National Atmospheric Deposition Program

Mercury Deposition Network

Mercury Analytical Laboratory
2007 Annual Quality Assurance Report

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Definitions of Acronyms and Abbreviations

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
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
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

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 2008, 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.

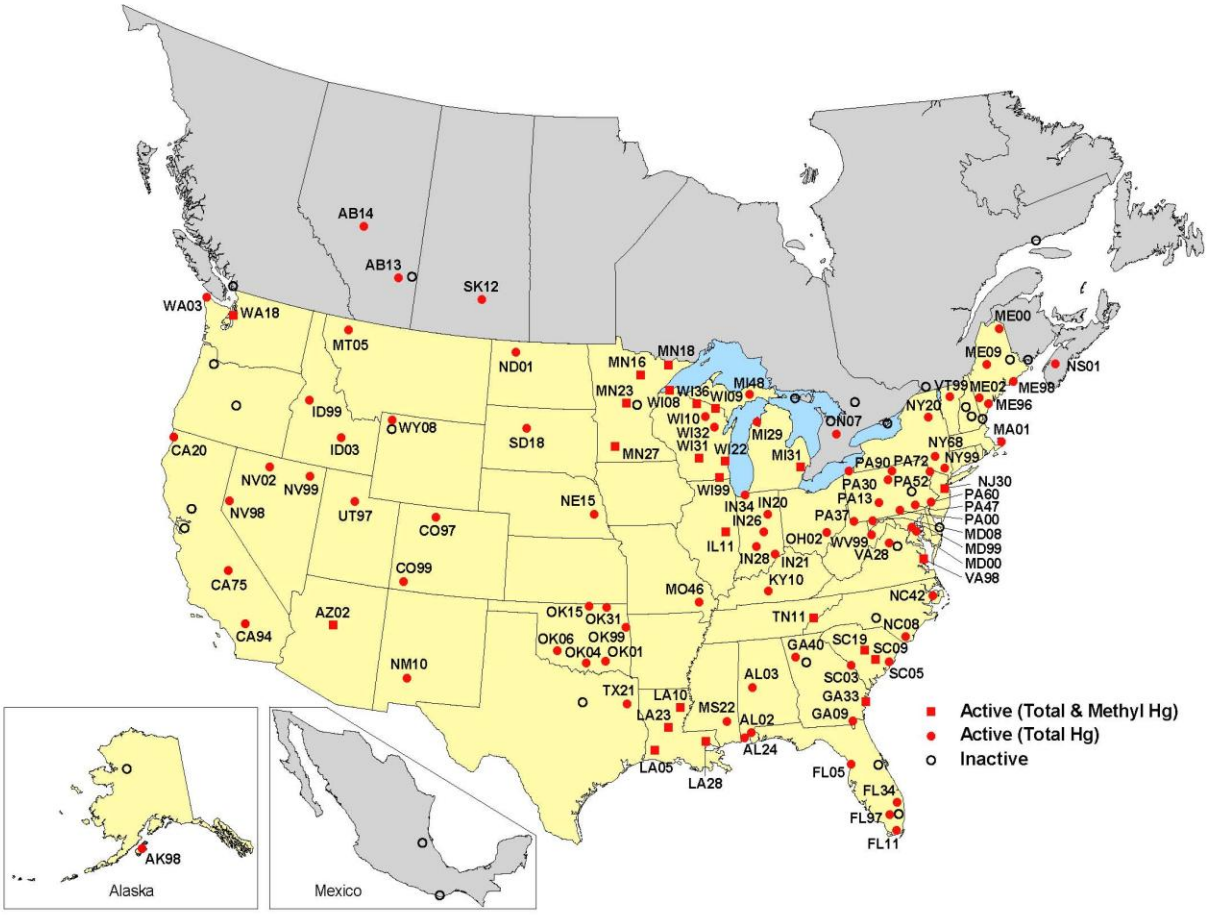

Figure 1 - Locations of MDN Sites During 2007

FGS continued to maintain and demonstrate acceptable quality control in 2007. Due to the addition of new MDN sites, the number of quality control points increased from about 1,750 in 2006, to more than 1900 quality control measurements in 2007. 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.

Outlook

The MDN continues to gain attention as the largest and longest-running national mercury wet deposition network in North America. Feedback from sponsors and other interested organizations indicates that MDN will experience significant growth in 2008-2009. With this growth, HAL will continue to look for ways to improve the program to ensure the highest quality. The following are goals HAL has set to maintain and improve quality throughout 2008-2009:

HAL will continue trace metals in wet deposition research in 2008. There is a strong indication that there are many sponsors that will want to participate in a combined mercury and trace metals program. In 2007, five MDN sites were collecting samples for trace metals following HAL's trace metal standard operating procedures.

HAL research in dry deposition of mercury and trace metals in sites in the southern U.S. will continue through 2008. HAL expects this research to lay the groundwork for a potential non-NADP product for interested MDN sponsors.

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 20mL 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 2007, no laboratory bottle blank was higher than the total mercury MDL. The current MDL for total mercury is 0.085 ng/L. In 2007 there were several laboratory bottle blanks above the MDL for methyl

mercury.The current MDL for methylmercury is 0.025 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

2007 Laboratory Bottle Blanks	n	Average (ng/bottle)	Stdev	MDL (ng/L)
Total Mercury	109	0.015	0.007	0.085
Methyl Mercury	73	0.014	0.028	0.025

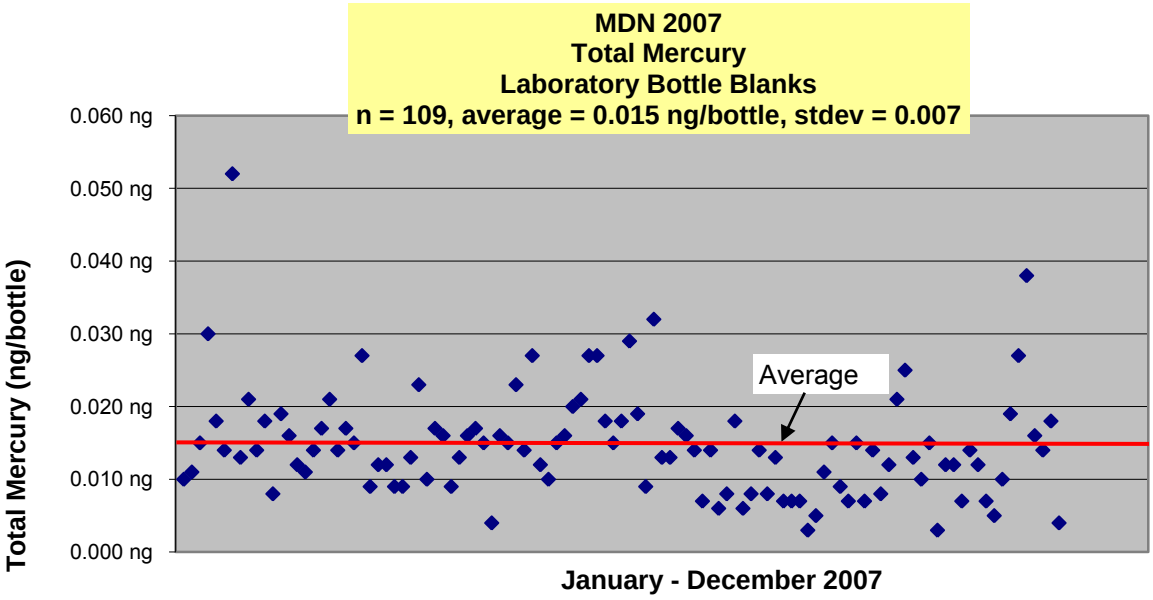

Figure 2 - Plot of Total Mercury Concentrations in Laboratory Bottle Blanks for 109 Samples Analyzed in 2007

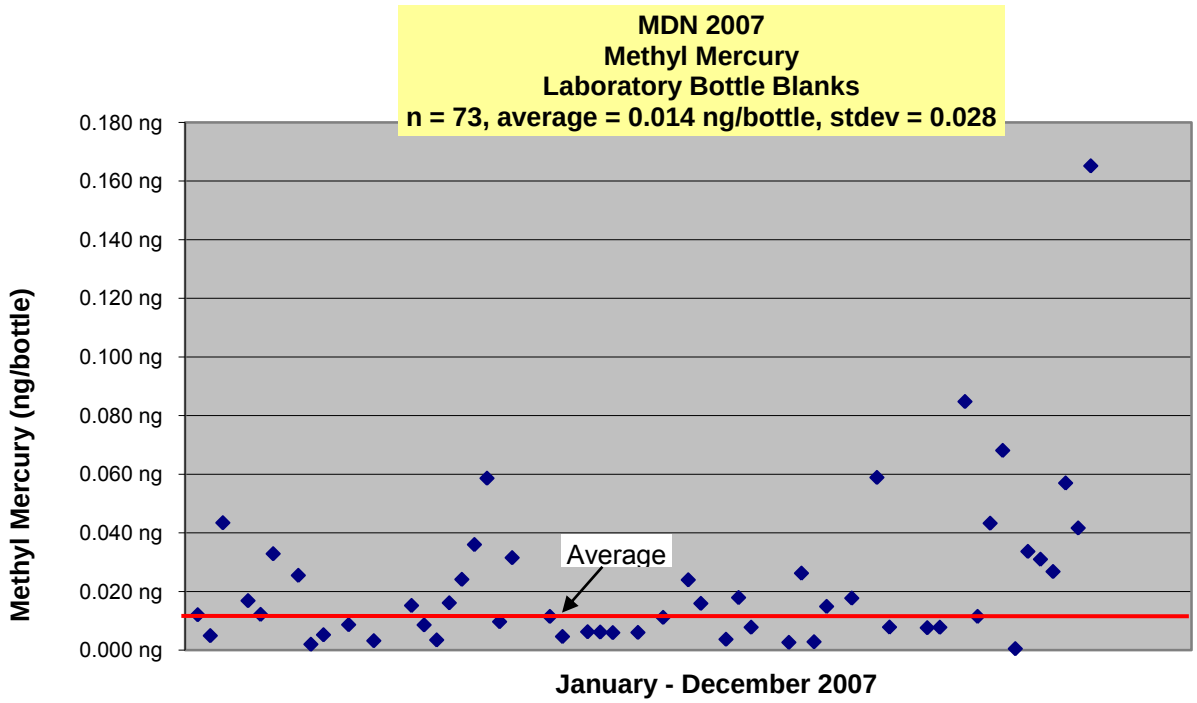

Figure 3 - Plot of Methyl Mercury Concentrations in Laboratory Bottle Blanks for 73 Samples Analyzed in 2007

3. Quality Control

Quality Control (QC) samples each have an expected target value that can be used to objectively assesspreparation and analytical method performance. 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 nine types of QC samples for the MDN project: laboratory bottle blanks, 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 2007, 5 preparation blanks for total mercury were above the newly established control limit of 0.198 ng/L (3 σ). The previous control limit of 0.25 ng/L was not exceeded. In 2007, the mean of the preparation blanks for methylmercury were all below the newly established control limit of 0.036 ng/L (3σ) (See table 2).

Table 2 - Preparation Blanks Summary Table

2007 Preparation Blanks	n	Average (ng/L)	Stdev (ng/L)	MDL (ng/L)	Control Limit (ng/L)
Total Mercury	627	0.045	0.051	0.085	0.198
Methyl Mercury	117	0.006	0.009	0.019	0.036

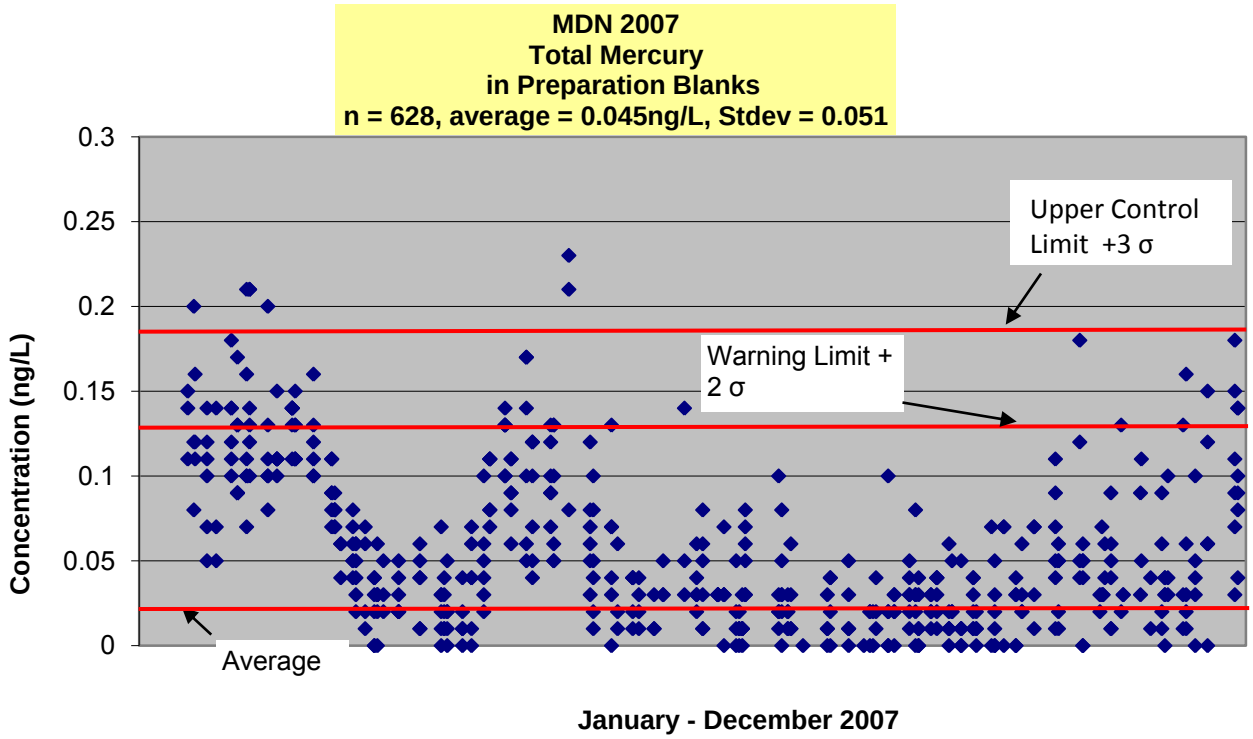

Figure 4 - Control Chart for Total Mercury Concentration in Reagent Preparation Blanks During 2007

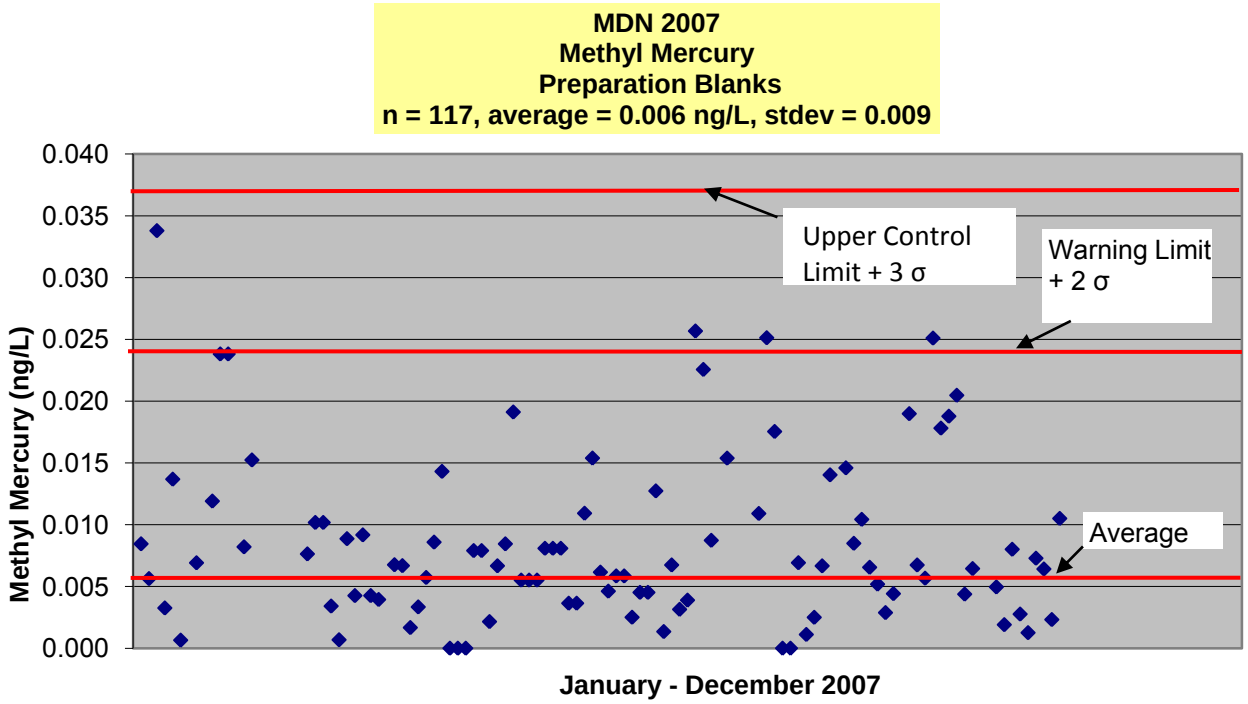

Figure 5 - Control Chart for Methyl Mercury Concentration in Reagent Preparation Blanks During 2007

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 1.0ng standard for total mercury and a 0.1ng 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 mercury standard solutions are traceable to certified standards or manufacturer lot number. Currently there is no commercially available methylmercury standard. FGS produced its own methyl mercury standard. 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

In 2007, 5 samples were above the newly established control limit of 111.8% (+3σ) and 1 sample was below the newly established control limit of 82.2% (-3σ). There were no ongoing calibration standard recoveries for the MDN project in 2007 that were above or below the newly established control limits of 121.5% (+3σ) and 65.0% (-3σ) (See table 3).

