19,9	mg/l	98%
Calcium	35,6	0,6	31,9	3,83	mg/l	90%
Magnesium	13,74	0,16	15,8	1,90	mg/l	115%
Sodium	29,8	0,4	31,8	3,18	mg/l	107%
Potassium	3,94	0,03	3,91	0,352	mg/l	99%
Nitrate (as NO3)	24,2	0,6	22,6	2,49	mg/l	93%
Nitrite (as NO2)	0,0811	0,0003	0,0723	0,00723	mg/l	89%
Ammonium (as NH4)	0,071	0,003			mg/l	
Chloride	21,54	0,05			mg/l	
Sulphate (as SO4)	35,6	0,4	55,6	12,2	mg/l	156%
Orthophosphate (as PO4)	<0,009				mg/l	
Boron	0,1006	0,0009	0,100	0,012	mg/l	99%
DOC (as C)	1,75	0,07			mg/l	
Total P (as PO4)	<0,009				mg/l	
KMnO4-Index (as O2)	2,72	0,10	2,82	0,254	mg/l	104%



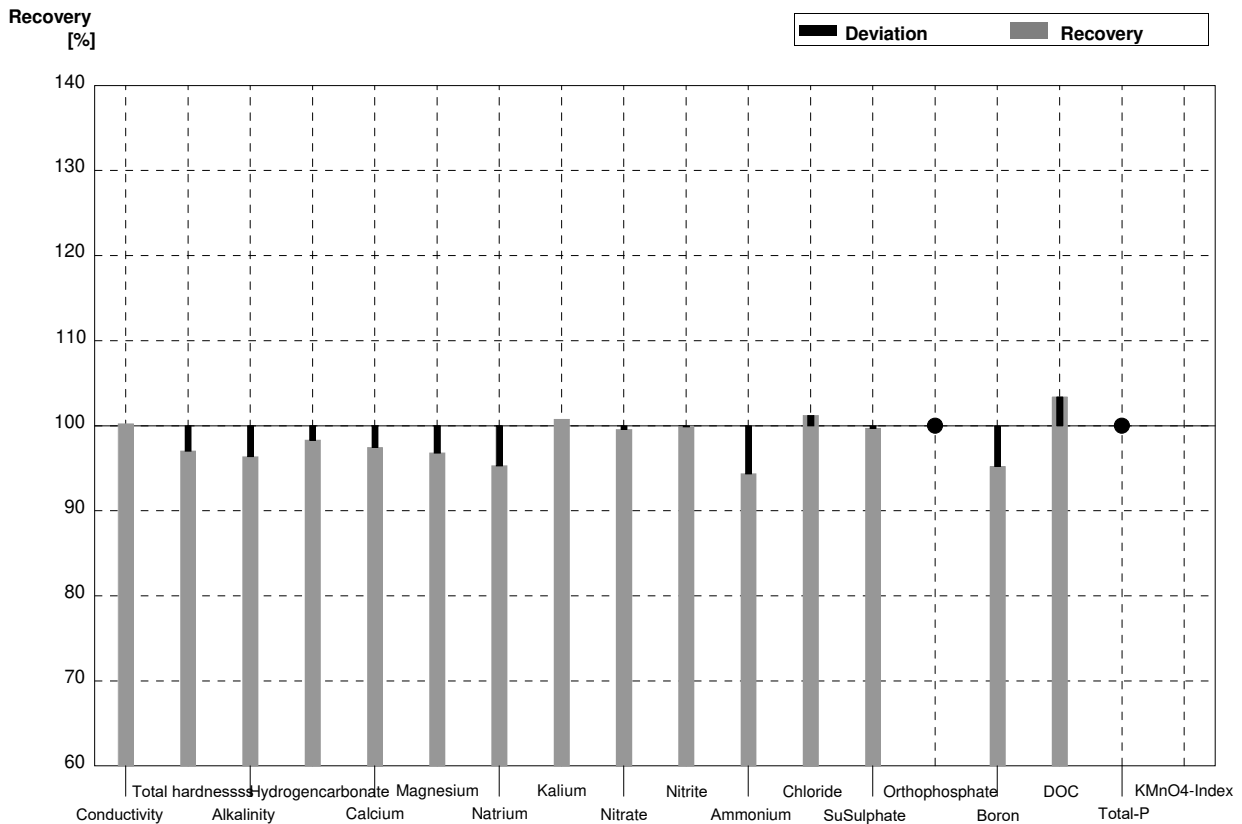
Sample N177B
Laboratory O

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1			µS/cm	
Total hardness	1,038	0,012	1,05	0,126	mmol/l	101%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,36	0,177	mmol/l	96%
Hydrogen carbonate	83,0	1,0	83,0	10,8	mg/l	100%
Calcium	30,9	0,5	28,3	3,40	mg/l	92%
Magnesium	6,47	0,08	7,21	0,865	mg/l	111%
Sodium	25,8	0,2	26,2	2,62	mg/l	102%
Potassium	3,07	0,02	3,06	0,275	mg/l	100%
Nitrate (as NO3)	45,4	1,2	42,4	4,66	mg/l	93%
Nitrite (as NO2)	0,0406	0,0012	<0,0493	0,00493	mg/l	•
Ammonium (as NH4)	<0,01				mg/l	
Chloride	29,31	0,13			mg/l	
Sulphate (as SO4)	15,24	0,18	31,7	6,97	mg/l	208%
Orthophosphate (as PO4)	0,0909	0,0015			mg/l	
Boron	0,0708	0,0010	<0,100	0,012	mg/l	•
DOC (as C)	3,64	0,08			mg/l	
Total P (as PO4)	0,1254	0,0011			mg/l	
KMnO4-Index (as O2)	2,23	0,11	2,35	0,212	mg/l	105%



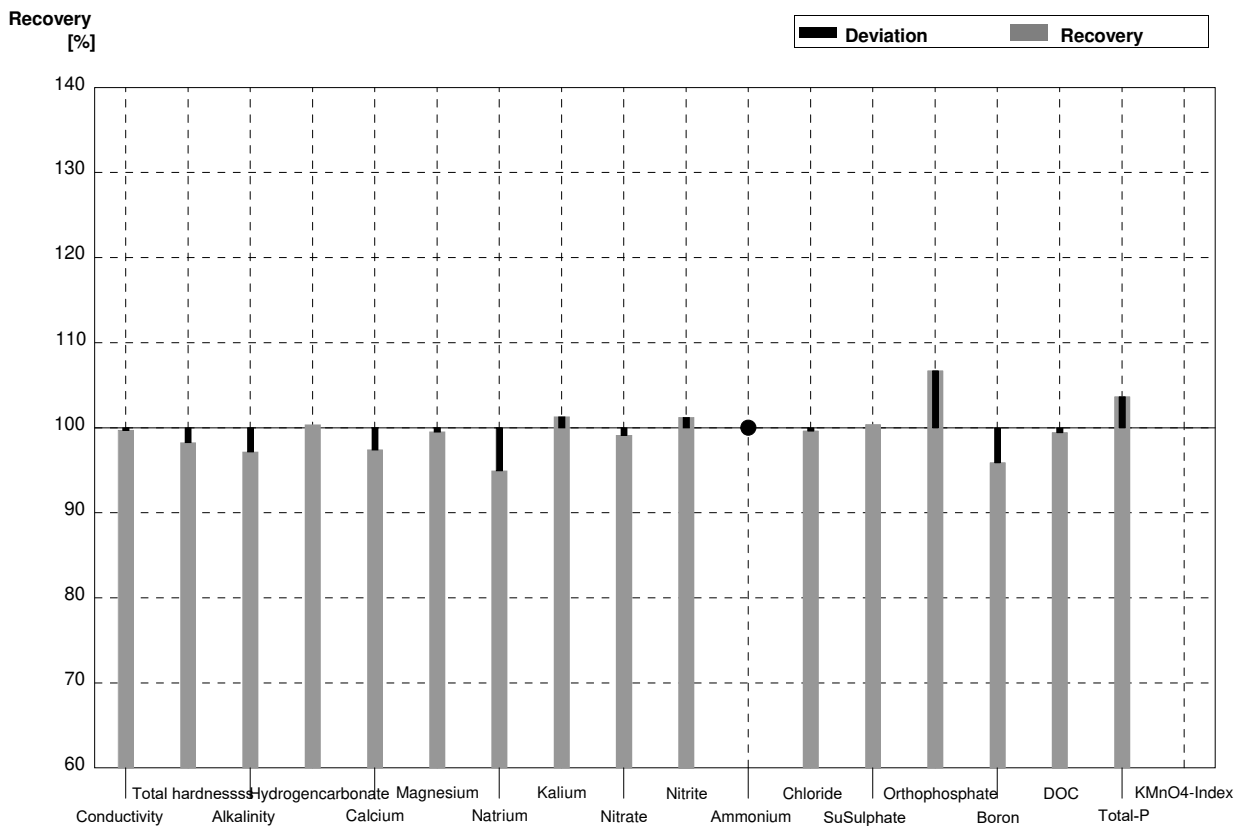
Sample N177A
Laboratory P

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	427	17	µS/cm	100%
Total hardness	1,453	0,017	1,41	0,067	mmol/l	97%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,506	0,155	mmol/l	96%
Hydrogen carbonate	155,5	1,9	152,9	9,5	mg/l	98%
Calcium	35,6	0,6	34,7	1,4	mg/l	97%
Magnesium	13,74	0,16	13,3	0,8	mg/l	97%
Sodium	29,8	0,4	28,4	1,6	mg/l	95%
Potassium	3,94	0,03	3,97	0,21	mg/l	101%
Nitrate (as NO3)	24,2	0,6	24,1	2,3	mg/l	100%
Nitrite (as NO2)	0,0811	0,0003	0,081	0,008	mg/l	100%
Ammonium (as NH4)	0,071	0,003	0,067	0,012	mg/l	94%
Chloride	21,54	0,05	21,8	1,8	mg/l	101%
Sulphate (as SO4)	35,6	0,4	35,5	2,9	mg/l	100%
Orthophosphate (as PO4)	<0,009		<0,010		mg/l	•
Boron	0,1006	0,0009	0,0958	0,0072	mg/l	95%
DOC (as C)	1,75	0,07	1,81	0,44	mg/l	103%
Total P (as PO4)	<0,009		<0,010		mg/l	•
KMnO4-Index (as O2)	2,72	0,10			mg/l	



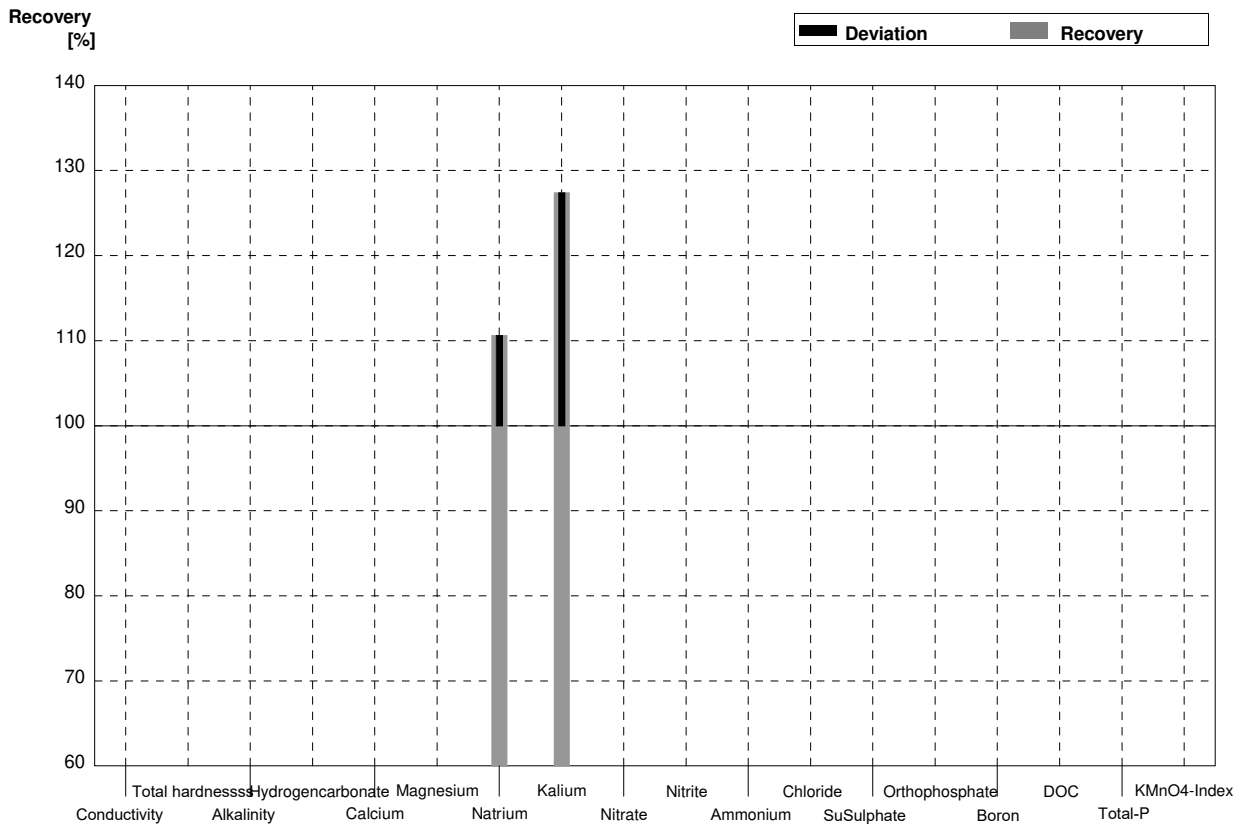
Sample N177B
Laboratory P

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	349	14	µS/cm	100%
Total hardness	1,038	0,012	1,02	0,047	mmol/l	98%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,37	0,1	mmol/l	97%
Hydrogen carbonate	83,0	1,0	83,3	6,0	mg/l	100%
Calcium	30,9	0,5	30,1	1,2	mg/l	97%
Magnesium	6,47	0,08	6,44	0,42	mg/l	100%
Sodium	25,8	0,2	24,5	1,4	mg/l	95%
Potassium	3,07	0,02	3,11	0,18	mg/l	101%
Nitrate (as NO3)	45,4	1,2	45,0	4,3	mg/l	99%
Nitrite (as NO2)	0,0406	0,0012	0,0411	0,0049	mg/l	101%
Ammonium (as NH4)	<0,01		<0,010		mg/l	•
Chloride	29,31	0,13	29,2	2,4	mg/l	100%
Sulphate (as SO4)	15,24	0,18	15,3	1,4	mg/l	100%
Orthophosphate (as PO4)	0,0909	0,0015	0,097	0,013	mg/l	107%
Boron	0,0708	0,0010	0,0679	0,0054	mg/l	96%
DOC (as C)	3,64	0,08	3,62	0,73	mg/l	99%
Total P (as PO4)	0,1254	0,0011	0,130	0,014	mg/l	104%
KMnO4-Index (as O2)	2,23	0,11			mg/l	



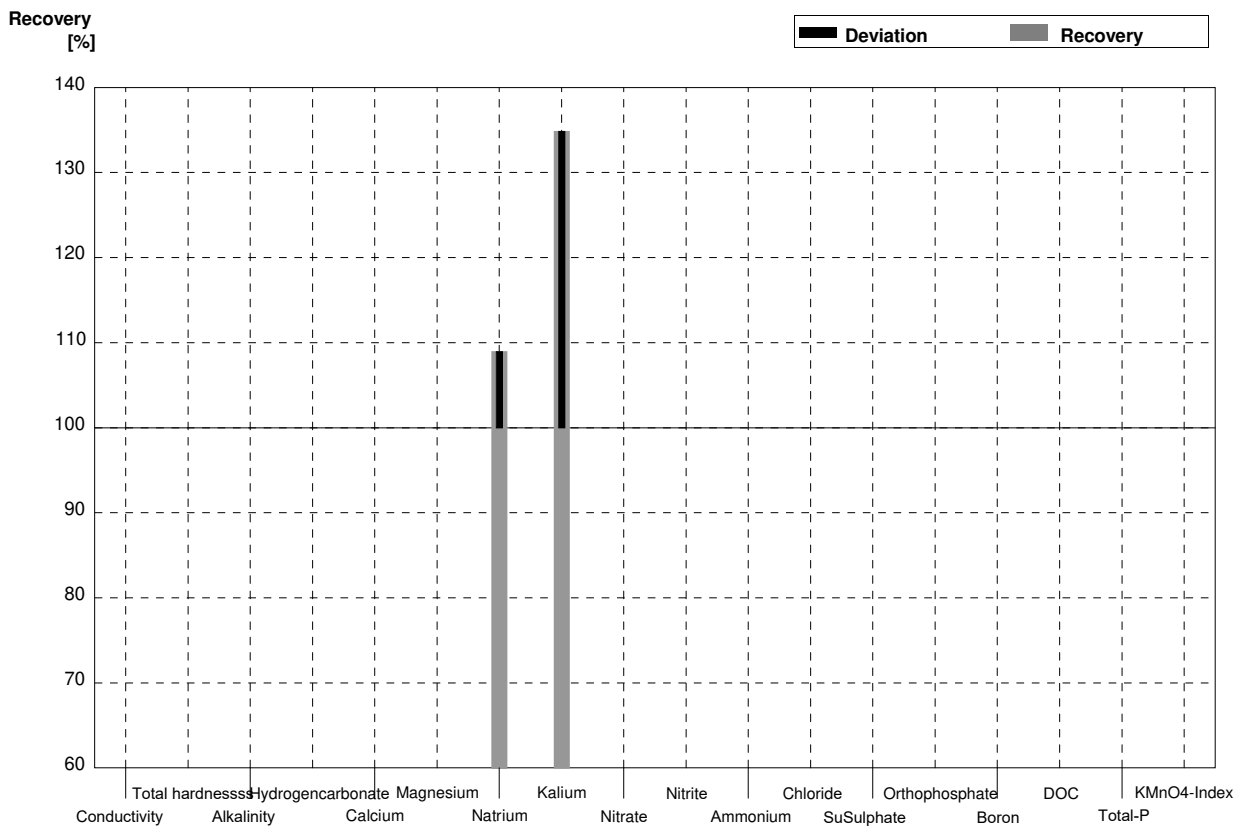
Sample N177A
Laboratory Q

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2			µS/cm	
Total hardness	1,453	0,017			mmol/l	
Alkalinity KS 4,3 (as H+)	2,60	0,03			mmol/l	
Hydrogen carbonate	155,5	1,9			mg/l	
Calcium	35,6	0,6			mg/l	
Magnesium	13,74	0,16			mg/l	
Sodium	29,8	0,4	32,97		mg/l	111%
Potassium	3,94	0,03	5,02		mg/l	127%
Nitrate (as NO3)	24,2	0,6			mg/l	
Nitrite (as NO2)	0,0811	0,0003			mg/l	
Ammonium (as NH4)	0,071	0,003			mg/l	
Chloride	21,54	0,05			mg/l	
Sulphate (as SO4)	35,6	0,4			mg/l	
Orthophosphate (as PO4)	<0,009				mg/l	
Boron	0,1006	0,0009			mg/l	
DOC (as C)	1,75	0,07			mg/l	
Total P (as PO4)	<0,009				mg/l	
KMnO4-Index (as O2)	2,72	0,10			mg/l	



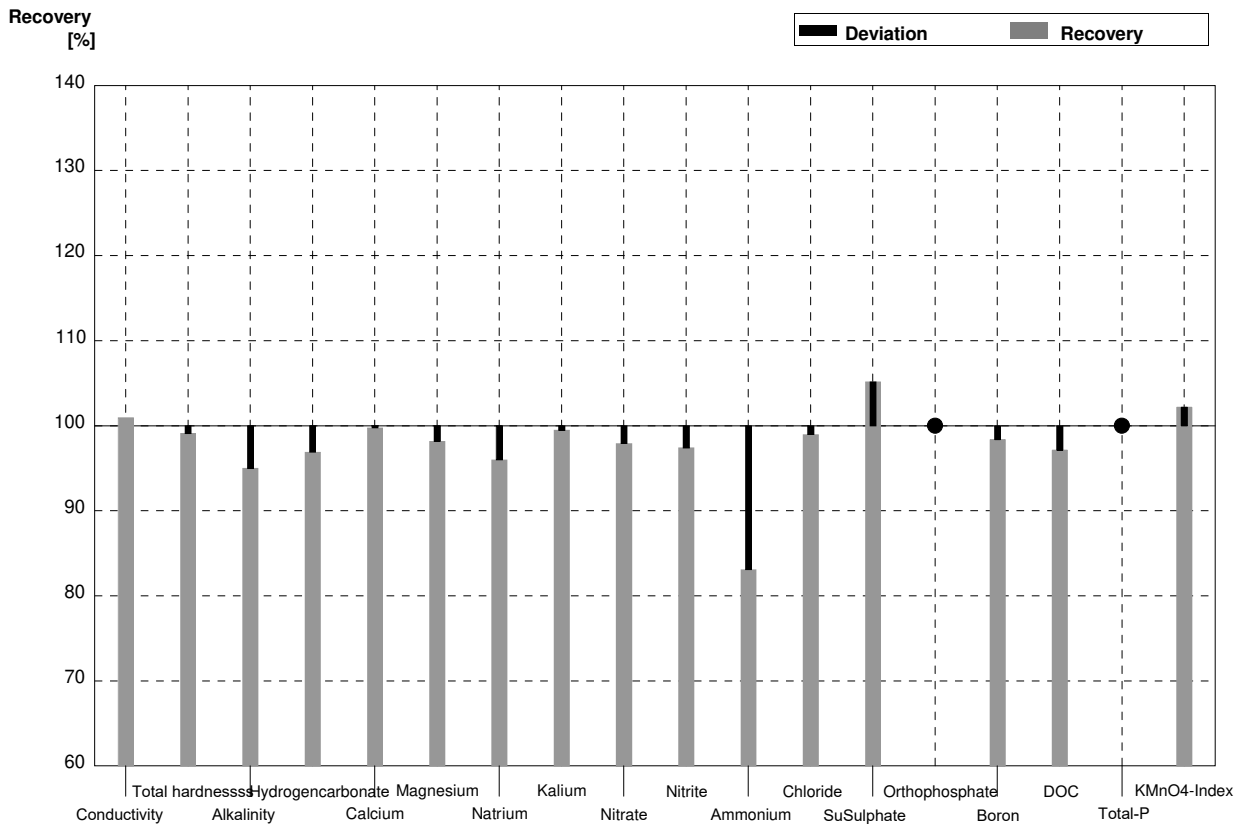
Sample N177B
Laboratory Q

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1			µS/cm	
Total hardness	1,038	0,012			mmol/l	
Alkalinity KS 4,3 (as H+)	1,410	0,017			mmol/l	
Hydrogen carbonate	83,0	1,0			mg/l	
Calcium	30,9	0,5			mg/l	
Magnesium	6,47	0,08			mg/l	
Sodium	25,8	0,2	28,12		mg/l	109%
Potassium	3,07	0,02	4,14		mg/l	135%
Nitrate (as NO3)	45,4	1,2			mg/l	
Nitrite (as NO2)	0,0406	0,0012			mg/l	
Ammonium (as NH4)	<0,01				mg/l	
Chloride	29,31	0,13			mg/l	
Sulphate (as SO4)	15,24	0,18			mg/l	
Orthophosphate (as PO4)	0,0909	0,0015			mg/l	
Boron	0,0708	0,0010			mg/l	
DOC (as C)	3,64	0,08			mg/l	
Total P (as PO4)	0,1254	0,0011			mg/l	
KMnO4-Index (as O2)	2,23	0,11			mg/l	



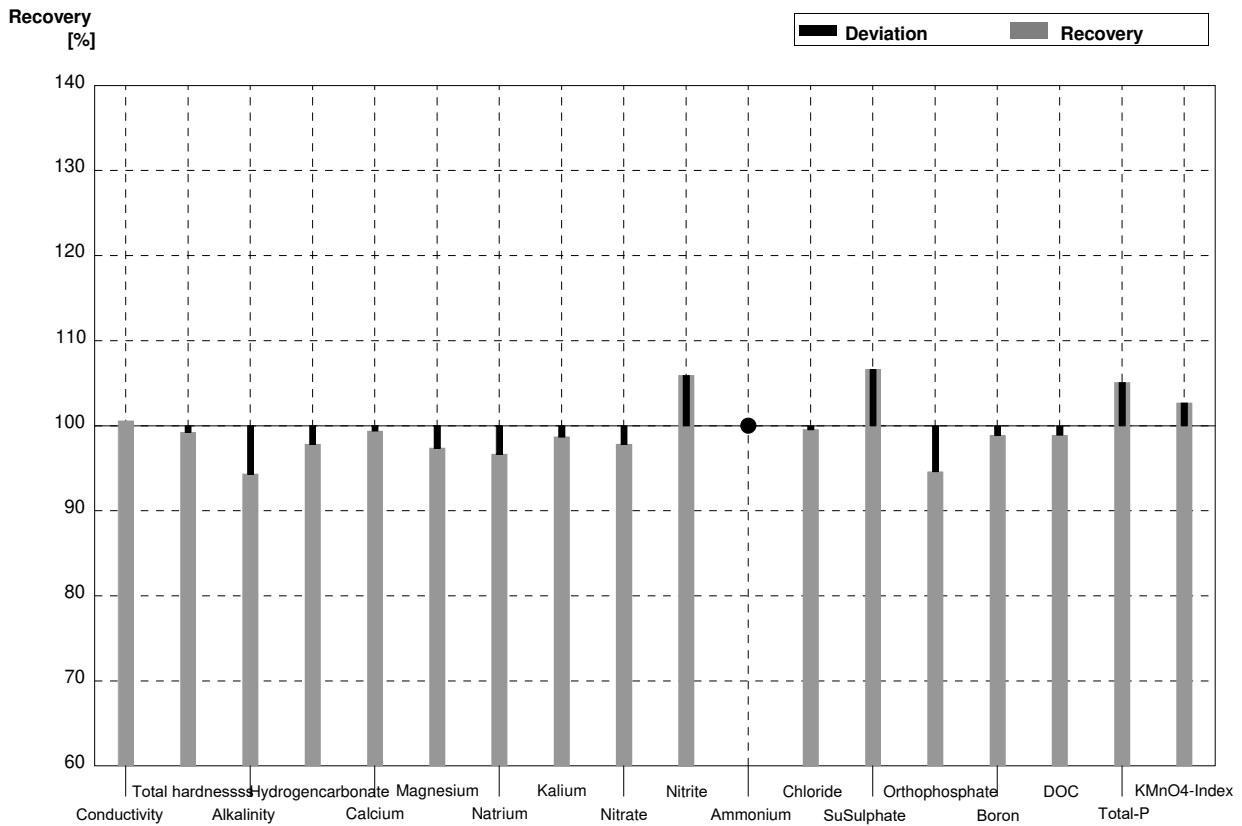
Sample N177A
Laboratory R

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	430	43,0	µS/cm	101%
Total hardness	1,453	0,017	1,44		mmol/l	99%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,47	0,371	mmol/l	95%
Hydrogen carbonate	155,5	1,9	150,7	22,61	mg/l	97%
Calcium	35,6	0,6	35,52	3,552	mg/l	100%
Magnesium	13,74	0,16	13,49	1,349	mg/l	98%
Sodium	29,8	0,4	28,61	2,861	mg/l	96%
Potassium	3,94	0,03	3,92	0,392	mg/l	99%
Nitrate (as NO3)	24,2	0,6	23,697	1,1848	mg/l	98%
Nitrite (as NO2)	0,0811	0,0003	0,079	0,0118	mg/l	97%
Ammonium (as NH4)	0,071	0,003	0,059	0,0059	mg/l	83%
Chloride	21,54	0,05	21,32	2,132	mg/l	99%
Sulphate (as SO4)	35,6	0,4	37,45	3,745	mg/l	105%
Orthophosphate (as PO4)	<0,009		0,0090	0,00140	mg/l	•
Boron	0,1006	0,0009	0,099	0,0149	mg/l	98%
DOC (as C)	1,75	0,07	1,70	0,140	mg/l	97%
Total P (as PO4)	<0,009		<0,0153		mg/l	•
KMnO4-Index (as O2)	2,72	0,10	2,78	0,445	mg/l	102%



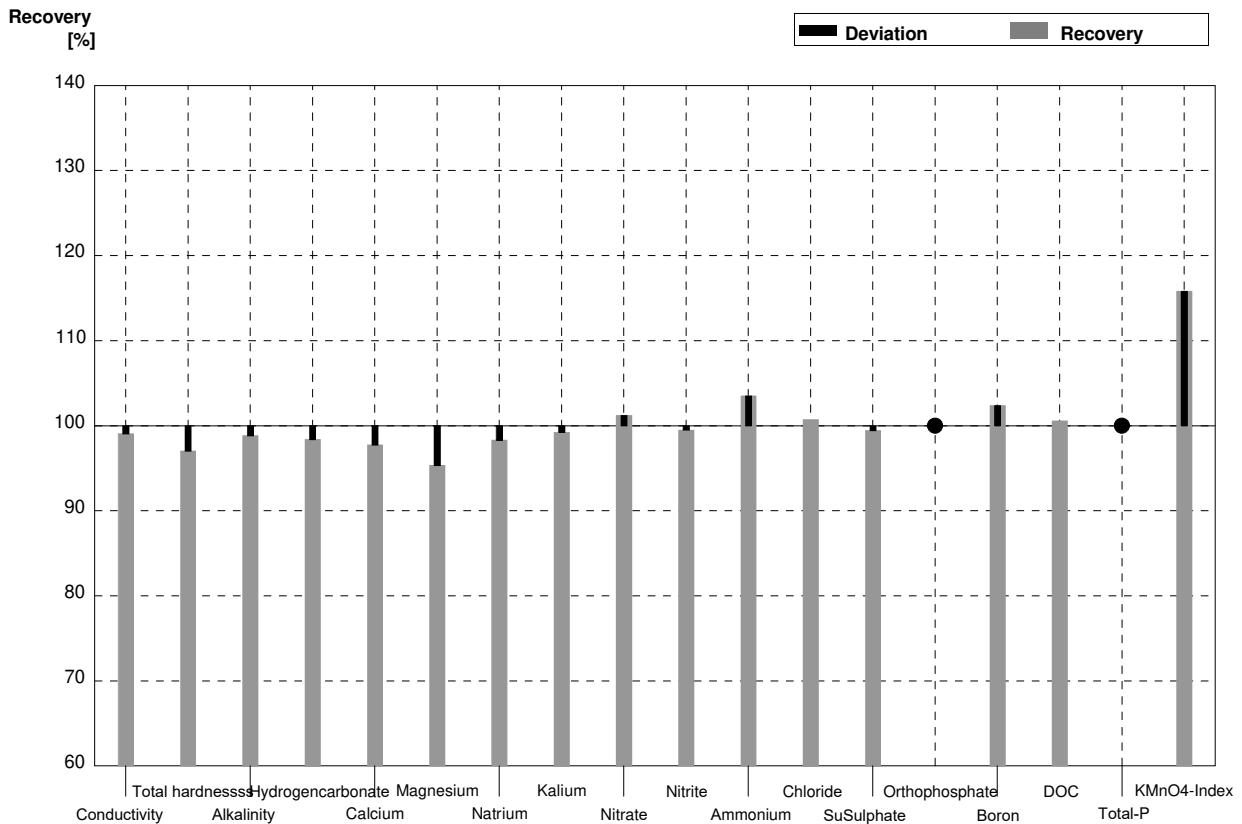
Sample N177B
Laboratory R

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	352	35,2	µS/cm	101%
Total hardness	1,038	0,012	1,03		mmol/l	99%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,33	0,200	mmol/l	94%
Hydrogen carbonate	83,0	1,0	81,2	12,17	mg/l	98%
Calcium	30,9	0,5	30,71	3,071	mg/l	99%
Magnesium	6,47	0,08	6,30	0,630	mg/l	97%
Sodium	25,8	0,2	24,94	2,494	mg/l	97%
Potassium	3,07	0,02	3,03	0,303	mg/l	99%
Nitrate (as NO3)	45,4	1,2	44,41	2,2205	mg/l	98%
Nitrite (as NO2)	0,0406	0,0012	0,0430	0,0064	mg/l	106%
Ammonium (as NH4)	<0,01		<0,00515		mg/l	•
Chloride	29,31	0,13	29,18	2,918	mg/l	100%
Sulphate (as SO4)	15,24	0,18	16,25	1,625	mg/l	107%
Orthophosphate (as PO4)	0,0909	0,0015	0,086	0,0129	mg/l	95%
Boron	0,0708	0,0010	0,070	0,0105	mg/l	99%
DOC (as C)	3,64	0,08	3,60	0,290	mg/l	99%
Total P (as PO4)	0,1254	0,0011	0,1318	0,0199	mg/l	105%
KMnO4-Index (as O2)	2,23	0,11	2,29	0,366	mg/l	103%



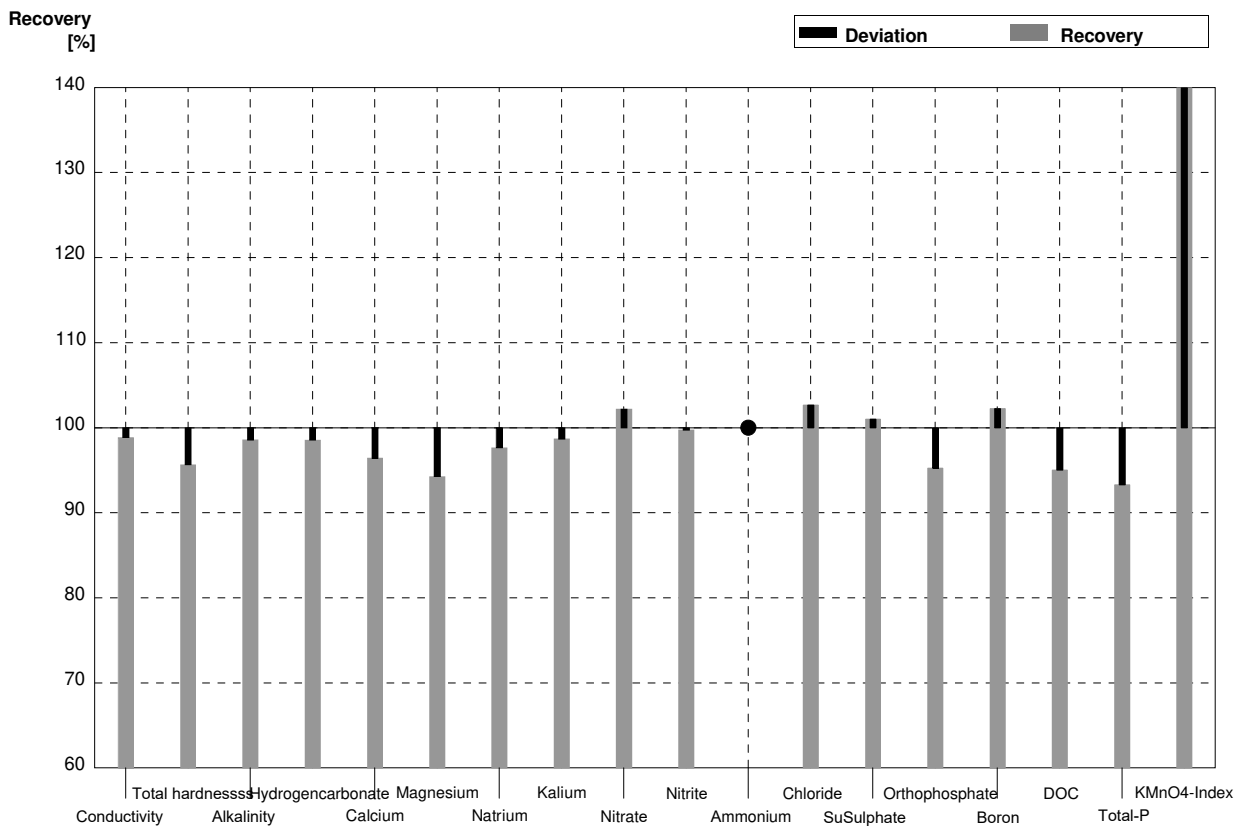
Sample N177A
Laboratory S

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	422	0,156	µS/cm	99%
Total hardness	1,453	0,017	1,41	0,0170	mmol/l	97%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,57	0,100	mmol/l	99%
Hydrogen carbonate	155,5	1,9	153	3,07	mg/l	98%
Calcium	35,6	0,6	34,8	0,332	mg/l	98%
Magnesium	13,74	0,16	13,1	0,361	mg/l	95%
Sodium	29,8	0,4	29,3	0,133	mg/l	98%
Potassium	3,94	0,03	3,91	0,0205	mg/l	99%
Nitrate (as NO3)	24,2	0,6	24,5	0,581	mg/l	101%
Nitrite (as NO2)	0,0811	0,0003	0,0807	0,000448	mg/l	100%
Ammonium (as NH4)	0,071	0,003	0,0735	0,00156	mg/l	104%
Chloride	21,54	0,05	21,7	0,416	mg/l	101%
Sulphate (as SO4)	35,6	0,4	35,4	0,117	mg/l	99%
Orthophosphate (as PO4)	<0,009		<0,0150		mg/l	•
Boron	0,1006	0,0009	0,103	0,000588	mg/l	102%
DOC (as C)	1,75	0,07	1,76	0,0486	mg/l	101%
Total P (as PO4)	<0,009		<0,0150		mg/l	•
KMnO4-Index (as O2)	2,72	0,10	3,15		mg/l	116%



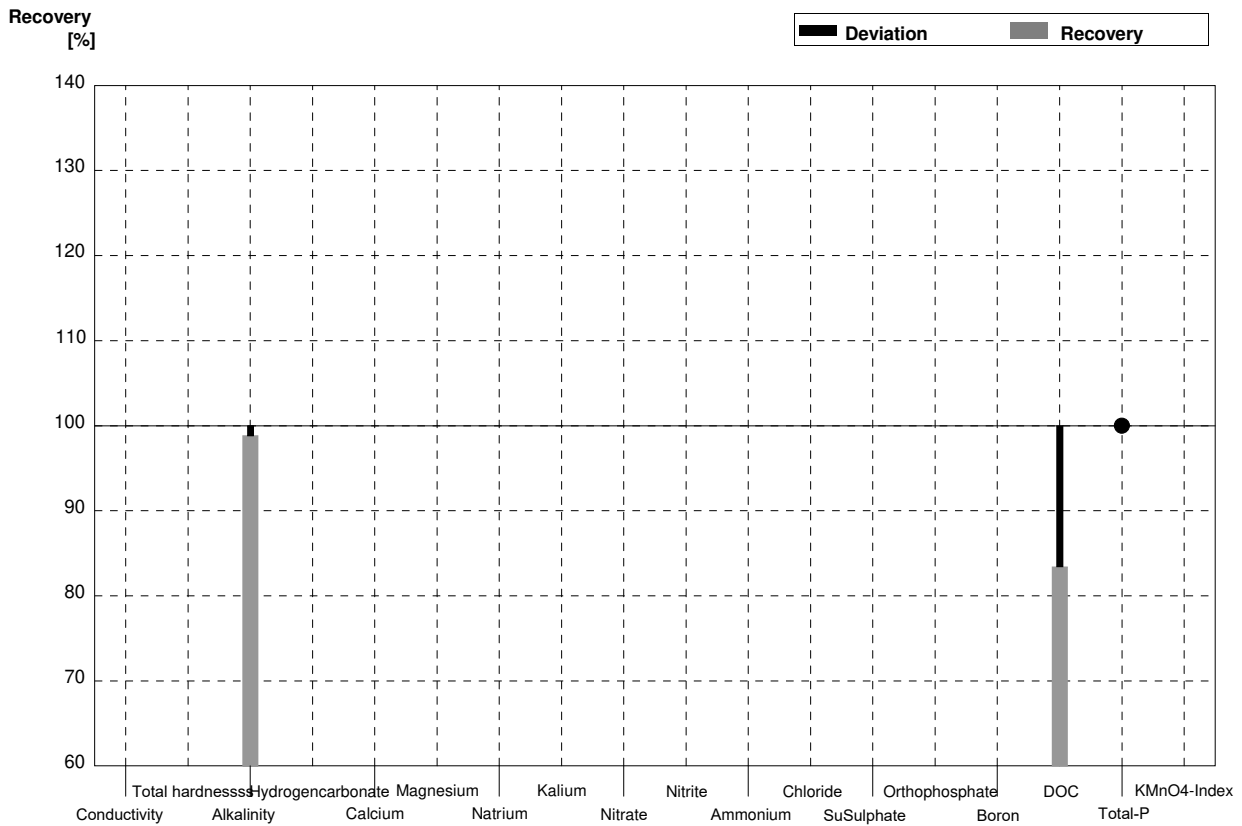
Sample N177B
Laboratory S

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	346	0,212	µS/cm	99%
Total hardness	1,038	0,012	0,993	0,00874	mmol/l	96%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,39	0,0768	mmol/l	99%
Hydrogen carbonate	83,0	1,0	81,8	1,64	mg/l	99%
Calcium	30,9	0,5	29,8	0,331	mg/l	96%
Magnesium	6,47	0,08	6,10	0,0685	mg/l	94%
Sodium	25,8	0,2	25,2	0,133	mg/l	98%
Potassium	3,07	0,02	3,03	0,0182	mg/l	99%
Nitrate (as NO3)	45,4	1,2	46,4	0,593	mg/l	102%
Nitrite (as NO2)	0,0406	0,0012	0,0405	0,000412	mg/l	100%
Ammonium (as NH4)	<0,01		<0,0100		mg/l	•
Chloride	29,31	0,13	30,1	0,397	mg/l	103%
Sulphate (as SO4)	15,24	0,18	15,4	0,114	mg/l	101%
Orthophosphate (as PO4)	0,0909	0,0015	0,0866	0,00165	mg/l	95%
Boron	0,0708	0,0010	0,0724	0,000566	mg/l	102%
DOC (as C)	3,64	0,08	3,46	0,0476	mg/l	95%
Total P (as PO4)	0,1254	0,0011	0,117	0,00418	mg/l	93%
KMnO4-Index (as O2)	2,23	0,11	3,61		mg/l	162%



