

APPENDIX VI
LABORATORY DATA SUMMARY REPORTS

Full Data packages are on the CD located on the inside rear cover of this report.

APPENDIX VI
LABORATORY DATA



Driven by Service and Science

Prepared for : Arrow Environmental Consulting

Analytical Data Package

Analysis: CTM 033

Maxxam Job #: B0D7239

Maxxam Analytics International
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com



Driven by Service and Science

I hereby certify that to the best of my knowledge all analytical data presented in this report:

- Has been checked for completeness.
- Is accurate, legible and error free.
- Has been conducted in accordance with approved SOP's and that all deviations are clearly listed in the Case Narrative.
- This report has been generated in .pdf format.

Review Performed By:

Maxxam Analytics International
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Glossary of Terms

- **MDL** represents the Minimum Detection Limit below which the laboratory cannot confirm the presence of the analyte to the 95% confidence level.
- **RDL** represents the Reportable Detection Limit and is usually set at a value equivalent to the lowest calibration standard.
- **Acceptance Criteria** are values used by the laboratory to determine that a process is in control.
- **Accuracy** is the degree of agreement of a measured value with the true or expected value.
- **Calibration Standards** are a set of solutions containing the analytes of interest at a specified concentration.
- **Calibration Verification Standard** consists of a calibration standard solution of intermediate concentration (mid-point initial calibration level) used to access whether the initial calibration is still valid
- **Certified Reference Material** is a stable homogenous material that is certified by repetitive analysis from a supplier who is certified to generate said materials.
- **Internal Standard** a deuterated or ^{13}C -labelled analyte that is added to a sample extract prior to instrumental analysis to compensate for injection variability.
- **Isomer** is a member of a group of compounds that differ from each other only in the locations of a specific number of common substituent atoms or groups of atoms on the parent compound.
- **Method Blank** is a laboratory control sample using reagents that are known to be free of contamination.
- **Precision** is the degree of agreement between the data generated from repetitive measurements under specific conditions.
- **Quality Assurance** is a system of activities whose purpose is to provide the producer or user of a product with the assurance that the product meets a defined standard of quality.
- **Quality Control** is the overall system of activities whose purpose is to control the quality of a product so that it meets the needs of the end user.
- **RSD** is the relative standard deviation.
- **Blank Spike** is a laboratory control sample that has been fortified with native analytes of interest.
- **Window Definng Mixture** is a solution containing only the earliest and latest eluting congeners within each homologous group of target analytes on a specified GC column.
- **RPD** or Relative Percent Difference. A measure used to compare duplicate sample analysis.
- **EMPC/NDR** – Peak detected does not meet ratio criteria and has resulted in a higher detection limit.



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1.0 Project Narrative

Maxxam Analytics International
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PROJECT NARRATIVE

Maxxam Analytics (Burlington ON)
Maxxam Job #: B0D7239



Client: Arrow Environmental Consulting
Client Project:

I. SAMPLE RECEIPT/ANALYSIS

a) Sample Listing

Maxxam ID	Client Sample ID	Date Sampled	Date Received	Date Prepped	Date Run
Hydrogen Cyanide in Impingers					
HI4512	FIELD SPIKE-CTM033	2010/09/21	2010/09/29	2010/10/15	2010/10/15
HI4514	REAGENT BLANK-CTM033	2010/09/21	2010/09/29	2010/10/15	2010/10/15
HI4515	FIELD BLK-CTM033-IMP1	2010/09/21	2010/09/29	2010/10/15	2010/10/15
HI4516	FIELD BLK-CTM033-IMP2	2010/09/21	2010/09/29	2010/10/15	2010/10/15
HI4517	FIELD BLK-CTM033-IMP3	2010/09/21	2010/09/29	2010/10/15	2010/10/15
HI4518	RUN 1-CTM033-IMP 1A	2010/09/14	2010/09/29	2010/10/15	2010/10/15
HI4518 Dup	RUN 1-CTM033-IMP 1A	2010/09/14	2010/09/29	2010/10/15	2010/10/15
HI4519	RUN 1-CTM033-IMP 1B	2010/09/14	2010/09/29	2010/10/15	2010/10/15
HI4520	RUN 1-CTM033-IMP 1C	2010/09/14	2010/09/29	2010/10/15	2010/10/15
HI4521	RUN 1-CTM033-IMP 2A	2010/09/14	2010/09/29	2010/10/15	2010/10/15
HI4522	RUN 1-CTM033-IMP 2B	2010/09/14	2010/09/29	2010/10/15	2010/10/15
HI4523	RUN 1-CTM033-IMP 2C	2010/09/14	2010/09/29	2010/10/15	2010/10/15
HI4524	RUN 1-CTM033-IMP 3	2010/09/14	2010/09/29	2010/10/15	2010/10/15
HI4525	RUN 2-CTM033-IMP 1	2010/09/14	2010/09/29	2010/10/15	2010/10/15
HI4526	RUN 2-CTM033-IMP 2	2010/09/14	2010/09/29	2010/10/15	2010/10/15
HI4527	RUN 2-CTM033-IMP 3	2010/09/14	2010/09/29	2010/10/15	2010/10/15
HI4528	RUN 3-CTM033-IMP 1	2010/09/14	2010/09/29	2010/10/15	2010/10/15
HI4529	RUN 3-CTM033-IMP 2	2010/09/14	2010/09/29	2010/10/15	2010/10/15
HI4530	RUN 3-CTM033-IMP 3	2010/09/14	2010/09/29	2010/10/15	2010/10/15
HI4531	RUN 4-CTM033-IMP 1A	2010/09/21	2010/09/29	2010/10/15	2010/10/15
HI4532	RUN 4-CTM033-IMP 1B	2010/09/21	2010/09/29	2010/10/15	2010/10/15
HI4533	RUN 4-CTM033-IMP 2A	2010/09/21	2010/09/29	2010/10/14	2010/10/14
HI4534	RUN 4-CTM033-IMP 2B	2010/09/21	2010/09/29	2010/10/14	2010/10/14
HI4535	RUN 4-CTM033-IMP 3	2010/09/21	2010/09/29	2010/10/14	2010/10/14
HI4535 Dup	RUN 4-CTM033-IMP 3	2010/09/21	2010/09/29	2010/10/14	2010/10/14
HI4536	RUN 4-CTM033-IMP 4	2010/09/21	2010/09/29	2010/10/14	2010/10/14

Run Date is defined as the date of injection of the last calibration standard (12 hours or less) prior to the samples analyzed within that run sequence. Therefore the time of calibration injection that defines the run date is always within 12 hours of the time of sample injection.

b) Shipping Problems: none encountered

c) Documentation Problems: none encountered

II. SAMPLE PREP:

No problems encountered

III. SAMPLE ANALYSIS:

See also comments within the appropriate Certificate of Analysis

- a) Hold Times: all within recommended hold times
- b) Instrument Calibration: all within control limits
- c) Quality Control: All applicable QC meets control criteria, except where otherwise noted.
- d) All analytes requiring manual integration(s) are noted on the sample chromatograms

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for other than the conditions detailed above.

In addition, I certify, that to the best of my knowledge and belief, the data as reported are true and accurate. Release of the data contained in this data package has been authorized by the cognizant laboratory official or his/her designee, as verified by this signature.

Ancy Sebastian

Digitally signed by Ancy Sebastian
DN: dc=lab, dc=maxxam, ou=Burlington, cn=Ancy
Sebastian, email=Ancy.Sebastian@maxxamalytics.com
Date: 2010.10.26 16:09:50 -04'00'



Driven by Service and Science

2.0 Summary Report

Maxxam Analytics International
6740 Campobello Rd.
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L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

Attention: Andrew McNeel
 Arrow Environmental Consulting
 2 Sutton Pl
 Easton, PA
 USA 18045

Report Date: 2010/10/20

This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0D7239

Received: 2010/09/29, 15:15

Sample Matrix: Stack Sampling Train

Samples Received: 24

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Hydrogen Cyanide in Impingers	4	2010/10/14	2010/10/14		EPA CTM-33
Hydrogen Cyanide in Impingers	20	2010/10/15	2010/10/15		EPA CTM-33
Volume of Sodium Hydroxide Impinger	24	N/A	2010/10/15		


* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

MAXXAM ANALYTICS

ANCY SEBASTIAN, C.Tech.
 Senior Project Manager, Air Toxics

AMS/ams
 encl.

