Annual Environmental Report

2018

Newcastle West

D0108-01

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1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2018 AER

This Annual Environmental Report has been prepared for D0108-01, Newcastle West, in Limerick in accordance with the requirements of the wastewater discharge licence for the agglomeration. Specified reports are included as an appendix to the AER as follows:

1.1 Licence specific reporting included in AER

Assessment / Report	Included in AER
Priority Substances Assessment	Yes

1.2 Treatment Type

The agglomeration is served by a wastewater treatment plant NEWCASTLE WEST WWTP with a Plant Capacity PE of 9000. The treatment process includes the following:

1.2.1 NEWCASTLE WEST WWTP

Treatment type	Yes / No	Details
Preliminary Treatment	Yes	screening
Primary Treatment	No	
Secondary Treatment	Yes	Activated sludge
Nutrient Removal	Yes	nitrogen and phosphate removal
Tertiary Treatment	No	

The overall compliance of the final effluent with the Emission Limit Values (ELVs) is shown below. More detailed information on the below ELV's can be found in Section 2.2 Discharges from the agglomeration.

1.3 ELV Overview

1.3.1 NEWCASTLE WEST WWTP

Compliance Status	
Were all parameters compliant for NEWCASTLE WEST WWTP treatment plant	No
Where noncompliant see table 2.2.1 for details of parameters	

1.4 Sludge Removal

The amount of sludge removed from the wastewater treatment plant is shown below along with the transported destination of the sludge from the treatment plant.

Treatment Plant	Sludge type	Quantity	Unit	% Dry Solids	Destination
NEWCASTLE WEST WWTP	Cake Sludge	1594.41	Weight (Tonnes)	10	D0013-01Limerick Main Drainage WWTP
NEWCASTLE WEST WWTP	Cake Sludge	129.62	Weight (Tonnes)	10	Cremins composting Broadford Co Limerick

Annual Statement of Measures

None

2 MONITORING REPORTS SUMMARY

2.1 Summary report on monthly influent monitoring

A summary of influent monitoring for the treatment plant is presented in below. This monitoring is primarily undertaken in order to determine the overall efficiency of the plant in removing pollutants from the raw wastewater.

2.1.1 Influent Monitoring Summary - NEWCASTLE WEST WWTP

Parameters	Number of Samples	Annual Max	Annual Mean
Total Nitrogen mg/l	12	52.9	26.78
COD-Cr mg/l	12	618	315.14
Total Phosphorus (as P) mg/l	12	9.45	3.89
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	12	225	117.93
Suspended Solids mg/l	12	340	163.28
Hydraulic Capacity	0	12792	4294

If other inputs in the form of sludge / leachate are added to the WWTP then these are included in Section 3.5 if applicable

Significance of Results:

The annual mean hydraulic loading is less than the peak Treatment Plant Capacity as detailed further in Section 3.2. The annual maximum hydraulic loading is greater than the peak Treatment Plant Capacity as detailed further in Section 3.2. The design of the wastewater tretament plant allows for peak values and therefore the peak loads have not impacted on compliance with Emission Limit Values.

2.2 Discharges from the agglomeration

2.2.1 Effluent Monitoring Summary - NEWCASTLE WEST WWTP

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included Note 1	Interim % reduction from influent concentration	Number of sample results	Number of exceedences	Number of with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
ortho-Phosphate (as P) - unspecified mg/l	0.5	0.6	0	12	2	2	0.22	Fail
Ammonia-Total (as N) mg/l	3	3.6	0	12	0	0	0.34	Pass
Total Nitrogen mg/l	0	0	0	12	0	0	13.28	Pass
Nitrite (as N) mg/l	0	0	0	12	0	0	0.26	Pass
Total Phosphorus (as P) mg/l	0	0	0	12	0	0	0.37	Pass
COD-Cr mg/l	125	250	0	12	0	0	27.14	Pass
Suspended Solids mg/l	35	87.5	0	12	1	0	13.22	Pass
Nitrate (as N) mg/l	0	0	0	12	0	0	11.08	Pass
pH pH units	0	0	0	12	0	0	7.69	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	15	30	0	12	0	0	4.97	Pass

Notes:
1– This represents the Emission Limit Values after the Interpretation provided for under Condition 2 of the licence is applied
2 - For parameters where a mean ELV applies

Cause of Exceedance(s):

Inadequate infastructure

Significance of Results:

The WWTP is not compliant with the ELV's set in the Wastewater Discharge Licence.