Table 3 - Ongoing Calibration Standard Summary Table

2007 Ongoing Calibration Standard	n	Average (%)	Stdev (%)	Upper control limit (%)	Lower control limit (%)
Total Mercury	711	97.0	4.9	111.8	82.2
Methyl Mercury	205	93.2	9.4	121.5	65.0

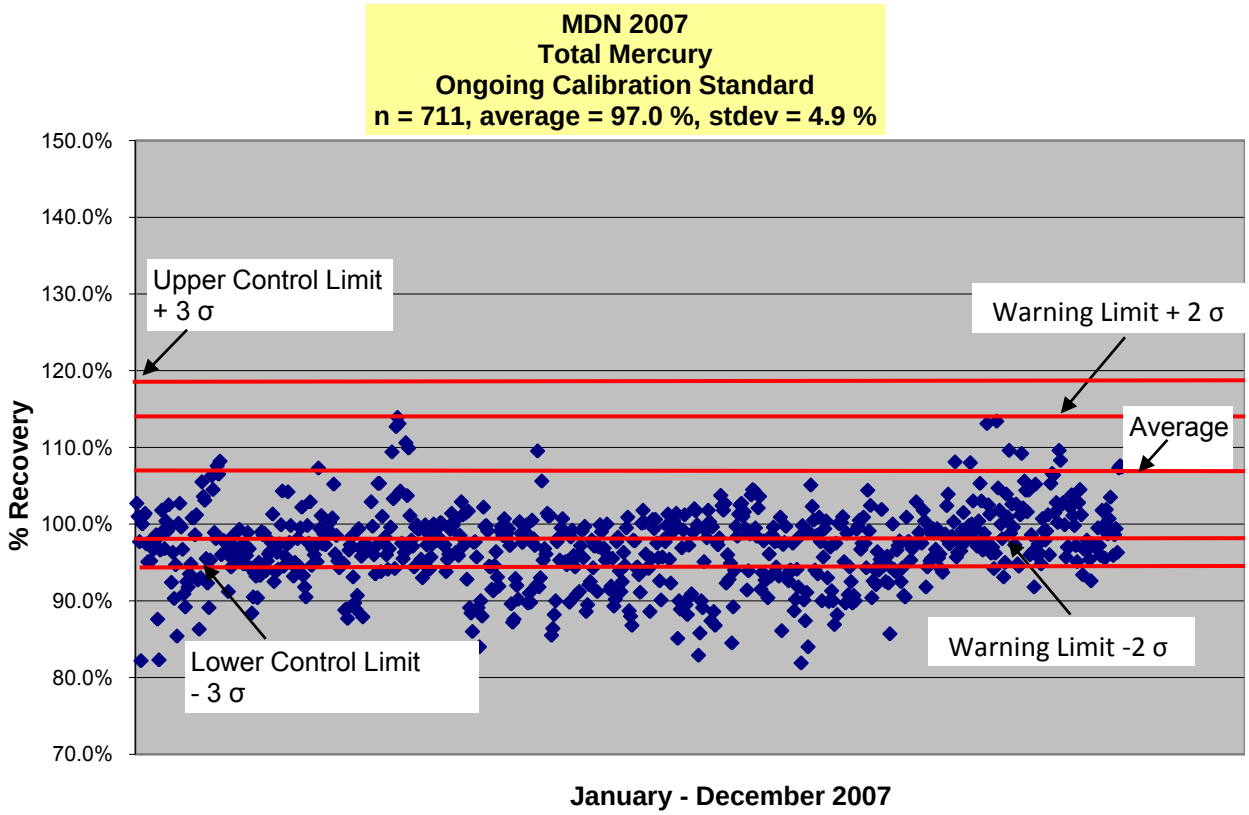

Figure 6 - Control Chart for Total Mercury Ongoing Calibration Standard Percent Recovery During 2007

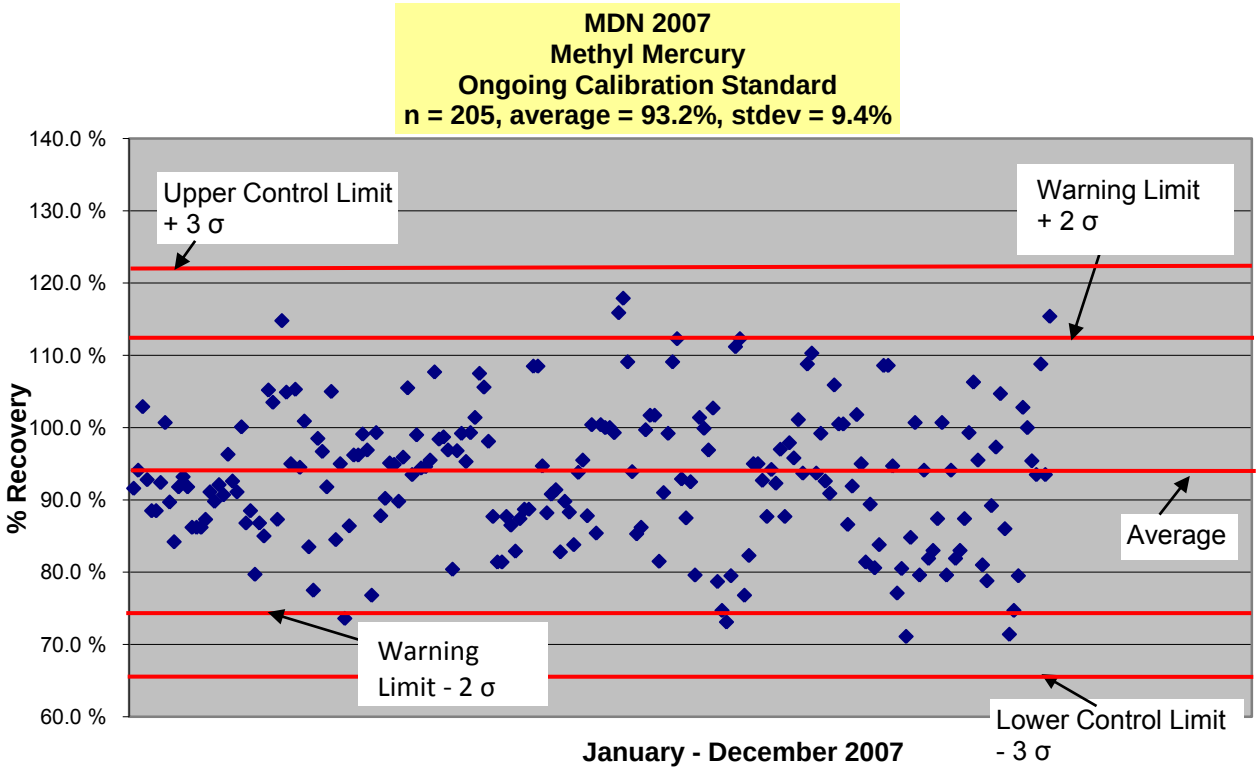

Figure 7 - Control Chart for Methyl Mercury Ongoing Calibration Standard Percent Recovery During 2007

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 2007 that were above the newly established control limit of 0.143 ng/L. No calibration blanks were above the previous upper control limit of 0.25 ng/L. There were no ongoing calibration blanks for methylmercury that were above the newly established control limit of 0.031 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

2007 Ongoing Calibration Blanks	n	Average (ng/L)	Stdev (ng/L)	MDL (ng/L)	Upper control limit (ng/L)
Total Mercury	1525	0.002	0.047	0.085	0.143
Methyl Mercury	193	0.011	0.007	0.019	0.031

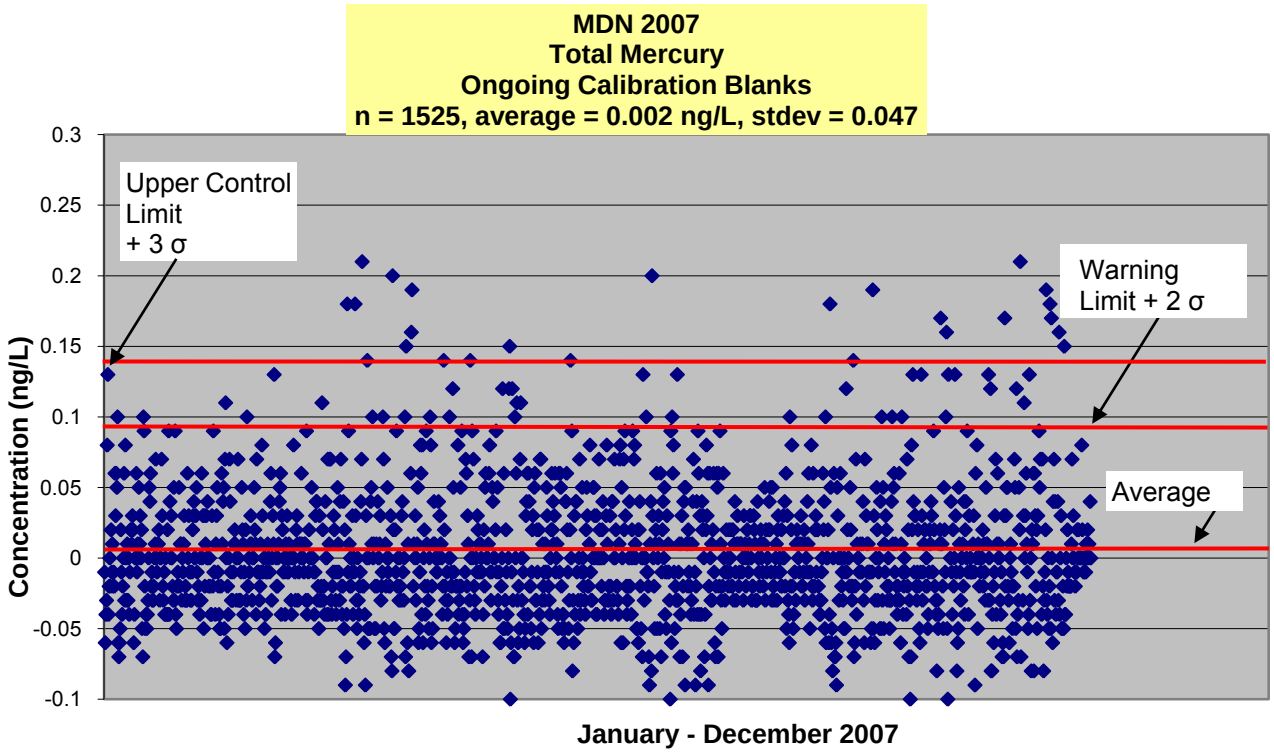

Figure 8 - Control Chart for Total Mercury Ongoing Calibration Blanks During 2007

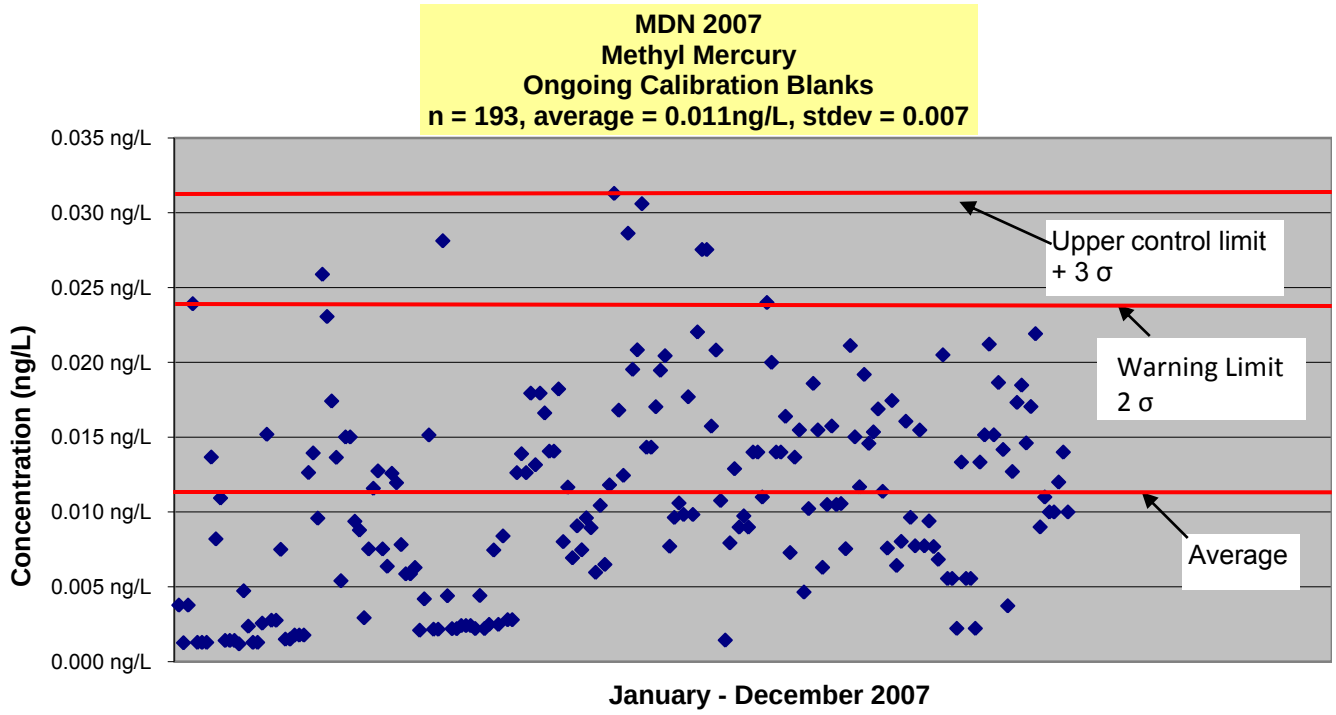

Figure 9 - Control Chart for Methyl Mercury Ongoing Calibration Blanks During 2007

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

Because matrix duplicates are parts of the same sample, 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 2007 that were above the newly established control limit of 14.46%. 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 70.8% (+3σ) (See table 5). The previous upper control limit was 25%.

