National Atmospheric Deposition Program

Mercury Deposition Network

Mercury Analytical Laboratory
2008 Annual Quality Assurance Report

Prepared by:
Gerard Van der Jagt

FRONTIER GEOSCIENCES INC.
414 PONTIUS AVE. N. SEATTLE WA 98109
WWW.FRONTIERGEOSCIENCES.COM

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Definitions of Abbreviations and Acronyms

CAL	Central Analytical Lab
CCB	Continued Calibration Blank
CCV	Continued Calibration Verification
COC	Chain of Custody
CRM	Certified Reference Material
CVAFS	Cold Vapor Atomic Fluorescence Spectrometry
DQO	Data Quality Objectives
EMOF	Electronic Mercury Observer Form
HAL	Mercury (Hg) Analytical Lab
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Spike
MD	Matrix Duplicate
MDL	Method Detection Limit
MDN	Mercury Deposition Network
MOF	Mercury Observer Form
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NADP	National Atmospheric Deposition Program
NED	Network Equipment Depot
OPR	Ongoing Precision and Recovery
PB	Preparation Blanks
PE	Performance Evaluation
PQL	Practical Quatitation Limit
PT	Proficiency Test
QA/QC	Quality Assurance/Quality Control
QAP	Quality Assurance Plan
QR	Quality Rating Code
RL	Reporting Limit
RPD	Relative Percent Difference
SOP	Standard Operating Procedure
SRM	Standard Reference Material
THg	Total Mercury (Hg)
TV	True Value
USGS	United States Geological Survey

1. Introduction

Since January 1996, Frontier GeoSciences Inc. (FGS) has served as the Mercury Analytical Laboratory (HAL) and Site Liaison Center for the Mercury Deposition Network (MDN). MDN, coordinated through the National Atmospheric Deposition Program (NADP), was designed with the primary objective of quantifying the wet deposition of mercury in North America to determine long-term geographic and temporal distributions. MDN has grown to incorporate over 105 sites in the United States and Canada (figure 1). In 2009, MDN is expected to incorporate 10-15 additional new sites.

As the HAL, FGS receives weekly precipitation samples to be analyzed for total mercury. HAL also analyzes samples for methylmercury from selected sites participating in the methylmercury program. The analytical technique — Modified EPA Method 1631 Revision B — was developed by Nicolas S. Bloom, one of FGS' founders. FGS also served as the referee lab for the Method 1631 final validation study.

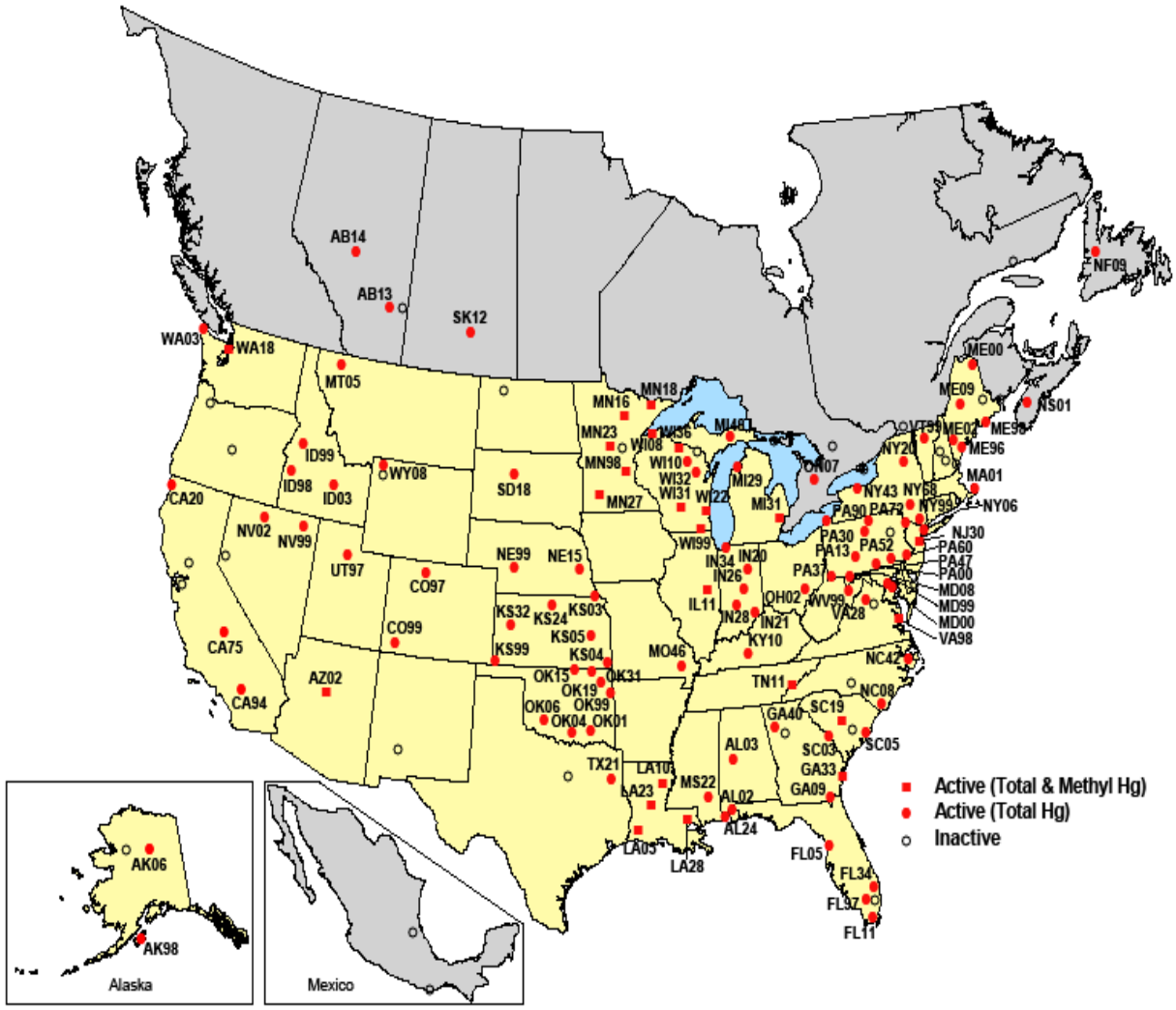

Figure 1 - Locations of MDN Sites During 2008

FGS continued to maintain and demonstrate acceptable quality control in 2008. Due to the addition of new MDN sites, the number of quality control points increased from about 1,900 in 2007, to more than 2000 quality control measurements in 2008. FGS demonstrated consistency and reproducibility in bottle blanks, preparation blanks, certified reference materials, matrix duplicates, and matrix spikes. All of these parameters are plotted in control charts in this report.

2. Quality Assurance

2.1. Philosophy and Objectives

Frontier GeoSciences Inc. (FGS) is committed to a rigorous quality assurance program and philosophy. Quality control begins at the bench level. Process improvements are solicited continuously from laboratory technicians and analysts. Management is active in evaluating and implementing feasible improvements. The Quality Assurance program is a system for ensuring that all information, data, and interpretations resulting from an analytical procedure are technically sound, statistically valid, and appropriately documented.

HAL data quality is assessed against FGS' Data Quality Objectives (DQO). Our DQOs consist of five components: precision, accuracy, representativeness, comparability, and completeness.

- *Precision* is a measure of data reproducibility. HAL assesses analytical precision using matrix duplicates. The acceptance criterion for matrix duplicates is ≤ 25% RPD.
- *Accuracy* is a measure of how close experimental data is to a "true" value. HAL assesses accuracy using certified reference materials and matrix spikes. The acceptance criterion for reference materials and matrix spikes is 75-125% recovery.
- *Representativeness* is a measure of how typical a sample is compared to the sample population. It is achieved by accurate, artifact-free sampling procedures and appropriate sample homogenization.
- *Comparability* is measured by comparing the variability of one set of data with respect to another. Control charts enable HAL to assess comparability over the course of an ongoing monitoring project such as MDN.
- *Completeness* is measured by the number of usable data points compared to the number of possible data points. The HAL DQO for the MDN project is at least 95% completeness.

2.2. Method Detection Limits

Method detection limit (MDL) studies are maintained for most matrix/analyte combinations available at FGS. Studies are performed using the protocols in 40 CFR, Section 136, Appendix A. Specifically; seven or more low-level, matrix-specific spikes are processed according to preparation and analytical method protocols. MDL is determined as t*SD of the replicates (where t is the Student's T-value for the number of replicates and SD is the standard deviation). The HAL updates MDL studies periodically for the MDN project. See Appendix A for the latest MDL study results.

2.3. Accreditations

FGS currently holds certifications through departments in eight states: the California Department of Health, the Florida Department of Health, the Louisiana Department of Environmental Quality, the Minnesota Department of Health, the New Jersey Department of Environmental Protection, the New York Department of Health, the Washington Department of Ecology, and the Wisconsin Department of Natural Resources. The Florida Department of Health acts as FGS' primary accreditor under the National Environmental Laboratory Accreditation Program (NELAP).

2.4. Laboratory Bottle Blanks

2.4.1. Description

Following cleaning, HAL bottles are charged with 20 mL of 1% hydrochloric acid. A random selection of these bottles is then analyzed for total mercury.

2.4.2. Purpose

Even in an ultra-clean laboratory, mercury exposure is inherent to the handling of MDN sample bottles. Because such contamination is inevitable, it must be analyzed and quantified so that it can be objectively subtracted from final sample results.

2.4.3. Discussion

In 2008, no laboratory bottle blank was higher than the total mercury MDL. The current MDL for total mercury is 0.080 ng/L. In 2008 there were several laboratory bottle blanks above the MDL for methyl

mercury.The current MDL for methylmercury is 0.019 ng/L (See table 1). Laboratory bottle blanks are expected to be at or near MDL. In cases where the blanks are significantly higher, the situation is investigated. Possible contamination sources are researched and identified. Once the contamination has been isolated and corrected, the run is continued. The HAL was unable to determine the cause of the high bottle blanks.

Table 1 - Laboratory Bottle Blank Summary Table

2008 Laboratory Bottle Blanks	n	Average (ng/bottle)	Stdev	MDL (ng/L)
Total Mercury	95	0.023	0.012	0.080
Methyl Mercury	16	0.019	0.026	0.019

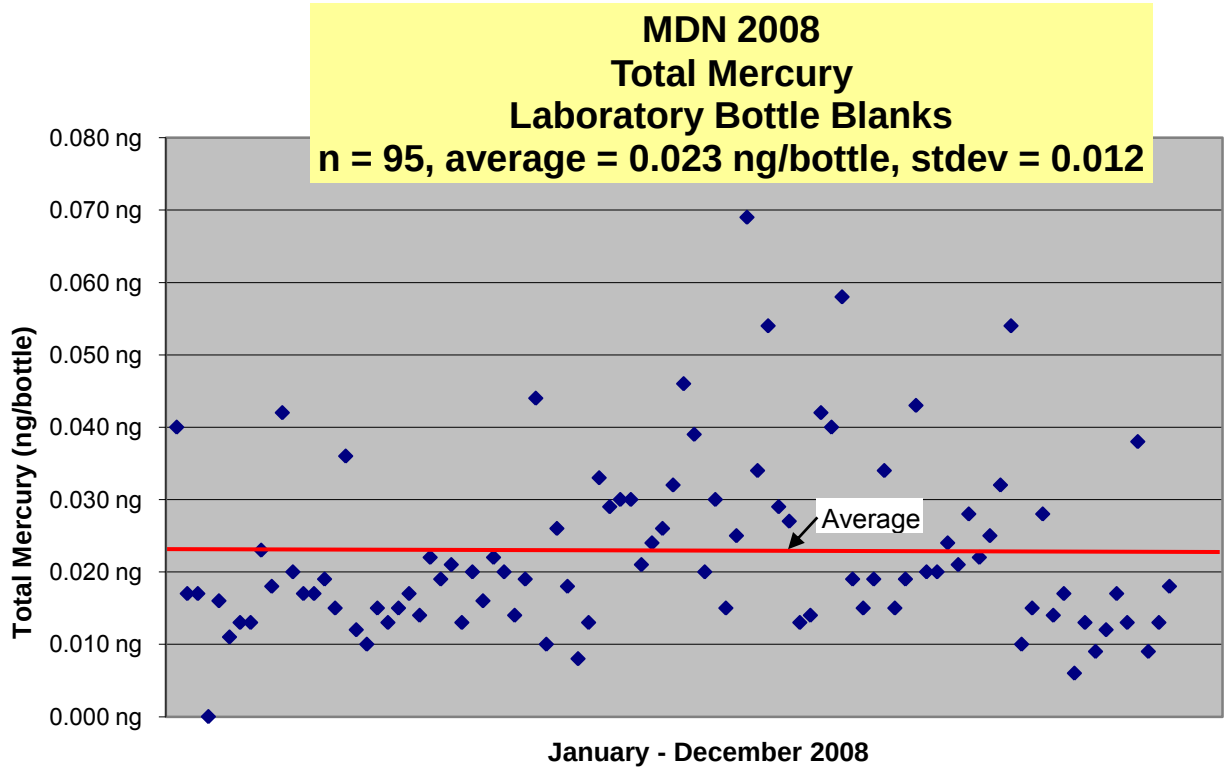

Figure 2 - Plot of Total Mercury Concentrations in Laboratory Bottle Blanks for 95 Samples Analyzed in 2008

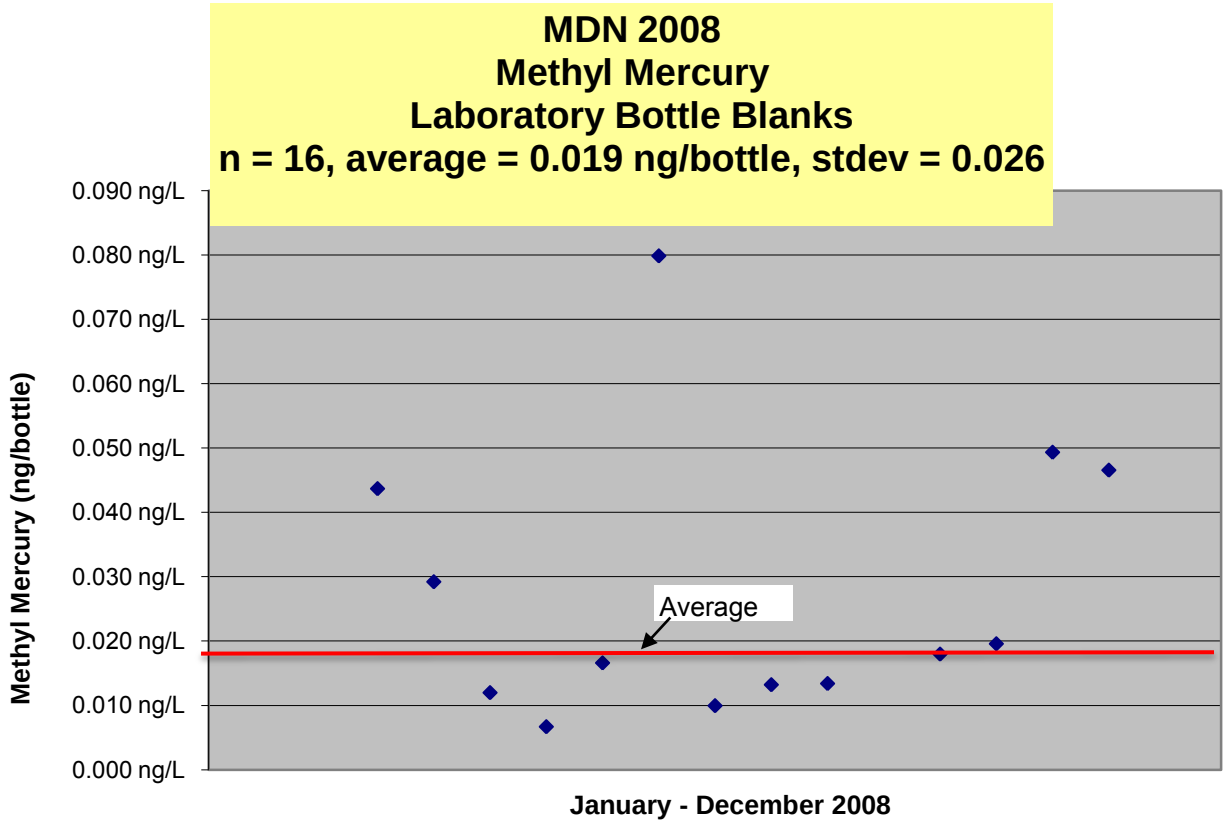

Figure 3 - Plot of Methyl Mercury Concentrations in Laboratory Bottle Blanks for 16 Samples Analyzed in 2008

3. Quality Control

Quality Control (QC) samples each have an expected target value that can be used to objectively assess the performance of preparation and analytical methods. If performance on these known samples is acceptable, client sample results and other *unknowns* are assumed to be acceptable, as well. Conversely, unacceptable QC results require immediate troubleshooting and re-assessment of affected sample results. The HAL utilizes eight types of QC samples for the MDN project: preparation blanks, ongoing calibration standards, ongoing calibration blanks, matrix duplicates, matrix spikes, certified reference materials, field blanks, and system blanks.

3.1. Preparation Blanks

3.1.1. Description

Preparation blanks for total mercury consist of bromine monochloride (BrCl), hydroxylamine hydrochloride, and stannous chloride in 100mL of reagent water. Preparation blanks for methylmercury consist of hydrochloric acid, ammonium pyrrolidine dithiocarbamate (APDC) solution, ethylating agent, acetate buffer, and reagent water. The MDN control limit for total mercury is currently set at 0.25 ng/L. This control limit is lower than the US EPA method 1631 method blank, which is set at 0.5 ng/L. The MDN control limit for methyl mercury is currently set at 0.025 ng/L. US EPA method 1630 states that the mean of the three preparation blanks should be less than 0.045 ng/L and the variability should be less than 0.015 ng/L.

3.1.2. Purpose

Mercury content is inherent even in FGS' preparatory and analytical reagents. Preparation blanks are a measure of how much of each sample result can be attributed to these necessary reagents. Preparation Blanks also help when investigating possible sources of contamination.

3.1.3. Discussion

In 2008, 9 preparation blanks for total mercury were above the newly established control limit of 0.107 ng/L (3 σ). Three preparation blanks exceeded the previous control limit of 0.198 ng/L. In 2008, two preparation blanks for methylmercury were above the newly established control limit of 0.040 ng/L (3σ) (See table 2).