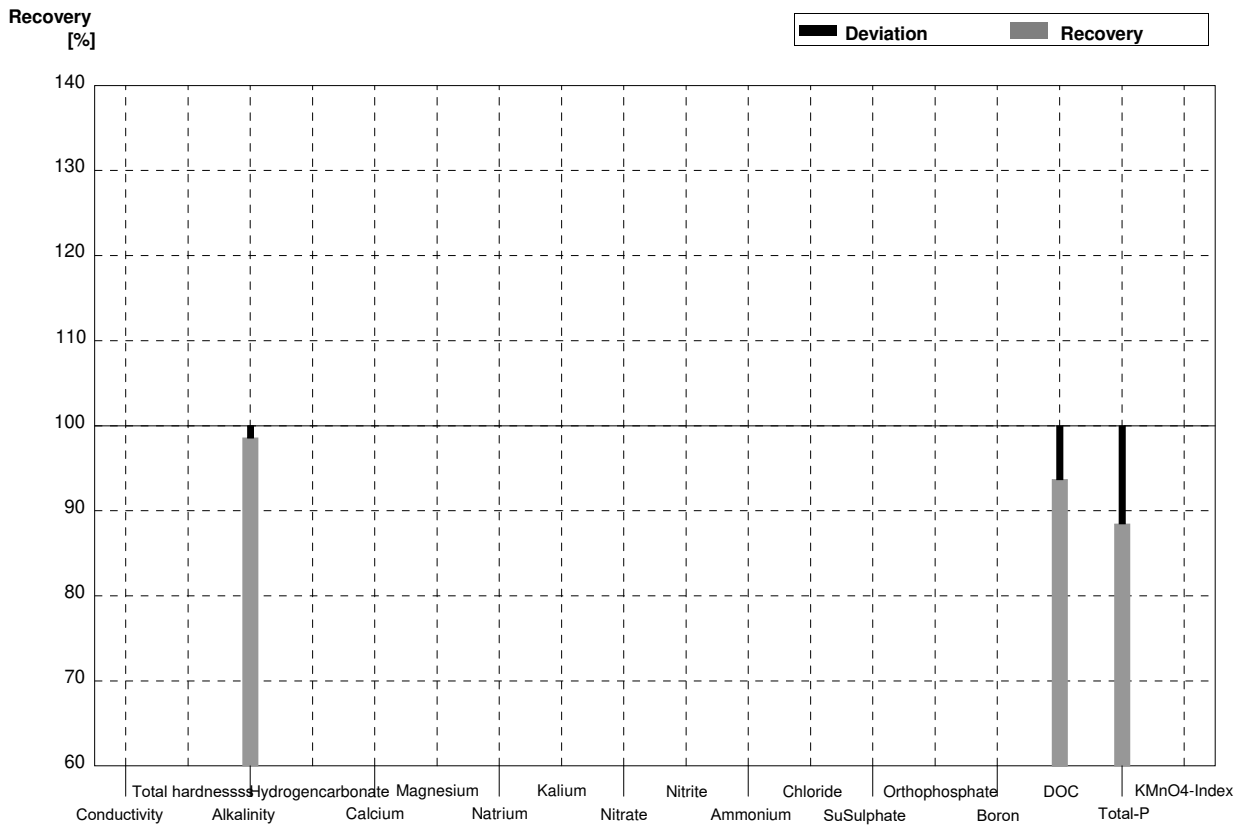
Sample N177A
Laboratory T

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2			µS/cm	
Total hardness	1,453	0,017			mmol/l	
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,57	0,26	mmol/l	99%
Hydrogen carbonate	155,5	1,9			mg/l	
Calcium	35,6	0,6			mg/l	
Magnesium	13,74	0,16			mg/l	
Sodium	29,8	0,4			mg/l	
Potassium	3,94	0,03			mg/l	
Nitrate (as NO3)	24,2	0,6			mg/l	
Nitrite (as NO2)	0,0811	0,0003			mg/l	
Ammonium (as NH4)	0,071	0,003			mg/l	
Chloride	21,54	0,05			mg/l	
Sulphate (as SO4)	35,6	0,4			mg/l	
Orthophosphate (as PO4)	<0,009				mg/l	
Boron	0,1006	0,0009			mg/l	
DOC (as C)	1,75	0,07	1,46	0,19	mg/l	83%
Total P (as PO4)	<0,009		<0,00613		mg/l	•
KMnO4-Index (as O2)	2,72	0,10			mg/l	



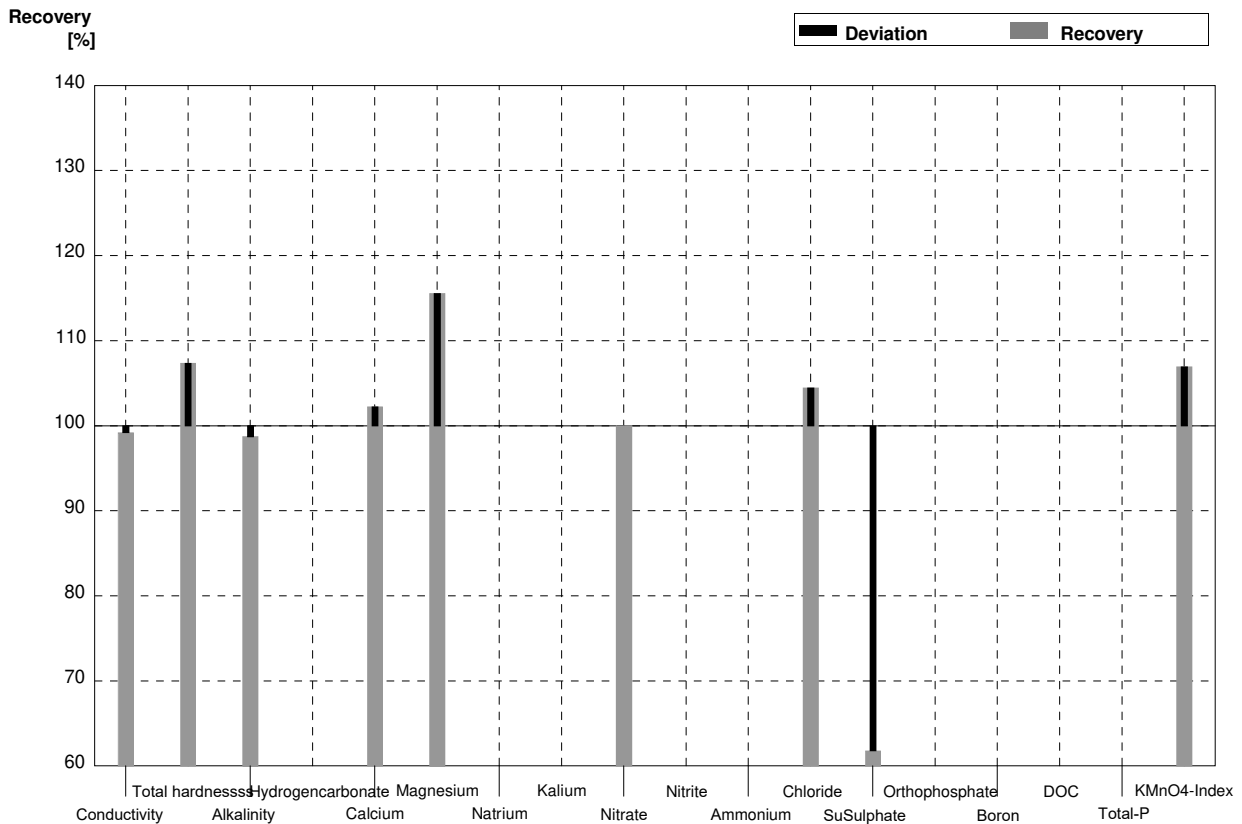
Sample N177B
Laboratory T

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1			µS/cm	
Total hardness	1,038	0,012			mmol/l	
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,39	0,14	mmol/l	99%
Hydrogen carbonate	83,0	1,0			mg/l	
Calcium	30,9	0,5			mg/l	
Magnesium	6,47	0,08			mg/l	
Sodium	25,8	0,2			mg/l	
Potassium	3,07	0,02			mg/l	
Nitrate (as NO3)	45,4	1,2			mg/l	
Nitrite (as NO2)	0,0406	0,0012			mg/l	
Ammonium (as NH4)	<0,01				mg/l	
Chloride	29,31	0,13			mg/l	
Sulphate (as SO4)	15,24	0,18			mg/l	
Orthophosphate (as PO4)	0,0909	0,0015			mg/l	
Boron	0,0708	0,0010			mg/l	
DOC (as C)	3,64	0,08	3,41	0,44	mg/l	94%
Total P (as PO4)	0,1254	0,0011	0,110953	0,02	mg/l	88%
KMnO4-Index (as O2)	2,23	0,11			mg/l	



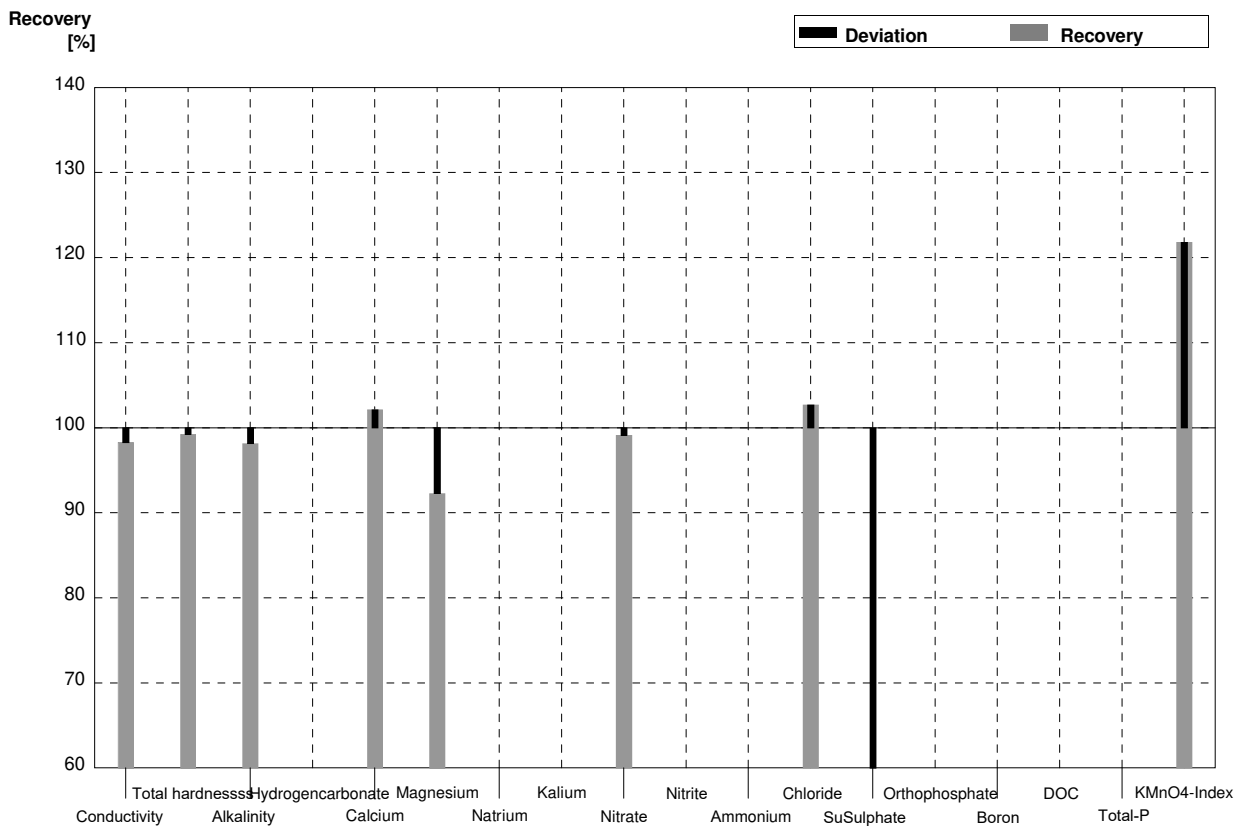
Sample N177A
Laboratory U

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	422,6	0,55	µS/cm	99%
Total hardness	1,453	0,017	1,56	0,111	mmol/l	107%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,567	0,3	mmol/l	99%
Hydrogen carbonate	155,5	1,9			mg/l	
Calcium	35,6	0,6	36,4	1,64	mg/l	102%
Magnesium	13,74	0,16	15,88	3,06	mg/l	116%
Sodium	29,8	0,4			mg/l	
Potassium	3,94	0,03			mg/l	
Nitrate (as NO3)	24,2	0,6	24,2	0,964	mg/l	100%
Nitrite (as NO2)	0,0811	0,0003			mg/l	
Ammonium (as NH4)	0,071	0,003			mg/l	
Chloride	21,54	0,05	22,5	2,148	mg/l	104%
Sulphate (as SO4)	35,6	0,4	22,0	20,0	mg/l	62%
Orthophosphate (as PO4)	<0,009				mg/l	
Boron	0,1006	0,0009			mg/l	
DOC (as C)	1,75	0,07			mg/l	
Total P (as PO4)	<0,009				mg/l	
KMnO4-Index (as O2)	2,72	0,10	2,909	0,297	mg/l	107%



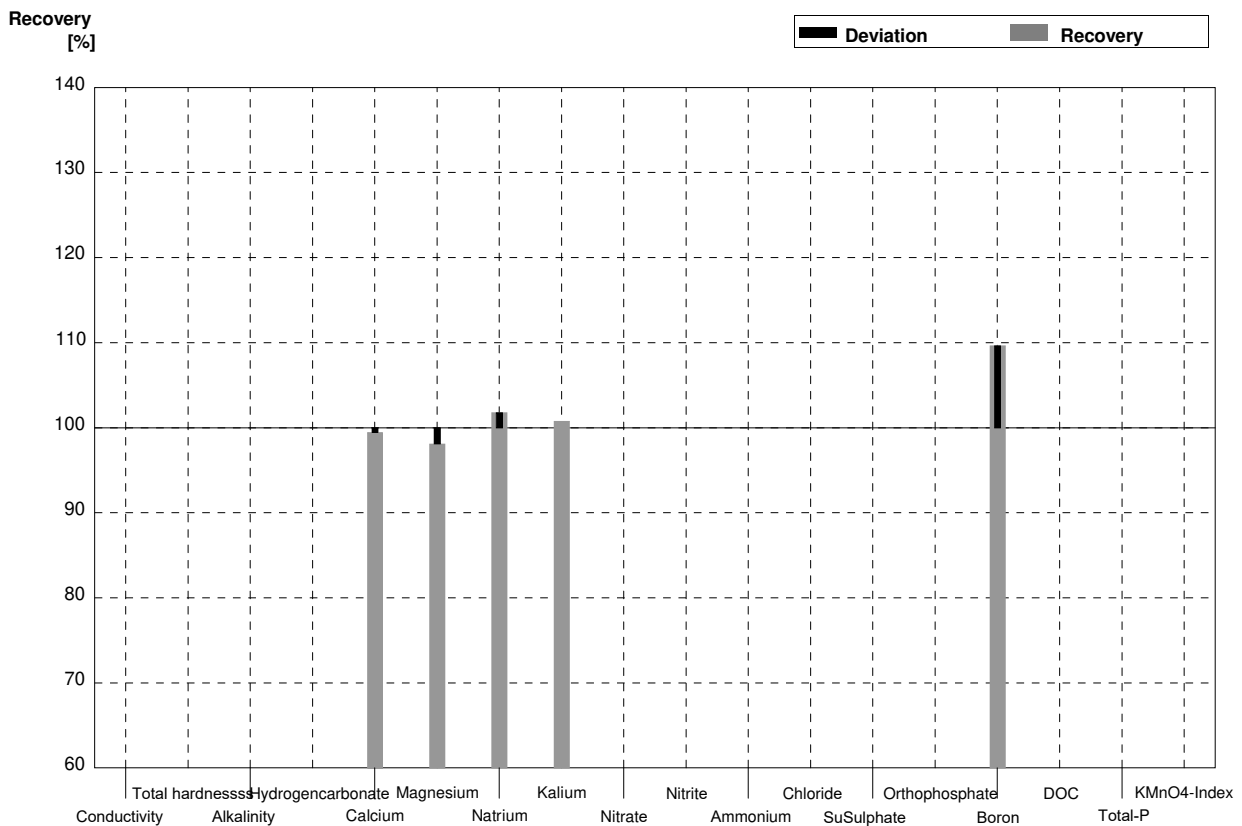
Sample N177B
Laboratory U

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	344	0,55	µS/cm	98%
Total hardness	1,038	0,012	1,03	0,111	mmol/l	99%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,384	0,3	mmol/l	98%
Hydrogen carbonate	83,0	1,0			mg/l	
Calcium	30,9	0,5	31,56	1,64	mg/l	102%
Magnesium	6,47	0,08	5,97	3,06	mg/l	92%
Sodium	25,8	0,2			mg/l	
Potassium	3,07	0,02			mg/l	
Nitrate (as NO3)	45,4	1,2	45,0	0,964	mg/l	99%
Nitrite (as NO2)	0,0406	0,0012			mg/l	
Ammonium (as NH4)	<0,01				mg/l	
Chloride	29,31	0,13	30,1	2,148	mg/l	103%
Sulphate (as SO4)	15,24	0,18	6,0	20,0	mg/l	39%
Orthophosphate (as PO4)	0,0909	0,0015			mg/l	
Boron	0,0708	0,0010			mg/l	
DOC (as C)	3,64	0,08			mg/l	
Total P (as PO4)	0,1254	0,0011			mg/l	
KMnO4-Index (as O2)	2,23	0,11	2,716	0,297	mg/l	122%



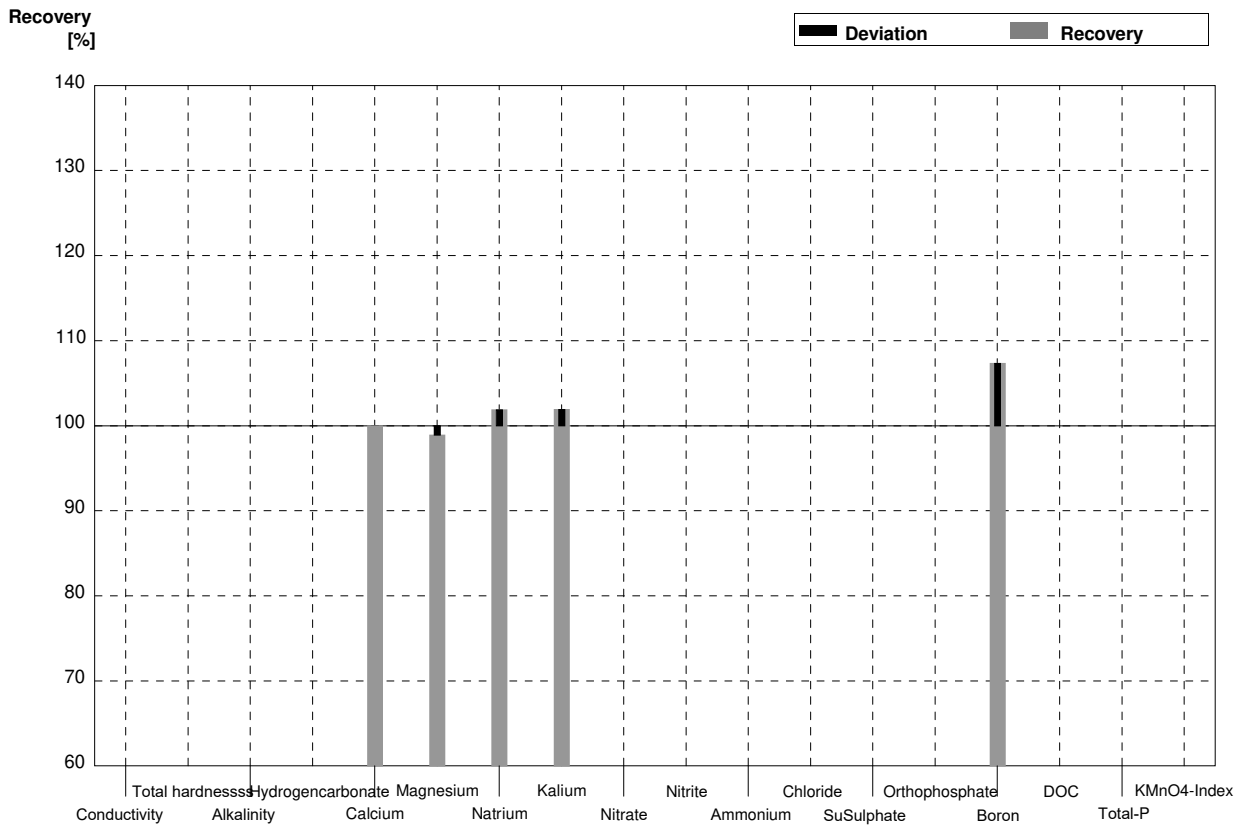
Sample N177A
Laboratory V

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2			µS/cm	
Total hardness	1,453	0,017			mmol/l	
Alkalinity KS 4,3 (as H+)	2,60	0,03			mmol/l	
Hydrogen carbonate	155,5	1,9			mg/l	
Calcium	35,6	0,6	35,41	3,54	mg/l	99%
Magnesium	13,74	0,16	13,48	1,35	mg/l	98%
Sodium	29,8	0,4	30,34	3,03	mg/l	102%
Potassium	3,94	0,03	3,97	0,40	mg/l	101%
Nitrate (as NO3)	24,2	0,6			mg/l	
Nitrite (as NO2)	0,0811	0,0003			mg/l	
Ammonium (as NH4)	0,071	0,003			mg/l	
Chloride	21,54	0,05			mg/l	
Sulphate (as SO4)	35,6	0,4			mg/l	
Orthophosphate (as PO4)	<0,009				mg/l	
Boron	0,1006	0,0009	0,1103	0,010	mg/l	110%
DOC (as C)	1,75	0,07			mg/l	
Total P (as PO4)	<0,009				mg/l	
KMnO4-Index (as O2)	2,72	0,10			mg/l	



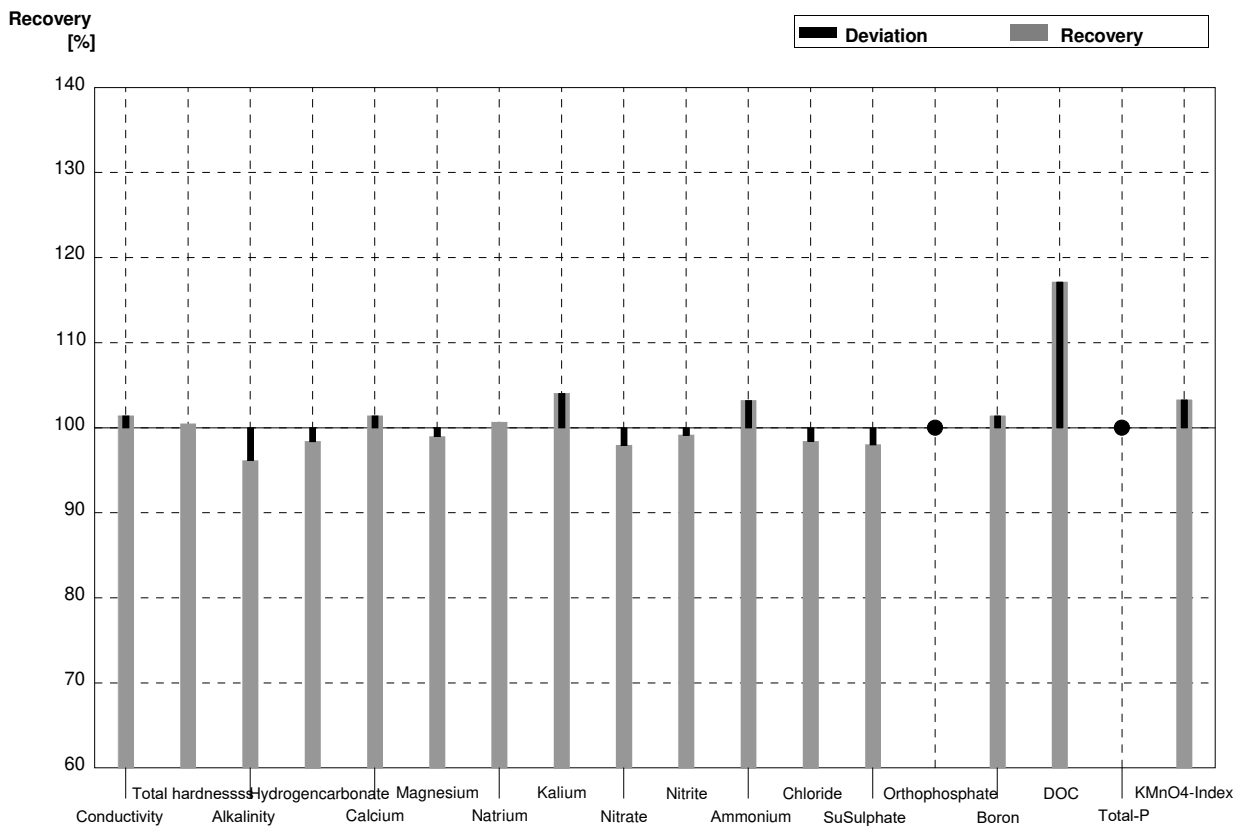
Sample N177B
Laboratory V

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1			µS/cm	
Total hardness	1,038	0,012			mmol/l	
Alkalinity KS 4,3 (as H+)	1,410	0,017			mmol/l	
Hydrogen carbonate	83,0	1,0			mg/l	
Calcium	30,9	0,5	30,90	3,09	mg/l	100%
Magnesium	6,47	0,08	6,40	0,64	mg/l	99%
Sodium	25,8	0,2	26,29	2,63	mg/l	102%
Potassium	3,07	0,02	3,13	0,31	mg/l	102%
Nitrate (as NO3)	45,4	1,2			mg/l	
Nitrite (as NO2)	0,0406	0,0012			mg/l	
Ammonium (as NH4)	<0,01				mg/l	
Chloride	29,31	0,13			mg/l	
Sulphate (as SO4)	15,24	0,18			mg/l	
Orthophosphate (as PO4)	0,0909	0,0015			mg/l	
Boron	0,0708	0,0010	0,076	0,008	mg/l	107%
DOC (as C)	3,64	0,08			mg/l	
Total P (as PO4)	0,1254	0,0011			mg/l	
KMnO4-Index (as O2)	2,23	0,11			mg/l	



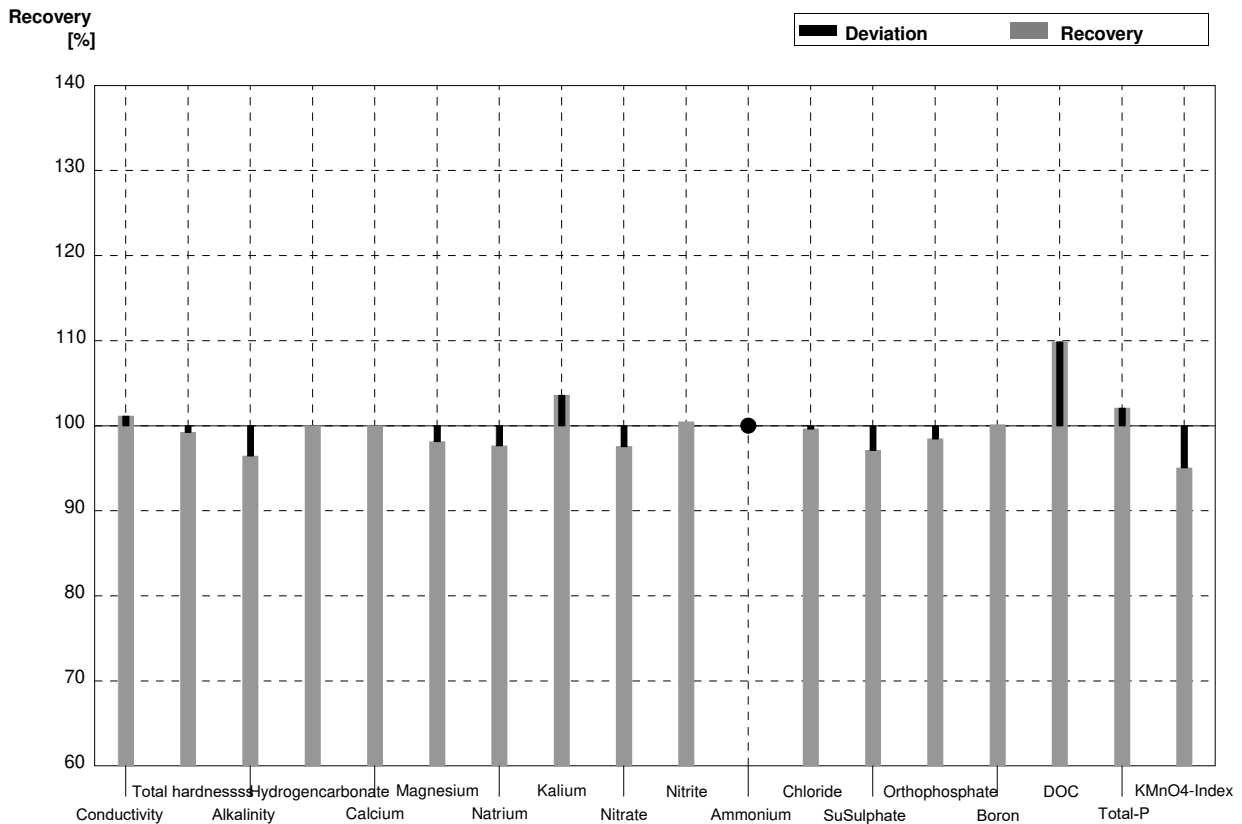
Sample N177A
Laboratory W

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	432	13	µS/cm	101%
Total hardness	1,453	0,017	1,46	0,22	mmol/l	100%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,50	0,20	mmol/l	96%
Hydrogen carbonate	155,5	1,9	153	12	mg/l	98%
Calcium	35,6	0,6	36,1	5,4	mg/l	101%
Magnesium	13,74	0,16	13,6	1,6	mg/l	99%
Sodium	29,8	0,4	30,0	3,9	mg/l	101%
Potassium	3,94	0,03	4,10	0,62	mg/l	104%
Nitrate (as NO3)	24,2	0,6	23,7	2,4	mg/l	98%
Nitrite (as NO2)	0,0811	0,0003	0,0804	0,0088	mg/l	99%
Ammonium (as NH4)	0,071	0,003	0,0733	0,0059	mg/l	103%
Chloride	21,54	0,05	21,2	2,1	mg/l	98%
Sulphate (as SO4)	35,6	0,4	34,9	5,6	mg/l	98%
Orthophosphate (as PO4)	<0,009		<0,015		mg/l	•
Boron	0,1006	0,0009	0,102	0,013	mg/l	101%
DOC (as C)	1,75	0,07	2,05	0,40	mg/l	117%
Total P (as PO4)	<0,009		<0,015		mg/l	•
KMnO4-Index (as O2)	2,72	0,10	2,81	0,40	mg/l	103%



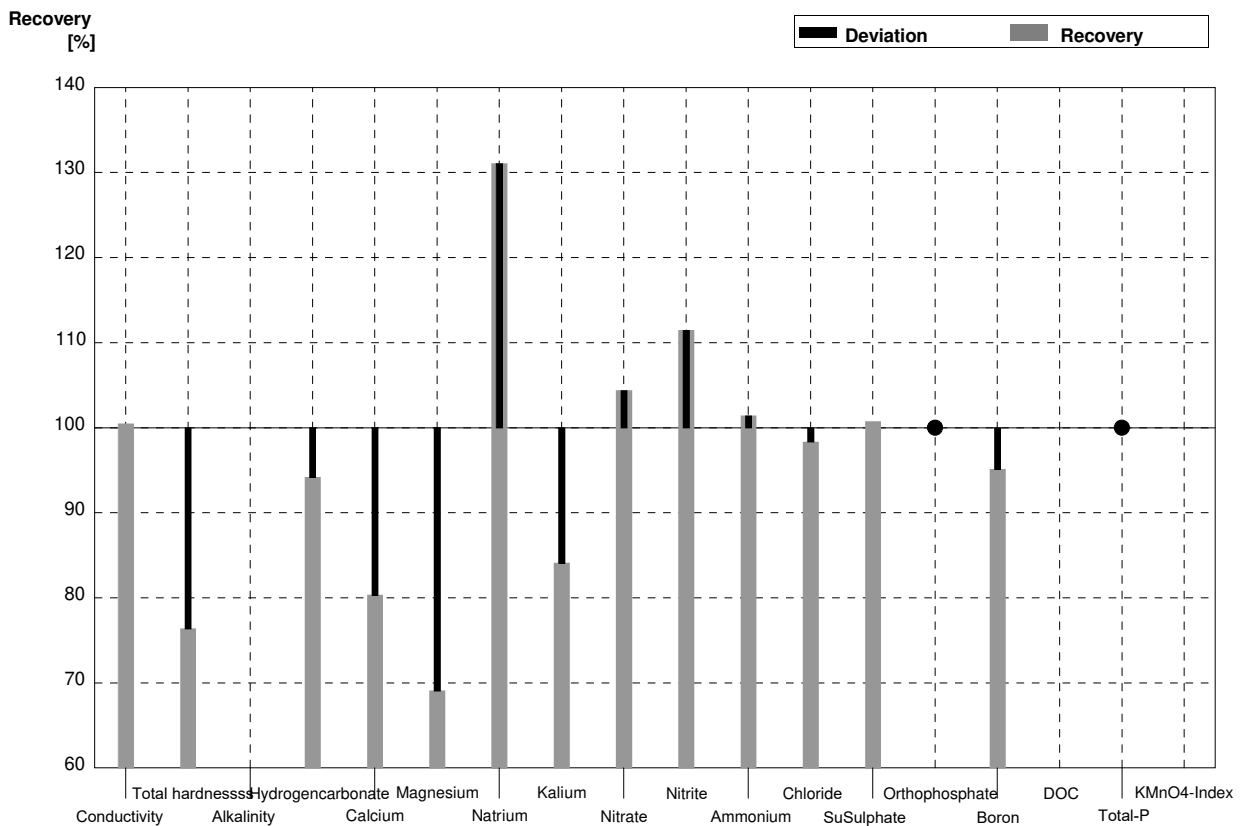
Sample N177B
Laboratory W

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	354	11	µS/cm	101%
Total hardness	1,038	0,012	1,03	0,15	mmol/l	99%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,36	0,11	mmol/l	96%
Hydrogen carbonate	83,0	1,0	83,0	6,6	mg/l	100%
Calcium	30,9	0,5	30,9	4,6	mg/l	100%
Magnesium	6,47	0,08	6,35	0,76	mg/l	98%
Sodium	25,8	0,2	25,2	3,3	mg/l	98%
Potassium	3,07	0,02	3,18	0,48	mg/l	104%
Nitrate (as NO3)	45,4	1,2	44,3	4,4	mg/l	98%
Nitrite (as NO2)	0,0406	0,0012	0,0408	0,0045	mg/l	100%
Ammonium (as NH4)	<0,01		<0,01		mg/l	•
Chloride	29,31	0,13	29,2	2,9	mg/l	100%
Sulphate (as SO4)	15,24	0,18	14,8	2,4	mg/l	97%
Orthophosphate (as PO4)	0,0909	0,0015	0,0895	0,0072	mg/l	98%
Boron	0,0708	0,0010	0,0709	0,0092	mg/l	100%
DOC (as C)	3,64	0,08	4,00	0,80	mg/l	110%
Total P (as PO4)	0,1254	0,0011	0,128	0,010	mg/l	102%
KMnO4-Index (as O2)	2,23	0,11	2,12	0,32	mg/l	95%



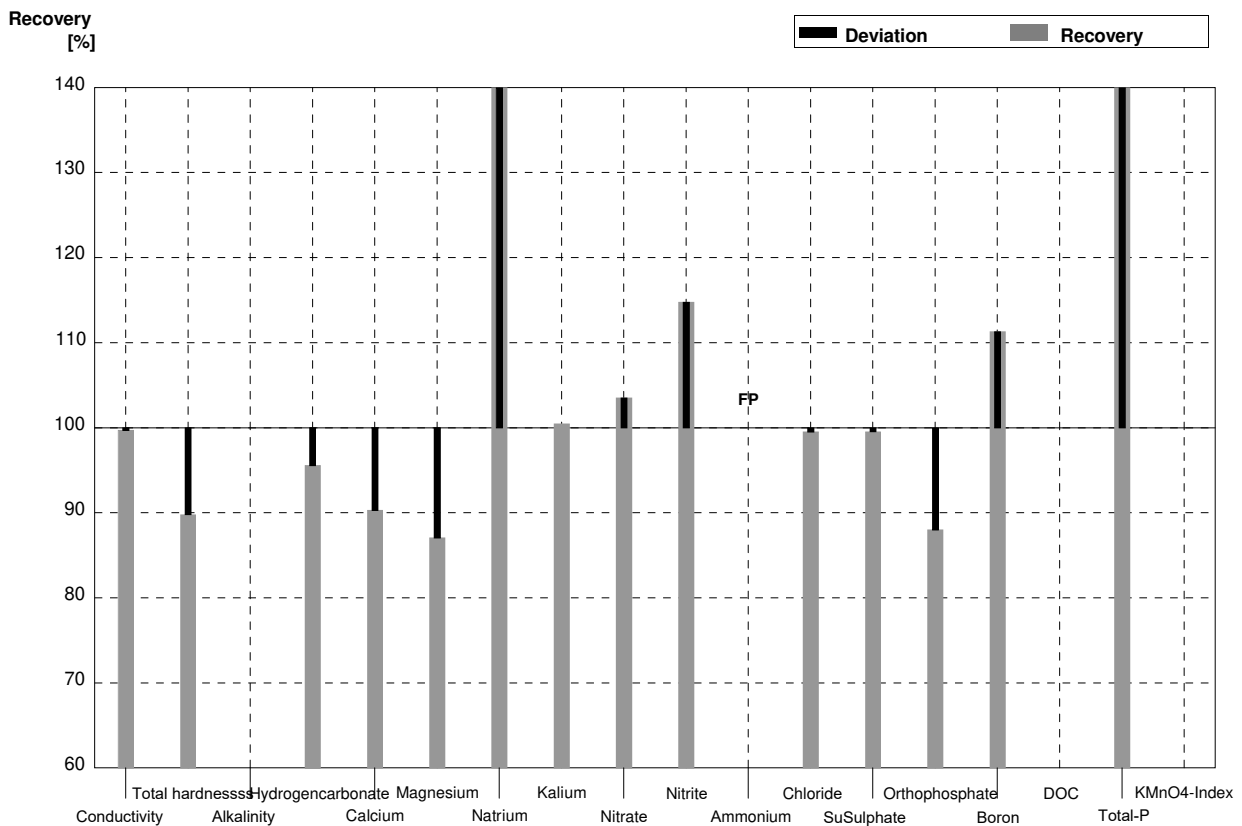
Sample N177A
Laboratory X

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	428	0,449	µS/cm	100%
Total hardness	1,453	0,017	1,110	0,002	mmol/l	76%
Alkalinity KS 4,3 (as H+)	2,60	0,03			mmol/l	
Hydrogen carbonate	155,5	1,9	146,448	0,01	mg/l	94%
Calcium	35,6	0,6	28,594	0,289	mg/l	80%
Magnesium	13,74	0,16	9,493	0,093	mg/l	69%
Sodium	29,8	0,4	39,0591	0,419	mg/l	131%
Potassium	3,94	0,03	3,313	0,031	mg/l	84%
Nitrate (as NO3)	24,2	0,6	25,264	0,078	mg/l	104%
Nitrite (as NO2)	0,0811	0,0003	0,0904	0,0002	mg/l	111%
Ammonium (as NH4)	0,071	0,003	0,0720	0,002	mg/l	101%
Chloride	21,54	0,05	21,182	0,161	mg/l	98%
Sulphate (as SO4)	35,6	0,4	35,861	0,200	mg/l	101%
Orthophosphate (as PO4)	<0,009		0,00799	0,001	mg/l	•
Boron	0,1006	0,0009	0,0957	0,00087	mg/l	95%
DOC (as C)	1,75	0,07			mg/l	
Total P (as PO4)	<0,009		0,00502	0,00021	mg/l	•
KMnO4-Index (as O2)	2,72	0,10			mg/l	



