

DWR CYMRU WELSH WATER - BOLTON HILL WTW

Analysis of water clarification sludge cake

Sampling Point No: 120038

Sample ID: 8444337

Date: 10/07/2025

Application rate (t/ha)	24.0
Application rate (t/acre)	9.7
pH	6.7
Dry solids (%)	15.6

NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	(kg/ha)	(kg/t)	(kg/ha)
Nitrogen (N)	1.27	0.20	%	2.0	48	0.2	5
Ammonium N	82.6	12.89	mg/kg	0.0	0		
Phosphorus (P)	3430	535.08	mg/kg	0.5	13		
Phosphate (P ₂ O ₅)		0.00		1.2	29	0.2	6
Potassium (K)	482	75.19	mg/kg	0.1	2		
Potash (K ₂ O)		0.00		0.1	2	0.0	0
Magnesium (Mg)	717	111.85	mg/kg	0.1	3		
Magnesium (MgO)		0.00		0.2	4	0.0	1
Sulphur (S)	5120	798.72	mg/kg	0.8	19		
Sulphur (SO ₃)		0.00		2.0	48	0.2	5

POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	83	12.95	mg/kg	12.95	0.31	15.00	2%
Copper	47.5	7.41	mg/kg	7.41	0.18	7.50	2%
Nickel	23.2	3.62	mg/kg	3.62	0.09	3.00	3%
Lead	20.4	3.18	mg/kg	3.18	0.08	15.00	1%
Cadmium	0.36	0.06	mg/kg	0.06	0.00	0.15	1%
Chromium	14.1	2.20	mg/kg	2.20	0.05	15.00	0%
Arsenic	20.6	3.21	mg/kg	3.21	0.08	0.70	11%
Mercury	0.66	0.10	mg/kg	0.10	0.00	0.10	2%
Other Elements							
Iron	17700	2761.20	mg/kg	2761.20	66		
Aluminium	168000	26208.00	mg/kg	26208.00	629		

DWR CYMRU WELSH WATER - BOLTON HILL WTW

Analysis of water clarification sludge cake

Sampling Point No: 120038

Sample ID: 8444337

Date: 10/07/2025

Application rate (t/ha)	32.0
Application rate (t/acre)	13.0
pH	6.7
Dry solids (%)	15.6

NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	(kg/ha)	(kg/t)	(kg/ha)
Nitrogen (N)	1.27	0.20	%	2.0	63	0.2	6
Ammonium N	82.6	12.89	mg/kg	0.0	0		
Phosphorus (P)	3430	535.08	mg/kg	0.5	17		
Phosphate (P ₂ O ₅)		0.00		1.2	39	0.2	8
Potassium (K)	482	75.19	mg/kg	0.1	2		
Potash (K ₂ O)		0.00		0.1	3	0.0	1
Magnesium (Mg)	717	111.85	mg/kg	0.1	4		
Magnesium (MgO)		0.00		0.2	6	0.0	1
Sulphur (S)	5120	798.72	mg/kg	0.8	26		
Sulphur (SO ₃)		0.00		2.0	64	0.2	6

POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	83	12.95	mg/kg	12.95	0.41	15.00	3%
Copper	47.5	7.41	mg/kg	7.41	0.24	7.50	3%
Nickel	23.2	3.62	mg/kg	3.62	0.12	3.00	4%
Lead	20.4	3.18	mg/kg	3.18	0.10	15.00	1%
Cadmium	0.36	0.06	mg/kg	0.06	0.00	0.15	1%
Chromium	14.1	2.20	mg/kg	2.20	0.07	15.00	0%
Arsenic	20.6	3.21	mg/kg	3.21	0.10	0.70	15%
Mercury	0.66	0.10	mg/kg	0.10	0.00	0.10	3%
Other Elements							
Iron	17700	2761.20	mg/kg	2761.20	88		
Aluminium	168000	26208.00	mg/kg	26208.00	839		

DWR CYMRU WELSH WATER - BOLTON HILL WTW

Analysis of water clarification sludge cake

Sampling Point No: 120038

Sample ID: 8444337

Date: 10/07/2025

Application rate (t/ha)	53.0
Application rate (t/acre)	21.4
pH	6.7
Dry solids (%)	15.6

NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	(kg/ha)	(kg/t)	(kg/ha)
Nitrogen (N)	1.27	0.20	%	2.0	105	0.2	11
Ammonium N	82.6	12.89	mg/kg	0.0	1		
Phosphorus (P)	3430	535.08	mg/kg	0.5	28		
Phosphate (P ₂ O ₅)		0.00		1.2	65	0.2	13
Potassium (K)	482	75.19	mg/kg	0.1	4		
Potash (K ₂ O)		0.00		0.1	5	0.0	1
Magnesium (Mg)	717	111.85	mg/kg	0.1	6		
Magnesium (MgO)		0.00		0.2	10	0.0	2
Sulphur (S)	5120	798.72	mg/kg	0.8	42		
Sulphur (SO ₃)		0.00		2.0	106	0.2	11

POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	83	12.95	mg/kg	12.95	0.69	15.00	5%
Copper	47.5	7.41	mg/kg	7.41	0.39	7.50	5%
Nickel	23.2	3.62	mg/kg	3.62	0.19	3.00	6%
Lead	20.4	3.18	mg/kg	3.18	0.17	15.00	1%
Cadmium	0.36	0.06	mg/kg	0.06	0.00	0.15	2%
Chromium	14.1	2.20	mg/kg	2.20	0.12	15.00	1%
Arsenic	20.6	3.21	mg/kg	3.21	0.17	0.70	24%
Mercury	0.66	0.10	mg/kg	0.10	0.01	0.10	5%
Other Elements							
Iron	17700	2761.20	mg/kg	2761.20	146		
Aluminium	168000	26208.00	mg/kg	26208.00	1389		

