



CERTIFICATE OF ANALYSIS

Work Order	: ES2321727	Page	: 1 of 10
Client	: DEPARTMENT OF PLANNING AND ENVIRONMENT (NSW-DPE)	Laboratory	: Environmental Division Sydney
Contact	: OEH	Contact	: Customer Services ES
Address	: [REDACTED] Lidcombe 2141	Address	: [REDACTED]
Telephone	: ----	Telephone	: [REDACTED]
Project	: 20230233	Date Samples Received	: 29-Jun-2023 15:25
Order number	: 4500806025	Date Analysis Commenced	: 29-Jun-2023
C-O-C number	: ----	Issue Date	: 04-Jul-2023 13:46
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 32		
No. of samples analysed	: 32		



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 Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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
[REDACTED]	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



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.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : 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
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP202: Poor matrix spike recoveries for Picloram and Clopyralid due to matrix effects.
- EK271A-CM: Samples for Ultra-Trace Reactive Phosphorus by FIA should be frozen upon sampling. If not, low-level results (below 0.01 mg/L) may bias low.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	235809	235810	235811	235812	235813
Sampling date / time					27-Jun-2023 00:00	27-Jun-2023 00:00	27-Jun-2023 00:00	27-Jun-2023 00:00	27-Jun-2023 00:00
Compound	CAS Number	LOR	Unit	ES2321727-001	ES2321727-002	ES2321727-003	ES2321727-004	ES2321727-005	
				Result	Result	Result	Result	Result	
EP202A: Phenoxyacetic Acid Herbicides by LCMS									
4-Chlorophenoxy acetic acid	122-88-3	10	µg/L	<10	<10	<10	<10	<10	
2,4-DB	94-82-6	10	µg/L	<10	<10	<10	<10	<10	
Dicamba	1918-00-9	10	µg/L	<10	<10	<10	<10	<10	
Mecoprop	93-65-2	10	µg/L	<10	<10	<10	<10	<10	
MCPA	94-74-6	10	µg/L	<10	<10	<10	<10	<10	
2,4-DP	120-36-5	10	µg/L	<10	<10	<10	<10	<10	
2,4-D	94-75-7	10	µg/L	<10	<10	<10	<10	<10	
Triclopyr	55335-06-3	10	µg/L	<10	<10	<10	<10	<10	
Silvex (2,4,5-TP/Fenoprop)	93-72-1	10	µg/L	<10	<10	<10	<10	<10	
2,4,5-T	93-76-5	10	µg/L	<10	<10	<10	<10	<10	
MCPB	94-81-5	10	µg/L	<10	<10	<10	<10	<10	
Picloram	1918-02-1	10	µg/L	<10	<10	<10	<10	<10	
Clopyralid	1702-17-6	10	µg/L	<10	<10	<10	<10	<10	
Fluroxypyr	69377-81-7	10	µg/L	<10	<10	<10	<10	<10	
2,6-D	575-90-6	10	µg/L	<10	<10	<10	<10	<10	
2,4,6-T	575-89-3	10	µg/L	<10	<10	<10	<10	<10	
EP204: Glyphosate and AMPA									
Glyphosate	1071-83-6	10	µg/L	<10	<10	<10	<10	<10	
AMPA	1066-51-9	10	µg/L	<10	<10	<10	<10	<10	
EP202S: Phenoxyacetic Acid Herbicide Surrogate									
2,4-Dichlorophenyl Acetic Acid	19719-28-9	10	%	113	118	114	115	118	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	235814	235815	235816	235817	235818
Sampling date / time				27-Jun-2023 00:00	27-Jun-2023 00:00	27-Jun-2023 00:00	27-Jun-2023 00:00	27-Jun-2023 00:00	
Compound	CAS Number	LOR	Unit	ES2321727-006	ES2321727-007	ES2321727-008	ES2321727-009	ES2321727-010	
				Result	Result	Result	Result	Result	
EK255A: Ammonia									
Ammonia as N	7664-41-7	0.005	mg/L	----	----	----	0.006	----	
EK259A: Nitrite and Nitrate (NOx)									