Table 5 - Matrix Duplicates Summary Table

2007 Matrix Duplicates	n	Average (%)	Stdev (%)	Upper control limit (%)
Total Mercury	613	3.62	3.61	14.46
Methyl Mercury	16	24.90	15.30	70.80

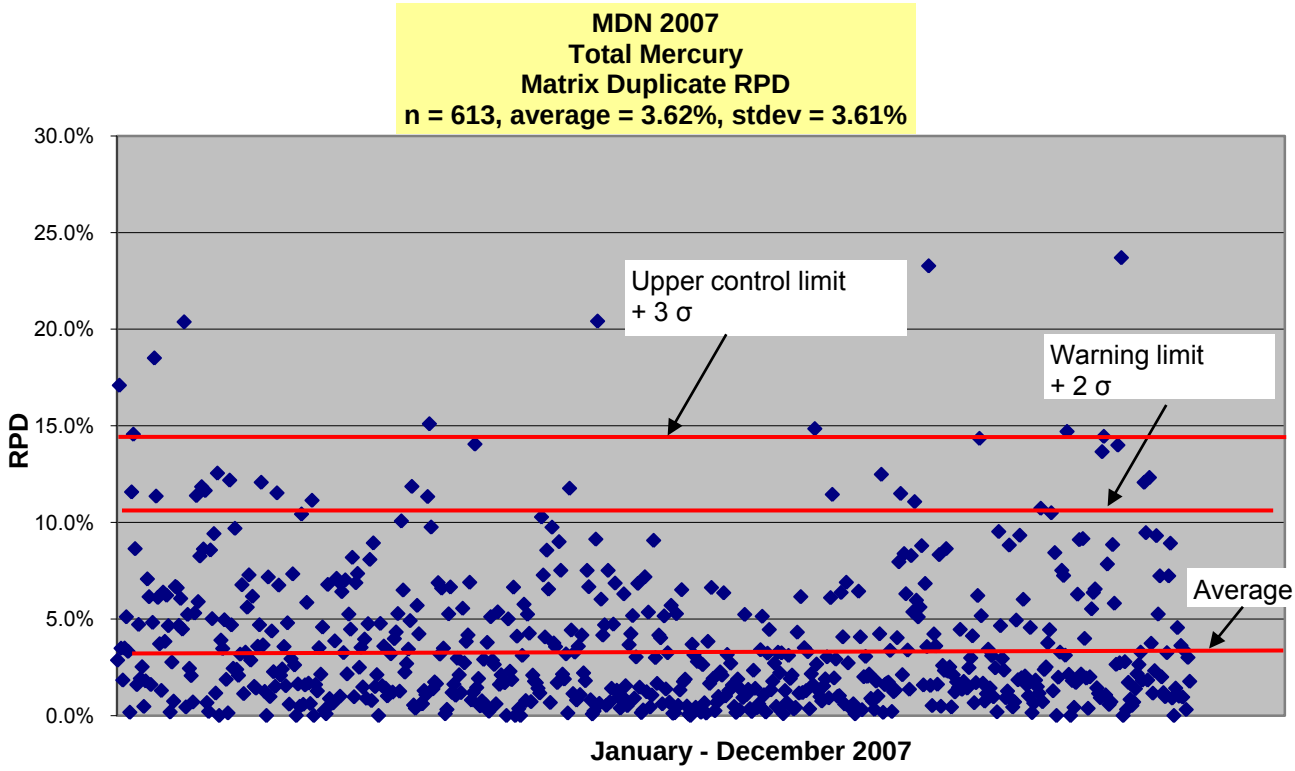

Figure 10 - Control Chart of the Relative Percent Differences for Total Mercury Concentrations in Matrix Duplicates During 2007

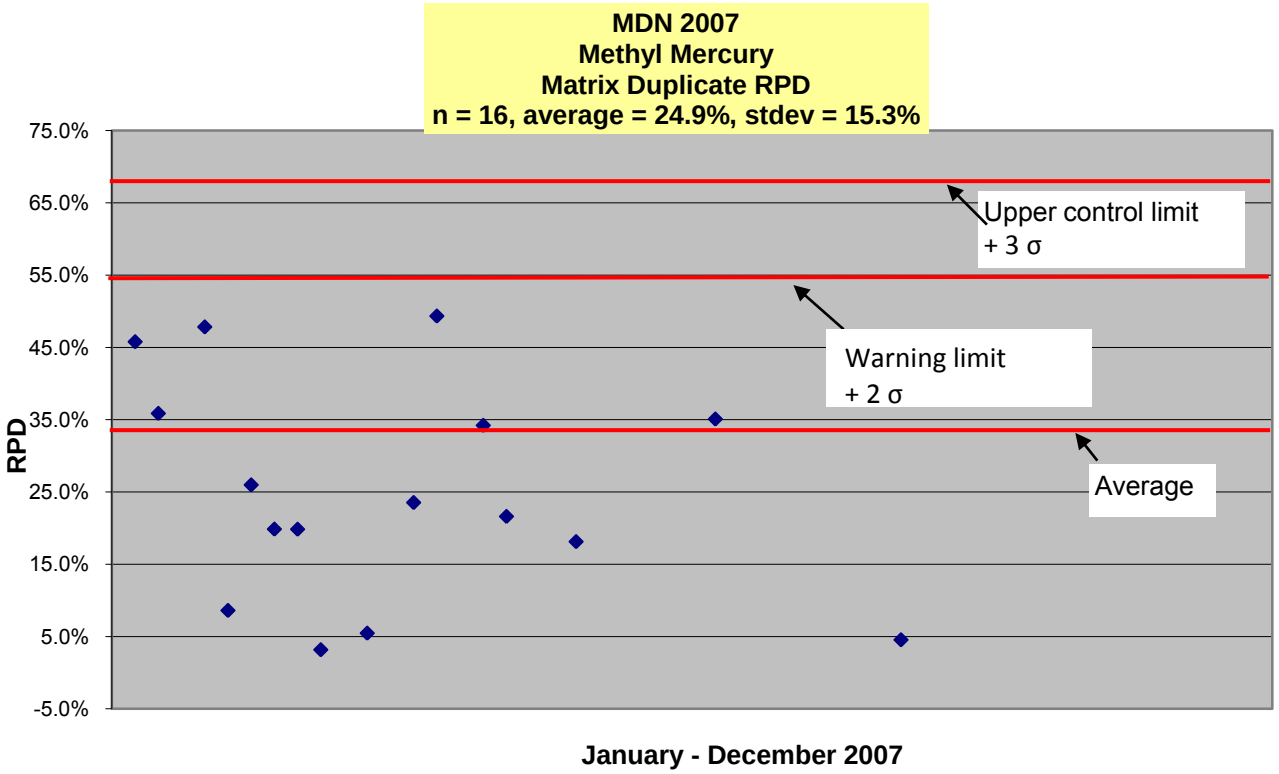

Figure 11 - Control Chart of the Relative Percent Differences for Methyl Mercury Concentrations in Matrix Duplicates During 2007

3.5. Matrix Spikes

3.5.1.Description

A matrix spike is created when an MDN sample with known mercury content is supplemented with an additional 1.00ng 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 acceptable control limits.

3.5.3.Discussion

There were several matrix spikes for the MDN project in 2007 that were above the newly established control limit of 115.39% (+3σ) and 1 sample was below the newly established control limit of 79.89% (-3σ). No matrix spike/matrix spike duplicate RPD was above the newly established control limit of 24.5% (+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 2007 Samples

2007 Matrix Spikes	n	Average (% Rec.)	Stdev (%)	Uppler Control Limit (%)	Lower Control Limit (%)
Total Mercury	613	97.64	5.92	115.39	79.89
	n	**Average (% RPD)**	**Stdev (%)**	**Upper Control Limit (%)**	**Lower Control Limit (%)**
Methyl Mercury	33	7.8	5.6	24.5	NA

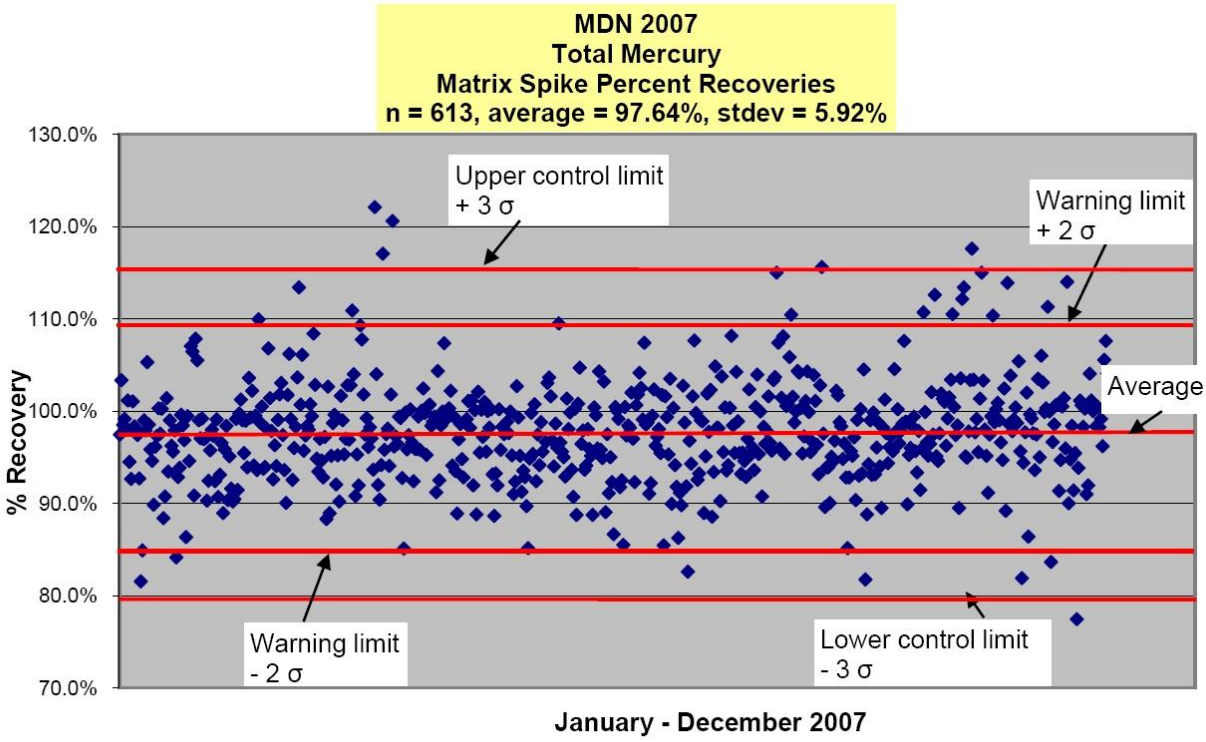

Figure 12 - Control Chart for Total Mercury Percent Recovery in Matrix Spikes During 2007

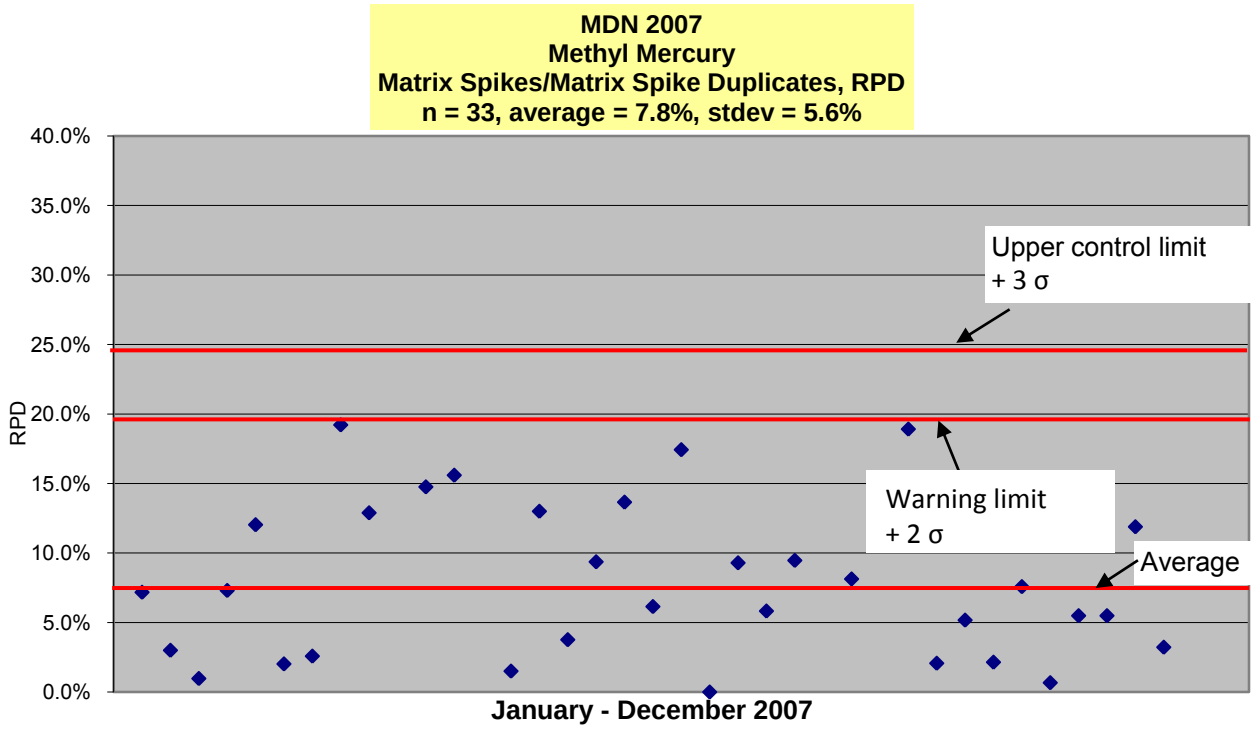

Figure 13 - Control Chart of the Relative Percent Differences for Methyl Mercury Matrix Spike/Matrix Spike Duplicate Pairs During 2007

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 2007, the mean of 412 certified reference material recoveries for total mercury was 94.5% with a standard deviation of 3.5%. No certified reference material recovery was above the newly established control limit of 104.92% (+3σ) or below 84.0% (-3σ).

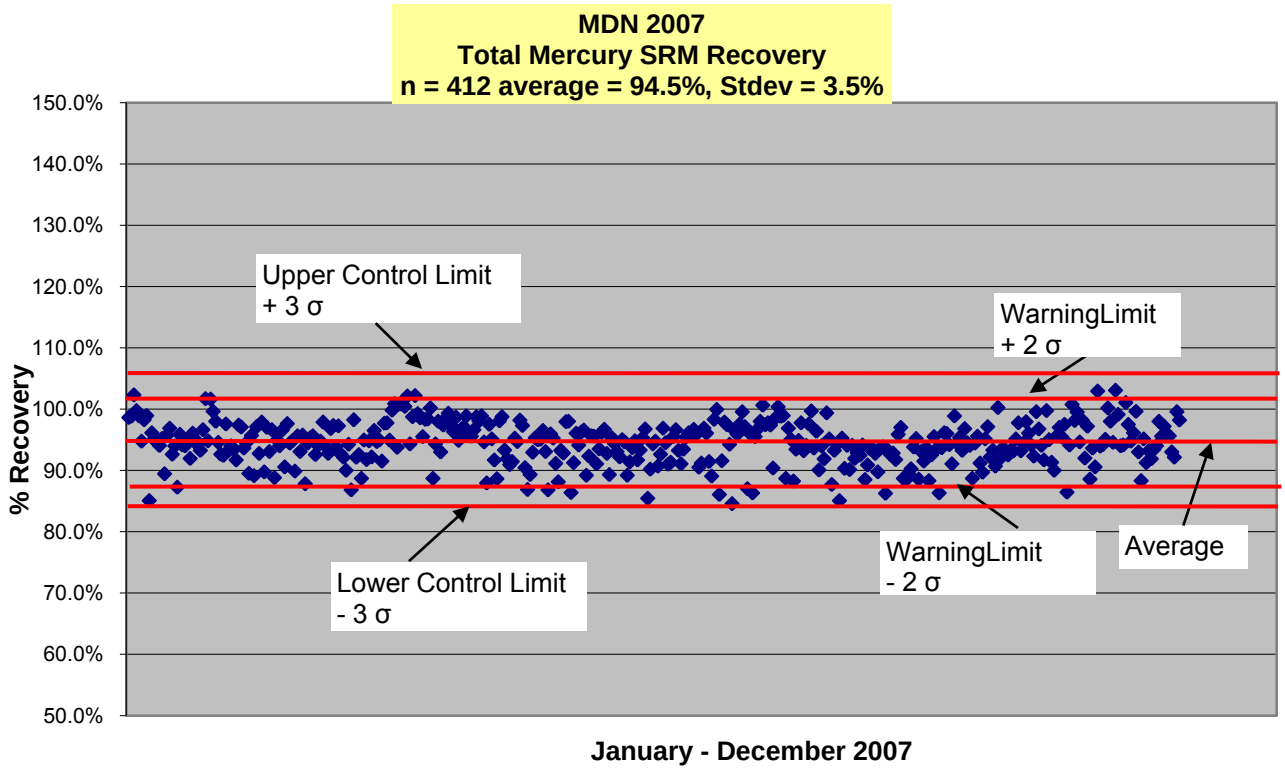

Figure 14 - Control Chart for Total Mercury Percent Recovery in Certified Reference Material Samples During 2007

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) is used for the precipitation volume when the raingage data has passed Quality Assurance.