2.3 Ambient monitoring summary

A summary of monitoring from ambient monitoring points associated with the wastewater discharge is provided in the sections below. For discharges to rivers upstream (U/S) and downstream (D/S) location data is provided. For other ambient points in lakes, coastal or transitional waters, monitoring data from the most appropriate monitoring station is selected.

2.3.1 Ambient Monitoring Report Summary - NEWCASTLE WEST WWTP

The table below provides details of ambient monitoring locations and details of any designations as sensitive areas.

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Irish Grid Reference	Code	Bathing Water	Drinking Water	FWPM	Shellfish	WFD Status
Upstream	129938, 132738	TPEFF1900D0108SW001	No	No	No	No	Moderate
Downstream	130787, 135042	TPEFF1900D0108SW001	No	No	No	No	Moderate

2.3.2 Ambient Monitoring Parameter Summary - NEWCASTLE WEST WWTP

The table below provides a summary of monitoring results for designated ambient monitoring points. The upstream and downstream annual mean values are shown (mg/l), and the difference between both monitoring stations is given as a percentage of the Environmental Quality Standard (EQS) where relevant.

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
Dissolved Oxygen mg/l	RS24D020500	9.63	RS24D020800	10		

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
Total Oxidised Nitrogen (as N) mg/l	RS24D020500	2	RS24D020800	1.71		
Chloride mg/l	RS24D020500	23.65	RS24D020800	23.53		
BOD - 5 days (Total) mg/l	RS24D020500	2.97	RS24D020800	1.86	2.6	-42.6
Ammonia-Total (as N) mg/l	RS24D020500	0.14	RS24D020800	0.07	0.14	-48.6
Nitrate (as N) mg/l	RS24D020500	2	RS24D020800	1.68		
pH pH units	RS24D020500	7.9	RS24D020800	8.14		
True Colour mg/litre Pt Co	RS24D020500	42.75	RS24D020800	53.25		
Conductivity @25°C µS/cm	RS24D020500	457.25	RS24D020800	424.75		
Dissolved Oxygen % Saturation	RS24D020500	88	RS24D020800	91.25		
Temperature °C	RS24D020500	11.43	RS24D020800	12.6		
Nitrite (as N) µg/l	RS24D020500	15.17	RS24D020800	16.12		
Total Hardness (as CaCO3) mg/l	RS24D020500	216.5	RS24D020800	191.75		
ortho-Phosphate (as P) - unspecified mg/l	RS24D020500	0.1	RS24D020800	0.08	0.08	-20.1

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
Alkalinity-total (as CaCO3) mg/l	RS24D020500	183.5	RS24D020800	163.25		

Significance of Results:

The WWTP discharge was not compliant with the ELV's set in the wastewater discharge licence.

The parameters which exceeded the EQS and may be causing an are: None.

Any other know impacts: The EQS assessed relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009, as amended.

3 OPERATIONAL REPORTS SUMMARY

3.1 Treatment Efficiency Report

Treatment efficiency is based on the removal of key pollutants from the influent wastewater by the treatment plant. In essence the calculation is based on the balance of load coming into the plant versus the load leaving the plant. The efficiency is presented as a percentage removal rate.

A summary presentation of the efficiency of the treatment process including information for all the parameters specified in the licence is included below:

3.1.1 Treatment Efficiency Report Summary - NEWCASTLE WEST WWTP

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)	Comment
SS	198485.48	15942.91	91.97	
TN	32556.58	16024.1	50.78	
cBOD	143358.1	6000.98	95.81	
TP	4723.8	442.14	90.64	
COD	383082.71	32735.94	91.45	

Note: The above data is based on sample results for the number of dates reported

3.2 Treatment Capacity Report Summary

Treatment capacity is an assessment of the hydraulic (flow) and organic (the amount of pollutants) load a treatment plant is designed to treat versus the current loading of that plant.

NEWCASTLE WEST WWTP	
Peak Hydraulic Capacity (m3/day) - As Constructed	10800

NEWCASTLE WEST WWTP	
DWF to the Treatment Plant (m3/day)	2025
Current Hydraulic Loading - annual max (m3/day)	12792
Average Hydraulic loading to the Treatment Plant (m3/day)	4294
Organic Capacity (PE) - As Constructed	9000
Organic Capacity (PE) - Collected Load (peak week)	8710
Organic Capacity (PE) - Remaining	290
Will the capacity be exceeded in the next three years? (Yes/No)	No

3.3 Complaints Summary

A summary of complaints of an environmental nature is included below.

Number of Complaints	Nature of Complaint	Number Open Complaints	Number Closed Complaints
There is no Complaint data included in the AER.			