Authorized By :

T. W. Obal


TERRY OBAL, Ph.D., C. Chem
 Manager, Scientific Services

Total cover pages: 1

Maxxam Job #: B0D7239
Report Date: 2010/10/20

RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

Maxxam ID		HI4512		HI4514	HI4515	HI4516		
Sampling Date		2010/09/21		2010/09/21	2010/09/21	2010/09/21		
	Units	FIELD SPIKE-CTM033	RDL	REAGENT BLANK-CTM033	FIELD BLK-CTM033-IMP1	FIELD BLK-CTM033-IMP2	RDL	QC Batch

Volume	ml	510	1	500	530	530	1	2293995
Hydrogen Cyanide	ug	38000	2000	<1000	<1000	<1000	1000	2293291

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		HI4517		HI4518		HI4518		HI4519		
Sampling Date		2010/09/21		2010/09/14		2010/09/14		2010/09/14		
	Units	FIELD BLK-CTM033-IMP3	RDL	RUN 1-CTM033-IMP 1A	RDL	RUN 1-CTM033-IMP 1A Lab-Dup	RDL	RUN 1-CTM033-IMP 1B	RDL	QC Batch

Volume	ml	530	1	640	1	N/A	1	580	1	2293995
Hydrogen Cyanide	ug	<1000	1000	<20000	20000	14000	2000	5500	1000	2293291

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		HI4520	HI4521	HI4522	HI4523	HI4524		
Sampling Date		2010/09/14	2010/09/14	2010/09/14	2010/09/14	2010/09/14		
	Units	RUN 1-CTM033-IMP 1C	RUN 1-CTM033-IMP 2A	RUN 1-CTM033-IMP 2B	RUN 1-CTM033-IMP 2C	RUN 1-CTM033-IMP 3	RDL	QC Batch

Volume	ml	600	550	550	550	590	1	2293995
Hydrogen Cyanide	ug	<1000	<1000	<1000	<1000	<1000	1000	2293291

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B0D7239
Report Date: 2010/10/20

RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

Maxxam ID		HI4525		HI4526	HI4527		HI4528		HI4529		
Sampling Date		2010/09/14		2010/09/14	2010/09/14		2010/09/14		2010/09/14		
	Units	RUN 2-CTM033-IMP 1	RDL	RUN 2-CTM033-IMP 2	RUN 2-CTM033-IMP 3	RDL	RUN 3-CTM033-IMP 1	RDL	RUN 3-CTM033-IMP 2	RDL	QC Batch

Volume	ml	700	1	570	590	1	710	1	560	1	2293995
Hydrogen Cyanide	ug	24000	2000	<1000	<1000	1000	26000	2000	<1000	1000	2293291

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		HI4530		HI4531		HI4532		HI4533		
Sampling Date		2010/09/14		2010/09/21		2010/09/21		2010/09/21		
	Units	RUN 3-CTM033-IMP 3	RDL	RUN 4-CTM033-IMP 1A	RDL	RUN 4-CTM033-IMP 1B	QC Batch	RUN 4-CTM033-IMP 2A	RDL	QC Batch

Volume	ml	600	1	720	1	640	2293995	630	1	2293995
Hydrogen Cyanide	ug	<1000	1000	24000	2000	6800	2293291	<1000	1000	2293292

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		HI4534	HI4535	HI4535	HI4536		
Sampling Date		2010/09/21	2010/09/21	2010/09/21	2010/09/21		
	Units	RUN 4-CTM033-IMP 2B	RUN 4-CTM033-IMP 3	RUN 4-CTM033-IMP 3 Lab-Dup	RUN 4-CTM033-IMP 4	RDL	QC Batch

Volume	ml	610	610	N/A	600	1	2293995
Hydrogen Cyanide	ug	<1000	<1000	<1000	<1000	1000	2293292

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B0D7239
Report Date: 2010/10/20

Test Summary

Maxxam ID HI4512
Sample ID FIELD SPIKE-CTM033
Matrix Stack Sampling Train

Collected 2010/09/21
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293291	2010/10/15	2010/10/15	LLE
Volume of Sodium Hydroxide Impinger		2293995	N/A	2010/10/15	FMO

Maxxam ID HI4514
Sample ID REAGENT BLANK-CTM033
Matrix Stack Sampling Train

Collected 2010/09/21
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293291	2010/10/15	2010/10/15	LLE
Volume of Sodium Hydroxide Impinger		2293995	N/A	2010/10/15	FMO

Maxxam ID HI4515
Sample ID FIELD BLK-CTM033-IMP1
Matrix Stack Sampling Train

Collected 2010/09/21
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293291	2010/10/15	2010/10/15	LLE
Volume of Sodium Hydroxide Impinger		2293995	N/A	2010/10/15	FMO

Maxxam ID HI4516
Sample ID FIELD BLK-CTM033-IMP2
Matrix Stack Sampling Train

Collected 2010/09/21
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293291	2010/10/15	2010/10/15	LLE
Volume of Sodium Hydroxide Impinger		2293995	N/A	2010/10/15	FMO

Maxxam ID HI4517
Sample ID FIELD BLK-CTM033-IMP3
Matrix Stack Sampling Train

Collected 2010/09/21
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293291	2010/10/15	2010/10/15	LLE
Volume of Sodium Hydroxide Impinger		2293995	N/A	2010/10/15	FMO

Maxxam ID HI4518
Sample ID RUN 1-CTM033-IMP 1A
Matrix Stack Sampling Train

Collected 2010/09/14
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293291	2010/10/15	2010/10/15	LLE
Volume of Sodium Hydroxide Impinger		2293995	N/A	2010/10/15	FMO

Maxxam Job #: B0D7239
Report Date: 2010/10/20

Test Summary

Maxxam ID HI4518 Dup
Sample ID RUN 1-CTM033-IMP 1A
Matrix Stack Sampling Train

Collected 2010/09/14
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293291	2010/10/15	2010/10/15	LLE

Maxxam ID HI4519
Sample ID RUN 1-CTM033-IMP 1B
Matrix Stack Sampling Train

Collected 2010/09/14
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293291	2010/10/15	2010/10/15	LLE
Volume of Sodium Hydroxide Impinger		2293995	N/A	2010/10/15	FMO

Maxxam ID HI4520
Sample ID RUN 1-CTM033-IMP 1C
Matrix Stack Sampling Train

Collected 2010/09/14
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293291	2010/10/15	2010/10/15	LLE
Volume of Sodium Hydroxide Impinger		2293995	N/A	2010/10/15	FMO

Maxxam ID HI4521
Sample ID RUN 1-CTM033-IMP 2A
Matrix Stack Sampling Train

Collected 2010/09/14
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293291	2010/10/15	2010/10/15	LLE
Volume of Sodium Hydroxide Impinger		2293995	N/A	2010/10/15	FMO

Maxxam ID HI4522
Sample ID RUN 1-CTM033-IMP 2B
Matrix Stack Sampling Train

Collected 2010/09/14
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293291	2010/10/15	2010/10/15	LLE
Volume of Sodium Hydroxide Impinger		2293995	N/A	2010/10/15	FMO

Maxxam ID HI4523
Sample ID RUN 1-CTM033-IMP 2C
Matrix Stack Sampling Train

Collected 2010/09/14
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293291	2010/10/15	2010/10/15	LLE
Volume of Sodium Hydroxide Impinger		2293995	N/A	2010/10/15	FMO

Maxxam Job #: B0D7239
Report Date: 2010/10/20

Test Summary

Maxxam ID HI4524
Sample ID RUN 1-CTM033-IMP 3
Matrix Stack Sampling Train
Collected 2010/09/14
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293291	2010/10/15	2010/10/15	LLE
Volume of Sodium Hydroxide Impinger		2293995	N/A	2010/10/15	FMO

Maxxam ID HI4525
Sample ID RUN 2-CTM033-IMP 1
Matrix Stack Sampling Train
Collected 2010/09/14
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293291	2010/10/15	2010/10/15	LLE
Volume of Sodium Hydroxide Impinger		2293995	N/A	2010/10/15	FMO

Maxxam ID HI4526
Sample ID RUN 2-CTM033-IMP 2
Matrix Stack Sampling Train
Collected 2010/09/14
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293291	2010/10/15	2010/10/15	LLE
Volume of Sodium Hydroxide Impinger		2293995	N/A	2010/10/15	FMO

Maxxam ID HI4527
Sample ID RUN 2-CTM033-IMP 3
Matrix Stack Sampling Train
Collected 2010/09/14
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293291	2010/10/15	2010/10/15	LLE
Volume of Sodium Hydroxide Impinger		2293995	N/A	2010/10/15	FMO

Maxxam ID HI4528
Sample ID RUN 3-CTM033-IMP 1
Matrix Stack Sampling Train
Collected 2010/09/14
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293291	2010/10/15	2010/10/15	LLE
Volume of Sodium Hydroxide Impinger		2293995	N/A	2010/10/15	FMO

Maxxam ID HI4529
Sample ID RUN 3-CTM033-IMP 2
Matrix Stack Sampling Train
Collected 2010/09/14
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293291	2010/10/15	2010/10/15	LLE
Volume of Sodium Hydroxide Impinger		2293995	N/A	2010/10/15	FMO

Maxxam Job #: B0D7239

Report Date: 2010/10/20

Test Summary

Maxxam ID HI4530
Sample ID RUN 3-CTM033-IMP 3
Matrix Stack Sampling Train
Collected 2010/09/14
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293291	2010/10/15	2010/10/15	LLE
Volume of Sodium Hydroxide Impinger		2293995	N/A	2010/10/15	FMO

Maxxam ID HI4531
Sample ID RUN 4-CTM033-IMP 1A
Matrix Stack Sampling Train
Collected 2010/09/21
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293291	2010/10/15	2010/10/15	LLE
Volume of Sodium Hydroxide Impinger		2293995	N/A	2010/10/15	FMO

Maxxam ID HI4532
Sample ID RUN 4-CTM033-IMP 1B
Matrix Stack Sampling Train
Collected 2010/09/21
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293291	2010/10/15	2010/10/15	LLE
Volume of Sodium Hydroxide Impinger		2293995	N/A	2010/10/15	FMO

Maxxam ID HI4533
Sample ID RUN 4-CTM033-IMP 2A
Matrix Stack Sampling Train
Collected 2010/09/21
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293292	2010/10/14	2010/10/14	LLE
Volume of Sodium Hydroxide Impinger		2293995	N/A	2010/10/15	FMO

Maxxam ID HI4534
Sample ID RUN 4-CTM033-IMP 2B
Matrix Stack Sampling Train
Collected 2010/09/21
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293292	2010/10/14	2010/10/14	LLE
Volume of Sodium Hydroxide Impinger		2293995	N/A	2010/10/15	FMO

Maxxam ID HI4535
Sample ID RUN 4-CTM033-IMP 3
Matrix Stack Sampling Train
Collected 2010/09/21
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293292	2010/10/14	2010/10/14	LLE
Volume of Sodium Hydroxide Impinger		2293995	N/A	2010/10/15	FMO

Maxxam Job #: B0D7239
Report Date: 2010/10/20

Test Summary

Maxxam ID HI4535 Dup
Sample ID RUN 4-CTM033-IMP 3
Matrix Stack Sampling Train

Collected 2010/09/21
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293292	2010/10/14	2010/10/14	LLE

Maxxam ID HI4536
Sample ID RUN 4-CTM033-IMP 4
Matrix Stack Sampling Train

Collected 2010/09/21
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hydrogen Cyanide in Impingers	IC	2293292	2010/10/14	2010/10/14	LLE
Volume of Sodium Hydroxide Impinger		2293995	N/A	2010/10/15	FMO

Maxxam Job #: B0D7239
Report Date: 2010/10/20

RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

Hydrogen Cyanide in Impingers: Samples were initially analyzed on 2010/10/13 but data are not reportable. Samples were re-analyzed on 2010/10/15.