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

When the standard raingage (Belfort) 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 2007. Results for these tests are available upon request.

Table 7 - Proficiency Tests

Non-Potable Water/Solid & Hazardous Waste/Air Emissions Proficiency Study #300	New York Department of Health	03/2007
April 2007 Soils	Analytical Products Group	06/2007
May – 2007 WP (water pollution)	Analytical Products Group	06/2007
Non-Potable Water/Solid & Hazardous Waste/Air Emissions Proficiency Study #305	New York Department of Health	08/2007
DMRQA-27 (water pollution)	Analytical Products Group	8/2007
September 2007 WP PTSTAT (water pollution)	Analytical Products Group	9/2007
October – 2007 WP (water pollution)	Analytical Products Group	11/2007
October 2007 Soils	Analytical Products Group	12/2007

6.2. Laboratory Intercomparisons

The HAL participates in a U.S. Geological Survey PE sample laboratory intercomparison program. This program is coordinated by the USGS. Results can be obtained online at:

http://bqs.usgs.gov/precip/mdninterlab_frontpage_data.htm.

The following proficiency tests were completed by HAL during 2007. Results for these tests are available upon request.

Table 2

Table 8 - Intercomparisons

CBDA Mercury Studies Intercomparison #4	Frontier Geosciences (Referee)
Mercury Round Robin 9	The Florida Department of Environmental Protection, Bureau of Laboratories
Hg Analyzer & Analysis Evaluation	Chevron

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 2007, the mean of 235 Field Bottle Blanks was 0.048ng/bottle with a standard deviation of 0.043ng/bottle. This suggests that the MDN aerochem collector protects the sample train and bottle well and the field exposure is minimal.

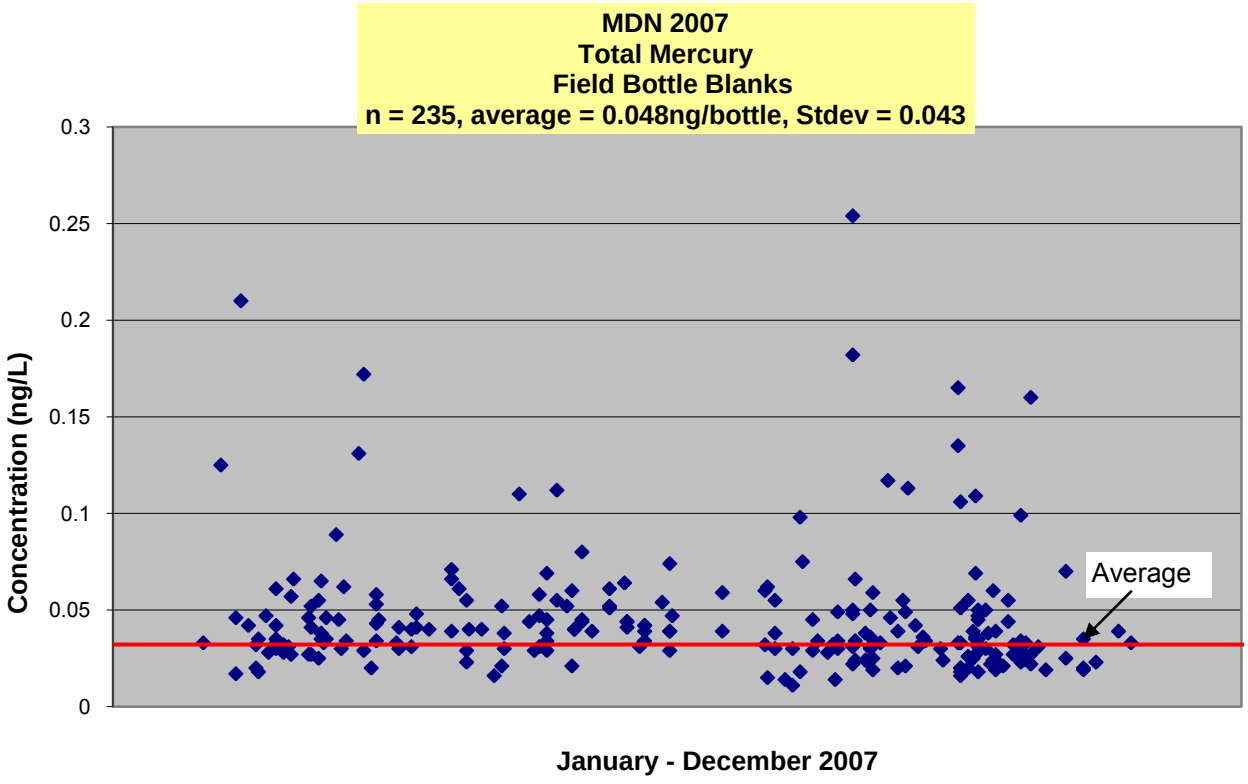

Figure 16 - Time Series Plot of Total Mercury Concentrations in Field Bottle Blanks During 2007

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 iscompared 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 2007, the mean of 39 system blanks was 0.070ng/aliquot with a standard deviation of 0.075ng/aliquot. This suggests that the MDN sample train is well protected.

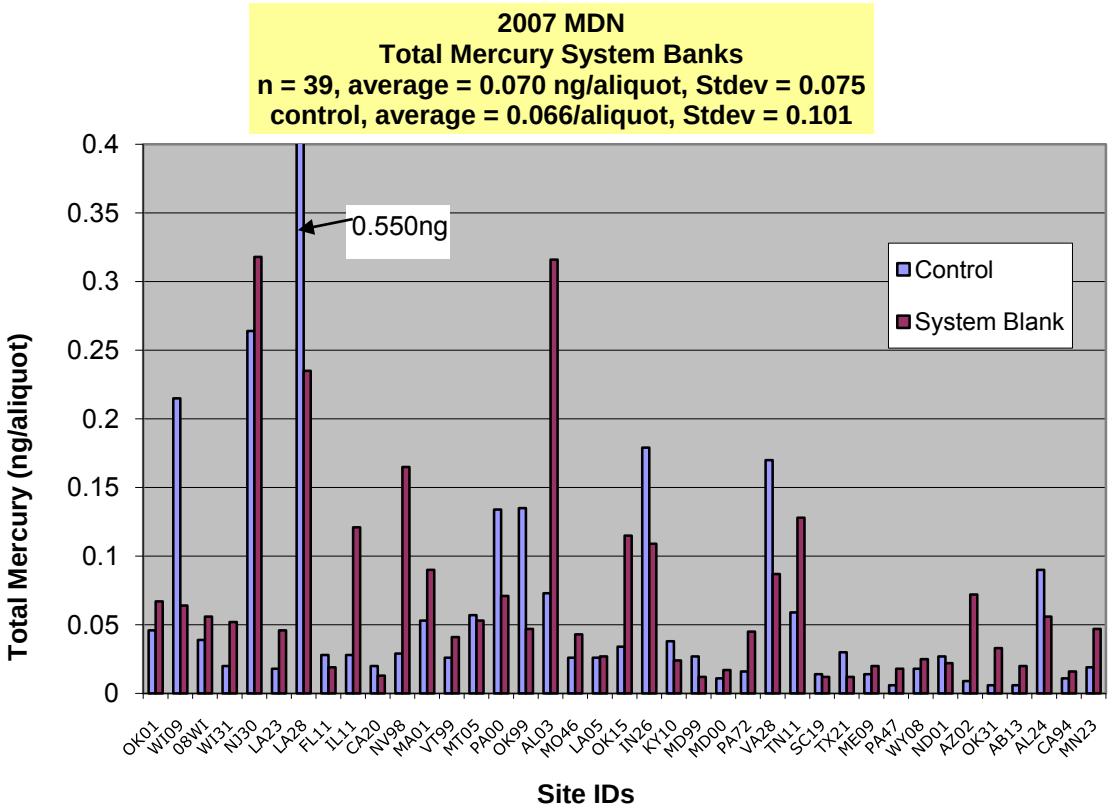

Figure 17 - Total Mercury Concentration Data for USGS System Blanks and Control Samples During 2007

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 5778 samples in 2007. 2261 samples received a QR code of A, 3166 received a B QR code, and 351 received a C QR code. FGS continued to maintain and demonstrate acceptable quality control in 2007.

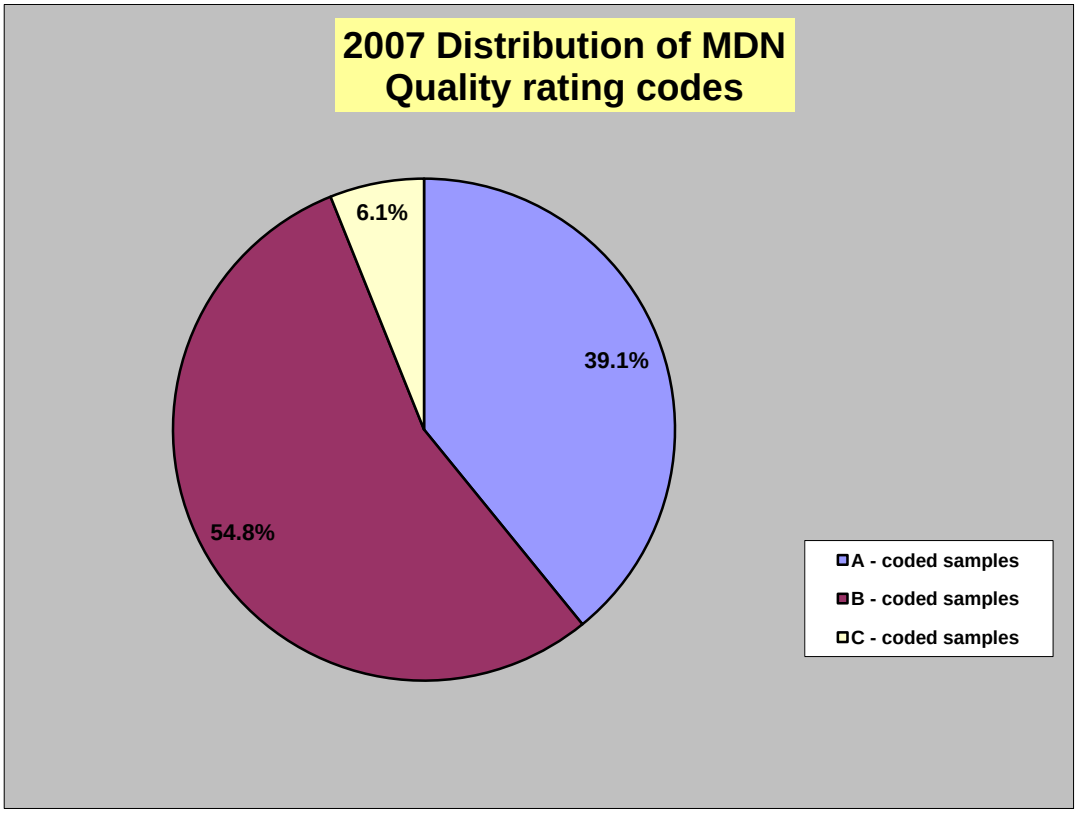

Figure 18 - Distribution of Quality Rating Codes for Samples Received in 2007

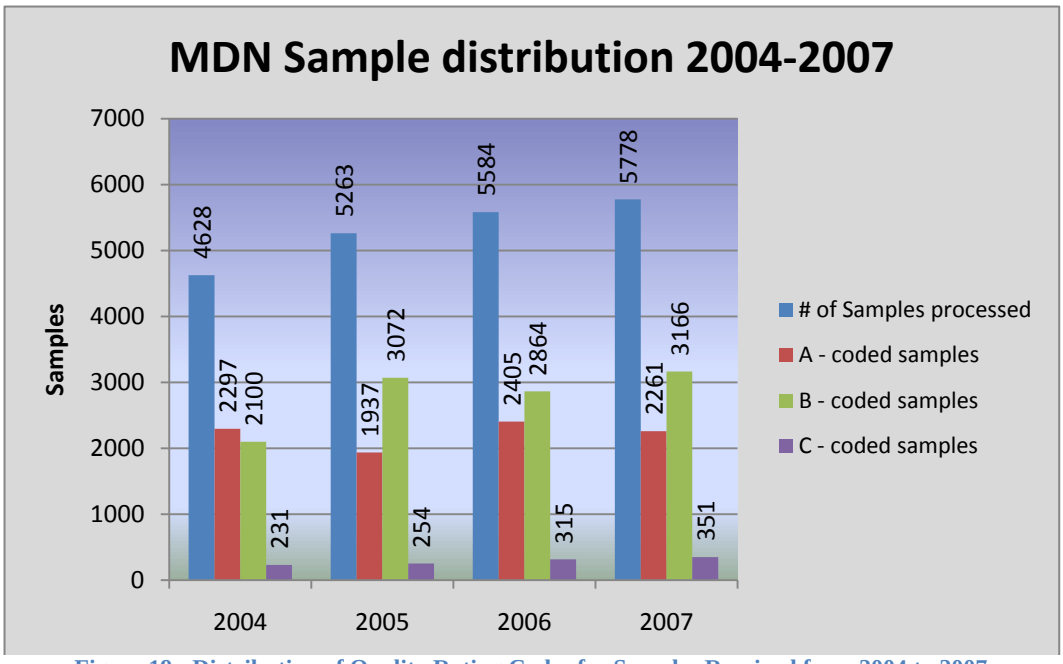

Figure 19 - Distribution of Quality Rating Codes for Samples Received from 2004 to 2007

Appendix A

Matrix Specific MDL Studies

Matrix Specific MDL Study:
Total Mercury in Water (FGS-012, FGS-069)
MDL Study Data for CV.AFS #13

January 23, 2007
THg13-070104-1
Sequence: 7A22013
Batch: F701173
WO#: 0701049

By Jill Lamberts and German Nuestro
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-069, and following the protocols outlined in 40 CFR 136. As detailed below, the MDL for Total Mercury in water was determined to be **0.085 ng/L THg**.