Table 2 - Preparation Blanks Summary Table

2008 Preparation Blanks	n	Average (ng/L)	Stdev (ng/L)	MDL (ng/L)	Control Limit (ng/L)
Total Mercury	678	0.024	0.036	0.080	0.107
Methyl Mercury	159	0.008	0.0107	0.019	0.040

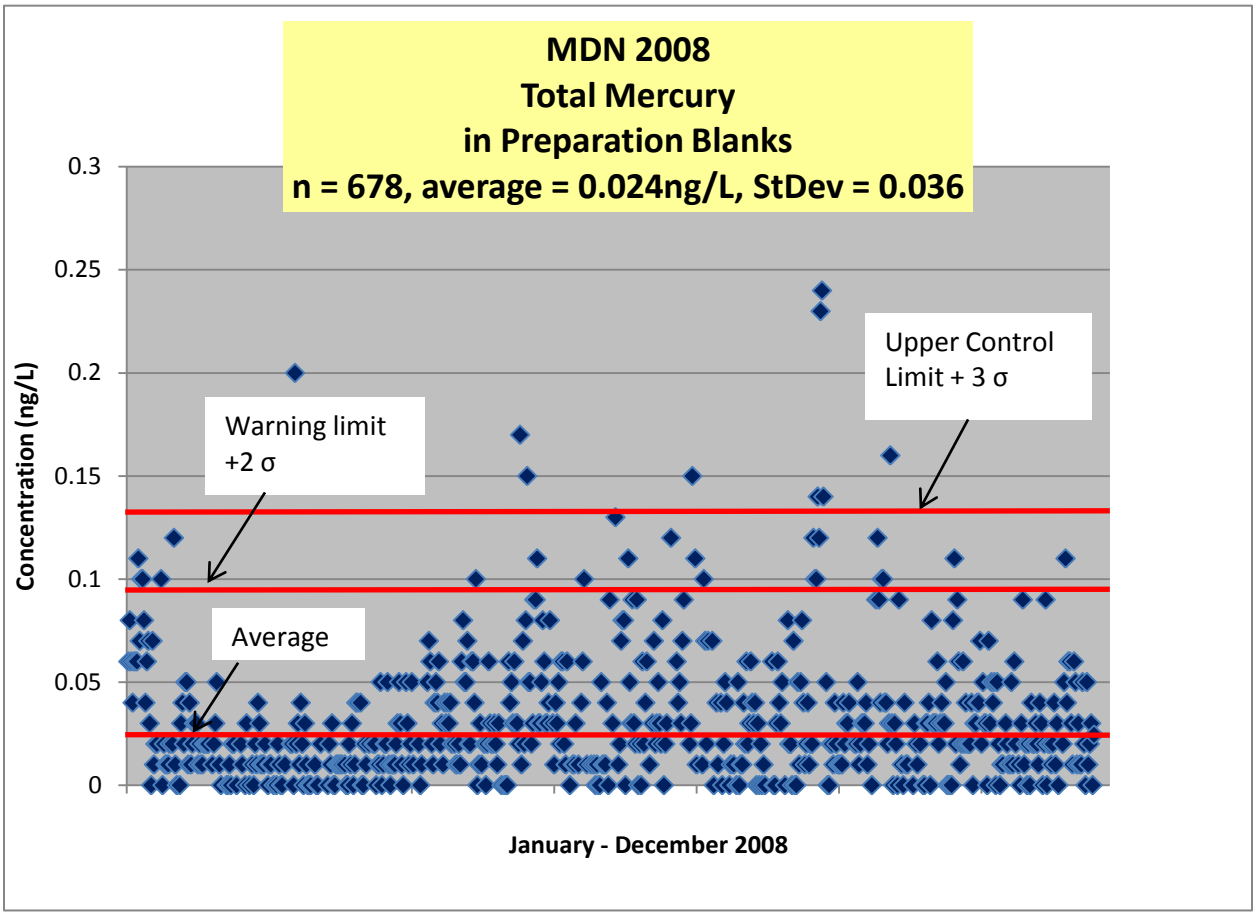

Figure 4 - Control Chart for Total Mercury Concentration I n Reagent Preparation Blanks During 2008

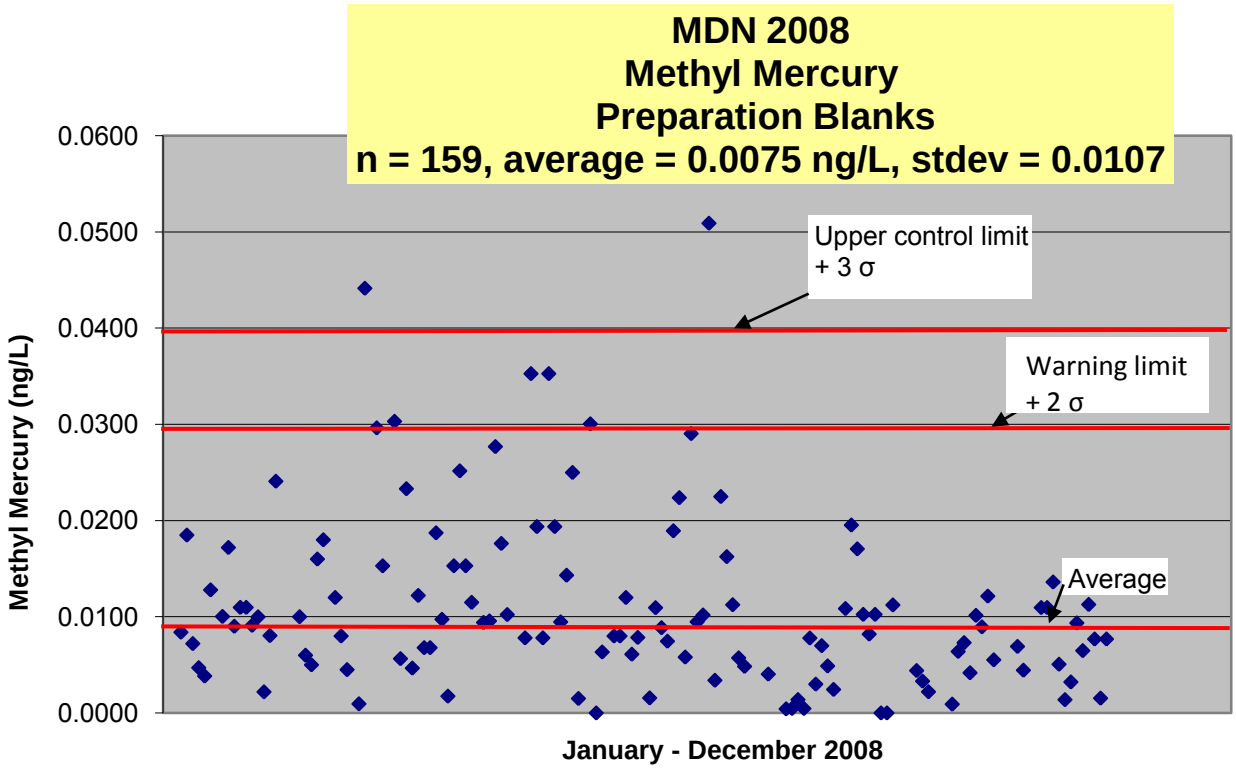

Figure 5 - Control Chart for Methyl Mercury Concentration in Reagent Preparation Blanks During 2008

3.2. Ongoing Calibration Standards

3.2.1.Description

Ongoing calibration standards are intermittently analyzed during the course of sample analysis, typically after a suite of ten samples and at the end of each analytical day. A 1.0 ng standard for total mercury and a 0.1 ng standard for methylmercury are typically analyzed as an ongoing calibration standard. The MDN control limits for total mercury are currently set at 75-125%. The control limits for US EPA method 1631, Ongoing Precision and Recovery (OPR) are currently set at 77-123%. The MDN control limits for methyl mercury are currently set at 75-125%. US EPA method 1630 has the OPR levels set at 67-133%.

3.2.2.Purpose

Ongoing calibration standards verify that the analytical system is in control. All total and methyl mercury standard solutions are traceable to certified standards or manufacturer lot number. All raw data references a unique laboratory ID number for associated standards. This ID may then be traced through the standards logbooks to the original shipment, container, and certification.

3.2.3.Discussion

Within NADP, control limits are defined as 3 times the standard deviation. These values are determined once per year and are used throughout the entire year. In 2008, 7 samples were above the newly established control limit of 107.4% (+3σ) and 8 samples were below the newly established control limit of 87.9% (-3σ). There were no ongoing calibration standard recoveries for the MDN project in 2008 that were above or below the newly established control limits of 129.8% (+3σ) and 53.0% (-3σ) (See table 3).

Table 3 - Ongoing Calibration Standard Summary Table

2008 Ongoing Calibration Standard	n	Average (%)	Stdev (%)	Upper control limit (%)	Lower control limit (%)
Total Mercury	684	97.6	3.3	107.4	87.9
Methyl Mercury	196	91.4	12.8	129.8	53.0

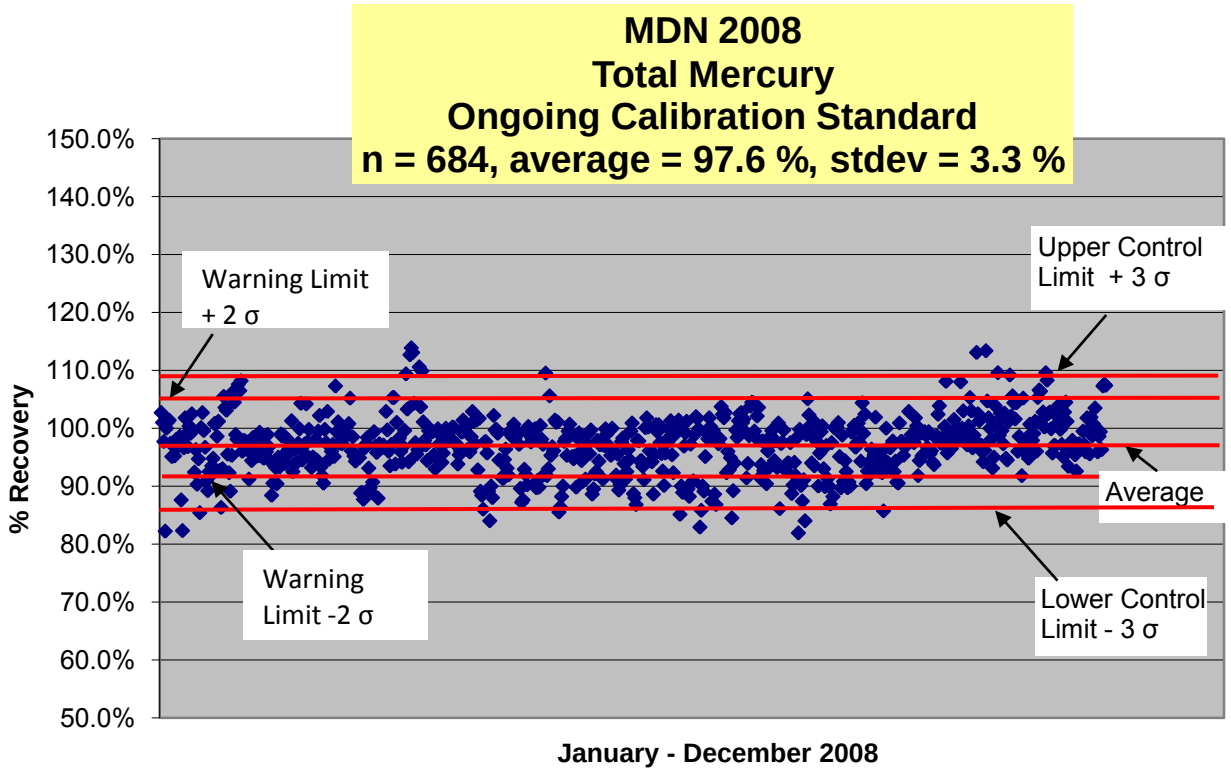

Figure 6 - Control Chart for Total Mercury Ongoing Calibration Standard Percent Recovery During 2008

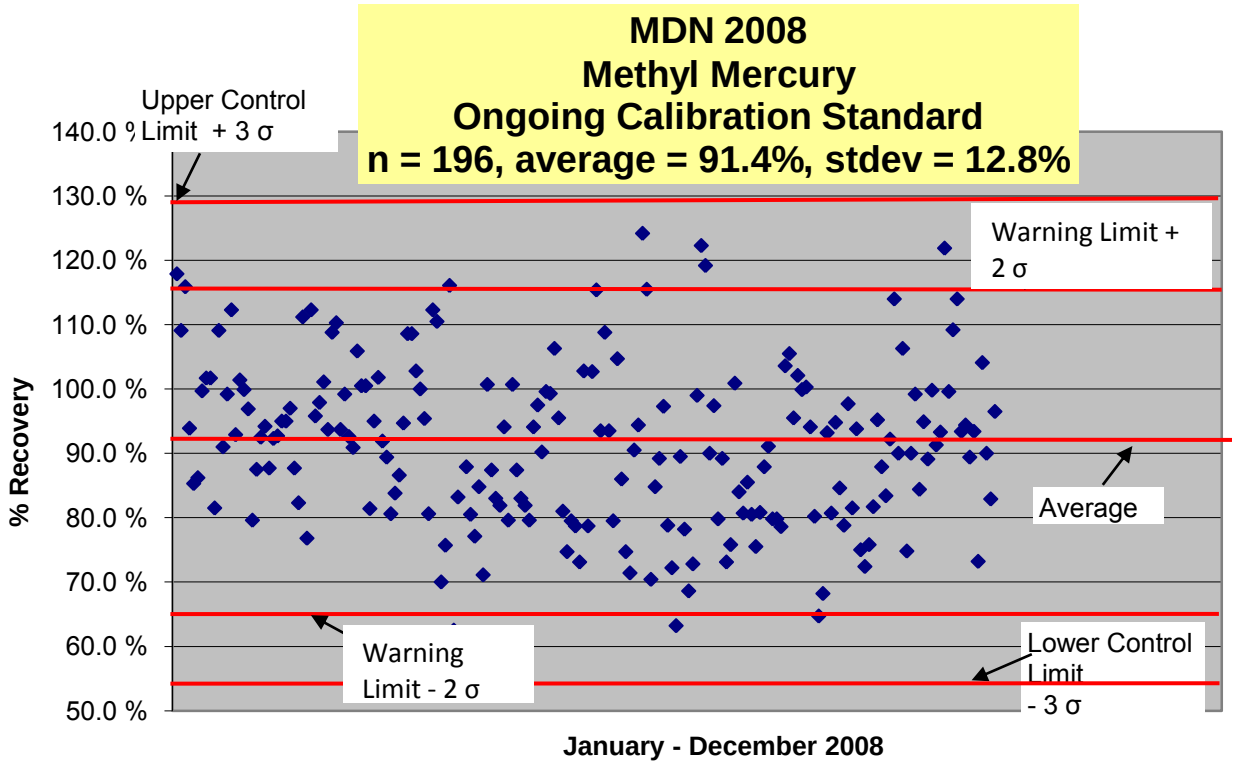

Figure 7 - Control Chart for Methyl Mercury Ongoing Calibration Standard Percent Recovery During 2008

3.3. Ongoing Calibration Blanks

3.3.1. Description

Ongoing calibration blanks are intermittently analyzed during the course of sample analysis, typically after a suite of ten samples and at the end of each analytical day. The MDN control limit for total mercury is currently set at 0.25 ng/L, which is also the control limit for US EPA method 1631. The MDN control limit for methyl mercury is currently set at 0.025 ng/L. US EPA method 1630 has no set ongoing calibration blank level.

3.3.2. Purpose

Instrument blanks are used to monitor baseline drift and to demonstrate freedom from system contamination and carryover.

3.3.3. Discussion

There were several ongoing calibration blanks for the MDN project in 2008 that were above the newly established control limit of 0.145 ng/L. No calibration blanks were above the previous upper control limit of 0.25 ng/L. There was one ongoing calibration blank for methylmercury above the newly established control limit of 0.032 ng/L (+3σ) (See table 4). The previous upper control limit was 0.025 ng/L.

Ongoing calibration blanks are expected to be at or near MDL. In cases where the blanks are significantly higher, the situation is investigated. Possible contamination sources are researched and identified. Once the contamination has been isolated and corrected, the run is continued.

Table 4 - Ongoing Calibration Blanks Summary Table

2008 Ongoing Calibration Blanks	n	Average (ng/L)	Stdev (ng/L)	MDL (ng/L)	Upper control limit (ng/L)
Total Mercury	1589	0.000	0.048	0.080	0.145
Methyl Mercury	170	0.012	0.006	0.019	0.032

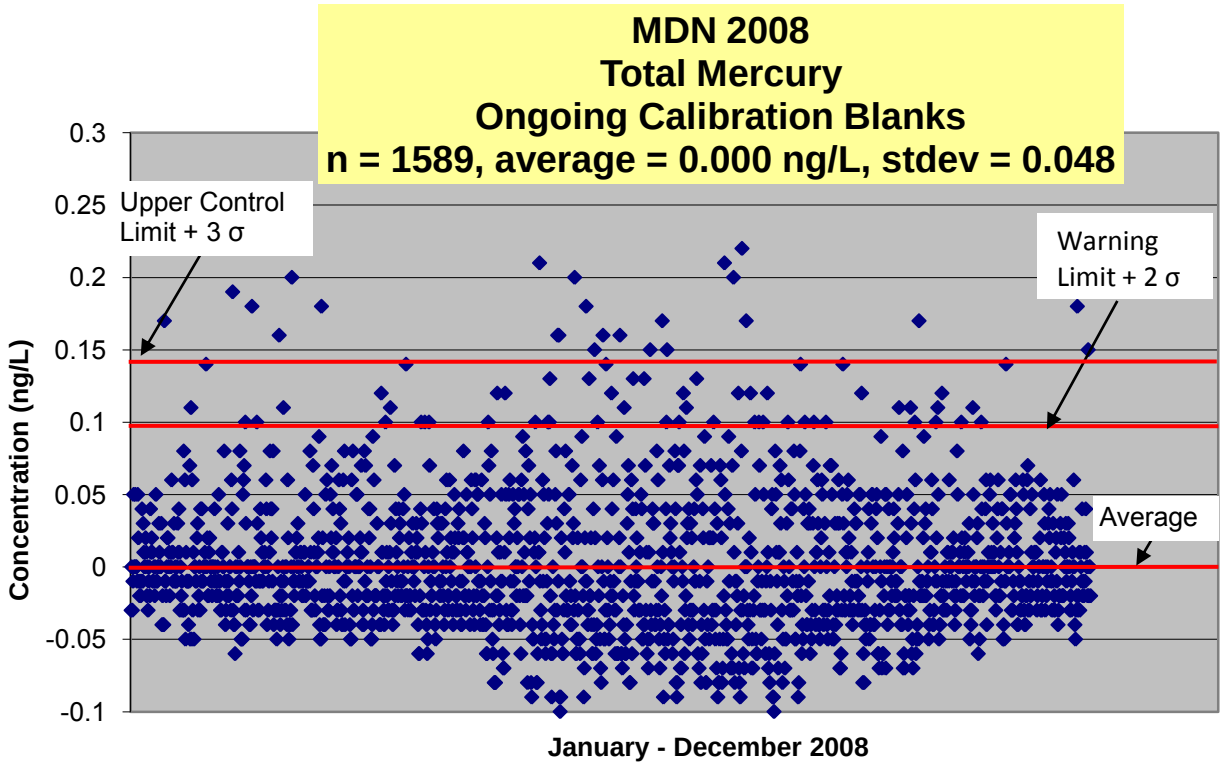

Figure 8 - Control Chart for Total Mercury Ongoing Calibration Blanks During 2008