Sampling Point No:	120038	Location:	BOLTON HILL Sludge Tankering Point
Date Sampled:	10/07/2025	Time Taken:	10:09
Laboratory:	ALS	Sample ID:	8444337
No. of Results:	20		
Sampling Reason:	WTW Sludge - Product Monitoring (SW_ME)		
Type:	WTW Sludge (SW)		

Sample Results



Code	Result	Units	Qualifier	Lower Limit
238 Magnesium	717	mg/kg		
288 Aluminium	168000	mg/kg		
357 Arsenic	20.6	mg/kg		
4620 pH	6.7	pH		
7774 Mercury	0.66	mg/kg	<	
8241 Volatile solids	45.9	%		
9233 Ammoniacal nitrogen	82.6	mg/kg		
9234 Sulphur	5120	mg/kg		
9271 Cadmium	0.36	mg/kg	<	
9272 Chromium	14.1	mg/kg	<	
9273 Copper	47.5	mg/kg		
9275 Nickel	23.2	mg/kg		
9276 Lead	20.4	mg/kg	<	
9277 Zinc	83.0	mg/kg		
9278 Iron	17700	mg/kg		
9281 % Dry solids	15.6	%		
9282 % Minerals	54.1	%		
9283 % K (dry weight)	0.0482	mg/kg		
9284 % P (dry weight)	0.343	%		
9285 % N (dry weight)	1.27	%		

Comments:

Signed:

Approved by:

Position:

Upper Limit

DWR CYMRU WELSH WATER - PRESELI WTW

Analysis of water clarification sludge cake

Sampling Point No: 100506

Sample ID: 8189080

Date: 26/11/2024

Application rate (t/ha)	67.0
Application rate (t/acre)	27.1
pH	7.2
Dry solids (%)	16.2

NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	(kg/ha)	(kg/t)	(kg/ha)
Nitrogen (N)	0.988	0.16	%	1.6	107	0.2	11
Ammonium N	18.8	3.05	mg/kg	0.0	0		
Phosphorus (P)	699	113.24	mg/kg	0.1	8		
Phosphate (P ₂ O ₅)		0.00		0.3	17	0.1	3
Potassium (K)	116	18.79	mg/kg	0.0	1		
Potash (K ₂ O)		0.00		0.0	2	0.0	0
Magnesium (Mg)	328	53.14	mg/kg	0.1	4		
Magnesium (MgO)		0.00		0.1	6	0.0	1
Sulphur (S)	7230	1171.26	mg/kg	1.2	78		
Sulphur (SO ₃)		0.00		2.9	196	0.3	20

POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	58.1	9.41	mg/kg	9.41	0.63	15.00	4%
Copper	32.7	5.30	mg/kg	5.30	0.35	7.50	5%
Nickel	10.1	1.64	mg/kg	1.64	0.11	3.00	4%
Lead	1.99	0.32	mg/kg	0.32	0.02	15.00	0%
Cadmium	0.49	0.08	mg/kg	0.08	0.01	0.15	4%
Chromium	1.04	0.17	mg/kg	0.17	0.01	15.00	0%
Arsenic	61.2	9.91	mg/kg	9.91	0.66	0.70	95%
Mercury	0.62	0.10	mg/kg	0.10	0.01	0.10	7%
Other Elements							
Iron	7020	1137.24	mg/kg	1137.24	76		
Aluminium	186000	30132.00	mg/kg	30132.00	2019		

Sampling Point No:	100506	Location:	PRESELI WTW SLUDGE Tankering Point (New Works)
Date Sampled:	26/11/2024	Time Taken:	10:45
Laboratory:	ALS	Sample ID:	8189080
No. of Results:	20		
Sampling Reason:	WTW Sludge - Product Monitoring (SW_ME)		
Type:	WTW Sludge (SW)		

Sample Results



Code	Result	Units	Qualifier	Lower Limit
238 Magnesium	328	mg/kg		
288 Aluminium	186000	mg/kg		
357 Arsenic	61.2	mg/kg		
4620 pH	7.2	pH		
7774 Mercury	0.62	mg/kg	<	
8241 Volatile solids	59	%		
9233 Ammoniacal nitrogen	18.8	mg/kg		
9234 Sulphur	7230	mg/kg		
9271 Cadmium	0.49	mg/kg		
9272 Chromium	1.04	mg/kg	<	
9273 Copper	32.7	mg/kg		
9275 Nickel	10.1	mg/kg		
9276 Lead	1.99	mg/kg	<	
9277 Zinc	58.1	mg/kg		
9278 Iron	7020	mg/kg		
9281 % Dry solids	16.2	%		
9282 % Minerals	41	%		
9283 % K (dry weight)	0.0116	mg/kg		
9284 % P (dry weight)	0.0699	%		
9285 % N (dry weight)	0.988	%		

Comments:

Signed:

Approved by:

Position:

Upper Limit

DWR CYMRU WELSH WATER - BOLTON HILL WTW

Analysis of liquid water clarification sludge

Sampling Point No: 120038

Sample ID: 8443907

Date: 10/07/2025

Application rate (t/ha)	50.0
Application rate (t/acre)	20.2
pH	6.6
Dry solids (%)	3.34

NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	(kg/ha)	(kg/t)	(kg/ha)
Nitrogen (N)	1.21	0.04	%	0.4	20	0.0	2
Ammonium N	183	6.11	mg/kg	0.0	0		
Phosphorus (P)	3470	115.90	mg/kg	0.1	6		
Phosphate (P ₂ O ₅)		0.00		0.3	13	0.1	3
Potassium (K)	865	28.89	mg/kg	0.0	1		
Potash (K ₂ O)		0.00		0.0	2	0.0	0
Magnesium (Mg)	1490	49.77	mg/kg	0.0	2		
Magnesium (MgO)		0.00		0.1	4	0.0	1
Sulphur (S)	6120	204.41	mg/kg	0.2	10		
Sulphur (SO ₃)		0.00		0.5	26	0.1	3

POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	108	3.61	mg/kg	3.61	0.18	15.00	1%
Copper	60.8	2.03	mg/kg	2.03	0.10	7.50	1%
Nickel	30.3	1.01	mg/kg	1.01	0.05	3.00	2%
Lead	36.8	1.23	mg/kg	1.23	0.06	15.00	0%
Cadmium	0.65	0.02	mg/kg	0.02	0.00	0.15	1%
Chromium	25.5	0.85	mg/kg	0.85	0.04	15.00	0%
Arsenic	16.4	0.55	mg/kg	0.55	0.03	0.70	4%
Mercury	0.59	0.02	mg/kg	0.02	0.00	0.10	1%
Other Elements							
Iron	24000	801.60	mg/kg	801.60	40		
Aluminium	140000	4676.00	mg/kg	4676.00	234		

DWR CYMRU WELSH WATER - BOLTON HILL WTW

Analysis of liquid water clarification sludge

Sampling Point No: 120038

Sample ID: 8443907

Date: 10/07/2025

Application rate (t/ha)	150.0
Application rate (t/acre)	60.7
pH	6.6
Dry solids (%)	3.34

NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	(kg/ha)	(kg/t)	(kg/ha)
Nitrogen (N)	1.21	0.04	%	0.4	61	0.0	6
Ammonium N	183	6.11	mg/kg	0.0	1		
Phosphorus (P)	3470	115.90	mg/kg	0.1	17		
Phosphate (P ₂ O ₅)		0.00		0.3	40	0.1	8
Potassium (K)	865	28.89	mg/kg	0.0	4		
Potash (K ₂ O)		0.00		0.0	5	0.0	1
Magnesium (Mg)	1490	49.77	mg/kg	0.0	7		
Magnesium (MgO)		0.00		0.1	12	0.0	2
Sulphur (S)	6120	204.41	mg/kg	0.2	31		
Sulphur (SO ₃)		0.00		0.5	77	0.1	8

POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	108	3.61	mg/kg	3.61	0.54	15.00	4%
Copper	60.8	2.03	mg/kg	2.03	0.30	7.50	4%
Nickel	30.3	1.01	mg/kg	1.01	0.15	3.00	5%
Lead	36.8	1.23	mg/kg	1.23	0.18	15.00	1%
Cadmium	0.65	0.02	mg/kg	0.02	0.00	0.15	2%
Chromium	25.5	0.85	mg/kg	0.85	0.13	15.00	1%
Arsenic	16.4	0.55	mg/kg	0.55	0.08	0.70	12%
Mercury	0.59	0.02	mg/kg	0.02	0.00	0.10	3%
Other Elements							
Iron	24000	801.60	mg/kg	801.60	120		
Aluminium	140000	4676.00	mg/kg	4676.00	701		

DWR CYMRU WELSH WATER - BOLTON HILL WTW

Analysis of liquid water clarification sludge

Sampling Point No: 120038

Sample ID: 8443907

Date: 10/07/2025

Application rate (t/ha)	250.0
Application rate (t/acre)	101.2
pH	6.6
Dry solids (%)	3.34

NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	(kg/ha)	(kg/t)	(kg/ha)
Nitrogen (N)	1.21	0.04	%	0.4	101	0.0	10
Ammonium N	183	6.11	mg/kg	0.0	2		
Phosphorus (P)	3470	115.90	mg/kg	0.1	29		
Phosphate (P ₂ O ₅)		0.00		0.3	66	0.1	13
Potassium (K)	865	28.89	mg/kg	0.0	7		
Potash (K ₂ O)		0.00		0.0	9	0.0	2
Magnesium (Mg)	1490	49.77	mg/kg	0.0	12		
Magnesium (MgO)		0.00		0.1	21	0.0	4
Sulphur (S)	6120	204.41	mg/kg	0.2	51		
Sulphur (SO ₃)		0.00		0.5	128	0.1	13

POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	108	3.61	mg/kg	3.61	0.90	15.00	6%
Copper	60.8	2.03	mg/kg	2.03	0.51	7.50	7%
Nickel	30.3	1.01	mg/kg	1.01	0.25	3.00	8%
Lead	36.8	1.23	mg/kg	1.23	0.31	15.00	2%
Cadmium	0.65	0.02	mg/kg	0.02	0.01	0.15	4%
Chromium	25.5	0.85	mg/kg	0.85	0.21	15.00	1%
Arsenic	16.4	0.55	mg/kg	0.55	0.14	0.70	20%
Mercury	0.59	0.02	mg/kg	0.02	0.00	0.10	5%
Other Elements							
Iron	24000	801.60	mg/kg	801.60	200		
Aluminium	140000	4676.00	mg/kg	4676.00	1169		

Sampling Point No:	120038	Location:	BOLTON HILL Sludge Tankering Point
Date Sampled:	10/07/2025	Time Taken:	10:10
Laboratory:	ALS	Sample ID:	8443907
No. of Results:	20		
Sampling Reason:	WTW Sludge - Product Monitoring (SW_ME)		
Type:	WTW Sludge (SW)		

Sample Results



Code	Result	Units	Qualifier	Lower Limit
238 Magnesium	1490	mg/kg		
288 Aluminium	140000	mg/kg		
357 Arsenic	16.4	mg/kg		
4620 pH	6.6	pH		
7774 Mercury	0.59	mg/kg	<	
8241 Volatile solids	40.7	%		
9233 Ammoniacal nitrogen	183	mg/kg	<	
9234 Sulphur	6120	mg/kg		
9271 Cadmium	0.65	mg/kg	<	
9272 Chromium	25.5	mg/kg	<	
9273 Copper	60.8	mg/kg		
9275 Nickel	30.3	mg/kg	<	
9276 Lead	36.8	mg/kg	<	
9277 Zinc	108	mg/kg		
9278 Iron	24000	mg/kg		
9281 % Dry solids	3.34	%		
9282 % Minerals	59.3	%		
9283 % K (dry weight)	0.0865	mg/kg		
9284 % P (dry weight)	0.347	%	<	
9285 % N (dry weight)	1.21	%		