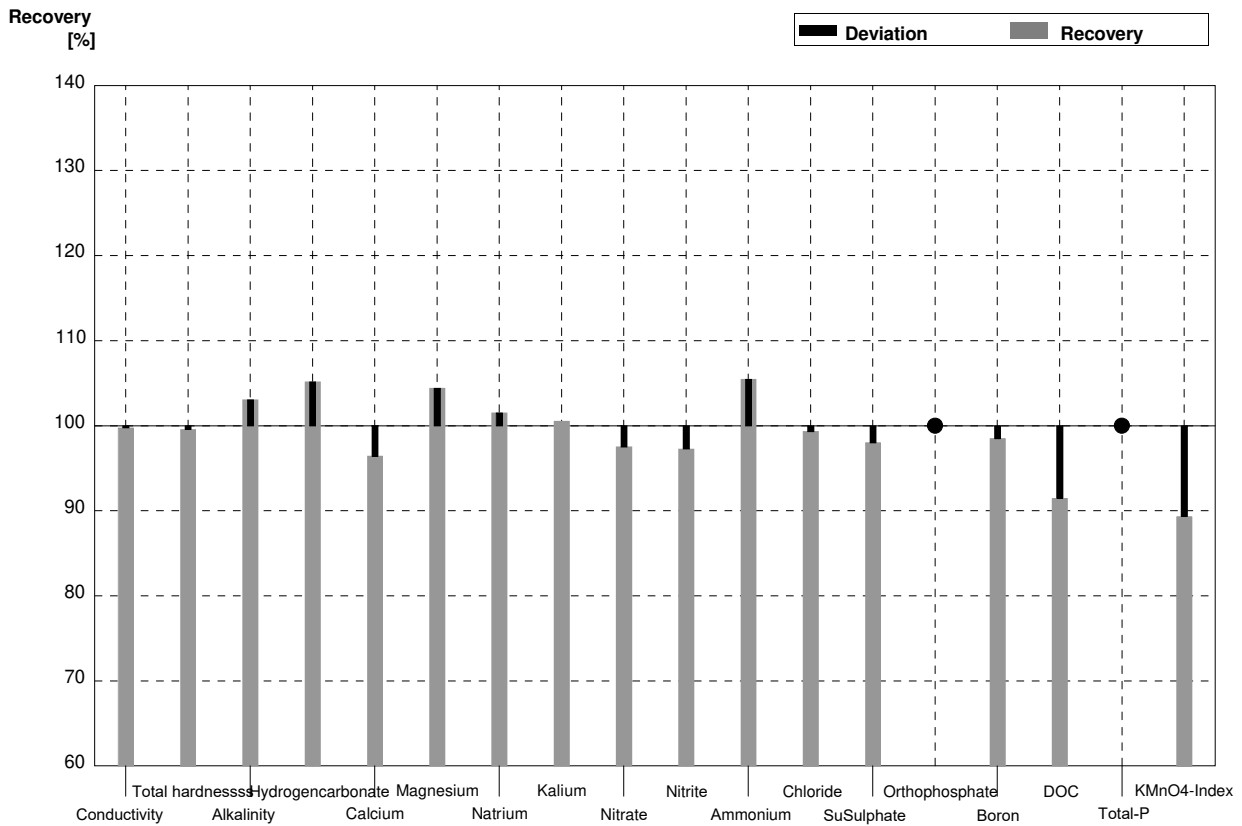
Sample N177B
Laboratory X

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	349	0,512	µS/cm	100%
Total hardness	1,038	0,012	0,932	0,001	mmol/l	90%
Alkalinity KS 4,3 (as H+)	1,410	0,017			mmol/l	
Hydrogen carbonate	83,0	1,0	79,326	0,01	mg/l	96%
Calcium	30,9	0,5	27,904	0,446	mg/l	90%
Magnesium	6,47	0,08	5,633	0,0890	mg/l	87%
Sodium	25,8	0,2	36,578	0,598	mg/l	142%
Potassium	3,07	0,02	3,0851	0,0371	mg/l	100%
Nitrate (as NO3)	45,4	1,2	47,003	0,076	mg/l	104%
Nitrite (as NO2)	0,0406	0,0012	0,0466	0,0002	mg/l	115%
Ammonium (as NH4)	<0,01		0,0331	0,002	mg/l	FP
Chloride	29,31	0,13	29,169	0,060	mg/l	100%
Sulphate (as SO4)	15,24	0,18	15,172	0,134	mg/l	100%
Orthophosphate (as PO4)	0,0909	0,0015	0,0800	0,0027	mg/l	88%
Boron	0,0708	0,0010	0,0788	0,00113	mg/l	111%
DOC (as C)	3,64	0,08			mg/l	
Total P (as PO4)	0,1254	0,0011	0,187	0,00127	mg/l	149%
KMnO4-Index (as O2)	2,23	0,11			mg/l	



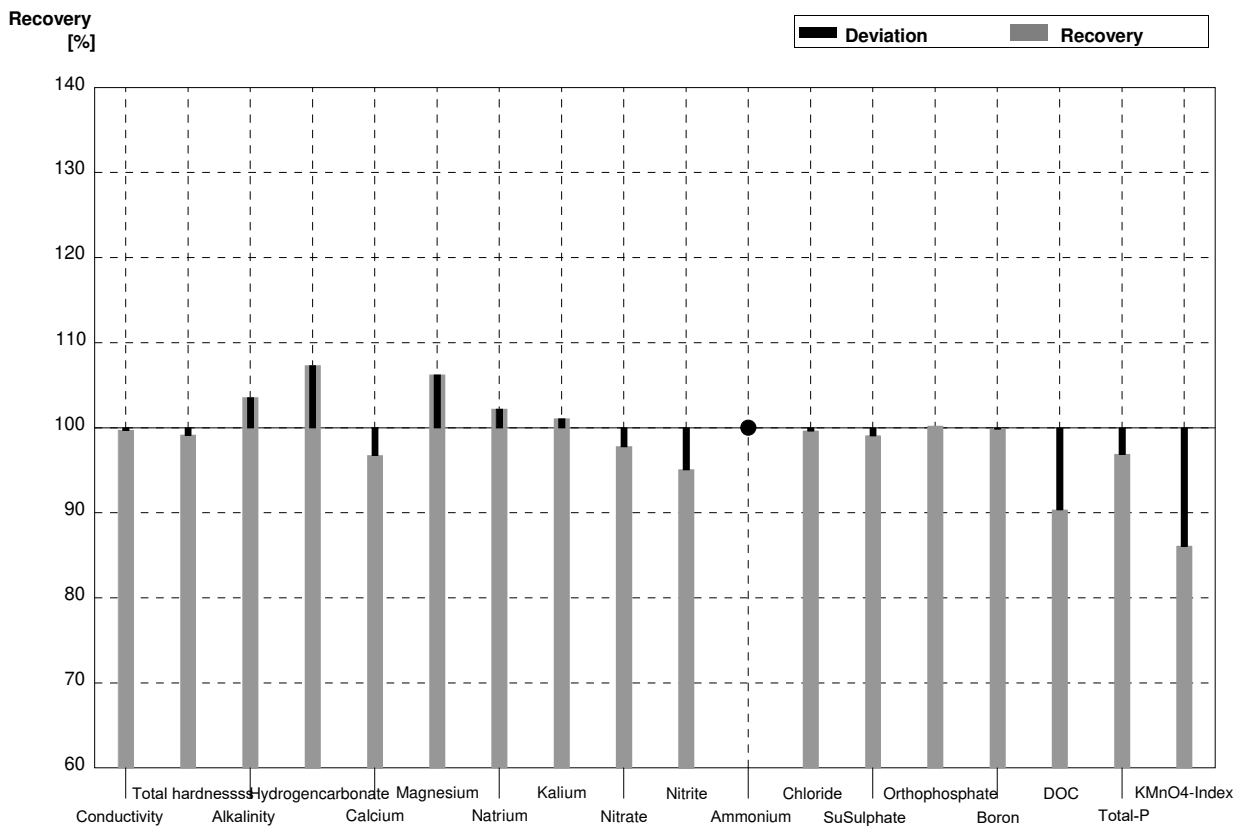
Sample N177A
Laboratory Y

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	425	43	µS/cm	100%
Total hardness	1,453	0,017	1,447	0,088	mmol/l	100%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,68	0,16	mmol/l	103%
Hydrogen carbonate	155,5	1,9	163,53	9,6	mg/l	105%
Calcium	35,6	0,6	34,33	1,11	mg/l	96%
Magnesium	13,74	0,16	14,35	1,45	mg/l	104%
Sodium	29,8	0,4	30,26	2,77	mg/l	102%
Potassium	3,94	0,03	3,962	0,587	mg/l	101%
Nitrate (as NO3)	24,2	0,6	23,6	2,1	mg/l	98%
Nitrite (as NO2)	0,0811	0,0003	0,0789	0,015	mg/l	97%
Ammonium (as NH4)	0,071	0,003	0,0749	0,019	mg/l	105%
Chloride	21,54	0,05	21,4	1,6	mg/l	99%
Sulphate (as SO4)	35,6	0,4	34,9	2,2	mg/l	98%
Orthophosphate (as PO4)	<0,009		<0,005	0,0001	mg/l	•
Boron	0,1006	0,0009	0,0991	0,0078	mg/l	99%
DOC (as C)	1,75	0,07	1,601	0,165	mg/l	91%
Total P (as PO4)	<0,009		<0,005	0,0001	mg/l	•
KMnO4-Index (as O2)	2,72	0,10	2,43	0,3	mg/l	89%



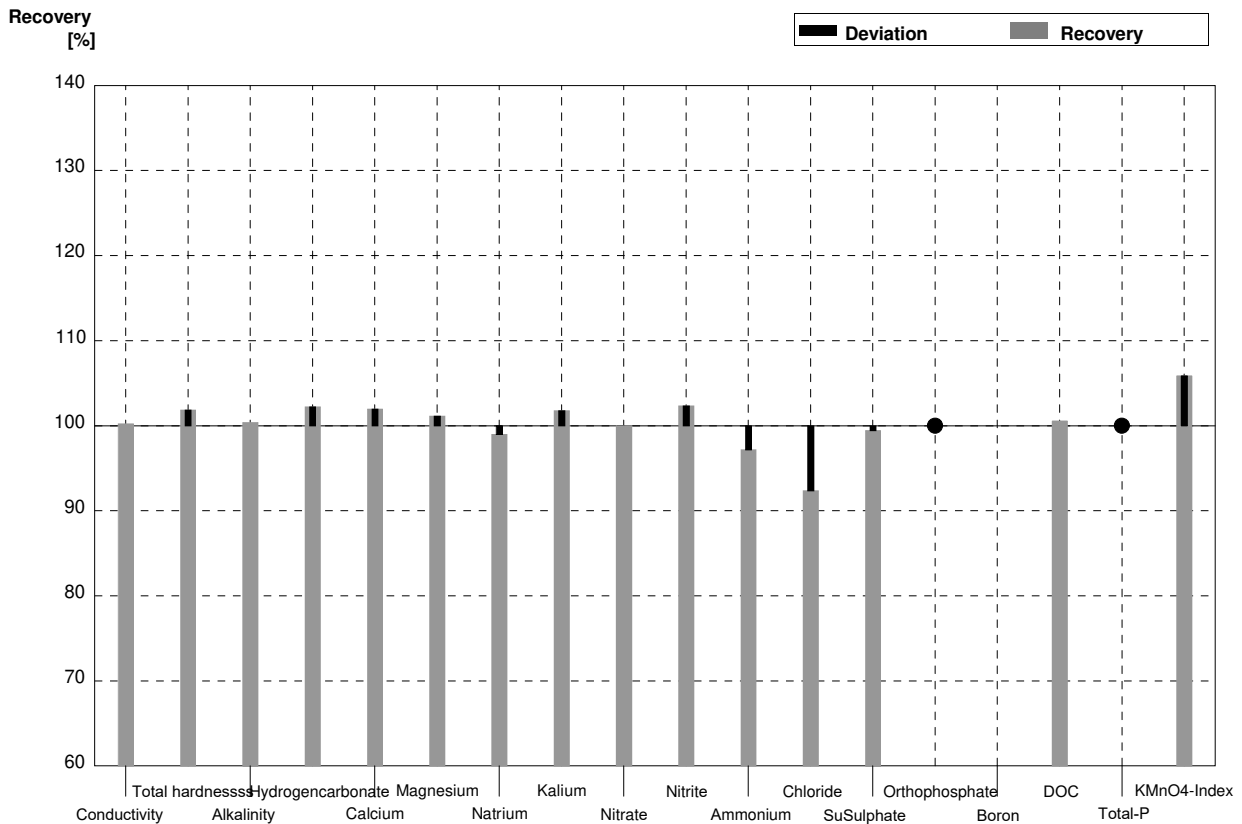
Sample N177B
Laboratory Y

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	349	35	µS/cm	100%
Total hardness	1,038	0,012	1,029	0,053	mmol/l	99%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,46	0,09	mmol/l	104%
Hydrogen carbonate	83,0	1,0	89,08	5,2	mg/l	107%
Calcium	30,9	0,5	29,90	0,966	mg/l	97%
Magnesium	6,47	0,08	6,873	0,696	mg/l	106%
Sodium	25,8	0,2	26,37	2,41	mg/l	102%
Potassium	3,07	0,02	3,103	0,459	mg/l	101%
Nitrate (as NO3)	45,4	1,2	44,4	4,0	mg/l	98%
Nitrite (as NO2)	0,0406	0,0012	0,0386	0,007	mg/l	95%
Ammonium (as NH4)	<0,01		<0,01	0,003	mg/l	•
Chloride	29,31	0,13	29,2	2,1	mg/l	100%
Sulphate (as SO4)	15,24	0,18	15,1	0,9	mg/l	99%
Orthophosphate (as PO4)	0,0909	0,0015	0,0911	0,0175	mg/l	100%
Boron	0,0708	0,0010	0,0707	0,0055	mg/l	100%
DOC (as C)	3,64	0,08	3,289	0,338	mg/l	90%
Total P (as PO4)	0,1254	0,0011	0,1215	0,0071	mg/l	97%
KMnO4-Index (as O2)	2,23	0,11	1,92	0,23	mg/l	86%



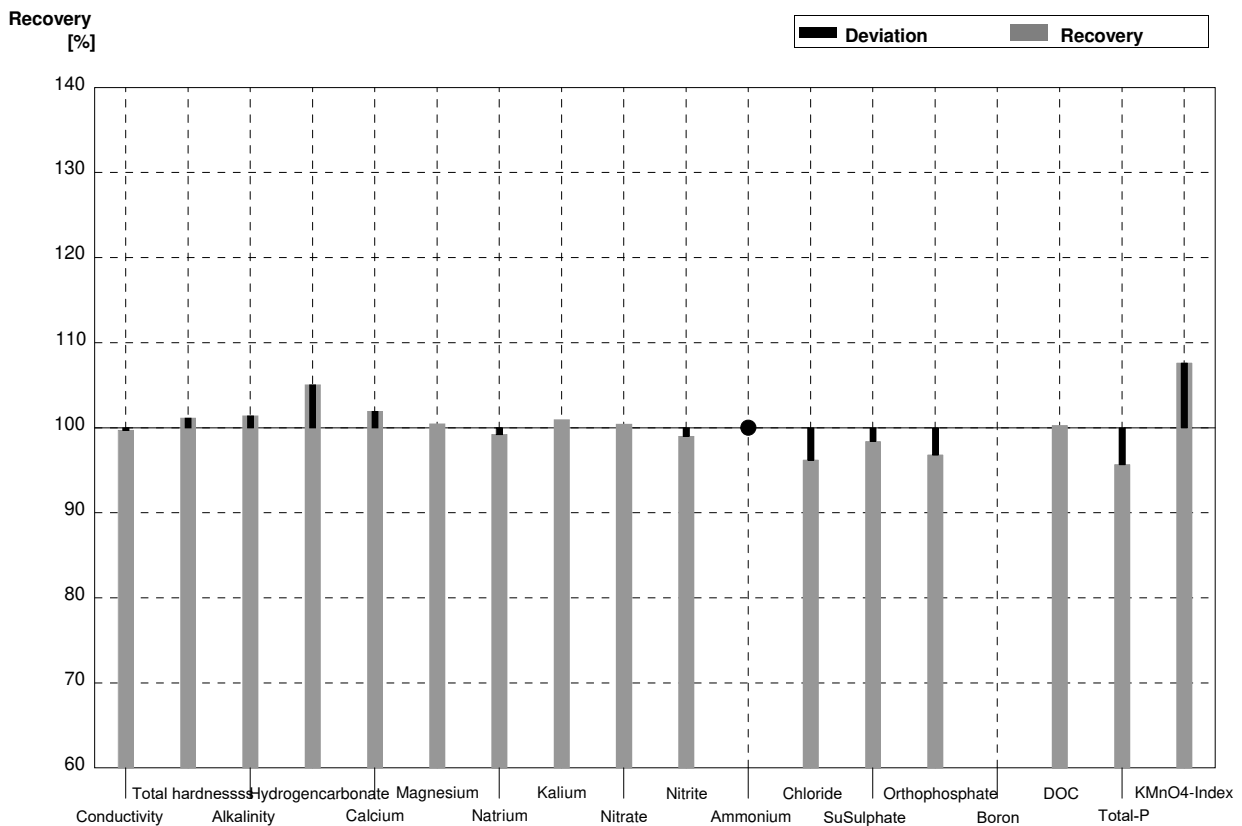
Sample N177A
Laboratory Z

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	427	9	µS/cm	100%
Total hardness	1,453	0,017	1,48	0,13	mmol/l	102%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,61	0,12	mmol/l	100%
Hydrogen carbonate	155,5	1,9	159	7	mg/l	102%
Calcium	35,6	0,6	36,3	1,6	mg/l	102%
Magnesium	13,74	0,16	13,9	0,6	mg/l	101%
Sodium	29,8	0,4	29,5	1,3	mg/l	99%
Potassium	3,94	0,03	4,01	0,16	mg/l	102%
Nitrate (as NO3)	24,2	0,6	24,2	0,9	mg/l	100%
Nitrite (as NO2)	0,0811	0,0003	0,083	0,006	mg/l	102%
Ammonium (as NH4)	0,071	0,003	0,069	0,009	mg/l	97%
Chloride	21,54	0,05	19,9	0,8	mg/l	92%
Sulphate (as SO4)	35,6	0,4	35,4	1,4	mg/l	99%
Orthophosphate (as PO4)	<0,009		<0,01		mg/l	•
Boron	0,1006	0,0009			mg/l	
DOC (as C)	1,75	0,07	1,76	0,22	mg/l	101%
Total P (as PO4)	<0,009		<0,01		mg/l	•
KMnO4-Index (as O2)	2,72	0,10	2,88	0,39	mg/l	106%



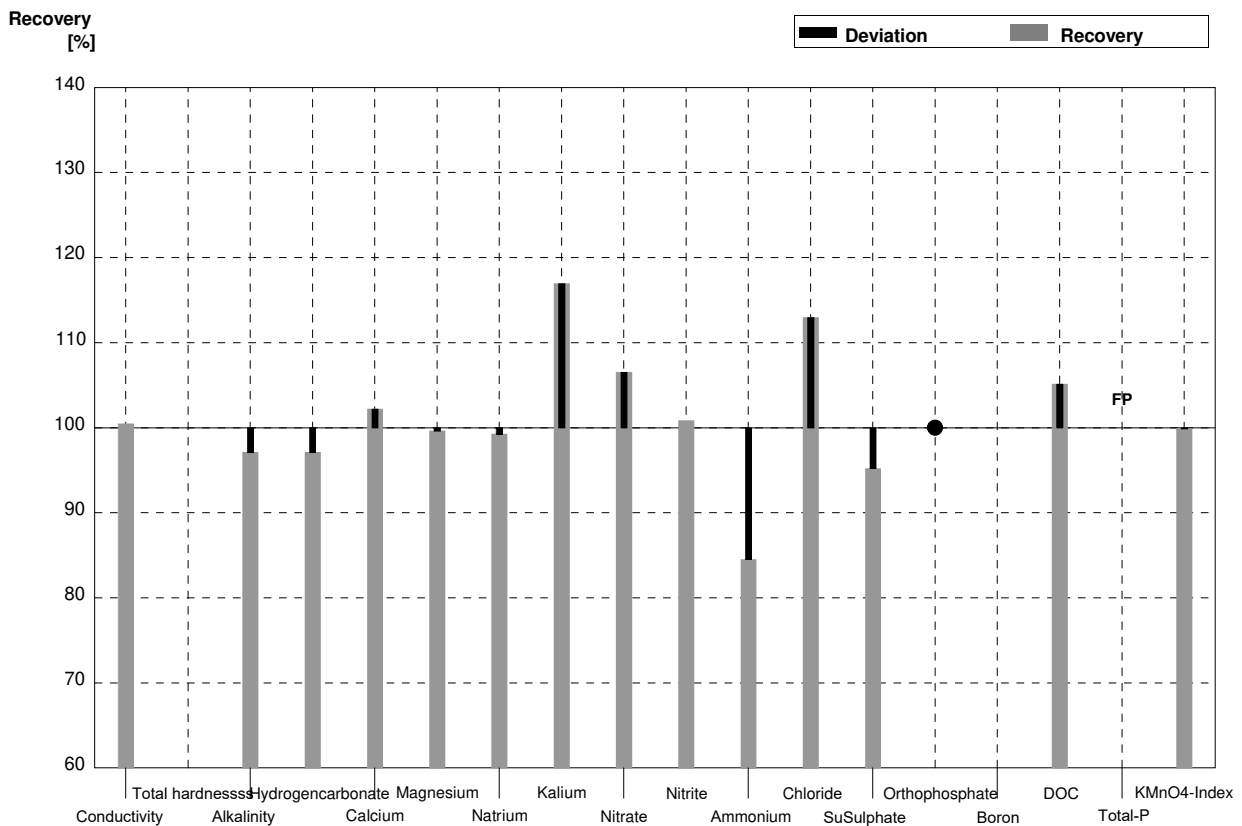
Sample N177B
Laboratory Z

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	349	8	µS/cm	100%
Total hardness	1,038	0,012	1,05	0,09	mmol/l	101%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,430	0,063	mmol/l	101%
Hydrogen carbonate	83,0	1,0	87,2	3,9	mg/l	105%
Calcium	30,9	0,5	31,5	1,4	mg/l	102%
Magnesium	6,47	0,08	6,5	0,3	mg/l	100%
Sodium	25,8	0,2	25,6	1,1	mg/l	99%
Potassium	3,07	0,02	3,10	0,12	mg/l	101%
Nitrate (as NO3)	45,4	1,2	45,6	1,7	mg/l	100%
Nitrite (as NO2)	0,0406	0,0012	0,0402	0,0029	mg/l	99%
Ammonium (as NH4)	<0,01		<0,02		mg/l	•
Chloride	29,31	0,13	28,2	1,1	mg/l	96%
Sulphate (as SO4)	15,24	0,18	15,0	0,6	mg/l	98%
Orthophosphate (as PO4)	0,0909	0,0015	0,088	0,008	mg/l	97%
Boron	0,0708	0,0010			mg/l	
DOC (as C)	3,64	0,08	3,65	0,46	mg/l	100%
Total P (as PO4)	0,1254	0,0011	0,120	0,026	mg/l	96%
KMnO4-Index (as O2)	2,23	0,11	2,40	0,32	mg/l	108%



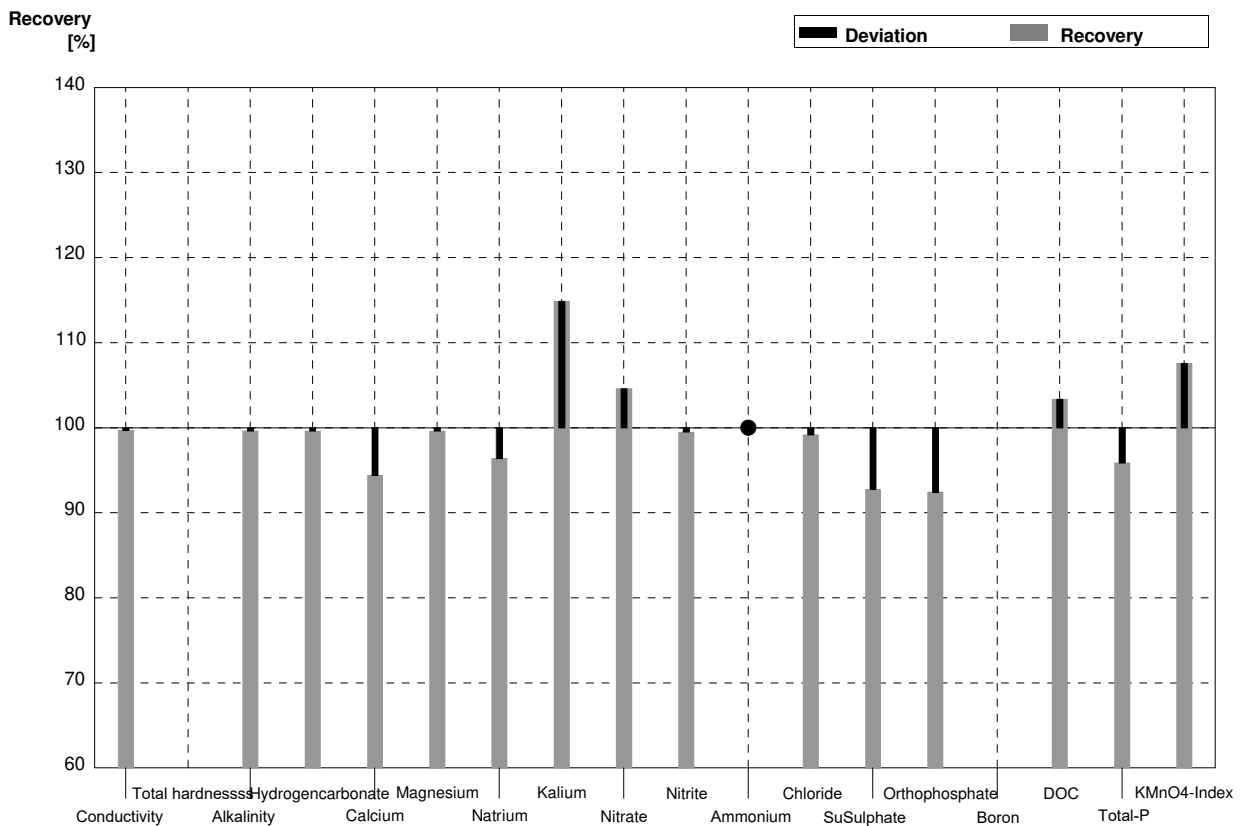
Sample N177A
Laboratory AA

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	428	12,4	µS/cm	100%
Total hardness	1,453	0,017			mmol/l	
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,525	0,244	mmol/l	97%
Hydrogen carbonate	155,5	1,9	151,02	14,59	mg/l	97%
Calcium	35,6	0,6	36,39	0,96	mg/l	102%
Magnesium	13,74	0,16	13,69	1,00	mg/l	100%
Sodium	29,8	0,4	29,58	1,43	mg/l	99%
Potassium	3,94	0,03	4,608	0,228	mg/l	117%
Nitrate (as NO3)	24,2	0,6	25,78	0,954	mg/l	107%
Nitrite (as NO2)	0,0811	0,0003	0,08178	0,00286	mg/l	101%
Ammonium (as NH4)	0,071	0,003	0,06002	0,00318	mg/l	85%
Chloride	21,54	0,05	24,33	1,17	mg/l	113%
Sulphate (as SO4)	35,6	0,4	33,899	1,559	mg/l	95%
Orthophosphate (as PO4)	<0,009		<0,005		mg/l	•
Boron	0,1006	0,0009			mg/l	
DOC (as C)	1,75	0,07	1,840	0,107	mg/l	105%
Total P (as PO4)	<0,009		0,01441	0,00117	mg/l	FP
KMnO4-Index (as O2)	2,72	0,10	2,717	0,27	mg/l	100%



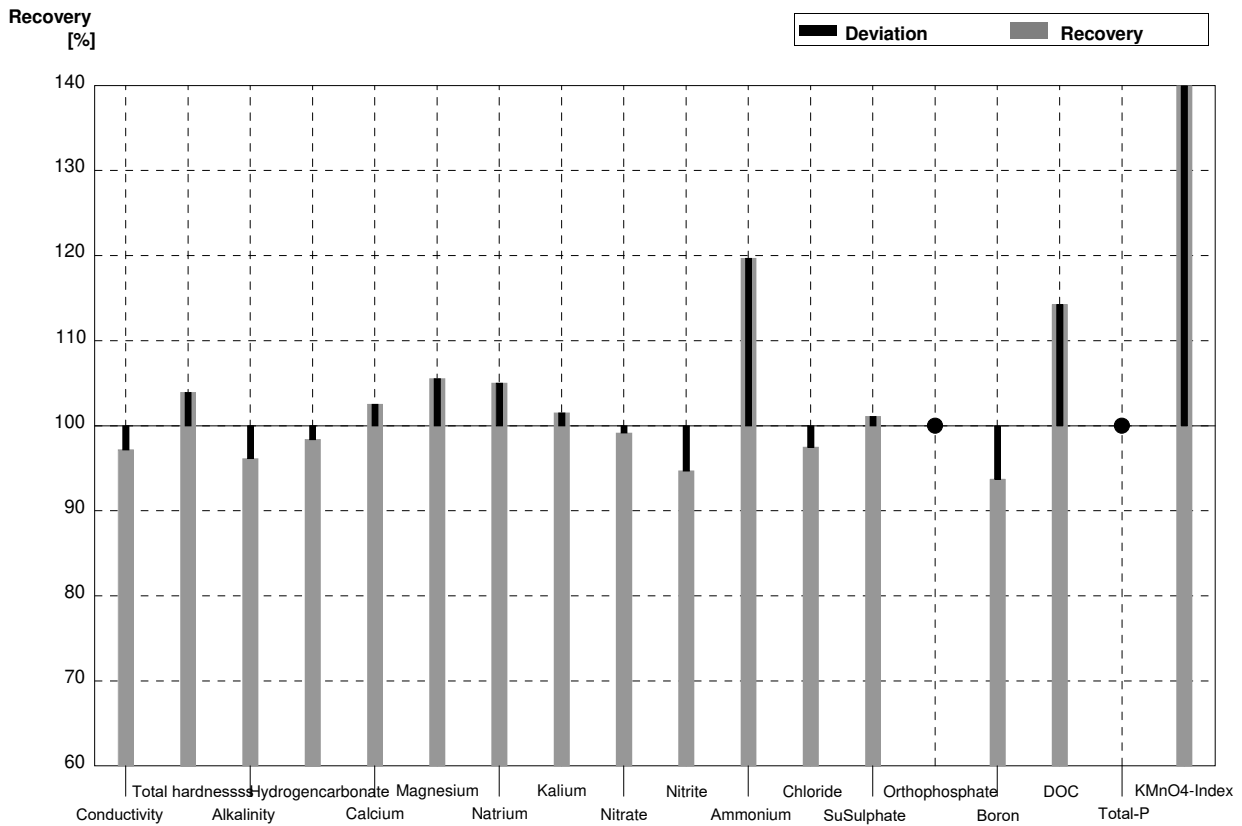
Sample N177B
Laboratory AA

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	349	10,1	µS/cm	100%
Total hardness	1,038	0,012			mmol/l	
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,405	0,136	mmol/l	100%
Hydrogen carbonate	83,0	1,0	82,68	7,99	mg/l	100%
Calcium	30,9	0,5	29,17	0,77	mg/l	94%
Magnesium	6,47	0,08	6,445	0,471	mg/l	100%
Sodium	25,8	0,2	24,87	1,20	mg/l	96%
Potassium	3,07	0,02	3,527	0,174	mg/l	115%
Nitrate (as NO3)	45,4	1,2	47,49	1,76	mg/l	105%
Nitrite (as NO2)	0,0406	0,0012	0,04040	0,01414	mg/l	100%
Ammonium (as NH4)	<0,01		<0,0129		mg/l	•
Chloride	29,31	0,13	29,07	1,40	mg/l	99%
Sulphate (as SO4)	15,24	0,18	14,138	1,400	mg/l	93%
Orthophosphate (as PO4)	0,0909	0,0015	0,08404	0,00664	mg/l	92%
Boron	0,0708	0,0010			mg/l	
DOC (as C)	3,64	0,08	3,762	0,218	mg/l	103%
Total P (as PO4)	0,1254	0,0011	0,12023	0,00974	mg/l	96%
KMnO4-Index (as O2)	2,23	0,11	2,399	0,239	mg/l	108%



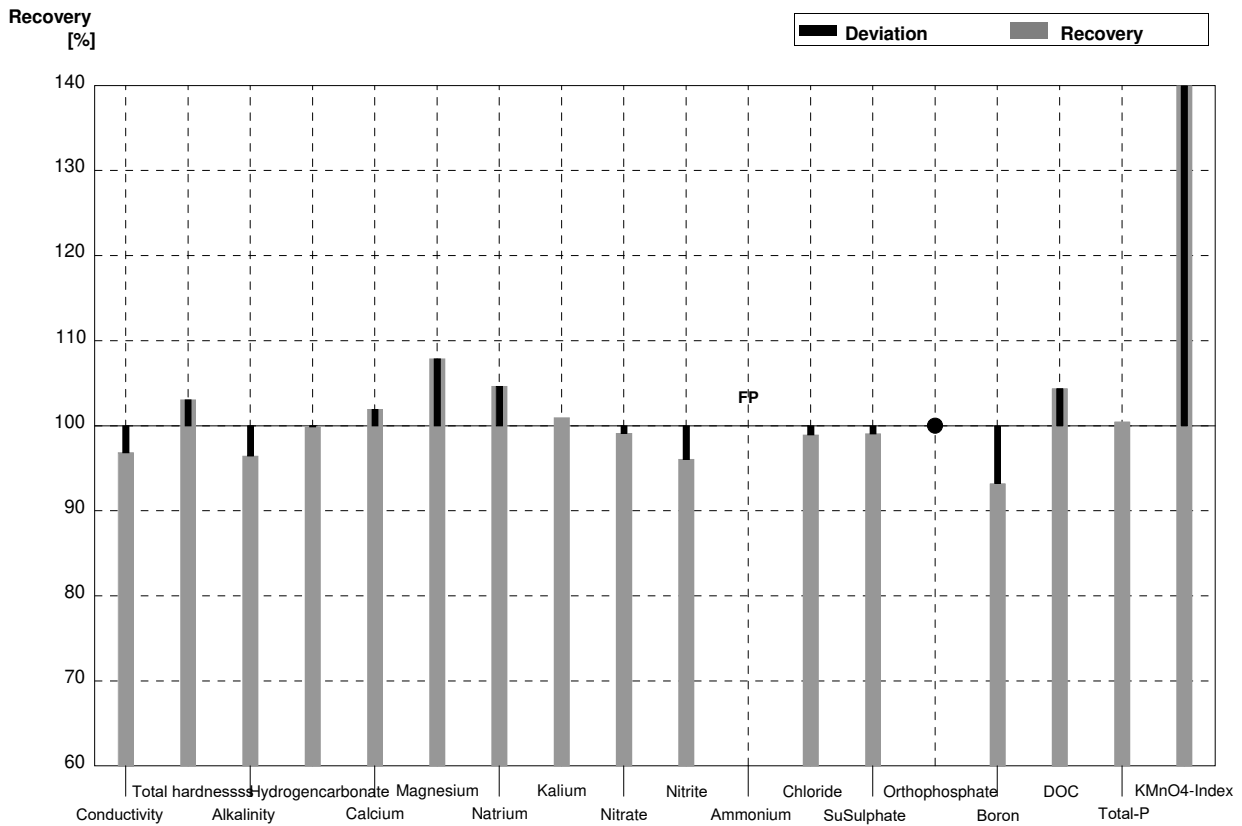
Sample N177A
Laboratory AB

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	414	41	µS/cm	97%
Total hardness	1,453	0,017	1,51	0,30	mmol/l	104%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,50	0,25	mmol/l	96%
Hydrogen carbonate	155,5	1,9	153	15	mg/l	98%
Calcium	35,6	0,6	36,5	7,3	mg/l	103%
Magnesium	13,74	0,16	14,5	2,9	mg/l	106%
Sodium	29,8	0,4	31,3	6,3	mg/l	105%
Potassium	3,94	0,03	4,00	0,80	mg/l	102%
Nitrate (as NO3)	24,2	0,6	24,0	3,6	mg/l	99%
Nitrite (as NO2)	0,0811	0,0003	0,0768	0,012	mg/l	95%
Ammonium (as NH4)	0,071	0,003	0,0850	0,017	mg/l	120%
Chloride	21,54	0,05	21,0	3,2	mg/l	97%
Sulphate (as SO4)	35,6	0,4	36,0	5,4	mg/l	101%
Orthophosphate (as PO4)	<0,009		<0,1		mg/l	•
Boron	0,1006	0,0009	0,0943	0,019	mg/l	94%
DOC (as C)	1,75	0,07	2,00	0,60	mg/l	114%
Total P (as PO4)	<0,009		<0,062		mg/l	•
KMnO4-Index (as O2)	2,72	0,10	6,00	1,8	mg/l	221%



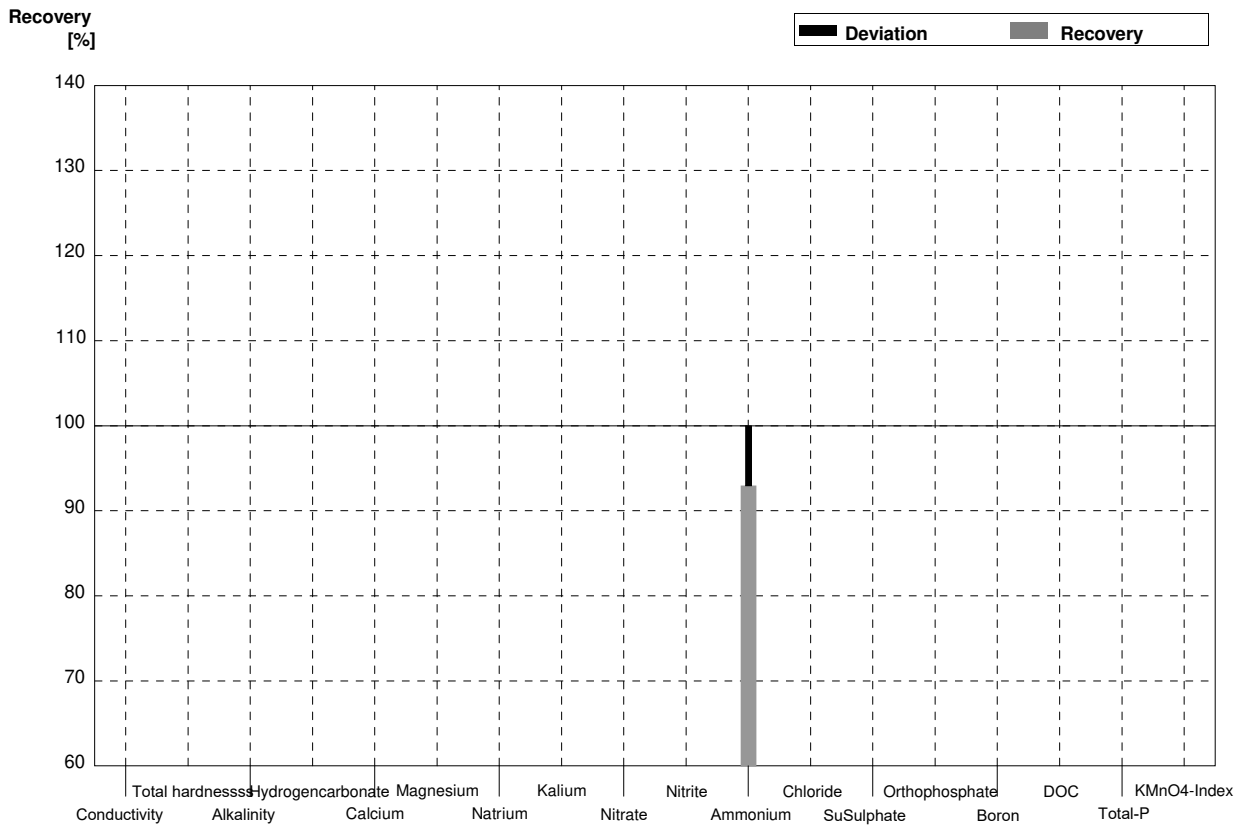
Sample N177B
Laboratory AB

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	339	34	µS/cm	97%
Total hardness	1,038	0,012	1,07	0,21	mmol/l	103%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,36	0,14	mmol/l	96%
Hydrogen carbonate	83,0	1,0	82,9	8,3	mg/l	100%
Calcium	30,9	0,5	31,5	6,3	mg/l	102%
Magnesium	6,47	0,08	6,98	1,4	mg/l	108%
Sodium	25,8	0,2	27,0	5,4	mg/l	105%
Potassium	3,07	0,02	3,10	0,62	mg/l	101%
Nitrate (as NO3)	45,4	1,2	45,0	6,8	mg/l	99%
Nitrite (as NO2)	0,0406	0,0012	0,0390	0,0059	mg/l	96%
Ammonium (as NH4)	<0,01		0,0200	0,0040	mg/l	FP
Chloride	29,31	0,13	29,0	4,4	mg/l	99%
Sulphate (as SO4)	15,24	0,18	15,1	2,27	mg/l	99%
Orthophosphate (as PO4)	0,0909	0,0015	<0,1		mg/l	•
Boron	0,0708	0,0010	0,0660	0,013	mg/l	93%
DOC (as C)	3,64	0,08	3,80	1,1	mg/l	104%
Total P (as PO4)	0,1254	0,0011	0,126	0,025	mg/l	100%
KMnO4-Index (as O2)	2,23	0,11	6,40	1,9	mg/l	287%



