



Environmental Forensics Report of Analysis

Project 20230148

Report #: 1653

Date Issued: 30-May-2023

Client Project Reference: Menindee Fish Kill - 17 (IMT 4 May 2

Customer: Department of Planning & Environment

Attention: [Redacted]

Report Date: 30 May 2023

Project Received: 05 May 2023

EF Project Contact: [Redacted]

[Redacted]

The following samples were analysed:

Sample ID	Client ID	Sample Type	Client Sampled Date/Time	Aliquot
232922	E6	Liquid	04/05/2023	
232937	E6	Liquid	04/05/2023	Field Aliquot
232952	E6	Liquid	04/05/2023	Laboratory Aliquot
232923	E6.5	Liquid	04/05/2023	Field Aliquot
232938	E6.5	Liquid	04/05/2023	Laboratory Aliquot
232953	E6.5	Liquid	04/05/2023	Field Aliquot
232924	E7	Liquid	04/05/2023	Laboratory Aliquot
232939	E7	Liquid	04/05/2023	Field Aliquot
232954	E7	Liquid	04/05/2023	Laboratory Aliquot
232925	E8	Liquid	04/05/2023	Field Aliquot
232940	E8	Liquid	04/05/2023	Laboratory Aliquot
232955	E8	Liquid	04/05/2023	Field Aliquot
232926	E9	Liquid	04/05/2023	Laboratory Aliquot
232941	E9	Liquid	04/05/2023	Field Aliquot
232956	E9	Liquid	04/05/2023	Laboratory Aliquot
232927	E10	Liquid	04/05/2023	Field Aliquot
232942	E10	Liquid	04/05/2023	Laboratory Aliquot
232957	E10	Liquid	04/05/2023	Field Aliquot
232931	B4	Liquid	04/05/2023	Laboratory Aliquot
232946	B4	Liquid	04/05/2023	Field Aliquot
232961	B4	Liquid	04/05/2023	Laboratory Aliquot
233068	E6 MFK-Z-6_20230504	Liquid	04/05/2023	Field Aliquot
233069	E6.5 MFK-Z-16_20230504	Liquid	04/05/2023	Laboratory Aliquot
233070	E7 MFK-Z-7_20230504	Liquid	04/05/2023	Field Aliquot
233071	E8 MFK-Z-8_20230504	Liquid	04/05/2023	Laboratory Aliquot
233072	E9 MFK-Z-9_20230504	Liquid	04/05/2023	Field Aliquot
233073	E10 MFK-Z-10_20230504	Liquid	04/05/2023	Laboratory Aliquot
233074	B4 MFK-Z_20230504	Liquid	04/05/2023	Field Aliquot
233457	E6 Filtered 1	Liquid	04/05/2023	Laboratory Aliquot

Tests not covered by NATA accreditation 3040 are denoted with *

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233458	E6 Filtered 2	Liquid	04/05/2023
233459	E6 Unfiltered	Liquid	04/05/2023
233460	E6.5 Filtered 1	Liquid	04/05/2023
233461	E6.5 Filtered 2	Liquid	04/05/2023
233462	E6.5 Unfiltered	Liquid	04/05/2023
233463	E7 Filtered 1	Liquid	04/05/2023
233464	E7 Filtered 2	Liquid	04/05/2023
233465	E7 Unfiltered	Liquid	04/05/2023
233466	E8 Filtered 1	Liquid	04/05/2023
233467	E8 Filtered 2	Liquid	04/05/2023
233468	E8 Unfiltered	Liquid	04/05/2023
233469	E9 Filtered 1	Liquid	04/05/2023
233470	E9 Filtered 2	Liquid	04/05/2023
233471	E9 Unfiltered	Liquid	04/05/2023
233472	E10 Filtered 1	Liquid	04/05/2023
233473	E10 Filtered 2	Liquid	04/05/2023
233474	E10 Unfiltered	Liquid	04/05/2023
233475	B4 Filtered 1	Liquid	04/05/2023
233476	B4 Filtered 2	Liquid	04/05/2023
233477	B4 Unfiltered	Liquid	04/05/2023

Report Notes

- This document has been authorised by the person whose name appears in this report.
- This report shall not be reproduced except in full. Samples analysed as received from the client.
- Results reported as 'less than' (<) indicates a result below the practical quantitation limit for the sample matrix and method used.
- Solid samples are reported on a dry weight basis and biota samples are reported on an as received basis unless specified otherwise.

