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Cover Page

Order ID : P1747

Project ID : Walter Gladwin Recreation Center, Bronx, NY

Client : LiRo Engineers, Inc.

Lab Sample Number	Client Sample Number
P1747-01	MW-01
P1747-02	MW-01-DUP
P1747-03	MW-01
P1747-04	MW-02
P1747-05	TWP-04
P1747-06	TRIP-BLANK-1
P1747-07	MW-01
P1747-08	MW-01-DUP
P1747-09	MW-02
P1747-10	TWP-04

I certify that the data package is in compliance with the terms and conditions of the contract,both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the laboratory manager or his designee, as verified by the following signature.

Signature : _____ Date: 3/28/2024

NYDOH CERTIFICATION NO - 11376

NJDEP CERTIFICATION NO - 20012

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CASE NARRATIVE

LiRo Engineers, Inc.
Project Name: Walter Gladwin Recreation Center, Bronx, NY
Project # N/A
Chemtech Project # P1747
Test Name: VOC-TCLVOA-10

A. Number of Samples and Date of Receipt:
10 Water samples were received on 03/13/2024.

B. Parameters
According to the Chain of Custody document, the following analyses were requested: Anions Group1, CBOD5, Chloride, Dissolved ICP-TAL Metals, Dissolved Mercury, DISSOLVED METALS-TAL, Flash Point, Hexavalent Chromium, Mercury, Metals ICP-TAL, METALS-NYCD, METALS-TAL, Non-Polar Material, NYCDischarge, PCB, Pesticide-TCL, Phenolics, SVOC-NYCD, SVOC-TCL BNA -20, TKN, Total Nitrogen, TS, TSS, VOC-NYCD and VOC-TCLVOA-10. This data package contains results for VOC-TCLVOA-10.

C. Analytical Techniques:
The analysis performed on instrument MSVOA_N were done using GC column RXI-624SIL MS 30m 0.25mm 1.4 um. Cat#13868.The analysis of VOC-TCLVOA-10 was based on method 8260D..

D. QA/ QC Samples:
The Holding Times were met for all analysis.
The Surrogate recoveries met the acceptable criteria.
The Internal Standards Areas met the acceptable requirements.
The Retention Times were acceptable for all samples.
The RPD met criteria .
The Blank Spike met requirements for all samples .
The Blank Spike Duplicate met requirements for all samples .
The Blank analysis did not indicate the presence of lab contamination.

The %RSD is greater than 15% in the Initial Calibration method (82N030524W.M) for Methylene Chloride this compound is passing on Linear Regression.

The Continuous Calibration met the requirements .
The Tuning criteria met requirements.

E. Additional Comments:
Samples for MS/MSD for VOC analysis were not provided with this set of samples. The Blank Spike Duplicate is reported with the data.

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Please use %D calculated based on Avg RF and CCRF for all compounds using Average Response Factor when the %RSD value for a compound is <15% for the Initial Calibration curve and use %D calculated based on Amount added and Calculated amount for all compounds using Linear Regression when the %RSD value for a compound is > 15% for the Initial Calibration curve for SW-846 analysis.

F. Manual Integration Comments:
Please refer to the Manual integration Report included with the Run Logs for information on the manual integrations performed.

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CASE NARRATIVE

LiRo Engineers, Inc.
Project Name: Walter Gladwin Recreation Center, Bronx, NY
Project # N/A
Chemtech Project # P1747
Test Name: VOC-NYCD

A. Number of Samples and Date of Receipt:
10 Water samples were received on 03/13/2024.

B. Parameters
According to the Chain of Custody document, the following analyses were requested: Anions Group1, CBOD5, Chloride, Dissolved ICP-TAL Metals, Dissolved Mercury, DISSOLVED METALS-TAL, Flash Point, Hexavalent Chromium, Mercury, Metals ICP-TAL, METALS-NYCD, METALS-TAL, Non-Polar Material, NYCDischarge, PCB, Pesticide-TCL, Phenolics, SVOC-NYCD, SVOC-TCL BNA -20, TKN, Total Nitrogen, TS, TSS, VOC-NYCD and VOC-TCLVOA-10. This data package contains results for VOC-NYCD.