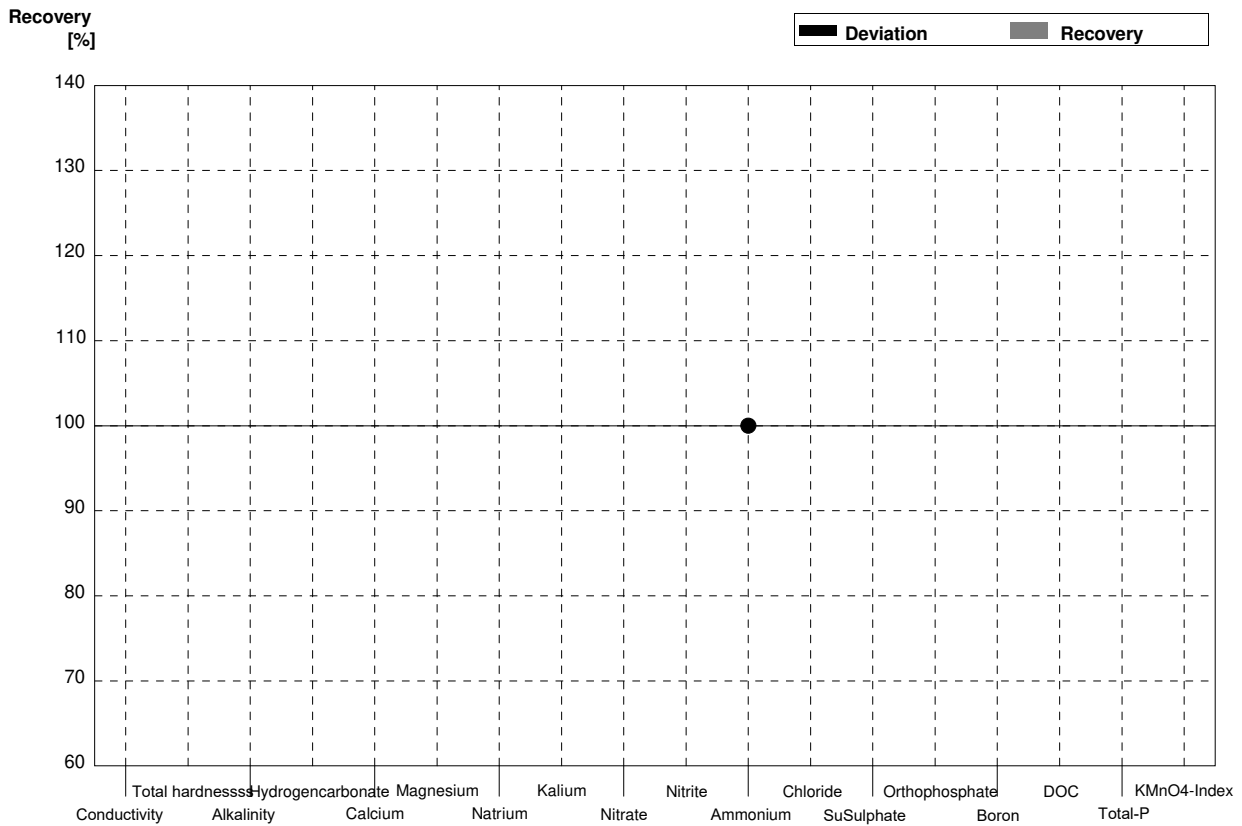
Sample N177A
Laboratory AC

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2			µS/cm	
Total hardness	1,453	0,017			mmol/l	
Alkalinity KS 4,3 (as H+)	2,60	0,03			mmol/l	
Hydrogen carbonate	155,5	1,9			mg/l	
Calcium	35,6	0,6			mg/l	
Magnesium	13,74	0,16			mg/l	
Sodium	29,8	0,4			mg/l	
Potassium	3,94	0,03			mg/l	
Nitrate (as NO3)	24,2	0,6			mg/l	
Nitrite (as NO2)	0,0811	0,0003			mg/l	
Ammonium (as NH4)	0,071	0,003	0,066	0,0099	mg/l	93%
Chloride	21,54	0,05			mg/l	
Sulphate (as SO4)	35,6	0,4			mg/l	
Orthophosphate (as PO4)	<0,009				mg/l	
Boron	0,1006	0,0009			mg/l	
DOC (as C)	1,75	0,07			mg/l	
Total P (as PO4)	<0,009				mg/l	
KMnO4-Index (as O2)	2,72	0,10			mg/l	



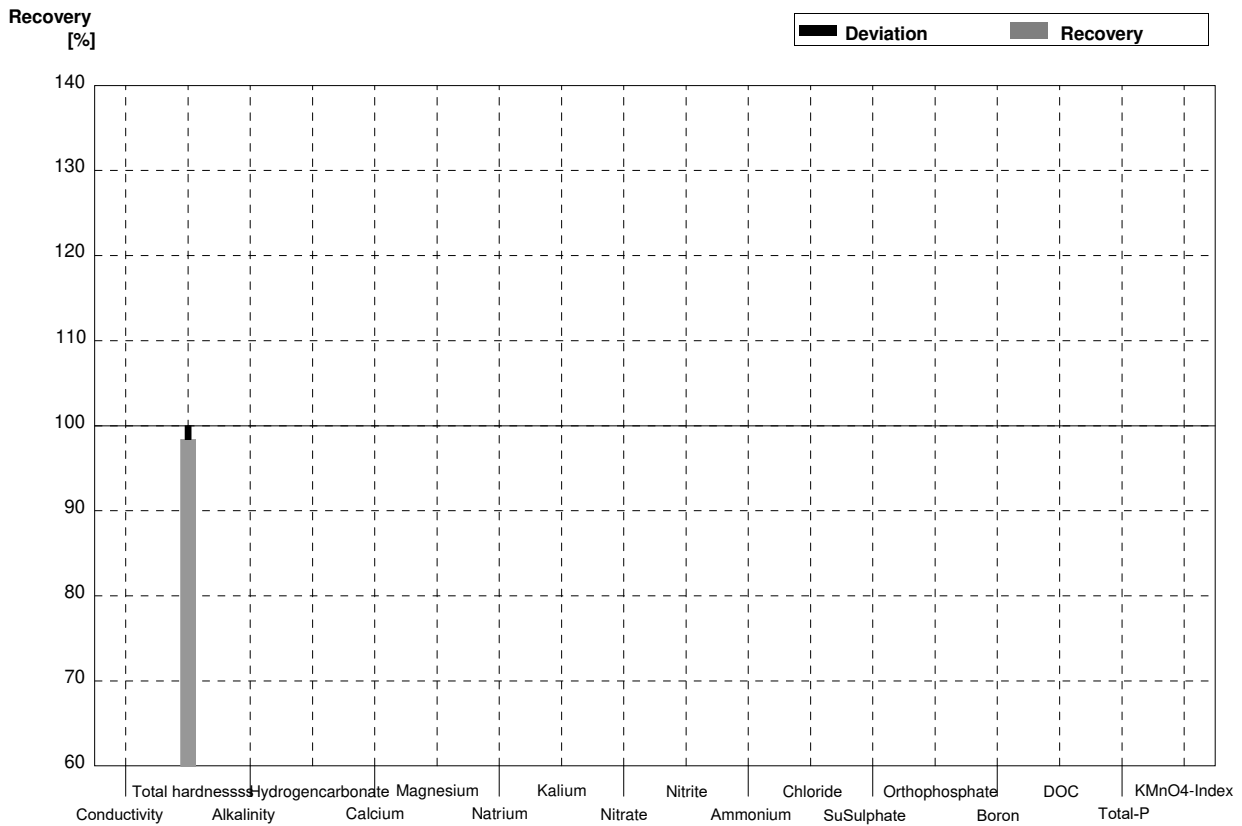
Sample N177B
Laboratory AC

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1			µS/cm	
Total hardness	1,038	0,012			mmol/l	
Alkalinity KS 4,3 (as H+)	1,410	0,017			mmol/l	
Hydrogen carbonate	83,0	1,0			mg/l	
Calcium	30,9	0,5			mg/l	
Magnesium	6,47	0,08			mg/l	
Sodium	25,8	0,2			mg/l	
Potassium	3,07	0,02			mg/l	
Nitrate (as NO3)	45,4	1,2			mg/l	
Nitrite (as NO2)	0,0406	0,0012			mg/l	
Ammonium (as NH4)	<0,01		<0,01		mg/l	•
Chloride	29,31	0,13			mg/l	
Sulphate (as SO4)	15,24	0,18			mg/l	
Orthophosphate (as PO4)	0,0909	0,0015			mg/l	
Boron	0,0708	0,0010			mg/l	
DOC (as C)	3,64	0,08			mg/l	
Total P (as PO4)	0,1254	0,0011			mg/l	
KMnO4-Index (as O2)	2,23	0,11			mg/l	



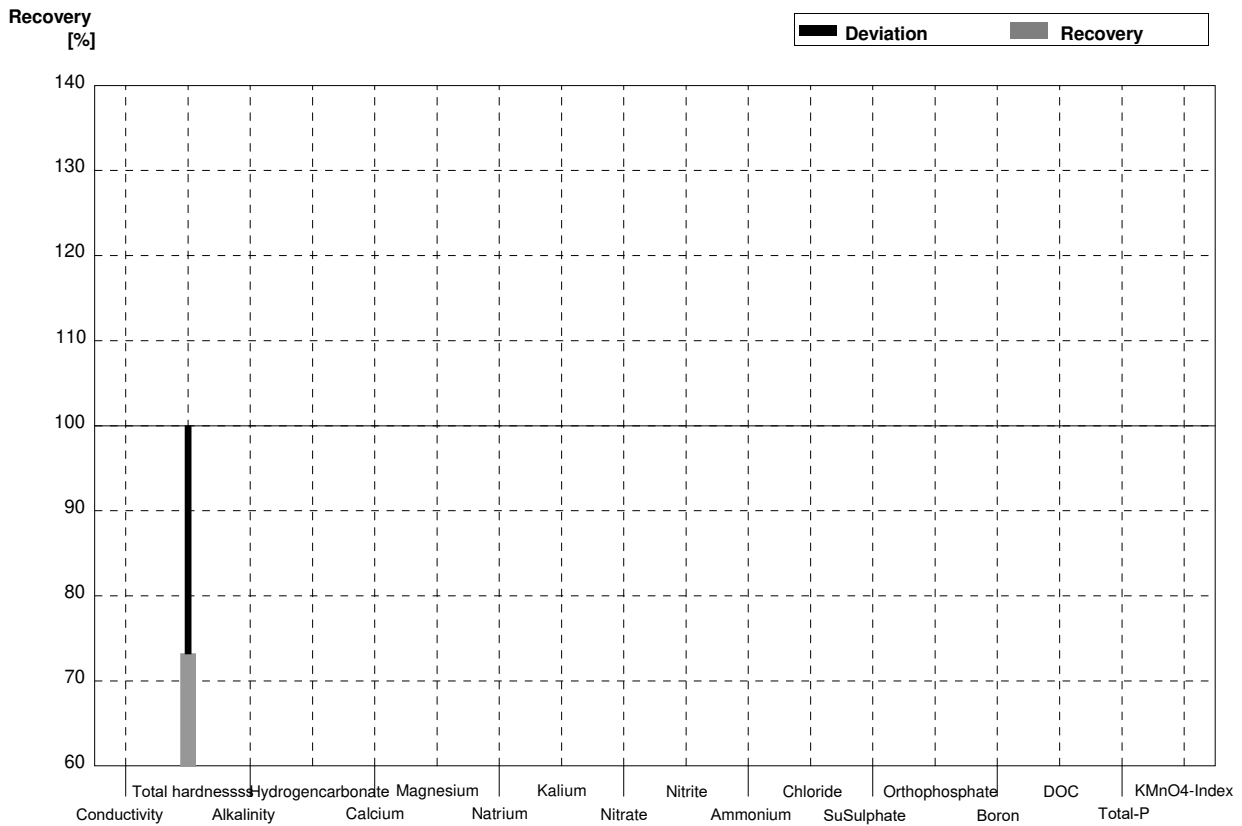
Sample N177A
Laboratory AD

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2			µS/cm	
Total hardness	1,453	0,017	1,43	0,04	mmol/l	98%
Alkalinity KS 4,3 (as H+)	2,60	0,03			mmol/l	
Hydrogen carbonate	155,5	1,9			mg/l	
Calcium	35,6	0,6			mg/l	
Magnesium	13,74	0,16			mg/l	
Sodium	29,8	0,4			mg/l	
Potassium	3,94	0,03			mg/l	
Nitrate (as NO3)	24,2	0,6			mg/l	
Nitrite (as NO2)	0,0811	0,0003			mg/l	
Ammonium (as NH4)	0,071	0,003			mg/l	
Chloride	21,54	0,05			mg/l	
Sulphate (as SO4)	35,6	0,4			mg/l	
Orthophosphate (as PO4)	<0,009				mg/l	
Boron	0,1006	0,0009			mg/l	
DOC (as C)	1,75	0,07			mg/l	
Total P (as PO4)	<0,009				mg/l	
KMnO4-Index (as O2)	2,72	0,10			mg/l	



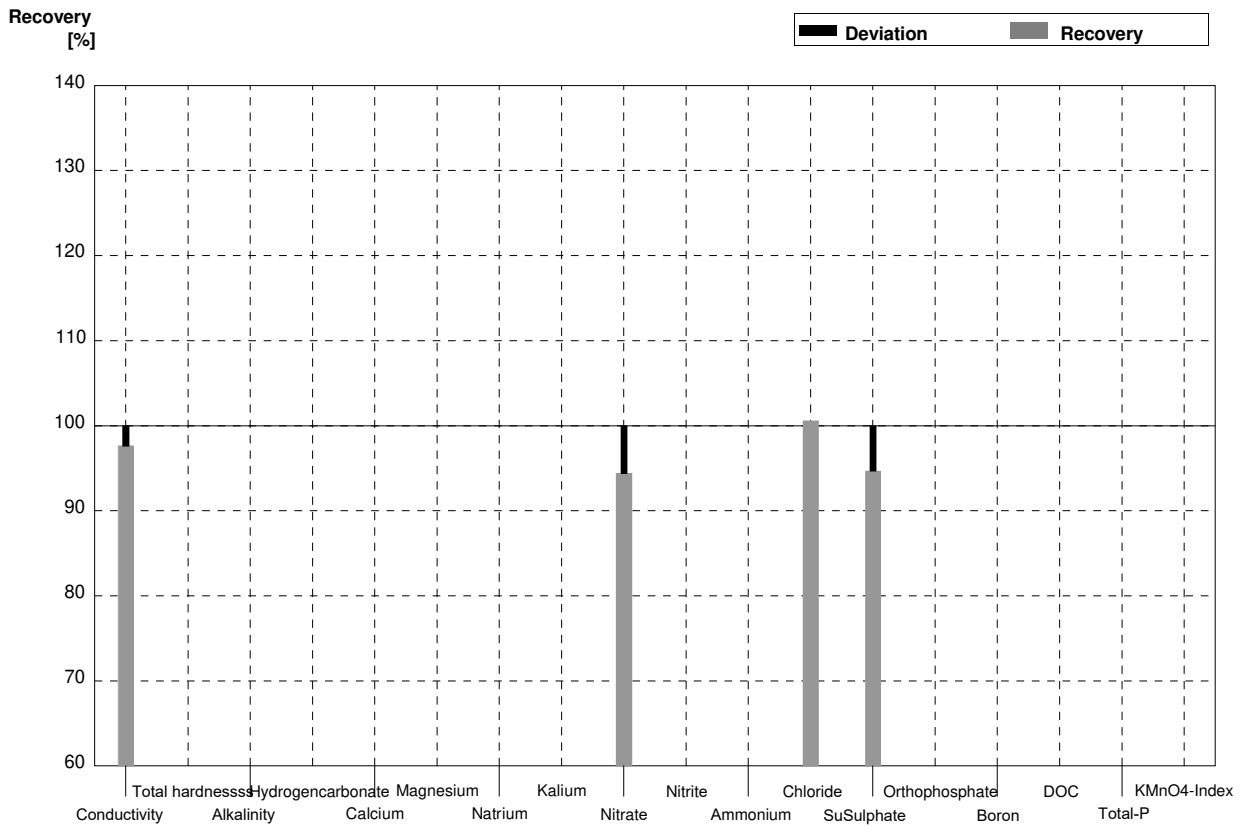
Sample N177B
Laboratory AD

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1			µS/cm	
Total hardness	1,038	0,012	0,76	0,02	mmol/l	73%
Alkalinity KS 4,3 (as H+)	1,410	0,017			mmol/l	
Hydrogen carbonate	83,0	1,0			mg/l	
Calcium	30,9	0,5			mg/l	
Magnesium	6,47	0,08			mg/l	
Sodium	25,8	0,2			mg/l	
Potassium	3,07	0,02			mg/l	
Nitrate (as NO3)	45,4	1,2			mg/l	
Nitrite (as NO2)	0,0406	0,0012			mg/l	
Ammonium (as NH4)	<0,01				mg/l	
Chloride	29,31	0,13			mg/l	
Sulphate (as SO4)	15,24	0,18			mg/l	
Orthophosphate (as PO4)	0,0909	0,0015			mg/l	
Boron	0,0708	0,0010			mg/l	
DOC (as C)	3,64	0,08			mg/l	
Total P (as PO4)	0,1254	0,0011			mg/l	
KMnO4-Index (as O2)	2,23	0,11			mg/l	



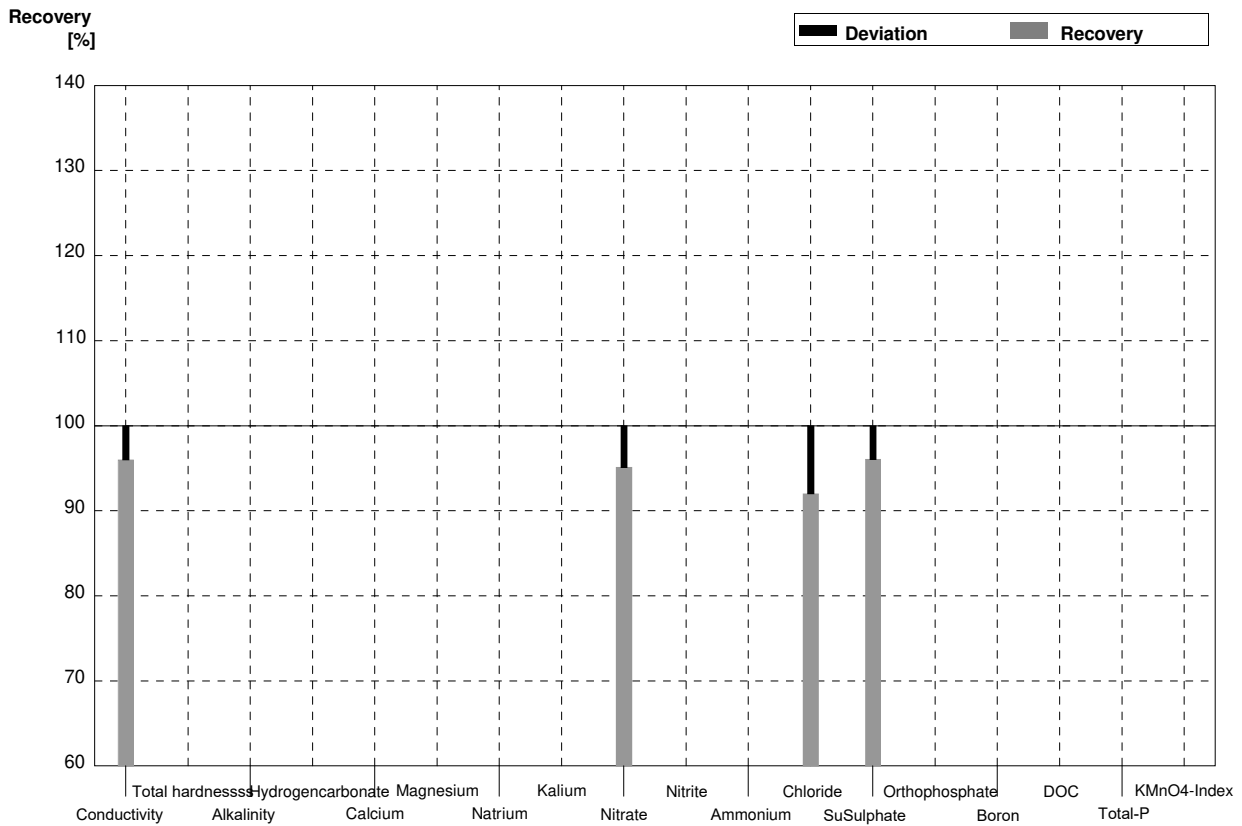
Sample N177A
Laboratory AE

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	416,0	10,98	µS/cm	98%
Total hardness	1,453	0,017			mmol/l	
Alkalinity KS 4,3 (as H+)	2,60	0,03			mmol/l	
Hydrogen carbonate	155,5	1,9			mg/l	
Calcium	35,6	0,6			mg/l	
Magnesium	13,74	0,16			mg/l	
Sodium	29,8	0,4			mg/l	
Potassium	3,94	0,03			mg/l	
Nitrate (as NO3)	24,2	0,6	22,85	2,285	mg/l	94%
Nitrite (as NO2)	0,0811	0,0003			mg/l	
Ammonium (as NH4)	0,071	0,003			mg/l	
Chloride	21,54	0,05	21,67	2,17	mg/l	101%
Sulphate (as SO4)	35,6	0,4	33,71	4,04	mg/l	95%
Orthophosphate (as PO4)	<0,009				mg/l	
Boron	0,1006	0,0009			mg/l	
DOC (as C)	1,75	0,07			mg/l	
Total P (as PO4)	<0,009				mg/l	
KMnO4-Index (as O2)	2,72	0,10			mg/l	



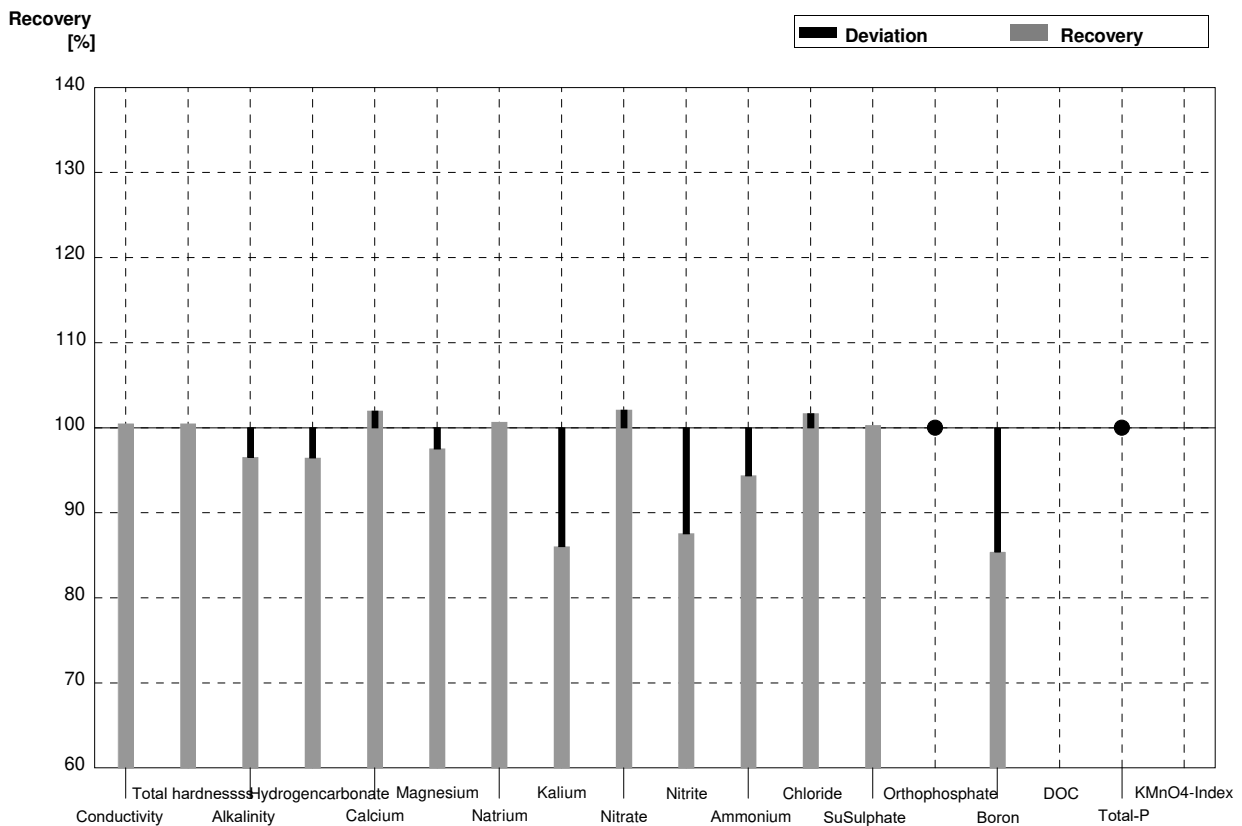
Sample N177B
Laboratory AE

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	336,0	8,87	µS/cm	96%
Total hardness	1,038	0,012			mmol/l	
Alkalinity KS 4,3 (as H+)	1,410	0,017			mmol/l	
Hydrogen carbonate	83,0	1,0			mg/l	
Calcium	30,9	0,5			mg/l	
Magnesium	6,47	0,08			mg/l	
Sodium	25,8	0,2			mg/l	
Potassium	3,07	0,02			mg/l	
Nitrate (as NO3)	45,4	1,2	43,18	4,318	mg/l	95%
Nitrite (as NO2)	0,0406	0,0012			mg/l	
Ammonium (as NH4)	<0,01				mg/l	
Chloride	29,31	0,13	26,97	2,68	mg/l	92%
Sulphate (as SO4)	15,24	0,18	14,64	1,76	mg/l	96%
Orthophosphate (as PO4)	0,0909	0,0015			mg/l	
Boron	0,0708	0,0010			mg/l	
DOC (as C)	3,64	0,08			mg/l	
Total P (as PO4)	0,1254	0,0011			mg/l	
KMnO4-Index (as O2)	2,23	0,11			mg/l	



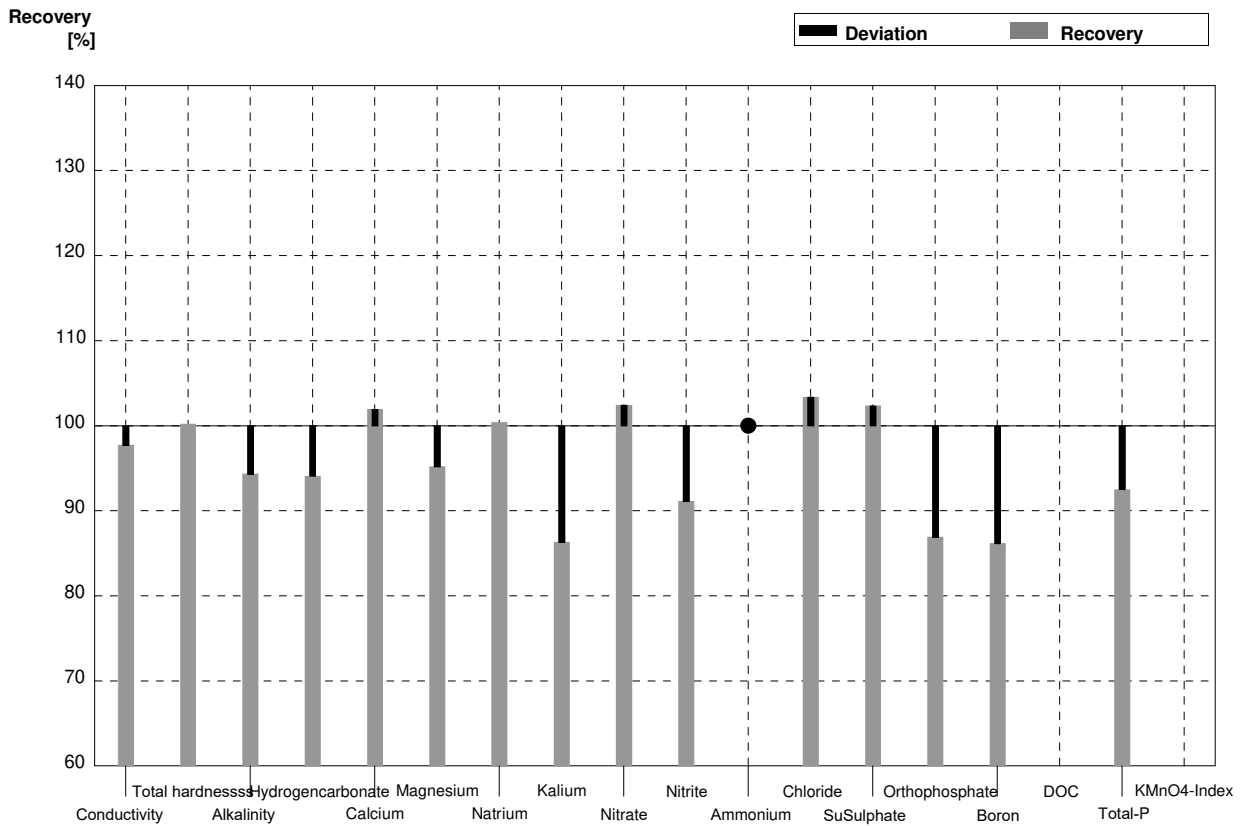
Sample N177A
Laboratory AF

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	428	64,2	µS/cm	100%
Total hardness	1,453	0,017	1,46	0,219	mmol/l	100%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,51	0,377	mmol/l	97%
Hydrogen carbonate	155,5	1,9	150	22,5	mg/l	96%
Calcium	35,6	0,6	36,3	5,45	mg/l	102%
Magnesium	13,74	0,16	13,4	2,01	mg/l	98%
Sodium	29,8	0,4	30,0	4,50	mg/l	101%
Potassium	3,94	0,03	3,39	0,509	mg/l	86%
Nitrate (as NO3)	24,2	0,6	24,7	3,71	mg/l	102%
Nitrite (as NO2)	0,0811	0,0003	0,071	0,0107	mg/l	88%
Ammonium (as NH4)	0,071	0,003	0,067	0,0101	mg/l	94%
Chloride	21,54	0,05	21,9	3,29	mg/l	102%
Sulphate (as SO4)	35,6	0,4	35,7	5,36	mg/l	100%
Orthophosphate (as PO4)	<0,009		<0,0015		mg/l	•
Boron	0,1006	0,0009	0,0859	0,0129	mg/l	85%
DOC (as C)	1,75	0,07			mg/l	
Total P (as PO4)	<0,009		<0,011		mg/l	•
KMnO4-Index (as O2)	2,72	0,10			mg/l	



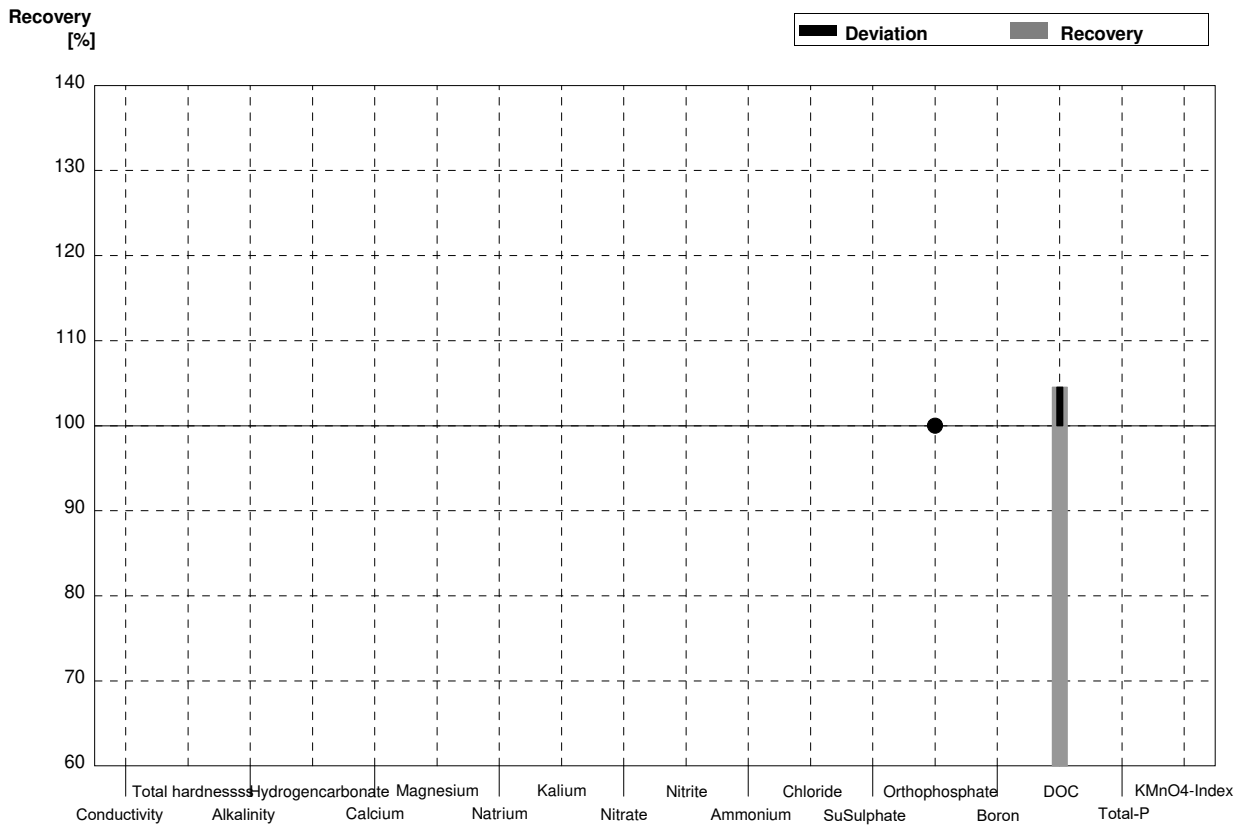
Sample N177B
Laboratory AF

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	342	51,3	µS/cm	98%
Total hardness	1,038	0,012	1,04	0,156	mmol/l	100%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,33	0,20	mmol/l	94%
Hydrogen carbonate	83,0	1,0	78,1	11,7	mg/l	94%
Calcium	30,9	0,5	31,5	4,73	mg/l	102%
Magnesium	6,47	0,08	6,16	0,924	mg/l	95%
Sodium	25,8	0,2	25,9	3,89	mg/l	100%
Potassium	3,07	0,02	2,65	0,398	mg/l	86%
Nitrate (as NO3)	45,4	1,2	46,5	6,98	mg/l	102%
Nitrite (as NO2)	0,0406	0,0012	0,0370	0,0056	mg/l	91%
Ammonium (as NH4)	<0,01		<0,0090		mg/l	•
Chloride	29,31	0,13	30,3	4,55	mg/l	103%
Sulphate (as SO4)	15,24	0,18	15,6	2,34	mg/l	102%
Orthophosphate (as PO4)	0,0909	0,0015	0,079	0,0119	mg/l	87%
Boron	0,0708	0,0010	0,0610	0,009	mg/l	86%
DOC (as C)	3,64	0,08			mg/l	
Total P (as PO4)	0,1254	0,0011	0,116	0,0174	mg/l	93%
KMnO4-Index (as O2)	2,23	0,11			mg/l	



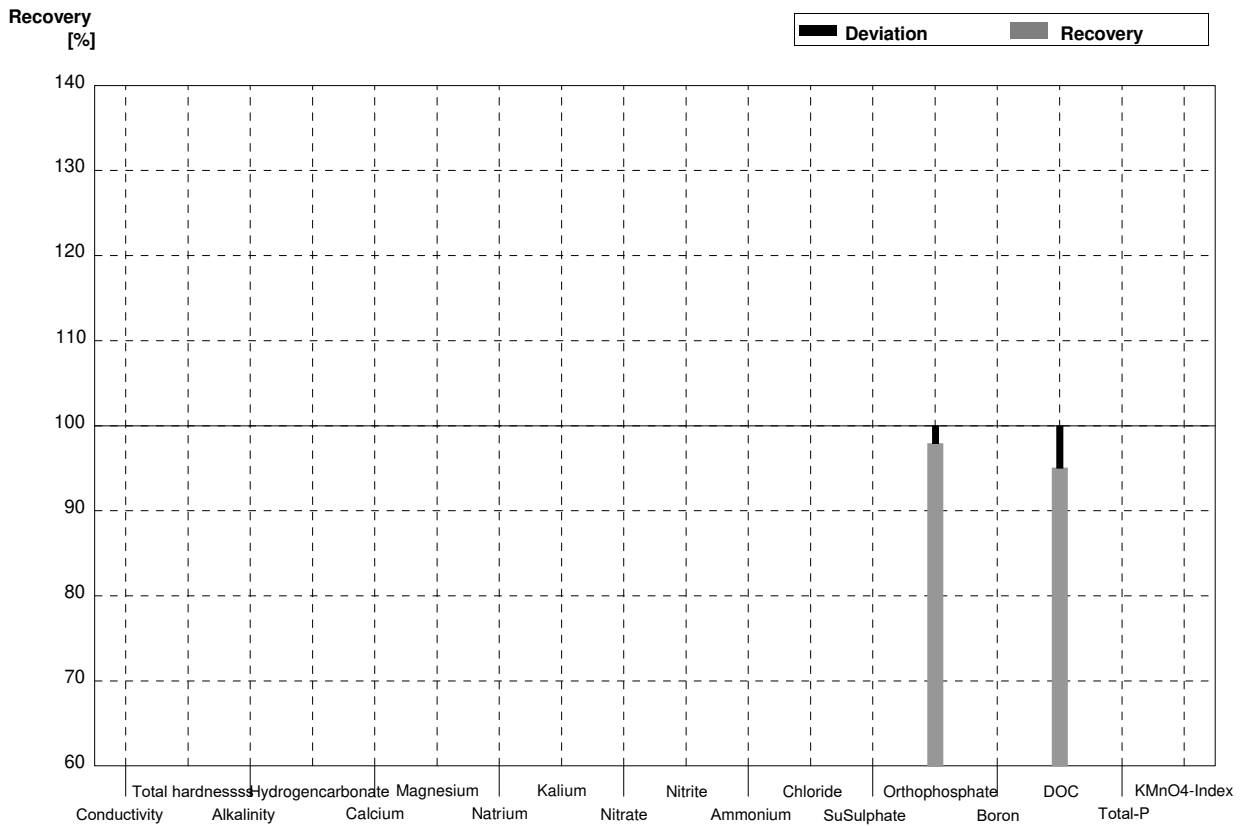
Sample N177A
Laboratory AG

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2			µS/cm	
Total hardness	1,453	0,017			mmol/l	
Alkalinity KS 4,3 (as H+)	2,60	0,03			mmol/l	
Hydrogen carbonate	155,5	1,9			mg/l	
Calcium	35,6	0,6			mg/l	
Magnesium	13,74	0,16			mg/l	
Sodium	29,8	0,4			mg/l	
Potassium	3,94	0,03			mg/l	
Nitrate (as NO3)	24,2	0,6			mg/l	
Nitrite (as NO2)	0,0811	0,0003			mg/l	
Ammonium (as NH4)	0,071	0,003			mg/l	
Chloride	21,54	0,05			mg/l	
Sulphate (as SO4)	35,6	0,4			mg/l	
Orthophosphate (as PO4)	<0,009		<0,015	0,002	mg/l	•
Boron	0,1006	0,0009			mg/l	
DOC (as C)	1,75	0,07	1,83	0,33	mg/l	105%
Total P (as PO4)	<0,009				mg/l	
KMnO4-Index (as O2)	2,72	0,10			mg/l	