Comments:

Signed:

Approved by:

Position:

Upper Limit

DWR CYMRU WELSH WATER - PRESELI WTW

Analysis of liquid water clarification sludge

Sampling Point No: 100506

Sample ID: 8189084

Date: 26/11/2024

Application rate (t/ha)	50.0
Application rate (t/acre)	20.2
pH	7.2
Dry solids (%)	2.81

NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	(kg/ha)	(kg/t)	(kg/ha)
Nitrogen (N)	1.05	0.03	%	0.3	15	0.0	1
Ammonium N	6	0.17	mg/kg	0.0	0		
Phosphorus (P)	669	18.80	mg/kg	0.0	1		
Phosphate (P ₂ O ₅)		0.00		0.0	2	0.0	0
Potassium (K)	116	3.26	mg/kg	0.0	0		
Potash (K ₂ O)		0.00		0.0	0	0.0	0
Magnesium (Mg)	356	10.00	mg/kg	0.0	1		
Magnesium (MgO)		0.00		0.0	1	0.0	0
Sulphur (S)	8360	234.92	mg/kg	0.2	12		
Sulphur (SO ₃)		0.00		0.6	29	0.1	3

POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	47.4	1.33	mg/kg	1.33	0.07	15.00	0%
Copper	33.7	0.95	mg/kg	0.95	0.05	7.50	1%
Nickel	5.1	0.14	mg/kg	0.14	0.01	3.00	0%
Lead	4.64	0.13	mg/kg	0.13	0.01	15.00	0%
Cadmium	0.4	0.01	mg/kg	0.01	0.00	0.15	0%
Chromium	2.43	0.07	mg/kg	0.07	0.00	15.00	0%
Arsenic	70	1.97	mg/kg	1.97	0.10	0.70	14%
Mercury	1.43	0.04	mg/kg	0.04	0.00	0.10	2%
Other Elements							
Iron	7780	218.62	mg/kg	218.62	11		
Aluminium	191000	5367.10	mg/kg	5367.10	268		

DWR CYMRU WELSH WATER - PRESELI WTW

Analysis of liquid water clarification sludge

Sampling Point No: 100506

Sample ID: 8189084

Date: 26/11/2024

Application rate (t/ha)	250.0
Application rate (t/acre)	101.2
pH	7.2
Dry solids (%)	2.81

NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	(kg/ha)	(kg/t)	(kg/ha)
Nitrogen (N)	1.05	0.03	%	0.3	74	0.0	7
Ammonium N	6	0.17	mg/kg	0.0	0		
Phosphorus (P)	669	18.80	mg/kg	0.0	5		
Phosphate (P ₂ O ₅)		0.00		0.0	11	0.0	2
Potassium (K)	116	3.26	mg/kg	0.0	1		
Potash (K ₂ O)		0.00		0.0	1	0.0	0
Magnesium (Mg)	356	10.00	mg/kg	0.0	3		
Magnesium (MgO)		0.00		0.0	4	0.0	1
Sulphur (S)	8360	234.92	mg/kg	0.2	59		
Sulphur (SO ₃)		0.00		0.6	147	0.1	15

POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	47.4	1.33	mg/kg	1.33	0.33	15.00	2%
Copper	33.7	0.95	mg/kg	0.95	0.24	7.50	3%
Nickel	5.1	0.14	mg/kg	0.14	0.04	3.00	1%
Lead	4.64	0.13	mg/kg	0.13	0.03	15.00	0%
Cadmium	0.4	0.01	mg/kg	0.01	0.00	0.15	2%
Chromium	2.43	0.07	mg/kg	0.07	0.02	15.00	0%
Arsenic	70	1.97	mg/kg	1.97	0.49	0.70	70%
Mercury	1.43	0.04	mg/kg	0.04	0.01	0.10	10%
<u>Other Elements</u>							
Iron	7780	218.62	mg/kg	218.62	55		
Aluminium	191000	5367.10	mg/kg	5367.10	1342		

Sampling Point No:	100506	Location:	PRESELI WTW SLUDGE Tankering Point (New Works)
Date Sampled:	26/11/2024	Time Taken:	10:47
Laboratory:	ALS	Sample ID:	8189084
No. of Results:	20		
Sampling Reason:	WTW Sludge - Product Monitoring (SW_ME)		
Type:	WTW Sludge (SW)		

Sample Results



Code	Result	Units	Qualifier	Lower Limit
238 Magnesium	356	mg/kg		
288 Aluminium	191000	mg/kg		
357 Arsenic	70	mg/kg		
4620 pH	7.2	pH		
7774 Mercury	1.43	mg/kg	<	
8241 Volatile solids	57	%		
9233 Ammoniacal nitrogen	6	mg/kg	<	
9234 Sulphur	8360	mg/kg		
9271 Cadmium	0.4	mg/kg		
9272 Chromium	2.43	mg/kg	<	
9273 Copper	33.7	mg/kg		
9275 Nickel	5.1	mg/kg	<	
9276 Lead	4.64	mg/kg	<	
9277 Zinc	47.4	mg/kg		
9278 Iron	7780	mg/kg		
9281 % Dry solids	2.81	%		
9282 % Minerals	43	%		
9283 % K (dry weight)	0.0116	mg/kg		
9284 % P (dry weight)	0.0669	%		
9285 % N (dry weight)	1.05	%		

