METHOD STATEMENT

Determinand:
Total Solids @ 105°C and Total Dissolved Solids @ 180°C

Matrix:
Treated and Untreated Sewage, Prepared and Land Leachates, Trade Effluents, Ground Water, Surface Water, Recreational Water and Process Water.

Principle of Method:
The total solids and total dissolved solids are measured gravimetrically.
The total solids are evaporated to dryness in an oven at 105°C.
Total dissolved solids are filtered through a 0.45µm membrane filter under reduced pressure. The filtrate is then evaporated to dryness in an oven at 180°C.

Sampling and Sample Preparation
Total Dissolved Solids samples are stable for 6 days (In-House Data) from sampling.
Total Solids samples are stable for 7 days (ISO 5667-3) from sampling.

Interferences:
Samples containing bicarbonates and/or hygroscopic salts.
The method is not applicable to sea water containing high levels of magnesium and chloride.

The presence of substances which are volatile at temperatures below 105°C or which decompose at temperatures below 105°C to form volatile compounds will give falsely low results for the total solids determination.

Static build-up on the bowls can lead to interference when taking gravimetric readings. An anti-static gun is used to counter this.

Performance of Method:

Determinand	Total Dissolved Solids	Total Solids
Range of Application:	12mg/l and upwards	11mg/l and upwards
Limit of Detection:	11.29mg/l	7.96
Normal Reporting Level:	12mg/l	11mg/l

Determinand	High standard		Medium standard		Low standard	
	RSD %	Bias %	RSD %	Bias %	RSD %	Bias %
TDS	12.1	1.41	4.96	-3.05	1.68	-5.27
Total Solids	8.62	1.50	3.33	-0.91	2.02	3.11

Determinand	%	Treated Sewage		Trade Effluent		Untreated Sewage	
		Low Spike	High Spike	Low Spike	High Spike	Low Spike	High Spike
TDS	Rec.	91.58	93.80	94.28	91.94	94.53	94.08
	RSD	3.34	1.23	1.61	1.77	3.72	2.94
Total Solids	Rec.	93.14	97.70	99.59	96.00	98.20	95.11
	RSD	2.37	2.87	2.55	4.35	6.29	3.20

Determinand	%	Ground Water		Landfill Leachate		Prepared Leachate	
		Low Spike	High Spike	Low Spike	High Spike	Low Spike	High Spike
TDS	Rec.	93.2	94.4	103	94.8	105	98.2
	RSD	3.41	2.01	8.30	1.67	9.36	5.23
Total Solids	Rec.	---	100.77	---	99.36	---	---
	RSD	---	11.07	---	4.61	---	---

Determinand	%	Clean process water	Dirty process water	Recreational water	Surface water
		High Spike	High Spike	High Spike	High Spike
TDS	Rec.	109.51	91.08	96.64	93.82
	RSD	11.9	5.51	4.29	4.21
Total Solids	Rec.	100.77	93.25	---	---
	RSD	4.58	3.53	---	---

Uncertainty of Measurement:

The reported uncertainty is an expanded uncertainty calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.

Determinand	Uncertainty of Measurement %
Total Dissolved Solids	19.15
Total Solids	15.15

References:

Suspended, Settleable and Total Dissolved Solids in Waters and Effluents 1980, HMSO Methods for the Examination of Waters and Associated Materials. ISBN 011 751957X.

Standard Methods for the examination of water and wastewater 1989 17th edition ISBN 0-87553-161-X.

ISO 5667-3:2018 – Water quality Sampling Part 3: Preservation and handling of water samples.