Analytical Method. A calibration was performed according to FGS-069. 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/mL Hg standard (LIMS# 0600556) into a 1000 mL solution. Ten mL of BrCl was then added, 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 3, as well in the raw data sheets (ID # THg13-070104-1 and Sequence 7A22013). All results are reported **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)(0.0302), or **0.085 ng/L**.*

Matrix Specific MDL Study:
Total Mercury in Water (FGS-012, FGS-069)
MDL Study Data for CV.AFS #13

MDL and PQL 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% (103.4 ± 5.7 %), making this dataset eligible for determining both an MDL and a PQL value. Using the mean of the TVs, gives a ***PQL of 0.5 ng/L****.*

For MDL validation, according to 40 CFR, the PQL should be within 1 to 10 times the MDL. For this dataset, the PQL is 5.87 times the MDL, thus validating the ***MDL value of 0.085 ng/L.***

Matrix Specific MDL Study:
Total Mercury in Water (FGS-012, FGS-069)
MDL Study Data for CV.AFS #13

January 23, 2007
THg13-070104-1
Sequence: 7A22013
Batch: F701173
WO#: 0701049

By Jill Lamberts and German Nuestro
Frontier Geosciences Inc.
414 Pontius North
Seattle, WA 98109

Sample	[THg], ng/L	%BrCl	
F701173-BLK1	0.17	1	
F701173-BLK2	0.17	1	
F701173-BLK3	0.21	1	
F701173-BLK4	0.4	2	**Not included in mean calculation**
Mean	**0.183**		
SD	**0.023**		

		Spike Level, [TV], ng/L	[%Rec]	
0701049-01	0.53	0.5	106.0%	
0701049-02	0.45	0.5	90.0%	
0701049-03	0.52	0.5	104.0%	
0701049-04	0.51	0.5	102.0%	
0701049-05	0.53	0.5	106.0%	
0701049-06	0.53	0.5	106.0%	
0701049-07	0.53	0.5	106.0%	
0701049-08	0.48	0.5	96.0%	
0701049-09	0.54	0.5	108.0%	
0701049-10	0.55	0.5	110.0%	
Mean	**0.517**	**0.5**	**103.4%**	
SD	**0.030203017**	**0**	**5.7%**	
		Certified Value		
NIST 1641d	**8324**	**8005.5**	**104.0%**	
NIST 1641d	**8270**	**8005.5**	**103.3%**	**0.651%**

0.08520271	**MDL**
5.868357921	**PQL/MDL**

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			
method blank #1	0.001		**% Recovery Limits**	
method blank #2	0.017			
method blank #3	0.001		**70-130%**	
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	AnalysisDate	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	Dup ID	Dup RPD	Spike ID	Spike Recovery	BB ID	BB Conc
2007-001	1/23/2007	CVAFS-9	0.009	0.9994	98.81	MDN 2649	3.48%	MDN 2649	98.50%	MDN 2285	0.010 ng/bottle
					98.63	MDN 0698	17.10%	MDN 698	103.35%		
						MDN 2502	2.87%	MDN 2502	97.45%		
2007-002	1/17/2007	CVAFS-9	0.013	0.9996	102.31	MDN 0488	1.83%	MDN 488	99.15%	MDN 2285	0.015 ng/bottle
					99.75	MDN 2572	5.11%	MDN 2572	101.15%		
						MDN 2396	3.49%	MDN 2396	97.95%		
2007-003	1/23/2007	CVAFS-10	0.009	0.9998	98.88	MDN 2028	3.32%	MDN 2028	94.50%	MDN 180	0.030 ng/bottle
					94.75	MDN 2363	0.17%	MDN 2363	92.65%		
						MDN 0934	11.58%	MDN 934	101.05%		
2007-004	1/19/2007	CVAFS-9	0.013	0.9998	98.25	MDN 2620	14.56%	MDN 2620	98.35%		
						MDN 2080	8.64%	MDN 2080	98.00%		
2007-005	1/19/2007	CVAFS-10	0.013	0.9999	98.94	MDN 0763	4.71%	MDN 763	92.70%		
						MDN 2320	1.60%	MDN 2320	97.40%		
2007-006	1/31/2007	CVAFS-9	0.013	1.0000	96.13	MDN 2001	1.92%	MDN 2001	81.55%		
					85.07	MDN 0982	2.52%	MDN 982	84.90%		
2007-007	1/26/2007	CVAFS-10	0.008	0.9998	95.13	MDN 0673	0.47%	MDN 673	99.00%	MDN 296	0.018 ng/bottle
					94.57	MDN 0802	7.07%	MDN 802	105.30%		
						MDN 2644	1.79%	MDN 2644	97.90%		
2007-008	1/31/2007	CVAFS-10	0.012	0.9997	95.19	MDN 2686	6.15%	MDN 2686	98.55%		
					94.07	MDN 0954	4.82%	MDN 954	94.60%		
						MDN 2613	1.60%	MDN 2613	95.85%		
2007-009	2/2/2007	CVAFS-9	0.013	0.9999	95.75	MDN 2491	18.51%	MDN 2491	89.85%		
					89.44	MDN 2488	11.36%	MDN 2488	96.15%		
2007-010	2/2/2007	CVAFS-10	0.01	0.9998	96.88	MDN 2754	1.30%	MDN 2754	97.55%		
					92.63	MDN 0646	6.11%	MDN 646	97.30%		
						MDN 1931	3.71%	MDN 1931	100.30%		
2007-011	2/5/2007	CVAFS-9	0.016	0.9997	94.00	MDN 2128	3.84%	MDN 2128	88.40%	MDN 2470	0.014 ng/bottle
					87.26	MDN 2555	6.22%	MDN 2555	90.75%		
						MDN 2117	6.38%	MDN 2117	100.25%		
2007-012	2/6/2007	CVAFS-9	0.018	0.9997	95.88	MDN 0799	4.78%	MDN 799	101.50%		
					94.13	MDN 2411	0.00%	MDN 2411	93.40%		
						MDN 2287	2.76%	MDN 2287	99.00%		
2007-013	2/5/2007	CVAFS-10	0.008	0.9999	94.94	MDN 2173	6.68%	MDN 2173	95.60%		
					94.00	MDN 1922	6.61%	MDN 1922	97.90%		
						MDN 0172	0.74%	MDN 172	96.25%		
2007-014	2/12/2007	CVAFS-9	0	0.9999	96.06	MDN 2561	4.66%	MDN 2561	84.15%		
					91.94	MDN 2345	6.06%	MDN 2345	92.85%		
						MDN 3002	4.47%	MDN 3002	93.85%		

MDN Data Set ID	AnalysisDate	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	Dup ID	Dup RPD	Spike ID	Spike Recovery	BB ID	BB Conc
2007-015	2/6/2007	CVAFS-10	0.011	0.9998	95.07	MDN 2365	20.38%	MDN 2365	99.60%	MDN 2266	0.013 ng/bottle
					94.13	MDN 2651	5.23%	MDN 2651	96.85%		
						MDN 0117	0.44%	MDN 117	98.45%		
2007-016	2/15/2007	CVAFS-9	0.011	1.0000	96.63	MDN 0654	2.44%	MDN 654	86.35%		
					93.25	MDN 0820	0.70%	MDN 820	94.60%		
						MDN 1986	2.07%	MDN 1986	99.45%		
2007-017	2/15/2007	CVAFS-10	0.01	0.9995	101.69	MDN 2043	11.39%	MDN 2043	106.45%	MDN 2550	0.014 ng/bottle
					94.82	MDN 2277	5.90%	MDN 2277	90.85%		
						MDN 0847	5.31%	MDN 847	107.05%		
2007-018	2/12/2007	CVAFS-10	0.01	0.9995	101.62	MDN 0896	8.50%	MDN 896	107.85%		
					99.63	MDN 0225	8.83%	MDN 225	99.10%		
						MDN 2660	12.07%	MDN 2660	105.50%		
2007-019	2/20/2007	CVAFS-9	0.013	1.0000	98.00	MDN 0496	11.65%	MDN 496	97.05%		
					94.57	MDN 0400	0.21%	MDN 400	96.95%		
						MDN 0185	0.68%	MDN 185	99.20%		
2007-020	2/20/2007	CVAFS-10	0.013	0.9997	92.63	MDN 2549	8.57%	MDN 2549	97.05%	MDN 2335	0.008 ng/bottle
					92.44	MDN 2301	9.42%	MDN 2301	92.45%		
						MDN 2095	5.01%	MDN 2095	90.30%		
2007-021	2/21/2007	CVAFS-9	0.011	1.0000	97.56	MDN 0683	12.55%	MDN 683	98.00%		
					93.25	MDN 2477	1.16%	MDN 2477	95.75%		
						MDN 2186	0.00%	MDN 2186	97.30%		
2007-022	2/21/2007	CVAFS-10	0.012	0.9996	94.00	MDN 2044	3.47%	MDN 2044	99.10%		
					93.38	MDN 2166	5.95%	MDN 2166	91.75%		
						MDN 2682	4.95%	MDN 2682	90.70%		
2007-023	2/27/2007	CVAFS-9	0.011	1.0000	97.38	MDN 2769	12.18%	MDN 2769	88.95%		
					91.69	MDN 2080	1.87%	MDN 2080	93.10%		
						MDN 2677	0.13%	MDN 2677	96.55%		
2007-024	2/27/2007	CVAFS-10	0.012	0.9994	97.06	MDN 2355	2.44%	MDN 2355	98.40%	MDN 2720	0.019 ng/bottle
					93.63	MDN 2601	9.69%	MDN 2601	90.35%		
						MDN 2624	4.69%	MDN 2624	95.85%		
2007-025	3/6/2007	CVAFS-9	0.007	0.9999	94.50	MDN 2192	3.17%	MDN 2192	90.20%	MDN 2124	0.012 ng/bottle
					89.51	MDN 1981	2.08%	MDN 1981	91.60%		
						MDN 0162	2.39%	MDN 162	95.10%		
2007-026	3/5/2007	CVAFS-9	0.008	0.9999	95.69	MDN 2741	6.85%	MDN 2741	90.55%	MDN 2027	0.011 ng/bottle
					89.13	MDN 0763	3.90%	MDN 763	91.40%		
						MDN 2690	1.22%	MDN 2690	99.10%		
2007-027	3/5/2007	CVAFS-10	0.01	0.9999	97.13	MDN 0277	2.87%	MDN 277	99.00%		
					92.75	MDN 2390	5.61%	MDN 2390	99.75%		
						MDN 0126	7.28%	MDN 126	101.25%		
2007-028	3/8/2007	CVAFS-9	0.005	0.9998	97.88	MDN 2721	6.17%	MDN 2721	95.45%		
					89.76	MDN 2675	1.42%	MDN 2675	93.90%		
						MDN 2279	1.51%	MDN 2279	98.95%		

MDN Data Set ID	AnalysisDate	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	Dup ID	Dup RPD	Spike ID	Spike Recovery	BB ID	BB Conc
2007-029	3/6/2007	CVAFS-10	0.007	0.9998	97.00	MDN 2278	3.58%	MDN 2278	103.60%	MDN 185	0.014 ng/bottle
					93.07	MDN 2734	12.07%	MDN 2734	102.20%		
						MDN 2265	4.69%	MDN 2265	99.30%		
2007-030	3/13/2007	CVAFS-9	0.003	0.9998	96.63	MDN 2817	3.65%	MDN 2817	94.10%		
					88.82	MDN 2630	0.00%	MDN 2630	93.60%		
						MDN 0861	1.25%	MDN 861	99.50%		
2007-031	3/13/2007	CVAFS-10	0.005	0.9997	94.94	MDN 2805	4.37%	MDN 2805	100.50%		
					94.00	MDN 2047	7.17%	MDN 2047	109.95%		
						MDN 2387	0.98%	MDN 2387	98.75%		
2007-032	3/12/2007	CVAFS-9	0.005	0.9999	96.56	MDN 2256	2.27%	MDN 2256	93.75%	MDN 2650	0.021 ng/bottle
					90.57	MDN 0479	1.51%	MDN 479	93.95%		
						MDN 2058	11.52%	MDN 2058	98.09%		
2007-033	3/12/2007	CVAFS-10	0.006	0.9998	97.63	MDN 2600	2.09%	MDN 2600	101.40%		
					94.44	MDN 2757	6.75%	MDN 2757	106.80%		
						MDN 0639	2.42%	MDN 639	97.85%		
2007-034	3/19/2007	CVAFS-9	0.001	0.9998	94.82	MDN 2413	4.80%	MDN 2413	94.05%		
					89.88	MDN 0481	1.54%	MDN 481	96.30%		
						MDN 2695	3.57%	MDN 2695	92.60%		
2007-035	3/19/2007	CVAFS-10	0.002	0.9998	95.63	MDN 2345	2.94%	MDN 2345	101.80%		
					93.07	MDN 2644	7.33%	MDN 2644	103.05%		
						MDN 0181	0.59%	MDN 181	99.05%		
2007-036	3/16/2007	CVAFS-9	-0	0.9997	95.75	MDN 2140	1.63%	MDN 2140	90.05%	MDN 2753	0.017 ng/bottle
					87.82	MDN 0740	0.00%	MDN 740	93.60%		
						MDN 0976	2.62%	MDN 976	97.40%		
2007-037	3/16/2007	CVAFS-10	0.005	0.9997	95.32	MDN 0120	0.48%	MDN 120	101.75%		
					94.44	MDN 0928	10.43%	MDN 928	106.20%		
						MDN 0832	0.58%	MDN 832	99.15%		
2007-038	3/20/2007	CVAFS-9	0.002	0.9997	95.63	MDN 0183	1.58%	MDN 183	92.55%		
					92.57	MDN 0794	1.67%	MDN 794	98.30%		
						MDN 2661	5.85%	MDN 2661	96.00%		
2007-039	3/20/2007	CVAFS-10	0.003	0.9997	94.07	MDN 2087	0.62%	MDN 2087	103.65%		
					94.75	MDN 2759	11.14%	MDN 2759	113.40%		
						MDN 2378	0.00%	MDN 2378	100.70%		
2007-040	3/22/2007	CVAFS-9	0.003	0.9996	97.88	MDN 1984	3.51%	MDN 1984	97.35%	MDN 787	0.015 ng/bottle
					93.94	MDN 2460	1.60%	MDN 2460	106.10%		
						MDN 2320	1.27%	MDN 2320	95.70%		
2007-041	3/27/2007	CVAFS-9	0.002	1.0000	96.88	MDN 2571	4.43%	MDN 2571	97.95%	MDN 2579	0.009 ng/bottle
					92.82	MDN 2751	0.27%	MDN 2751	100.65%		
						MDN 0862	2.14%	MDN 862	98.40%		
2007-042	3/27/2007	CVAFS-10	0.002	0.9996	97.31	MDN 0678	0.88%	MDN 678	102.85%	MDN 2518	0.012 ng/bottle
					93.82	MDN 2822	6.78%	MDN 2822	108.40%		
						MDN 2026	0.09%	MDN 2026	99.45%		