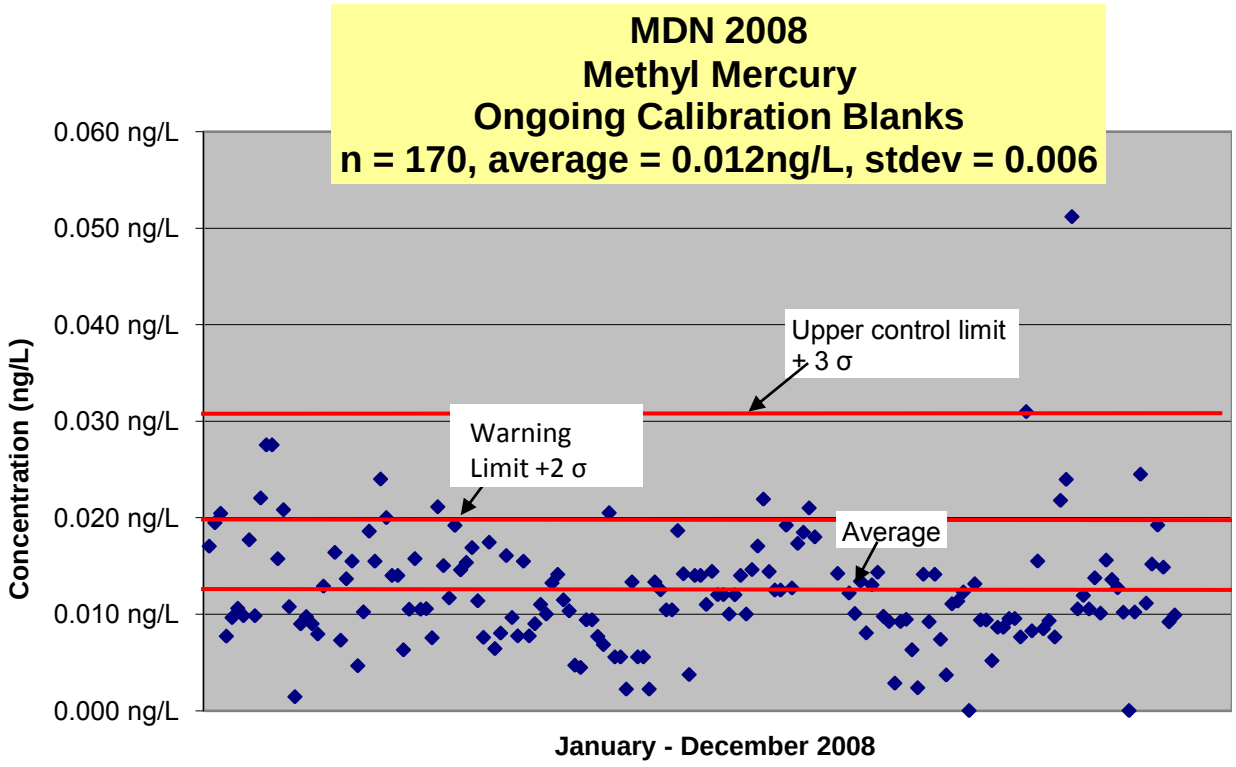

Figure 9 - Control Chart for Methyl Mercury Ongoing Calibration Blanks During 2008

3.4. Matrix Duplicates

3.4.1. Description

Matrix duplicates are created when an existing sample is split into two portions that can then be compared analytically. The MDN control limit for the matrix duplicates is currently set at 25%. US EPA methods 1630 and 1631 do not require a matrix duplicate.

3.4.2. Purpose

Matrix duplicates are part of the same sample. As such, their relative percent difference (RPD) is expected to be less than 25%. Out of control results are indicative of a heterogeneous sample matrix and/or poor analytical precision.

3.4.3. Discussion

There were several duplicate pairs for the MDN project in 2008 that were above the newly established control limit of 15.51%. No duplicate pairs were above the previous upper control limit of 25%. There were no duplicate pairs for methylmercury that were above the newly established control limit of 65.1% (+3σ) (See table 5). The previous upper control limit was 25%.

Table 5 - Matrix Duplicates Summary Table

2008 Matrix Duplicates	n	Average (%)	Stdev (%)	Upper control limit (%)
Total Mercury	673	3.05	4.16	15.51
Methyl Mercury	22	32.5	21.7	65.1

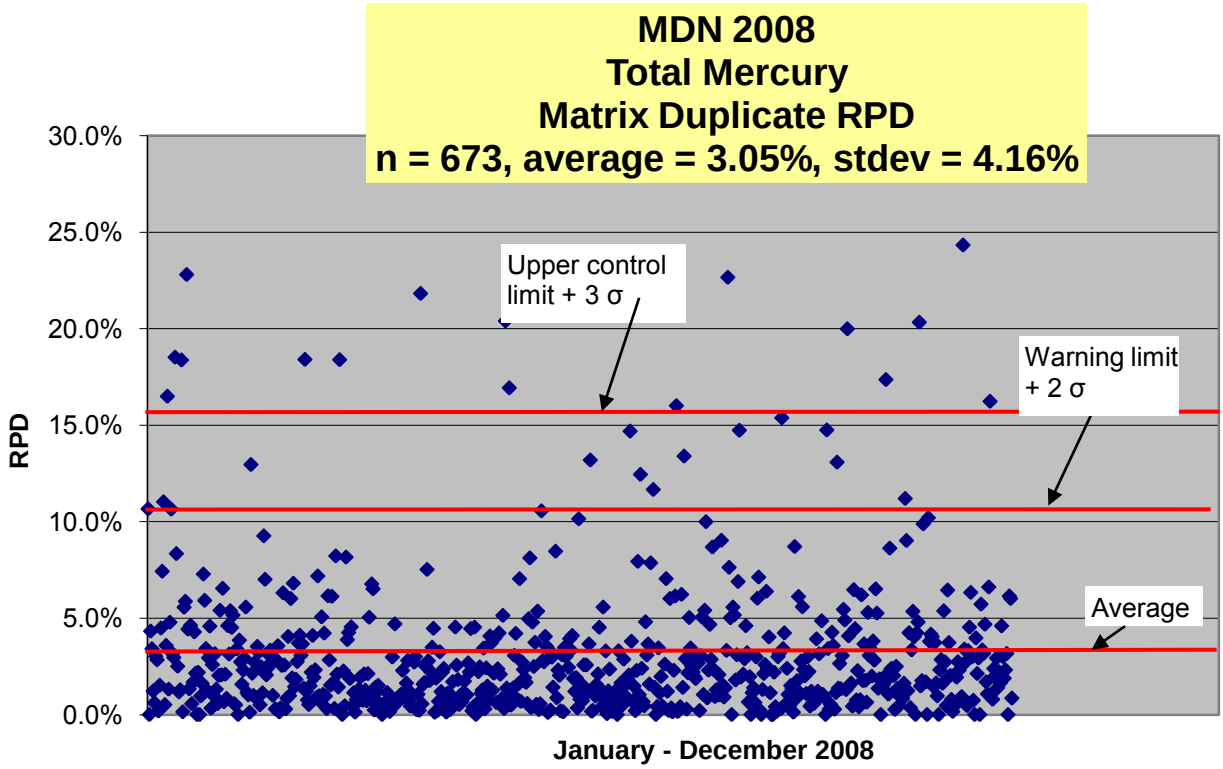

Figure 10 - Control Chart of the Relative Percent Differences for Total Mercury Concentrations in Matrix Duplicates During 2008

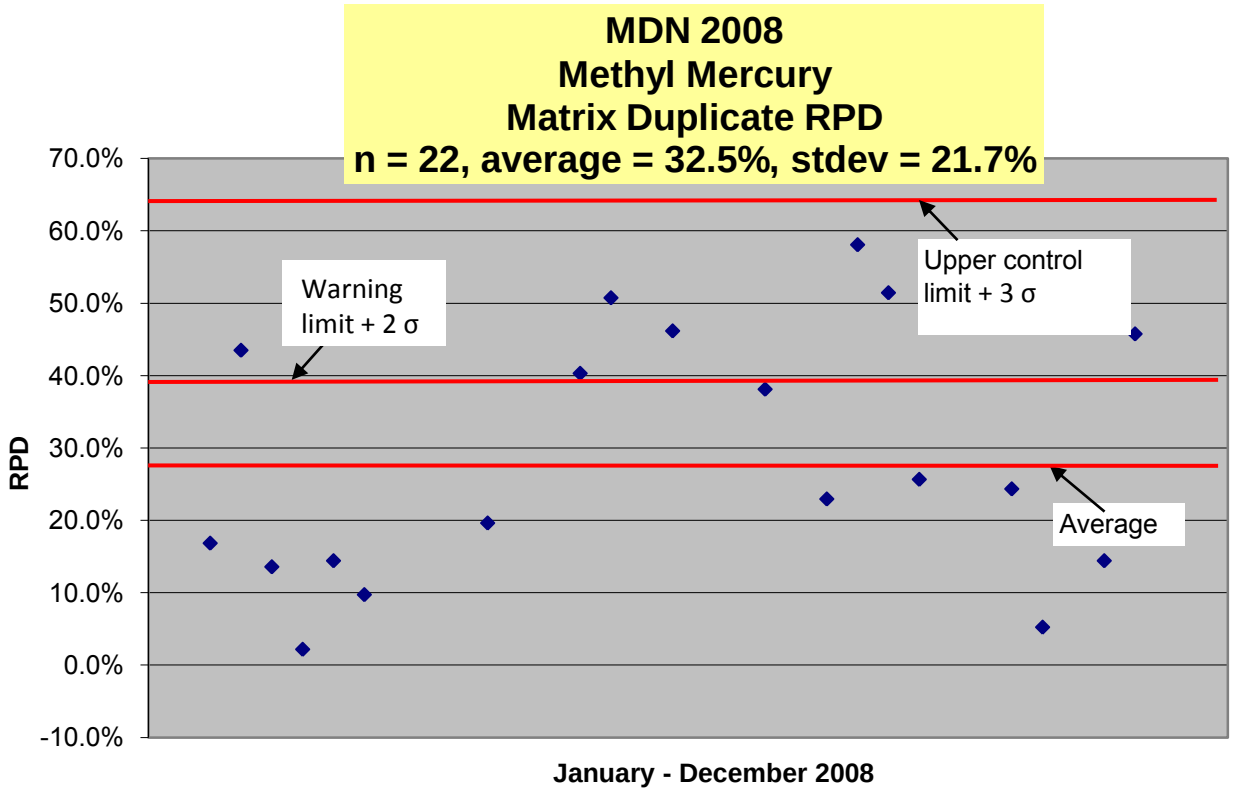

Figure 11 - Control Chart of the Relative Percent Differences for Methyl Mercury Concentrations in Matrix Duplicates During 2008

3.5. Matrix Spikes

3.5.1. Description

A matrix spike and if necessary a matrix spike duplicate are created when an MDN sample with known mercury content is split in two portions and than supplemented with an additional 1.00 ng of mercury standard. The MDN control limits for total mercury are currently set at 75-125%. The control limits for US EPA method 1631, for matrix spikes and matrix spike duplicates are currently set at 71-125%. The MDN control limits for methyl mercury are currently set at 75-125%. US EPA method 1630 has the matrix spike and matrix spike duplicates levels set at 65-135%.

3.5.2. Purpose

Because the combined mercury content of the matrix spike sample is known in theory, matrix spike recoveries are expected to be within 75% and 125% of this theoretical value. Matrix spike recoveries determine if, and how, the sample matrix interferes with target analyte recovery. They also ensure that HAL's preparation and analytical procedures do not result in significant analyte losses. US EPA methods 1630 and 1631 do not specify control limits.

3.5.3. Discussion

There were no matrix spikes for the MDN project in 2008 that were above or below the newly established upper control limit of 120.98% (+3σ) and the newly established lower control limit of 69.82% (-3σ). No matrix spike/matrix spike duplicate RPD was above the newly established control limit of 32.5% (+3σ) (See table 6). The previous control limit for matrix spike/matrix spike duplicate pairs was 25% RPD.

Table 6 - Total Mercury Matrix Spike Recoveries and Methyl Mercury MS/MSD RPDs for 2008 Samples

2008 Matrix Spikes	n	Average (% Rec.)	Stdev (%)	Uppler Control Limit (%)	Lower Control Limit (%)
Total Mercury	673	95.40	8.53	120.98	69.82
	n	**Average (% RPD)**	**Stdev (%)**	**Upper Control Limit (%)**	**Lower Control Limit (%)**
Methyl Mercury	40	9.7	7.6	32.5	NA

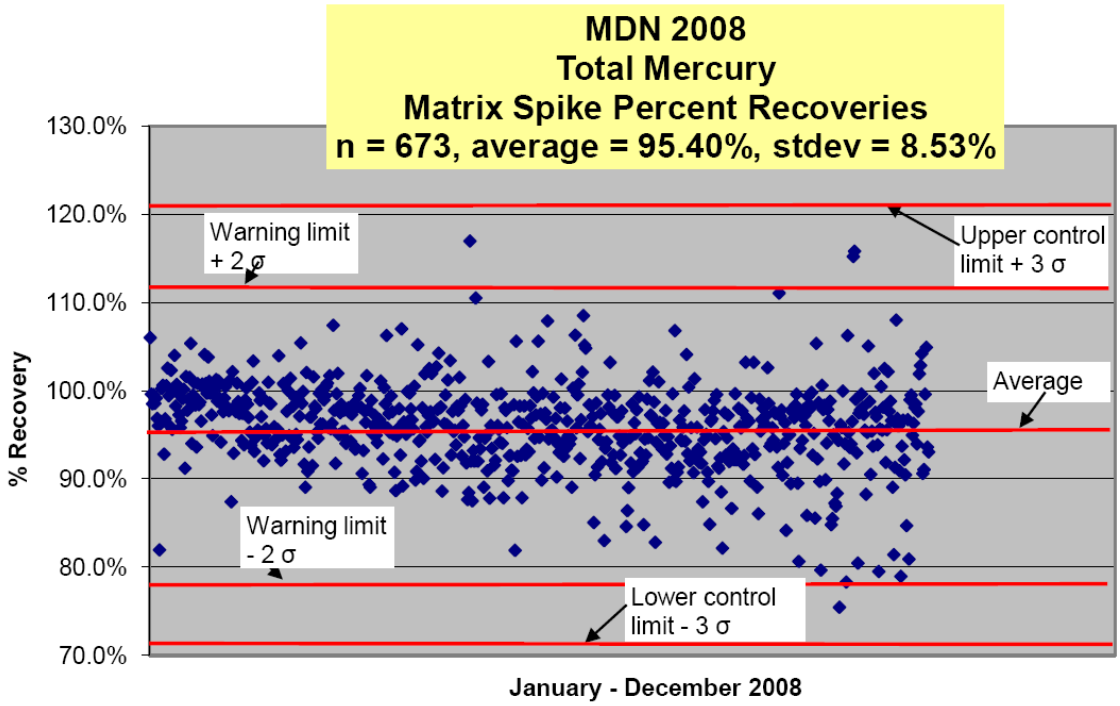

Figure 12 - Control Chart for Total Mercury Percent Recovery in Matrix Spikes During 2008

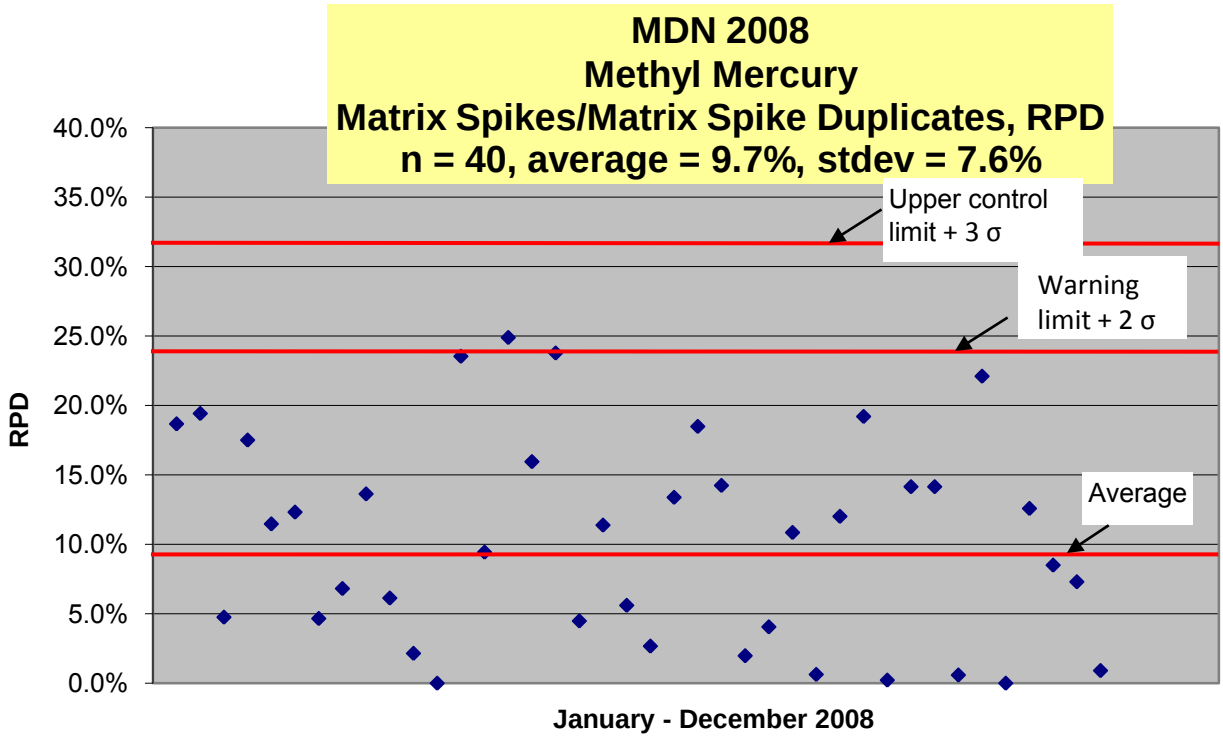

Figure 13 - Control Chart of the Relative Percent Differences for Methyl Mercury Matrix Spike/Matrix Spike Duplicate Pairs During 2008

3.6. Certified Reference Materials

3.6.1. Description

Certified reference materials are commercially available samples containing known quantities of analyte in a specific matrix. Currently, there is no available Reference Material matching the MDN rainwater matrix. Instead, HAL uses National Institute of Standards and Technology Reference Material 1641d – Total Mercury in Water. The MDN control limits for total mercury and methyl mercury are currently set at 75-125%. US EPA methods 1630 and 1631 do not require a certified reference material.

3.6.2. Purpose

Certified reference materials are used to demonstrate HAL's ability to recover a target analyte from a specific matrix. They are also a secondary source for verifying the validity of the analytical curve.

3.6.3. Discussion

In 2008, the mean of 448 certified reference material recoveries for total mercury was 95.8% with a standard deviation of 3.1%. There was one certified reference material recovery above the newly established upper control limit of 105.12% (+3σ) and one below the newly established lower control limit of 86.45% (-3σ). A freshly made standard was introduced in October. New working standards are tested prior to use. Three reps of the new standard are analyzed in the same run as three reps of the current NIST standard. The mean percent recovery of the three standards should be +/- 5% (95-105%) of the true value and also within 5% of the average NIST recovery. So if the average of NIST is 97% the range for the standards are 95-102. The new standard caused an anomly in the graph eventhough it was tested and found to be in control. No corrective action was needed.

