ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2115784**	Page	: 1 of 4
Client	: **Dept for Environment & Water**	Laboratory	: Environmental Division Melbourne
Contact	: Mr FRANK MANGERUCA	Contact	: Kieren Burns
Address	: GPO BOX 2834 ADELAIDE SA, AUSTRALIA 5001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61881625130
Project	: HCHB	Date Samples Received	: 11-Aug-2021
Order number	: ----	Date Analysis Commenced	: 11-Aug-2021
C-O-C number	: ----	Issue Date	: 16-Aug-2021
Sampler	: JC		
Site	: ----		
Quote number	: AD/052/20 V2		
No. of samples received	: 2		
No. of samples analysed	: 2		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EK055G-SW: Ammonia as N by Discrete Analyser in Saline Water (QC Lot: 3840809)									
EM2115771-001	Anonymous	EK055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	0.04	0.03	0.0	No Limit
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 3843936)									
EM2115781-010	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	9460	9490	0.4	0% - 20%
EM2115920-003	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	4560	4410	3.4	0% - 20%
EG052G: Silica by Discrete Analyser (QC Lot: 3840870)									
EM2115784-001	Tilley Swamp Outlet Drain	EG052G: Reactive Silica	----	0.05	mg/L	19.7	19.8	0.2	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 3840868)									
EM2115776-010	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EM2115776-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 3840810)									
EM2115771-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 3841526)									
EM2115776-010	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.6	2.2	19.5	0% - 20%
EM2115823-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	6.2	6.2	0.0	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 3841524)									
EM2115770-010	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.18	0.35	63.2	No Limit
EM2115770-019	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	1.64	1.62	1.7	0% - 50%
EK071FG: Dissolved Reactive Phosphorus as P by DA (QC Lot: 3840871)									
EM2115784-001	Tilley Swamp Outlet Drain	EK071FG: Dissolved Reactive Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.0	0% - 20%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EK055G-SW: Ammonia as N by Discrete Analyser in Saline Water (QCLot: 3840809)								
EK055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	<0.02	0.5 mg/L	106	81.1	124
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 3843936)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	99.5	91.0	110
				<10	293 mg/L	94.9	91.0	110
EG052G: Silica by Discrete Analyser (QCLot: 3840870)								
EG052G: Reactive Silica	----	0.05	mg/L	<0.05	5 mg/L	104	78.9	118
EK057G: Nitrite as N by Discrete Analyser (QCLot: 3840868)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	108	90.9	112
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3840810)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	104	90.0	117
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 3841526)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	5 mg/L	93.4	70.0	117
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 3841524)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	2.21 mg/L	86.8	71.9	114
EK071FG: Dissolved Reactive Phosphorus as P by DA (QCLot: 3840871)								
EK071FG: Dissolved Reactive Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	115	89.2	119

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK055G-SW: Ammonia as N by Discrete Analyser in Saline Water (QCLot: 3840809)							
EM2115771-002	Anonymous	EK055G-SW: Ammonia as N	7664-41-7	0.5 mg/L	106	70.0	130
EG052G: Silica by Discrete Analyser (QCLot: 3840870)							
EM2115784-002	Tilley Swamp D/S Nth Outlet	EG052G: Reactive Silica	----	5 mg/L	85.0	80.0	120
EK057G: Nitrite as N by Discrete Analyser (QCLot: 3840868)							
EM2115776-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	83.5	80.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3840810)							
EM2115771-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	87.5	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 3841526)							
EM2115823-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	99.3	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 3841524)							
EM2115770-011	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	97.7	70.0	130
EK071FG: Dissolved Reactive Phosphorus as P by DA (QCLot: 3840871)							
EM2115784-002	Tilley Swamp D/S Nth Outlet	EK071FG: Dissolved Reactive Phosphorus as P	----	0.5 mg/L	105	70.0	130