C. Analytical Techniques:
The analysis performed on instrument MSVOA_X were done using GC column DB-624UI 20m 0.18mm 1.0 um. Cat#121-1324UIThe analysis of VOC-NYCD was based on method 624.1.

D. QA/ QC Samples:
The Holding Times were met for all analysis.
The Surrogate recoveries met the acceptable criteria.
The Internal Standards Areas met the acceptable requirements.
The Retention Times were acceptable for all samples.
The RPD met criteria .
The Blank Spike met requirements for all samples .
The Blank Spike Duplicate met requirements for all samples .
The Blank analysis did not indicate the presence of lab contamination.
The Initial Calibration met the requirements .
The Continuous Calibration met the requirements .
The Tuning criteria met requirements.

E. Additional Comments:
As per method, MS/MSD is required to be performed with the sample analysis. However, Lab did not receive sufficient volume to perform the MS/MSD therefore MS/MSD were not performed for this project. However, Lab has performed LCS/LCSD instead.

Trip Blank was not provided with this set of samples.

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F. Manual Integration Comments:
Please refer to the Manual integration Report included with the Run Logs for information on the manual integrations performed.

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CASE NARRATIVE

LiRo Engineers, Inc.
Project Name: Walter Gladwin Recreation Center, Bronx, NY
Project # N/A
Chemtech Project # P1747
Test Name: SVOC-TCL BNA -20

A. Number of Samples and Date of Receipt:
10 Water samples were received on 03/13/2024.

B. Parameters
According to the Chain of Custody document, the following analyses were requested: Anions Group1, CBOD5, Chloride, Dissolved ICP-TAL Metals, Dissolved Mercury, DISSOLVED METALS-TAL, Flash Point, Hexavalent Chromium, Mercury, Metals ICP-TAL, METALS-NYCD, METALS-TAL, Non-Polar Material, NYCDischarge, PCB, Pesticide-TCL, Phenolics, SVOC-NYCD, SVOC-TCL BNA -20, TKN, Total Nitrogen, TS, TSS, VOC-NYCD and VOC-TCLVOA-10. This data package contains results for SVOC-TCL BNA -20.

C. Analytical Techniques:
The samples were analyzed on instrument BNA_G using GC Column ZB-SemiVolatiles Guardian which is 30 meters, 0.25 mm ID, 0.5 um df, Catalog # 7HG-G027-17-GGAThe analysis of SVOC-TCL BNA -20 was based on method 8270E and extraction was done based on method 3510.

D. QA/ QC Samples:
The Holding Times were met for all analysis.
The Surrogate recoveries met the acceptable criteria.
The Internal Standards Areas met the acceptable requirements.
The Retention Times were acceptable for all samples.
The RPD met criteria .
The Blank Spike met requirements for all samples .
The Blank Spike Duplicate met requirements for all samples .
The Blank analysis did not indicate the presence of lab contamination.

The % RSD is greater than 15% in the Initial Calibration method (Method 8270-BG031324.M) for 2-Nitrophenol , 2,4-Dinitrophenol, 4,6-Dinitro-2-methylphenol, these compounds are passing on Linear Regression.

The Continuous Calibration met the requirements .
The Tuning criteria met requirements.

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E. Additional Comments:

Please use %D calculated based on Avg RF and CCRF for all compounds using Average Response Factor when the %RSD value for a compound is <15% for the Initial Calibration curve and use %D calculated based on Amount added and Calculated amount for all compounds using Linear Regression when the %RSD value for a compound is > 15% for the Initial Calibration curve for SW-846 analysis.

F. Manual Integration Comments:

Please refer to the Manual integration Report included with the Run Logs for information on the manual integrations performed.