Nitrite + Nitrate as N	----	0.002	mg/L	----	----	----	0.009	----	
EK262A: Total Nitrogen									
Dissolved Total Nitrogen as N	----	0.01	mg/L	----	----	----	----	0.57	
EK267A: Total Phosphorus (Persulfate Digestion)									
Dissolved Total Phosphorus as P	----	0.005	mg/L	----	----	----	----	0.307	
EK271A: Reactive Phosphorus									
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	----	----	----	0.265	----	
EP202A: Phenoxyacetic Acid Herbicides by LCMS									
4-Chlorophenoxy acetic acid	122-88-3	10	µg/L	<10	<10	<10	----	----	
2,4-DB	94-82-6	10	µg/L	<10	<10	<10	----	----	
Dicamba	1918-00-9	10	µg/L	<10	<10	<10	----	----	
Mecoprop	93-65-2	10	µg/L	<10	<10	<10	----	----	
MCPA	94-74-6	10	µg/L	<10	<10	<10	----	----	
2,4-DP	120-36-5	10	µg/L	<10	<10	<10	----	----	
2,4-D	94-75-7	10	µg/L	<10	<10	<10	----	----	
Triclopyr	55335-06-3	10	µg/L	<10	<10	<10	----	----	
Silvex (2,4,5-TP/Fenoprop)	93-72-1	10	µg/L	<10	<10	<10	----	----	
2,4,5-T	93-76-5	10	µg/L	<10	<10	<10	----	----	
MCPB	94-81-5	10	µg/L	<10	<10	<10	----	----	
Picloram	1918-02-1	10	µg/L	<10	<10	<10	----	----	
Clopyralid	1702-17-6	10	µg/L	<10	<10	<10	----	----	
Fluroxypyr	69377-81-7	10	µg/L	<10	<10	<10	----	----	
2,6-D	575-90-6	10	µg/L	<10	<10	<10	----	----	
2,4,6-T	575-89-3	10	µg/L	<10	<10	<10	----	----	
EP204: Glyphosate and AMPA									
Glyphosate	1071-83-6	10	µg/L	<10	<10	<10	----	----	
AMPA	1066-51-9	10	µg/L	<10	<10	<10	----	----	
EP202S: Phenoxyacetic Acid Herbicide Surrogate									
2,4-Dichlorophenyl Acetic Acid	19719-28-9	10	%	109	108	116	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	235819	235820	235821	235822	235823
Sampling date / time				27-Jun-2023 00:00	27-Jun-2023 00:00	27-Jun-2023 00:00	27-Jun-2023 00:00	27-Jun-2023 00:00	
Compound	CAS Number	LOR	Unit	ES2321727-011	ES2321727-012	ES2321727-013	ES2321727-014	ES2321727-015	
				Result	Result	Result	Result	Result	
EK255A: Ammonia									
Ammonia as N	7664-41-7	0.005	mg/L	----	0.059	----	----	0.009	
EK259A: Nitrite and Nitrate (NOx)									
Nitrite + Nitrate as N	----	0.002	mg/L	----	0.043	----	----	<0.002	
EK262A: Total Nitrogen									
Dissolved Total Nitrogen as N	----	0.01	mg/L	----	----	0.86	----	----	
Total Nitrogen as N	----	0.01	mg/L	0.73	----	----	1.54	----	
EK267A: Total Phosphorus (Persulfate Digestion)									
Dissolved Total Phosphorus as P	----	0.005	mg/L	----	----	0.070	----	----	
Total Phosphorus as P	----	0.005	mg/L	0.410	----	----	0.238	----	
EK271A: Reactive Phosphorus									
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	----	0.043	----	----	0.128	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	235824	235825	235826	235827	235828
Sampling date / time				27-Jun-2023 00:00	27-Jun-2023 00:00	27-Jun-2023 00:00	27-Jun-2023 00:00	27-Jun-2023 00:00	
Compound	CAS Number	LOR	Unit	ES2321727-016	ES2321727-017	ES2321727-018	ES2321727-019	ES2321727-020	
				Result	Result	Result	Result	Result	
EK255A: Ammonia									
Ammonia as N	7664-41-7	0.005	mg/L	----	----	0.098	----	----	
EK259A: Nitrite and Nitrate (NOx)									
Nitrite + Nitrate as N	----	0.002	mg/L	----	----	0.029	----	----	
EK262A: Total Nitrogen									
Dissolved Total Nitrogen as N	----	0.01	mg/L	0.64	----	----	0.85	----	