Comments:

Signed:

 Approved by:

Position:

Upper Limit

DWR CYMRU WELSH WATER - BRYNGWYN WTW

Analysis of liquid water clarification sludge

Sampling Point No: 79131

Sample ID: 8268999

Date: 05/02/2025

Application rate (t/ha)	50.0
Application rate (t/acre)	20.2
pH	6.5
Dry solids (%)	2.92

NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	(kg/ha)	(kg/t)	(kg/ha)
Nitrogen (N)	0.564	0.02	%	0.2	8	0.0	1
Ammonium N	209	6.10	mg/kg	0.0	0		
Phosphorus (P)	1260	36.79	mg/kg	0.0	2		
Phosphate (P ₂ O ₅)		0.00		0.1	4	0.0	1
Potassium (K)	509	14.86	mg/kg	0.0	1		
Potash (K ₂ O)		0.00		0.0	1	0.0	0
Magnesium (Mg)	1460	42.63	mg/kg	0.0	2		
Magnesium (MgO)		0.00		0.1	4	0.0	1
Sulphur (S)	3010	87.89	mg/kg	0.1	4		
Sulphur (SO ₃)		0.00		0.2	11	0.0	1

POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	200	5.84	mg/kg	5.84	0.29	15.00	2%
Copper	12.6	0.37	mg/kg	0.37	0.02	7.50	0%
Nickel	17.7	0.52	mg/kg	0.52	0.03	3.00	1%
Lead	38	1.11	mg/kg	1.11	0.06	15.00	0%
Cadmium	0.32	0.01	mg/kg	0.01	0.00	0.15	0%
Chromium	12.5	0.37	mg/kg	0.37	0.02	15.00	0%
Arsenic	19.4	0.57	mg/kg	0.57	0.03	0.70	4%
Mercury	1.38	0.04	mg/kg	0.04	0.00	0.10	2%
Other Elements							
Iron	367000	10716.40	mg/kg	10716.40	536		
Aluminium	6150	179.58	mg/kg	179.58	9		

DWR CYMRU WELSH WATER - BRYNGWYN WTW

Analysis of liquid water clarification sludge

Sampling Point No: 79131

Sample ID: 8268999

Date: 05/02/2025

Application rate (t/ha)	250.0
Application rate (t/acre)	101.2
pH	6.5
Dry solids (%)	2.92

NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	(kg/ha)	(kg/t)	(kg/ha)
Nitrogen (N)	0.564	0.02	%	0.2	41	0.0	4
Ammonium N	209	6.10	mg/kg	0.0	2		
Phosphorus (P)	1260	36.79	mg/kg	0.0	9		
Phosphate (P ₂ O ₅)		0.00		0.1	21	0.0	4
Potassium (K)	509	14.86	mg/kg	0.0	4		
Potash (K ₂ O)		0.00		0.0	4	0.0	1
Magnesium (Mg)	1460	42.63	mg/kg	0.0	11		
Magnesium (MgO)		0.00		0.1	18	0.0	4
Sulphur (S)	3010	87.89	mg/kg	0.1	22		
Sulphur (SO ₃)		0.00		0.2	55	0.0	5

POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	200	5.84	mg/kg	5.84	1.46	15.00	10%
Copper	12.6	0.37	mg/kg	0.37	0.09	7.50	1%
Nickel	17.7	0.52	mg/kg	0.52	0.13	3.00	4%
Lead	38	1.11	mg/kg	1.11	0.28	15.00	2%
Cadmium	0.32	0.01	mg/kg	0.01	0.00	0.15	2%
Chromium	12.5	0.37	mg/kg	0.37	0.09	15.00	1%
Arsenic	19.4	0.57	mg/kg	0.57	0.14	0.70	20%
Mercury	1.38	0.04	mg/kg	0.04	0.01	0.10	10%
Other Elements							
Iron	367000	10716.40	mg/kg	10716.40	2679		
Aluminium	6150	179.58	mg/kg	179.58	45		

Sampling Point No:	79131	Location:	BRYNGWYN WTW SLUDGE TANKERING POINT
Date Sampled:	05/02/2025	Time Taken:	10:12
Laboratory:	ALS	Sample ID:	8268999
No. of Results:	20		
Sampling Reason:	WTW Sludge - Product Monitoring (SW_ME)		
Type:	WTW Sludge (SW)		

Sample Results



Code	Result	Units	Qualifier	Lower Limit
238 Magnesium	1460	mg/kg		
288 Aluminium	6150	mg/kg		
357 Arsenic	19.4	mg/kg		
4620 pH	6.5	pH		
7774 Mercury	1.38	mg/kg	<	
8241 Volatile solids	26.8	%		
9233 Ammoniacal nitrogen	209	mg/kg	<	
9234 Sulphur	3010	mg/kg		
9271 Cadmium	0.32	mg/kg	<	
9272 Chromium	12.5	mg/kg		
9273 Copper	12.6	mg/kg		
9275 Nickel	17.7	mg/kg		
9276 Lead	38	mg/kg		
9277 Zinc	200	mg/kg		
9278 Iron	367000	mg/kg		
9281 % Dry solids	2.92	%		
9282 % Minerals	73.2	%		
9283 % K (dry weight)	0.0509	mg/kg		
9284 % P (dry weight)	0.126	%		
9285 % N (dry weight)	0.564	%		

Comments:

Signed:

Approved by:

Position:

Upper Limit

DWR CYMRU WELSH WATER - CAPEL DEWI WTW

Analysis of liquid water clarification sludge

Sampling Point No: 122055

Sample ID: 8266816

Date: 05/02/2025

Application rate (t/ha)	50.0
Application rate (t/acre)	20.2
pH	6.4
Dry solids (%)	5.54

NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	(kg/ha)	(kg/t)	(kg/ha)
Nitrogen (N)	0.678	0.04	%	0.4	19	0.0	2
Ammonium N	110	6.09	mg/kg	0.0	0		
Phosphorus (P)	1810	100.27	mg/kg	0.1	5		
Phosphate (P ₂ O ₅)		0.00		0.2	11	0.0	2
Potassium (K)	908	50.30	mg/kg	0.1	3		
Potash (K ₂ O)		0.00		0.1	3	0.0	1
Magnesium (Mg)	2820	156.23	mg/kg	0.2	8		
Magnesium (MgO)		0.00		0.3	13	0.1	3
Sulphur (S)	2720	150.69	mg/kg	0.2	8		
Sulphur (SO ₃)		0.00		0.4	19	0.0	2

POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	176	9.75	mg/kg	9.75	0.49	15.00	3%
Copper	28	1.55	mg/kg	1.55	0.08	7.50	1%
Nickel	21	1.16	mg/kg	1.16	0.06	3.00	2%
Lead	70.1	3.88	mg/kg	3.88	0.19	15.00	1%
Cadmium	0.21	0.01	mg/kg	0.01	0.00	0.15	0%
Chromium	19.2	1.06	mg/kg	1.06	0.05	15.00	0%
Arsenic	19.2	1.06	mg/kg	1.06	0.05	0.70	8%
Mercury	0.72	0.04	mg/kg	0.04	0.00	0.10	2%
Other Elements							
Iron	280000	15512.00	mg/kg	15512.00	776		
Aluminium	11700	648.18	mg/kg	648.18	32		

DWR CYMRU WELSH WATER - CAPEL DEWI WTW

Analysis of liquid water clarification sludge

Sampling Point No: 122055

Sample ID: 8266816

Date: 05/02/2025

Application rate (t/ha)	172.0
Application rate (t/acre)	69.6
pH	6.4
Dry solids (%)	5.54

NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	(kg/ha)	(kg/t)	(kg/ha)
Nitrogen (N)	0.678	0.04	%	0.4	65	0.0	6
Ammonium N	110	6.09	mg/kg	0.0	1		
Phosphorus (P)	1810	100.27	mg/kg	0.1	17		
Phosphate (P ₂ O ₅)		0.00		0.2	39	0.0	8
Potassium (K)	908	50.30	mg/kg	0.1	9		
Potash (K ₂ O)		0.00		0.1	10	0.0	2
Magnesium (Mg)	2820	156.23	mg/kg	0.2	27		
Magnesium (MgO)		0.00		0.3	45	0.1	9
Sulphur (S)	2720	150.69	mg/kg	0.2	26		
Sulphur (SO ₃)		0.00		0.4	65	0.0	6

POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	176	9.75	mg/kg	9.75	1.68	15.00	11%
Copper	28	1.55	mg/kg	1.55	0.27	7.50	4%
Nickel	21	1.16	mg/kg	1.16	0.20	3.00	7%
Lead	70.1	3.88	mg/kg	3.88	0.67	15.00	4%
Cadmium	0.21	0.01	mg/kg	0.01	0.00	0.15	1%
Chromium	19.2	1.06	mg/kg	1.06	0.18	15.00	1%
Arsenic	19.2	1.06	mg/kg	1.06	0.18	0.70	26%
Mercury	0.72	0.04	mg/kg	0.04	0.01	0.10	7%
Other Elements							
Iron	280000	15512.00	mg/kg	15512.00	2668		
Aluminium	11700	648.18	mg/kg	648.18	111		

DWR CYMRU WELSH WATER - CAPEL DEWI WTW

Analysis of liquid water clarification sludge

Sampling Point No: 122055

Sample ID: 8266816

Date: 05/02/2025

Application rate (t/ha)	250.0
Application rate (t/acre)	101.2
pH	6.4
Dry solids (%)	5.54

NUTRIENT CONTENT

	Dry Wt result	Wet Wt result	Units	Total		Available	
				(kg/t)	(kg/ha)	(kg/t)	(kg/ha)
Nitrogen (N)	0.678	0.04	%	0.4	94	0.0	9
Ammonium N	110	6.09	mg/kg	0.0	2		
Phosphorus (P)	1810	100.27	mg/kg	0.1	25		
Phosphate (P ₂ O ₅)		0.00		0.2	57	0.0	11
Potassium (K)	908	50.30	mg/kg	0.1	13		
Potash (K ₂ O)		0.00		0.1	15	0.0	3
Magnesium (Mg)	2820	156.23	mg/kg	0.2	39		
Magnesium (MgO)		0.00		0.3	65	0.1	13
Sulphur (S)	2720	150.69	mg/kg	0.2	38		
Sulphur (SO ₃)		0.00		0.4	94	0.0	9

POTENTIALLY TOXIC ELEMENTS

	Dry Wt result	Wet Wt result	Units	Rate		Limit	% of Annual Addition Limit
				(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	176	9.75	mg/kg	9.75	2.44	15.00	16%
Copper	28	1.55	mg/kg	1.55	0.39	7.50	5%
Nickel	21	1.16	mg/kg	1.16	0.29	3.00	10%
Lead	70.1	3.88	mg/kg	3.88	0.97	15.00	6%
Cadmium	0.21	0.01	mg/kg	0.01	0.00	0.15	2%
Chromium	19.2	1.06	mg/kg	1.06	0.27	15.00	2%
Arsenic	19.2	1.06	mg/kg	1.06	0.27	0.70	38%
Mercury	0.72	0.04	mg/kg	0.04	0.01	0.10	10%
Other Elements							
Iron	280000	15512.00	mg/kg	15512.00	3878		
Aluminium	11700	648.18	mg/kg	648.18	162		