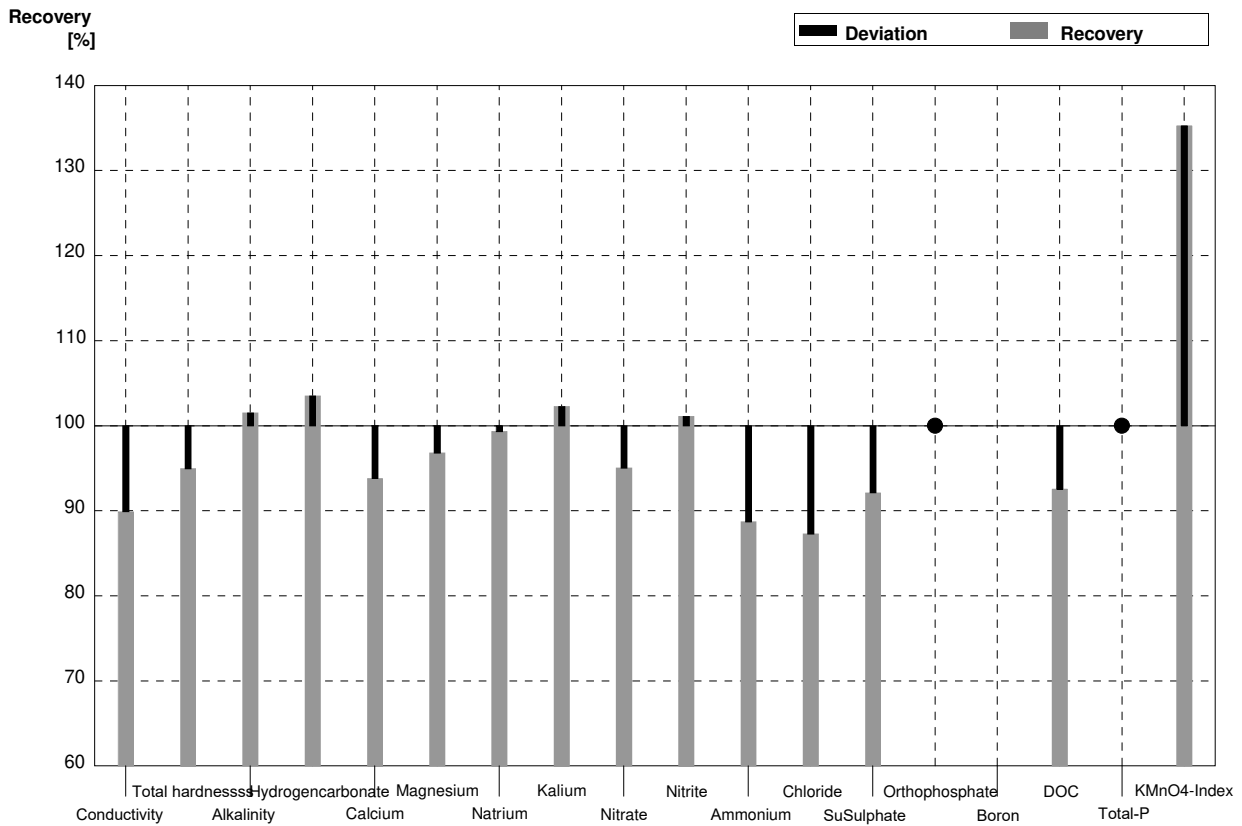
Sample N177B
Laboratory AG

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1			µS/cm	
Total hardness	1,038	0,012			mmol/l	
Alkalinity KS 4,3 (as H+)	1,410	0,017			mmol/l	
Hydrogen carbonate	83,0	1,0			mg/l	
Calcium	30,9	0,5			mg/l	
Magnesium	6,47	0,08			mg/l	
Sodium	25,8	0,2			mg/l	
Potassium	3,07	0,02			mg/l	
Nitrate (as NO3)	45,4	1,2			mg/l	
Nitrite (as NO2)	0,0406	0,0012			mg/l	
Ammonium (as NH4)	<0,01				mg/l	
Chloride	29,31	0,13			mg/l	
Sulphate (as SO4)	15,24	0,18			mg/l	
Orthophosphate (as PO4)	0,0909	0,0015	0,0890	0,011	mg/l	98%
Boron	0,0708	0,0010			mg/l	
DOC (as C)	3,64	0,08	3,46	0,62	mg/l	95%
Total P (as PO4)	0,1254	0,0011			mg/l	
KMnO4-Index (as O2)	2,23	0,11			mg/l	



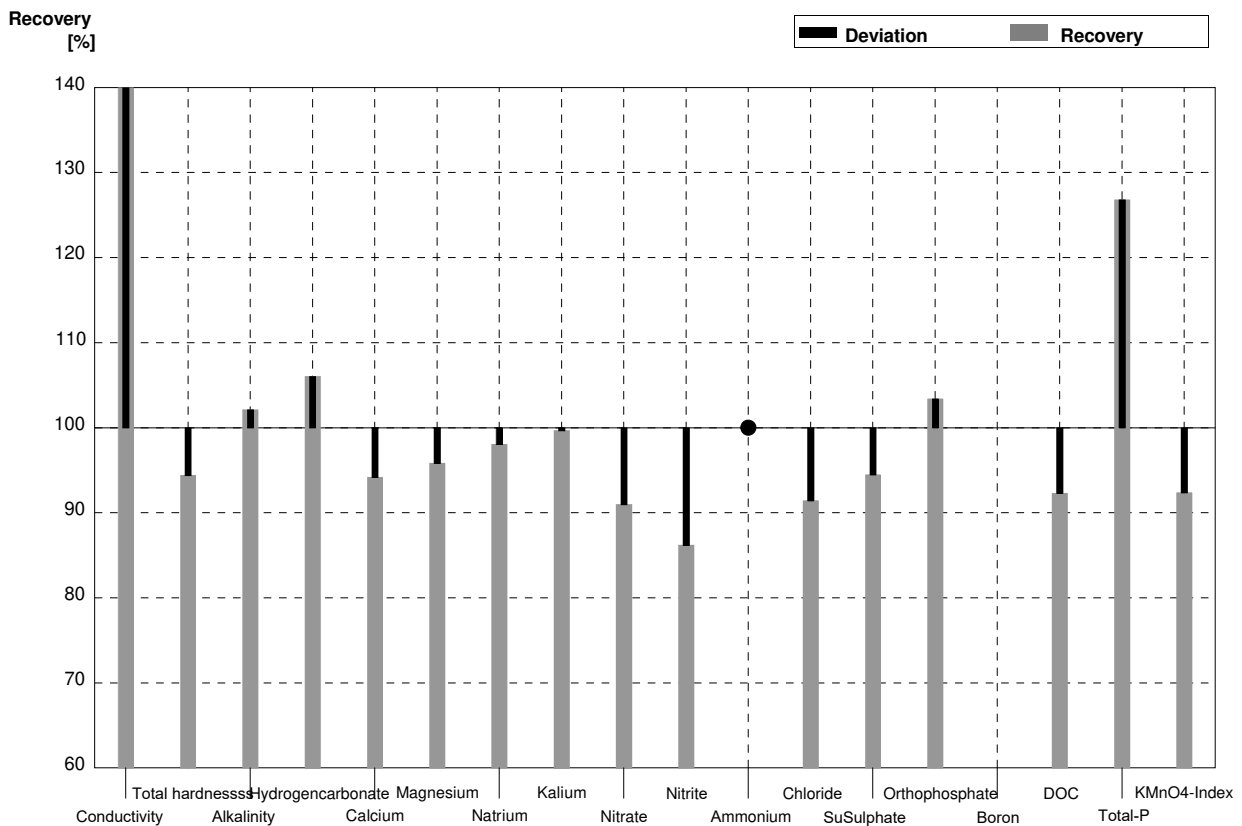
Sample N177A
Laboratory AH

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	383	8,3	µS/cm	90%
Total hardness	1,453	0,017	1,38	0,11	mmol/l	95%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,64	0,22	mmol/l	102%
Hydrogen carbonate	155,5	1,9	161	7,2	mg/l	104%
Calcium	35,6	0,6	33,4	1,7	mg/l	94%
Magnesium	13,74	0,16	13,3	0,84	mg/l	97%
Sodium	29,8	0,4	29,6	2,3	mg/l	99%
Potassium	3,94	0,03	4,03	0,14	mg/l	102%
Nitrate (as NO3)	24,2	0,6	23,0	1,1	mg/l	95%
Nitrite (as NO2)	0,0811	0,0003	0,082	0,0048	mg/l	101%
Ammonium (as NH4)	0,071	0,003	0,063	0,0046	mg/l	89%
Chloride	21,54	0,05	18,8	1,5	mg/l	87%
Sulphate (as SO4)	35,6	0,4	32,8	2,0	mg/l	92%
Orthophosphate (as PO4)	<0,009		<0,01		mg/l	•
Boron	0,1006	0,0009			mg/l	
DOC (as C)	1,75	0,07	1,62	0,15	mg/l	93%
Total P (as PO4)	<0,009		<0,01		mg/l	•
KMnO4-Index (as O2)	2,72	0,10	3,68	0,17	mg/l	135%



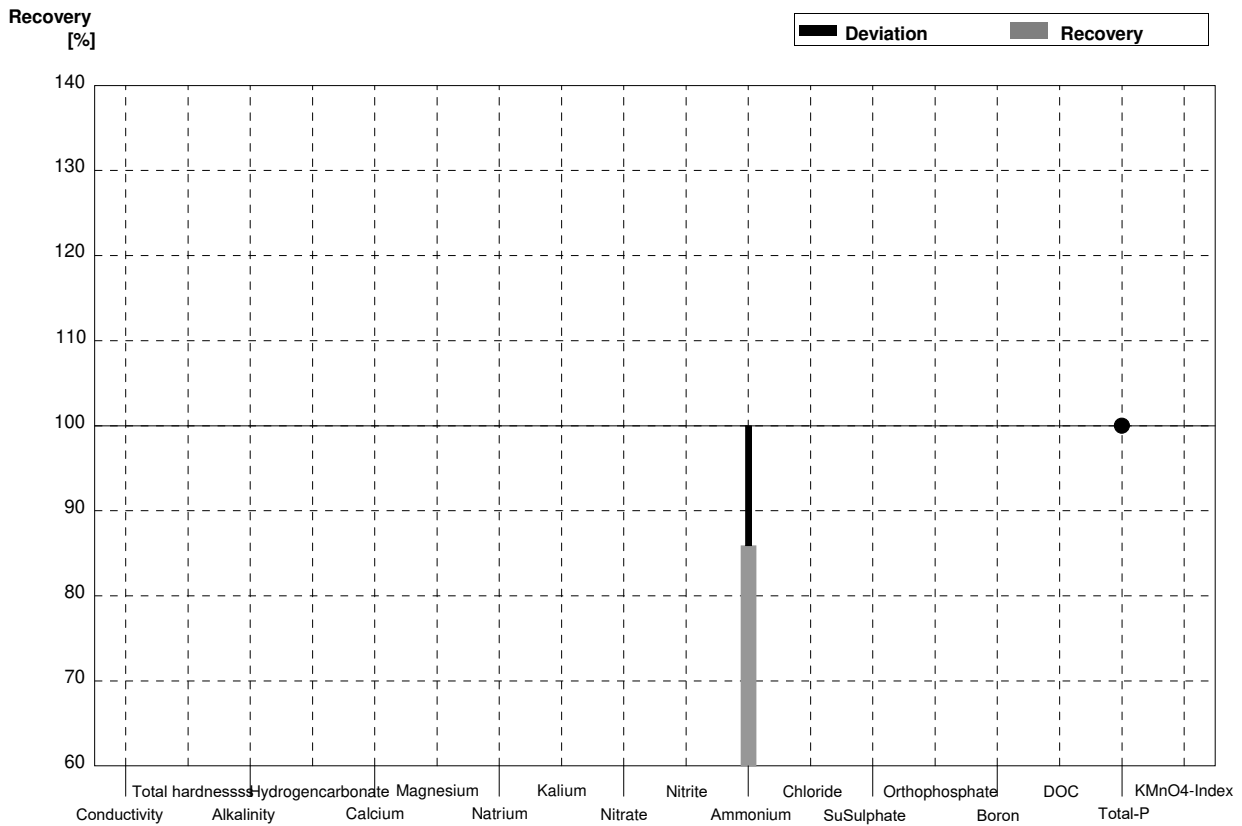
Sample N177B
Laboratory AH

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	513	11	µS/cm	147%
Total hardness	1,038	0,012	0,98	0,080	mmol/l	94%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,44	0,12	mmol/l	102%
Hydrogen carbonate	83,0	1,0	88	3,9	mg/l	106%
Calcium	30,9	0,5	29,1	1,5	mg/l	94%
Magnesium	6,47	0,08	6,2	0,39	mg/l	96%
Sodium	25,8	0,2	25,3	1,9	mg/l	98%
Potassium	3,07	0,02	3,06	0,11	mg/l	100%
Nitrate (as NO3)	45,4	1,2	41,3	2,0	mg/l	91%
Nitrite (as NO2)	0,0406	0,0012	0,0350	0,0020	mg/l	86%
Ammonium (as NH4)	<0,01		<0,01		mg/l	•
Chloride	29,31	0,13	26,8	2,1	mg/l	91%
Sulphate (as SO4)	15,24	0,18	14,4	0,88	mg/l	94%
Orthophosphate (as PO4)	0,0909	0,0015	0,094	0,014	mg/l	103%
Boron	0,0708	0,0010			mg/l	
DOC (as C)	3,64	0,08	3,36	0,31	mg/l	92%
Total P (as PO4)	0,1254	0,0011	0,159	0,021	mg/l	127%
KMnO4-Index (as O2)	2,23	0,11	2,06	0,093	mg/l	92%



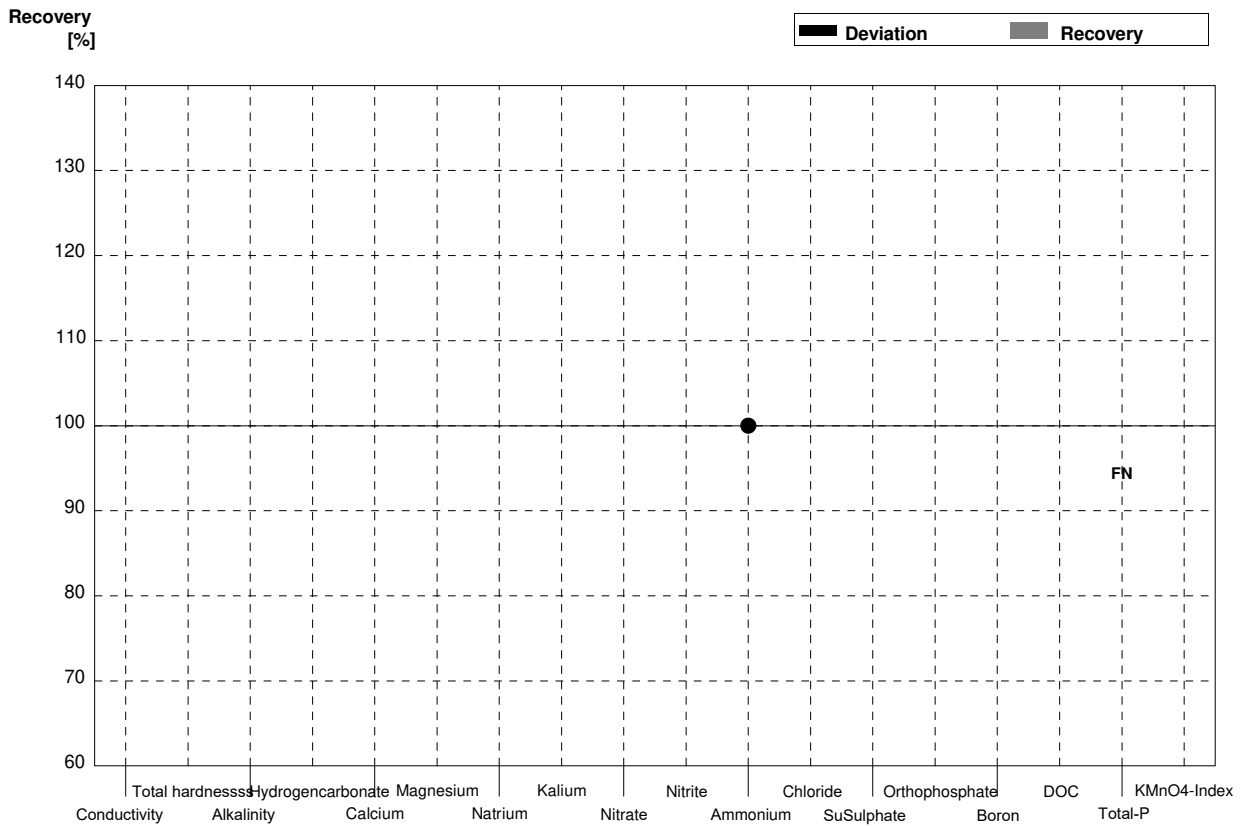
Sample N177A
Laboratory AI

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2			µS/cm	
Total hardness	1,453	0,017			mmol/l	
Alkalinity KS 4,3 (as H+)	2,60	0,03			mmol/l	
Hydrogen carbonate	155,5	1,9			mg/l	
Calcium	35,6	0,6			mg/l	
Magnesium	13,74	0,16			mg/l	
Sodium	29,8	0,4			mg/l	
Potassium	3,94	0,03			mg/l	
Nitrate (as NO3)	24,2	0,6			mg/l	
Nitrite (as NO2)	0,0811	0,0003			mg/l	
Ammonium (as NH4)	0,071	0,003	0,061		mg/l	86%
Chloride	21,54	0,05			mg/l	
Sulphate (as SO4)	35,6	0,4			mg/l	
Orthophosphate (as PO4)	<0,009				mg/l	
Boron	0,1006	0,0009			mg/l	
DOC (as C)	1,75	0,07			mg/l	
Total P (as PO4)	<0,009		<0,1		mg/l	•
KMnO4-Index (as O2)	2,72	0,10			mg/l	



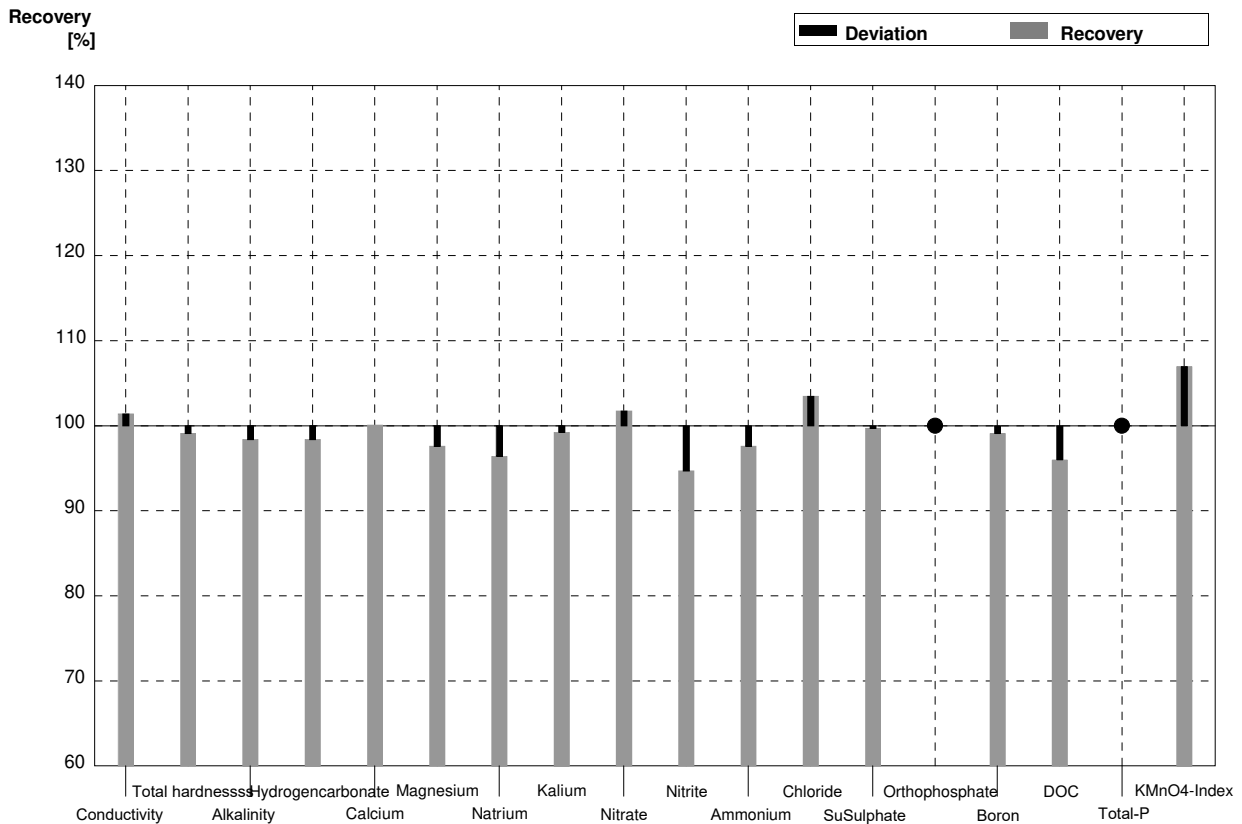
Sample N177B
Laboratory AI

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1			µS/cm	
Total hardness	1,038	0,012			mmol/l	
Alkalinity KS 4,3 (as H+)	1,410	0,017			mmol/l	
Hydrogen carbonate	83,0	1,0			mg/l	
Calcium	30,9	0,5			mg/l	
Magnesium	6,47	0,08			mg/l	
Sodium	25,8	0,2			mg/l	
Potassium	3,07	0,02			mg/l	
Nitrate (as NO3)	45,4	1,2			mg/l	
Nitrite (as NO2)	0,0406	0,0012			mg/l	
Ammonium (as NH4)	<0,01		<0,05		mg/l	•
Chloride	29,31	0,13			mg/l	
Sulphate (as SO4)	15,24	0,18			mg/l	
Orthophosphate (as PO4)	0,0909	0,0015			mg/l	
Boron	0,0708	0,0010			mg/l	
DOC (as C)	3,64	0,08			mg/l	
Total P (as PO4)	0,1254	0,0011	<0,1		mg/l	FN
KMnO4-Index (as O2)	2,23	0,11			mg/l	



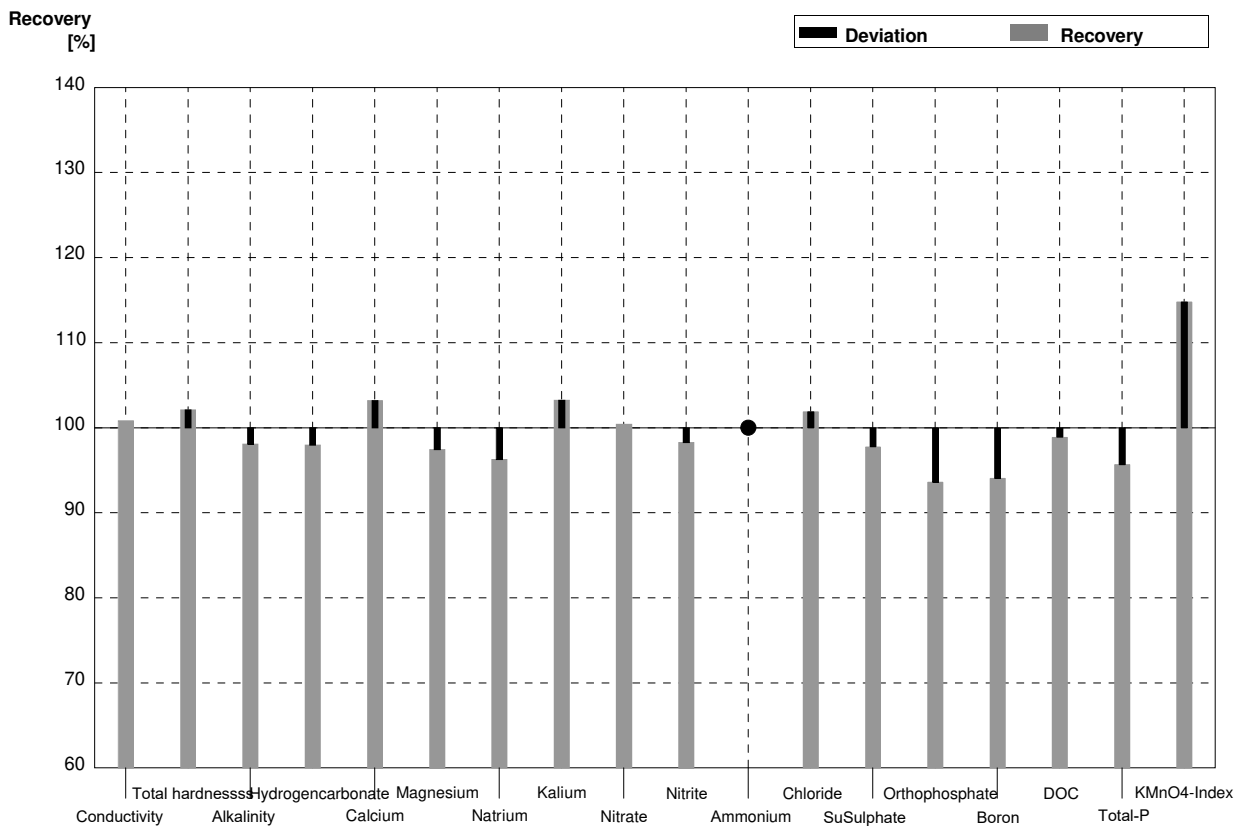
Sample N177A
Laboratory AJ

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	432	9	µS/cm	101%
Total hardness	1,453	0,017	1,44	0,19	mmol/l	99%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,558	0,230	mmol/l	98%
Hydrogen carbonate	155,5	1,9	153,0	13,8	mg/l	98%
Calcium	35,6	0,6	35,63	3,56	mg/l	100%
Magnesium	13,74	0,16	13,41	1,07	mg/l	98%
Sodium	29,8	0,4	28,73	2,59	mg/l	96%
Potassium	3,94	0,03	3,910	0,352	mg/l	99%
Nitrate (as NO3)	24,2	0,6	24,62	2,22	mg/l	102%
Nitrite (as NO2)	0,0811	0,0003	0,0768	0,0054	mg/l	95%
Ammonium (as NH4)	0,071	0,003	0,0693	0,0097	mg/l	98%
Chloride	21,54	0,05	22,29	2,67	mg/l	103%
Sulphate (as SO4)	35,6	0,4	35,50	3,55	mg/l	100%
Orthophosphate (as PO4)	<0,009		<0,01		mg/l	•
Boron	0,1006	0,0009	0,0997	0,0209	mg/l	99%
DOC (as C)	1,75	0,07	1,68	0,12	mg/l	96%
Total P (as PO4)	<0,009		<0,01		mg/l	•
KMnO4-Index (as O2)	2,72	0,10	2,91	0,44	mg/l	107%



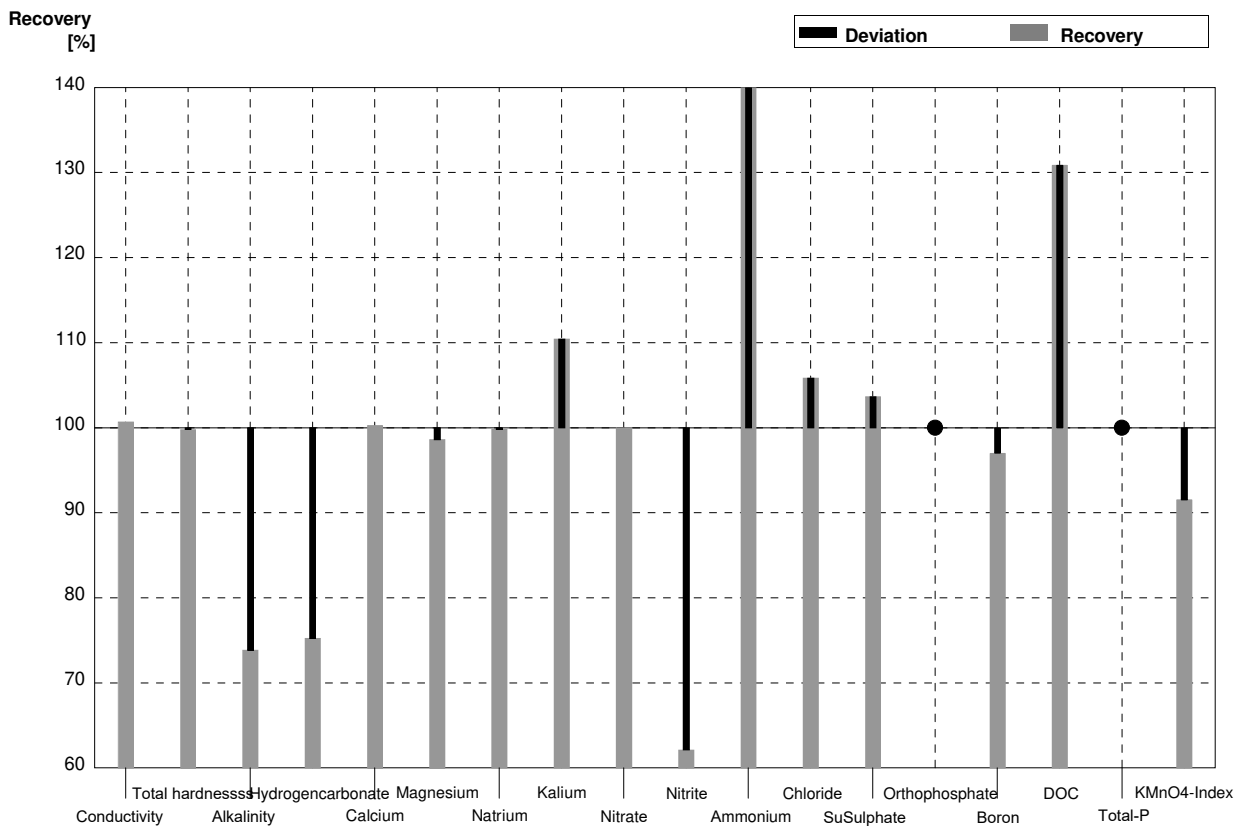
Sample N177B
Laboratory AJ

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	353	7	µS/cm	101%
Total hardness	1,038	0,012	1,06	0,14	mmol/l	102%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,383	0,124	mmol/l	98%
Hydrogen carbonate	83,0	1,0	81,33	7,32	mg/l	98%
Calcium	30,9	0,5	31,89	3,19	mg/l	103%
Magnesium	6,47	0,08	6,305	0,504	mg/l	97%
Sodium	25,8	0,2	24,84	2,24	mg/l	96%
Potassium	3,07	0,02	3,170	0,254	mg/l	103%
Nitrate (as NO3)	45,4	1,2	45,59	4,10	mg/l	100%
Nitrite (as NO2)	0,0406	0,0012	0,0399	0,0028	mg/l	98%
Ammonium (as NH4)	<0,01		<0,01		mg/l	•
Chloride	29,31	0,13	29,87	3,58	mg/l	102%
Sulphate (as SO4)	15,24	0,18	14,90	1,49	mg/l	98%
Orthophosphate (as PO4)	0,0909	0,0015	0,0851	0,0128	mg/l	94%
Boron	0,0708	0,0010	0,0666	0,0140	mg/l	94%
DOC (as C)	3,64	0,08	3,60	0,25	mg/l	99%
Total P (as PO4)	0,1254	0,0011	0,120	0,023	mg/l	96%
KMnO4-Index (as O2)	2,23	0,11	2,56	0,38	mg/l	115%



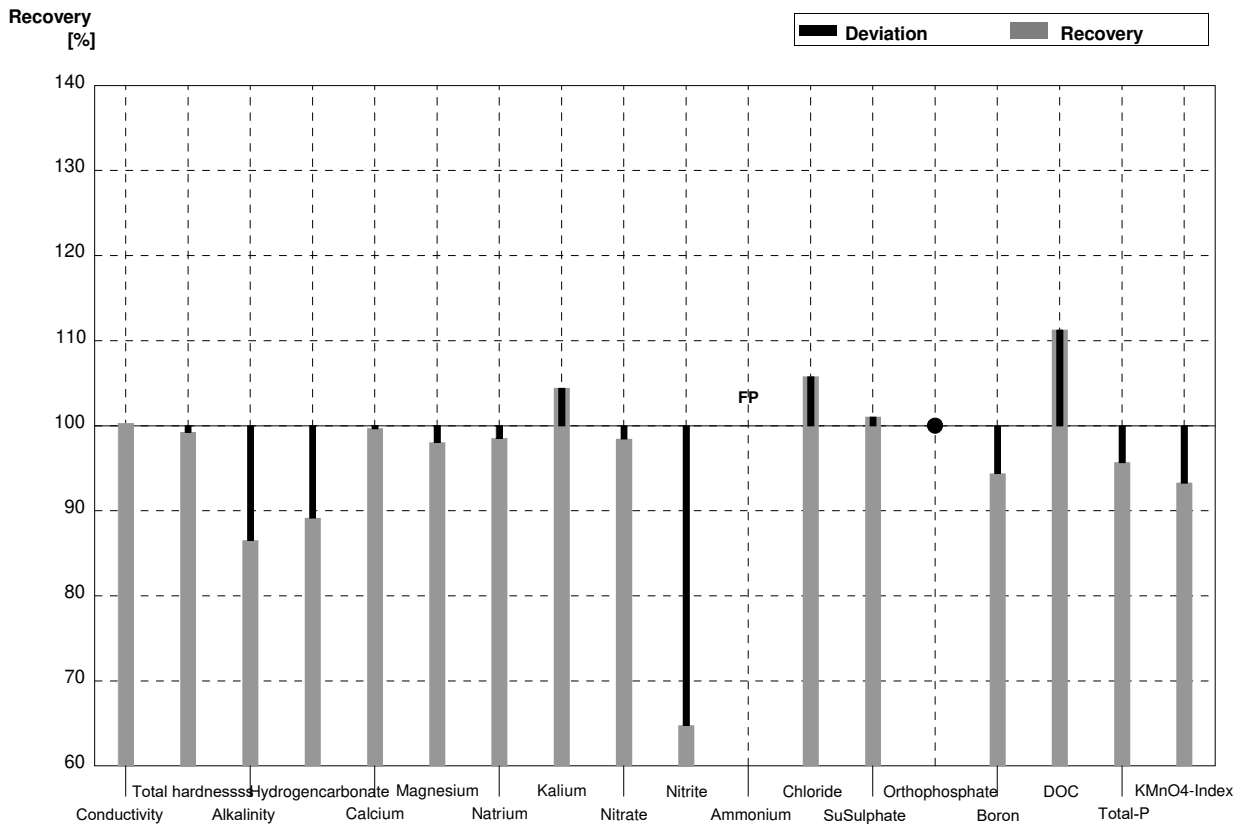
Sample N177A
Laboratory AK

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	429		µS/cm	101%
Total hardness	1,453	0,017	1,45		mmol/l	100%
Alkalinity KS 4,3 (as H+)	2,60	0,03	1,92		mmol/l	74%
Hydrogen carbonate	155,5	1,9	117		mg/l	75%
Calcium	35,6	0,6	35,7		mg/l	100%
Magnesium	13,74	0,16	13,55		mg/l	99%
Sodium	29,8	0,4	29,75		mg/l	100%
Potassium	3,94	0,03	4,351		mg/l	110%
Nitrate (as NO3)	24,2	0,6	24,2		mg/l	100%
Nitrite (as NO2)	0,0811	0,0003	0,0504		mg/l	62%
Ammonium (as NH4)	0,071	0,003	0,112		mg/l	158%
Chloride	21,54	0,05	22,8		mg/l	106%
Sulphate (as SO4)	35,6	0,4	36,9		mg/l	104%
Orthophosphate (as PO4)	<0,009		<0,200		mg/l	•
Boron	0,1006	0,0009	0,09761		mg/l	97%
DOC (as C)	1,75	0,07	2,29		mg/l	131%
Total P (as PO4)	<0,009		<0,0210		mg/l	•
KMnO4-Index (as O2)	2,72	0,10	2,49		mg/l	92%



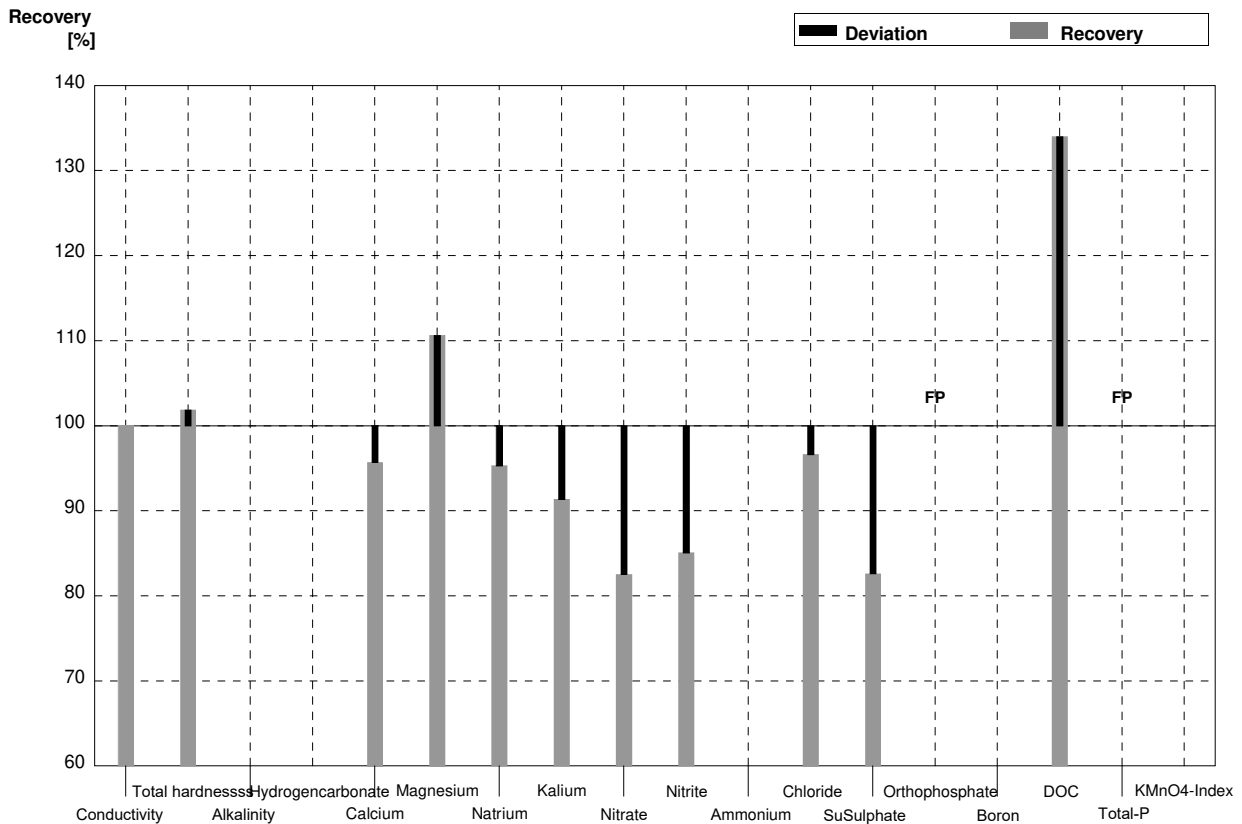
Sample N177B
Laboratory AK

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	351		µS/cm	100%
Total hardness	1,038	0,012	1,03		mmol/l	99%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,22		mmol/l	87%
Hydrogen carbonate	83,0	1,0	74,0		mg/l	89%
Calcium	30,9	0,5	30,8		mg/l	100%
Magnesium	6,47	0,08	6,343		mg/l	98%
Sodium	25,8	0,2	25,42		mg/l	99%
Potassium	3,07	0,02	3,206		mg/l	104%
Nitrate (as NO3)	45,4	1,2	44,7		mg/l	98%
Nitrite (as NO2)	0,0406	0,0012	0,0263		mg/l	65%
Ammonium (as NH4)	<0,01		0,0374		mg/l	FP
Chloride	29,31	0,13	31,0		mg/l	106%
Sulphate (as SO4)	15,24	0,18	15,4		mg/l	101%
Orthophosphate (as PO4)	0,0909	0,0015	<0,200		mg/l	•
Boron	0,0708	0,0010	0,06683		mg/l	94%
DOC (as C)	3,64	0,08	4,05		mg/l	111%
Total P (as PO4)	0,1254	0,0011	0,120		mg/l	96%
KMnO4-Index (as O2)	2,23	0,11	2,08		mg/l	93%