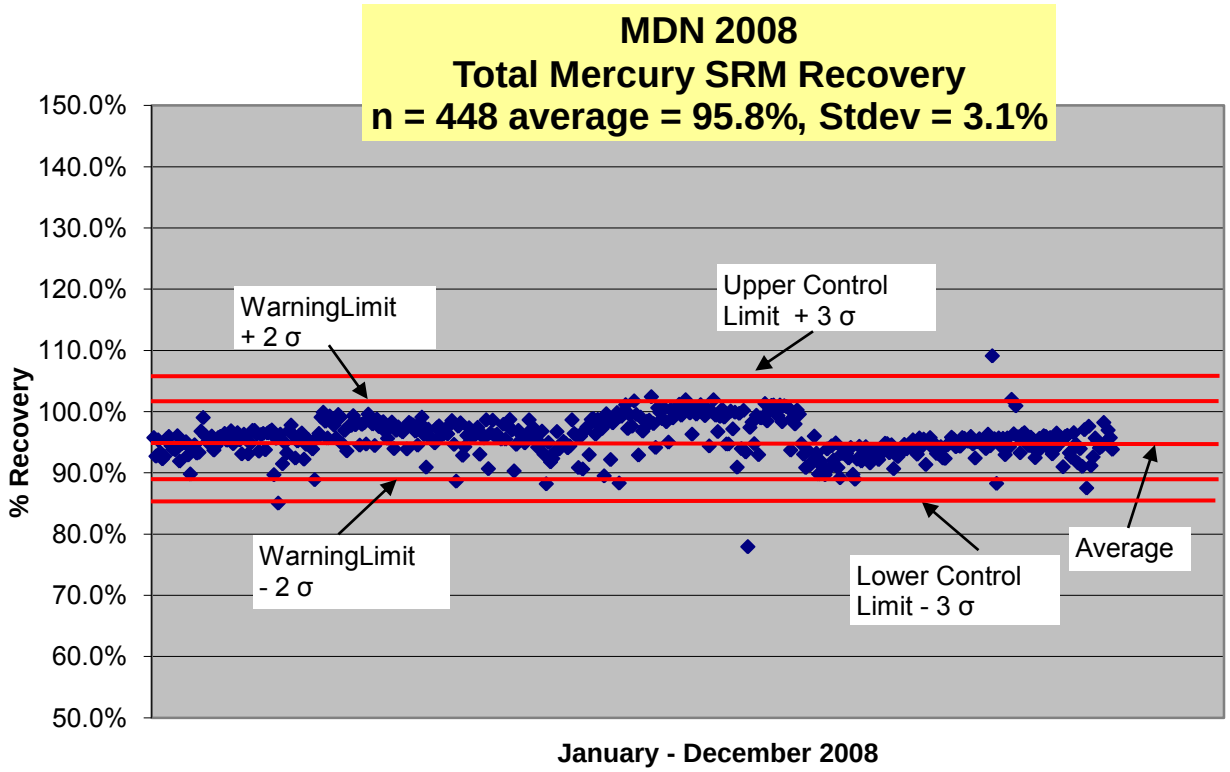

Figure 14 - Control Chart for Total Mercury Percent Recovery in Certified Reference Material Samples During 2008

4. Calculations

Calculations have been color-coded in instances where results become variables in subsequent calculations.

4.1. Calculation: Gross MDN Sample Concentration

Calc 1) {(Sample PA - Ave BB) / Slope} - {(Aliquot * BrCl RB) / 100} = ng Hg/aliquot (mL)

Sample PA = sample peak area (PA units)
Ave BB = average bubbler blank (PA units)
Slope = slope (PA units/ng)
Aliquot = volume of sample analyzed (mL)
BrCl RB = BrCl reagent blank value (ng/mL of preservative)
1/100 = correction for 1% preservation concentration

4.2. Calculation: Net MDN Sample Concentration

ng Hg/aliquot (mL) * mL / Sample Bottle = ng Hg/Sample Bottle

ng Hg/Sample Bottle – ng Hg/Quarterly Bottle Blank = net ng Hg/Sample Bottle

net ng Hg/Sample Bottle * (Sample Bottle / mL) * 1000 = net ng Hg/L

4.3. Calculation: MDN Deposition

(net ng Hg/L) * (precip vol (mL) / 120.0cm^2) * (1/1000mL) * (10000cm^2/m^2) = (ng/m^2)

Alternatively, because there are 10000 cm^2 in 1m^2:

(net ng Hg/L) * (precip vol (mL) / 120.0cm^2)*10 = (ng/m^2)

120.0cm^2 = Area of MDN Funnel
Precip volume (mL) = Precipitation Volume — see below

The standard raingage (Belfort or Electronic) is used for the precipitation volume when the raingage data has passed Quality Assurance.

Precip volume (Raingage (mL)) = Inches of Rain (raingage) * (825mL / raingage-Inch) (for Belfort or ETI raingage).

When the standard raingage (Belfort or Electronic) has not passed Quality Assurance, the Bottle Catch is used to calculate deposition (as long as the Event Recorder shows that the collector worked properly).

Precip volume (Bottle Catch (mL)) = Total mL of sample captured in MDN Sample Bottle minus 20mL preservative

5. Analytical Run Sequence

HAL routinely includes the aforementioned QC samples in all of its analyses for the MDN project. The following bench sheet shows how these samples are arranged within a typical analysis day. For every set of ten samples analyzed, the sample set is preceded and followed with a matrix duplicate, a matrix spike, ongoing calibration standard, and an ongoing calibration blank. In addition, after the twentieth sample an additional reference material sample is analyzed.

MDN Precipitation Sample Analysis Lab Sheet

Analysis Date:
Analyzer:
Analyst:
REVIEWER:
FGS DATA SET ID:
MDN LAB DATA SET CODE:
DATE:

Analytical Run
D=Duplicate Analysis
Trap Set:
S=Sample Spike @ 1.00ng

Run	Tp	Bub	HAL Code	Sample ID	PA	% BrCl	Aliquot Volume	THg per Aliquot	THg Conc (Net)	Remarks
1	1	1		4.00 ng						
2	2	2		2.00 ng						
3	3	3		1.00 ng						
4	4	4		0.50 ng						
5	5	1		0.05 ng						
6	6	2		BB-1						
7	7	3		BB-2						
8	8	4		BB-3						
9	9	1		NIST1641d		2				
10	10	2		BrCl-1						
11	1	3		BrCl-2						
12	2	4		BrCl-3						
13	3	1		BB-4						
14	4	2		Sample #1						
15	5	3		Sample #1 D						
16	6	4		Sample #1 S						
17	7	1		Sample #2						
18	8	2		Sample #3						
19	9	3		Sample #4						
20	10	4		Sample #5						
21	1	1		Sample #6						
22	2	2		Sample #7						
23	3	3		Sample #8						
24	4	4		Sample #9						
25	5	1		Sample #10						
26	6	2		1.00						
27	7	3		BB-5						
28	8	4		Sample #11						
29	9	3		Sample #12						
30	10	4		Sample #13						
31	1	1		Sample #14						
32	2	2		Sample #15						
33	3	3		Sample #16						
34	4	4		Sample #17						
35	5	1		Sample #18						
36	6	2		Sample #19						
37	7	3		Sample #20						
38	8	4		Sample #11 D						
39	9	3		Sample #11 S						
40	10	4		1.00						
41	1	1		BB-6						
42	2	2		NIST1641d						
43	3	3		Sample #21						
44	4	4		Sample #22						
45	5	1		Sample #23						
46	6	2		etc...						
47	7	3								
48	8	4								
49	9	1								
50	10	2								
51	1	3								
52	2	4								
53	3	1		Sample #21 D						
54	4	2		Sample #21 S						
55	5	3		1.00						
56	6	4		BB-7						

Key
Reference materials
Preparation blanks
Matrix duplicates
Matrix spikes
Ongoing calibration
Ongoing calibration

Figure 15 - Example of Sample Analysis Worksheet

6. Proficiency Tests and Laboratory Intercomparisons

Proficiency tests (PT) and laboratory intercomparisons are an important part of the Quality Assurance Program. Each year, FGS completes at least four PTs representing a suite of trace metals in wastewater and solid waste matrices. While these studies are a requirement of accreditation, they are also a valuable tool for internal quality control.

6.1. Proficiency Tests

The following proficiency tests were completed by HAL during 2008. Results for these tests are available upon request.

Table 7 - Proficiency Tests

Proficiency Test Name	Organization	Test Date
Non-Potable Water/Solid & Hazardous Waste/Air Emissions Proficiency Study	New York Department of Health	01/2008
April 2008 Soils	Analytical Products Group	04/2008
May – 2008 WP (water pollution)	Analytical Products Group	05/2008
Non-Potable Water/Solid & Hazardous Waste/Air Emissions Proficiency Study	New York Department of Health	07/2008
DMRQA-28 (water pollution)	Analytical Products Group	07/2008
August 2008 WP PTSTAT (water pollution)	Analytical Products Group	08/2008
August 2008 APDC/RP	Analytical Products Group	08/2008
September – 2008 WP (water pollution)	Analytical Products Group	09/2008
October 2008 Soils	Analytical Products Group	10/2008

6.2. Laboratory Intercomparisons

The following laboratory intercomparisons were completed by HAL during 2008. Results for these tests are available upon request.

Table 8 - Intercomparisons

Laboratory Intercomparison Name	Organization
Mercury Round Robin 8	The Florida Department of Environmental Protection, Bureau of Laboratories

7. Field Quality Control

The MDN network utilizes two different procedures to ensure that the sample train is not compromised. The two procedures are field blanks and system blanks.

7.1. Field Bottle Blanks

7.1.1.Description

A field bottle blank has the same contents as a laboratory bottle blank. However, this blank is left exposed at the sampling site for the entire collection period without any collector openings. All field bottle blanks that maintain at least 15mL of the initial 20mL 1% hydrochloric acid charge are then analyzed for total mercury.

7.1.2.Purpose

Outside of the controlled laboratory environment, ambient mercury levels increase and additional sample handling occurs. Because such contamination sources are inevitable, their contributions must be quantified so that they can be subtracted from final sample results.

7.1.3.Discussion

In 2008, the mean of 206 Field Bottle Blanks was 0.053ng/bottle with a standard deviation of 0.067ng/bottle. This suggests that the MDN aerochem collector protects the sample train and bottle well and the field exposure is minimal.

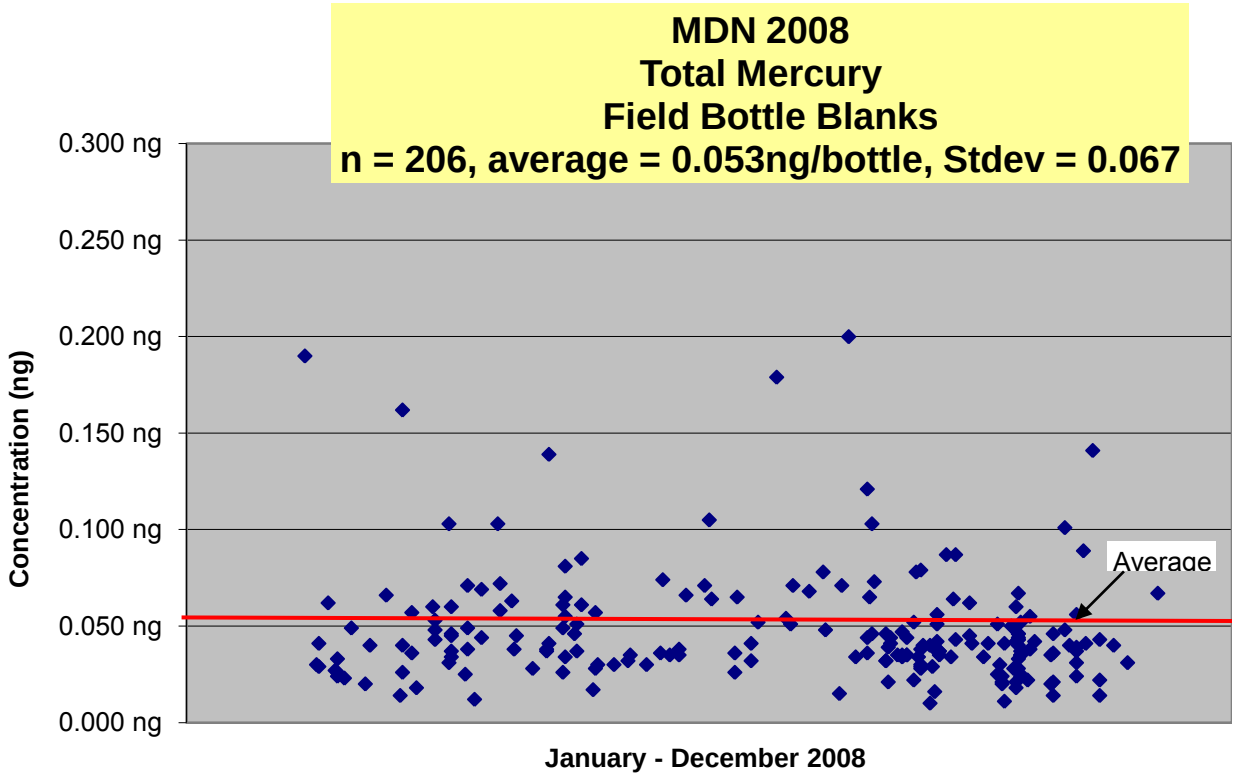

Figure 16 - Time Series Plot of Total Mercury Concentrations in Field Bottle Blanks During 2008

7.2. Field System Blanks

7.2.1.Description

A field system blank is essentially a field bottle blank in which a solution is poured through the wet side collection sample train that was installed in the field for an entire week with no precipitation. The system

blank total mercury concentration is compared to the total mercury concentration of an aliquot of the same solution that was not poured through the sample train (i.e. control sample).

7.2.2.Purpose

This quality assurance program, conducted jointly by the U.S. Geological Survey and FGS, is intended to measure the effects of field exposure, handling, and processing on the chemistry of MDN precipitation samples.

7.2.3.Discussion

In 2008, the mean of 40 system blanks was 0.061ng/aliquot with a standard deviation of 0.084ng/aliquot. This suggests that the MDN sample train is well protected.

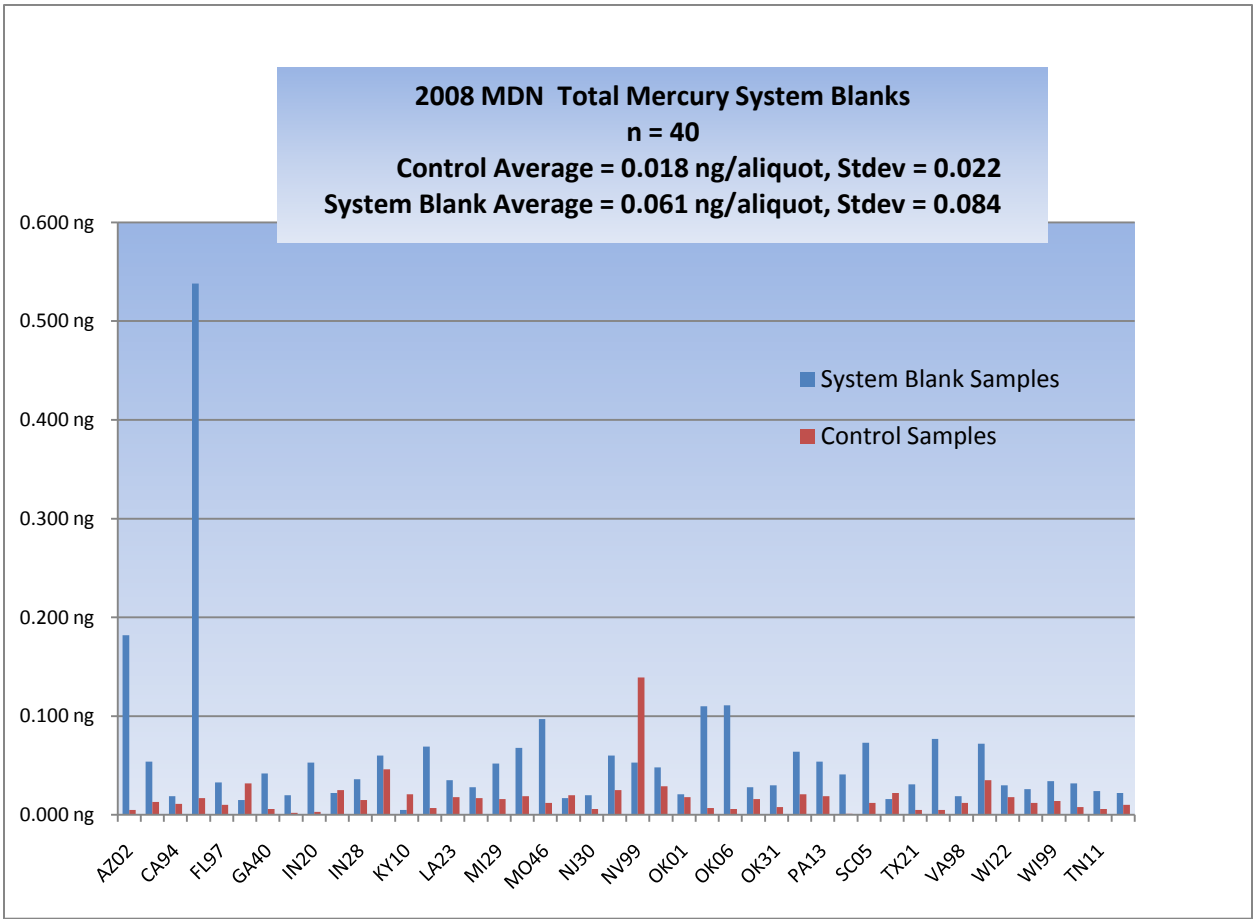

Figure 17 - Total Mercury Concentration Data for USGS System Blanks and Control Samples During 2008

8. Quality Rating Codes

The quality rating (QR) code is designed as a user-friendly method to indicate the overall quality of each individual MDN data value. The MDN QR is modeled on the NADP AIRMoN QR. The QR code is what the general user of the final database will use in the evaluation of MDN data. This QR code is assigned by the computer program based on the results of the notes codes given to each MDN sample. A general description of each code follows.

A. Valid samples with no problems; contained only precipitation; all sampling and laboratory protocols were followed; all required equipment was installed and operating properly.

B. Valid samples with minor problems; may have contaminants such as insects or other debris; there may be an exception to approved sampling or laboratory methods; required equipment may be lacking or not operating properly. The laboratory does not consider these problems sufficient to invalidate the data, but there is more uncertainty than for A-rated data. These data are used along with A-rated data to calculate average concentrations and deposition.

C. Invalid samples; major problems occurred; the laboratory does not have confidence in the data.

The HAL processed 6623 samples in 2008. 2870 samples received a QR code of A, 3196 received a B QR code, and 457 received a C QR code. FGS continued to maintain and demonstrate acceptable quality control in 2008.