MDN Data Set ID	AnalysisDate	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	Dup ID	Dup RPD	Spike ID	Spike Recovery	BB ID	BB Conc
2007-043	4/3/2007	CVAFS-9	0.004	0.9999	97.25	MDN 0632	3.86%	MDN 632	97.00%		
					92.63	MDN 2674	0.63%	MDN 2674	94.85%		
						MDN 1958	0.65%	MDN 1958	93.45%		
2007-044	4/3/2007	CVAFS-10	0.003	0.9996	92.13	MDN 2359	6.96%	MDN 2359	92.80%	MDN 2724	0.012 ng/bottle
					90.01	MDN 1750	7.10%	MDN 1750	94.65%		
						MDN 2762	1.00%	MDN 2762	97.20%		
2007-045	4/10/2007	CVAFS-9	0.003	0.9999	94.25	MDN 2507	7.02%	MDN 2507	88.95%		
					86.82	MDN 2105	6.41%	MDN 2105	88.30%		
						MDN 2362	3.26%	MDN 2362	102.65%		
2007-046	4/10/2007	CVAFS-10	0.002	0.9991	98.25	MDN 1913	2.15%	MDN 1913	95.15%	MDN 2245	0.009 ng/bottle
					92.13	MDN 0677	4.47%	MDN 677	99.60%		
						MDN 2492	5.25%	MDN 2492	98.70%		
2007-047	4/11/2007	CVAFS-9	0.002	0.9998	92.57	MDN 2598	8.19%	MDN 2598	92.05%		
					88.69	MDN 0127	6.88%	MDN 127	90.20%		
						MDN 2792	0.97%	MDN 2792	95.20%		
2007-048	4/11/2007	CVAFS-10	0	0.9995	94.94	MDN 2411	3.53%	MDN 2411	95.30%	MDN 2345	0.009 ng/bottle
					91.76	MDN 2815	7.35%	MDN 2815	101.65%		
						MDN 0289	2.49%	MDN 289	99.00%		
2007-049	4/12/2007	CVAFS-9	0.002	0.9999	94.82	MDN 1975	3.96%	MDN 1975	102.80%	MDN 2631	0.013 ng/bottle
					92.19	MDN 0949	0.89%	MDN 949	96.90%		
						MDN 2175	1.48%	MDN 2175	97.00%		
2007-050	4/12/2007	CVAFS-10	0	0.9996	96.50	MDN 2690	4.75%	MDN 2690	102.80%		
					94.69	MDN 2312	8.08%	MDN 2312	110.90%		
						MDN 0938	0.77%	MDN 938	104.00%		
2007-051	4/17/2007	CVAFS-9	0.001	0.9998	94.94	MDN 0867	8.93%	MDN 867	90.80%		
					91.51	MDN 2526	1.50%	MDN 2526	95.30%		
						MDN 0280	2.11%	MDN 280	91.95%		
2007-052	4/17/2007	CVAFS-10	0.001	0.9994	97.69	MDN 0126	1.54%	MDN 126	101.80%	MDN 1981	0.023 ng/bottle
					97.75	MDN 2096	4.76%	MDN 2096	107.75%		
						MDN 2458	0.00%	MDN 2458	109.30%		
2007-053	4/24/2007	CVAFS-9	0.004	1.0000	99.81	MDN 2578	3.59%	MDN 2578	97.45%		
					94.94	MDN 2255	1.01%	MDN 2255	96.10%		
						MDN 2263	1.41%	MDN 2263	99.25%		
2007-054	4/20/2007	CVAFS-9	0.005	0.9982	100.87	MDN 2455	3.19%	MDN 2455	97.05%		
					93.75	MDN 3000	1.21%	MDN 3000	93.65%		
						MDN 2611	3.32%	MDN 2611	98.25%		
2007-055	4/20/2007	CVAFS-10	0.001	0.9996	100.81	MDN 2684	3.98%	MDN 2684	122.10%		
					100.81	MDN 2509	5.28%	MDN 2509	92.00%		
						MDN 2447	4.32%	MDN 2447	104.00%		
2007-056	4/24/2007	CVAFS-10	0.005	0.9996	100.44	MDN 1755	6.49%	MDN 1755	117.05%		
					102.12	MDN 0928	1.26%	MDN 928	90.40%		
						MDN 1983	10.07%	MDN 1983	94.15%		

MDN Data Set ID	AnalysisDate	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	Dup ID	Dup RPD	Spike ID	Spike Recovery	BB ID	BB Conc
2007-057	4/26/2007	CVAFS-9	0.009	0.9999	98.75	MDN 2182	2.69%	MDN 2182	97.50%		
					94.32	MDN 2242	2.24%	MDN 2242	95.80%		
						MDN 2117	3.44%	MDN 2117	98.10%		
2007-058	4/26/2007	CVAFS-10	0.009	0.9995	99.25	MDN 2456	0.54%	MDN 2456	120.60%	MDN 401	0.017 ng/bottle
					102.19	MDN 0976	4.91%	MDN 976	93.85%		
						MDN 2336	11.86%	MDN 2336	101.80%		
2007-059	5/1/2007	CVAFS-9	0.012	0.9997	98.56	MDN 1904	5.70%	MDN 1904	97.25%		
					95.50	MDN 0740	4.23%	MDN 740	96.45%		
						MDN 2576	0.38%	MDN 2576	96.15%		
2007-060	5/1/2007	CVAFS-10	0.012	1.0000	98.31	MDN 0751	0.61%	MDN 751	99.25%	MDN 2679	0.016 ng/bottle
					98.38	MDN 0809	0.61%	MDN 809	99.40%		
						MDN 2769	1.29%	MDN 2769	92.75%		
2007-061	5/3/2007	CVAFS-9	0.0084	0.9996	100.19	MDN 2110	11.33%	MDN 2110	99.85%		
					88.69	MDN 2016	15.10%	MDN 2016	95.85%		
						MDN 2480	1.08%	MDN 2480	85.10%		
2007-062	5/3/2007	CVAFS-10	0.009	1.000	98.00	MDN 2811	1.74%	MDN 2811	96.60%		
					94.32	MDN 0688	9.76%	MDN 688	97.40%		
						MDN 2042	1.38%	MDN 2042	100.20%		
2007-063	5/8/2007	CVAFS-10	0.015	1.0000	97.38	MDN 2799	1.65%	MDN 2799	92.40%		
					93.00	MDN 3019	3.17%	MDN 3019	95.90%		
						MDN 2032	6.88%	MDN 2032	95.90%		
2007-064	5/8/2007	CVAFS-9	0	0.9999	98.50	MDN 0114	6.59%	MDN 114	99.40%		
2007-065	5/10/2007	CVAFS-9	0.005	0.9998	99.31	MDN 2106	3.49%	MDN 2106	95.80%	MDN 722	0.009 ng/bottle
					97.38	MDN 2508	0.09%	MDN 2508	100.05%		
						MDN 2198	0.33%	MDN 2198	102.45%		
2007-066	5/10/2007	CVAFS-10	0.011	0.9998	98.69	MDN 2461	1.19%	MDN 2461	100.55%		
					96.31	MDN 2703	5.26%	MDN 2703	99.80%		
						MDN 2036	6.65%	MDN 2036	95.25%		
2007-067	5/16/2007	CVAFS-9	0.009	0.9999	96.31	MDN 2481	2.96%	MDN 2481	98.85%	MDN 264	0.013 ng/bottle
					94.88	MDN 3024	1.05%	MDN 3024	98.40%		
						MDN 0185	1.62%	MDN 185	100.70%		
2007-068	5/16/2007	CVAFS-10	0.01	0.9999	97.13	MDN 2287	2.11%	MDN 2287	99.40%	MDN 2456	0.016 ng/bottle
					98.88	MDN 2615	1.18%	MDN 2615	91.20%		
						MDN 1924	5.55%	MDN 1924	104.35%		
2007-069	5/17/2007	CVAFS-9	0.005	0.9997	95.69	MDN 2053	3.83%	MDN 2053	98.45%	MDN 2784	0.017 ng/bottle
					95.57	MDN 2653	4.17%	MDN 2653	99.95%		
						MDN 3011	2.73%	MDN 3011	92.50%		
2007-070	5/17/2007	CVAFS-10	0.011	0.9999	98.75	MDN 0772	1.19%	MDN 772	99.80%	MDN 2435	0.015 ng/bottle
					96.63	MDN 2594	0.80%	MDN 2594	99.10%		
						MDN 1931	6.90%	MDN 1931	107.35%		

MDN Data Set ID	AnalysisDate	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	Dup ID	Dup RPD	Spike ID	Spike Recovery	BB ID	BB Conc
2007-071	5/22/2007	CVAFS-10	0.017	0.9999	98.88	MDN 2632	1.45%	MDN 2632	102.20%	MDN 1956	0.004 ng/bottle
					98.06	MDN 2195	1.92%	MDN 2195	94.10%		
						MDN 2533	14.05%	MDN 2533	100.31%		
2007-072	5/29/2007	CVAFS-9	0.005	0.9997	94.63	MDN 2803	2.90%	MDN 2803	88.90%	MDN 756	0.016 ng/bottle
					87.95	MDN 0120	0.76%	MDN 120	93.50%		
						MDN 2815	0.49%	MDN 2815	99.40%		
2007-073	5/29/2007	CVAFS-10	0.008	0.9999	97.50	MDN 2028	0.56%	MDN 2028	96.95%		
					95.13	MDN 0148	0.22%	MDN 148	94.88%		
						MDN 2397	3.78%	MDN 2397	98.60%		
2007-074	5/30/2007	CVAFS-9	0.002	0.9997	91.69	MDN 2245	2.86%	MDN 2245	94.73%	MDN 114	0.023 ng/bottle
					88.63	MDN 2427	5.11%	MDN 2427	92.81%		
						MDN 2586	2.64%	MDN 2586	99.14%		
2007-075	5/30/2007	CVAFS-10	0.007	0.9998	98.06	MDN 0811	0.60%	MDN 811	101.10%		
					98.75	MDN 2017	1.61%	MDN 2017	101.15%		
						MDN 2443	5.34%	MDN 2443	98.20%		
2007-076	6/5/2007	CVAFS-9	0.002	0.9996	93.32	MDN 2395	1.81%	MDN 2395	100.10%		
					91.88	MDN 2763	2.11%	MDN 2763	91.95%		
						MDN 2721	1.69%	MDN 2721	88.80%		
2007-077	6/7/2007	CVAFS-9	0	0.9994	91.44	MDN 2101	2.29%	MDN 2101	100.15%	MDN 2369	0.014 ng/bottle
					90.94	MDN 2276	5.00%	MDN 2276	95.50%		
						MDN 2706	0.00%	MDN 2706	102.10%		
2007-078	6/7/2007	CVAFS-10	0.003	1.0000	95.25	MDN 2140	0.00%	MDN 2140	95.60%		
					94.69	MDN 0821	1.86%	MDN 821	97.20%		
						MDN 1753	6.64%	MDN 1753	101.00%		
2007-079	6/5/2007	CVAFS-10	0.009	1.0000	98.19	MDN 0896	0.00%	MDN 896	100.20%		
					97.31	MDN 2263	0.35%	MDN 2263	98.20%		
						MDN 2239	4.10%	MDN 2239	100.00%		
2007-080	6/12/2007	CVAFS-9	0.001	0.9991	90.44	MDN 0181	5.80%	MDN 181	88.65%	MDN 2533	0.027 ng/bottle
					86.88	MDN 0397	3.12%	MDN 397	93.14%		
						MDN 2588	0.77%	MDN 2588	93.25%		
2007-081	6/14/2007	CVAFS-9	-0	0.9996	92.94	MDN 2410	5.24%	MDN 2410	91.95%	MDN 2097	0.012 ng/bottle
					89.32	MDN 0649	0.73%	MDN 649	95.80%		
						MDN 0189	4.26%	MDN 189	100.20%		
2007-082	6/14/2007	CVAFS-10	0.002	1.0000	95.32	MDN 0799	1.70%	MDN 799	97.75%	MDN 2434	0.010 ng/bottle
					95.00	MDN 2630	1.78%	MDN 2630	97.50%		
						MDN 2762	2.09%	MDN 2762	98.30%		
2007-083	6/12/2007	CVAFS-10	0.002	1.0000	96.50	MDN 2170	1.17%	MDN 2170	97.60%		
					95.07	MDN 2482	1.41%	MDN 2482	98.85%		
						MDN 0150	10.28%	MDN 150	99.95%		
2007-084	6/19/2007	CVAFS-9	-0.002	0.9987	93.07	MDN 0165	7.27%	MDN 165	95.20%		
					86.82	MDN 2124	4.07%	MDN 2124	91.00%		
						MDN 2291	8.56%	MDN 2291	92.35%		

MDN Data Set ID	AnalysisDate	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	Dup ID	Dup RPD	Spike ID	Spike Recovery	BB ID	BB Conc
2007-085	6/19/2007	CVAFS-10	0.001	1.0000	95.94	MDN 2164	0.67%	MDN 2164	99.30%		
					95.25	MDN 2768	9.75%	MDN 2768	95.15%		
						MDN 0853	6.55%	MDN 853	102.70%		
2007-086	6/20/2007	CVAFS-9	0	0.9994	91.13	MDN 2797	1.71%	MDN 2797	92.85%	MDN 2077	0.015 ng/bottle
					88.13	MDN 1971	3.57%	MDN 1971	93.55%		
						MDN 2555	3.75%	MDN 2555	91.25%		
2007-087	6/22/2007	CVAFS-9	-0.002	0.9995	93.25	MDN 2569	7.52%	MDN 2569	98.79%	MDN 145	0.016 ng/bottle
					92.82	MDN 2091	9.00%	MDN 2091	89.70%		
						MDN 2725	2.14%	MDN 2725	94.85%		
2007-088	6/22/2007	CVAFS-10	0.003	0.9999	98.00	MDN 2551	0.13%	MDN 2551	100.75%		
					97.94	MDN 2546	1.89%	MDN 2546	99.80%		
						MDN 0693	3.19%	MDN 693	95.35%		
2007-089	7/3/2007	CVAFS-9	0.002	0.9994	91.26	MDN 2049	4.42%	MDN 2049	97.45%	MDN 2101	0.020 ng/bottle
					86.38	MDN 2748	28.93%	MDN 2748	100.65%		
						MDN 2821	11.75%	MDN 2821	92.39%		
2007-090	6/29/2007	CVAFS-10	0.007	1.0000	96.06	MDN 2136	3.28%	MDN 2136	98.80%		
					94.13	MDN 0747	0.80%	MDN 747	95.60%		
						MDN 0956	1.13%	MDN 956	94.15%		
2007-091	7/3/2007	CVAFS-10	0.003	0.9999	96.25	MDN 1757	4.16%	MDN 1757	103.05%	MDN 1750	0.021 ng/bottle
					96.56	MDN 0762	1.09%	MDN 762	96.65%		
						MDN 0269	3.59%	MDN 269	100.44%		
2007-092	7/5/2007	CVAFS-9	0.002	0.9993	89.19	MDN 0723	1.80%	MDN 723	101.60%		
					92.32	MDN 3004	7.51%	MDN 3004	96.85%		
						MDN 2807	2.21%	MDN 2807	103.65%		
2007-093	7/5/2007	CVAFS-10	0.005	1.0000	95.57	MDN 2213	0.81%	MDN 2213	98.65%		
					95.63	MDN 1738	0.08%	MDN 1738	96.05%		
						MDN 0951	6.67%	MDN 951	94.00%		
2007-094	7/12/2007	CVAFS-9	0.004	0.9997	93.50	MDN 0401	0.23%	MDN 401	109.50%		
					91.07	MDN 2278	9.13%	MDN 2278	96.60%		
						MDN 0899	20.42%	MDN 899	95.60%		
2007-095	7/12/2007	CVAFS-10	0	1.0000	96.69	MDN 3003	4.16%	MDN 3003	101.35%		
					96.19	MDN 0496	0.63%	MDN 496	95.00%		
						MDN 2815	6.02%	MDN 2815	92.90%		
2007-096	7/16/2007	CVAFS-9	-0	0.9987	92.75	MDN 2757	0.52%	MDN 2757	99.85%	MDN 2499	0.027 ng/bottle
					89.32	MDN 0177	7.51%	MDN 177	93.65%		
						MDN 2760	4.69%	MDN 2760	98.05%		
2007-097	7/16/2007	CVAFS-10	0.001	1.0000	95.32	MDN 1921	1.41%	MDN 1921	100.25%		
					94.38	MDN 1966	0.70%	MDN 1966	90.70%		
						MDN 0954	4.73%	MDN 954	88.75%		
2007-098	7/10/2007	CVAFS-9	-0	0.9995	92.19	MDN 2589	1.31%	MDN 2589	104.70%		
					93.07	MDN 0655	6.85%	MDN 655	100.80%		
						MDN 2776	0.96%	MDN 2776	96.45%		