Sampling Point No:	122055	Location:	Capel Dewi WTW Sludge Tankering Point
Date Sampled:	05/02/2025	Time Taken:	10:07
Laboratory:	ALS	Sample ID:	8266816
No. of Results:	20		
Sampling Reason:	WTW Sludge - Investigation (SW_SI)		
Type:	WTW Sludge (SW)		

Sample Results



Code	Result	Units	Qualifier	Lower Limit
238 Magnesium	2820	mg/kg		
288 Aluminium	11700	mg/kg		
357 Arsenic	19.2	mg/kg		
4620 pH	6.4	pH		
7774 Mercury	0.72	mg/kg	<	
8241 Volatile solids	21.1	%		
9233 Ammoniacal nitrogen	110	mg/kg	<	
9234 Sulphur	2720	mg/kg		
9271 Cadmium	0.21	mg/kg		
9272 Chromium	19.2	mg/kg		
9273 Copper	28	mg/kg		
9275 Nickel	21	mg/kg		
9276 Lead	70.1	mg/kg		
9277 Zinc	176	mg/kg		
9278 Iron	280000	mg/kg		
9281 % Dry solids	5.54	%		
9282 % Minerals	78.9	%		
9283 % K (dry weight)	0.0908	mg/kg		
9284 % P (dry weight)	0.181	%		
9285 % N (dry weight)	0.678	%		

Comments:

Signed:

Approved by:

Position:

Upper Limit

DWR CYMRU WELSH WATER - CANASTON BRIDGE PUMPING STATION

Analysis of natural sludge

Sample Ref: CANASTON BRIDGE WTW

Report Number: 64859-24

Sample Number: SLUR158494

Date: 13/11/2024

Application rate (t/ha) 37
Application rate (t/acre) 15.0
pH 6.67
Dry solids (%) 1.29

NUTRIENT CONTENT

	result	units	Total		Available	
			(kg/t)	(kg/ha)	(kg/t)	(kg/ha)
Nitrogen (N)	0.16	%	1.6	59	0.2	6
Ammonium-N	25.00	mg/kg	0.0	1		
Phosphorus (P)	357.00	mg/kg	0.4	13		
Phosphate (P ₂ O ₅)			0.8	30	0.2	6
Potassium (K)	210.00	mg/kg	0.2	8		
Potash (K ₂ O)			0.3	9	0.1	2
Magnesium (Mg)	1899.00	mg/kg	1.9	70		
Magnesium (MgO)			3.2	117	0.6	23
Sulphur (S)	357.00	mg/kg	0.4	13		
Sulphur (SO ₃)			0.9	33	0.1	3

POTENTIALLY TOXIC ELEMENTS

	result	units	Rate		Limit	% of Annual Addition Limit
			(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	76.20	mg/kg	76.20	2.82	15.00	19%
Copper	9.12	mg/kg	9.12	0.34	7.50	4%
Nickel	16.90	mg/kg	16.90	0.63	3.00	21%
Lead	9.02	mg/kg	9.02	0.33	15.00	2%
Cadmium	0.15	mg/kg	0.15	0.01	0.15	4%
Chromium	13.30	mg/kg	13.30	0.49	15.00	3%
Arsenic	4.07	mg/kg	4.07	0.15	0.70	22%
Mercury	0.05	mg/kg	0.05	0.00	0.10	2%
Molybdenum	0.52	mg/kg	0.52	0.02	0.20	10%
Selenium	0.40	mg/kg	0.40	0.01	0.15	10%
Flouride	10.00	mg/kg	10.00	0.37	20.00	2%
Other Elements						
Iron	15756.00	mg/kg	15756.00	583		
Aluminium	6766.00	mg/kg	6766.00	250		

All results expressed on sample as received. The ammonium N, mercury & fluoride concentrations are less than the minimum lab level of detection, consequently, the calculated values will be less than those shown.

DWR CYMRU WELSH WATER - CANASTON BRIDGE PUMPING STATION

Analysis of natural sludge

Sample Ref: CANASTON BRIDGE WTW

Report Number: 64859-24

Sample Number: SLUR158494

Date: 13/11/2024

Application rate (t/ha) 48
Application rate (t/acre) 19.4
pH 6.67
Dry solids (%) 1.29

NUTRIENT CONTENT

	result	units	Total		Available	
			(kg/t)	(kg/ha)	(kg/t)	(kg/ha)
Nitrogen (N)	0.16	%	1.6	77	0.2	8
Ammonium-N	25.00	mg/kg	0.0	1		
Phosphorus (P)	357.00	mg/kg	0.4	17		
Phosphate (P ₂ O ₅)			0.8	39	0.2	8
Potassium (K)	210.00	mg/kg	0.2	10		
Potash (K ₂ O)			0.3	12	0.1	2
Magnesium (Mg)	1899.00	mg/kg	1.9	91		
Magnesium (MgO)			3.2	151	0.6	30
Sulphur (S)	357.00	mg/kg	0.4	17		
Sulphur (SO ₃)			0.9	43	0.1	4

POTENTIALLY TOXIC ELEMENTS

	result	units	Rate		Limit	% of Annual Addition Limit
			(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	76.20	mg/kg	76.20	3.66	15.00	24%
Copper	9.12	mg/kg	9.12	0.44	7.50	6%
Nickel	16.90	mg/kg	16.90	0.81	3.00	27%
Lead	9.02	mg/kg	9.02	0.43	15.00	3%
Cadmium	0.15	mg/kg	0.15	0.01	0.15	5%
Chromium	13.30	mg/kg	13.30	0.64	15.00	4%
Arsenic	4.07	mg/kg	4.07	0.20	0.70	28%
Mercury	0.05	mg/kg	0.05	0.00	0.10	2%
Molybdenum	0.52	mg/kg	0.52	0.02	0.20	12%
Selenium	0.40	mg/kg	0.40	0.02	0.15	13%
Flouride	10.00	mg/kg	10.00	0.48	20.00	2%
Other Elements						
Iron	15756.00	mg/kg	15756.00	756		
Aluminium	6766.00	mg/kg	6766.00	325		

All results expressed on sample as received. The ammonium N, mercury & fluoride concentrations are less than the minimum lab level of detection, consequently, the calculated values will be less than those shown.