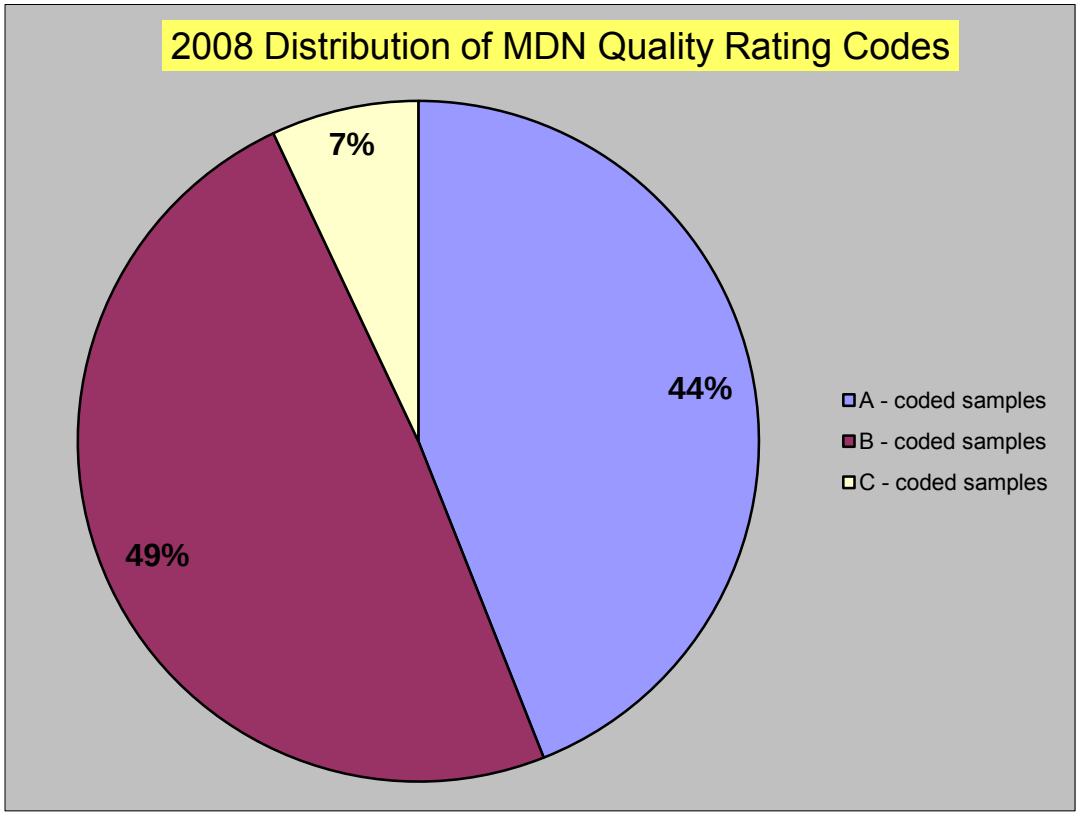

Figure 18 - Distribution of Quality Rating Codes for Samples Received in 2008

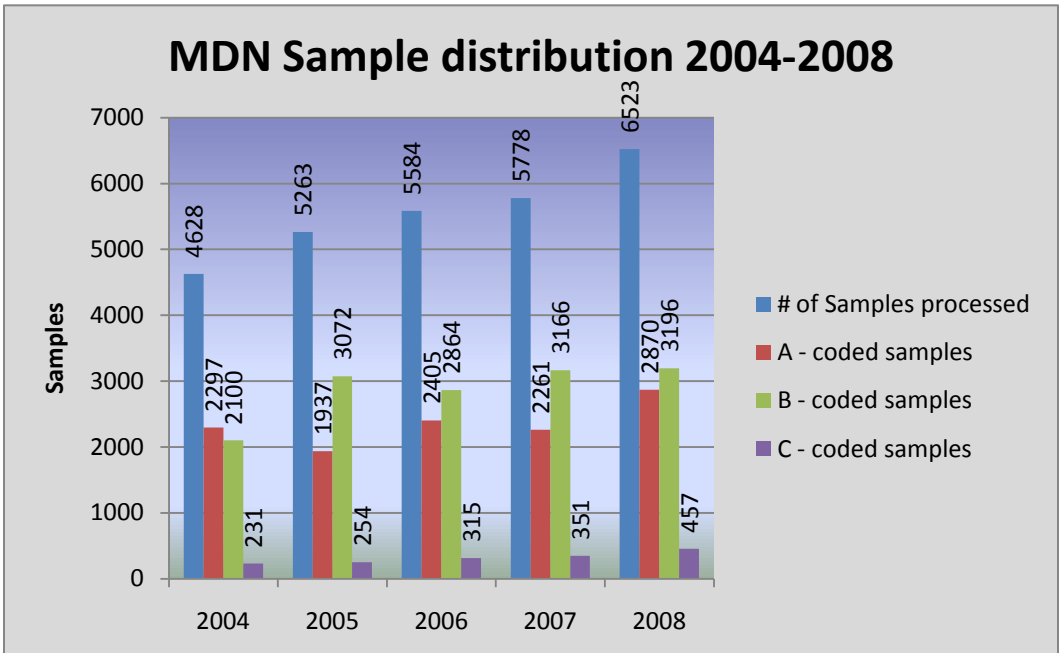

Figure 19 - Distribution of Quality Rating Codes for Samples Received from 2004 to 2008

9. Summary and Conclusions

The HAL continued to maintain and demonstrate acceptable quality control in 2008. The five DQOs, precision, accuracy, representativeness, comparability, and completeness, were all met. Figure 14, the control chart for Total Mercury Percent Recovery in Certified Reference Material Samples During 2008, showed a couple of inflections. The inflections were caused by newly made standards. The standards were tested before use and all were found to be within acceptable control limits. No corrective action was needed.

The HAL will continue to look for ways to improve the program to ensure the highest quality.

Appendix A

Matrix Specific MDL Studies

Matrix Specific MDL Study:
Total Mercury in Water (FGS-012, FGS-MDN-005)
MDL Study Data for CV.AFS #9

March 14, 2008
THg09-080307-1

By Phayvanh Lameny
Frontier Geosciences Inc.
414 Pontius North
Seattle, WA 98109

Objective. Determine the method detection limit (MDL) for total mercury in water, using the preservation method FGS-012 and analysis method FGS-MDN-005, and following the protocols outlined in 40 CFR 136. As detailed below, the MDL for Total Mercury in water was **0.063 ng/L**.

Analytical Method. A calibration was performed according to FGS-MDN-005. Briefly, this method incorporates oxidation with the addition of BrCl, reduction of Mercury in the sample aliquot with $SnCl_2$, analysis by purge and trap and dual amalgamation CV-AFS.

*The MDL study consisted of the oxidation and analysis of ten water replicates spiked with 50 µL of 10 ng/L Hg standard into a 1000 mL solution. BrCl was also then added as part of the total volume, resulting in a concentration of 0.5 ng/L of THg oxidized with 1% BrCl. The results of these measurements are found in the table on the page 2, as well in the raw data sheets (ID # THg09-080307-1). All results are reported **corrected** for the instrument blanks but not the method blanks.*

MDL Calculation. *Using 40 CFR 136, the MDL was calculated using the standard deviation of the spiked samples, with n = 10 replicates (9 degrees of freedom). In this case, the t value of 2.821 was used in the following equation, where σ is the standard deviation of the results obtained on samples spiked at a level near the MDL.*

$$MDL = t^{*}\sigma$$

The MDL calculated from these data is (2.821)(0.022), or **0.063 ng/L**.*

Matrix Specific MDL Study:
Total Mercury in Water (FGS-012, FGS-MDN-005)
MDL Study Data for CV.AFS #9

MDL Validation. *The dataset was peer reviewed and all qualifying parameters (ICV, CCV, CCB, LCS, R-value, etc.) passed. For this dataset, the preparation blank mean is 0.021 ng/L. All 10 replicates showed a percent recovery between 70-130% with a range of 101.7 ± 4.2 % Using the mean of the TVs, the* ***PQL is 0.50 ng/L****.*

For MDL validation, according to 40 CFR, the PQL must be within 1 to 10 times the MDL. For this dataset, the PQL is 7.9 times the MDL, thus validating the ***MDL value of 0.063 ng/L****.*

Matrix Specific MDL Study:
Total Mercury in Water (FGS-012, FGS-MDN-005)
MDL Study Data for CV.AFS #9

March 14, 2008
THg09-080307

By Phayvanh Lameny
Frontier Geosciences Inc.
414 Pontius North
Seattle, WA 98109

Sample	[THg], ng/L		
BrCl-1	0.018		
BrCl-2	0.024		
BrCl-3	0.021		
Mean	**0.021**		
SD	**0.003**		
		Spike Level, [TV], ng/L	**[%Rec]**
MDL-1	0.510	0.500	102.0%
MDL-2	0.480	0.500	96.0%
MDL-3	0.480	0.500	96.0%
MDL-4	0.530	0.500	106.0%
MDL-5	0.500	0.500	100.0%
MDL-6	0.500	0.500	100.0%
MDL-7	0.490	0.500	98.0%
MDL-8	0.520	0.500	104.0%
MDL-9	0.540	0.500	108.0%
MDL-10	0.537	0.500	107.4%
Mean	**0.509**	**0.500**	**101.7%**
SD	**0.022**	**0.000**	**4.2%**
		Certified Value	
NIST 1641d	**7613.861**	**8005**	**95.1%**

0.063	**MDL**
7.92	**PQL/MDL**

Matrix Specific MDL Study:
Total Mercury in Water (FGS-012, FGS-MDN-005)
MDL Study Data for CV.AFS #10

March 14, 2008
THg10-080307-1

By Phayvanh Lameny
Frontier Geosciences Inc.
414 Pontius North
Seattle, WA 98109

Objective. Determine the method detection limit (MDL) for total mercury in water, using the preservation method FGS-012 and analysis method FGS-MDN-005, and following the protocols outlined in 40 CFR 136. As detailed below, the MDL for Total Mercury in water was **0.080 ng/L**.

Analytical Method. A calibration was performed according to FGS-MDN-005. Briefly, this method incorporates oxidation with the addition of BrCl, reduction of Mercury in the sample aliquot with $SnCl_2$, analysis by purge and trap and dual amalgamation CV-AFS.

*The MDL study consisted of the oxidation and analysis of ten water replicates spiked with 50 µL of 10 ng/L Hg standard into a 1000 mL solution. BrCl was also then added as part of the total volume, resulting in a concentration of 0.5 ng/L of THg oxidized with 1% BrCl. The results of these measurements are found in the table on the page 2, as well in the raw data sheets (ID # THg10-080307-1). All results are reported **corrected** for the instrument blanks but not the method blanks.*

MDL Calculation. *Using 40 CFR 136, the MDL was calculated using the standard deviation of the spiked samples, with n = 10 replicates (9 degrees of freedom). In this case, the t value of 2.821 was used in the following equation, where σ is the standard deviation of the results obtained on samples spiked at a level near the MDL.*

$$MDL = t*\sigma$$

The MDL calculated from these data is (2.821)(0.028), or **0.080 ng/L**.*

Matrix Specific MDL Study:
Total Mercury in Water (FGS-012, FGS-MDN-005)
MDL Study Data for CV.AFS #9

MDL Validation. *The dataset was peer reviewed and all qualifying parameters (ICV, CCV, CCB, LCS, R-value, etc.) passed. For this dataset, the preparation blank mean is 0.068 ng/L. All 10 replicates showed a percent recovery between 70-130% with a range of 92.8 ± 5.4 % Using the mean of the TVs, the* ***PQL is 0.50 ng/L****.*

For MDL validation, according to 40 CFR, the PQL must be within 1 to 10 times the MDL. For this dataset, the PQL is 6.25 times the MDL, thus validating the ***MDL value of 0.080 ng/L****.*

Matrix Specific MDL Study:
Total Mercury in Water (FGS-012, FGS-MDN-005)
MDL Study Data for CV.AFS #10

March 14, 2008
THg10-080307

By Phayvanh Lameny
Frontier Geosciences Inc.
414 Pontius North
Seattle, WA 98109

Sample	[THg], ng/L		
BrCl-1	0.023		
BrCl-2	0.024		
BrCl-3	0.158		
Mean	**0.068**		
SD	**0.078**		
		Spike Level, [TV], ng/L	**[%Rec]**
MDL-1	0.450	0.500	90.0%
MDL-2	0.450	0.500	90.0%
MDL-3	0.450	0.500	90.0%
MDL-4	0.440	0.500	88.0%
MDL-5	0.430	0.500	86.0%
MDL-6	0.440	0.500	88.0%
MDL-7	0.480	0.500	96.0%
MDL-8	0.510	0.500	102.0%
MDL-9	0.490	0.500	98.0%
MDL-10	0.500	0.500	100.0%
Mean	**0.464**	**0.500**	**92.8%**
SD	**0.028**	**0.000**	**5.4%**
		Certified Value	
NIST 1641d	**7584.158**	**8005**	**94.7%**

0.080	**MDL**
6.25	**PQL/MDL**

IDL Study:
Methyl Mercury in Water (FGS-070)
MDL Study Data for CV.GC.AFS #7

September 12, 2008
MHg07-080823-1 Sequence# 8H27003
Batch# F808152
WO# 0808146

Objective. To determine the instrument detection limit (IDL) for methyl mercury in water using Tenax traps following the protocols outlined in 40 CFR 136. Since this was an IDL study and not a MDL/PQL study the samples were not distilled prior to analysis and no preparation blanks or blank spike, and blank spike duplicate were analyzed.

As detailed below, the IDL for Methyl Mercury in Water using Tenax traps was determined to be **0.007 ng/L MHg.**

Analytical Method. A calibration was performed according to FGS-070. Briefly, this method utilizes aqueous phase ethylation, CV purge and trap, thermal desorption, GC separation, pyrolytic decomposition, and detection using CV-AFS. An efficiency factor of 0.854 was used.

*The IDL study consisted of the analysis of ten water replicates of the 0.050 ng/L MHg standard (LIMS # 0800635). The results of these measurements are found in the table on the next page, as well in the raw data sheets (ID # MMHg07-080823-1, 8H27003). All results reported are **corrected** for the instrument blanks and **uncorrected** for the method blanks.*

IDL Calculation. *Using 40 CFR 136, the IDL was calculated using the standard deviation of the spiked samples, with n = 10 replicates (9 degrees of freedom). In this case, the t value of 2.821 was used in the following equation, where σ is the standard deviation of the results obtained on samples spiked at a level near the MDL.*

$$IDL = t^{*}\sigma$$

The IDL calculated from these data is (2.821)(0.0028), or 0.0079 ng/L.*

IDL Validation. *The dataset was peer reviewed and all qualifying parameters (ICV, CCV, CCB, CF, etc.) passed. All 10 replicates showed a percent recovery between 70-130% (94.21 ± 5.10%), making this dataset eligible for determining an IDL value for instrument 7.*

For IDL validation for this dataset, the PQL is 6.31 times the IDL, thus validating the IDL value of **0.0079 ng/L**.

IDL Study:
Methyl Mercury in Water (FGS-070)
MDL Study Data for CV.GC.AFS #7

September 12, 2008
MHg07-080823-1 Sequence# 8H27003
Batch# F808152
WO# 0808146

Sample	[MeHg], ng/L
8H27003-ICB1	0.002
8H27003-CCB1	0.000
8H27003-CCB2	-0.001
8H27003-CCB3	-0.001
Mean	**0.000**
SD	**0.002**

% Recovery Limits

70-130%

		Spike Level, [TV], ng/L	[%Rec]
0808146-01	0.048	0.050	95.28%
0808146-02	0.048	0.050	95.28%
0808146-03	0.046	0.050	92.12%
0808146-04	0.045	0.050	90.54%
0808146-05	0.042	0.050	84.21%
0808146-06	0.050	0.050	100.02%
0808146-07	0.051	0.050	101.61%
0808146-08	0.051	0.050	90.54%
0808146-09	0.045	0.050	97.65%
0808146-10	0.049	0.050	94.88%
Mean	**0.047**	**0.050**	**94.21%**
SD	**0.0028**	**0.000**	**5.10%**

		Certified Value	[%Rec]	[%RSD]
8H27003-ICV1	1.84	**2.00**	**92.05%**	
8H27003-CCV1	2.05	**2.00**	**102.33%**	
8H27003-CCV2	1.97	**2.00**	**98.37%**	
8H27003-CCV3	1.68	**2.00**	**84.14%**	**8.43%**

IDL	0.0079
PQL/IDL Ratio	6.3087

Matrix Specific MDL Study:
Methyl Mercury in Water (FGS-070)
MDL Study Data for CV.GC.AFS #7

April 11, 2007
MHg07-070405-1 Sequence# 7D06001
Batch# F704024
WO# 0703161

Frontier Geosciences Inc.
414 Pontius North
Seattle, WA 98109

Objective. Determine the method detection limit (MDL) for methyl mercury in water, using the Distillation of Aqueous Samples for Methyl Mercury method FGS-013, and following the protocols outlined in 40 CFR 136. As detailed below, the MDL for Methyl Mercury in Water was determined to be **0.019 ng/L MHg.**

Analytical Method. A calibration was performed according to FGS-070. Briefly, this method incorporates the digestion and extraction followed by analysis utilizing aqueous phase ethylation, CV purge and trap, thermal desorption, GC separation, pyrolytic decomposition, and detection using CV-AFS. An efficiency factor of 0.854 was used.