I certify that the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. The laboratory manager or his designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

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CASE NARRATIVE

LiRo Engineers, Inc.
Project Name: Walter Gladwin Recreation Center, Bronx, NY
Project # N/A
Chemtech Project # P1747
Test Name: SVOC-NYCD

A. Number of Samples and Date of Receipt:
10 Water samples were received on 03/13/2024.

B. Parameters
According to the Chain of Custody document, the following analyses were requested: Anions Group1, CBOD5, Chloride, Dissolved ICP-TAL Metals, Dissolved Mercury, DISSOLVED METALS-TAL, Flash Point, Hexavalent Chromium, Mercury, Metals ICP-TAL, METALS-NYCD, METALS-TAL, Non-Polar Material, NYCDischarge, PCB, Pesticide-TCL, Phenolics, SVOC-NYCD, SVOC-TCL BNA -20, TKN, Total Nitrogen, TS, TSS, VOC-NYCD and VOC-TCLVOA-10. This data package contains results for SVOC-NYCD.

C. Analytical Techniques:
The samples were analyzed on instrument BNA_F using GC Column DB-UI 8270D which is 20 meters, 0.18 mm ID, 0.36 um dfThe samples were analyzed on instrument BNA_M using GC Column ZB-SemiVolatiles Guardian which is 30 meters, 0.25 mm ID, 0.5 um df, Catalog # 7HG-G027-17-GGAThe analysis of SVOC-NYCD was based on method 625.1 and extraction was done based on method 3510.

D. QA/ QC Samples:
The Holding Times were met for all analysis.

The Surrogate recoveries met the acceptable criteria except for
MW-01 [2-Fluorophenol - 42%, Phenol-d6 - 23%],
MW-01RE [2-Fluorophenol - 40% and Phenol-d6 - 22%], All the failure samples in surrogates were reanalyzed to confirm the results as per method and reported in the data.

The Internal Standards Areas met the acceptable requirements.
The Retention Times were acceptable for all samples.
The RPD met criteria .
The Blank Spike met requirements for all samples .
The Blank Spike Duplicate met requirements for all samples .
The Blank analysis did not indicate the presence of lab contamination.
The Initial Calibration met the requirements .
The Continuous Calibration met the requirements .
The Tuning criteria met requirements.

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E. Additional Comments:

As per method, MS/MSD is required to be performed with sample analysis. However, Lab did not receive sufficient volume to perform the MS/MSD therefore MS/MSD were not performed for this project. However, Lab has performed LCS/LCSD instead.

Please use %D calculated based on Avg RF and CCRF for all compounds using Average Response Factor when the %RSD value for a compound is <15% for the Initial Calibration curve and use %D calculated based on Amount added and Calculated amount for all compounds using Linear Regression when the %RSD value for a compound is > 15% for the Initial Calibration curve for SW-846 analysis.

F. Manual Integration Comments:
Please refer to the Manual integration Report included with the Run Logs for information on the manual integrations performed.

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CASE NARRATIVE

LiRo Engineers, Inc.
Project Name: Walter Gladwin Recreation Center, Bronx, NY
Project # N/A
Chemtech Project # P1747
Test Name: Pesticide-TCL

A. Number of Samples and Date of Receipt:
10 Water samples were received on 03/13/2024.

B. Parameters
According to the Chain of Custody document, the following analyses were requested: Anions Group1, CBOD5, Chloride, Dissolved ICP-TAL Metals, Dissolved Mercury, DISSOLVED METALS-TAL, Flash Point, Hexavalent Chromium, Mercury, Metals ICP-TAL, METALS-NYCD, METALS-TAL, Non-Polar Material, NYCDischarge, PCB, Pesticide-TCL, Phenolics, SVOC-NYCD, SVOC-TCL BNA -20, TKN, Total Nitrogen, TS, TSS, VOC-NYCD and VOC-TCLVOA-10. This data package contains results for Pesticide-TCL.

C. Analytical Techniques:
The analysis was performed on instrument ECD_L. The front column is ZB-MR2 which is 30 meters, 0.32 mm ID, 0.25 um df, Catalog #: 7HMG017- 11 The rear column is ZB-MR1 which is 30 meters, 0.32 mm ID, 0. 5 um df,: Catalog # 7HM-G016-17. .The analysis of Pesticide-TCLs was based on method 8081B and extraction was done based on method 3510.