Results relate only to the items tested.

Arrow Environmental Consulting
Attention: Andrew McNeel
Client Project #:
P.O. #:
Project name:

Quality Assurance Report

Maxxam Job Number: GB0D7239

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2293291 LLE	Matrix Spike (HI4518)	Hydrogen Cyanide	2010/10/15		98	%	N/A
	Spiked Blank	Hydrogen Cyanide	2010/10/15		101	%	N/A
	Method Blank	Hydrogen Cyanide	2010/10/15	<1000		ug	
	RPD - Sample/Sample Dup	Hydrogen Cyanide	2010/10/15	NC		%	20
	Matrix Spike (HI4535)	Hydrogen Cyanide	2010/10/14		102	%	N/A
2293292 LLE	Spiked Blank	Hydrogen Cyanide	2010/10/14		101	%	N/A
	Method Blank	Hydrogen Cyanide	2010/10/14	<1000		ug	
	RPD - Sample/Sample Dup	Hydrogen Cyanide	2010/10/14	NC		%	20
<p>Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference. Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery. Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination. NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.</p>							

Validation Signature Page**Maxxam Job #: B0D7239**

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



FRANK MO, B.Sc., Inorganic Lab. Manager

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Driven by Service and Science

3.0 Sample Custody

Maxxam Analytics International
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

Arrow Environmental Consulting, LLC

PO Box 3658

Easton PA 18043

610-597-1770 610-258-2470 FAX

andrewmcneel@acn.com

Chain of Custody Record

Samples Submitted to:

Maxxam Analytical

5555 North Service Rd

Burlington Ontario Canada L7L 5H7

(905) 332-8788

Attn: A. Sebastian (905) 332-9169 fx

☐

Other

- Container Type
- B. Gas Bag
 - D. Petri Dish
 - E. Method 25 Tank
 - F. Method 25 Trap
 - G. Glass
 - N. NIOSH Tube
 - P. Plastic Bottle
 - S. Summa Canister
 - T. VOST Tube
 - V. VOC Vial
 - X. XAD-2 Trap
 - O. Other: AMPULE

- Sample Type
- 1. Liquid
 - 2. Gas
 - 3. Filter
 - 4. Charcoal
 - 5. Resin
 - 6. Other

Page 2 of 2

Pls fax/email results by 10/08/10.

Requested Analysis / Method

cyanide per CTM-033

Sample Identification	Sample vol (mls)	Sample Type	Container Type	Size	Date	Tech	Reagents and/or Preservatives	Lab ID #
Run 2, imp 1, catch / rinse	695	1 G	950	9/14/2010	JMC	6N NaOH	x	
Run 2, imp 2, catch / rinse	565	1 G	950	9/14/2010	JMC	6N NaOH	x	
Run 2, imp 3, catch / rinse	590	1 G	950	9/14/2010	JMC	6N NaOH	x	
Run 3, imp 1, catch / rinse	705	1 G	950	9/14/2010	JMC	6N NaOH	x	
Run 3, imp 2, catch / rinse	560	1 G	950	9/14/2010	JMC	6N NaOH	x	
Run 3, imp 3, catch / rinse	595	1 G	950	9/14/2010	JMC	6N NaOH	x	
Run 4, imp 1A, catch / rinse	720	1 G	950	9/21/2010	JMC	6N NaOH	x	
Run 4, imp 1B, catch / rinse	640	1 G	950	9/21/2010	JMC	6N NaOH	x	
Run 4, imp 2A, catch / rinse	630	1 G	950	9/21/2010	JMC	6N NaOH	x	
Run 4, imp 2B, catch / rinse	610	1 G	950	9/21/2010	JMC	6N NaOH	x	
Run 4, imp 3, catch / rinse	610	1 G	950	9/21/2010	JMC	6N NaOH	x	
Run 4, imp 4, catch / rinse	600	1 G	950	9/21/2010	JMC	6N NaOH	x	
Reagent Blank	500	1 G	950	9/21/2010	BEC	6N NaOH	x	
Field Spike	510	1 G	950	9/21/2010	BEC	6N NaOH / spike solution	x	
Field Blank, imp 1	530	1 G	950	9/21/2010	BEC	6N NaOH	x	
Field Blank, imp 2	530	1 G	950	9/21/2010	BEC	6N NaOH	x	
Field Blank, imp 3	530	1 G	950	9/21/2010	BEC	6N NaOH	x	

Special Instructions: Field spiked sample contains 500 mls 6N NaOH with 10mls of the Potassium Cyanide/0.1N NaOH spike solution. 25mls of the spiking solution is included in a VOC vial.

Submitted By: <i>for m Callets</i>	Date: 9/23/2010	Received By: <i>Stu</i>	Date: 9/23/2010	QA/QC Report Package
Relinquished By:	Date:	Received By:	Date:	Non-compliance
Relinquished By:	Date:	Received By:	Date: 09-29-10	Method
				Normal

QA/QC Report Package

Non-compliance

Method

Normal

NELAC - SAMPLE RECEIPT LOG

Lab Name: Maxxam Analytics, Mississauga Laboratory	
Received by (Name): <u>Marsela Wijaya</u>	
Received by (Signature): <u>[Signature]</u>	Date: <u>09-29-10</u> Time: <u>3:15</u>
Where Applicable:	
Client Name: <u>Arrow Environmental Consulting</u>	
Mode of delivery:	Pick up at: <input checked="" type="checkbox"/> Client <input type="checkbox"/> FEDEX <input type="checkbox"/> UPS <input type="checkbox"/> Purolator <input type="checkbox"/> Other _____
Waybill #: _____	
Assigned job#: <u>BOD6255, BOD6223, BOD7239, BOD7344</u>	
Number of Package: Number of Boxes: <u>4</u> or Coolers: _____	
REMARKS:	Condition of Sample(s) Shipment - Comments
Sample Reception Documentation	
Samples Packed in Coolers?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/>
Cooler Contains ice?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
Custody seal(s) on cooler?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
Chain of Custody (CoC) present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>
Cooler Temperature measured?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
Containers intact?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>
Correct containers used?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>
CoC agrees with samples?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>
Samples rec'd after hold time?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/>
Project Mgr contacted via SIF?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
Project Manager Documentation	
Client contacted if discrepancies in shipment are observed	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>
Client acceptance of deficiencies (if observed at sample receipt)	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>
Cooler temperatures upon receipt	
Cooler ID: _____ Temp. _____	CTM33 - cyanide +: 12/12/12°C (stored in fridge overnight)
Cooler ID: _____ Temp. _____	
Cooler ID: _____ Temp. _____	
Cooler ID: _____ Temp. _____	

Keika Ventures

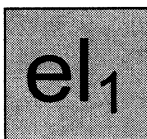
PO Box 4704
Chapel Hill, NC 27515

Project No: MXA100110

Hydrogen Cyanide

CARB Method 426 Analysis

Analytical Report
15377



Element One, Inc.
5022-C Wrightsville Av., Wilmington, NC 28403
910-793-0128 FAX: 910-792-6853 e1lab@e1lab.com

The following data for Analytical Report 15377
has been reviewed for completeness, accuracy,
adherence to method protocol,
and compliance with quality assurance guidelines.

Review by:



Daphne Woodman, Chemist
October 13, 2010

Report Reviewed and Finalized By:



Ken Smith, Laboratory Director
October 13, 2010

SUMMARY OF RESULTS

Summary of Analysis

Summary of CARB Method 426 Cyanide Analysis

Element	Run 1 e15377-1 Total µg	Run 2 e15377-2 Total µg	Run 2 e15377-2 dup Total µg	Run 3 e15377-3 Total µg	Reagent Blank e15377-4 Total µg
Cyanide	2057	1682	1637	1797	< 2.6
FV, mL	700	690	690	690	520

ANALYTICAL NARRATIVE

Element One Analytical Narrative

Client:	Keika Ventures	Element One #:	15377
Client ID:	Maxxam	Analyst:	MBM
Method:	CARB 426	Dates Received:	10/01/10
Analytes:	Hydrogen Cyanide	Dates Analyzed:	10/11-12/10

Summary of Analysis

The samples were prepared and analyzed in accordance with CARB Method 426 protocol. Beginning volumes were obtained for all sample fractions. Sample filters were then sonicated for 30 minutes after addition of 35 mL of 1.25 N NaOH followed by combination of all fractions of each sample. Aliquots of the samples were distilled on a Midi-Stil distillation unit. Samples were then colored and read on a HACH DR/2800 Spectrophotometer.

Detection Limits

The analytical reporting limit for cyanide is 0.005mg/L.

Analysis QA/QC

Duplicate analyses relative percent difference (RPD) and spike recovery data are summarized in the Quality Control section. All QA/QC data was within the criteria of the method.

Additional Comments

The reported results have not been corrected for any blank values or spike recovery values. Samples were preserved in 0.1 N NaHCO₃.