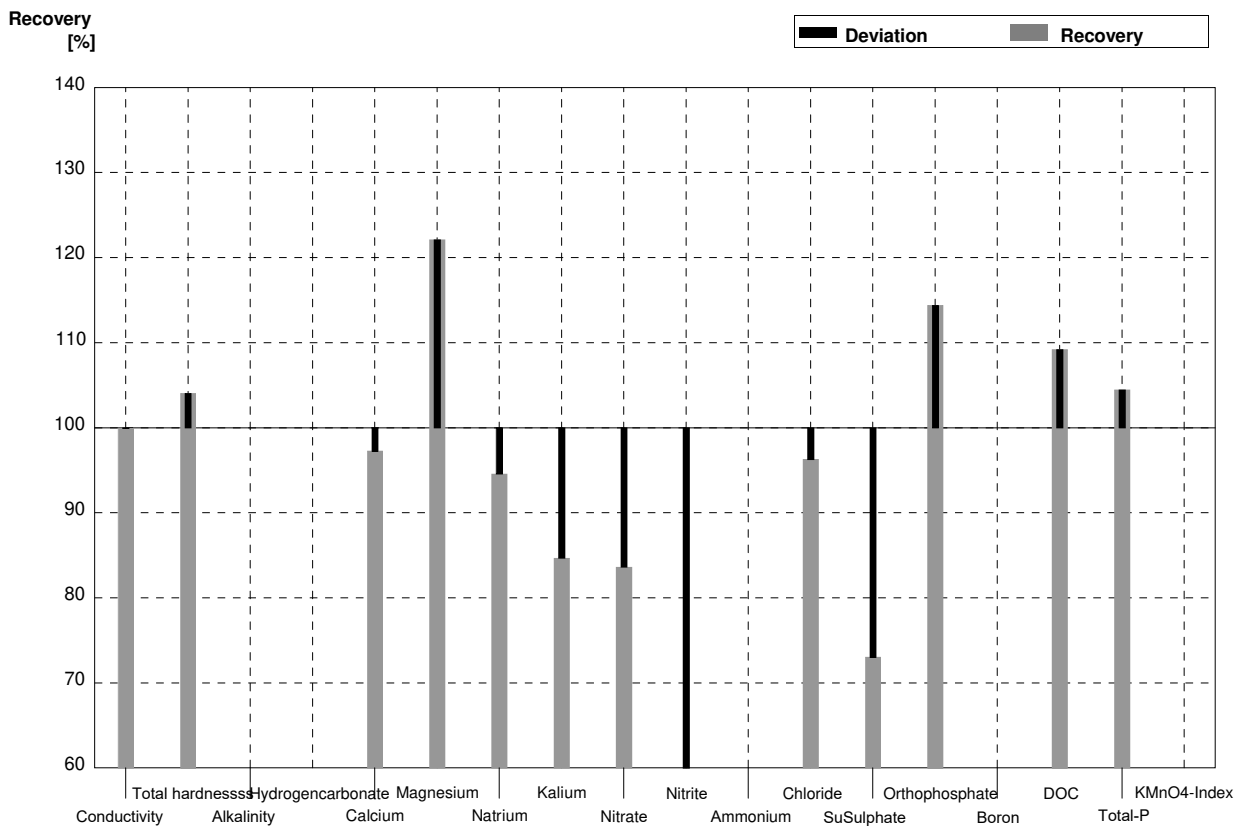
Sample N177A
Laboratory AL

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	426,3	21,3	µS/cm	100%
Total hardness	1,453	0,017	1,48	0,10	mmol/l	102%
Alkalinity KS 4,3 (as H+)	2,60	0,03			mmol/l	
Hydrogen carbonate	155,5	1,9			mg/l	
Calcium	35,6	0,6	34,07	2,35	mg/l	96%
Magnesium	13,74	0,16	15,20	0,21	mg/l	111%
Sodium	29,8	0,4	28,4	0,2	mg/l	95%
Potassium	3,94	0,03	3,60	0,43	mg/l	91%
Nitrate (as NO3)	24,2	0,6	19,974	1,158	mg/l	83%
Nitrite (as NO2)	0,0811	0,0003	0,069	0,013	mg/l	85%
Ammonium (as NH4)	0,071	0,003			mg/l	
Chloride	21,54	0,05	20,81	2,02	mg/l	97%
Sulphate (as SO4)	35,6	0,4	29,41	3,63	mg/l	83%
Orthophosphate (as PO4)	<0,009		0,0250	0,004	mg/l	FP
Boron	0,1006	0,0009			mg/l	
DOC (as C)	1,75	0,07	2,345	0,305	mg/l	134%
Total P (as PO4)	<0,009		0,0250	0,004	mg/l	FP
KMnO4-Index (as O2)	2,72	0,10			mg/l	



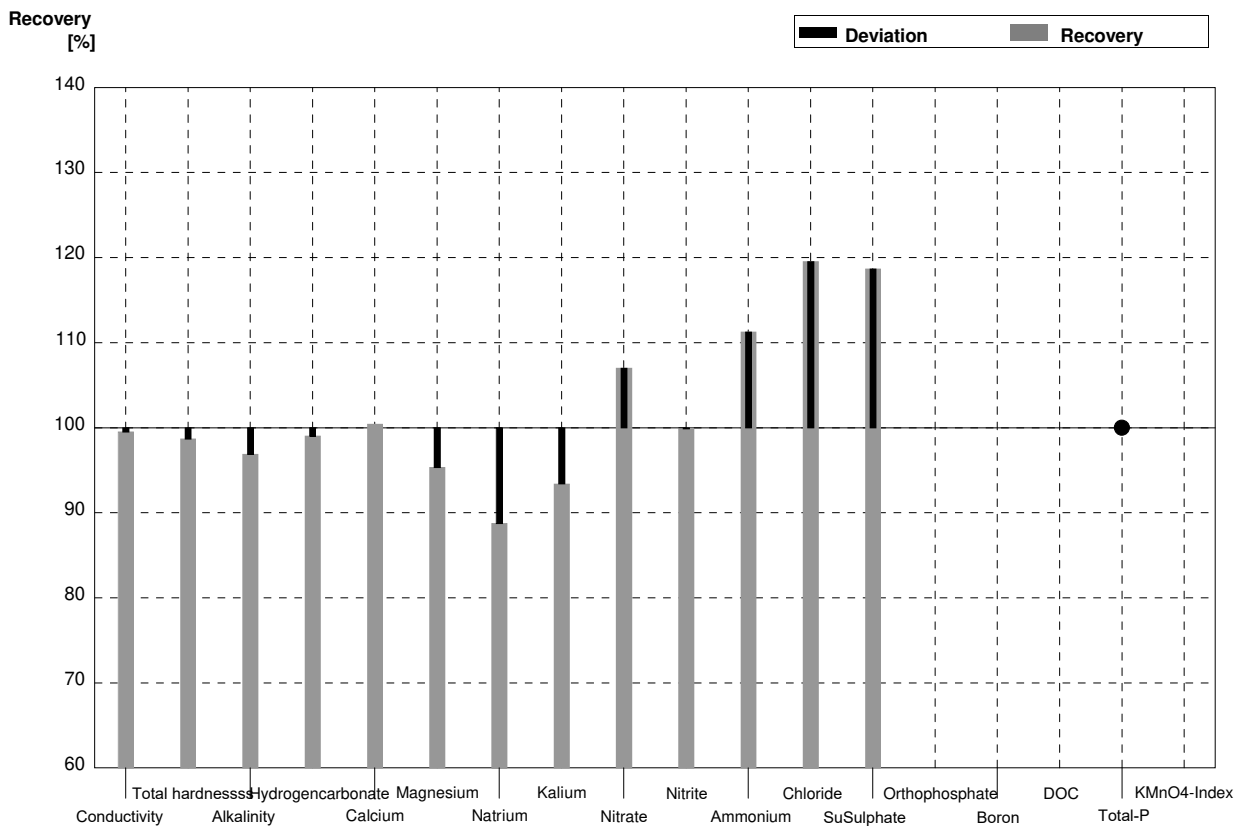
Sample N177B
Laboratory AL

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	349,8	17,5	µS/cm	100%
Total hardness	1,038	0,012	1,08	0,08	mmol/l	104%
Alkalinity KS 4,3 (as H+)	1,410	0,017			mmol/l	
Hydrogen carbonate	83,0	1,0			mg/l	
Calcium	30,9	0,5	30,06	2,09	mg/l	97%
Magnesium	6,47	0,08	7,9	0,11	mg/l	122%
Sodium	25,8	0,2	24,4	0,2	mg/l	95%
Potassium	3,07	0,02	2,60	0,36	mg/l	85%
Nitrate (as NO3)	45,4	1,2	37,966	2,202	mg/l	84%
Nitrite (as NO2)	0,0406	0,0012	0,0230	0,007	mg/l	57%
Ammonium (as NH4)	<0,01				mg/l	
Chloride	29,31	0,13	28,22	2,25	mg/l	96%
Sulphate (as SO4)	15,24	0,18	11,13	1,44	mg/l	73%
Orthophosphate (as PO4)	0,0909	0,0015	0,104	0,012	mg/l	114%
Boron	0,0708	0,0010			mg/l	
DOC (as C)	3,64	0,08	3,975	0,517	mg/l	109%
Total P (as PO4)	0,1254	0,0011	0,131	0,030	mg/l	104%
KMnO4-Index (as O2)	2,23	0,11			mg/l	



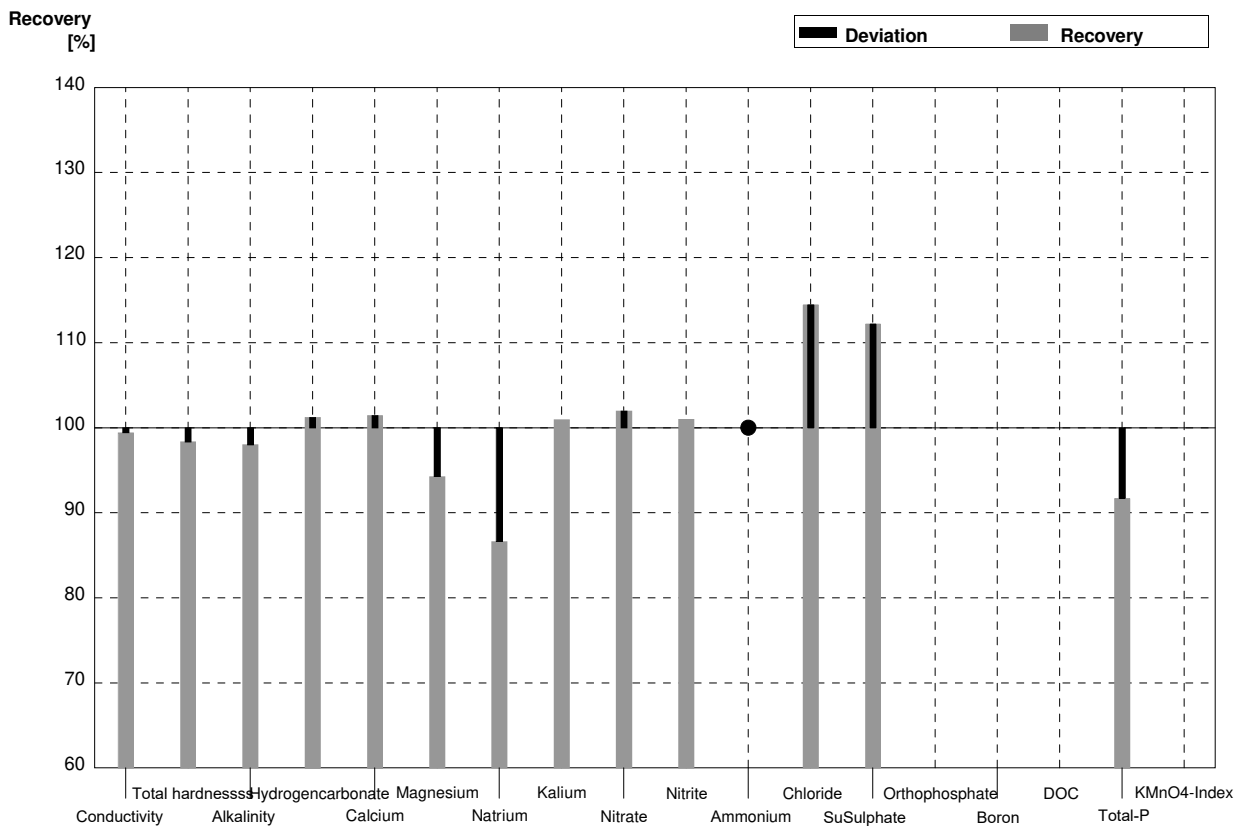
Sample N177A
Laboratory AM

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	424	14	µS/cm	100%
Total hardness	1,453	0,017	1,434	0,025	mmol/l	99%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,519	0,025	mmol/l	97%
Hydrogen carbonate	155,5	1,9	154	10	mg/l	99%
Calcium	35,6	0,6	35,75	2	mg/l	100%
Magnesium	13,74	0,16	13,1	0,4	mg/l	95%
Sodium	29,8	0,4	26,45	1	mg/l	89%
Potassium	3,94	0,03	3,68	0,2	mg/l	93%
Nitrate (as NO3)	24,2	0,6	25,9	1	mg/l	107%
Nitrite (as NO2)	0,0811	0,0003	0,081	0,01	mg/l	100%
Ammonium (as NH4)	0,071	0,003	0,079	0,01	mg/l	111%
Chloride	21,54	0,05	25,75	1	mg/l	120%
Sulphate (as SO4)	35,6	0,4	42,25	1,5	mg/l	119%
Orthophosphate (as PO4)	<0,009				mg/l	
Boron	0,1006	0,0009			mg/l	
DOC (as C)	1,75	0,07			mg/l	
Total P (as PO4)	<0,009		0,00100	0,05	mg/l	•
KMnO4-Index (as O2)	2,72	0,10			mg/l	



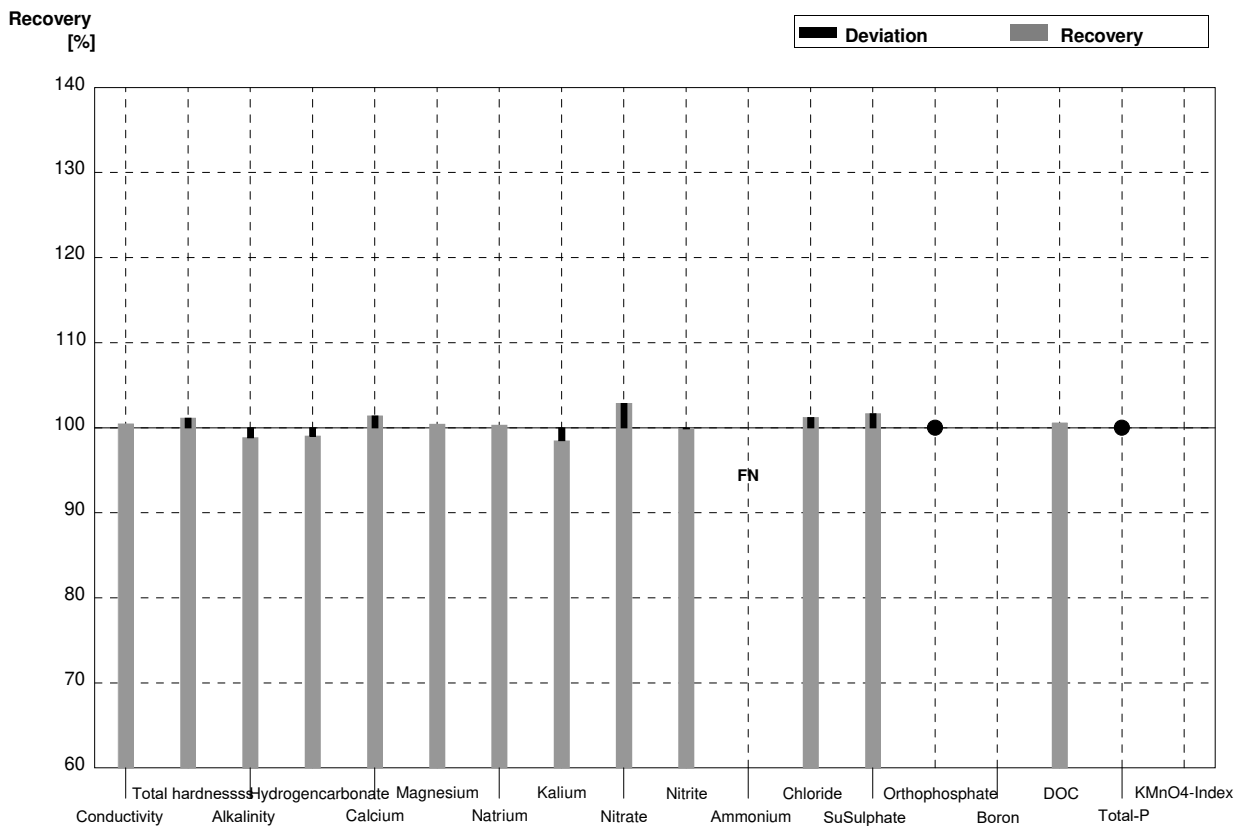
Sample N177B
Laboratory AM

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	348	14	µS/cm	99%
Total hardness	1,038	0,012	1,021	0,025	mmol/l	98%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,382	0,025	mmol/l	98%
Hydrogen carbonate	83,0	1,0	84	10	mg/l	101%
Calcium	30,9	0,5	31,35	2	mg/l	101%
Magnesium	6,47	0,08	6,10	0,4	mg/l	94%
Sodium	25,8	0,2	22,35	1	mg/l	87%
Potassium	3,07	0,02	3,10	0,2	mg/l	101%
Nitrate (as NO3)	45,4	1,2	46,3	1	mg/l	102%
Nitrite (as NO2)	0,0406	0,0012	0,0410	0,01	mg/l	101%
Ammonium (as NH4)	<0,01		0,00400	0,01	mg/l	•
Chloride	29,31	0,13	33,55	1	mg/l	114%
Sulphate (as SO4)	15,24	0,18	17,1	1,5	mg/l	112%
Orthophosphate (as PO4)	0,0909	0,0015			mg/l	
Boron	0,0708	0,0010			mg/l	
DOC (as C)	3,64	0,08			mg/l	
Total P (as PO4)	0,1254	0,0011	0,115	0,05	mg/l	92%
KMnO4-Index (as O2)	2,23	0,11			mg/l	



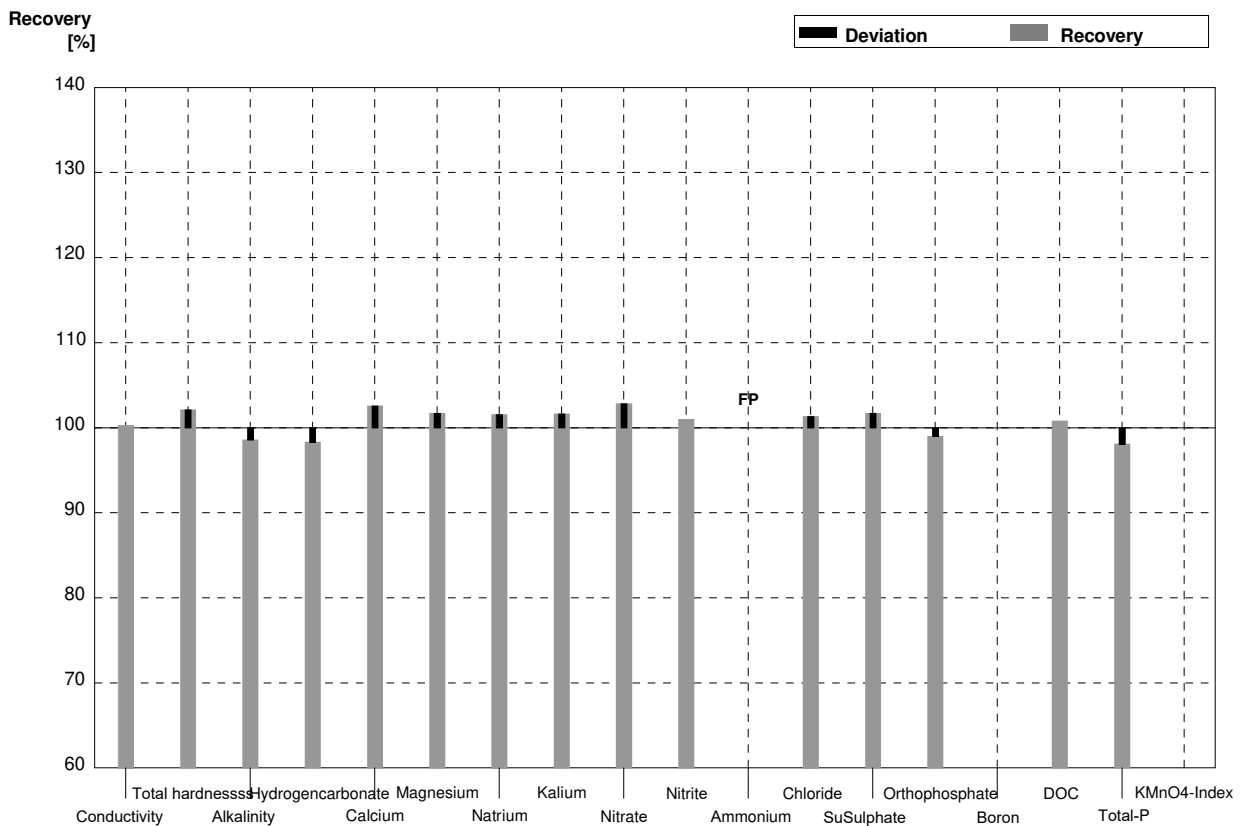
Sample N177A
Laboratory AN

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	428	18	µS/cm	100%
Total hardness	1,453	0,017	1,47	0,1	mmol/l	101%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,57	0,2	mmol/l	99%
Hydrogen carbonate	155,5	1,9	154	7	mg/l	99%
Calcium	35,6	0,6	36,1	3	mg/l	101%
Magnesium	13,74	0,16	13,8	1,7	mg/l	100%
Sodium	29,8	0,4	29,9	5	mg/l	100%
Potassium	3,94	0,03	3,88	0,6	mg/l	98%
Nitrate (as NO3)	24,2	0,6	24,9	2	mg/l	103%
Nitrite (as NO2)	0,0811	0,0003	0,081	0,006	mg/l	100%
Ammonium (as NH4)	0,071	0,003	<0,013		mg/l	FN
Chloride	21,54	0,05	21,8	2	mg/l	101%
Sulphate (as SO4)	35,6	0,4	36,2	3	mg/l	102%
Orthophosphate (as PO4)	<0,009		<0,01		mg/l	•
Boron	0,1006	0,0009			mg/l	
DOC (as C)	1,75	0,07	1,76	0,3	mg/l	101%
Total P (as PO4)	<0,009		<0,013		mg/l	•
KMnO4-Index (as O2)	2,72	0,10			mg/l	



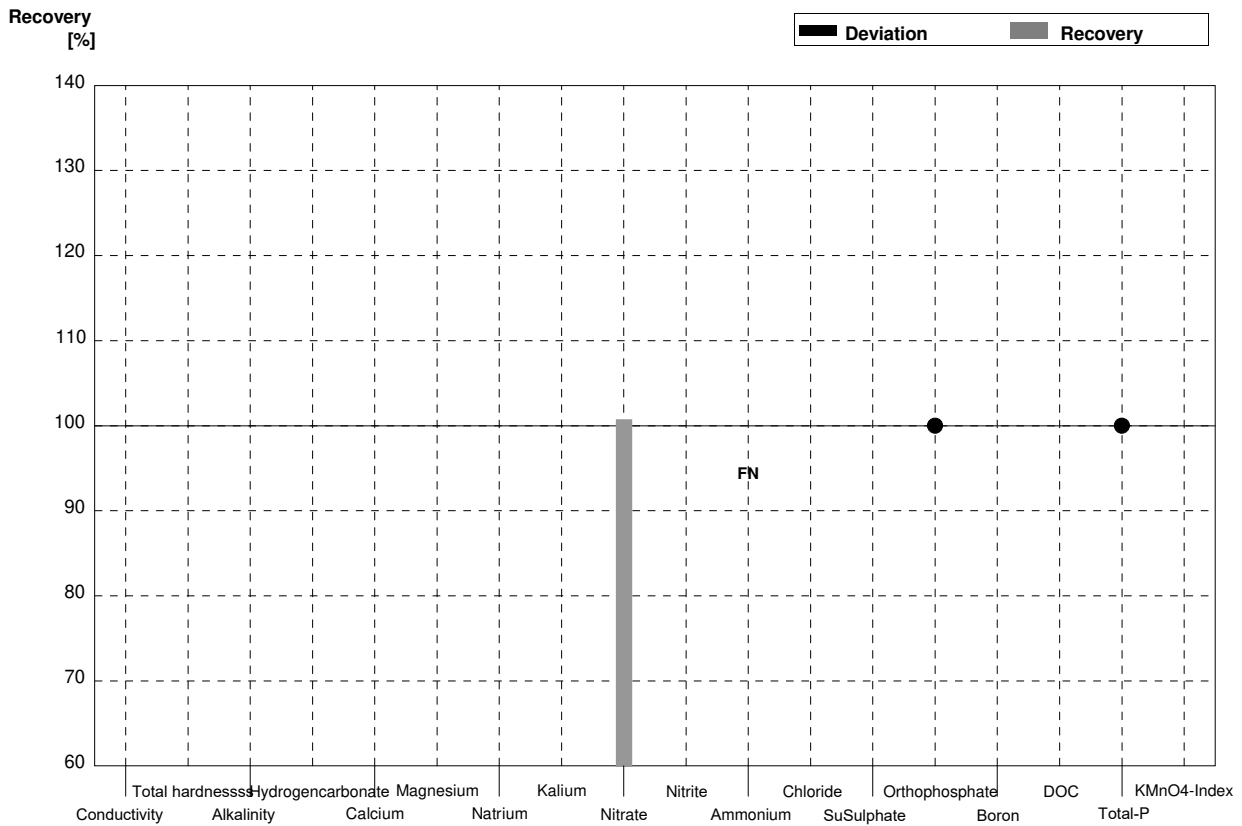
Sample N177B
Laboratory AN

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	351	15	µS/cm	100%
Total hardness	1,038	0,012	1,06	0,1	mmol/l	102%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,39	0,1	mmol/l	99%
Hydrogen carbonate	83,0	1,0	81,6	4	mg/l	98%
Calcium	30,9	0,5	31,7	3	mg/l	103%
Magnesium	6,47	0,08	6,58	0,8	mg/l	102%
Sodium	25,8	0,2	26,2	4	mg/l	102%
Potassium	3,07	0,02	3,12	0,5	mg/l	102%
Nitrate (as NO3)	45,4	1,2	46,7	4	mg/l	103%
Nitrite (as NO2)	0,0406	0,0012	0,0410	0,003	mg/l	101%
Ammonium (as NH4)	<0,01		0,068	0,009	mg/l	FP
Chloride	29,31	0,13	29,7	3	mg/l	101%
Sulphate (as SO4)	15,24	0,18	15,5	1,1	mg/l	102%
Orthophosphate (as PO4)	0,0909	0,0015	0,090	0,018	mg/l	99%
Boron	0,0708	0,0010			mg/l	
DOC (as C)	3,64	0,08	3,67	0,6	mg/l	101%
Total P (as PO4)	0,1254	0,0011	0,123	0,02	mg/l	98%
KMnO4-Index (as O2)	2,23	0,11			mg/l	



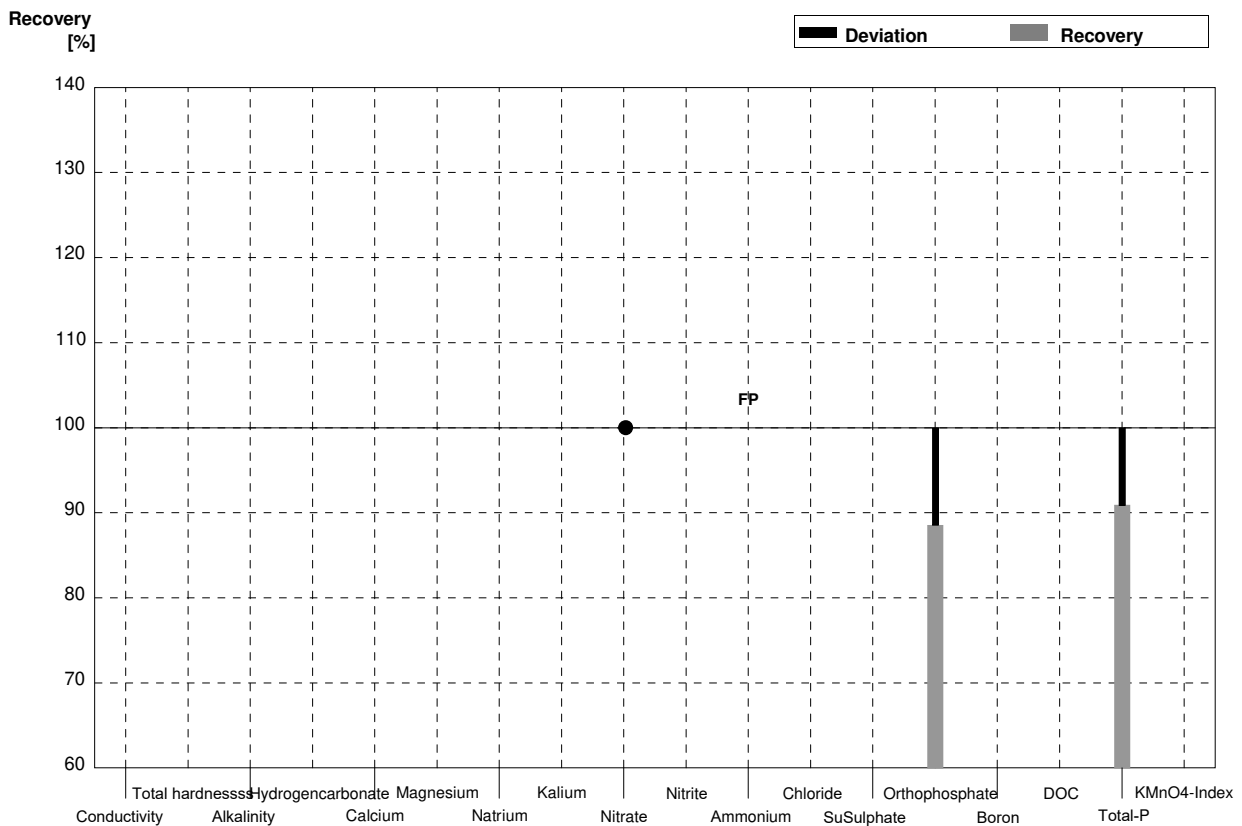
Sample N177A
Laboratory AO

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2			µS/cm	
Total hardness	1,453	0,017			mmol/l	
Alkalinity KS 4,3 (as H+)	2,60	0,03			mmol/l	
Hydrogen carbonate	155,5	1,9			mg/l	
Calcium	35,6	0,6			mg/l	
Magnesium	13,74	0,16			mg/l	
Sodium	29,8	0,4			mg/l	
Potassium	3,94	0,03			mg/l	
Nitrate (as NO3)	24,2	0,6	24,379	1,336	mg/l	101%
Nitrite (as NO2)	0,0811	0,0003			mg/l	
Ammonium (as NH4)	0,071	0,003	<0,01		mg/l	FN
Chloride	21,54	0,05			mg/l	
Sulphate (as SO4)	35,6	0,4			mg/l	
Orthophosphate (as PO4)	<0,009		<0,019		mg/l	•
Boron	0,1006	0,0009			mg/l	
DOC (as C)	1,75	0,07			mg/l	
Total P (as PO4)	<0,009		<0,02		mg/l	•
KMnO4-Index (as O2)	2,72	0,10			mg/l	



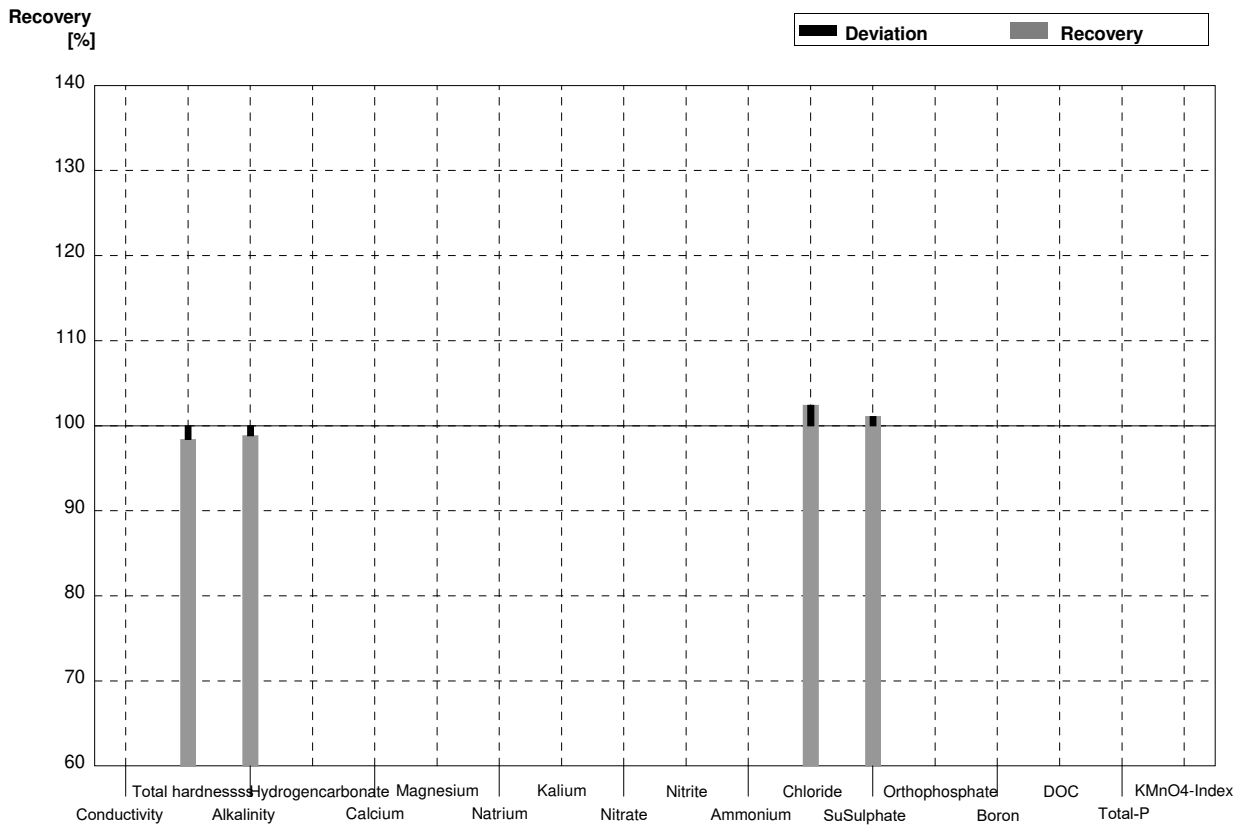
Sample N177B
Laboratory AO

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1			µS/cm	
Total hardness	1,038	0,012			mmol/l	
Alkalinity KS 4,3 (as H+)	1,410	0,017			mmol/l	
Hydrogen carbonate	83,0	1,0			mg/l	
Calcium	30,9	0,5			mg/l	
Magnesium	6,47	0,08			mg/l	
Sodium	25,8	0,2			mg/l	
Potassium	3,07	0,02			mg/l	
Nitrate (as NO3)	45,4	1,2	>30		mg/l	•
Nitrite (as NO2)	0,0406	0,0012			mg/l	
Ammonium (as NH4)	<0,01		0,0639	0,0079	mg/l	FP
Chloride	29,31	0,13			mg/l	
Sulphate (as SO4)	15,24	0,18			mg/l	
Orthophosphate (as PO4)	0,0909	0,0015	0,0805	0,0169	mg/l	89%
Boron	0,0708	0,0010			mg/l	
DOC (as C)	3,64	0,08			mg/l	
Total P (as PO4)	0,1254	0,0011	0,114	0,0187	mg/l	91%
KMnO4-Index (as O2)	2,23	0,11			mg/l	



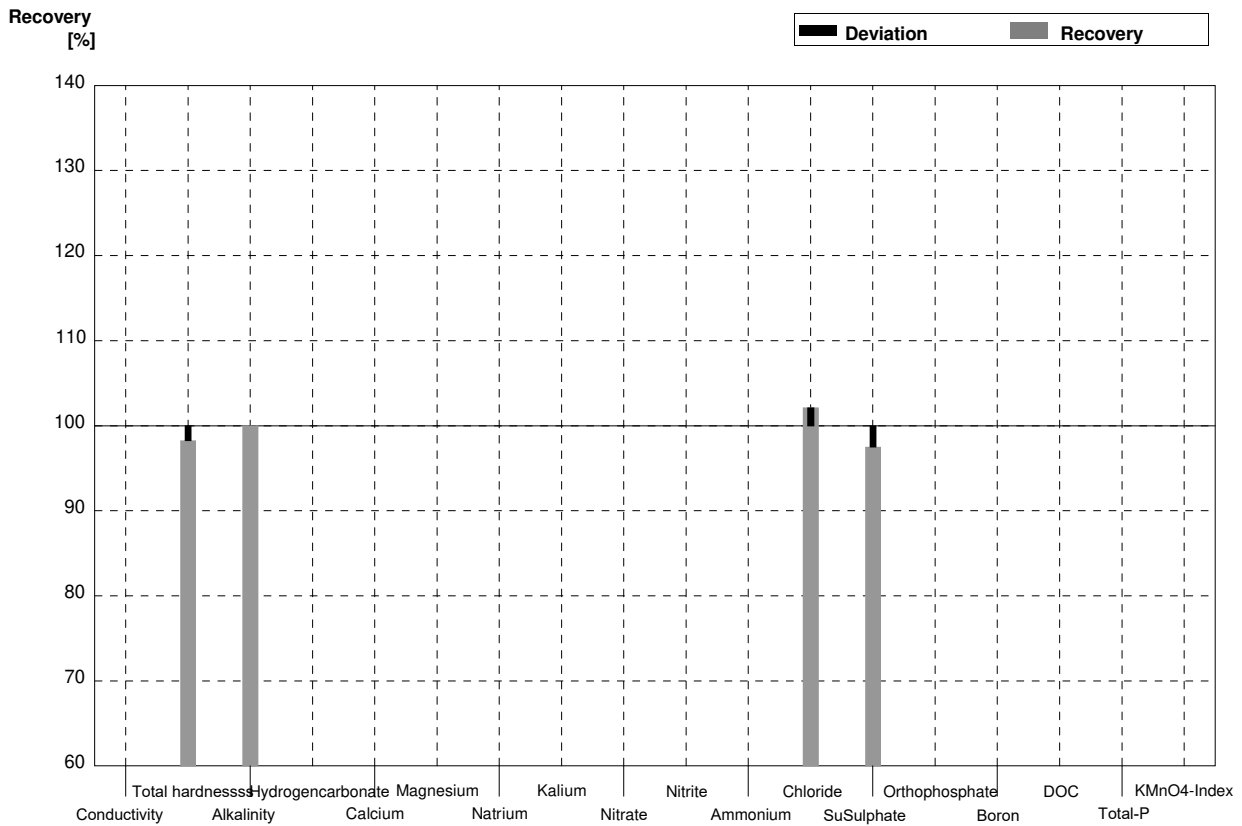
Sample N177A
Laboratory AP

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2			µS/cm	
Total hardness	1,453	0,017	1,43	0,185	mmol/l	98%
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,57	0,133	mmol/l	99%
Hydrogen carbonate	155,5	1,9			mg/l	
Calcium	35,6	0,6			mg/l	
Magnesium	13,74	0,16			mg/l	
Sodium	29,8	0,4			mg/l	
Potassium	3,94	0,03			mg/l	
Nitrate (as NO3)	24,2	0,6			mg/l	
Nitrite (as NO2)	0,0811	0,0003			mg/l	
Ammonium (as NH4)	0,071	0,003			mg/l	
Chloride	21,54	0,05	22,06	0,966	mg/l	102%
Sulphate (as SO4)	35,6	0,4	36,0	4,16	mg/l	101%
Orthophosphate (as PO4)	<0,009				mg/l	
Boron	0,1006	0,0009			mg/l	
DOC (as C)	1,75	0,07			mg/l	
Total P (as PO4)	<0,009				mg/l	
KMnO4-Index (as O2)	2,72	0,10			mg/l	