D. QA/ QC Samples:
The Holding Times were met for all analysis.
The Surrogate recoveries met the acceptable criteria
The Retention Times were acceptable for all samples.
The RPD met criteria .
The Blank Spike met requirements for all samples .
The Blank Spike Duplicate met requirements for all samples .
The Blank analysis did not indicate the presence of lab contamination.
The Initial Calibration met the requirements .
The Continuous Calibration met the requirements .

E. Additional Comments:

F. Manual Integration Comments:
Please refer to the Manual integration Report included with the Run Logs for information on the manual integrations performed.

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CASE NARRATIVE

LiRo Engineers, Inc.
Project Name: Walter Gladwin Recreation Center, Bronx, NY
Project # N/A
Chemtech Project # P1747
Test Name: PCB

A. Number of Samples and Date of Receipt:
10 Water samples were received on 03/13/2024.

B. Parameters
According to the Chain of Custody document, the following analyses were requested: Anions Group1, CBOD5, Chloride, Dissolved ICP-TAL Metals, Dissolved Mercury, DISSOLVED METALS-TAL, Flash Point, Hexavalent Chromium, Mercury, Metals ICP-TAL, METALS-NYCD, METALS-TAL, Non-Polar Material, NYCDischarge, PCB, Pesticide-TCL, Phenolics, SVOC-NYCD, SVOC-TCL BNA -20, TKN, Total Nitrogen, TS, TSS, VOC-NYCD and VOC-TCLVOA-10. This data package contains results for PCB.

C. Analytical Techniques:
The analyses were performed on instrument GCECD_O. The front column is ZB-MR1 which is 30 meters, 0.32 mm ID, 0.5 um df, Catalogue # 7HM-G016-17. The rear column is ZB-MR2 which is 30 meters, 0.32 mm ID, 0.25 µm; Catalogue # 7HM-G017-11.The analysis of PCBs was based on method 608.3,8082A and extraction was done based on method 3510.

D. QA/ QC Samples:
The Holding Times were met for all analysis.

The Surrogate recoveries met the acceptable criteria except for MW-01 [Tetrachloro-m-xylene(1) - 54%],AS per method one surrogate allowed to fail to meet the criteria per column, No further corrective action was taken.

The Retention Times were acceptable for all samples.
The RPD met criteria .
The Blank Spike met requirements for all samples .
The Blank Spike Duplicate met requirements for all samples .
The Blank analysis did not indicate the presence of lab contamination.
The Initial Calibration met the requirements .

The Continuous Calibration File ID PO102519.D met the requirements except for Aroclor-1260(Peak-05),Decachlorobiphenyl is failing in 2nd column,
The Continuous Calibration File ID PO102531.D met the requirements except for Aroclor-1260(Peak-05),Decachlorobiphenyl is failing in 2nd column,

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Above CCAL failing high in 2nd column but it is passing in 1st column therefore no corrective action taken.

E. Additional Comments:
As per method, MS/MSD is required to be performed with the sample analysis. However, Lab did not receive sufficient volume to perform the MS/MSD therefore MS/MSD were not performed for this project. However, Lab has performed LCS/LCSD instead.

F. Manual Integration Comments:
Please refer to the Manual integration Report included with the Run Logs for information on the manual integrations performed.

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CASE NARRATIVE

LiRo Engineers, Inc.
Project Name: Walter Gladwin Recreation Center, Bronx, NY
Project # N/A
Chemtech Project # P1747
Test Name: Dissolved ICP-TAL Metals,Dissolved Mercury,Mercury,Metals ICP-TAL,METALS-NYCD

A. Number of Samples and Date of Receipt:
10 Water samples were received on 03/13/2024.

B. Parameters:
According to the Chain of Custody document, the following analyses were requested: Anions Group1, CBOD5, Chloride, Dissolved ICP-TAL Metals, Dissolved Mercury, DISSOLVED METALS-TAL, Flash Point, Hexavalent Chromium, Mercury, Metals ICP-TAL, METALS-NYCD, METALS-TAL, Non-Polar Material, NYCDischarge, PCB, Pesticide-TCL, Phenolics, SVOC-NYCD, SVOC-TCL BNA -20, TKN, Total Nitrogen, TS, TSS, VOC-NYCD and VOC-TCLVOA-10. This data package contains results for Dissolved ICP-TAL Metals,Dissolved Mercury,Mercury,Metals ICP-TAL,METALS-NYCD.