QUALITY CONTROL SUMMARY

Summary of Quality Control Data

Cyanide Duplicate Analysis RPD and Spike Recoveries

(Laboratory QC limits: <10% for RPD and $\pm 10\%$ for Spike Recoveries)

Element	Run 2 RPD	Run 3 Recovery
Cyanide	2.7%	90%

SAMPLE CUSTODY

Send Report & invoice to Lorri White (a Keika) 15377

Element One, Inc.
ATTN: Paula Smith
5022-C Wrightsville Ave.
Wilmington, NC 28403
Tel.: 910-793-0128

Chain of Custody Record

From, Maxxam Analytical / Keika
5555 North Service Rd
Burlington Ontario Canada L7L 5H7
(905) 332-9798
Attn: A. Sebastian (905) 332-9169 lx

Page 1 of 1

DUE DATE

Final

Pls fax /email results by 10/08/10.

Sample Identification	Sample Type	Sample Size	Container Type	Sampling Information	Reagents and/or Preservatives	Lab ID #
Run 1, cont 1, filter	50	1 G	250	9/14/2010 JMC	0.1N Sodium Bicarbonate	
Run 1, cont 2, P&N rinse	50	1 G	250	9/14/2010 JMC	0.1N Sodium Bicarbonate	
Run 1, cont 3, imp rinse	180	1 G	250	9/14/2010 JMC	0.1N Sodium Bicarbonate	
Run 1, cont 4, impingers	379	1 G	500	9/14/2010 JMC	0.1N Sodium Bicarbonate	
Run 2, cont 1, filter	50	1 G	250	9/14/2010 JMC	0.1N Sodium Bicarbonate	
Run 2, cont 2, P&N rinse	58	1 G	250	9/14/2010 JMC	0.1N Sodium Bicarbonate	
Run 2, cont 3, imp rinse	180	1 G	250	9/14/2010 JMC	0.1N Sodium Bicarbonate	
Run 2, cont 4, impingers	367	1 G	500	9/14/2010 JMC	0.1N Sodium Bicarbonate	
Run 3, cont 1, filter	50	1 G	250	9/14/2010 JMC	0.1N Sodium Bicarbonate	
Run 3, cont 2, P&N rinse	54	1 G	250	9/14/2010 JMC	0.1N Sodium Bicarbonate	
Run 3, cont 3, imp rinse	180	1 G	250	9/14/2010 JMC	0.1N Sodium Bicarbonate	
Run 3, cont 4, impingers	370	1 G	500	9/14/2010 JMC	0.1N Sodium Bicarbonate	
Blank, 0.1N sodium bicarbonate	476	1 G	500	9/14/2010 BEC	0.1N Sodium Bicarbonate	

Requested Analysis / Method

cyanide per CARB 426

Container Type

1. Liquid

2. Gas

3. Filter

4. Charcoal

5. Resin

6. Other

Sample Type

1. Liquid

2. Gas

3. Filter

4. Charcoal

5. Resin

6. Other

Other

X. AMPULE

Submitted By: John M. Gaultle Date: 9/23/2010

Relinquished By: Date: 9/29/10

Relinquished By: Date: 9/29/10

Shipping date: Sept. 30th

via FedEx

1215

10.1.10

10.4.10

Standard TAT

8.2° C

Next step 10.01.10

Per L. White via email 10.4.10

QA/QC Report Package

Compliance

NIJDEP

USEPA

Non-compliance

Method

Normal



Driven by Service and Science

Prepared for Arrow Environmental Consulting

Analytical Data Package

Analysis: M29 Metals

Maxxam Job #: B0D6223

Maxxam Analytics International
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

Glossary of Terms

- **MDL** represents the Minimum Detection Limit below which the laboratory cannot confirm the presence of the analyte to the 95% confidence level.
- **RDL** represents the Reportable Detection Limit and is usually set at a value equivalent to the lowest calibration standard.
- **Acceptance Criteria** are values used by the laboratory to determine that a process is in control.
- **Accuracy** is the degree of agreement of a measured value with the true or expected value.
- **Calibration Standards** are a set of solutions containing the analytes of interest at a specified concentration.
- **Calibration Verification Standard** consists of a calibration standard solution of intermediate concentration (mid-point initial calibration level) used to assess whether the initial calibration is still valid.
- **Certified Reference Material** is a stable homogenous material that is certified by repetitive analysis from a supplier who is certified to generate said materials.
- **Internal Standard** a deuterated or ^{13}C -labelled analyte that is added to a sample extract prior to instrumental analysis to compensate for injection variability.
- **Isomer** is a member of a group of compounds that differ from each other only in the locations of a specific number of common substituent atoms or groups of atoms on the parent compound.
- **Method Blank** is a laboratory control sample using reagents that are known to be free of contamination.
- **Precision** is the degree of agreement between the data generated from repetitive measurements under specific conditions.
- **Quality Assurance** is a system of activities whose purpose is to provide the producer or user of a product with the assurance that the product meets a defined standard of quality.
- **Quality Control** is the overall system of activities whose purpose is to control the quality of a product so that it meets the needs of the end user.
- **RSD** is the relative standard deviation.
- **Blank Spike** is a laboratory control sample that has been fortified with native analytes of interest.
- **Window Defining Mixture** is a solution containing only the earliest and latest eluting congeners within each homologous group of target analytes on a specified GC column.
- **RPD** or Relative Percent Difference. A measure used to compare duplicate sample analysis.
- **EMPC/NDR** – Peak detected does not meet ratio criteria and has resulted in a higher detection limit.



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1.0 Project Narrative

Maxxam Analytics International
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

PROJECT NARRATIVE

Maxxam Analytics (Burlington ON)
Maxxam Job #: B0D6223



Client: Arrow Environmental Consulting
Client Project:

I. SAMPLE RECEIPT/ANALYSIS

a) Sample Listing

Maxxam ID	Client Sample ID	Date Sampled	Date Received	Date Prepped	Date Run
Metals B.H. in H2O2/HNO3 Imp.(6020)					
HH9748	BLANK-FILTER	2010/09/15	2010/09/29	2010/10/08	2010/10/08
HH9749	R1-M29-PB-FILTER	2010/09/15	2010/09/29	2010/10/08	2010/10/08
HH9749 Dup	R1-M29-PB-FILTER	2010/09/15	2010/09/29	2010/10/12	2010/10/08
HH9750	R2-M29-PB-FILTER	2010/09/15	2010/09/29	2010/10/08	2010/10/08
HH9751	R3-M29-PB-FILTER	2010/09/15	2010/09/29	2010/10/08	2010/10/08
Metals F.H. in Filter + Rinses (6020)					
HH9748	BLANK-FILTER	2010/09/15	2010/09/29	2010/10/08	2010/10/08
HH9749	R1-M29-PB-FILTER	2010/09/15	2010/09/29	2010/10/08	2010/10/08
HH9749 Dup	R1-M29-PB-FILTER	2010/09/15	2010/09/29	2010/10/12	2010/10/08
HH9750	R2-M29-PB-FILTER	2010/09/15	2010/09/29	2010/10/08	2010/10/08
HH9751	R3-M29-PB-FILTER	2010/09/15	2010/09/29	2010/10/08	2010/10/08

Run Date is defined as the date of injection of the last calibration standard (12 hours or less) prior to the samples analyzed within that run sequence. Therefore the time of calibration injection that defines the run date is always within 12 hours of the time of sample injection.

b) Shipping Problems: none encountered

c) Documentation Problems: none encountered

II. SAMPLE PREP:

No problems encountered

III. SAMPLE ANALYSIS:

See also comments within the appropriate Certificate of Analysis

a) Hold Times: all within recommended hold times

b) Instrument Calibration: all within control limits

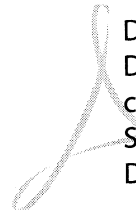
c) Quality Control: All applicable QC meets control criteria, except where otherwise noted.

d) All analytes requiring manual intergration(s) are noted on the sample chromatograms

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for other than the conditions detailed above.

In addition, I certify, that to the best of my knowledge and belief, the data as reported are true and accurate. Release of the data contained in this data package has been authorized by the cognizant laboratory official or his/her designee, as verified by this signature.

**Ancy
Sebastian**



Digitally signed by Ancy Sebastian
DN: dc=lab, dc=maxxam, ou=Burlington,
cn=Ancy Sebastian, email=Ancy.
Sebastian@maxxamanalytics.com
Date: 2010.10.28 12:14:27 -04'00'



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2.0 Summary Report

Maxxam Analytics International
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

Your C.O.C. #: 0697

Attention: Andrew McNeel
 Arrow Environmental Consulting
 2 Sutton Pl
 Easton, PA
 USA 18045

Report Date: 2010/10/13

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0D6223
Received: 2010/09/29, 15:15

Sample Matrix: Stack Sampling Train
 # Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Metals B.H. in H2O2/HNO3 Imp.(6020) ¶	4	2010/10/08	2010/10/08	BRL SOP-00103 / BRL SOP-00102	EPA 6020 / M29
Metals F.H. in Filter + Rinses (6020) ¶	4	2010/10/08	2010/10/08	BRL SOP-00103/ BRL SOP-00102	EPA 6020 / M29

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed in Maxxam Mississauga under Maxxam Burlington SCC Accreditation

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

ANCY SEBASTIAN, C.Tech., Senior Project Manager, Air Toxics
 Email: ASebastian@maxxam.ca
 Phone# (905) 817-5831

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 1

Maxxam Job #: B0D6223
Report Date: 2010/10/13

ELEMENTS BY ICP/MS (STACK SAMPLING TRAIN)

Maxxam ID		HH9748		HH9749	HH9749	HH9750		
Sampling Date		2010/09/15		2010/09/15	2010/09/15	2010/09/15		
COC Number		0697		0697	0697	0697		
	Units	BLANK-FILTER	RDL	R1-M29-PB-FILTER	R1-M29-PB-FILTER Lab-Dup	R2-M29-PB-FILTER	RDL	QC Batch
Back Half Lead (Pb)	ug	<0.10	0.10	2.01	1.99	1.73	0.50	2292866
Front Half Lead (Pb)	ug	2.66	0.20	4.42	4.34	4.06	0.40	2292861
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								