Total Nitrogen as N	----	0.01	mg/L	----	1.07	----	----	1.19	
EK267A: Total Phosphorus (Persulfate Digestion)									
Dissolved Total Phosphorus as P	----	0.005	mg/L	0.180	----	----	0.052	----	
Total Phosphorus as P	----	0.005	mg/L	----	0.203	----	----	0.151	
EK271A: Reactive Phosphorus									
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	----	----	0.026	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	235829	235830	235831	235832	235833
Sampling date / time				27-Jun-2023 00:00	27-Jun-2023 00:00	27-Jun-2023 00:00	27-Jun-2023 00:00	27-Jun-2023 00:00	
Compound	CAS Number	LOR	Unit	ES2321727-021	ES2321727-022	ES2321727-023	ES2321727-024	ES2321727-025	
				Result	Result	Result	Result	Result	
EK255A: Ammonia									
Ammonia as N	7664-41-7	0.005	mg/L	0.006	----	----	0.007	----	
EK259A: Nitrite and Nitrate (NOx)									
Nitrite + Nitrate as N	----	0.002	mg/L	0.027	----	----	0.003	----	
EK262A: Total Nitrogen									
Dissolved Total Nitrogen as N	----	0.01	mg/L	----	0.66	----	----	0.67	
Total Nitrogen as N	----	0.01	mg/L	----	----	0.75	----	----	
EK267A: Total Phosphorus (Persulfate Digestion)									
Dissolved Total Phosphorus as P	----	0.005	mg/L	----	0.292	----	----	0.044	
Total Phosphorus as P	----	0.005	mg/L	----	----	0.347	----	----	
EK271A: Reactive Phosphorus									
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.266	----	----	0.020	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	235834	235835	235836	235837	235838
Sampling date / time				27-Jun-2023 00:00	27-Jun-2023 00:00	27-Jun-2023 00:00	27-Jun-2023 00:00	27-Jun-2023 00:00	
Compound	CAS Number	LOR	Unit	ES2321727-026	ES2321727-027	ES2321727-028	ES2321727-029	ES2321727-030	
				Result	Result	Result	Result	Result	
EK255A: Ammonia									
Ammonia as N	7664-41-7	0.005	mg/L	----	0.099	----	----	<0.005	
EK259A: Nitrite and Nitrate (NOx)									
Nitrite + Nitrate as N	----	0.002	mg/L	----	0.043	----	----	0.008	
EK262A: Total Nitrogen									
Dissolved Total Nitrogen as N	----	0.01	mg/L	----	----	0.86	----	----	
Total Nitrogen as N	----	0.01	mg/L	1.12	----	----	1.18	----	
EK267A: Total Phosphorus (Persulfate Digestion)									
Dissolved Total Phosphorus as P	----	0.005	mg/L	----	----	0.087	----	----	
Total Phosphorus as P	----	0.005	mg/L	0.083	----	----	0.144	----	
EK271A: Reactive Phosphorus									
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	----	0.052	----	----	0.130	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	235839	235840	----	----	----
Sampling date / time				27-Jun-2023 00:00	27-Jun-2023 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	ES2321727-031	ES2321727-032	-----	-----	-----	
				Result	Result	----	----	----	
EK262A: Total Nitrogen									
Dissolved Total Nitrogen as N	----	0.01	mg/L	0.69	----	----	----	----	
Total Nitrogen as N	----	0.01	mg/L	----	0.95	----	----	----	
EK267A: Total Phosphorus (Persulfate Digestion)									
Dissolved Total Phosphorus as P	----	0.005	mg/L	0.158	----	----	----	----	
Total Phosphorus as P	----	0.005	mg/L	----	0.270	----	----	----	



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP202S: Phenoxyacetic Acid Herbicide Surrogate			
2,4-Dichlorophenyl Acetic Acid	19719-28-9	64	140