3.4 Reported Incidents Summary

Environmental incidents that arise in an agglomeration are reported on an on-going basis in accordance with our waste water discharge licences. Where an incident occurs and it is reportable under the licence, it is reported to the Environmental Protection Agency through their Environmental Data Exchange Network, or in some instances by telephone. Some incidents which arise in the agglomeration are recorded by Irish Water but may not be reportable under our licence for example where the incident does not have an impact on environmental performance.

A summary of reported incidents is included below.

3.4.1 Summary of Incidents

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Non-compliance	Inadequate Infrastructure	2	Yes	No
Other	Plant or equipment breakdown at WWTP	1	No	Yes
Uncontrolled release	Other	1	No	No

3.4.2 Summary of Overall Incidents

Question	Answer
Number of Incidents in 2018	3
Number of Incidents reported to the EPA via EDEN in 2018	3
Explanation of any discrepancies between the two numbers above	

3.5 Sludge / Other inputs to the WWTP

'Other inputs' to the waste water treatment plant are summarised in table below

Input type	Quantity	Unit	P.E.	% of load to WWTP	Included in Influent Monitoring (Y/N)?[3]	Is there a leachate/sludge acceptance procedure for the WWTP?	Is there a dedicated leachate/sludge acceptance facility for the WWTP?[2](Y/N)
Landfill Leachate (delivered by tanker)	2700	Volume (m3)	12	0	No	No	No
Other	126	Volume (m3)	2	0	No	No	No

Input type	Quantity	Unit	P.E.	% of load to WWTP	Included in Influent Monitoring (Y/N)?[3]	Is there a leachate/sludge acceptance procedure for the WWTP?	Is there a dedicated leachate/sludge acceptance facility for the WWTP?[2](Y/N)
Waterworks Sludge	1200	Volume (m3)	55	0	No	No	No
Other	36	Volume (m3)	1	0	No	No	No

4 INFRASTRUCTURAL ASSESSMENTS AND PROGRAMME OF IMPROVEMENTS

4.1 Storm Water Overflow Identification and Inspection Report

A summary of the operation of the storm water overflows and their significance where known is included below:

No Appendix Included

4.1.1 SWO Identification

WWDL Name / Code for Storm Water Overflow	Irish Grid Ref.	Included in Schedule A4 of the WWDL	Significance of the overflow(High / Medium / Low)	Assessed against DoEHLG Criteria	No. of times activated in 2018 (No. of events)	Total volume discharged in 2018 (m3)	Monitoring Status
SW2	127999, 133610	Yes	Low	Not Meeting			Not Monitored
SW3	128006, 128006	Yes	Low	Not Meeting			Not Monitored
SW4	129988, 132823	Yes	Low	Not Meeting			Not Monitored

4.1.2 Inspection Summary Report

SWO Summary	
How much sewage was discharged via SWOs in the agglomeration in the year (m3)?	
Is each SWO identified as non meeting DoEHLG Guidance included in the Programme of Improvements?	No
The SWO Assessment included the requirements of relevant of WWDL schedules?	Yes

SWO Summary	
Have the EPA been advised of any additional SWOs / charges to Schedule C3 and A4 under Condition 1.7?	No

4.2 Report on progress made and proposals being developed to meet the improvement programme requirements.

4.2.1 Specified Improvement Programme Summary

A wastewater discharge licence may require a number of reports on specific subject areas to be prepared for the agglomeration in question. These reports are submitted to the EPA as part of the Annual Environmental Report. This section provides list of the various reports required for this agglomeration and a brief summary of their recommendations.

Specified Improvement Programmes (under Schedule A and C of WWDL)	Licence Schedule	Licence Completion Date	Date Expired? (N/NA/Y)	Status of Works	Timeframe for Completing the Work	Comments
Installation of leachate drip feed tank, anoxic tank, storm water storage tank and sludge storage tank	C	31/12/2012	Yes	Not Started		The improvement programme will be reviewed by Irish Water to assess the works required to comply with the licence condition on a prioritised basis"
SW1. See section 2.4 of attachment C.1 of application	C	31/12/2012	Yes	Not Started		The improvement programme will be reviewed by Irish Water to assess the works required to comply with the licence condition on a prioritised basis"
SW2. See section 2.4 of attachment C.1 of application	C	31/12/2012	Yes	Not Started		The improvement programme will be reviewed by Irish Water to assess the works required to comply with the licence condition on a prioritised basis"
SW3. See section 2.4 of attachment C.1 of application	C	31/12/2012	Yes	Not Started		The improvement programme will be reviewed by Irish Water to assess the works required to comply with the licence condition on a prioritised basis"

Specified Improvement Programmes (under Schedule A and C of WWDL)	Licence Schedule	Licence Completion Date	Date Expired? (N/NA/Y)	Status of Works	Timeframe for Completing the Work	Comments
Works necessary to meet ammonia, phosphorous and BOD emission limit standards	C	31/12/2012	Yes	Works Completed		

A summary of the status of any improvements identified by under Condition 5.2 is included below.

