Hach Method 10242 Revision 1.2 March 2022 Equivalency Checklist

1) **Concentration and Response of Calibration Standards for Equivalency Study:** Hach Method 10242 Revision 1.2 March 2022 uses an internal calibration built into the Hach spectrophotometer. The calibration is based on Beers-Lambert Law and least squares fit algorithm.

2) **Correlation Coefficient of Calibration Regression (y-axis = Concentration):**

Standard (mg/L TKN as NH_3-N)	Measured (mg/L TKN as NH_3-N)
1.00	1.08
2.00	1.97
5.00	4.79
8.00	7.53
16.0	15.7

$R^2 = 0.9993$

3) **Equivalency Performance range tested with units:**

   0.1 – 16.0 mg/L TKN as NH_3-N

4) **Sample(s) used in initial demonstration have the recommended preservative, where applicable:**

   Samples were preserved according to the *USEPA Handbook for Sampling and Sample Preservation of Water and Wastewater*

5) **Sample(s) used in initial demonstration met recommended holding times, where applicable:**

   Holding times were according to the USEPA Handbook for Sampling and Sample Preservation of Water and Wastewater

6) **Interferences:**

   Interferences associated with the test procedure are those listed in and EPA Method 351.2

7) **Qualitative Identification Criteria:**

   Measured Absorbance at 345 nm

8) **Performance evaluation studies performed for analytes of interest, where available:**

Hach Method 10242 Revision 1.2 March 2022 study sponsor or title – Hach Loveland, Colorado

9) **Analysis of external reference material:**

Results of analyses on reference material from a source different from that used to prepare the calibration standards, if applicable.

N/A

10) **Sources of external reference material, if applicable:**

Source: Hach (Loveland, CO)

11) **Surrogates Used if Applicable:**

N/A

12) **Concentration of Surrogates, if applicable:**

N/A

13) **Recoveries of Surrogates:**

N/A

14) **Sample Preparation:**

Samples prepared per Hach Method 10242 Revision 1.2, March 2022

15) **Cleanup Procedure:**

No cleanup required

16) **Method Blank Result:**

Below Quantitation Limit (< 0.26 mg/L TKN as NH_3-N)

17) **Matrix:**

Reagent Water for Standards, MDL, and IPR studies. Treated wastewater effluents for matrix, matrix spike, and matrix spike/duplicate samples.

18) **Spiking System:**

Concentrated volume of N added to volume of reagent water and treated effluent samples

19) **Spike Concentrations:**

Quantitation Limit – 1.00 mg/L NH_3-N

IPR – 5.0 mg/L NH$_3$-N

Matrix – 5.0 mg/L NH$_3$-N

20) **Source of spiking material:**

Source: Hach (Loveland, CO)

21) **Number of replicate spikes:**

MDL – 7 analyses

IPR – 4 analyses

Matrix – 1 analysis per matrix

Matrix spike – 1 analysis per matrix

Matrix spike duplicate – 1 analysis per matrix

22) **Accuracy** and **Precision (analyte by analyte):**

TKN as NH$_3$-N

IPR Accuracy – 96.9%

IPR Precision (SD) – 2.2%

IPR Range – 90% - 110%

Matrix Accuracy (average of 9 effluents) – 95.6%

Matrix Precision (SD) – 2.2%

Matrix Recovery Range – 90% - 110%

23) **Bias (analyte by analyte):**

TKN as NH$_3$-N

IPR – 3.1%

Matrix – 4.4%

24) **Detection Limit (analyte by analyte):**

TKN as NH$_3$-N

Method Detection Limit - 0.08 mg/L

25) **Confirmation of detection limit, if applicable:**

N/A

26) **Quantitation Limit**

TKN as NH_3-N

Quantitation Limit – 0.26 mg/L

Quantitation Limit Rounded – 1.00 mg/L

27) **Qualitative Conformation**

N/A