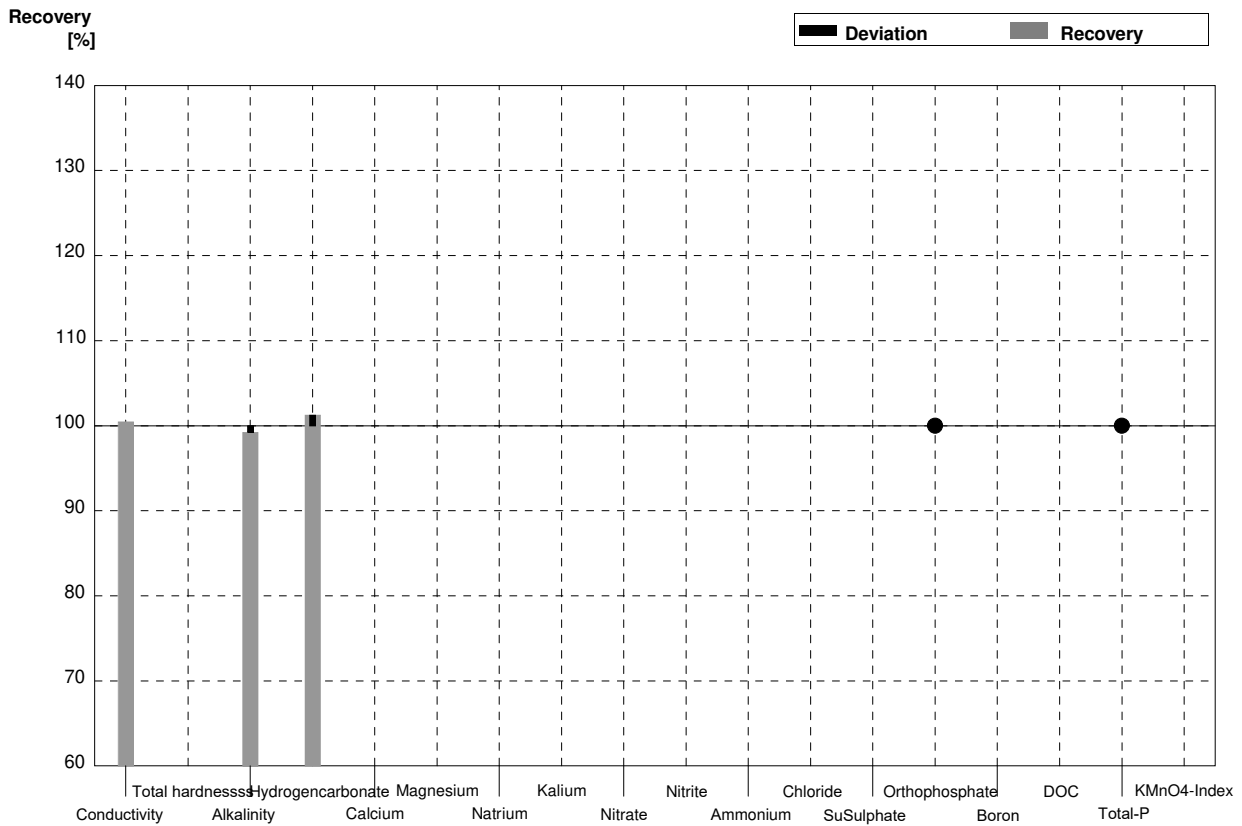
Sample N177B
Laboratory AP

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1			µS/cm	
Total hardness	1,038	0,012	1,02	0,132	mmol/l	98%
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,41	0,0729	mmol/l	100%
Hydrogen carbonate	83,0	1,0			mg/l	
Calcium	30,9	0,5			mg/l	
Magnesium	6,47	0,08			mg/l	
Sodium	25,8	0,2			mg/l	
Potassium	3,07	0,02			mg/l	
Nitrate (as NO3)	45,4	1,2			mg/l	
Nitrite (as NO2)	0,0406	0,0012			mg/l	
Ammonium (as NH4)	<0,01				mg/l	
Chloride	29,31	0,13	29,93	1,31	mg/l	102%
Sulphate (as SO4)	15,24	0,18	14,86	1,71	mg/l	98%
Orthophosphate (as PO4)	0,0909	0,0015			mg/l	
Boron	0,0708	0,0010			mg/l	
DOC (as C)	3,64	0,08			mg/l	
Total P (as PO4)	0,1254	0,0011			mg/l	
KMnO4-Index (as O2)	2,23	0,11			mg/l	



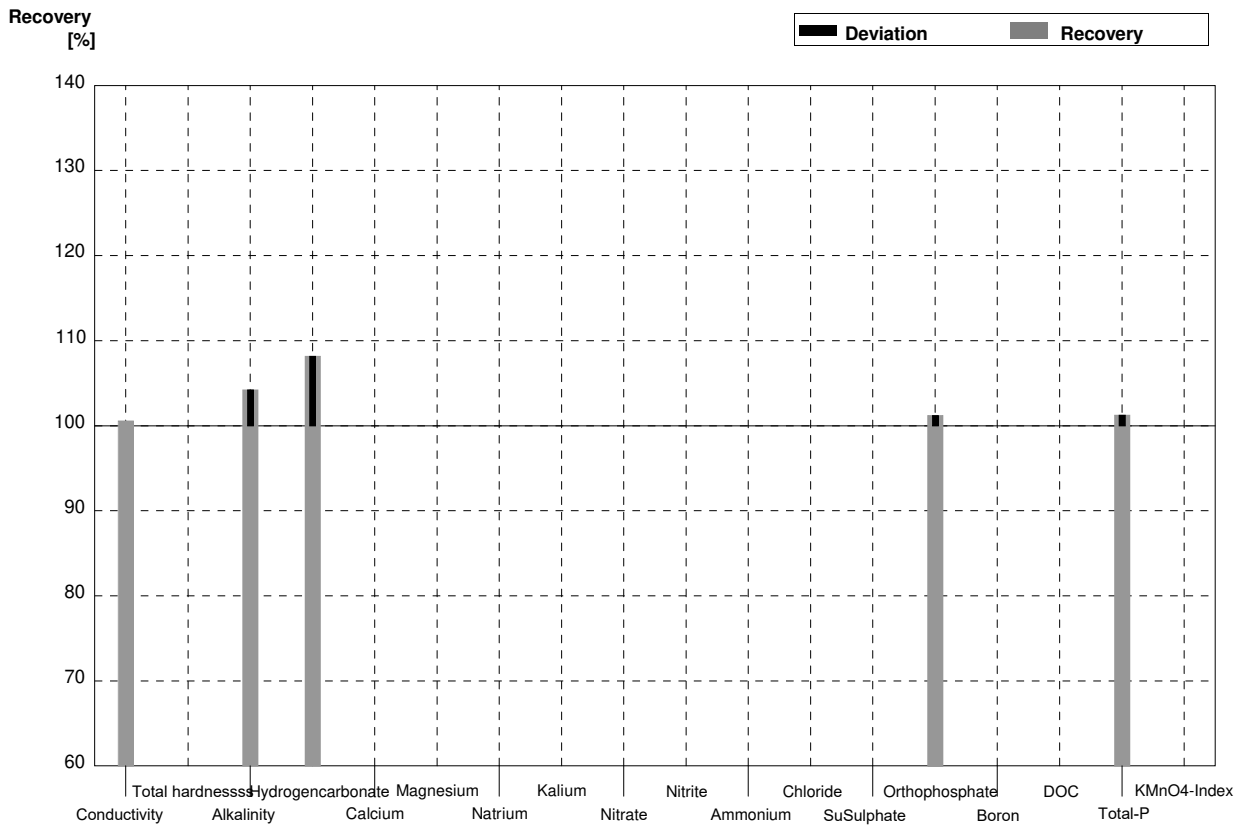
Sample N177A
Laboratory AQ

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	426	2	428		µS/cm	100%
Total hardness	1,453	0,017			mmol/l	
Alkalinity KS 4,3 (as H+)	2,60	0,03	2,58		mmol/l	99%
Hydrogen carbonate	155,5	1,9	157,46		mg/l	101%
Calcium	35,6	0,6			mg/l	
Magnesium	13,74	0,16			mg/l	
Sodium	29,8	0,4			mg/l	
Potassium	3,94	0,03			mg/l	
Nitrate (as NO3)	24,2	0,6			mg/l	
Nitrite (as NO2)	0,0811	0,0003			mg/l	
Ammonium (as NH4)	0,071	0,003			mg/l	
Chloride	21,54	0,05			mg/l	
Sulphate (as SO4)	35,6	0,4			mg/l	
Orthophosphate (as PO4)	<0,009		<0,02		mg/l	•
Boron	0,1006	0,0009			mg/l	
DOC (as C)	1,75	0,07			mg/l	
Total P (as PO4)	<0,009		<0,05		mg/l	•
KMnO4-Index (as O2)	2,72	0,10			mg/l	



Sample N177B
Laboratory AQ

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Electr. Conductivity	350	1	352		µS/cm	101%
Total hardness	1,038	0,012			mmol/l	
Alkalinity KS 4,3 (as H+)	1,410	0,017	1,47		mmol/l	104%
Hydrogen carbonate	83,0	1,0	89,80		mg/l	108%
Calcium	30,9	0,5			mg/l	
Magnesium	6,47	0,08			mg/l	
Sodium	25,8	0,2			mg/l	
Potassium	3,07	0,02			mg/l	
Nitrate (as NO3)	45,4	1,2			mg/l	
Nitrite (as NO2)	0,0406	0,0012			mg/l	
Ammonium (as NH4)	<0,01				mg/l	
Chloride	29,31	0,13			mg/l	
Sulphate (as SO4)	15,24	0,18			mg/l	
Orthophosphate (as PO4)	0,0909	0,0015	0,092		mg/l	101%
Boron	0,0708	0,0010			mg/l	
DOC (as C)	3,64	0,08			mg/l	
Total P (as PO4)	0,1254	0,0011	0,127		mg/l	101%
KMnO4-Index (as O2)	2,23	0,11			mg/l	





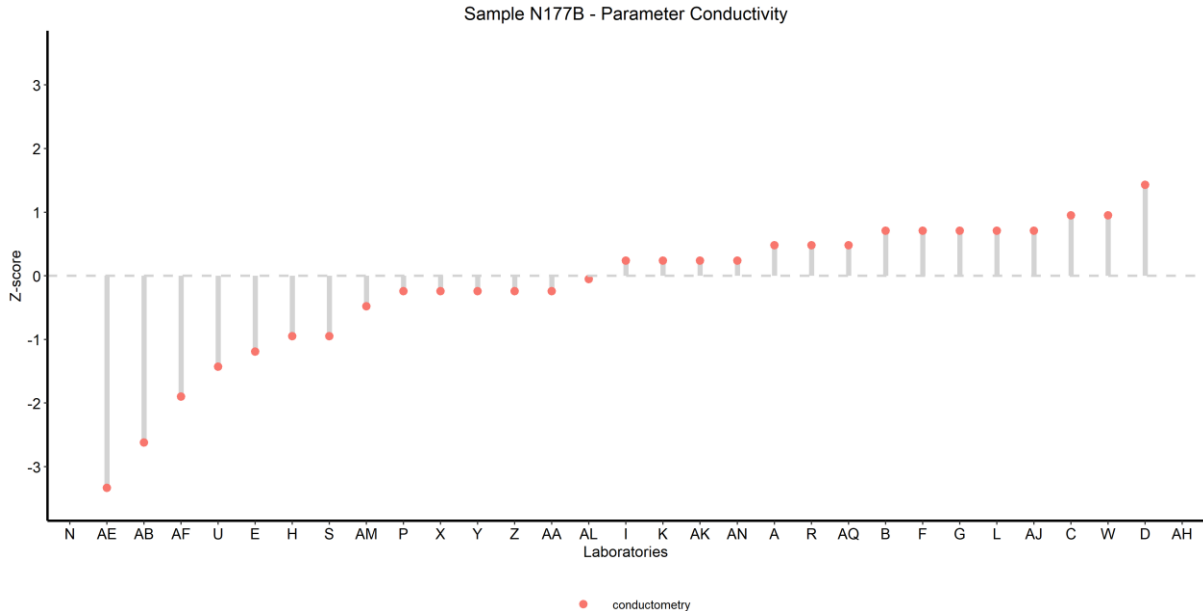
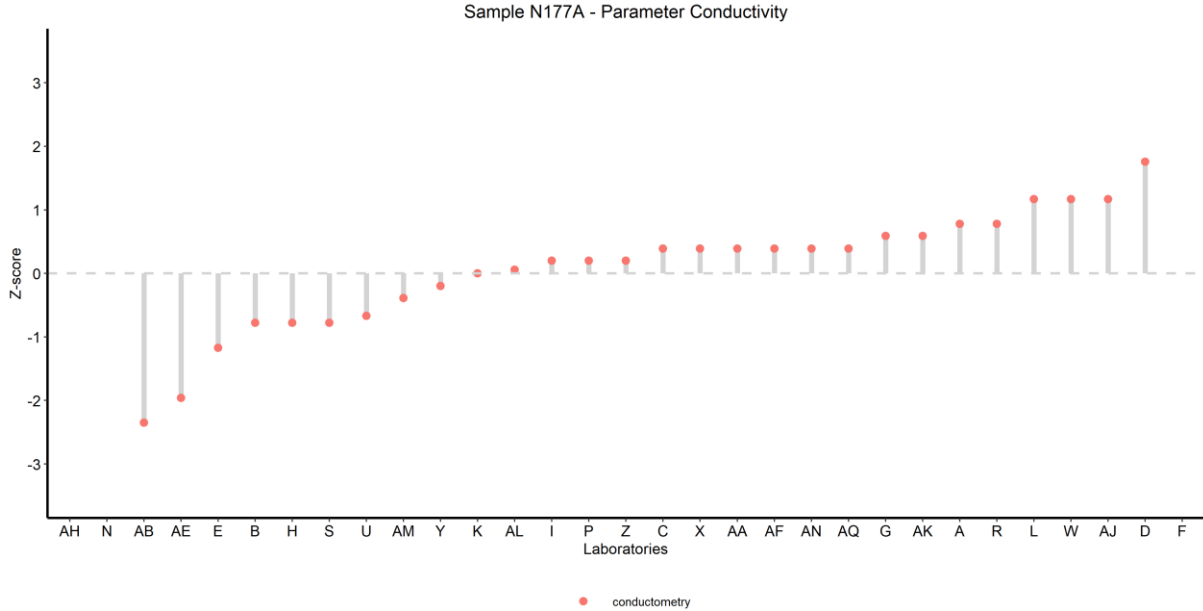
Methodenvergleich
Method comparison

Eignungsprüfungsrunde / Proficiency testing round
N177

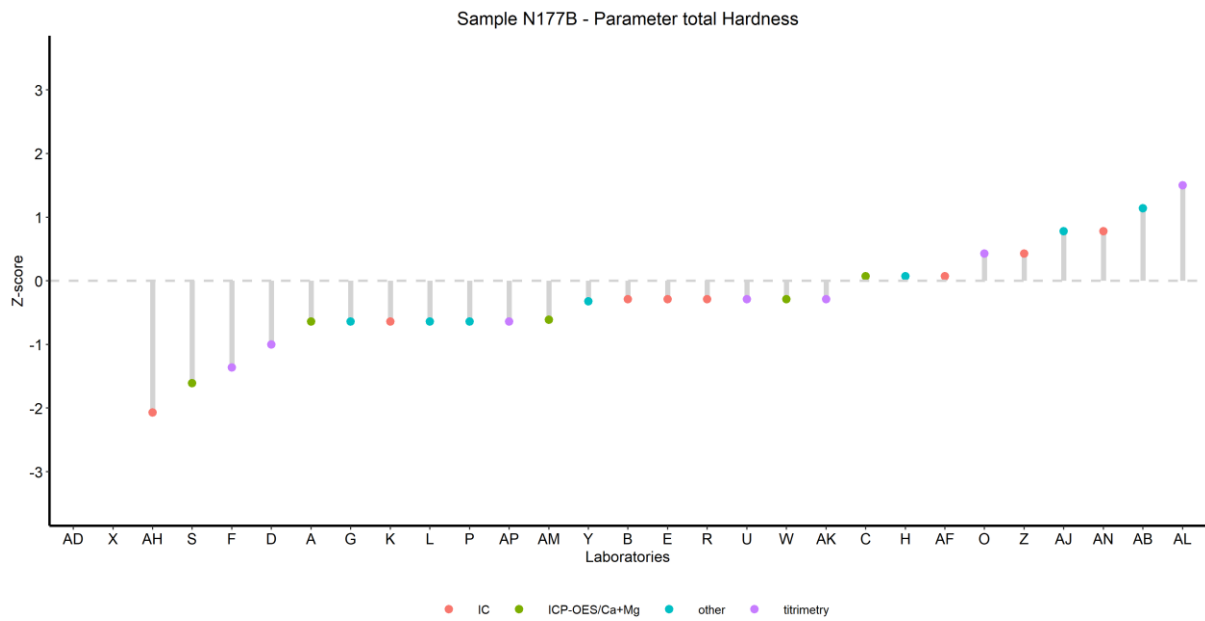
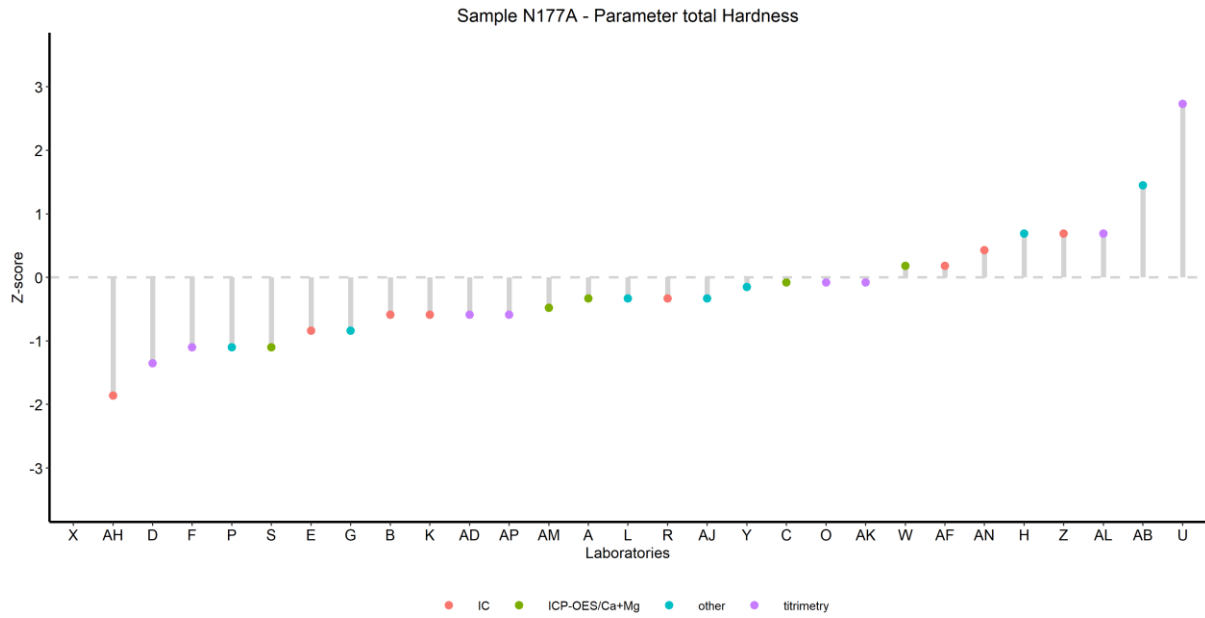
Nährstoffe
Nutrients / Major ions

Versand / Dispatch: 12. 05. 2025

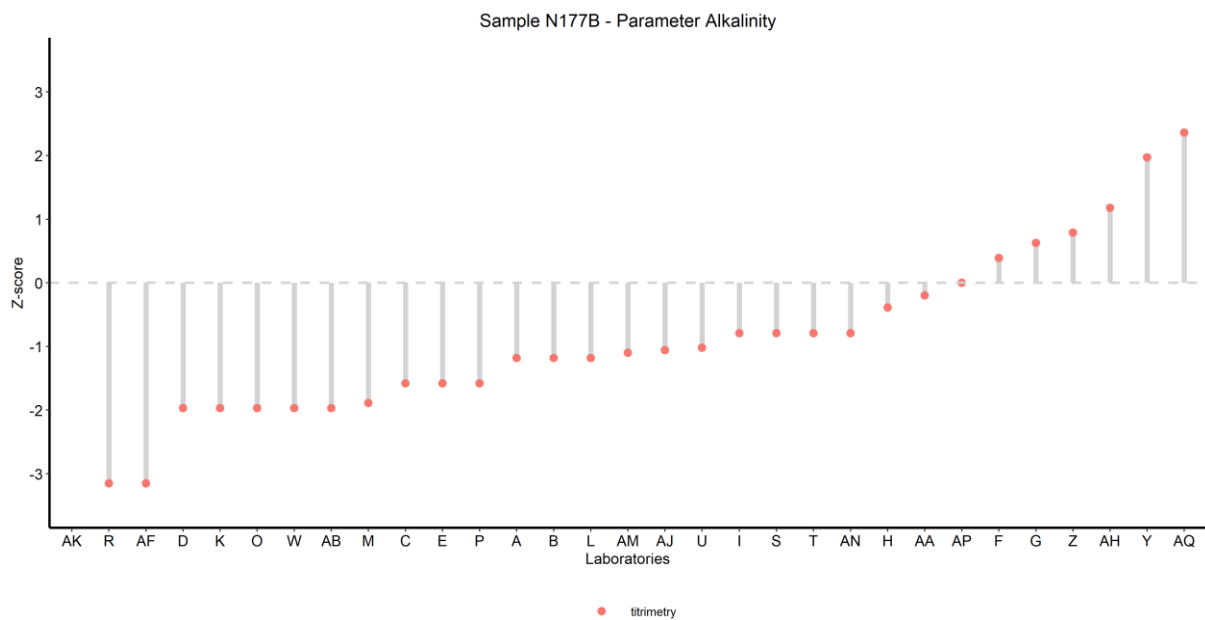
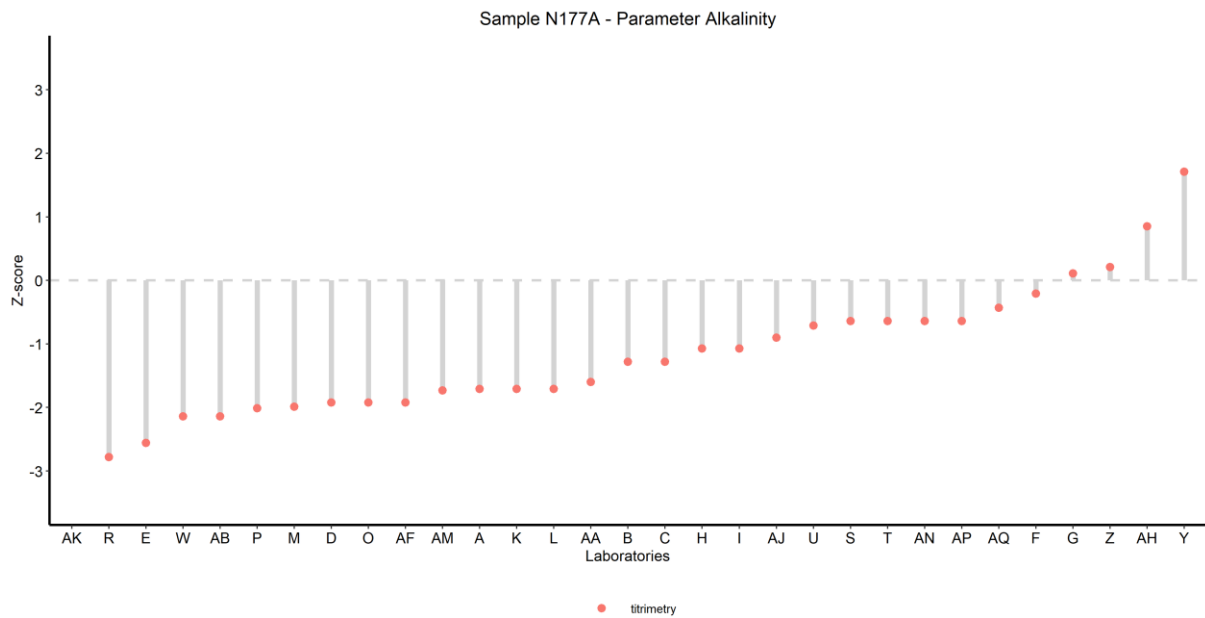
Conductivity



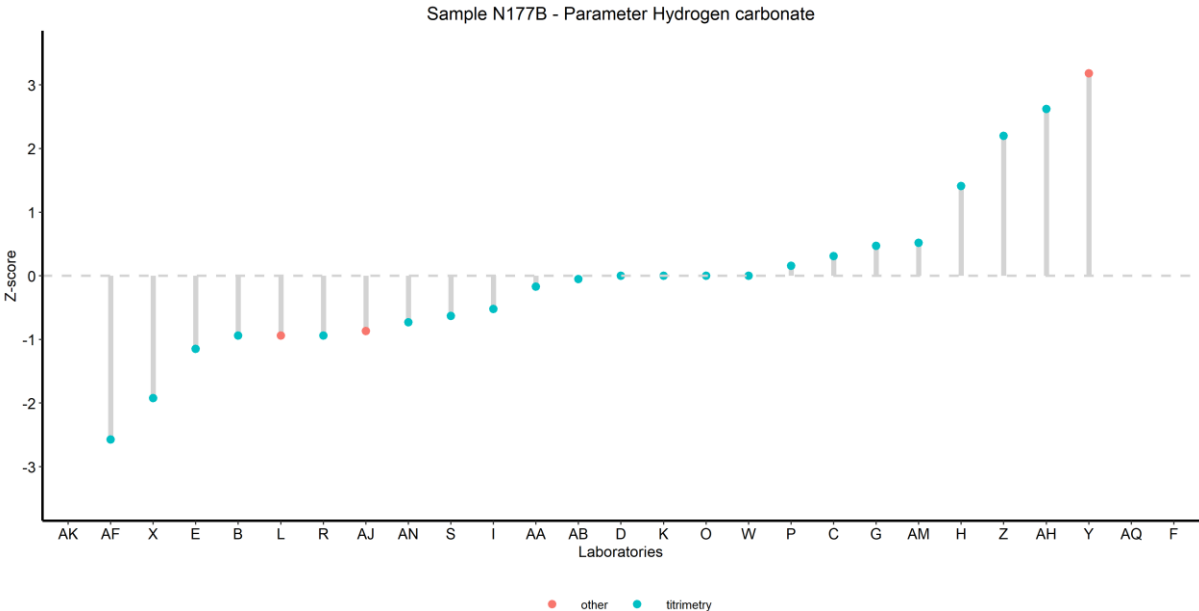
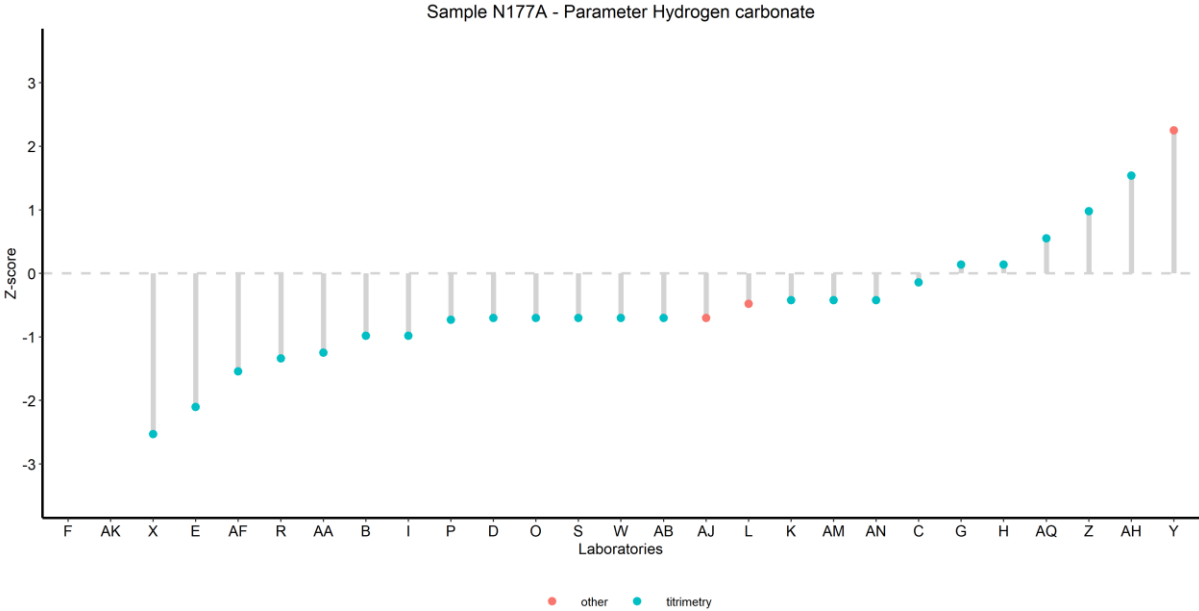
Total Hardness



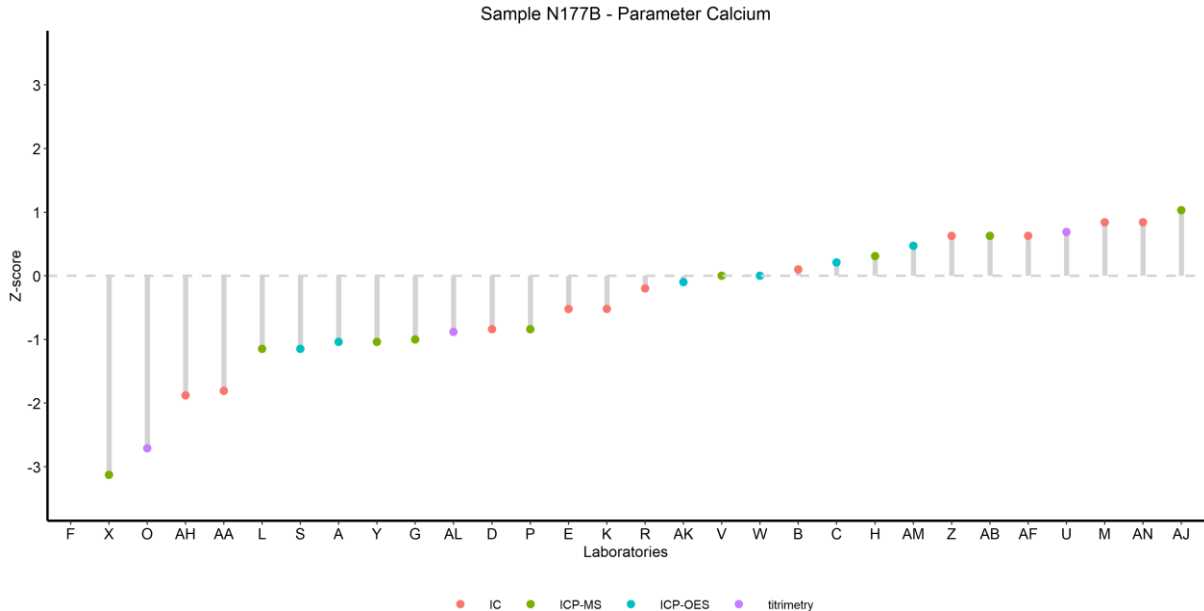
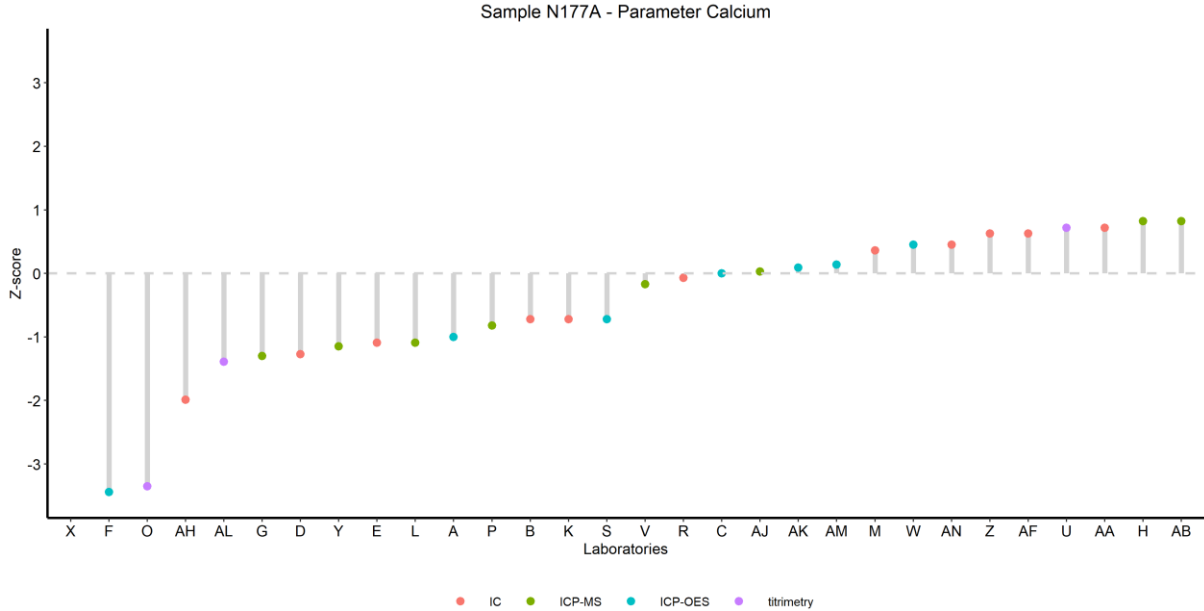
Alkalinity $K_{s 4.3}$ (as H⁺)



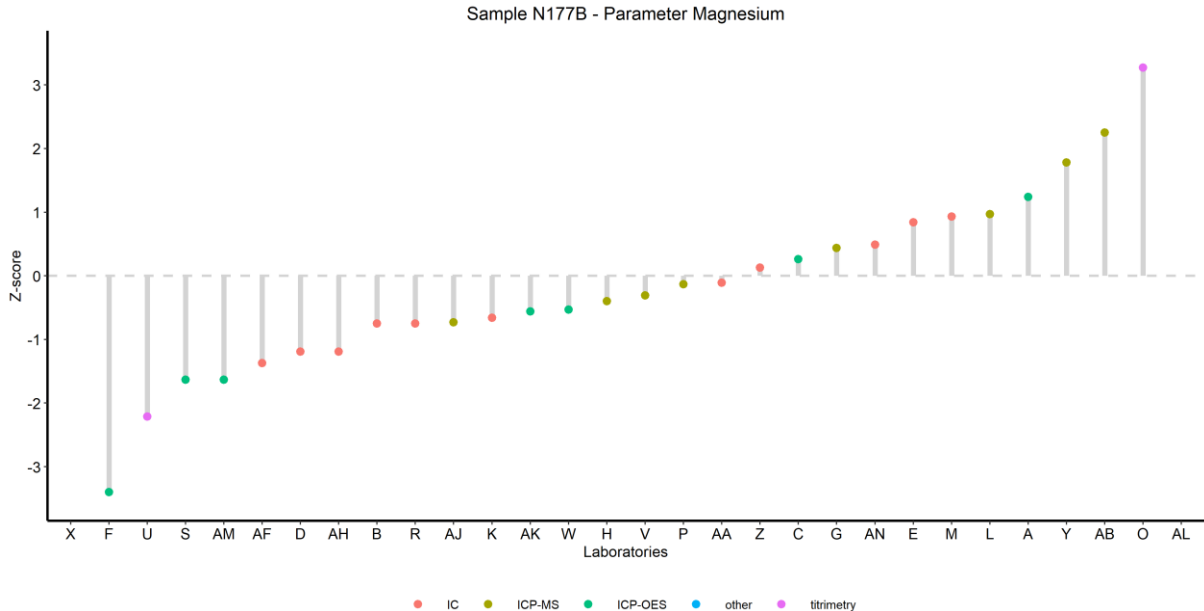
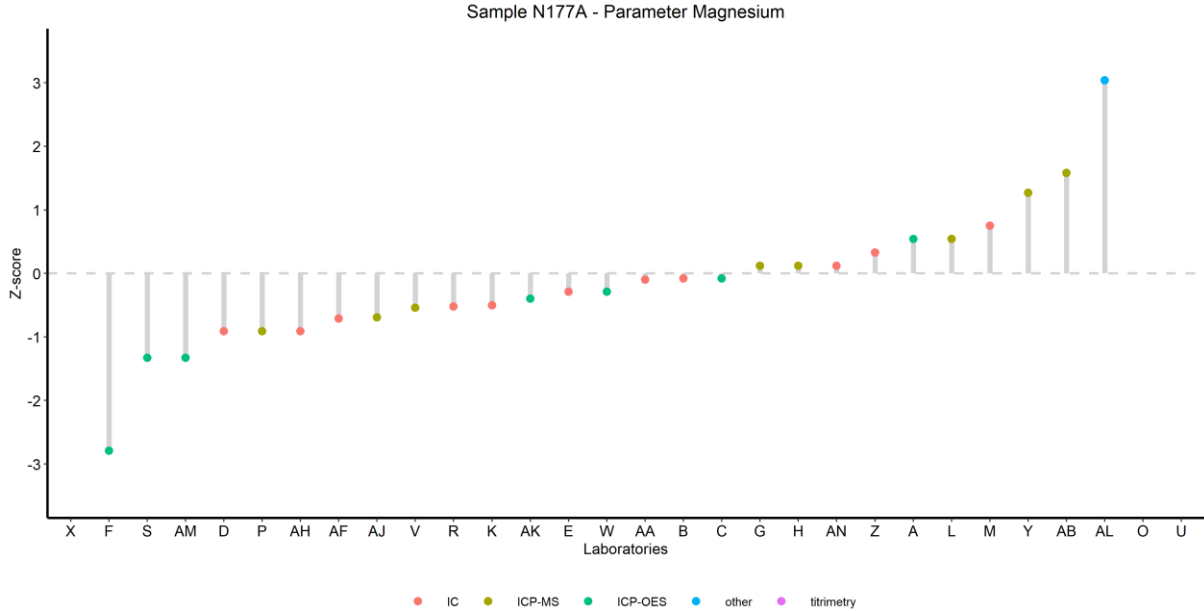
Hydrogen carbonate



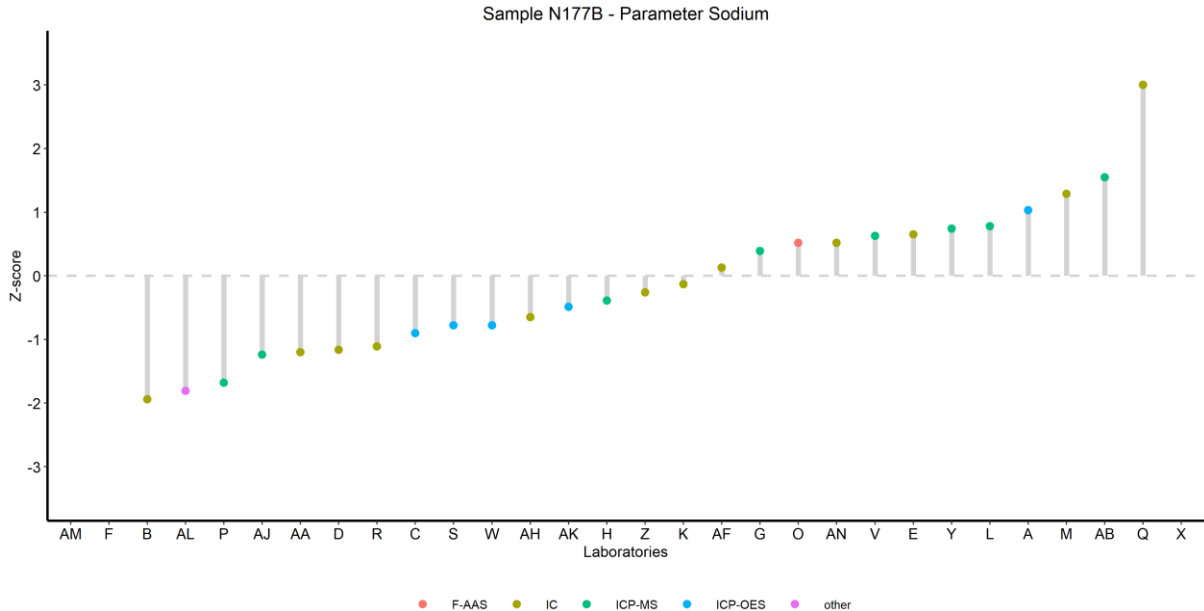
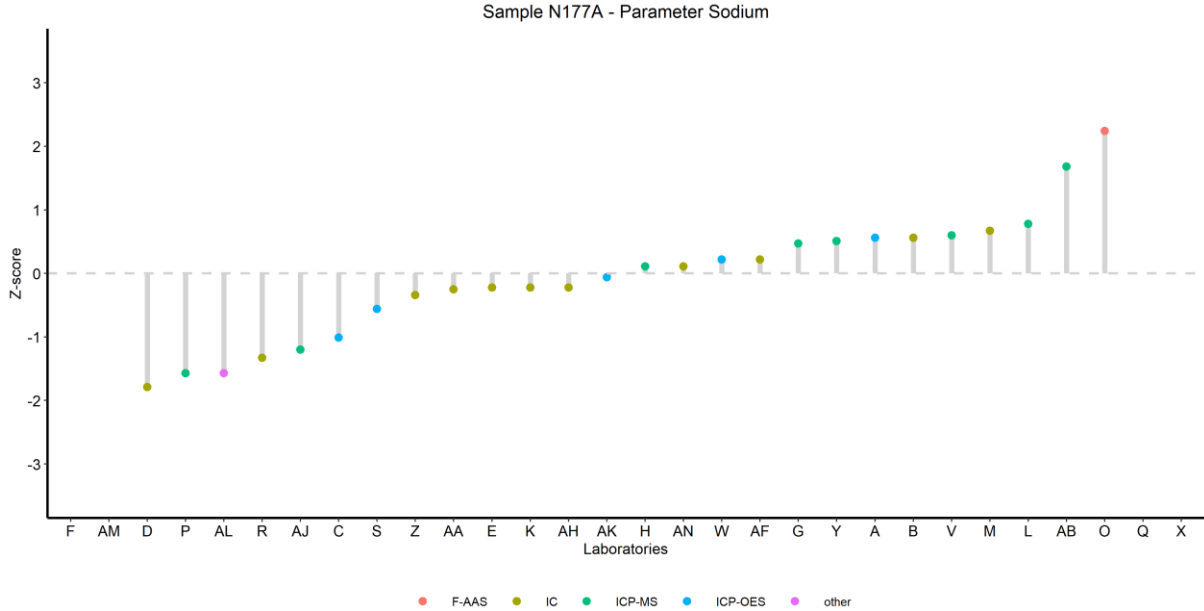
Calcium