DWR CYMRU WELSH WATER - CANASTON BRIDGE PUMPING STATION

Analysis of natural sludge

Sample Ref: CANASTON BRIDGE WTW

Report Number: 64859-24

Sample Number: SLUR158494

Date: 13/11/2024

Application rate (t/ha) 50
Application rate (t/acre) 20.2
pH 6.67
Dry solids (%) 1.29

NUTRIENT CONTENT

	result	units	Total		Available	
			(kg/t)	(kg/ha)	(kg/t)	(kg/ha)
Nitrogen (N)	0.16	%	1.6	80	0.2	8
Ammonium-N	25.00	mg/kg	0.0	1		
Phosphorus (P)	357.00	mg/kg	0.4	18		
Phosphate (P ₂ O ₅)			0.8	41	0.2	8
Potassium (K)	210.00	mg/kg	0.2	11		
Potash (K ₂ O)			0.3	13	0.1	3
Magnesium (Mg)	1899.00	mg/kg	1.9	95		
Magnesium (MgO)			3.2	158	0.6	32
Sulphur (S)	357.00	mg/kg	0.4	18		
Sulphur (SO ₃)			0.9	45	0.1	4

POTENTIALLY TOXIC ELEMENTS

	result	units	Rate		Limit	% of Annual Addition Limit
			(g/tonne)	(kg/ha)	(kg/ha/yr)	
Zinc	76.20	mg/kg	76.20	3.81	15.00	25%
Copper	9.12	mg/kg	9.12	0.46	7.50	6%
Nickel	16.90	mg/kg	16.90	0.85	3.00	28%
Lead	9.02	mg/kg	9.02	0.45	15.00	3%
Cadmium	0.15	mg/kg	0.15	0.01	0.15	5%
Chromium	13.30	mg/kg	13.30	0.67	15.00	4%
Arsenic	4.07	mg/kg	4.07	0.20	0.70	29%
Mercury	0.05	mg/kg	0.05	0.00	0.10	3%
Molybdenum	0.52	mg/kg	0.52	0.03	0.20	13%
Selenium	0.40	mg/kg	0.40	0.02	0.15	13%
Flouride	10.00	mg/kg	10.00	0.50	20.00	3%
Other Elements						
Iron	15756.00	mg/kg	15756.00	788		
Aluminium	6766.00	mg/kg	6766.00	338		

All results expressed on sample as received. The ammonium N, mercury & fluoride concentrations are less than the minimum lab level of detection, consequently, the calculated values will be less than those shown.

ANALYTICAL REPORT

Report Number	64859-24	V850	STEPSIDE AGRI	Client STEPSIDE AGRI
Date Received	13-NOV-2024		STEPSIDE FARM	
Date Reported	04-DEC-2024		GWBERT ROAD	
Project	LIQUID WASTE		CARDIGAN	
Reference	STEPSIDE AGRI		SA43 1PH	
Order Number				

Laboratory Reference		SLUR158494	SLUR158495							
Sample Reference		CANASTON BRIDGE WTW	██████████							
Determinand	Unit	LIQUID WASTE	██████████							
Oven Dry Solids	%	1.29	████							
E Coli [Fresh]	cfu/g	<10	████							
Conductivity 1:6	uS/cm	59.2	████							
Total Kjeldahl Nitrogen	% w/w	0.16	████							
Nitrate Nitrogen	mg/kg	<10	████							
Ammonium Nitrogen	mg/kg	<25	████							
Total Phosphorus (P)	mg/kg	357	████							
Total Potassium (K)	mg/kg	210	████							
Total Magnesium (Mg)	mg/kg	1899	████							
Total Copper (Cu)	mg/kg	9.12	████							
Total Zinc (Zn)	mg/kg	76.2	████							
Total Sulphur (S)	mg/kg	357	████							
Total Calcium (Ca)	mg/kg	1328	████							
Total Iron (Fe)	mg/kg	15756	████							
Total Molybdenum (Mo)	mg/kg	0.52	████							
Total Lead (Pb)	mg/kg	9.02	████							
Total Cadmium (Cd)	mg/kg	0.15	████							
Total Mercury (Hg)	mg/kg	<0.05	████							
Total Nickel (Ni)	mg/kg	16.9	████							
Total Chromium (Cr)	mg/kg	13.3	████							
Total Sodium (Na)	mg/kg	35.9	████							
pH 1:6 [Fresh]		6.67	████							
Organic Matter LOI	% w/w	0.26	████							
Total Aluminium	mg/kg	6766	████							
Fluoride [100:1 H2SO4 Soluble]	mg/kg	<10	████							

ANALYTICAL REPORT

Report Number	64859-24	V850	STEPSIDE AGRI	Client STEPSIDE AGRI
Date Received	13-NOV-2024		STEPSIDE FARM	
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Project	LIQUID WASTE		CARDIGAN	
Reference	STEPSIDE AGRI		SA43 1PH	
Order Number				

Laboratory Reference		SLUR158494	SLUR158495							
Sample Reference		CANASTON BRIDGE WTW	██████████							
Determinand	Unit	LIQUID WASTE	██████████							
Total Arsenic (As)	mg/kg	4.07	████							
Total Selenium (Se)	mg/kg	0.40	████							
Oils,Fats and Grease	mg/kg	<200	████							
Salmonella spp [fresh]	in 25g	Negative	████							

Notes

Analysis Notes The sample submitted was of adequate size to complete all analysis requested.
 The results as reported relate only to the item(s) submitted for testing.
 The results are presented on an as received basis unless otherwise stipulated.

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