MDN Data Set ID	AnalysisDate	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	Dup ID	Dup RPD	Spike ID	Spike Recovery	BB ID	BB Conc
2007-099	7/10/2007	CVAFS-10	0.002	0.9999	95.00	MDN 2036	0.38%	MDN 2036	97.90%		
					94.63	MDN 0896	0.99%	MDN 896	93.65%		
						MDN 0483	6.30%	MDN 483	94.10%		
2007-100	7/17/2007	CVAFS-9	-0	0.9995	91.38	MDN 2184	0.51%	MDN 2184	95.90%		
					89.19	MDN 2118	3.67%	MDN 2118	95.15%		
						MDN 2508	1.54%	MDN 2508	98.05%		
2007-101	7/17/2007	CVAFS-10	0.001	1.0000	93.69	MDN 3062	5.17%	MDN 3062	100.40%		
					94.82	MDN 3063	0.90%	MDN 3063	99.55%		
						MDN 3052	4.23%	MDN 3052	88.76%		
2007-102	7/18/2007	CVAFS-9	0	0.9997	93.32	MDN 0716	3.03%	MDN 716	95.95%		
					91.69	MDN 2621	1.47%	MDN 2621	95.80%		
						MDN 0126	6.84%	MDN 126	104.30%		
2007-103	7/18/2007	CVAFS-10	0.001	0.9999	95.32	MDN 2486	0.28%	MDN 2486	103.20%		
					96.75	MDN 2233	0.15%	MDN 2233	94.90%		
						MDN 2632	7.18%	MDN 2632	89.05%		
2007-104	7/19/2007	CVAFS-9	0.003	0.9997	90.19	MDN 0181	0.44%	MDN 181	95.00%		
					85.45	MDN 1735	5.35%	MDN 1735	91.10%		
						MDN 1754	1.23%	MDN 1754	97.50%		
2007-105	7/19/2007	CVAFS-10	0.006	0.9999	94.75	MDN 2175	3.00%	MDN 2175	100.45%	MDN 2312	0.018 ng/bottle
					94.32	MDN 0982	1.06%	MDN 982	92.30%		
						MDN 2628	9.07%	MDN 2628	86.65%		
2007-106	7/31/2007	CVAFS-9	0.003	0.9993	92.63	MDN 2661	4.02%	MDN 2661	91.75%		
					90.69	MDN 2073	4.16%	MDN 2073	99.15%		
						MDN 2781	1.66%	MDN 2781	100.05%		
2007-107	7/31/2007	CVAFS-10	0.003	0.9999	94.50	MDN 2484	1.37%	MDN 2484	100.45%	MDN 2186	0.015 ng/bottle
					96.88	MDN 0861	0.60%	MDN 861	92.50%		
						MDN 0668	5.15%	MDN 668	85.50%		
2007-108	7/30/2007	CVAFS-9	0.004	0.9994	91.01	MDN 2122	5.70%	MDN 2122	98.20%		
					91.32	MDN 1981	0.69%	MDN 1981	98.45%		
						MDN 2209	3.25%	MDN 2209	97.35%		
2007-109	7/30/2007	CVAFS-10	0	1.0000	95.50	MDN 2635	0.11%	MDN 2635	102.00%		
					96.63	MDN 3114	0.14%	MDN 3114	97.00%		
						MDN 0180	5.27%	MDN 180	92.30%		
2007-110	8/3/2007	CVAFS-9	-0	0.9994	91.07	MDN 2762	1.32%	MDN 2762	101.80%	MDN 2765	0.018 ng/bottle
					93.25	MDN 2498	6.51%	MDN 2498	104.15%		
						MDN 2596	0.52%	MDN 2596	100.65%		
2007-111	8/7/2007	CVAFS-9	-0.001	0.9987	95.44	MDN 0430	1.66%	MDN 430	102.55%	MDN 2256	0.029 ng/bottle
					93.44	MDN 0389	1.81%	MDN 389	99.15%		
						MDN 2113	0.49%	MDN 2113	107.40%		
2007-112	8/3/2007	CVAFS-10	0.003	1.0000	95.88	MDN 2192	0.07%	MDN 2192	98.55%	MDN 2449	0.019 ng/bottle
					96.13	MDN 2525	0.00%	MDN 2525	98.80%		
						MDN 2583	3.69%	MDN 2583	91.05%		

MDN Data Set ID	AnalysisDate	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	Dup ID	Dup RPD	Spike ID	Spike Recovery	BB ID	BB Conc
2007-113	8/7/2007	CVAFS-10	-0.002	0.9999	96.69	MDN 2128	2.80%	MDN 2128	102.35%		
					95.88	MDN 2602	0.42%	MDN 2602	99.50%		
						MDN 2419	3.15%	MDN 2419	92.20%		
2007-114	8/2/2007	CVAFS-9	0.001	0.9997	90.51	MDN 0172	2.63%	MDN 172	98.05%		
					91.19	MDN 0442	0.17%	MDN 442	97.20%		
						MDN 0447	2.80%	MDN 447	96.25%		
2007-115	8/2/2007	CVAFS-10	0	0.9999	96.06	MDN 2360	0.12%	MDN 2360	101.75%	MDN 679	0.009 ng/bottle
					96.88	MDN 0761	0.66%	MDN 761	95.45%		
						MDN 2276	3.84%	MDN 2276	85.45%		
2007-116	8/16/2007	CVAFS-9	0	0.9986	91.44	MDN 3004	1.66%	MDN 3004	101.60%	MDN 2339	0.032 ng/bottle
					89.07	MDN 2264	6.63%	MDN 2264	99.35%		
						MDN 3120	1.92%	MDN 3120	95.30%		
2007-117	8/16/2007	CVAFS-10	0.001	0.9999	98.31	MDN 2029	0.25%	MDN 2029	103.50%		
					99.94	MDN 1976	0.99%	MDN 1976	100.35%		
						MDN 2165	0.68%	MDN 2165	89.95%		
2007-118	8/15/2007	CVAFS-9	0	0.9995	91.57	MDN 1972	6.35%	MDN 1972	86.25%		
					86.07	MDN 3121	2.09%	MDN 3121	91.80%		
						MDN 2327	2.26%	MDN 2327	94.15%		
2007-119	8/15/2007	CVAFS-10	-0.001	1.0000	97.44	MDN 2554	1.29%	MDN 2554	102.75%	MDN 3074	0.013 ng/bottle
					97.88	MDN 2622	1.01%	MDN 2622	91.15%		
						MDN 2491	3.16%	MDN 2491	89.80%		
2007-120	8/22/2007	CVAFS-9	0.001	0.9997	94.25	MDN 2698	0.47%	MDN 2698	82.60%		
					94.57	MDN 2735	1.58%	MDN 2735	91.85%		
						MDN 2615	2.70%	MDN 2615	98.75%		
2007-121	8/22/2007	CVAFS-10	0.001	0.9999	96.50	MDN 0914	0.29%	MDN 914	101.60%		
					95.88	MDN 2412	0.16%	MDN 2412	96.80%		
						MDN 0488	1.89%	MDN 488	94.30%		
2007-122	8/29/2007	CVAFS-10	0.001	1.0000	97.56	MDN 2071	1.34%	MDN 2071	107.65%	MDN 179	0.013 ng/bottle
					99.56	MDN 2630	0.93%	MDN 2630	99.80%		
						MDN 2719	5.23%	MDN 2719	92.55%		
2007-123	9/6/2007	CVAFS-9	0.002	0.9999	97.13	MDN 2161	0.35%	MDN 2161	98.90%	MDN 132	0.017 ng/bottle
					87.01	MDN 2365	1.08%	MDN 2365	93.25%		
						MDN 3005	1.35%	MDN 3005	99.00%		
2007-124	8/31/2007	CVAFS-9	0.001	0.9999	96.00	MDN 0697	0.20%	MDN 697	88.95%	MDN 1981	0.016 ng/bottle
					86.32	MDN 2769	2.34%	MDN 2769	95.10%		
						MDN 2585	1.41%	MDN 2585	101.90%		
2007-125	8/27/2007	CVAFS-10	-0	0.9999	96.75	MDN 0823	0.60%	MDN 823	102.30%		
					95.50	MDN 0796	0.40%	MDN 796	97.75%		
						MDN 3033	3.40%	MDN 3033	88.55%		
2007-126	8/30/2007	CVAFS-10	0	0.9999	98.00	MDN 0734	1.07%	MDN 734	104.85%	MDN 393	0.014 ng/bottle
					100.62	MDN 2773	0.18%	MDN 2773	98.20%		
						MDN 0981	5.14%	MDN 981	93.40%		

MDN Data Set ID	AnalysisDate	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	Dup ID	Dup RPD	Spike ID	Spike Recovery	BB ID	BB Conc
2007-127	8/31/2007	CVAFS-10	-0.001	0.9999	97.44	MDN 2046	1.33%	MDN 2046	103.75%	MDN 427	0.007 ng/bottle
					97.75	MDN 2580	3.12%	MDN 2580	98.10%		
						MDN 0792	4.52%	MDN 792	90.20%		
2007-128	9/4/2007	CVAFS-9	0.001	0.9998	97.38	MDN 2755	0.47%	MDN 2755	93.55%	MDN 2425	0.014 ng/bottle
					90.38	MDN 2003	1.78%	MDN 2003	95.55%		
						MDN 2353	2.71%	MDN 2353	100.40%		
2007-129	9/4/2007	CVAFS-10	0.002	1.0000	98.56	MDN 1737	3.24%	MDN 1737	108.15%		
					100.37	MDN 3087	2.21%	MDN 3087	100.35%		
						MDN 0173	3.27%	MDN 173	94.15%		
2007-130	9/6/2007	CVAFS-10	-0	0.9995	98.94	MDN 0951	0.67%	MDN 951	104.25%		
					98.81	MDN 2782	0.09%	MDN 2782	98.45%		
						MDN 2321	1.29%	MDN 2321	95.45%		
2007-131	9/13/2007	CVAFS-9	0.001	0.9998	96.88	MDN 2592	1.92%	MDN 2592	95.45%	MDN 2636	0.006 ng/bottle
					88.69	MDN 2369	2.09%	MDN 2369	93.20%		
						MDN 2693	3.11%	MDN 2693	98.90%		
2007-132	9/11/2007	CVAFS-9	0.002	1.0000	95.07	MDN 1939	4.31%	MDN 1939	92.85%	MDN 2173	0.008 ng/bottle
					88.26	MDN 0633	0.34%	MDN 633	95.50%		
						MDN 2020	0.42%	MDN 2020	94.60%		
2007-133	9/11/2007	CVAFS-10	0.003	0.9997	94.88	MDN 2373	1.19%	MDN 2373	95.30%		
					93.44	MDN 2741	1.16%	MDN 2741	97.00%		
						MDN 0181	6.15%	MDN 181	102.35%		
2007-134	9/14/2007	CVAFS-9	0.001	0.9999	97.75	MDN 2166	3.51%	MDN 2166	96.10%		
					93.19	MDN 2730	1.28%	MDN 2730	93.60%		
						MDN 2255	3.30%	MDN 2255	100.45%		
2007-135	9/13/2007	CVAFS-10	0.003	0.9998	97.56	MDN 2355	0.35%	MDN 2355	103.95%		
					94.07	MDN 1950	1.60%	MDN 1950	99.95%		
						MDN 0185	2.16%	MDN 185	95.35%		
2007-136	9/18/2007	CVAFS-9	0.002	0.9999	99.69	MDN 0799	14.85%	MDN 799	90.75%		
2007-137	9/14/2007	CVAFS-10	0.001	0.9998	96.38	MDN 2802	0.98%	MDN 2802	97.85%		
					93.63	MDN 0174	2.66%	MDN 174	98.30%		
						MDN 2063	1.30%	MDN 2063	96.45%		
2007-138	9/18/2007	CVAFS-10	0.001	0.9999	94.00	MDN 0825	1.90%	MDN 825	95.70%	MDN 2499	0.018 ng/bottle
					90.07	MDN 2626	1.53%	MDN 2626	96.55%		
						MDN 3108	0.75%	MDN 3108	101.60%		
2007-139	9/20/2007	CVAFS-9	0.004	0.9993	99.38	MDN 2096	6.10%	MDN 2096	115.00%	MDN 2086	0.008 ng/bottle
					91.88	MDN 2512	0.91%	MDN 2512	103.70%		
						MDN 3093	3.04%	MDN 3093	103.35%		
2007-140	9/24/2007	CVAFS-9	0.001	0.9999	95.13	MDN 2569	11.45%	MDN 2569	107.40%		

MDN Data Set ID	AnalysisDate	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	Dup ID	Dup RPD	Spike ID	Spike Recovery	BB ID	BB Conc
2007-141	9/24/2007	CVAFS-10	0.002	0.9996	93.25	MDN 2064	0.99%	MDN 2064	108.10%	MDN 867	0.008 ng/bottle
					87.70	MDN 2174	1.94%	MDN 2174	95.95%		
						MDN 2809	2.92%	MDN 2809	101.45%		
2007-142	9/28/2007	CVAFS-9	0	0.9997	94.25	MDN 2393	1.03%	MDN 2393	95.35%		
					85.07	MDN 2287	4.07%	MDN 2287	100.75%		
						MDN 0155	6.37%	MDN 155	100.55%		
2007-143	9/25/2007	CVAFS-10	0.002	0.9999	95.25	MDN 2494	6.90%	MDN 2494	110.45%		
					90.32	MDN 2192	0.59%	MDN 2192	105.85%		
						MDN 2770	2.72%	MDN 2770	101.55%		
2007-144	9/20/2007	CVAFS-10	0.002	0.9999	94.07	MDN 2785	0.61%	MDN 2785	104.35%		
					90.13	MDN 1931	0.42%	MDN 1931	98.75%		
						MDN 0679	0.44%	MDN 679	99.95%		
2007-145	10/3/2007	CVAFS-9	0.001	0.9996	91.94	MDN 2652	6.43%	MDN 2652	95.40%	MDN 1942	0.007 ng/bottle
					94.07	MDN 1733	0.28%	MDN 1733	100.30%		
						MDN 2634	0.08%	MDN 2634	104.15%		
2007-146	10/3/2007	CVAFS-10	-0	0.9998	92.88	MDN 0151	0.30%	MDN 151	101.10%		
					92.44	MDN 0480	2.01%	MDN 480	104.30%		
						MDN 2729	4.07%	MDN 2729	97.25%		
2007-147	10/2/2007	CVAFS-9	0.002	0.9999	94.13	MDN 3085	2.14%	MDN 3085	96.70%	MDN 2613	0.007 ng/bottle
					88.51	MDN 2817	2.02%	MDN 2817	95.55%		
						MDN 2245	3.06%	MDN 2245	99.90%		
2007-148	9/28/2007	CVAFS-10	0.001	0.9993	93.50	MDN 3066	0.88%	MDN 3066	103.90%	MDN 2009	0.007 ng/bottle
					90.88	MDN 1971	0.76%	MDN 1971	101.10%		
						MDN 2121	0.32%	MDN 2121	96.35%		
2007-149	10/2/2007	CVAFS-10	0.002	0.9999	93.50	MDN 2640	1.01%	MDN 2640	102.80%		
					92.75	MDN 0121	4.23%	MDN 121	115.60%		
						MDN 2323	1.78%	MDN 2323	93.15%		
2007-150	10/16/2007	CVAFS-9	0.002	0.9996	93.63	MDN 2497	12.49%	MDN 2497	97.55%		
					89.76	MDN 2531	0.16%	MDN 2531	89.60%		
						MDN 2763	1.60%	MDN 2763	93.90%		
2007-151	10/9/2007	CVAFS-9	0.001	0.9998	93.82	MDN 0792	1.67%	MDN 792	93.90%	MDN 751	0.005 ng/bottle
					86.26	MDN 0832	1.72%	MDN 832	90.05%		
						MDN 2017	3.37%	MDN 2017	95.05%		
2007-152	10/9/2007	CVAFS-10	0.002	0.9998	93.25	MDN 0422	2.16%	MDN 422	98.30%		
					92.57	MDN 0411	2.42%	MDN 411	97.65%		
						MDN 2502	0.21%	MDN 2502	94.55%		
2007-153	10/8/2007	CVAFS-10	0.002	1.0000	91.76	MDN 0819	4.03%	MDN 819	101.70%		
					92.82	MDN 2185	1.32%	MDN 2185	102.20%		
						MDN 0662	1.23%	MDN 662	96.80%		
2007-154	10/16/2007	CVAFS-10	0	0.9999	95.88	MDN 2367	2.11%	MDN 2367	94.80%		
					97.00	MDN 2339	7.96%	MDN 2339	98.80%		
						MDN 3051	11.49%	MDN 3051	98.35%		