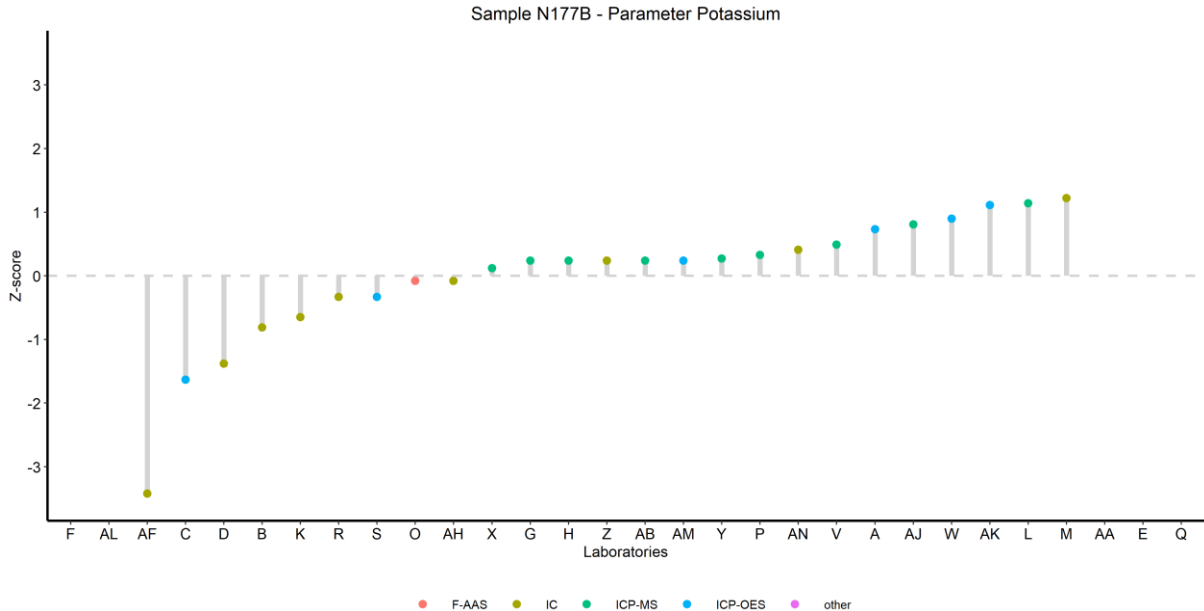
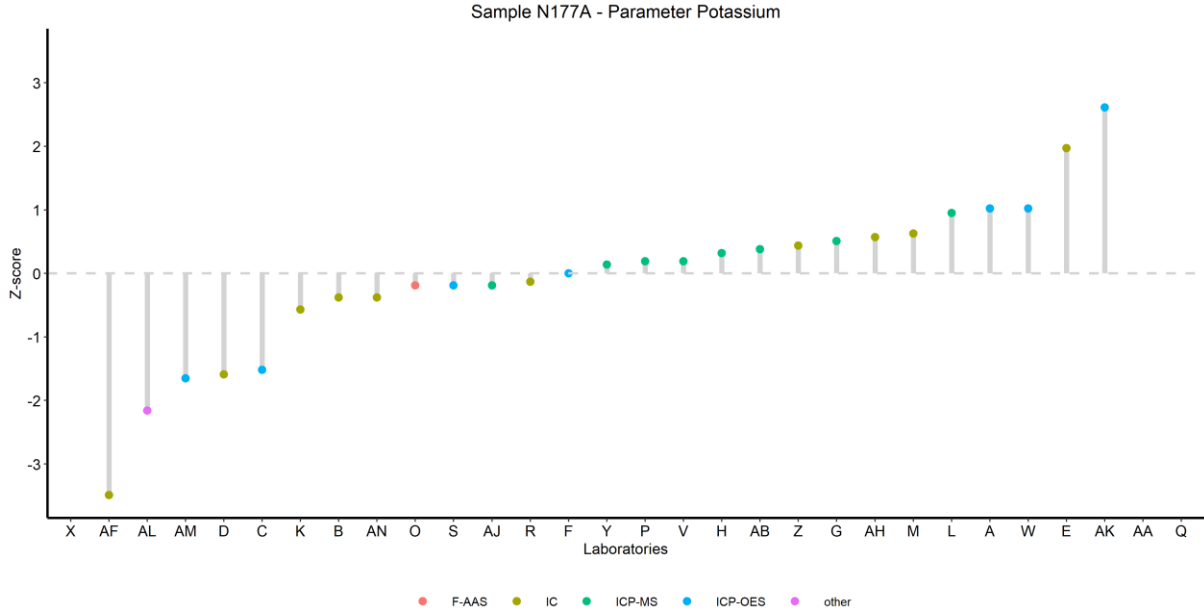
Magnesium



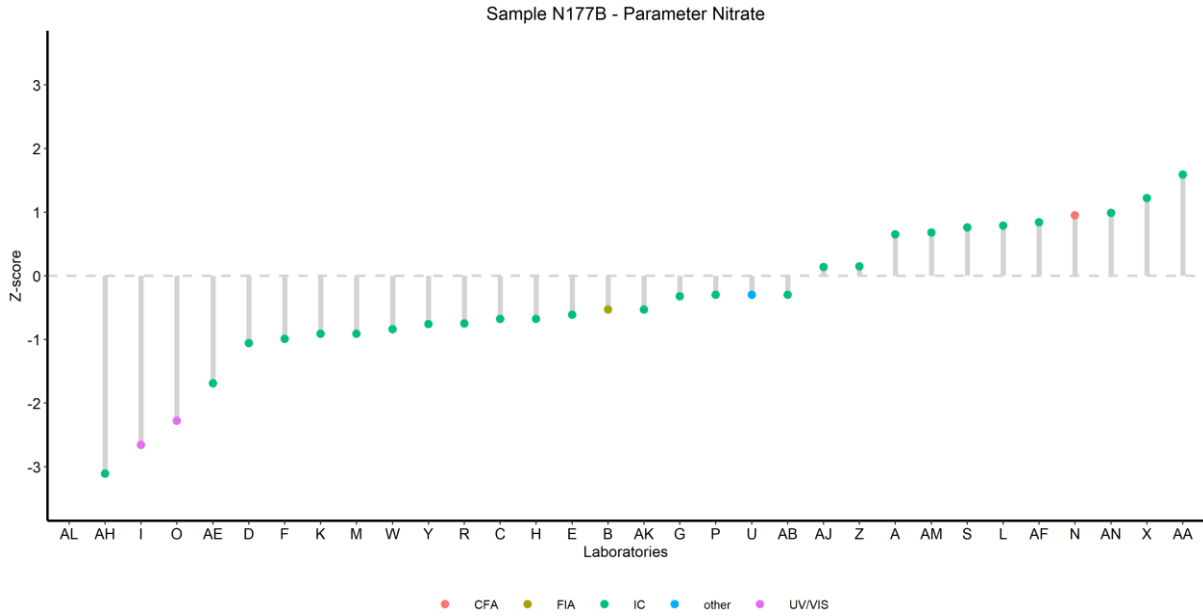
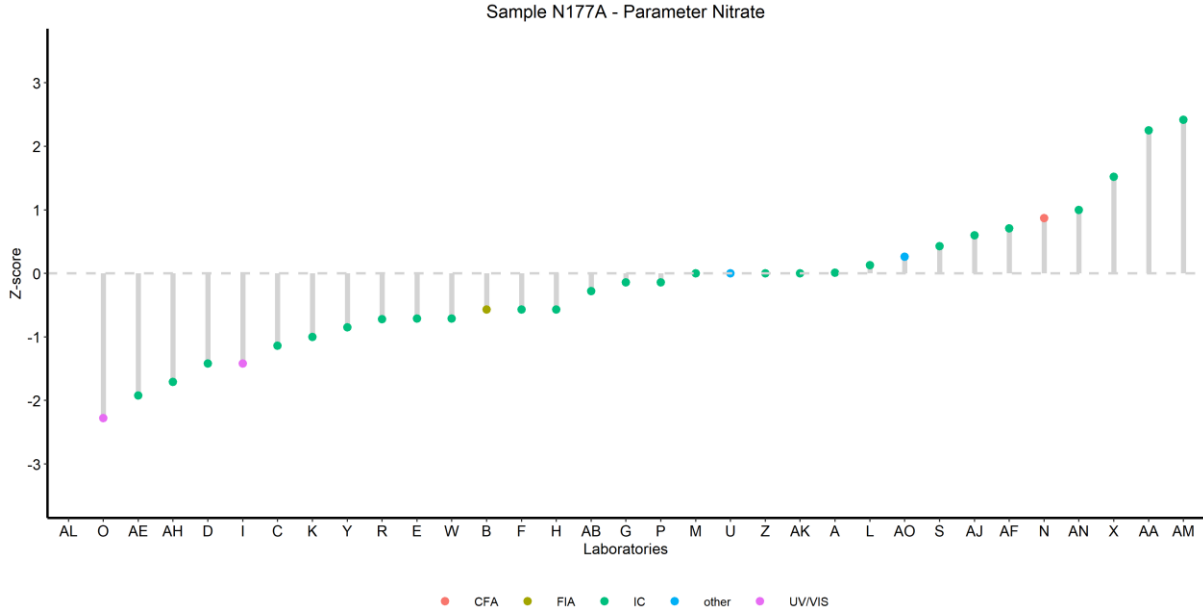
Sodium



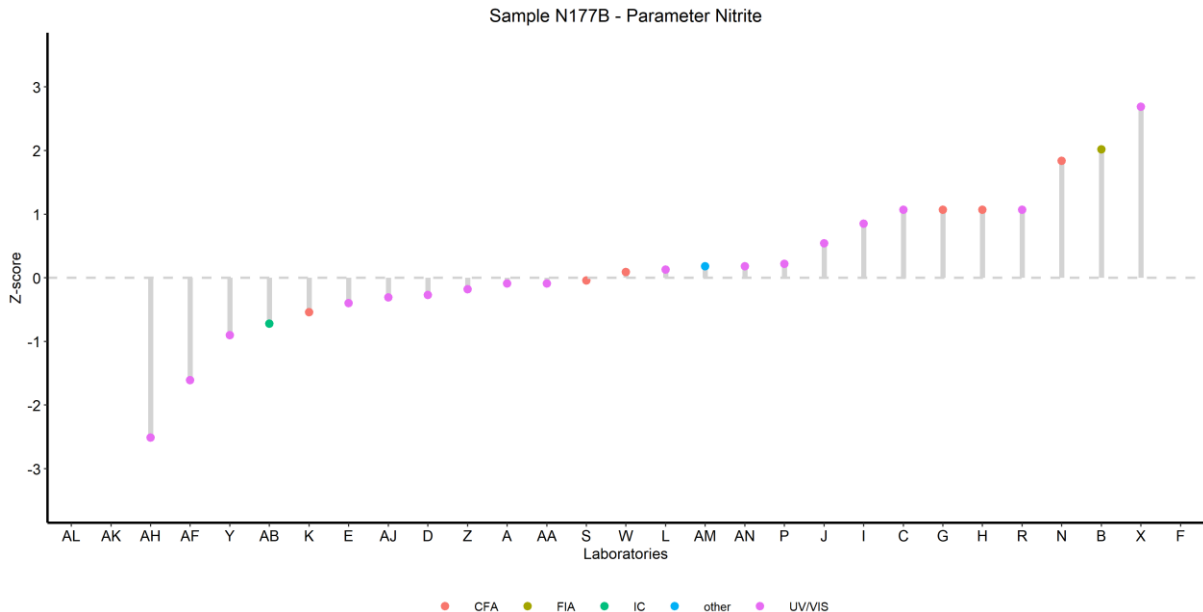
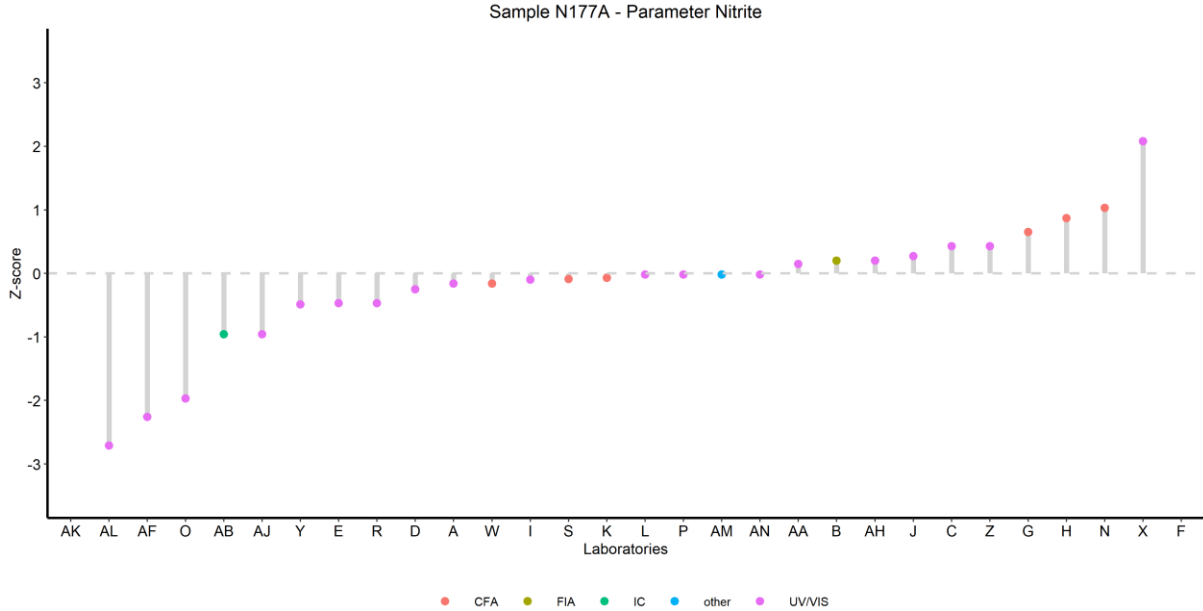
Potassium



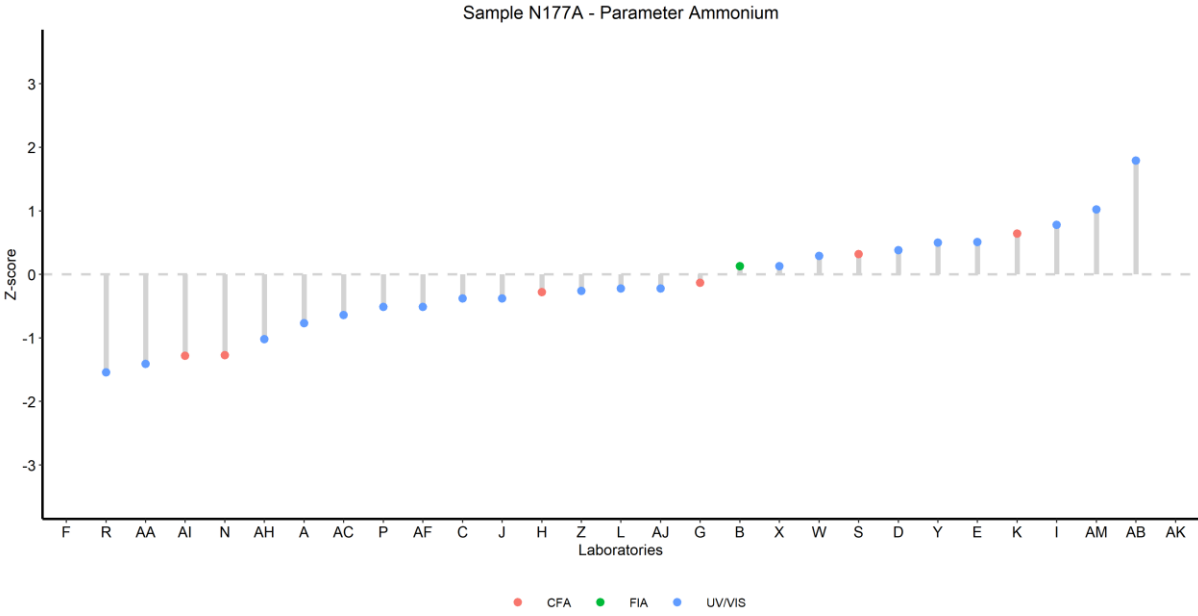
Nitrate (as NO₃⁻)



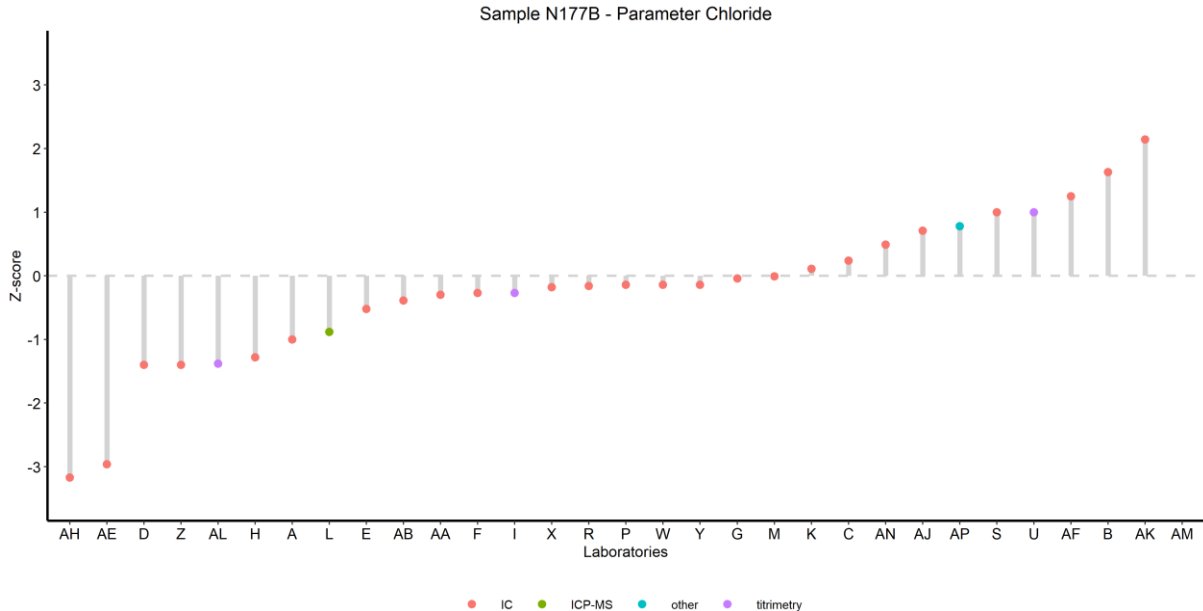
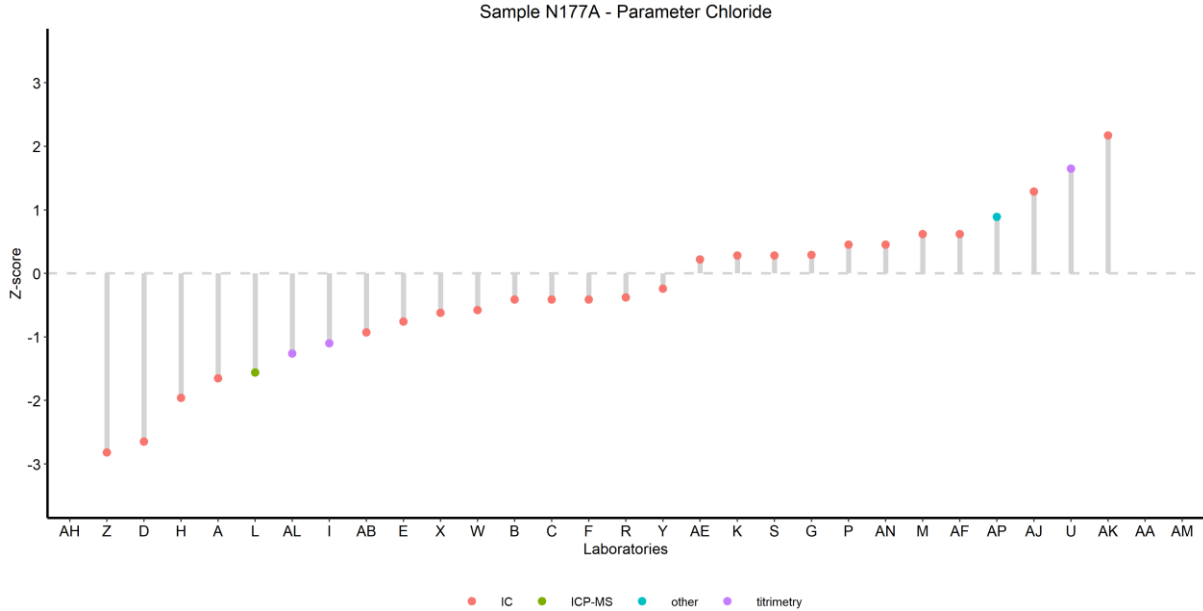
Nitrite (as NO₂⁻)



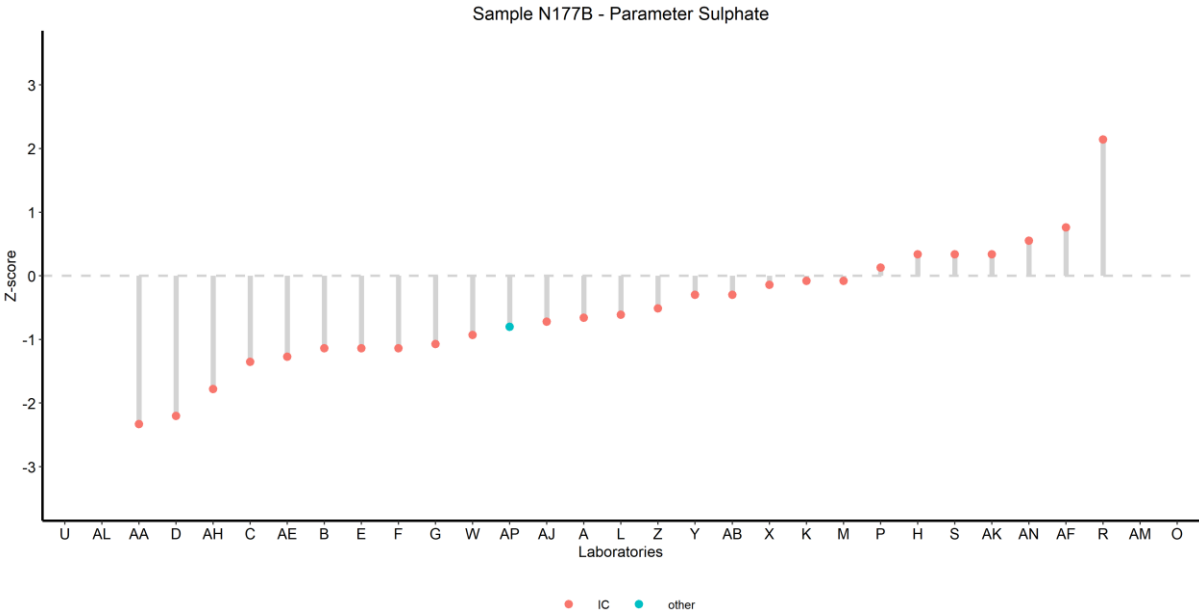
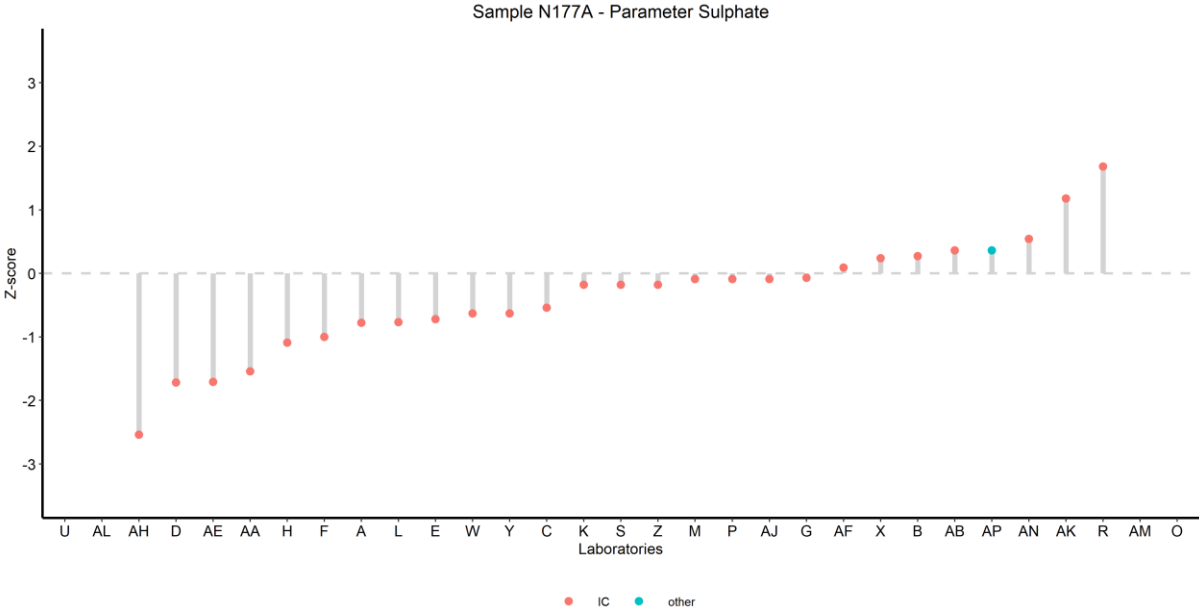
Ammonium (as NH₄⁺)



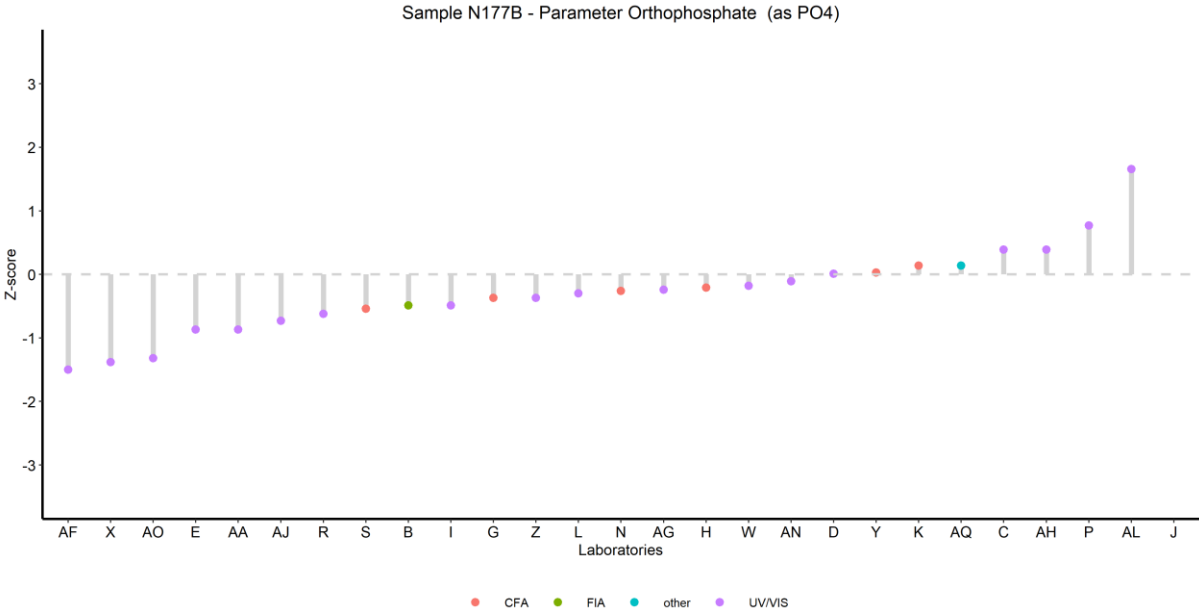
Chloride



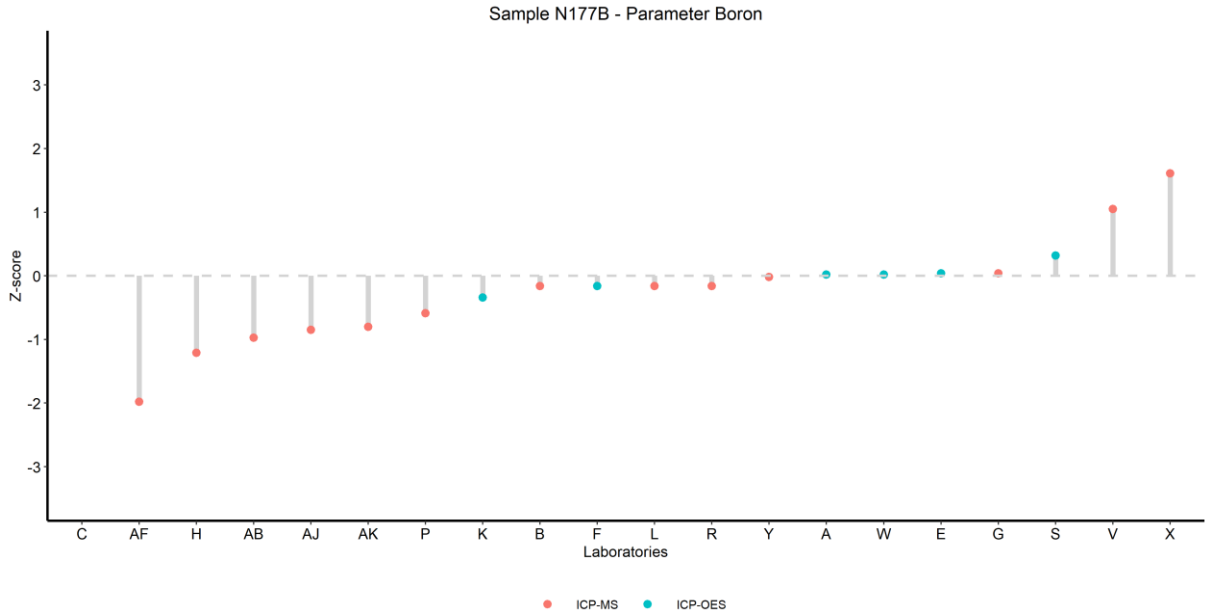
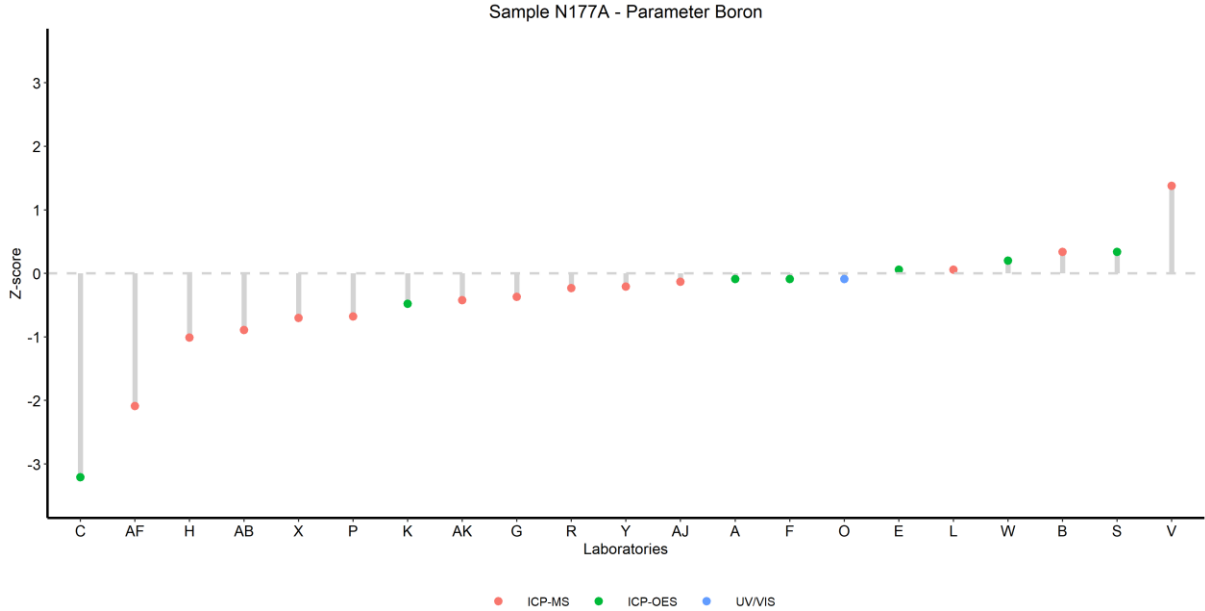
Sulphate (as SO₄²⁻)



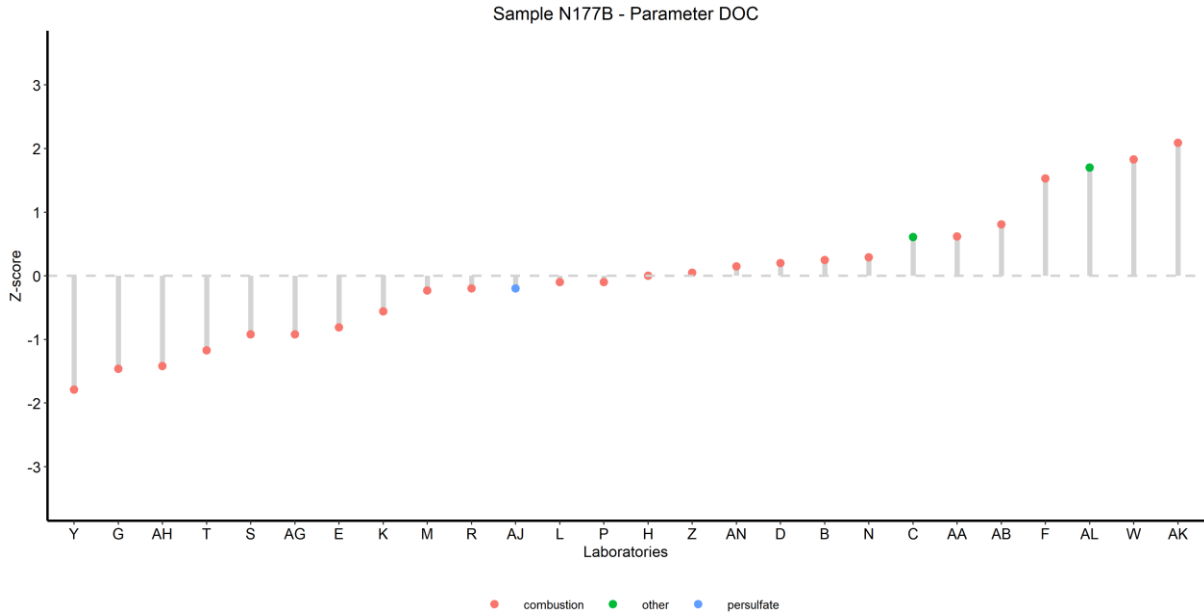
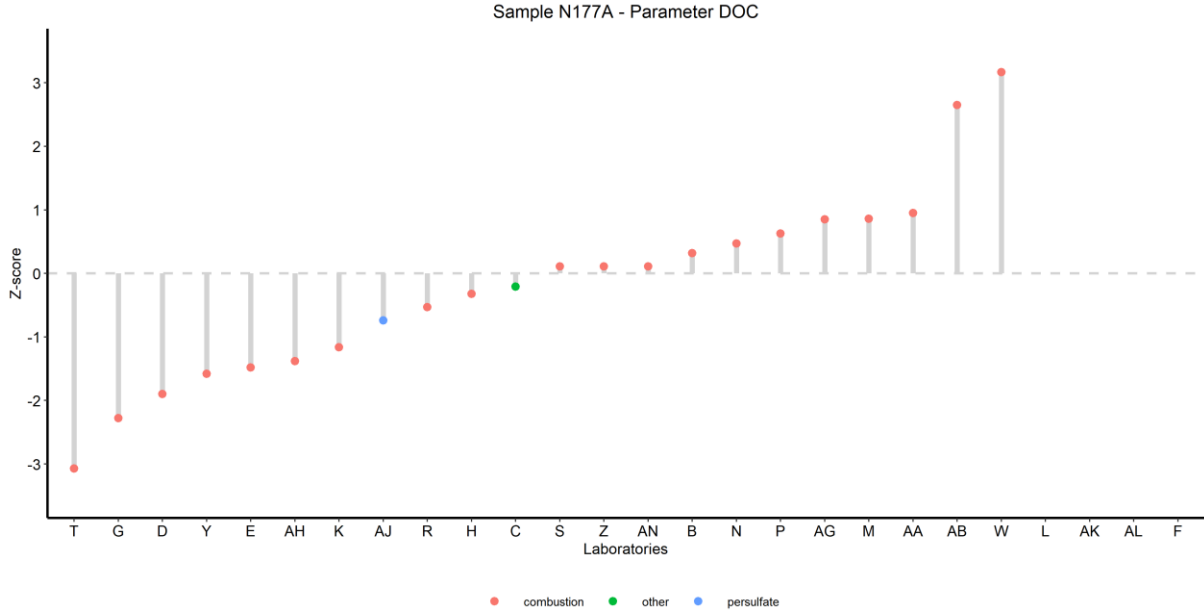
Orthophosphate (as PO₄³⁻)



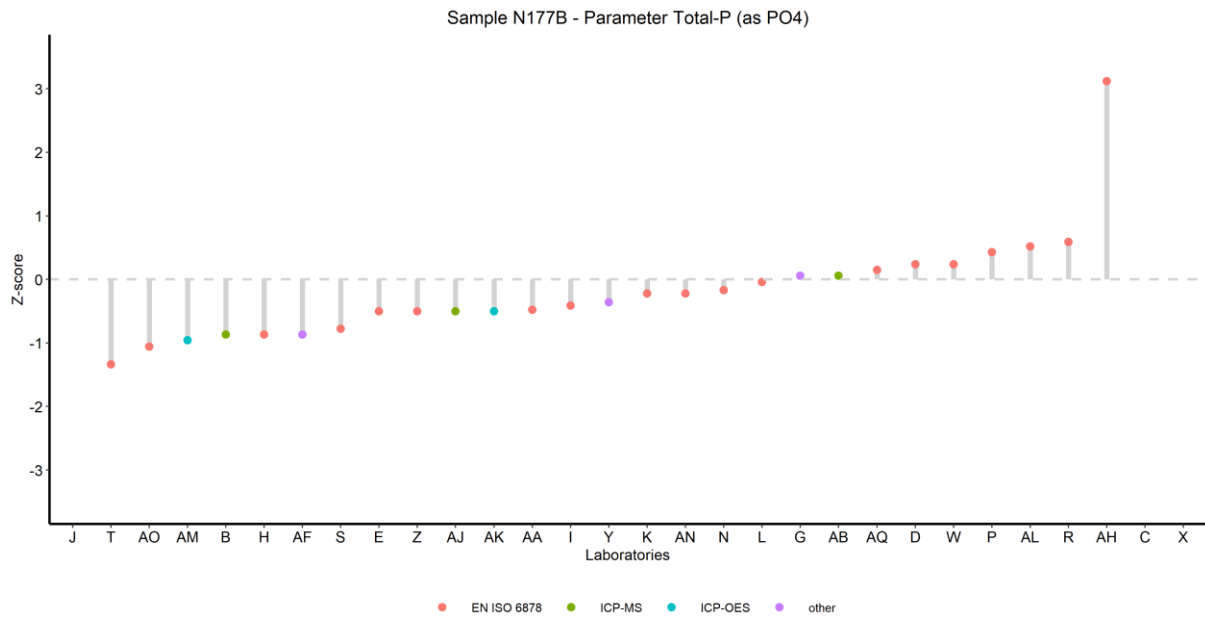
Boron



DOC (as C)



Total-P (as PO₄³⁻)



Permanganate index (as O₂)