*The MDL study consisted of the distillation and analysis of ten water replicates spiked with 0.050 ng/L of MHg (45 µL @ 0.05 ng/mL spiked into 45 mL distillation vials – LIMS # 0700128). The results of these measurements are found in the table on the next page, as well in the raw data sheets (ID # MHg07-070405-1, 7D06001). All results reported are **corrected** for the instrument blanks and the method blanks.*

MDL Calculation. *Using 40 CFR 136, the MDL was calculated using the standard deviation of the spiked samples, with n = 10 replicates (9 degrees of freedom). In this case, the t value of 2.821 was used in the following equation, where σ is the standard deviation of the results obtained on samples spiked at a level near the MDL.*

$$MDL = t^{*}\sigma$$

The MDL calculated from these data is (2.821)(0.0068), or 0.019 ng/L.*

MDL Validation. *The dataset was peer reviewed and all qualifying parameters (ICV, CCV, CCB, LCS, RSD CF, etc.) passed. All 10 replicates showed a percent recovery between 70-130% (91.80 ± 13.68%), making this dataset eligible for determining both an MDL and a PQL value. Using the mean of the TVs, gives a PQL of 0.050 ng/L.*

For MDL validation, according to 40 CFR, the PQL must be within 1 to 10 times the MDL. For this dataset, the PQL is 2.59 times the MDL, thus validating the MDL value of ***0.019 ng/L****.*

Methyl Mercury in Water (MeHg)
MDL Study Data for CV.GC.AFS #7

April 11, 2007
MHg07-070405-1 Sequence# 7D06001
Batch# F704024
WO# 0703161

Frontier Geosciences Inc.
414 Pontius North
Seattle, WA 98109

Sample	[MeHg], ng/L		% Recovery Limits	
method blank #1	0.001			
method blank #2	0.017		70-130%	
method blank #3	0.001			
Mean	**0.006**			
SD	**0.009**			
		Spike Level, [TV], ng/L	**[%Rec]**	
Water MDL-1	0.055	0.050	110.00%	
Water MDL-2	0.039	0.050	78.00%	
Water MDL-3	0.048	0.050	96.00%	
Water MDL-4	0.042	0.050	84.00%	
Water MDL-5	0.036	0.050	72.00%	
Water MDL-6	0.052	0.050	104.00%	
Water MDL-7	0.055	0.050	110.00%	
Water MDL-8	0.039	0.050	78.00%	
Water MDL-9	0.048	0.050	96.00%	
Water MDL-10	0.045	0.050	90.00%	
Mean	**0.0459**	**0.05**	**91.80%**	
SD	**0.006838616**	**7.31424E-18**	**13.68%**	
		Certified Value		
BS1 (0700187)	**1.658**	**2**	**82.90%**	**RPD**
BSD1 (0700187)	**1.952**	**2**	**97.60%**	**16.29%**

MDL	0.019291735
PQL/MDL Ratio	2.591783436

Appendix B

QC Summary Tables

MDN Data Set ID	Analysis Date	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	NIST Recovery 2	Dup/Spike ID	Dup RPD	Spike Recovery	BB ID	BB Conc
2008-001	1/17/2008	CVAFS-9	0.006	0.9999	92.7%	95.7%	MDN 2447	4.33%	98.50%	MDN2493	0.040 ng/bottle
							MDN 2186	0.00%	99.60%	MDN2405	0.017 ng/bottle
							MDN 0430	10.67%	106.00%		
2008-002	1/17/2008	CVAFS-10	0.005	0.9996	95.4%		MDN 0655	1.22%	98.55%		
							MDN 2051	0.61%	99.15%		
							MDN 0493	3.41%	99.55%		
2008-003	1/18/2008	CVAFS-9	0.008	1.0000	92.3%	92.7%	MDN 0400	3.02%	96.85%	MDN0825	0.017 ng/bottle
							MDN 0742	2.84%	96.00%		
							MDN 2254	0.18%	81.95%		
2008-004	1/18/2008	CVAFS-10	0.009	0.9999	95.5%	95.9%	MDN 2153	1.52%	96.50%	MDN0757	0.000 ng/bottle
							MDN 2276	4.48%	100.25%		
							MDN 2443	7.43%	100.60%		
2008-005	1/22/2008	CVAFS-9	0.005	0.9999	94.4%	93.9%	MDN 3205	3.58%	100.55%	MDN2677	0.016 ng/bottle
							MDN 2345	0.51%	96.80%		
							MDN 1922	11.03%	92.80%		
2008-006	1/22/2008	CVAFS-10	0.003	1.0000	93.8%	96.0%	MDN 3217	4.78%	96.00%	MDN2397	0.011 ng/bottle
							MDN 3164	1.32%	99.40%		
							MDN 2519	16.50%	102.55%		
2008-007	1/29/2008	CVAFS-9	0.001	0.9999	94.7%	91.9%	MDN 3207	2.96%	100.25%	MDN0496	0.013 ng/bottle
							MDN 3179	3.16%	95.60%		
							MDN 2635	10.65%	102.30%		
2008-008	1/29/2008	CVAFS-10	0.002	1.0000	94.9%	95.1%	MDN 3301	2.51%	100.70%	MDN1956	0.013 ng/bottle
							MDN 3089	8.34%	98.25%		
							MDN 3065	18.53%	104.00%		
2008-009	1/30/2008	CVAFS-9	0	1.0000	89.8%	92.9%	MDN 2292	1.17%	99.70%		
							MDN 2373	1.28%	97.25%		
							MDN 3151	18.38%	95.80%		
2008-010	1/30/2008	CVAFS-10	0.001	1.0000	93.8%	94.6%	MDN 0299	0.14%	96.55%	MDN2051	0.023 ng/bottle
							MDN 3242	5.56%	99.10%		
							MDN 3252	5.87%	100.15%		
2008-011	3/5/2008	CVAFS-9	0.0014	0.9998	93.2%	93.3%				MDN2114	0.018 ng/bottle
2008-012	2/5/2008	CVAFS-10	0.003	0.9999	99.0%	96.8%				MDN3185	0.042 ng/bottle
2008-013	3/7/2008	CVAFS-9	0	0.9994	95.1%	96.0%					
2008-014	2/11/2008	CVAFS-10	0.004	0.9999	96.0%	95.1%	MDN 2674	0.97%	100.80%		
							MDN 0633	2.19%	98.35%		
							MDN 1738	0.00%	124.80%		
2008-015	2/8/2008	CVAFS-9	-0	0.9998	93.7%	94.4%	MDN 3199	7.28%	98.70%	MDN2802	0.020 ng/bottle
							MDN 2246	1.62%	98.40%		
							MDN 3200	5.92%	96.55%		

MDN Data Set ID	Analysis Date	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	NIST Recovery 2	Dup/Spike ID	Dup RPD	Spike Recovery	BB ID	BB Conc
2008-016	2/8/2008	CVAFS-10	0.002	0.9999	95.7%	95.9%	MDN 2487	1.25%	100.35%		
							MDN 2087	3.42%	100.75%		
							MDN 2525	2.94%	104.10%		
2008-017	2/12/2008	CVAFS-9	0.001	0.9990	96.8%	97.4%	MDN 0899	4.58%	100.80%		
							MDN 2099	2.59%	103.80%		
							MDN 2081	0.33%	99.70%		
2008-018	2/12/2008	CVAFS-10	0.002	0.9999	95.3%	96.0%	MDN 2050	0.98%	101.05%		
							MDN 2621	3.15%	99.70%		
							MDN 2740	1.32%	97.25%		
2008-019	2/25/2008	CVAFS-9	0.001	0.9998	96.8%	94.7%	MDN 0844	2.03%	99.55%	MDN3173	0.017 ng/bottle
							MDN 0129	0.57%	94.90%		
							MDN 2301	5.41%	100.20%		
2008-020	2/25/2008	CVAFS-10	0.001	0.9999	96.5%	95.7%	MDN 3283	0.66%	101.10%		
							MDN 0135	2.06%	101.25%		
							MDN 2378	6.54%	98.80%		
2008-021	2/28/2008	CVAFS-9	0.001	1.0000	93.1%	95.4%	MDN 3270	4.61%	98.40%		
							MDN 3075	0.84%	94.15%		
							MDN 1733	2.09%	99.15%		
2008-022	2/28/2008	CVAFS-10	-0	1.0000	96.3%	95.5%	MDN 1755	3.13%	97.60%		
							MDN 2760	5.38%	99.15%		
							MDN 3002	4.51%	100.45%		
2008-023	3/4/2008	CVAFS-9	0.003	1.0000	94.8%	93.1%	MDN 2728	0.56%	98.00%		
							MDN 3080	0.50%	97.70%		
							MDN 2716	5.16%	98.20%		
2008-024	3/4/2008	CVAFS-10	0	0.9998	96.9%	96.9%	MDN 3320	3.86%	102.15%	MDN3079	0.017 ng/bottle
							MDN 0488	3.40%	101.20%		
							MDN 0864	0.00%	87.40%		
2008-025	3/5/2008	CVAFS-9	-0.001	0.9999	93.5%	96.3%	MDN 3106	2.31%	97.60%		
							MDN 2475	1.57%	98.20%		
							MDN 0131	2.73%	92.90%		
2008-026	3/5/2008	CVAFS-10	0	0.9999	96.2%	96.4%	MDN 2412	5.57%	98.75%	MDN2134	0.019 ng/bottle
							MDN 2651	1.14%	97.40%		
							MDN 0480	2.92%	100.85%		
2008-027	3/6/2008	CVAFS-9	-0	0.9999	93.8%	96.5%	MDN 2658	1.02%	98.10%	MDN3300	0.015 ng/bottle
							MDN 2821	0.12%	94.35%		
							MDN 3292	12.96%	97.40%		
2008-028	3/6/2008	CVAFS-10	0	1.0000	96.7%	97.0%	MDN 3038	2.70%	100.30%		
							MDN 0260	0.99%	98.95%		
							MDN 0148	2.14%	93.85%		
2008-029	3/10/2008	CVAFS-9	-0	1.0000	89.7%	95.6%	MDN 2579	3.23%	95.30%	MDN3241	0.036 ng/bottle
							MDN 2367	3.53%	96.95%	MDN3148	0.012 ng/bottle
							MDN 0445	0.88%	98.45%		
2008-030	3/10/2008	CVAFS-10	0.001	1.0000	96.3%	85.0%	MDN 2484	2.47%	100.95%		
							MDN 3305	1.13%	103.35%		
							MDN 2243	0.51%	93.80%		

MDN Data Set ID	Analysis Date	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	NIST Recovery 2	Dup/Spike ID	Dup RPD	Spike Recovery	BB ID	BB Conc
2008-031	3/12/2008	CVAFS-9	0.002	0.9999	91.5%	94.9%	MDN 1961	7.01%	94.65%		
							MDN 2145	2.06%	84.90%		
							MDN 0287	9.27%	93.10%		
2008-032	3/12/2008	CVAFS-10	0	0.9999	96.8%	93.3%	MDN 0757	2.41%	95.55%		
							MDN 0972	3.10%	99.75%		
							MDN 2534	3.33%	98.90%		
2008-033	3/13/2008	CVAFS-10	0	0.9999	96.2%	97.8%	MDN 0664	2.72%	97.05%		
							MDN 0952	0.99%	99.20%		
							MDN 2649	2.94%	92.05%		
2008-034	3/17/2008	CVAFS-9	0	0.9999	92.4%	95.2%	MDN 0970	2.82%	95.70%		
							MDN 0174	0.30%	94.90%		
							MDN 2701	3.57%	94.05%		
2008-035	3/17/2008	CVAFS-10	-0	1.0000	96.5%	96.1%	MDN 2494	0.34%	98.60%	MDN2176	0.010 ng/bottle
							MDN 0425	0.13%	100.95%		
							MDN 2648	2.54%	98.50%		
2008-036	3/18/2008	CVAFS-9	0	1.0000	94.6%	92.2%	MDN 2029	0.29%	95.90%	MDN3095	0.015 ng/bottle
							MDN 0896	2.56%	94.20%		
							MDN 0655	6.31%	93.85%		
2008-037	3/18/2008	CVAFS-10	-0	0.9999	95.4%	94.9%	MDN 2712	0.98%	95.60%		
							MDN 0442	0.85%	95.60%		
							MDN 0836	4.05%	94.55%		
2008-038	3/24/2008	CVAFS-9	-0.002	1.0000	93.9%	88.9%	MDN 3147	1.90%	92.75%		
							MDN 3242	6.81%	92.10%		
							MDN 0817	6.01%	103.95%		
2008-039	3/24/2008	CVAFS-10	0.001	0.9999	95.7%	96.4%	MDN 3114	2.75%	100.65%		
							MDN 2530	1.83%	100.80%		
							MDN 0945	1.45%	94.95%		
2008-040	3/25/2008	CVAFS-10	0.008	0.9999	99.9%	99.1%	MDN 3282	3.08%	100.00%		
							MDN 0430	3.71%	93.15%		
							MDN 2063	4.11%	97.65%		
2008-041	3/31/2008	CVAFS-9	0.002	1.0000	98.4%	95.7%	MDN 2640	18.41%	94.65%		
							MDN 2453	3.66%	94.90%		
							MDN 2618	1.36%	101.40%		
2008-042	3/31/2008	CVAFS-10	0.001	1.0000	99.3%	98.3%	MDN 2067	1.21%	98.20%	MDN0667	0.013 ng/bottle
							MDN 3206	0.52%	99.20%	MDN3425	0.015 ng/bottle
							MDN 2608	0.76%	93.55%		
2008-043	4/1/2008	CVAFS-9	0	1.0000	97.8%	95.7%	MDN 2229	2.20%	94.45%		
							MDN 0186	1.49%	95.05%		
							MDN 3170	4.10%	99.00%		
2008-044	4/1/2008	CVAFS-10	-0	1.0000	99.1%	99.5%	MDN 3143	0.89%	98.55%		
							MDN 2620	1.93%	97.10%		
							MDN 3044	2.32%	105.40%		
2008-045	4/9/2008	CVAFS-9	-0	1.0000	96.9%	94.7%	MDN 2195	0.97%	91.65%		
							MDN 3321	0.67%	89.05%		
							MDN 2114	7.18%	99.90%		

MDN Data Set ID	Analysis Date	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	NIST Recovery 2	Dup/Spike ID	Dup RPD	Spike Recovery	BB ID	BB Conc
2008-046	4/2/2008	CVAFS-9	-0	0.9996	93.6%	97.6%	MDN 2359	4.22%	93.60%		
							MDN 0719	1.05%	90.85%		
							MDN 0482	5.07%	102.05%		
2008-047	4/2/2008	CVAFS-10	-0	0.9999	97.7%	99.3%	MDN 2186	0.31%	97.00%	MDN2626	0.017 ng/bottle
							MDN 0429	0.96%	97.00%		
							MDN 3243	6.15%	91.50%		
2008-048	4/9/2008	CVAFS-10	0.001	1.0000	98.3%	97.8%	MDN 3248	6.13%	97.95%		
							MDN 0844	1.53%	98.25%		
							MDN 0165	2.83%	101.55%		
2008-049	4/10/2008	CVAFS-9	0	1.0000	97.9%		MDN 0929	1.63%	95.30%		
							MDN 2139	0.31%	94.60%		
							MDN 2287	8.22%	99.70%		
2008-050	4/16/2008	CVAFS-9	0.001	1.0000	98.1%	94.7%	MDN 2635	18.40%	96.20%		
							MDN 2397	2.10%	96.20%		
							MDN 2429	1.43%	100.10%		
2008-051	4/10/2008	CVAFS-10	0.001	0.9999	98.7%	99.6%	MDN 2151	2.26%	100.50%	MDN3261	0.014 ng/bottle
							MDN 1922	0.27%	98.95%		
							MDN 1936	0.00%	99.40%		
2008-052	4/14/2008	CVAFS-9	0	1.0000	94.4%	98.0%	MDN 3106	8.16%	95.80%		
							MDN 3362	3.88%	101.70%		
							MDN 2476	0.45%	100.85%		
2008-053	4/14/2008	CVAFS-10	0	1.0000	98.8%	97.5%	MDN 3376	4.55%	107.40%		
							MDN 2800	1.87%	96.30%		
							MDN 0419	4.26%	95.65%		
2008-054	4/16/2008	CVAFS-10	0.003	1.0000	98.3%	98.1%	MDN 3383	0.12%	99.65%	MDN2649	0.022 ng/bottle
							MDN 3382	1.13%	91.75%		
							MDN 2713	0.44%	97.75%		
2008-055	4/21/2008	CVAFS-9	0	0.9999	96.7%	95.6%	MDN 0715	0.78%	101.95%		
							MDN 2516	0.66%	95.00%		
							MDN 3187	1.31%	97.50%		
2008-056	4/21/2008	CVAFS-10	0.001	0.9999	97.5%	98.3%	MDN 3368	0.74%	97.75%	MDN3320	0.019 ng/bottle
							MDN 2120	1.09%	95.35%		
							MDN 0862	1.93%	98.45%		
2008-057	4/24/2008	CVAFS-9	-0	0.9999	93.9%	96.9%	MDN 0909	1.26%	94.00%		
							MDN 3372	0.71%	94.35%		
							MDN 0447	2.10%	95.40%		
2008-058	4/24/2008	CVAFS-10	0.001	0.9999	97.5%	97.0%	MDN 2037	2.12%	98.05%		
							MDN 3000	5.04%	97.55%		
							MDN 3078	0.79%	94.25%		
2008-059	4/28/2008	CVAFS-9	0	0.9999	96.7%	97.3%	MDN 2690	6.52%	97.85%	MDN0186	0.021 ng/bottle
							MDN 3109	0.24%	98.55%		
							MDN 0190	6.77%	97.30%		
2008-060	4/29/2008	CVAFS-9	0.002	0.9999	98.2%	93.9%	MDN 3049	1.18%	93.45%	MDN0832	0.013 ng/bottle
							MDN 2101	1.42%	93.35%		
							MDN 3396	1.51%	98.15%		

MDN Data Set ID	Analysis Date	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	NIST Recovery 2	Dup/Spike ID	Dup RPD	Spike Recovery	BB ID	BB Conc
2008-061	4/29/2008	CVAFS-10	0.002	0.9999	98.0%	97.8%	MDN 0398	0.51%	99.45%	MDN2453	0.020 ng/bottle
							MDN 3241	0.00%	98.10%		
							MDN 0759	0.54%	100.25%		
2008-062	5/1/2008	CVAFS-9	0	0.9999	94.5%	96.8%	MDN 2494	0.39%	93.20%	MDN3142	0.016 ng/bottle
							MDN 0802	0.31%	90.60%		
							MDN 2807	0.41%	97.70%		
2008-063	5/1/2008	CVAFS-10	0.001	0.9999	98.1%	99.1%	MDN 1743	1.14%	96.40%		
							MDN 3327	0.16%	97.85%		
							MDN 2215	0.78%	101.70%		
2008-064	5/5/2008	CVAFS-9	0.003	1.0000	90.9%	96.2%	MDN 0481	0.70%	89.35%		
							MDN 2335	2.98%	89.05%		
							MDN 3431	0.56%	98.90%		
2008-065	5/5/2008	CVAFS-10	-0	1.0000	97.1%	95.9%	MDN 2781	0.57%	96.05%		
							MDN 2491	4.70%	95.10%		
							MDN 3424	0.70%	97.20%		
2008-066	5/8/2008	CVAFS-9	0.003	1.0000	94.9%	95.3%	MDN 2245	0.92%	94.95%		
							MDN 2680	0.99%	94.10%		
							MDN 3186	1.06%	95.65%		
2008-067	5/8/2008	CVAFS-10	0.002	0.9999	97.3%	97.6%	MDN 0179	2.29%	96.70%	MDN3056	0.022 ng/bottle
							MDN 3087	0.88%	96.25%	MDN2305	0.020 ng/bottle
							MDN 2791	1.00%	101.10%		
2008-068	5/12/2008	CVAFS-10	-0.002	0.9999	96.3%	96.1%	MDN 1942	1.63%	92.25%		
							MDN 3446	0.61%	97.75%		
							MDN 3442	2.81%	100.35%		
2008-069	5/13/2008	CVAFS-9	0	0.9999	96.7%	96.4%	MDN 2675	0.95%	97.40%		
							MDN 1971	0.46%	95.75%		
							MDN 0973	0.44%	106.25%		
2008-070	5/13/2008	CVAFS-10	-0.003	0.9999	97.8%	98.5%	MDN 2497	3.00%	99.40%		
							MDN 3126	0.25%	97.60%		
							MDN 1907	2.71%	95.25%		
2008-071	5/16/2008	CVAFS-9	0.006	1.0000	88.6%	94.6%	MDN 3493	21.83%	88.65%		
							MDN 3138	0.22%	90.75%		
							MDN 0813	1.05%	95.05%		
2008-072	5/16/2008	CVAFS-10	0.002	1.0000	98.1%	97.6%	MDN 3287	1.66%	97.95%		
							MDN 0121	0.56%	94.85%		
							MDN 2079	1.58%	95.70%		
2008-073	5/19/2008	CVAFS-9	0.004	0.9998	94.2%	92.8%	MDN 0761	2.50%	92.70%		
							MDN 3081	2.78%	89.20%		
							MDN 2726	7.52%	107.00%		
2008-074	5/19/2008	CVAFS-10	0.001	0.9999	96.1%	97.3%	MDN 2284	2.22%	95.60%		
							MDN 0430	1.76%	96.45%		
							MDN 2819	3.49%	95.05%		
2008-075	5/21/2008	CVAFS-9	0.003	1.0000	95.9%	96.0%	MDN 3285	0.12%	96.55%	MDN3362	0.019 ng/bottle
							MDN 3328	1.88%	99.70%	MDN3343	0.014 ng/bottle
							MDN 2291	4.47%	99.90%		