Maxxam ID		HH9751		
Sampling Date		2010/09/15		
COC Number		0697		
	Units	R3-M29-PB-FILTER	RDL	QC Batch
Back Half Lead (Pb)	ug	2.17	0.50	2292866
Front Half Lead (Pb)	ug	4.65	0.40	2292861
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

Maxxam Job #: B0D6223
Report Date: 2010/10/13

Test Summary

Maxxam ID HH9748
Sample ID BLANK-FILTER
Matrix Stack Sampling Train
Collected 2010/09/15
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Metals B.H. in H2O2/HNO3 Imp.(6020)	ICP1/MS	2292866	2010/10/08	2010/10/08	N R
Metals F.H. in Filter + Rinses (6020)	ICP1/MS	2292861	2010/10/08	2010/10/08	N R

Maxxam ID HH9749
Sample ID R1-M29-PB-FILTER
Matrix Stack Sampling Train
Collected 2010/09/15
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Metals B.H. in H2O2/HNO3 Imp.(6020)	ICP1/MS	2292866	2010/10/08	2010/10/08	N R
Metals F.H. in Filter + Rinses (6020)	ICP1/MS	2292861	2010/10/08	2010/10/08	N R

Maxxam ID HH9749 Dup
Sample ID R1-M29-PB-FILTER
Matrix Stack Sampling Train
Collected 2010/09/15
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Metals B.H. in H2O2/HNO3 Imp.(6020)	ICP1/MS	2292866	2010/10/12	2010/10/08	N R
Metals F.H. in Filter + Rinses (6020)	ICP1/MS	2292861	2010/10/12	2010/10/08	N R

Maxxam ID HH9750
Sample ID R2-M29-PB-FILTER
Matrix Stack Sampling Train
Collected 2010/09/15
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Metals B.H. in H2O2/HNO3 Imp.(6020)	ICP1/MS	2292866	2010/10/08	2010/10/08	N R
Metals F.H. in Filter + Rinses (6020)	ICP1/MS	2292861	2010/10/08	2010/10/08	N R

Maxxam ID HH9751
Sample ID R3-M29-PB-FILTER
Matrix Stack Sampling Train
Collected 2010/09/15
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Metals B.H. in H2O2/HNO3 Imp.(6020)	ICP1/MS	2292866	2010/10/08	2010/10/08	N R
Metals F.H. in Filter + Rinses (6020)	ICP1/MS	2292861	2010/10/08	2010/10/08	N R

Maxxam Job #: B0D6223
Report Date: 2010/10/13

ELEMENTS BY ICP/MS (STACK SAMPLING TRAIN)

Metals B.H. in H₂O₂/HNO₃ Imp.(6020): Extra 5x dilution was required for all samples except HH9748, due to the matrix.
Post digestion duplicate and spike was done on sample HH9749.

Metals F.H. in Filter + Rinses (6020): Extra 2x dilution was required for all samples except HH9748, due to the matrix.
Post digestion duplicate and spike was done on sample HH9749.

Results relate only to the items tested.

Arrow Environmental Consulting
Attention: Andrew McNeel
Client Project #:
P.O. #:
Project name:

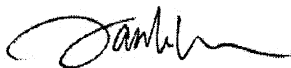
Quality Assurance Report
Maxxam Job Number: GB0D6223

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2292861 N_R	Matrix Spike (HH9749)	Front Half Lead (Pb)	2010/10/08		103	%	70 - 130
	Matrix Spike DUP (HH9749)	Front Half Lead (Pb)	2010/10/08		102	%	70 - 130
	MS/MSD RPD	Front Half Lead (Pb)	2010/10/08	1		%	20
	Spiked Blank	Front Half Lead (Pb)	2010/10/08		96	%	85 - 115
	Spiked Blank DUP	Front Half Lead (Pb)	2010/10/08		95	%	85 - 115
	RPD	Front Half Lead (Pb)	2010/10/08	0.9		%	20
	Method Blank	Front Half Lead (Pb)	2010/10/08	<0.20		ug	
	Method Blank DUP	Front Half Lead (Pb)	2010/10/08	<0.20		ug	
	RPD	Front Half Lead (Pb)	2010/10/08	NC		%	20
	RPD - Sample/Sample Dup	Front Half Lead (Pb)	2010/10/08	1.8		%	20
2292866 N_R	Matrix Spike (HH9749)	Back Half Lead (Pb)	2010/10/08		98	%	70 - 130
	Matrix Spike DUP (HH9749)	Back Half Lead (Pb)	2010/10/08		96	%	70 - 130
	MS/MSD RPD	Back Half Lead (Pb)	2010/10/08	2.1		%	20
	Spiked Blank	Back Half Lead (Pb)	2010/10/08		105	%	85 - 115
	Spiked Blank DUP	Back Half Lead (Pb)	2010/10/08		106	%	85 - 115
	RPD	Back Half Lead (Pb)	2010/10/08	0.3		%	20
	Method Blank	Back Half Lead (Pb)	2010/10/08	<0.10		ug	
	Method Blank DUP	Back Half Lead (Pb)	2010/10/08	<0.10		ug	
	RPD	Back Half Lead (Pb)	2010/10/08	NC		%	20
	RPD - Sample/Sample Dup	Back Half Lead (Pb)	2010/10/08	NC		%	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page**Maxxam Job #: B0D6223**

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



FRANK MO, B.Sc., Inorganic Lab. Manager

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Driven by Service and Science

3.0 Sample Custody

Maxxam Analytics International
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

Arrow Environmental Consulting, LLC

PO Box 3658

Easton PA 18043

610-597-1770 610-258-2470 FAX

andrewmcmee@rcn.com

Chain of Custody Record

Page 1 of 1

DUE DATE
Final

Please fax/email results by 10/08/10.

Samples Submitted to:

Maxxam Analytical

5555 North Service Rd

Burlington Ontario Canada L7L 5H7

(905) 332-8788

Attn: A. Sebastian (905) 332-9169 fx

Container Type

B. Gas Bag

D. Petri Dish

E. Method 25 Tank

F. Method 25 Trap

G. Glass

N. NIOSH Tube

P. Plastic Bottle

S. Summa Canister

T. VOST Tube

V. VOC Vial

X. XAD-2 Trap

O. Other: AMPULE

Sample Type

1. Liquid

2. Gas

3. Filter

4. Charcoal

5. Resin

6. Other

Requested Analysis / Method

Lead per EPA M29

Sample Identification	Sample vol (mls)	Sample Type	Container Type	Size	Sampling Information	Reagents and/or Preservatives	Lab ID #
Run 1, cont. 1, filter	---	3 D	---	---	9/15/2010 JMC	N/A	x
Run 1, cont. 3, p&n, filter front	100	1 G	---	250	9/15/2010 JMC	0.1N HNO3	x
Run 1, cont. 4, imp 1-3, filter back	425	1 G	---	960	9/15/2010 JMC	0.1N HNO3	x
Run 1, cont. 5A, imp 4	102	1 G	---	250	9/15/2010 JMC	0.1N HNO3	x
Run 2, cont. 1, filter	---	3 D	---	---	9/15/2010 JMC	N/A	x
Run 2, cont. 3, p&n, filter front	100	1 G	---	250	9/15/2010 JMC	0.1N HNO3	x
Run 2, cont. 4, imp 1-3, filter back	420	1 G	---	960	9/15/2010 JMC	0.1N HNO3	x
Run 2, cont. 5A, imp 4	102	1 G	---	250	9/15/2010 JMC	0.1N HNO3	x
Run 3, cont. 1, filter	---	3 D	---	---	9/15/2010 JMC	N/A	x
Run 3, cont. 3, p&n, filter front	100	1 G	---	250	9/15/2010 JMC	0.1N HNO3	x
Run 3, cont. 4, imp 1-3, filter back	433	1 G	---	960	9/15/2010 JMC	0.1N HNO3	x
Run 3, cont. 5A, imp 4	102	1 G	---	250	9/15/2010 JMC	0.1N HNO3	x
Blank, cont 8A,	300	1 G	---	500	9/15/2010 BEC	0.1N HNO3	x
Blank, cont 8B	100	1 G	---	250	9/15/2010 BEC	DH2O	x
Blank, cont 9	200	1 G	---	250	9/15/2010 BEC	5% HNO3/10% H2O2	x
Blank, cont 12, filter	---	3 D	---	---	9/15/2010 BEC	---	x

Special Instructions:

Submitted By: *John M. Collette*

Date: 9/23/2010

Received By: *John M. Collette*

Date: 9/29/2010

Date: 1:50 p

Relinquished By:

Date:

Received By:

Date: 09/29/10

Date: 3:15 pm

QA/QC Report Package

Compliance

NUDEP

USEPA

Method

Normal



Driven by Service and Science

Prepared for : Arrow Environmental Consulting

Analytical Data Package

Analysis: M8 H₂SO₄

Maxxam Job #: B0D6255

Maxxam Analytics International
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com



Driven by Service and Science

I hereby certify that to the best of my knowledge all analytical data presented in this report:

- Has been checked for completeness.
- Is accurate, legible and error free.
- Has been conducted in accordance with approved SOP's and that all deviations are clearly listed in the Case Narrative.
- This report has been generated in .pdf format.