Project Comments

- Samples 232922, 232923, 232924, 232925, 232926, 232927, 232931 were sent to ALS Environmental Laboratory (NATA Accreditation no: 825) for the analysis of EP202A: Phenoxycetic Acid Herbicides by LCMS, EP202S: Phenoxycetic Acid Herbicide Surrogate, EP204: Glyphosate and AMPA. This report summarises data from the attached external report: ES2315270, dated 15-May-2023.
- Samples 233068 to 233074 were analysed outside the method holding time for TSS analysis. Sample 233074 contained very fine particulates, a fraction of which passed through the filter used for analysing total, fixed and volatile suspended solids.
- Samples 233457 to 233477 were sent to ALS Environmental Laboratory (NATA Accreditation no: 825) for the analysis of EK055G: Ammonia as N by Discrete Analyser, EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser, EK061G: Total Kjeldahl Nitrogen By Discrete Analyser, EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser, EK067 G: Total Phosphorus as P by Discrete Analyser, EK071G: Reactive Phosphorus as P by discrete analyser. This report summarises data from the attached external report: ES23162 52, dated 22-May-2023.
- Samples 232937 to 232942 and 232946 were sent to Sydney Water Laboratory Services (NATA Accreditation no: 63 and 610) for the analysis of Blue-Green Algal ID and Enumeration. Please see detailed results in the attached Phytoplankton Analysis Report no. 285312 dated 29 May 2023.
- Samples 232952 to 232957 and 232961 were sent to Sydney Water Laboratory Services (NATA Accreditation no: 63 and 610) for the analysis of Algal Toxins. Please the attached Analytical Report No: 285312 dated 29 May 2023, which gives Algal Toxins analysis results and the Blue-Green Algal ID and Enumeration summary results.

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Analysis Results - External Methods*
Area - EXTERNAL

Analyte	Sample ID	Start Date	Client ID
Algal Enumeration	232937	24/05/2023	E6
Algal Enumeration	232952	9/05/2023	E6
Algal Enumeration	232938	24/05/2023	E6.5
Algal Enumeration	232953	9/05/2023	E6.5
Algal Enumeration	232939	24/05/2023	E7
Algal Enumeration	232954	9/05/2023	E7
Algal Enumeration	232940	25/05/2023	E8
Algal Enumeration	232955	9/05/2023	E8
Algal Enumeration	232941	25/05/2023	E9
Algal Enumeration	232956	9/05/2023	E9
Algal Enumeration	232942	25/05/2023	E10
Algal Enumeration	232957	9/05/2023	E10

Analysis Results - External Methods*
Area - EXTERNAL

Analyte	Sample ID	Start Date	Client ID
Algal Enumeration	232946	25/05/2023	B4
Algal Enumeration	232961	9/05/2023	B4

Analysis Results - External Methods*
Area - EXTERNAL

Analyte	Sample ID	Start Date	Client ID
Ammonia as N	233457	17/05/2023	E6 Filtered 1
Nitrite+Nitrate as N	233458	17/05/2023	E6 Filtered 2
Reactive Phosphorus as P	233459	17/05/2023	E6
Total Kjeldahl Nitrogen as N	233460	17/05/2023	E6.5 Filtered 1
Total Nitrogen as N	233461	17/05/2023	E6.5 Filtered 2
Total Phosphorus as P	233462	17/05/2023	E6.5 Unfiltered
Ammonia as N	233463	17/05/2023	E7 Filtered 1
Nitrite+Nitrate as N	233464	17/05/2023	E7 Filtered 2
Reactive Phosphorus as P	233465	17/05/2023	E7 Unfiltered
Total Kjeldahl Nitrogen as N	233466	17/05/2023	E8 Filtered 1
Total Nitrogen as N	233467	17/05/2023	E8 Filtered 2
Total Phosphorus as P	233468	17/05/2023	E8 Unfiltered