4.2.2 Improvement Programme Summary

Improvement Identifier	Improvement Description	Improvement Source	Expected Completion Date	Comments
There are no Improvements Programme for this Agglomeration.				

4.2.3 Sewer Integrity Risk Assessment

The utilisation of multiple capital maintenance programmes and the outputs of the workshops with the Local Authority Operations Staff held under the programme can be used to satisfy the requirements of Condition 5 regarding network integrity. Improvement works identified by way of these programmes and workshops will be included in the Improvements Summary Table".

5 LICENCE SPECIFIC REPORTS

A wastewater discharge licence may require a number of reports on specific subject areas to be prepared for the agglomeration in question. These reports are submitted to the EPA as part of the Annual Environmental Report. This section provides list of the various reports required for this agglomeration and a brief summary of their recommendations.

5.a Licence Specific Reports Summary Table

Licence Specific Report	Required by licence	Year included in AER	Included in this AER	Reference to relevant section of AER (e.g. Appendix X).
Priority Substances Assessment	Yes	2016	Yes	5.1

5.1 Priority Substances Assessment

The Priority Substances Assessment Report is included in Appendix 7.1 - Priority Substances Assessment. A summary of the findings of this report is included below.

Parameter	Value
Does the assessment include a review of Trade inputs to the works?	Yes
Does the assessment include a review of other inputs to the works?	Yes
Does the assessment use the Desk Top Study Method or Screening Analysis to determine if the discharge contains the parameters in Appendix 1 of the EPA guidance	Yes
Is the agglomeration included in the Irish Water Dangerous Substance Effluent Monitoring Programme (if yes, what year)	Yes (2018)

Parameter	Value
Does the Dangerous Substance Effluent Monitoring Programme reporting identify Irish Water measures for minimising priority substances and eliminating priority hazardous substances in the discharges	No
Does the Dangerous Substance Effluent Monitoring assessment identify that priority substances were found at levels above EQS or target LOD values??	No
Does the report include an assessment of the significance of the results where a listed material is present in the discharge? (e.g. impact on the relevant EQS standard for the receiving water)	No

6 CERTIFICATION AND SIGN OFF

6.1 Summary of AER Contents

Parameter	Answer
Does the AER include an Executive Summary?	Yes
Does the AER include an assessment of the performance of the Waste Water Works (i.e. have the results of assessments been interpreted against WWDL requirements and or Environmental Quality Standards)?	Yes
Is there a need to advise the EPA for consideration of a Technical Amendment / Review of the licence?	No
List reason e.g. additional SWO identified	
Is there a need to request/advise the EPA of any modifications to the existing WWDL?	No
List reason e.g. changes to monitoring requirements	
Have these processes commenced?	
Are all outstanding reports and assessments from previous AERs included as an appendix to this AER	No

I certify that the information given in this Annual Environmental Report is truthful, accurate and complete:

Signed: Date: 28/03/2019

This AER has been produced by Irish Water's Environmental Information System (EIMS) and has been electronically signed off in that system for and on behalf of ,

Eleanor Roche

Acting Head of Environmental Regulation.

7 APPENDIX

In the appendix include all the detailed or site specific reports that are relevant to the AER. Reports omitted from previous AERs should also be appended here.

Appendix
Appendix 7.1 - Priority Substances Assessment

Archived	Category	Entity	Entity Referenc	Station	Station Referen	Station Easting	Station Northin	Laboratory
Yes	Discharge Mon	Newcastle Wes	TP1900D0108	Effluent	TPEFF1900D01	129681.6	132811.4	Limerick City &
Yes	Discharge Mon	Newcastle Wes	TP1900D0108	Effluent	TPEFF1900D01	129681.6	132811.4	Limerick City &

River Basin Dist	Surface Waterb	Ground Waterb	Sample Templa	Sample Referer	Sample Date	Sample Time	Reason	Comments
Shannon	River: DEEL (NE	Newcastle Wes	Discharge Mon	18372012	30-May-2018	09:00	Investigative	Dangerous Con
Shannon	River: DEEL (NE	Newcastle Wes	Discharge Mon	18374110	23-Oct-2018	10:30	Compliance	Dangerous subs