MDN Data Set ID	AnalysisDate	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	Dup ID	Dup RPD	Spike ID	Spike Recovery	BB ID	BB Conc
2007-155	10/12/2007	CVAFS-10	0.004	1.0000	88.69	MDN 3002	5.96%	MDN 3002	92.55%		
					88.44	MDN 2361	9.38%	MDN 2361	96.25%		
						MDN 2520	3.39%	MDN 2520	85.15%		
2007-156	10/18/2007	CVAFS-9	0.001	0.9998	89.44	MDN 2390	5.37%	MDN 2390	95.15%		
					90.26	MDN 2480	1.36%	MDN 2480	92.80%		
						MDN 2006	8.28%	MDN 2006	95.65%		
2007-157	10/18/2007	CVAFS-10	0.002	0.9999	95.19	MDN 2814	5.97%	MDN 2814	90.35%	MDN 3085	0.011 ng/bottle
					93.82	MDN 0180	5.10%	MDN 180	99.05%		
						MDN 3107	11.07%	MDN 3107	97.15%		
2007-158	10/22/2007	CVAFS-9	0.001	0.9999	93.07	MDN 3052	5.83%	MDN 3052	92.95%		
					88.57	MDN 2189	1.58%	MDN 2189	93.25%		
						MDN 2530	8.79%	MDN 2530	100.20%		
2007-159	10/22/2007	CVAFS-10	0	0.9997	91.51	MDN 0970	3.57%	MDN 970	81.75%	MDN 422	0.009 ng/bottle
					93.69	MDN 2167	23.28%	MDN 2167	88.80%		
						MDN 3021	6.83%	MDN 3021	104.50%		
2007-160	10/29/2007	CVAFS-9	0	0.9999	92.50	MDN 3126	4.22%	MDN 3126	93.10%	MDN 2084	0.007 ng/bottle
					88.32	MDN 0020	1.55%	MDN 20	94.25%		
						MDN 2288	0.52%	MDN 2288	99.00%		
2007-161	10/29/2007	CVAFS-10	0.006	1.0000	95.50	MDN 2798	8.33%	MDN 2798	96.05%	MDN 2247	0.015 ng/bottle
					93.50	MDN 0913	1.62%	MDN 913	93.15%		
						MDN 2431	3.60%	MDN 2431	99.85%		
2007-162	10/30/2007	CVAFS-9	0	0.9998	93.69	MDN 2403	2.59%	MDN 2403	94.00%	MDN 968	0.007 ng/bottle
					86.32	MDN 2505	2.33%	MDN 2505	89.50%		
						MDN 2534	0.48%	MDN 2534	98.75%		
2007-163	10/30/2007	CVAFS-10	0.001	0.9998	96.00	MDN 2493	8.64%	MDN 2493	98.20%	MDN 664	0.014 ng/bottle
					96.13	MDN 2769	2.29%	MDN 2769	101.25%		
						MDN 0496	2.52%	MDN 496	97.60%		
2007-164	11/6/2007	CVAFS-9	0.005	0.9999	94.19	MDN 1956	1.22%	MDN 1956	97.30%	MDN 2213	0.008 ng/bottle
					91.07	MDN 2119	2.11%	MDN 2119	96.10%		
						MDN 3048	0.44%	MDN 3048	94.35%		
2007-165	11/6/2007	CVAFS-10	0.007	0.9998	98.88	MDN 2730	4.46%	MDN 2730	97.80%		
					94.44	MDN 2382	1.74%	MDN 2382	95.65%		
						MDN 2560	1.45%	MDN 2560	104.55%		
2007-166	11/7/2007	CVAFS-9	0.003	0.9999	95.38	MDN 3020	1.36%	MDN 3020	100.20%		
					93.25	MDN 2009	1.58%	MDN 2009	97.85%		
						MDN 2738	1.76%	MDN 2738	96.50%		
2007-167	11/7/2007	CVAFS-10	0.003	0.9999	96.81	MDN 2676	2.99%	MDN 2676	98.85%	MDN 3107	0.012 ng/bottle
					94.50	MDN 0158	1.42%	MDN 158	98.65%		
						MDN 2768	2.48%	MDN 2768	107.60%		
2007-168	11/14/2007	CVAFS-9	0.001	0.9998	94.07	MDN 2046	4.12%	MDN 2046	89.90%		
					88.69	MDN 2127	1.70%	MDN 2127	96.00%		
						MDN 0799	0.66%	MDN 799	95.25%		

MDN Data Set ID	AnalysisDate	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	Dup ID	Dup RPD	Spike ID	Spike Recovery	BB ID	BB Conc
2007-169	11/14/2007	CVAFS-10	0.002	0.9999	94.44	MDN 2256	5.17%	MDN 2256	95.65%		
					95.57	MDN 2691	6.21%	MDN 2691	98.35%		
						MDN 2601	14.35%	MDN 2601	99.40%		
2007-170	11/13/2007	CVAFS-9	0.002	0.9998	91.19	MDN 2550	1.67%	MDN 2550	93.35%	MDN 1999	0.025 ng/bottle
					89.69	MDN 2047	0.74%	MDN 2047	97.85%		
						MDN 2658	1.13%	MDN 2658	91.45%		
2007-171	11/13/2007	CVAFS-10	0	0.9999	97.13	MDN 2054	3.43%	MDN 2054	95.90%		
					95.13	MDN 2419	1.43%	MDN 2419	110.70%		
						MDN 0832	3.10%	MDN 832	99.90%		
2007-172	11/20/2007	CVAFS-9	0.001	0.9998	93.32	MDN 2345	0.97%	MDN 2345	96.60%		
					92.19	MDN 2611	0.19%	MDN 2611	96.45%		
						MDN 0151	2.47%	MDN 151	95.15%		
2007-173	11/20/2007	CVAFS-10	0.004	0.9994	100.25	MDN 0870	4.65%	MDN 870	97.45%		
					90.69	MDN 2807	2.95%	MDN 2807	112.60%		
						MDN 2023	9.52%	MDN 2023	102.05%		
2007-174	11/16/2007	CVAFS-9	0.004	0.9999	93.69	MDN 2365	2.35%	MDN 2365	95.10%		
					92.00	MDN 3056	0.92%	MDN 3056	94.60%		
						MDN 0148	1.27%	MDN 148	97.60%		
2007-175	11/16/2007	CVAFS-10	0.003	0.9998	92.69	MDN 0668	0.87%	MDN 668	101.35%		
					92.50	MDN 1984	8.82%	MDN 1984	101.90%		
						MDN 2310	0.44%	MDN 2310	101.00%		
2007-176	11/26/2007	CVAFS-9	0.003	0.9998	93.32	MDN 0804	1.85%	MDN 804	101.50%		
					93.13	MDN 2460	4.94%	MDN 2460	99.20%		
						MDN 0266	0.71%	MDN 266	96.25%		
2007-177	11/26/2007	CVAFS-10	0.005	0.9996	97.75	MDN 0960	6.01%	MDN 960	100.45%		
					95.13	MDN 1954	1.95%	MDN 1954	110.50%		
						MDN 2791	9.33%	MDN 2791	103.40%		
2007-178	11/29/2007	CVAFS-9	0	0.9999	94.44	MDN 0632	2.04%	MDN 632	97.40%		
					93.19	MDN 2799	1.58%	MDN 2799	98.45%		
						MDN 2367	1.02%	MDN 2367	89.50%		
2007-179	11/29/2007	CVAFS-10	-0.004	0.9999	97.94	MDN 2753	0.65%	MDN 2753	113.40%		
					96.06	MDN 2302	0.15%	MDN 2302	112.15%		
						MDN 2581	4.56%	MDN 2581	103.55%		
2007-180	12/3/2007	CVAFS-9	0.004	0.9998	94.13	MDN 2414	1.50%	MDN 2414	94.95%		
					92.32	MDN 0287	1.83%	MDN 287	95.10%		
						MDN 0018	1.16%	MDN 18	97.80%		
2007-181	12/3/2007	CVAFS-10	-0	1.0000	96.75	MDN 0445	2.38%	MDN 445	103.40%		
					99.56	MDN 0120	0.72%	MDN 120	117.60%		
						MDN 2131	10.73%	MDN 2131	103.35%		
2007-182	12/4/2007	CVAFS-9	0.001	0.9998	94.07	MDN 2285	2.51%	MDN 2285	97.70%		
					91.69	MDN 0272	4.44%	MDN 272	95.55%		
						MDN 2291	3.76%	MDN 2291	99.15%		

MDN Data Set ID	AnalysisDate	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	Dup ID	Dup RPD	Spike ID	Spike Recovery	BB ID	BB Conc
2007-183	12/4/2007	CVAFS-10	0	0.9999	95.00	MDN 2819	8.43%	MDN 2819	103.30%		
					99.75	MDN 2071	1.28%	MDN 2071	115.00%		
						MDN 2497	10.50%	MDN 2497	101.35%		
2007-184	12/5/2007	CVAFS-9	0.001	0.9998	91.32	MDN 0186	1.98%	MDN 186	95.15%		
					90.01	MDN 2567	3.28%	MDN 2567	91.15%		
						MDN 2635	0.00%	MDN 2635	98.00%		
2007-185	12/5/2007	CVAFS-10	0.001	1.0000	95.63	MDN 2696	7.25%	MDN 2696	99.45%		
					97.00	MDN 0866	3.12%	MDN 866	110.35%		
						MDN 2097	7.52%	MDN 2097	97.45%		
2007-186	12/11/2007	CVAFS-9	0.001	0.9998	97.50	MDN 2661	14.71%	MDN 2661	98.80%		
					95.44	MDN 3045	2.13%	MDN 3045	100.20%		
						MDN 2249	0.00%	MDN 2249	100.90%		
2007-187	12/10/2007	CVAFS-9	0.004	0.9998	94.13	MDN 1987	0.42%	MDN 1987	96.60%	MDN 2791	0.007 ng/bottle
					86.45	MDN 3034	1.71%	MDN 3034	94.70%		
						MDN 0719	1.81%	MDN 719	99.00%		
2007-188	12/10/2007	CVAFS-10	-0.001	0.9998	98.13	MDN 2020	6.28%	MDN 2020	102.45%		
					100.75	MDN 0427	2.14%	MDN 427	113.90%		
						MDN 1933	9.11%	MDN 1933	89.20%		
2007-189	12/11/2007	CVAFS-10	0.006	0.9996	99.50	MDN 2314	3.99%	MDN 2314	103.85%		
						MDN 0679	9.16%	MDN 679	98.60%		
2007-190	12/14/2007	CVAFS-9	0.004	1.0000	98.19	MDN 2458	2.00%	MDN 2458	100.40%	MDN 2087	0.012 ng/bottle
					94.63	MDN 2678	0.37%	MDN 2678	99.10%		
						MDN 2806	1.94%	MDN 2806	97.80%		
2007-191	12/14/2007	CVAFS-10	0.002	0.9998	97.19	MDN 2636	5.52%	MDN 2636	98.70%	MDN 2733	0.005 ng/bottle
					92.00	MDN 0429	6.37%	MDN 429	105.40%		
						MDN 0633	6.55%	MDN 633	95.65%		
2007-192	12/18/2007	CVAFS-9	0.001	0.9999	93.63	MDN 2617	1.14%	MDN 2617	94.40%		
					88.57	MDN 0762	0.92%	MDN 762	97.70%		
						MDN 0421	1.43%	MDN 421	81.90%		
2007-193	12/18/2007	CVAFS-10	0.011	0.9996	90.57	MDN 0181	1.07%	MDN 181	99.65%	MDN 2069	0.019 ng/bottle
					102.94	MDN 2389	13.66%	MDN 2389	102.00%		
						MDN 0393	14.45%	MDN 393	86.40%		
2007-194	12/27/2007	CVAFS-9	0.013	1.0000	94.19	MDN 2575	0.57%	MDN 2575	97.60%	MDN 2134	0.027 ng/bottle
					93.94	MDN 2614	7.84%	MDN 2614	99.20%		
						MDN 0694	0.71%	MDN 694	93.60%		
2007-195	12/27/2007	CVAFS-10	0.007	0.9998	100.19	MDN 0774	8.85%	MDN 774	97.45%		
					95.07	MDN 2752	2.65%	MDN 2752	95.00%		
						MDN 2416	5.81%	MDN 2416	103.50%		
2007-196	12/28/2007	CVAFS-9	0.007	0.9997	98.00	MDN 2277	23.70%	MDN 2277	99.90%		
					94.57	MDN 0662	14.00%	MDN 662	106.00%		
						MDN 2054	2.73%	MDN 2054	103.10%		

MDN Data Set ID	AnalysisDate	Instrument	BrCl Blank (ng/L)	R	NIST Recovery 1	Dup ID	Dup RPD	Spike ID	Spike Recovery	BB ID	BB Conc
2007-197	12/28/2007	CVAFS-10	0.011	0.9997	103.06	MDN 2451	2.78%	MDN 2451	111.30%		
					99.13	MDN 2163	0.00%	MDN 2163	100.30%		
						MDN 2653	0.32%	MDN 2653	99.95%		
2007-198	1/3/2008	CVAFS-9	0.008	0.9999	94.13	MDN 3111	1.89%	MDN 3111	98.95%		
					94.00	MDN 0279	0.84%	MDN 279	96.65%		
						MDN 0750	1.72%	MDN 750	83.65%		
2007-199	1/3/2008	CVAFS-10	0.006	0.9998	101.06	MDN 2480	1.39%	MDN 2480	100.70%		
					97.50	MDN 3085	0.70%	MDN 3085	100.65%		
						MDN 0757	2.16%	MDN 757	91.35%		
2007-200	1/4/2008	CVAFS-9	0.005	0.9999	96.13	MDN 2754	1.83%	MDN 2754	101.40%	MDN 3219	0.016 ng/bottle
					94.75	MDN 2764	3.28%	MDN 2764	100.50%		
						MDN 2677	2.64%	MDN 2677	94.70%		
2007-201	1/4/2008	CVAFS-10	0.007	0.9996	99.63	MDN 0797	12.07%	MDN 797	95.95%		
					93.00	MDN 0925	1.83%	MDN 925	90.00%		
						MDN 2555	9.47%	MDN 2555	114.00%		
2007-202	1/7/2008	CVAFS-9	0.006	0.9998	95.13	MDN 2412	12.32%	MDN 2412	94.75%	MDN 3144	0.014 ng/bottle
					88.32	MDN 2673	3.74%	MDN 2673	98.40%		
						MDN 2047	1.16%	MDN 2047	91.40%		
2007-203	1/15/2008	CVAFS-9	0.007	0.9998	93.19	MDN 2143	2.32%	MDN 2143	95.45%	MDN 3285	0.004 ng/bottle
					91.26	MDN 2013	5.25%	MDN 2013	93.85%		
						MDN 0020	9.31%	MDN 20	77.45%		
2007-204	1/16/2008	CVAFS-9	0.004	1.0000	93.44	MDN 2278	1.18%	MDN 2278	98.30%		
					91.88	MDN 0688	2.00%	MDN 688	100.65%		
						MDN 2490	7.23%	MDN 2490	101.15%		
2007-205	1/16/2008	CVAFS-10	0.007	0.9999	98.00	MDN 2117	7.23%	MDN 2117	91.95%		
					94.00	MDN 0184	3.25%	MDN 184	91.00%		
						MDN 2578	0.98%	MDN 2578	100.25%		
2007-206	1/28/2008	CVAFS-9	0.002	1.0000	95.57	MDN 2731	0.90%	MDN 2731	101.15%		
					97.19	MDN 3051	0.00%	MDN 3051	100.00%		
						MDN 0075	8.92%	MDN 75	104.05%		
2007-207	1/28/2008	CVAFS-10	0.003	0.9995	95.69	MDN 0260	4.55%	MDN 260	98.35%		
					95.63	MDN 2086	1.42%	MDN 2086	100.30%		
						MDN 1983	1.00%	MDN 1983	100.45%		
2007-208	2/4/2008	CVAFS-9	0.002	0.9999	92.15	MDN 0813	3.37%	MDN 813	128.27%		
					93.01	MDN 1942	3.62%	MDN 1942	98.25%		
						MDN 2421	0.96%	MDN 2421	99.15%		
2007-209	2/4/2008	CVAFS-10	0.003	0.9993	98.21	MDN 2523	3.00%	MDN 2523	143.47%		
					99.57	MDN 2712	1.76%	MDN 2712	138.8		
						MDN 0447	0.31%	MDN 447	105.55%		