Review Performed By:

Maxxam Analytics International
6740 Campobello Rd.
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1-800-668-0639
www.maxxamanalytics.com

Glossary of Terms

- **MDL** represents the Minimum Detection Limit below which the laboratory cannot confirm the presence of the analyte to the 95% confidence level.
- **RDL** represents the Reportable Detection Limit and is usually set at a value equivalent to the lowest calibration standard.
- **Acceptance Criteria** are values used by the laboratory to determine that a process is in control.
- **Accuracy** is the degree of agreement of a measured value with the true or expected value.
- **Calibration Standards** are a set of solutions containing the analytes of interest at a specified concentration.
- **Calibration Verification Standard** consists of a calibration standard solution of intermediate concentration (mid-point initial calibration level) used to access whether the initial calibration is still valid
- **Certified Reference Material** is a stable homogenous material that is certified by repetitive analysis from a supplier who is certified to generate said materials.
- **Internal Standard** a deuterated or ^{13}C -labelled analyte that is added to a sample extract prior to instrumental analysis to compensate for injection variability.
- **Isomer** is a member of a group of compounds that differ from each other only in the locations of a specific number of common substituent atoms or groups of atoms on the parent compound.
- **Method Blank** is a laboratory control sample using reagents that are known to be free of contamination.
- **Precision** is the degree of agreement between the data generated from repetitive measurements under specific conditions.
- **Quality Assurance** is a system of activities whose purpose is to provide the producer or user of a product with the assurance that the product meets a defined standard of quality.
- **Quality Control** is the overall system of activities whose purpose is to control the quality of a product so that it meets the needs of the end user.
- **RSD** is the relative standard deviation.
- **Blank Spike** is a laboratory control sample that has been fortified with native analytes of interest.
- **Window Definng Mixture** is a solution containing only the earliest and latest eluting congeners within each homologous group of target analytes on a specified GC column.
- **RPD** or Relative Percent Difference. A measure used to compare duplicate sample analysis.
- **EMPC/NDR** – Peak detected does not meet ratio criteria and has resulted in a higher detection limit.



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1.0 Project Narrative

Maxxam Analytics International
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

PROJECT NARRATIVE

Maxxam Analytics (Burlington ON)
Maxxam Job #: B0D6255



Client: Arrow Environmental Consulting
Client Project:

I. SAMPLE RECEIPT/ANALYSIS

a) Sample Listing

Maxxam ID	Client Sample ID	Date Sampled	Date Received	Date Prepped	Date Run
H2SO4 Acid Mist in IPA by IC (M8mod)					
HH9905	BLANK-80% IPA	2010/09/15	2010/09/29	2010/10/04	2010/10/04
HH9906	R1-P&N RINSE-SO3	2010/09/15	2010/09/29	2010/10/04	2010/10/04
HH9906 Dup	R1-P&N RINSE-SO3	2010/09/15	2010/09/29	2010/10/04	2010/10/04
HH9907	R1-IMP+FILTER-SO3	2010/09/15	2010/09/29	2010/10/04	2010/10/04
HI0013	R2-P&N RINSE-SO3	2010/09/15	2010/09/29	2010/10/04	2010/10/04
HI0014	R2-IMP+FILTER-SO3	2010/09/15	2010/09/29	2010/10/04	2010/10/04
HI0015	R3-P&N RINSE-SO3	2010/09/15	2010/09/29	2010/10/04	2010/10/04
HI0017	R3-IMP+FILTER-SO3	2010/09/15	2010/09/29	2010/10/04	2010/10/04

Run Date is defined as the date of injection of the last calibration standard (12 hours or less) prior to the samples analyzed within that run sequence. Therefore the time of calibration injection that defines the run date is always within 12 hours of the time of sample injection.

b) Shipping Problems: none encountered

c) Documentation Problems: none encountered

II. SAMPLE PREP:

No problems encountered

III. SAMPLE ANALYSIS:

See also comments within the appropriate Certificate of Analysis

a) Hold Times: all within recommended hold times

b) Instrument Calibration: all within control limits

c) Quality Control: All applicable QC meets control criteria, except where otherwise noted.

d) All analytes requiring manual intergration(s) are noted on the sample chromatograms

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for other than the conditions detailed above.

In addition, I certify, that to the best of my knowledge and belief, the data as reported are true and accurate. Release of the data contained in this data package has been authorized by the cognizant laboratory official or his/her designee, as verified by this signature.

Ancy Sebastian

Digitally signed by Ancy Sebastian
DN: dc=lab, dc=maxxam, ou=Burlington, cn=Ancy
Sebastian, email=Ancy.Sebastian@maxxamanalytics.
com
Date: 2010.10.26 15:59:37 -04'00'



Driven by Service and Science

2.0 Summary Report

Maxxam Analytics International
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

Your C.O.C. #: 0622

Attention: Andrew McNeel
 Arrow Environmental Consulting
 2 Sutton Pl
 Easton, PA
 USA 18045

Report Date: 2010/10/20

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0D6255

Received: 2010/09/29, 15:15

Sample Matrix: Stack Sampling Train
 # Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
H2SO4 Acid Mist in IPA by IC (M8mod)	7	2010/10/04	2010/10/04	BRL SOP-00105	EPA 8mod
Volume of Isopropyl Alcohol Impinger	7	N/A	2010/10/04		

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

ANCY SEBASTIAN, C.Tech., Senior Project Manager, Air Toxics
 Email: ASebastian@maxxam.ca
 Phone# (905) 817-5831

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 1

Maxxam Job #: B0D6255
Report Date: 2010/10/20

RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

Maxxam ID		HH9905		HH9906	HH9906		HH9907		HI0013		
Sampling Date		2010/09/15		2010/09/15	2010/09/15		2010/09/15		2010/09/15		
COC Number		0622		0622	0622		0622		0622		
	Units	BLANK-80% IPA	RDL	R1-P&N RINSE-SO3	R1-P&N RINSE-SO3 Lab-Dup	RDL	R1-IMP+FILTER-SO3	RDL	R2-P&N RINSE-SO3	RDL	QC Batch

Volume	ml	280	1	50	N/A	1	230	1	64	1	2287454
Sulphuric Acid Mist	mg	<0.14	0.14	1.3	1.3	0.026	10	0.12	1.5	0.033	2283840

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		HI0014		HI0015		HI0017		
Sampling Date		2010/09/15		2010/09/15		2010/09/15		
COC Number		0622		0622		0622		
	Units	R2-IMP+FILTER-SO3	RDL	R3-P&N RINSE-SO3	RDL	R3-IMP+FILTER-SO3	RDL	QC Batch

Volume	ml	230	1	50	1	230	1	2287454
Sulphuric Acid Mist	mg	5.6	0.12	1.2	0.026	6.6	0.12	2283840

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B0D6255
Report Date: 2010/10/20

Test Summary

Maxxam ID HH9905
Sample ID BLANK-80% IPA
Matrix Stack Sampling Train

Collected 2010/09/15
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
H2SO4 Acid Mist in IPA by IC (M8mod)	IC/SPEC	2283840	2010/10/04	2010/10/04	LLE
Volume of Isopropyl Alcohol Impinger		2287454	N/A	2010/10/04	FMO

Maxxam ID HH9906
Sample ID R1-P&N RINSE-SO3
Matrix Stack Sampling Train

Collected 2010/09/15
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
H2SO4 Acid Mist in IPA by IC (M8mod)	IC/SPEC	2283840	2010/10/04	2010/10/04	LLE
Volume of Isopropyl Alcohol Impinger		2287454	N/A	2010/10/04	FMO

Maxxam ID HH9906 Dup
Sample ID R1-P&N RINSE-SO3
Matrix Stack Sampling Train

Collected 2010/09/15
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
H2SO4 Acid Mist in IPA by IC (M8mod)	IC/SPEC	2283840	2010/10/04	2010/10/04	LLE

Maxxam ID HH9907
Sample ID R1-IMP+FILTER-SO3
Matrix Stack Sampling Train

Collected 2010/09/15
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
H2SO4 Acid Mist in IPA by IC (M8mod)	IC/SPEC	2283840	2010/10/04	2010/10/04	LLE
Volume of Isopropyl Alcohol Impinger		2287454	N/A	2010/10/04	FMO

Maxxam ID HI0013
Sample ID R2-P&N RINSE-SO3
Matrix Stack Sampling Train

Collected 2010/09/15
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
H2SO4 Acid Mist in IPA by IC (M8mod)	IC/SPEC	2283840	2010/10/04	2010/10/04	LLE
Volume of Isopropyl Alcohol Impinger		2287454	N/A	2010/10/04	FMO

Maxxam ID HI0014
Sample ID R2-IMP+FILTER-SO3
Matrix Stack Sampling Train

Collected 2010/09/15
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
H2SO4 Acid Mist in IPA by IC (M8mod)	IC/SPEC	2283840	2010/10/04	2010/10/04	LLE
Volume of Isopropyl Alcohol Impinger		2287454	N/A	2010/10/04	FMO

Maxxam Job #: B0D6255
Report Date: 2010/10/20

Test Summary

Maxxam ID HI0015
Sample ID R3-P&N RINSE-SO3
Matrix Stack Sampling Train

Collected 2010/09/15
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
H2SO4 Acid Mist in IPA by IC (M8mod)	IC/SPEC	2283840	2010/10/04	2010/10/04	LLE
Volume of Isopropyl Alcohol Impinger		2287454	N/A	2010/10/04	FMO

Maxxam ID HI0017
Sample ID R3-IMP+FILTER-SO3
Matrix Stack Sampling Train

Collected 2010/09/15
Shipped
Received 2010/09/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
H2SO4 Acid Mist in IPA by IC (M8mod)	IC/SPEC	2283840	2010/10/04	2010/10/04	LLE
Volume of Isopropyl Alcohol Impinger		2287454	N/A	2010/10/04	FMO

Maxxam Job #: B0D6255
Report Date: 2010/10/20

GENERAL COMMENTS

Results relate only to the items tested.