C. Analytical Techniques:
The analysis and digestion of METALS-NYCD was based on 200.7, The analysis and digestion of Mercury was based on 245.1, The analysis of Dissolved ICP-TAL Metals,Metals ICP-TAL was based on method 6010D, digestion based on method 3010 (waters). The analysis and digestion of Dissolved Mercury,Mercury was based on method 7470A.

D. QA/ QC Samples:
The Holding Times were met for all analysis.
The Blank Spike met requirements for all samples.
The Duplicate analysis met criteria for all samples.
The Matrix Spike analysis met criteria for all samples.
The Matrix Spike Duplicate analysis met criteria for all samples.
The Blank analysis did not indicate the presence of lab contamination.
The Calibration met the requirements.
The Serial Dilution met criteria for all samples except for Chromium, Copper, Iron, Lead, Magnesium, Potassium, Sodium and Zinc Due to sample matrix interference.

E. Additional Comments:

LLCCV & LLICV are not required for 200.7 method.

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CASE NARRATIVE

LiRo Engineers, Inc.
Project Name: Walter Gladwin Recreation Center, Bronx, NY
Project # N/A
Chemtech Project # P1747
Test Name: CBOD5,Chloride,Flash Point,Hexavalent Chromium,Non-Polar Material,Phenolics,TKN,Total Nitrogen,TS,TSS

A. Number of Samples and Date of Receipt:
10 Water samples were received on 03/13/2024.

B. Parameters:
According to the Chain of Custody document, the following analyses were requested: CBOD5, Chloride, Dissolved ICP-TAL Metals, Dissolved Mercury, DISSOLVED METALS-TAL, Flash Point, Hexavalent Chromium, Mercury, Metals ICP-TAL, METALS-NYCD, METALS-TAL, Non-Polar Material, NYCDischarge, PCB, Pesticide-TCL, Phenolics, SVOC-NYCD, SVOC-TCL BNA -20, TKN, Total Nitrogen, TS, TSS, VOC-NYCD and VOC-TCLVOA-10. This data package contains results for CBOD5,Chloride,Flash Point,Hexavalent Chromium,Non-Polar Material,Phenolics,TKN,Total Nitrogen,TS,TSS.

C. Analytical Techniques:
The analysis of Flash Point was based on method 1010B, The analysis of Non-Polar Material was based on method 1664A, The analysis of Phenolics was based on method 420.1, The analysis of Total Nitrogen was based on method Cal, The analysis of TS was based on method SM2540 B, The analysis of TSS was based on method SM2540 D, The analysis of Hexavalent Chromium was based on method SM3500-Cr B, The analysis of TKN was based on method SM4500 N Org B or C, The analysis of Chloride was based on method SM4500-CL C and The analysis of CBOD5 was based on method SM5210 B.

D. QA/ QC Samples:
The Holding Times were met for all analysis.
The Blank Spike met requirements for all samples.
The Duplicate analysis met criteria for all samples.
The Matrix Spike analysis met criteria for all samples.
The Matrix Spike Duplicate analysis met criteria for all samples.
The Blank analysis did not indicate the presence of lab contamination.
The Calibration met the requirements.

E. Additional Comments:
As per method 1664A, MS/MSD is required to be performed with the sample analysis. However, Lab did not receive sufficient volume to perform the MS/MSD therefore MS/MSD were not performed for this project.