MDN Data Set ID	Analysis Date	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	NIST Recovery 2	Dup/Spike ID	Dup RPD	Spike Recovery	BB ID	BB Conc
2008-076	5/21/2008	CVAFS-10	0.002	0.9999	97.0%	97.4%	MDN 2613	0.20%	97.90%		
							MDN 2764	0.69%	96.70%		
							MDN 3406	3.25%	95.65%		
2008-077	5/22/2008	CVAFS-9	0.001	0.9999	96.4%	93.0%	MDN 2199	2.21%	89.85%		
							MDN 3310	2.39%	90.85%		
							MDN 2177	1.19%	100.50%		
2008-078	5/22/2008	CVAFS-10	0.001	1.0000	98.6%	95.7%	MDN 2087	0.12%	94.25%		
							MDN 3434	1.10%	94.40%		
							MDN 0922	0.62%	105.20%		
2008-079	5/27/2008	CVAFS-9	0.006	1.0000	96.5%	90.7%	MDN 0853	1.10%	92.00%		
							MDN 2520	0.98%	90.05%		
							MDN 2092	0.26%	98.05%		
2008-080	5/27/2008	CVAFS-10	0.004	0.9999	98.6%	96.0%	MDN 3047	4.54%	95.30%		
							MDN 2001	0.70%	95.90%		
							MDN 0393	1.71%	101.90%		
2008-081	6/9/2008	CVAFS-9	0.004	1.0000	95.8%	96.3%	MDN 2422	2.56%	97.20%		
							MDN 3185	0.52%	97.60%		
							MDN 2480	1.81%	102.50%		
2008-082	6/9/2008	CVAFS-10	0.004	0.9999	97.9%	95.5%	MDN 2719	0.66%	96.45%		
							MDN 2472	1.12%	96.55%		
							MDN 2417	1.00%	101.95%		
2008-083	6/10/2008	CVAFS-9	0.001	0.9999	97.7%	95.5%	MDN 3146	1.03%	97.85%		
							MDN 2272	1.73%	92.20%		
							MDN 2530	1.00%	102.70%		
2008-084	6/10/2008	CVAFS-10	0	0.9999	97.0%	98.7%	MDN 2745	4.46%	98.15%		
							MDN 2173	2.21%	98.05%		
							MDN 0185	2.68%	104.25%		
2008-085	6/16/2008	CVAFS-9	0.003	0.9999	94.6%	90.3%	MDN 0763	0.40%	91.25%	MDN3177	0.044 ng/bottle
							MDN 0740	0.20%	88.60%		
							MDN 2280	4.53%	96.25%		
2008-086	6/16/2008	CVAFS-10	0.002	1.0000	96.4%	96.9%	MDN 0914	0.58%	96.15%		
							MDN 0676	0.00%	99.50%		
							MDN 3123	2.22%	101.20%		
2008-087	6/17/2008	CVAFS-9	0.002	0.9999	96.0%	94.9%	MDN 2501	2.47%	95.90%		
							MDN 2728	1.27%	92.70%		
							MDN 2631	1.10%	103.40%		
2008-088	6/17/2008	CVAFS-10	-0.002	1.0000	96.4%	98.6%	MDN 0085	3.44%	97.65%	MDN2314	0.010 ng/bottle
							MDN 2794	2.42%	95.50%		
							MDN 2036	0.30%	95.35%		
2008-089	6/18/2008	CVAFS-10	0	1.0000	96.7%	97.3%	MDN 0427	1.47%	93.85%		
							MDN 0893	0.77%	98.25%		
							MDN 3005	4.07%	97.75%		
2008-090	6/23/2008	CVAFS-9	0.005	0.9999	95.5%	94.2%	MDN 2322	1.26%	98.30%		
							MDN 3206	2.14%	92.60%		
							MDN 0127	3.72%	101.50%		

MDN Data Set ID	Analysis Date	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	NIST Recovery 2	Dup/Spike ID	Dup RPD	Spike Recovery	BB ID	BB Conc
2008-091	6/23/2008	CVAFS-10	0.003	0.9999	96.8%	94.9%	MDN 2212	0.62%	94.75%		
							MDN 0960	3.98%	96.05%		
							MDN 2481	2.37%	99.00%		
2008-092	6/24/2008	CVAFS-9	0.007	0.9999	93.0%	88.2%	MDN 2822	0.82%	88.45%		
							MDN 2222	2.09%	87.65%		
							MDN 0159	4.23%	91.80%		
2008-093	6/26/2008	CVAFS-9	0.009	0.9999	94.9%	91.8%	MDN 2370	0.31%	92.00%		
							MDN 2532	20.41%	87.50%		
							MDN 2030	5.14%	116.95%		
2008-094	6/26/2008	CVAFS-10	0.003	0.9999	93.4%	92.3%	MDN 3428	0.85%	92.00%		
							MDN 2523	1.37%	93.20%		
							MDN 3458	16.94%	110.50%		
2008-095	7/1/2008	CVAFS-9	0.009	1.0000	96.7%	93.9%	MDN 0759	0.54%	92.00%		
							MDN 3291	1.38%	94.65%		
							MDN 0162	0.48%	98.60%		
2008-096	7/1/2008	CVAFS-10	0.003	1.0000	95.1%	94.7%	MDN 0414	3.07%	93.40%		
							MDN 3100	0.81%	98.45%		
							MDN 2166	4.21%	97.80%		
2008-097	6/24/2008	CVAFS-10	0.003	0.9999	94.1%	94.8%	MDN 2753	0.68%	94.95%	MDN2027	0.026 ng/bottle
							MDN 0951	1.59%	89.05%	MDN2522	0.008 ng/bottle
							MDN 2575	7.04%	94.60%	MDN2770	0.018 ng/bottle
2008-098	7/3/2008	CVAFS-9	0.01	0.9998	98.6%	94.4%	MDN 2568	2.72%	90.90%		
							MDN 3241	1.91%	87.80%		
							MDN 3121	2.34%	103.30%		
2008-099	7/3/2008	CVAFS-10	0.005	1.0000	96.4%	96.1%	MDN 2652	0.57%	93.45%	MDN2074	0.013 ng/bottle
							MDN 2617	1.67%	96.05%	MDN0427	0.033 ng/bottle
							MDN 3292	4.97%	95.75%		
2008-100	7/7/2008	CVAFS-9	0.004	0.9999	96.0%	90.8%	MDN 2396	0.36%	92.10%		
							MDN 0282	8.12%	91.55%		
							MDN 2621	4.79%	99.55%		
2008-101	7/7/2008	CVAFS-10	0.001	1.0000	90.6%	97.0%	MDN 2467	0.53%	94.15%		
							MDN 2057	2.49%	96.05%		
							MDN 2129	3.74%	95.60%		
2008-102	7/8/2008	CVAFS-9	0.003	0.9999	97.5%	92.9%	MDN 3107	0.25%	94.00%	MDN2486	0.029 ng/bottle
							MDN 3244	0.56%	87.85%		
							MDN 2125	5.36%	99.65%		
2008-103	7/8/2008	CVAFS-10	0.004	1.0000	98.7%		MDN 2593	2.80%	97.75%		
							MDN 2494	10.56%	98.05%		
2008-104	7/9/2008	CVAFS-9	0.002	0.9998	98.8%	96.3%	MDN 3193	3.37%	92.55%	MDN3376	0.030 ng/bottle
							MDN 2701	4.05%	89.80%	MDN2368	0.030 ng/bottle
							MDN 1743	2.74%	95.70%	MDN3143	0.021 ng/bottle
2008-105	7/9/2008	CVAFS-10	-0.001	1.0000	97.5%	98.7%	MDN 3449	0.23%	90.90%		
							MDN 3398	3.35%	91.00%		
							MDN 2043	0.11%	92.65%		

MDN Data Set ID	Analysis Date	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	NIST Recovery 2	Dup/Spike ID	Dup RPD	Spike Recovery	BB ID	BB Conc
2008-106	7/14/2008	CVAFS-9	0.001	0.9999	97.2%	89.5%	MDN 0866	1.42%	81.90%	MDN3361	0.024 ng/bottle
							MDN 2473	23.82%	105.60%		
							MDN 0770	2.97%	98.40%		
2008-107	7/14/2008	CVAFS-10	-0.001	1.0000	99.6%	98.4%	MDN 0268	8.47%	92.55%		
							MDN 3497	2.31%	98.25%		
							MDN 3469	0.87%	96.45%		
2008-108	7/16/2008	CVAFS-9	0.006	0.9998	98.1%	92.1%	MDN 2352	0.19%	87.85%		
							MDN 2148	2.03%	92.65%		
							MDN 3124	3.10%	96.15%		
2008-109	7/16/2008	CVAFS-10	-0.001	1.0000	98.6%	99.8%	MDN 2504	3.48%	92.70%		
							MDN 3060	3.00%	93.35%		
							MDN 1757	0.14%	98.25%		
2008-110	7/21/2008	CVAFS-9	0	0.9999	99.2%	88.3%	MDN 2482	2.45%	93.10%		
							MDN 1976	3.17%	95.70%		
							MDN 2685	3.93%	98.30%		
2008-111	7/21/2008	CVAFS-10	-0.001	0.9999	101.1%	99.9%					
2008-112	7/23/2008	CVAFS-9	0.001	0.9999	99.4%	97.2%	MDN 0125	1.20%	94.60%		
							MDN 2731	1.91%	97.25%		
							MDN 3197	0.34%	99.30%		
2008-113	7/23/2008	CVAFS-10	0	1.0000	101.7%	97.6%	MDN 2364	0.80%	94.70%		
							MDN 0787	10.15%	105.60%		
							MDN 3273	1.58%	97.35%		
2008-114	7/28/2008	CVAFS-9	0.004	0.9998	92.9%	99.5%	MDN 2050	0.72%	89.85%		
							MDN 3466	1.36%	91.25%		
							MDN 2158	2.58%	99.70%		
2008-115	7/28/2008	CVAFS-10	-0	1.0000	99.1%	96.8%	MDN 3363	3.66%	107.90%	MDN3433	0.026 ng/bottle
							MDN 3153	2.57%	97.45%		
							MDN 3242	1.16%	96.75%		
2008-116	7/29/2008	CVAFS-9	0.006	0.9994	98.4%	97.4%	MDN 3203	0.21%	95.40%	MDN2672	0.032 ng/bottle
							MDN 3084	0.17%	95.35%	MDN2720	0.046 ng/bottle
							MDN 2009	13.20%	94.50%		
2008-117	7/29/2008	CVAFS-10	0	1.0000	98.6%	102.4%	MDN 0767	1.55%	94.65%		
							MDN 0487	1.43%	95.55%		
							MDN 0722	0.96%	99.25%		
2008-118	8/5/2008	CVAFS-9	0.003	0.9999	98.0%	94.1%	MDN 2566	1.31%	93.95%		
							MDN 2339	4.52%	90.20%		
							MDN 0721	2.10%	96.85%		
2008-119	8/4/2008	CVAFS-10	0.007	0.9996	99.9%	100.6%	MDN 0783	5.57%	98.05%		
							MDN 0689	0.42%	93.00%		
							MDN 2163	0.81%	101.30%		
2008-120	8/5/2008	CVAFS-10	0.005	1.0000	100.6%	98.8%	MDN 3078	0.05%	92.55%	MDN2111	0.039 ng/bottle
							MDN 2241	3.30%	94.10%		
							MDN 3475	1.23%	98.00%		

MDN Data Set ID	Analysis Date	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	NIST Recovery 2	Dup/Spike ID	Dup RPD	Spike Recovery	BB ID	BB Conc
2008-121	8/6/2008	CVAFS-9	0.004	0.9999	98.3%	95.0%	MDN 0677	2.35%	93.45%	MDN2691	0.020 ng/bottle
							MDN 3054	0.57%	96.55%	MDN0393	0.030 ng/bottle
							MDN 3470	0.16%	94.90%		
2008-122	8/6/2008	CVAFS-10	0	1.0000	100.3%	98.9%	MDN 3431	0.96%	94.60%		
							MDN 3075	0.41%	93.95%		
							MDN 3476	1.26%	89.05%		
2008-123	8/18/2008	CVAFS-9	0.003	0.9998	99.8%	100.1%	MDN 3058	3.30%	100.10%		
							MDN 3329	0.86%	106.30%		
							MDN 2088	0.00%	100.30%		
2008-124	8/11/2008	CVAFS-9	0.004	0.9999	99.4%	101.2%	MDN 0131	1.65%	95.75%		
							MDN 0845	0.50%	99.50%		
							MDN 3169	2.87%	100.75%		
2008-125	8/11/2008	CVAFS-10	0.001	1.0000	101.9%	101.2%	MDN 3109	1.85%	102.10%	MDN2148	0.025 ng/bottle
							MDN 0199	0.99%	92.30%	MDN2469	0.015 ng/bottle
							MDN 3086	1.60%	96.70%		
2008-126	8/18/2008	CVAFS-1	0.005		101.1%	99.8%					
2008-127	8/20/2008	CVAFS-9	0.004	0.9998	100.6%	96.3%	MDN 2598	1.47%	95.35%		
							MDN 1955	0.67%	95.45%		
							MDN 3382	0.20%	98.40%		
2008-128	8/20/2008	CVAFS-10	0.001	1.0000	99.6%	100.1%	MDN 2766	2.28%	96.05%		
							MDN 3060	7.94%	98.20%		
							MDN 3458	1.04%	97.05%		
2008-129	8/21/2008	CVAFS-9	0.002	0.9999	101.1%	100.3%	MDN 0664	12.45%	85.05%	MDN2531	0.069 ng/bottle
							MDN 2224	2.39%	90.45%	MDN2720	0.034 ng/bottle
							MDN 3191	0.68%	98.60%		
2008-130	8/21/2008	CVAFS-10	-0.001	1.0000	100.4%	99.3%	MDN 3079	4.81%	94.45%	MDN0118	0.054 ng/bottle
							MDN 3198	3.08%	95.60%	MDN3077	0.029 ng/bottle
							MDN 2522	0.46%	91.35%		
2008-131	8/26/2008	CVAFS-9	0.006	0.9997	100.1%	94.4%	MDN 2494	1.58%	91.95%		
							MDN 3158	7.87%	94.10%		
							MDN 0155	3.66%	97.40%		
2008-132	8/26/2008	CVAFS-10	0.005		101.9%						
2008-133	8/27/2008	CVAFS-9	0.006	0.9999	96.7%	99.4%	MDN 3132	0.41%	98.15%		
							MDN 1740	1.41%	94.20%		
							MDN 2280	0.00%	99.50%		
2008-134	8/27/2008	CVAFS-10	-0.002	0.9999	99.2%	100.4%	MDN 2441	1.97%	97.55%		
							MDN 1755	1.13%	91.85%		
							MDN 0792	3.45%	103.20%		
2008-135	9/3/2008	CVAFS-9	0.003	1.0000	99.1%	94.7%	MDN 3489	2.61%	91.15%	MDN2817	0.027 ng/bottle
							MDN 0181	0.44%	92.70%		
							MDN 2138	0.37%	99.45%		

MDN Data Set ID	Analysis Date	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	NIST Recovery 2	Dup/Spike ID	Dup RPD	Spike Recovery	BB ID	BB Conc
2008-136	9/3/2008	CVAFS-10	-0.002	0.9999	100.1%	94.7%	MDN 2323	0.21%	94.85%	MDN3288	0.014 ng/bottle
							MDN 0400	7.05%	97.00%	MDN2014	0.013 ng/bottle
							MDN 0976	1.21%	97.05%		
2008-137	9/8/2008	CVAFS-9	0.005	0.9998	97.2%		MDN 3449	0.35%	97.70%		
							MDN 2799	6.02%	92.70%		
2008-138	9/10/2008	CVAFS-9	0.002	0.9999	99.9%	90.9%	MDN 3145	16.02%	84.60%		
							MDN 3080	6.14%	94.70%		
							MDN 2477	0.14%	94.05%		
2008-139	9/15/2008	CVAFS-9	0.001	0.9999	93.9%	99.7%	MDN 1950	0.40%	94.65%	MDN2719	0.042 ng/bottle
							MDN 0081	0.16%	86.40%		
							MDN 0954	0.21%	89.00%		
2008-140	9/17/2008	CVAFS-9	0	1.0000	100.2%	93.4%	MDN 0740	6.23%	91.80%		
							MDN 2383	13.40%	90.80%		
							MDN 2009	1.41%	98.50%		
2008-141	9/10/2008	CVAFS-10	0.001	0.9998	97.4%	77.9%	MDN 0959	2.90%	96.35%		
							MDN 2807	2.16%	97.80%		
							MDN 2139	0.28%	95.10%		
2008-142	9/15/2008	CVAFS-10	0	0.9999	94.7%	98.3%	MDN 2498	5.03%	91.30%		
							MDN 3231	2.50%	92.95%		
							MDN 3228	3.45%	99.30%		
2008-143	9/16/2008	CVAFS-9	0.003	0.9998	92.9%	99.4%	MDN 3113	1.97%	92.00%	MDN2481	0.058 ng/bottle
							MDN 0783	2.20%	91.80%	MDN3424	0.040 ng/bottle
							MDN 3421	1.87%	84.80%		
2008-144	9/17/2008	CVAFS-10	-0	0.9999	99.0%	98.9%	MDN 0914	3.06%	94.50%		
							MDN 2609	0.21%	99.05%		
							MDN 2341	2.68%	92.70%		
2008-145	9/19/2008	CVAFS-9	0.001	1.0000	98.5%	101.3%	MDN 2678	3.05%	94.65%		
							MDN 3498	1.04%	97.25%		
							MDN 2691	5.05%	101.15%		
2008-146	9/19/2008	CVAFS-10	0.002	1.0000	101.0%	100.2%	MDN 0973	5.41%	97.10%		
							MDN 3193	0.86%	98.70%		
							MDN 2103	10.00%	102.10%		
2008-147	9/24/2008	CVAFS-9	0.003	1.0000	101.1%	99.9%	MDN 3330	2.87%	96.30%		
							MDN 3300	4.67%	94.15%		
							MDN 0893	2.30%	82.80%		
2008-148	9/24/2008	CVAFS-10	0								
2008-149	9/25/2008	CVAFS-9	0.002	0.9999	98.3%	100.9%	MDN 2576	1.01%	96.30%		
							MDN 3445	2.08%	94.95%		
							MDN 2378	1.28%	93.40%		
2008-150	9/25/2008	CVAFS-10	0.001	1.0000	100.6%	100.8%	MDN 3046	1.54%	94.80%		
							MDN 1976	1.02%	97.75%		
							MDN 2081	9.03%	92.80%		