Arrow Environmental Consulting
 Attention: Andrew McNeel
 Client Project #:
 P.O. #:
 Project name:

Quality Assurance Report

Maxxam Job Number: GB0D6255

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2283840 LLE	Matrix Spike (HH9906)	Sulphuric Acid Mist	2010/10/04		90	%	80 - 120
	Spiked Blank	Sulphuric Acid Mist	2010/10/04		101	%	90 - 110
	Method Blank	Sulphuric Acid Mist	2010/10/04	<0.029		mg	
	RPD - Sample/Sample Dup						
		Sulphuric Acid Mist	2010/10/04	0.6		%	20

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
 Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
 Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Validation Signature Page

Maxxam Job #: B0D6255

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



FRANK MO, B.Sc., Inorganic Lab. Manager

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3.0 Sample Custody

Maxxam Analytics International
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com



Prepared for Arrow Environmental Consulting

Analytical Data Package

Analysis: CTM-027

Maxxam Job #: B0D5127

Maxxam Analytics International
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com



Driven by Service and Science

I hereby certify that to the best of my knowledge all analytical data presented in this report:

- Has been checked for completeness.
- Is accurate, legible and error free.
- Has been conducted in accordance with approved SOP's and that all deviations are clearly listed in the Case Narrative.
- This report has been generated in .pdf format.

Review Performed By:

Maxxam Analytics International
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Mississauga, Ontario, Canada
L5N 2L8
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www.maxxamanalytics.com

Glossary of Terms

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- **RPD** or Relative Percent Difference. A measure used to compare duplicate sample analysis.
- **EMPC/NDR** – Peak detected does not meet ratio criteria and has resulted in a higher detection limit.



Driven by Service and Science

1.0 Project Narrative

Maxxam Analytics International
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

PROJECT NARRATIVE

Maxxam Analytics (Burlington ON)
Maxxam Job #: B0D5127



Client: Arrow Environmental Consulting
Client Project:

I. SAMPLE RECEIPT/ANALYSIS

a) Sample Listing

Maxxam ID	Client Sample ID	Date Sampled	Date Received	Date Prepped	Date Run
Ammonium in H2SO4 Impingers (CTM-027)					
HH4580	BLANK H2SO4	2010/09/22	2010/09/28	2010/09/29	2010/09/29
HH4581	BLANK H2O	2010/09/22	2010/09/28	2010/09/29	2010/09/29
HH4582	RUN 1 - IMP. 1	2010/09/16	2010/09/28	2010/09/29	2010/09/29
HH4582 Dup	RUN 1 - IMP. 1	2010/09/16	2010/09/28	2010/09/29	2010/09/29
HH4583	RUN 1 - IMP. 2	2010/09/16	2010/09/28	2010/09/29	2010/09/29
HH4585	RUN 2 - IMP. 1	2010/09/16	2010/09/28	2010/09/29	2010/09/29
HH4586	RUN 2 - IMP. 2	2010/09/16	2010/09/28	2010/09/29	2010/09/29
HH4588	RUN 3 - IMP. 1	2010/09/17	2010/09/28	2010/09/29	2010/09/29
HH4589	RUN 3 - IMP. 2	2010/09/17	2010/09/28	2010/09/29	2010/09/29

Run Date is defined as the date of injection of the last calibration standard (12 hours or less) prior to the samples analyzed within that run sequence. Therefore the time of calibration injection that defines the run date is always within 12 hours of the time of sample injection.

b) Shipping Problems: none encountered

c) Documentation Problems: none encountered

II. SAMPLE PREP:

No problems encountered

III. SAMPLE ANALYSIS:

See also comments within the appropriate Certificate of Analysis

a) Hold Times: all within recommended hold times

b) Instrument Calibration: all within control limits

c) Quality Control: All applicable QC meets control criteria, except where otherwise noted.

d) All analytes requiring manual integration(s) are noted on the sample chromatograms

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for other than the conditions detailed above.

In addition, I certify, that to the best of my knowledge and belief, the data as reported are true and accurate. Release of the data contained in this data package has been authorized by the cognizant laboratory official or his/her designee, as verified by this signature.

Ancy Sebastian

Digitally signed by Ancy Sebastian
DN: dc=lab, dc=maxxam, ou=Burlington,
cn=Ancy Sebastian, email=Ancy.
Sebastian@maxxamanalytics.com
Date: 2010.10.26 15:24:38 -04'00'



Driven by Service and Science

2.0 Summary Report

Maxxam Analytics International
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

Your C.O.C. #: N/A

Attention: Andrew McNeel
 Arrow Environmental Consulting
 2 Sutton Pl
 Easton, PA
 USA 18045

Report Date: 2010/10/20

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0D5127

Received: 2010/09/28, 11:30

Sample Matrix: Stack Sampling Train
 # Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Ammonium in H2SO4 Impingers (CTM-027) ¶	8	2010/09/29	2010/09/29	BRL SOP-00107	EPA CTM-027
Volume of Sulfuric Acid Impinger	8	N/A	2010/09/29		

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed in Maxxam Mississauga under Maxxam Burlington SCC Accreditation

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

ANCY SEBASTIAN, C.Tech., Senior Project Manager, Air Toxics
 Email: ASebastian@maxxam.ca
 Phone# (905) 817-5831

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 1

Page 1 of 7

Confidential : Maxxam Analytics International

Page 6 of 59

Maxxam Job #: B0D5127

Report Date: 2010/10/20

RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

Maxxam ID		HH4580	HH4581		HH4582	HH4582		HH4583		
Sampling Date		2010/09/22	2010/09/22		2010/09/16	2010/09/16		2010/09/16		
COC Number		N/A	N/A		N/A	N/A		N/A		
	Units	BLANK H2SO4	BLANK H2O	RDL	RUN 1 - IMP. 1	RUN 1 - IMP. 1 Lab-Dup	RDL	RUN 1 - IMP. 2	RDL	QC Batch

Volume	ml	100	100	1	320	N/A	1	190	1	2282322
Ammonium (NH4)	ug	<13	<13	13	1800	1800	32	19	13	2282324

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		HH4585		HH4586		HH4588		HH4589		
Sampling Date		2010/09/16		2010/09/16		2010/09/17		2010/09/17		
COC Number		N/A		N/A		N/A		N/A		
	Units	RUN 2 - IMP. 1	RDL	RUN 2 - IMP. 2	RDL	RUN 3 - IMP. 1	RDL	RUN 3 - IMP. 2	RDL	QC Batch

Volume	ml	290	1	170	1	300	1	200	1	2282322
Ammonium (NH4)	ug	2300	29	<13	13	2300	30	20	13	2282324

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B0D5127
Report Date: 2010/10/20

Test Summary

Maxxam ID HH4580
Sample ID BLANK H2SO4
Matrix Stack Sampling Train

Collected 2010/09/22
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Ammonium in H2SO4 Impingers (CTM-027)	IC/SPEC	2282324	2010/09/29	2010/09/29	A S
Volume of Sulfuric Acid Impinger		2282322	N/A	2010/09/29	A S

Maxxam ID HH4581
Sample ID BLANK H2O
Matrix Stack Sampling Train

Collected 2010/09/22
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Ammonium in H2SO4 Impingers (CTM-027)	IC/SPEC	2282324	2010/09/29	2010/09/29	A S
Volume of Sulfuric Acid Impinger		2282322	N/A	2010/09/29	A S

Maxxam ID HH4582
Sample ID RUN 1 - IMP. 1
Matrix Stack Sampling Train

Collected 2010/09/16
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Ammonium in H2SO4 Impingers (CTM-027)	IC/SPEC	2282324	2010/09/29	2010/09/29	A S
Volume of Sulfuric Acid Impinger		2282322	N/A	2010/09/29	A S

Maxxam ID HH4582 Dup
Sample ID RUN 1 - IMP. 1
Matrix Stack Sampling Train

Collected 2010/09/16
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Ammonium in H2SO4 Impingers (CTM-027)	IC/SPEC	2282324	2010/09/29	2010/09/29	A S

Maxxam ID HH4583
Sample ID RUN 1 - IMP. 2
Matrix Stack Sampling Train

Collected 2010/09/16
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Ammonium in H2SO4 Impingers (CTM-027)	IC/SPEC	2282324	2010/09/29	2010/09/29	A S
Volume of Sulfuric Acid Impinger		2282322	N/A	2010/09/29	A S

Maxxam ID HH4585
Sample ID RUN 2 - IMP. 1
Matrix Stack Sampling Train

Collected 2010/09/16
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Ammonium in H2SO4 Impingers (CTM-027)	IC/SPEC	2282324	2010/09/29	2010/09/29	A S
Volume of Sulfuric Acid Impinger		2282322	N/A	2010/09/29	A S

Maxxam Job #: B0D5127
Report Date: 2010/10/20

Test Summary

Maxxam ID HH4586
Sample ID RUN 2 - IMP. 2
Matrix Stack Sampling Train

Collected 2010/09/16
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Ammonium in H2SO4 Impingers (CTM-027)	IC/SPEC	2282324	2010/09/29	2010/09/29	A S
Volume of Sulfuric Acid Impinger		2282322	N/A	2010/09/29	A S

Maxxam ID HH4588
Sample ID RUN 3 - IMP. 1
Matrix Stack Sampling Train

Collected 2010/09/17
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Ammonium in H2SO4 Impingers (CTM-027)	IC/SPEC	2282324	2010/09/29	2010/09/29	A S
Volume of Sulfuric Acid Impinger		2282322	N/A	2010/09/29	A S

Maxxam ID HH4589
Sample ID RUN 3 - IMP. 2
Matrix Stack Sampling Train

Collected 2010/09/17
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Ammonium in H2SO4 Impingers (CTM-027)	IC/SPEC	2282324	2010/09/29	2010/09/29	A S
Volume of Sulfuric Acid Impinger		2282322	N/A	2010/09/29	A S

Maxxam Job #: B0D5127
Report Date: 2010/10/20

GENERAL COMMENTS

Results relate only to the items tested.

