

NC DENR/DWQ LABORATORY CERTIFICATION

LABORATORY NAME:		CERT #:	
PRIMARY ANALYST:		DATE:	
NAME OF PERSON COMPLETING CHECKLIST (PRINT):			
SIGNATURE OF PERSON COMPLETING CHECKLIST:			

Parameter: **Total Suspended Solids (Non-filterable Residue)**  
 Method: Gravimetric (**Guidance Document**)

METHOD OF ANALYSIS:

Standard Methods 18th <input type="checkbox"/> , 19th <input type="checkbox"/> , 20th <input type="checkbox"/> , 21st <input type="checkbox"/> Edition: 2540 D
Standard Methods Online 2540 D-97 (SM 20 <sup>th</sup> ) <input type="checkbox"/>

EQUIPMENT:

Glass fiber filter disks without organic binder. <b>Type:</b>
Filtration apparatus suitable for the filter disk selected ( <b>circle apparatus used below</b> ):
1) Membrane filter funnel. 2) Gooch crucible with Gooch crucible adapter. 3) Filtration apparatus with reservoir and coarse fritted disk as a filter support
Suction Flask, of sufficient capacity for sample size selected.
Drying oven, for operation at 103 to 105 °C
Desiccator (w/color indicating desiccant or an instrumental indicator)
Wide-bore pipettes (Kimble Nos. 37005 or 37034B or equivalent)
Analytical Balance capable of weighing to 0.1 mg (0.0001g)
Type-III Water
Graduated Cylinder
Aluminum or stainless steel weighing pans (planchet)
Flat tipped forceps or metal tongs

<b>PLEASE COMPLETE CHECKLIST IN INDELIBLE INK</b>		Y	N	EXPLANATION
<b>PRESERVATION and STORAGE</b>				
1	What type of container is being used to store samples? [40 CFR 136 Table II]			
2	Are samples iced above freezing but ≤ 6 °C during shipment? [40 CFR 136 Table II]			
3	Are samples refrigerated above freezing but ≤ 6 °C during storage? [40 CFR 136 Table II]			
4	Are samples analyzed within 7 days of collection? [40 CFR 136 Table II]			
<b>PROCEDURE</b>				
5	Are pre-prepared (i.e., commercially pre-weighed) filters being used? [SM 2540 D. (3) (a)]. <b>If YES skip to question #11.</b>			
6	Is the glass fiber filter being placed in the filter funnel or Gooch crucible wrinkle side up during filter preparation? [SM 2540 D. (3) (a).]			
7	Is the laboratory washing the filter with 3 consecutive washings using at least 20 mL of reagent grade Type-III water? [SM 2540 D. (3) (a).]			
8	Is filter suctioned to remove all traces of water? [SM 2540 D. (3) (a).]			
9	At what temperature is the prepared filter and holder being dried? [SM 2540 D. (3) (a).]			

10	Is the laboratory drying, cooling, desiccating and weighing filters until a constant weight is obtained or until weight change is less than 4% of the previous weighing or 0.5 mg; whichever is less? [Ref: SM 18 <sup>th</sup> , 19 <sup>th</sup> , 20 <sup>th</sup> & 21 <sup>st</sup> 2540 D. (3) (a).]			
11	If the filters are not weighed to a constant weight, is a dried filter (i.e., filter blank) verified to constant weight each day samples are analyzed? [NC WW/GW LC Policy]			
12	Are dried filters being stored in a desiccator? [SM 2540 D. (3) (a).]			
13	Are samples well mixed prior to analysis? [SM 2540 D. (3) (c).]			
14	How is the sample volume measured? [SM 2540 D. (2).]			
15	Did sample volume yield the required residue: <b>2.5 to 200 mg</b> [NC WW/GW LC Policy per SM 20 <sup>th</sup> , 21 <sup>st</sup> 2540 D. (3) (b).]			
16	What is the maximum filtration time allowed to filter samples? [SM 2540 D. (3) (b).]			
17	Is filter placed with wrinkled side up during sample filtration? [SM 2540 D. (3) (b).]			
18	Is filter being seated with distilled water prior to filtering sample? [SM 2540 D. (3) (c).]			
19	Are sample filters being washed after sample transfer? [SM 2540 D. (3) (c).]			
20	Are samples allowed to drain completely between washings? [SM 2540 D. (3) (c).]			
21	How are samples transferred to the drying oven? [SM 2540 D. (3) (c).]			
22	At what temperature is the sample being dried? [SM 2540 D. (3) (c).]			
23	Are samples being cooled in a desiccator after evaporation until they reach ambient temperature? [SM 2540 D. (3) (c).]			
24	If an instrumental indicator (humidity gauge) is being used, does the desiccator also have an indicating desiccant? [SM 2540 D. (2).]			
25	Is the laboratory using a balance that is capable of weighing at least 0.1 mg (i.e., 0.0001 g)? [SM 2540 D. (2).]			
26	Is the analytical balanced being serviced every 12 months by a qualified vendor/technician? [NC WW/GW LC Policy]			
27	Does the laboratory have documentation to verify that the balance has been serviced? [NC WW/GW LC Policy]			
28	Is the laboratory using Class S or ASTM Class 1 weights? [NC WW/GW LC Policy]			
29	Are the weights being verified every 5 years? [NC WW/GW LC Policy]			
30	Does the laboratory have documentation indicating that the weights were verified? [NC WW/GW LC Policy]			
31	Is the laboratory drying, cooling, desiccating and weighing sample filters until a constant weight is obtained or until weight change is less than 4% of previous weight or 0.5 mg? [SM 2540 D. (3) (c).]			
32	If not, when was the last annual drying time study performed? [NC WW/GW LC Policy]			

QUALITY ASSURANCE				
33	What corrective actions are taken when interferences are observed? [SM 2540 A. (2). and 15A NCAC 2H .0805 (a) (7) and (a) (7) (F).]			
34	At what frequency are duplicate samples analyzed? [SM 20 <sup>th</sup> and 21 <sup>st</sup> 2540 D. (3) (c). or 15A NCAC 2H .0805 (a) (7) (C).]			
35	What are the acceptance criteria for duplicates? [15A NCAC 2H .0805 (a) (7) (F).]			
36	What corrective action does the laboratory take if the duplicate samples results are outside of established control limits or method accuracy limits? [15A NCAC 2H .0805 (a) (7) (F).]			
37	Is a check standard being analyzed quarterly? [15A NCAC 2H .0805 (a) (7) (B).]			
38	What type of standard is being used? [15A NCAC 2H .0805 (a) (7) (B).]			
39	What acceptance criterion is used? [15A NCAC 2H .0805 (a) (7).]			
40	Is the data qualified on the Discharge Monitoring Report (DMR) or client report if Quality Control (QC) requirements are not met? [NC WW/GW LC policy based upon 15A NCAC 2B .0506 (b) (3) (J).]			
41	What is the reporting limit (PQL)? [ NC WW/GW LC Policy based upon Standard Methods, 20th and 21st Editions - Method 2540 D. (3) (b).]			
42	What is the most recent review/revision date of the SOP? [15A NCAC 2H .0805 (a) (7).]			

**Calculations:** mg total suspended solids/L =  $\frac{(A - B) \times 1000}{\text{Sample volume, mL}}$

Where:

A = weight of filter + dried residue, mg, and  
 B = weight of filter, mg.

Additional Comments:

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Inspector: \_\_\_\_\_ Date: \_\_\_\_\_