Analysis Results - External Methods*
Area - EXTERNAL

Analyte	Sample ID	Start Date	Client ID
Ammonia as N	233469	17/05/2023	E9 Filtered 1
Nitrite+Nitrate as N	233470	17/05/2023	E9 Filtered 2
Reactive Phosphorus as P	233471	17/05/2023	E9 Unfiltered
Total Kjeldahl Nitrogen as N	233472	17/05/2023	E10 Filtered 1
Total Nitrogen as N	233473	17/05/2023	E10 Filtered 2
Total Phosphorus as P	233474	17/05/2023	E10 Unfiltered
Ammonia as N	233475	17/05/2023	B4 Filtered 1
Nitrite+Nitrate as N	233476	17/05/2023	B4 Filtered 2
Reactive Phosphorus as P	233477	17/05/2023	B4 Unfiltered
Total Kjeldahl Nitrogen as N	233478	17/05/2023	B4 Filtered 1
Total Nitrogen as N	233479	17/05/2023	B4 Filtered 2
Total Phosphorus as P	233480	17/05/2023	B4 Unfiltered

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Analysis Results - External Methods*

Area - EXTERNAL

Analyte	Sample ID	Start Date	Client ID	232922	232923	232924	232925	232926	232927	232931
				10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
				E6	E6.5	E7	E8	E9	E10	B4
2,4,5-T				<10	<10	<10	<10	<10	<10	<10
2,4,6-T				<10	<10	<10	<10	<10	<10	<10
2,4-D				<10	<10	<10	<10	<10	<10	<10
2,4-DB				<10	<10	<10	<10	<10	<10	<10
2,4-DP				<10	<10	<10	<10	<10	<10	<10
2,6-D				<10	<10	<10	<10	<10	<10	<10
4-Chlorophenoxy acetic acid				<10	<10	<10	<10	<10	<10	<10
AMPA				<10	<10	<10	<10	<10	<10	<10
Clopyralid				<10	<10	<10	<10	<10	<10	<10
Dicamba				<10	<10	<10	<10	<10	<10	<10
Fluroxypyr				<10	<10	<10	<10	<10	<10	<10
Glyphosate				<10	<10	<10	<10	<10	<10	<10
MCPA				<10	<10	<10	<10	<10	<10	<10
MCPB				<10	<10	<10	<10	<10	<10	<10
Mecoprop				<10	<10	<10	<10	<10	<10	<10
Picloram				<10	<10	<10	<10	<10	<10	<10
Silvex (2,4,5-TP/Fenoprop)				<10	<10	<10	<10	<10	<10	<10
Tridopyr				<10	<10	<10	<10	<10	<10	<10

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Analysis Results - IGR TSS
Area - INORGANIC

Analyte	Sample ID	Start Date	Client ID	233068	233069	233070	233071	233072	233073	233074
Fixed Suspended Solids		12/05/2023		E6 MFK-Z-6 _20230504	E6.5 MFK-Z- 16_2023050	E7 MFK-Z-7 _20230504	E8 MFK-Z-8 _20230504	E9 MFK-Z-9 _20230504	E10 MFK-Z- 10_2023050	B4 MFK-Z_2 0230504
	mg/L			22	21	50	29	39	57	<6
Total Suspended Solids				32	29	65	38	50	72	7
Volatile Suspended Solids				10	8	15	9	11	15	<6

The sample(s) referred to in this report were analysed by the following method(s):

Method code	Method description	Area
External Methods*	External Methods - Analysis completed externally	EXTERNAL
External Methods*	External Methods - Analysis completed externally	EXTERNAL
External Methods*	External Methods - Analysis completed externally	EXTERNAL
IGRTSS	Total Suspended Solids (TSS) (includes Volatile and Fixed Suspended Solids)	INORGANIC

The results in this report were authorised by:

Name	Title	Area
[REDACTED]	Senior Scientist	EXTERNAL
[REDACTED]	Scientist	INORGANIC

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