Parameter	Ortho-Phospha	COD Chemical (	Ammonia NH3-	Suspended Soli	Total Nitrogen	pH	Mercury	Arsenic
Max.	--	--	--	--	--	--	--	--
Min.	--	--	--	--	--	--	--	--
Test Method	TM-CHEM-17	-CHEM- 4, 28 &	TM-CHEM-17	TM-CHEM-22	TM-CHEM-26	TM-CHEM-21	--	--
Analyst Conclus	mg/l	mg/l	mg/l	mg/l	mg/l	pH units	µg/l	µg/l
-						8	0.07	< 1
-						7.9	< 0.06	< 1

Nitrate NO3-N	Total Phosphor	Nickel	Fluoride	Conductivity @	Chromium	Lead	Antimony	Selenium
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--	--	--	--	--	--	--	--	--
TM-CHEM-17	TM-CHEM-16	--	TM-CHEM-9	M-CHEM-6 & 3	--	--	--	--
mg/l	mg/l	µg/l	mg/l	µS/cm	mg/l	µg/l	µg/l	µg/l
		3.5	< 0.1	909	0.0037	11.6	0.7	< 3
		1.6	0.14	838	0.004	< 0.9	0.7	< 3

Boron	Copper	Chloride	Nitrite NO2-N	Fluoranthene	Alpha Hexachlo	Beta HCH	Gamma-HCH Li	Dichlobenil
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--	--	TM-CHEM-18	TM-CHEM-17	--	--	--	--	--
mg/l	mg/l	mg/l	mg/l	µg/l	µg/l	µg/l	µg/l	µg/l
< 0.5	0.032	79		< 0.1	< 0.003	< 0.003	< 0.0027	< 0.002
< 0.5	0.01	93		< 0.01	< 0.003	< 0.003	< 0.003	< 0.002

1,2,3-TCB Trich	Anthracene	Benzene	Benzo(a)pyrene	Benzo(b)fluorar	Benzo(ghi)pery	Benzo(k)fluorar	Carbon Tetrach	Cyanide
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µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
< 0.01	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.5	
< 0.01	< 0.01	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.5	< 1

Dieldrin	Diuron	Glyphosate	Hexachloroben	Hexachlorobuta	Indeno(1,2,3-c,	Isodrin	Isoproturon	Linuron
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µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
< 0.004	< 0.11	4.4	< 0.002	< 0.5	< 0.1	< 0.004	< 0.05	< 0.05
< 0.004	< 0.08	< 0.1	< 0.002	< 0.5	< 0.01	< 0.004	< 0.05	< 0.05

Naphthalene	Hardness CaCO	Dichloromethai	Toluene	Atrazine	Simazine	Xylene-Meta,Pa	Ethylbenzene	Chloroform
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--	TM-CHEM-20	--	--	--	--	--	--	--
µg/l	mg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
< 0.1	282.7	< 5	< 0.5	< 0.02	< 0.02	< 0.5	< 0.5	< 1
< 0.01	242.3	< 5	< 0.5	< 0.02	< 0.02	< 0.5	< 0.5	1

Trichloroethene	Tetrachloroeth	Xylene-Ortho o	BOD, 5 days wi	2,4-D Acid Herb	Acenaphthene	Acenaphthylen	Chrysene HPLC	Fluorene
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--	--	--	TM-CHEM-3	--	--	--	--	--
µg/l	µg/l	µg/l	mg/l	µg/l	µg/l	µg/l	µg/l	µg/l
< 0.1	< 0.1	< 0.5		< 0.05	< 0.1	< 0.1	< 0.1	< 0.1
< 0.1	< 0.1	< 0.5		< 0.05	< 0.01	< 0.01	< 0.01	< 0.01

MCPA	Phenanthrene	Pyrene	Calcium	Magnesium	1,2,4-TCB Trich	Dibenzo(a,h)an	Cadmium	Zinc
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µg/l	µg/l	µg/l	mg/l	mg/l	µg/l	µg/l	mg/l	mg/l
< 0.05	< 0.1	< 0.1	88.5	15	< 0.01	< 0.1	< 0.0002	0.092
< 0.05	< 0.01	< 0.01	74.8	13.5	< 0.01	< 0.01	0.002	0.041

Barium	Cobalt	Molybdenum	Vanadium	Tin	Mecoprop Tota	Benzo(a)anthra	2,6-Dichlorober	Total Cyanide
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µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
13	< 3	< 3	< 3	10.6	< 0.05	< 0.1	< 0.1	2
7.1	< 3	< 3	< 3	< 3	< 0.05	< 0.01	< 0.1	

Total PAH	1,3,5-Trichlorobenz
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µg/l	µg/l
< 0.1	< 0.01
< 0.01	< 0.01