MDN Data Set ID	Analysis Date	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	NIST Recovery 2	Dup/Spike ID	Dup RPD	Spike Recovery	BB ID	BB Conc
2008-151	9/29/2008	CVAFS-9	0	1.0000	93.7%	99.0%	MDN 0698	0.91%	89.60%		
							MDN 3492	3.32%	91.20%		
							MDN 2443	1.39%	93.75%		
2008-152	9/29/2008	CVAFS-10	-0.002	1.0000	98.0%	100.2%	MDN 2423	7.63%	89.85%		
							MDN 0102	22.67%	99.65%		
							MDN 3078	5.02%	106.80%		
2008-153	9/30/2008	CVAFS-9	0.001	1.0000	99.6%	94.7%	MDN 0871	5.57%	90.75%		
							MDN 3375	5.16%	91.35%		
							MDN 0633	0.00%	89.70%		
2008-154	10/3/2008	CVAFS-10	-0	0.9999	90.8%	93.0%	MDN 2446	3.10%	94.45%	MDN3405	0.019 ng/bottle
							MDN 2450	6.90%	94.30%	MDN3401	0.015 ng/bottle
							MDN 0405	1.79%	96.65%	MDN3057	0.019 ng/bottle
										MDN0735	0.034 ng/bottle
2008-155	10/2/2008	CVAFS-9	0.002	0.9999	91.3%	93.6%	MDN 3376	2.02%	94.25%		
							MDN 2764	14.68%	95.84%		
							MDN 3359	1.94%	97.70%		
2008-156	10/2/2008	CVAFS-10	0.004	0.9995	96.0%	91.8%	MDN 2775	2.89%	92.85%		
							MDN 3060	4.61%	100.40%		
							MDN 0158	2.10%	104.10%		
2008-157	10/9/2008	CVAFS-9	0.002	0.9997	93.2%	89.8%	MDN 0135	3.21%	92.05%		
							MDN 2611	1.97%	92.60%		
							MDN 2347	0.65%	95.80%		
2008-158	10/8/2008	CVAFS-10	0.004	0.9999	90.9%	91.9%	MDN 2547	0.00%	90.70%		
							MDN 3148	1.39%	92.55%		
							MDN 3069	1.14%	101.35%		
2008-159	10/10/2008	CVAFS-9	0.002	1.0000	93.9%	89.7%	MDN 2652	6.03%	91.85%		
							MDN 0940	2.99%	93.40%		
							MDN 0284	0.63%	95.85%		
2008-160	10/10/2008	CVAFS-10	0.005	1.0000	94.4%	90.8%	MDN 3225	0.23%	91.75%	MDN0922	0.015 ng/bottle
							MDN 2798	7.13%	93.05%	MDN3082	0.019 ng/bottle
							MDN 3293	0.00%	87.40%		
2008-161	10/14/2008	CVAFS-9	0.002	0.9998	92.1%	94.9%	MDN 0120	1.30%	94.40%		
							MDN 2406	2.59%	95.05%		
							MDN 0861	2.12%	97.85%		
2008-162	10/14/2008	CVAFS-10	0.001	0.9999	89.2%	90.8%	MDN 3140	2.40%	89.70%	MDN0698	0.043 ng/bottle
							MDN 2427	6.39%	90.75%		
							MDN 3307	4.02%	84.85%		
2008-163	11/10/2008	CVAFS-9	0.0098	0.9999	93.1%	93.8%	MDN 2717	0.00%	96.80%		
							MDN 2373	1.13%	96.55%		
							MDN 3257	0.00%	97.70%		
2008-164	10/16/2008	CVAFS-10	0.01	1.0000	93.1%	92.4%	MDN 2628	2.19%	98.90%		
							MDN 3011	0.41%	94.55%		
							MDN 3346	0.17%	99.55%		
2008-165	10/22/2008	CVAFS-9	0.016	0.9999	94.1%	89.7%	MDN 1936	3.23%	91.50%		
							MDN 2161	3.17%	91.20%		
							MDN 2679	0.29%	92.25%		

MDN Data Set ID	Analysis Date	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	NIST Recovery 2	Dup/Spike ID	Dup RPD	Spike Recovery	BB ID	BB Conc
2008-166	10/22/2008	CVAFS-10	0.02	1.0000	92.2%	88.9%	MDN 0277	15.38%	88.50%		
							MDN 3413	4.23%	95.35%		
							MDN 1999	3.42%	82.15%		
2008-167	10/24/2008	CVAFS-9	0.002	1.0000	94.3%	91.9%	MDN 3355	2.40%	92.70%	MDN2798	0.020 ng/bottle
							MDN 3470	1.05%	94.65%		
							MDN 0427	0.55%	97.50%		
2008-168	10/23/2008	CVAFS-9	0	0.9999	92.9%	94.2%	MDN 2703	1.36%	92.80%		
							MDN 0759	0.43%	97.20%		
							MDN 2042	1.50%	91.95%		
2008-169	10/24/2008	CVAFS-10	0.001	1.0000	91.6%	93.4%	MDN 3370	0.83%	92.15%		
							MDN 3042	8.71%	93.40%		
							MDN 2638	0.12%	86.65%		
2008-170	10/23/2008	CVAFS-10	0.001	0.9999	93.6%	93.1%	MDN 2514	6.12%	92.15%		
							MDN 2190	1.76%	99.65%		
							MDN 3186	1.12%	92.75%		
2008-171	10/30/2008	CVAFS-9	0.002	0.9999	92.1%	93.8%	MDN 2494	5.59%	95.95%		
							MDN 3160	2.33%	95.75%		
							MDN 0154	2.77%	98.00%		
2008-172	10/30/2008	CVAFS-10	0.003	1.0000	93.1%	93.8%	MDN 3388	1.09%	91.65%		
							MDN 3450	2.99%	92.65%		
							MDN 0797	2.01%	97.70%		
2008-173	10/31/2008	CVAFS-9	-0.002	0.9999	94.8%	94.7%	MDN 0715	2.23%	103.20%		
							MDN 2554	1.21%	96.45%		
							MDN 2051	0.45%	96.90%		
2008-174	10/31/2008	CVAFS-10	0.002	0.9999	94.6%	93.3%	MDN 2288	0.61%	96.56%		
							MDN 3423	0.84%	99.20%		
							MDN 3356	0.57%	89.75%		
2008-175	11/6/2008	CVAFS-9	0.002	0.9998	90.7%	92.9%	MDN 3001	3.92%	93.40%		
							MDN 3466	3.15%	92.75%		
							MDN 3019	1.21%	103.20%		
2008-176	11/6/2008	CVAFS-10	0.003	1.0000	92.6%	93.2%	MDN 2362	4.86%	89.05%		
							MDN 2306	0.97%	89.70%		
							MDN 2738	1.04%	86.05%		
2008-177	11/7/2008	CVAFS-9	0	0.9999	94.1%	94.6%	MDN 2206	0.90%	99.05%		
							MDN 3054	14.75%	96.70%		
							MDN 2397	0.00%	95.40%		
2008-178	11/7/2008	CVAFS-10	0	0.9999	94.6%	93.9%	MDN 0973	3.42%	98.00%		
							MDN 1952	0.29%	96.05%		
							MDN 2491	0.52%	96.20%		
2008-179	11/11/2008	CVAFS-9	0.007	0.9999	95.4%	94.5%	MDN 3446	0.27%	98.55%	MDN3148	0.020 ng/bottle
							MDN 2205	4.27%	97.20%	MDN3251	0.024 ng/bottle
							MDN 2431	3.58%	102.60%	MDN3457	0.021 ng/bottle
										MDN3138	0.028 ng/bottle
										MDN0162	0.022 ng/bottle

MDN Data Set ID	Analysis Date	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	NIST Recovery 2	Dup/Spike ID	Dup RPD	Spike Recovery	BB ID	BB Conc
2008-180	11/11/2008	CVAFS-10	0.003	1.0000	93.4%	93.0%	MDN 1953	1.14%	93.70%	MDN1907	0.025 ng/bottle
							MDN 2572	13.08%	94.00%		
							MDN 2757	1.37%	95.80%		
2008-181	11/13/2008	CVAFS-9	0.007	0.9999	95.7%	94.2%	MDN 3502	3.06%	97.40%	MDN2093	0.032 ng/bottle
							MDN 2585	2.65%	94.40%		
							MDN 3393	1.33%	97.55%		
2008-182	11/13/2008	CVAFS-10	0.001	1.0000	95.5%	91.3%	MDN 2726	4.90%	91.30%	MDN3388	0.054 ng/bottle
							MDN 2241	5.45%	93.60%		
							MDN 3172	1.29%	111.05%		
2008-183	11/18/2008	CVAFS-9	-0	0.9999	95.7%	94.9%	MDN 2603	4.08%	97.80%		
							MDN 1995	20.00%	97.10%		
							MDN 3336	1.54%	90.40%		
2008-184	11/14/2008	CVAFS-10	0.001	0.9999	94.7%	94.2%	MDN 0632	1.63%	94.00%		
							MDN 2748	0.44%	96.35%		
							MDN 3302	6.47%	84.15%		
2008-185	11/14/2008	CVAFS-9	0.002	0.9999	93.1%	93.5%	MDN 1927	0.75%	95.10%		
							MDN 2137	2.27%	95.00%		
							MDN 0480	4.45%	91.85%		
2008-186	11/18/2008	CVAFS-10	-0	1.0000	94.2%	92.4%	MDN 3202	0.77%	97.90%	MDN3054	0.010 ng/bottle
							MDN 3323	6.20%	97.50%		
							MDN 2796	0.40%	89.45%		
2008-187	12/5/2008	CVAFS-9	0	0.9999	94.5%	92.3%	MDN 3367	3.66%	98.35%	MDN3255	0.015 ng/bottle
							MDN 3447	1.77%	99.60%		
							MDN 3121	1.76%	96.90%		
2008-188	11/25/2008	CVAFS-10	0.001	0.9999	95.8%	94.9%	MDN 3387	3.06%	93.45%	MDN2738	0.028 ng/bottle
							MDN 0172	0.64%	89.50%	MDN0297	0.014 ng/bottle
							MDN 3306	5.29%	80.65%		
2008-189	11/26/2008	CVAFS-9	-0	0.9999	95.5%	94.2%	MDN 0266	3.55%	97.15%		
							MDN 2624	3.81%	97.95%		
							MDN 2264	1.99%	94.45%		
2008-190	11/26/2008	CVAFS-10	0	1.0000	94.4%	94.3%	MDN 0836	2.82%	97.20%	MDN2770	0.017 ng/bottle
							MDN 0866	6.51%	96.05%		
							MDN 2639	5.26%	85.85%		
2008-191	12/2/2008	CVAFS-9	0.002	0.9999	95.6%	95.7%	MDN 0117	1.36%	99.35%		
							MDN 0742	1.85%	98.45%		
							MDN 2520	0.00%	98.00%		
2008-192	12/2/2008	CVAFS-10	0.004	0.9999	95.2%	95.1%	MDN 2797	1.68%	95.15%		
							MDN 0757	1.74%	99.80%		
							MDN 0982	1.54%	92.70%		
2008-193	12/3/2008	CVAFS-9	0.003	0.9998	94.7%	95.9%	MDN 2192	17.87%	85.55%	MDN3312	0.006 ng/bottle
							MDN 3064	1.08%	92.35%	MDN3335	0.013 ng/bottle
							MDN 2711	2.22%	105.30%		
2008-194	12/3/2008	CVAFS-10	0.003	1.0000	95.1%	92.4%	MDN 0633	8.88%	98.90%		
							MDN 2475	2.37%	89.90%		
							MDN 3445	2.04%	79.80%		

MDN Data Set ID	Analysis Date	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	NIST Recovery 2	Dup/Spike ID	Dup RPD	Spike Recovery	BB ID	BB Conc
2008-195	12/10/2008	CVAFS-9	0.006	0.9999	95.5%	95.1%	MDN 3059	0.27%	97.85%		
							MDN 0679	2.02%	100.60%		
							MDN 3082	2.50%	98.35%		
2008-196	12/10/2008	CVAFS-10	0.005	1.0000	94.4%	93.9%	MDN 2100	0.45%	94.05%	MDN3169	0.009 ng/bottle
							MDN 2244	0.93%	97.85%		
							MDN 0187	1.36%	89.90%		
2008-197	12/12/2008	CVAFS-9	0.003	0.9999	96.3%		MDN 2534	0.83%	99.10%		
							MDN 0767	1.08%	96.60%		
2008-198	12/12/2008	CVAFS-10	0.002	0.9998	94.4%		MDN 2064	1.62%	84.80%		
							MDN 3337	11.20%	85.50%		
2008-199	12/16/2008	CVAFS-9	0.001	0.9999	95.5%	109.1%	MDN 3157	4.24%	86.90%		
							MDN 2044	1.24%	87.25%		
							MDN 1910	9.02%	95.00%		
2008-200	12/16/2008	CVAFS-10	0.003	0.9998	88.2%	95.7%	MDN 0189	0.36%	88.35%		
							MDN 3334	3.35%	94.35%		
							MDN 3343	5.35%	75.45%		
2008-201	12/19/2008	CVAFS-9	0.004	0.9999	95.6%	94.4%	MDN 0778	4.03%	96.15%	MDN2723	0.012 ng/bottle
							MDN 0846	0.00%	95.80%		
							MDN 2617	4.24%	99.95%		
2008-202	12/19/2008	CVAFS-10	0.003	1.0000	92.9%	95.7%	MDN 1753	4.80%	91.70%		
							MDN 1924	20.33%	93.95%		
							MDN 2430	1.44%	78.30%		
2008-203	12/30/2008	CVAFS-9	0.003	1.0000	94.2%	103.0%	MDN 3498	44.38%	93.55%		
							MDN 3213	9.89%	95.25%		
							MDN 2148	1.76%	106.25%		
2008-204	12/30/2008	CVAFS-10	0.004	0.9986	96.4%		MDN 2473	1.69%	93.95%		
							MDN 3454	0.00%	96.50%		
2008-205	12/31/2008	CVAFS-9	0.002	0.9977	95.9%	100.9%	MDN 1736	10.20%	115.20%	MDN3227	0.017 ng/bottle
							MDN 3469	4.17%	99.00%	MDN3126	0.013 ng/bottle
							MDN 3456	3.80%	115.80%	MDN0090	0.038 ng/bottle
2008-206	12/31/2008	CVAFS-10	0	0.9998	96.3%	93.3%	MDN 3087	4.03%	92.95%	MDN2128	0.009 ng/bottle
							MDN 3441	3.73%	97.45%		
							MDN 3253	1.46%	80.45%		
2008-207	1/2/2009	CVAFS-9	0.001	1.0000	95.1%	96.5%	MDN 0797	1.63%	97.80%	MDN2222	0.013 ng/bottle
							MDN 0873	0.97%	99.60%		
							MDN 3470	0.00%	98.10%		
2008-208	1/2/2009	CVAFS-10	0.002	1.0000	94.4%	95.8%	MDN 3109	2.85%	95.50%		
							MDN 0896	2.32%	97.30%		
							MDN 3261	1.62%	88.25%		
2008-209	1/6/2009	CVAFS-9	0.003	0.9999	95.4%	92.5%	MDN 0401	5.38%	95.25%		
							MDN 0746	2.73%	105.05%		
							MDN 2431	0.46%	98.75%		

MDN Data Set ID	Analysis Date	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	NIST Recovery 2	Dup/Spike ID	Dup RPD	Spike Recovery	BB ID	BB Conc
2008-210	1/6/2009	CVAFS-10	0	1.0000	93.4%	95.6%	MDN 3001	2.02%	93.70%		
							MDN 2423	3.73%	95.40%		
							MDN 2385	6.45%	90.50%		
2008-211	1/7/2009	CVAFS-9	0.004	0.9999	94.7%	96.0%	MDN 0954	0.16%	97.55%		
							MDN 3280	0.43%	97.05%		
							MDN 0639	0.78%	101.95%		
2008-212	1/7/2009	CVAFS-10	0.001	1.0000	95.9%	94.1%	MDN 0656	0.60%	93.85%		
							MDN 2783	2.74%	95.65%		
							MDN 2603	1.93%	79.50%		
2008-213	1/9/2009	CVAFS-9	0.001	0.9999	93.1%	95.7%	MDN 2639	0.93%	98.10%	MDN3271	0.018 ng/bottle
							MDN 2355	0.85%	95.50%	MDN3084	0.011 ng/bottle
							MDN 0118	2.31%	100.45%		
2008-214	1/9/2009	CVAFS-10	0.002	0.9999	96.5%	93.9%	MDN 3267	2.72%	95.55%		
							MDN 0266	24.34%	102.50%		
							MDN 1732	3.39%	91.85%		
2008-215	1/13/2009	CVAFS-9	0.002	0.9999	95.7%	94.6%	MDN 2789	3.31%	97.65%		
							MDN 3501	4.53%	98.80%		
							MDN 2526	0.47%	102.15%		
2008-216	1/13/2009	CVAFS-10	0.003	0.9998	95.9%	91.0%	MDN 3132	2.99%	89.05%		
							MDN 2569	6.33%	96.60%		
							MDN 3290	0.74%	81.40%		
2008-217	1/15/2009	CVAFS-9	0.001	0.9997	93.3%	96.1%	MDN 2290	2.13%	96.85%		
							MDN 0081	0.00%	91.30%		
							MDN 2032	3.97%	108.00%		
2008-218	1/15/2009	CVAFS-10	0.002	1.0000	96.5%	92.5%	MDN 3196	0.00%	90.90%		
							MDN 1754	2.93%	96.00%		
							MDN 3338	5.72%	78.95%		
2008-219	1/19/2009	CVAFS-9	0.001	0.9998	94.7%	91.6%	MDN 3304	4.68%	92.15%		
							MDN 2548	3.35%	93.70%		
							MDN 2717	3.17%	96.65%		
2008-220	1/19/2009	CVAFS-10	0	0.9999	91.0%	93.9%	MDN 2097	1.70%	90.45%		
							MDN 3005	6.61%	96.70%		
							MDN 2589	1.07%	84.70%		
2008-221	2/3/2009	CVAFS-9	0.006	0.9999	87.5%	97.0%	MDN 2563	16.24%	80.90%		
							MDN 2573	1.07%	98.95%		
							MDN 3228	0.79%	99.50%		
2008-222	2/3/2009	CVAFS-10	0.004	0.9988	97.6%	91.2%					
2008-223	2/9/2009	CVAFS-9	0.003	1.0000	95.7%	92.6%	MDN 3344	2.01%	96.30%		
							MDN 2193	2.39%	94.95%		
							MDN 3392	2.93%	98.10%		
2008-224	2/9/2009	CVAFS-10	0.001	1.0000	94.9%	94.1%	MDN 2333	2.22%	93.95%		
							MDN 2750	1.64%	97.65%		
							MDN 1738	1.39%	98.50%		

MDN Data Set ID	Analysis Date	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	NIST Recovery 2	Dup/Spike ID	Dup RPD	Spike Recovery	BB ID	BB Conc
2008-225	2/10/2009	CVAFS-9	0.002	0.9998	98.2%	94.3%	MDN 2449	4.60%	101.90%		
							MDN 3247	1.89%	104.20%		
							MDN 2488	3.00%	102.85%		
2008-226	2/10/2009	CVAFS-10	0.002	0.9999	97.0%	95.1%	MDN 2207	3.17%	91.05%		
							MDN 2631	0.00%	99.60%		
							MDN 2027	2.32%	90.60%		
2008-227	2/11/2009	CVAFS-10	0.001	1.0000	93.8%	95.7%	MDN 3478	0.85%	93.05%		
							MDN 3439	6.02%	93.60%		
							MDN 2137	6.15%	104.90%		