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DATA REPORTING QUALIFIERS- INORGANIC

For reporting results, the following " Results Qualifiers" are used:

J	Indicates the reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL), but greater than or equal to the Instrument Detection Limit (IDL).
U	Indicates the analyte was analyzed for, but not detected.
ND	Indicates the analyte was analyzed for, but not detected
E	Indicates the reported value is estimated because of the presence of interference
M	Indicates Duplicate injection precision not met.
N	Indicates the spiked sample recovery is not within control limits.
S	Indicates the reported value was determined by the Method of Standard Addition (MSA).
*	Indicates that the duplicate analysis is not within control limits.
+	Indicates the correlation coefficient for the MSA is less than 0.995.
D	Indicates the reported value is from a secondary analysis with a dilution factor. The original analysis exceeded the calibration range.
M	Method qualifiers **"P"** for ICP instrument **"PM"** for ICP when Microwave Digestion is used **"CV"** for Manual Cold Vapor AA **"AV"** for automated Cold Vapor AA **"CA"** for MIDI-Distillation Spectrophotometric **"AS"** for Semi –Automated Spectrophotometric **"C"** for Manual Spectrophotometric **"T"** for Titrimetric **"NR"** for analyte not required to be analyzed
OR	Indicates the analyte's concentration exceeds the calibrated range of the instrument for that specific analysis.
Q	Indicates the LCS did not meet the control limits requirements
H	Sample Analysis Out Of Hold Time

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DATA REPORTING QUALIFIERS- ORGANIC

For reporting results, the following " Results Qualifiers" are used:

Value	If the result is a value greater than or equal to the detection limit, report the value
U	Indicates the compound was analyzed for but was not detected. Report the minimum detection limit for the sample with the U, i.e. "10 U". This is not necessarily the instrument detection limit attainable for this particular sample based on any concentration or dilution that may have been required.
ND	Indicates the analyte was analyzed for, but not detected
J	Indicates an estimated value**.** This flag is used: (1) When estimating a concentration for a tentatively identified compound (library search hits, where a 1:1 response is assumed.) (2) When the mass spectral data indicated the identification, however the result was less than the specified detection limit greater than zero. If the detection limit was 10ug/L and a concentration of 3 ug/L was calculated report as 3 J. This is flag is used when similar situation arise on any organic parameter i.e. Pest, PCB and others.
B	Indicates the analyte was found in the blank as well as the sample report as "12 B".
E	Indicates the analyte 's concentration exceeds the calibrated range of the instrument for that specific analysis.
D	This flag identifies all compounds identified in an analysis at a secondary dilution factor.
P	This flag is used for Pesticide/PCB target analyte when there is >25% difference for detected concentrations between the two GC columns. The lower of the two values is reported on Form 1 and flagged with a "P".
N	This flag indicates presumptive evidence of a compound. This is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It applies to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the flag is not used.
A	This flag indicates that a Tentatively Identified Compound is a suspected aldol-condensation product.
Q	Indicates the LCS did not meet the control limits requirements

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APPENDIX A

QA REVIEW GENERAL DOCUMENTATION

Project #: **P1747**

	Completed
For thorough review, the report must have the following:	
GENERAL:	
Are all original paperwork present (chain of custody, record of communication,airbill, sample management lab chronicle, login page)	✓
Check chain-of-custody for proper relinquish/return of samples	✓
Is the chain of custody signed and complete	✓
Check internal chain-of-custody for proper relinquish/return of samples /sample extracts	✓
Collect information for each project id from server. Were all requirements followed	✓
COVER PAGE:	
Do numbers of samples correspond to the number of samples in the Chain of Custody on login page	✓
Do lab numbers and client Ids on cover page agree with the Chain of Custody	✓
CHAIN OF CUSTODY:	
Do requested analyses on Chain of Custody agree with form I results	✓
Do requested analyses on Chain of Custody agree with the log-in page	✓
Were the correct method log-in for analysis according to the Analytical Request and Chain of Castody	✓
Were the samples received within hold time	✓
Were any problems found with the samples at arrival recorded in the Sample Management Laboratory Chronicle	✓
ANALYTICAL:	
Was method requirement followed?	✓
Was client requirement followed?	✓
Does the case narrative summarize all QC failure?	✓
All runlogs and manual integration are reviewed for requirements	✓
All manual calculations and /or hand notations verified	✓

1st Level QA Review Signature: SOHIL JODHANI **Date:** 03/28/2024

2nd Level QA Review Signature: _____ **Date:** _____