Arrow Environmental Consulting
Attention: Andrew McNeel
Client Project #:
P.O. #:
Project name:

Quality Assurance Report

Maxxam Job Number: GB0D5127

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2282324 A_S	Matrix Spike (HH4582)	Ammonium (NH4)	2010/09/29		92	%	75 - 125
	Spiked Blank	Ammonium (NH4)	2010/09/29		100	%	90 - 110
	Method Blank	Ammonium (NH4)	2010/09/29	<13		ug	
	RPD - Sample/Sample Dup	Ammonium (NH4)	2010/09/29	1.3		%	20

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Validation Signature Page

Maxxam Job #: B0D5127

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



FRANK MO, B.Sc., Inorganic Lab. Manager

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



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3.0 Sample Custody

Maxxam Analytics International
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

Arrow Environmental Consulting, LLC

PO Box 3658

Easton PA 18043

610-597-1770 610-258-2470 FAX

andrewmcneel@rcn.com

Chain of Custody Record

Page 1 of 1

DUE DATE

Final

Please fax/email results by 10/08/10.

Requested Analysis / Method

Samples Submitted to:

Maxxam Analytical

5555 North Service Rd

Burlington Ontario Canada L7L 5H7

(905) 332-8788

Attn: A. Sebastian (905) 332-9169 fx

Container Type

Sample Type

- B. Gas Bag
D. Petri Dish
E. Method 25 Tank
F. Method 25 Trap
G. Glass
N. NIOSH Tube
P. Plastic Bottle
S. Summa Canister
T. VOST Tube
V. VOC Vial
X. XAD-2 Trap
O. Other: AMPULE

1. Liquid
2. Gas
3. Filter
4. Charcoal
5. Resin
6. Other

Ammonia per CTM-027

Sample Identification	Sample vol (mls)	Sample Type	Container Type	Size	Sampling Date	Tech	Reagents and/or Preservatives	Lab ID #
Run 1, impingers 1, NH3	315	1 P	500	9/16/2010	JMC		0.1N H2SO4/ DIH2O	x
Run 1, impinger 2, NH3	190	1 P	250	9/16/2010	JMC		0.1N H2SO4/ DIH2O	x
Run 1, impinger 3, NH3	194	1 P	250	9/16/2010	JMC		0.1N H2SO4/ DIH2O	x
Run 2, impinger 1, NH3	294	1 P	500	9/16/2010	JMC		0.1N H2SO4/ DIH2O	x
Run 2, impinger 2, NH3	174	1 P	250	9/16/2010	JMC		0.1N H2SO4/ DIH2O	x
Run 2, impinger 3, NH3	204	1 P	250	9/16/2010	JMC		0.1N H2SO4/ DIH2O	x
Run 3, impinger 1, NH3	299	1 P	500	9/17/2010	JMC		0.1N H2SO4/ DIH2O	x
Run 3, impinger 2, NH3	196	1 P	250	9/17/2010	JMC		0.1N H2SO4/ DIH2O	x
Run 3, impinger 3, NH3	212	1 P	250	9/17/2010	JMC		0.1N H2SO4/ DIH2O	x
Blank, 0.1N H2SO4	100	1 P	250	9/22/2010	JMC		0.1N H2SO4	x
Blank, DIH2O	100	1 P	250	9/22/2010	JMC		DIH2O	x

Special Instructions: Samples have been obtained per CTM-027. Sample volumes reflect as recovered, not brought to 230mls.

Each run started with 100 mls of 0.1N H2SO4.

Hold Impinger 3 (3) sample and analyze only if impinger 2 (2) concentration is greater than 9% of the impinger 1 (1) concentration.

Submitted By: *John M. Cole* Date: 9/23/2010 Received By: *John M. Cole* Date: 9/23/2010

Relinquished By: *John M. Cole* Date: 9/23/2010 Received By: *John M. Cole* Date: 9/23/2010

Relinquished By: *John M. Cole* Date: 9/23/2010 Received By: *John M. Cole* Date: 9/23/2010

QA/QC Report Package

Compliance

NUDEP

USEPA

Method

Normal

4/4/4°C



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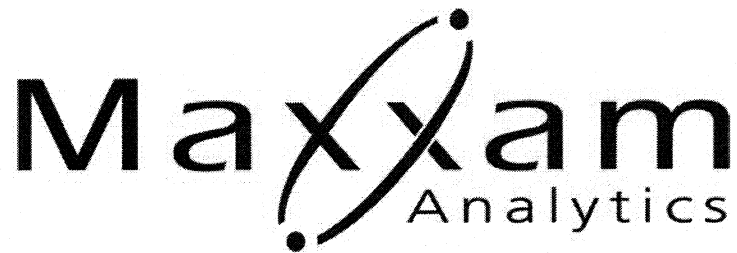
Prepared for Arrow Environmental Consulting

Analytical Data Package

Analysis: Benzene by M18 mod

Maxxam Job #: B0D5547

Maxxam Analytics International
6740 Campobello Rd.
Mississauga, Ontario, Canada
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www.maxxamanalytics.com



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I hereby certify that to the best of my knowledge all analytical data presented in this report:

- Has been checked for completeness.
- Is accurate, legible and error free.
- Has been conducted in accordance with approved SOP's and that all deviations are clearly listed in the Case Narrative.
- This report has been generated in .pdf format.

Review Performed By:

Maxxam Analytics International
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Glossary of Terms

- **MDL** represents the Minimum Detection Limit below which the laboratory cannot confirm the presence of the analyte to the 95% confidence level.
- **RDL** represents the Reportable Detection Limit and is usually set at a value equivalent to the lowest calibration standard.
- **Acceptance Criteria** are values used by the laboratory to determine that a process is in control.
- **Accuracy** is the degree of agreement of a measured value with the true or expected value.
- **Calibration Standards** are a set of solutions containing the analytes of interest at a specified concentration.
- **Calibration Verification Standard** consists of a calibration standard solution of intermediate concentration (mid-point initial calibration level) used to assess whether the initial calibration is still valid
- **Certified Reference Material** is a stable homogenous material that is certified by repetitive analysis from a supplier who is certified to generate said materials.
- **Internal Standard** a deuterated or ^{13}C -labelled analyte that is added to a sample extract prior to instrumental analysis to compensate for injection variability.
- **Isomer** is a member of a group of compounds that differ from each other only in the locations of a specific number of common substituent atoms or groups of atoms on the parent compound.
- **Method Blank** is a laboratory control sample using reagents that are known to be free of contamination.
- **Precision** is the degree of agreement between the data generated from repetitive measurements under specific conditions.
- **Quality Assurance** is a system of activities whose purpose is to provide the producer or user of a product with the assurance that the product meets a defined standard of quality.
- **Quality Control** is the overall system of activities whose purpose is to control the quality of a product so that it meets the needs of the end user.
- **RSD** is the relative standard deviation.
- **Blank Spike** is a laboratory control sample that has been fortified with native analytes of interest.
- **Window Defining Mixture** is a solution containing only the earliest and latest eluting congeners within each homologous group of target analytes on a specified GC column.
- **RPD** or Relative Percent Difference. A measure used to compare duplicate sample analysis.
- **EMPC/NDR** – Peak detected does not meet ratio criteria and has resulted in a higher detection limit.



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1.0 Project Narrative

Maxxam Analytics International
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Mississauga, Ontario, Canada
L5N 2L8
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www.maxxamanalytics.com

PROJECT NARRATIVE

Maxxam Analytics (Burlington ON)
Maxxam Job #: B0D5547



Client: Arrow Environmental Consulting
Client Project:

I. SAMPLE RECEIPT/ANALYSIS

a) Sample Listing

Maxxam ID	Client Sample ID	Date Sampled	Date Received	Date Prepped	Date Run	Initial Calibration
Organic Compound Analysis						
HH6991	BLANK-UNSPIKED TUBE	2010/09/17	2010/09/28	2010/09/30	2010/10/08	2010/10/08
HH6993	R1-T1-UNSPIKED	2010/09/17	2010/09/28	2010/09/30	2010/10/08	2010/10/08
HH6997	R1-T2-UNSPIKED-FH	2010/09/17	2010/09/28	2010/09/30	2010/10/08	2010/10/08
HH7002	R2-T1-UNSPIKED	2010/09/17	2010/09/28	2010/09/30	2010/10/08	2010/10/08
HH7003	R2-T2-UNSPIKED-FH	2010/09/17	2010/09/28	2010/09/30	2010/10/08	2010/10/08
HH7005	R3-T1-UNSPIKED	2010/09/17	2010/09/28	2010/09/30	2010/10/08	2010/10/08
HH7006	R3-T2-UNSPIKED-FH	2010/09/17	2010/09/28	2010/09/30	2010/10/20	2010/10/08
HH7043	BLANK-SPIKED TUBE	2010/09/17	2010/09/28	2010/09/30	2010/10/20	2010/10/08
HH7050	R1-T1-SPIKED	2010/09/17	2010/09/28	2010/09/30	2010/10/20	2010/10/08
HH7052	R1-T2-SPIKED-FH	2010/09/17	2010/09/28	2010/09/30	2010/10/20	2010/10/08
HH7062	R2-T1-SPIKED	2010/09/17	2010/09/28	2010/09/30	2010/10/20	2010/10/08
HH7063	R2-T2-SPIKED-FH	2010/09/17	2010/09/28	2010/09/30	2010/10/20	2010/10/08
HH7065	R3-T1-SPIKED	2010/09/17	2010/09/28	2010/09/30	2010/10/20	2010/10/08
HH7066	R3-T2-SPIKED-FH	2010/09/17	2010/09/28	2010/09/30	2010/10/20	2010/10/08
VOST Condensate (8260Cmod)						
HH7070	BLANK-CONDENSATE	2010/09/17	2010/09/28	N/A	2010/10/07	2010/10/01
HH7072	R1-COND-UNSPIKED	2010/09/17	2010/09/28	N/A	2010/10/07	2010/10/01
HH7073	R1-COND-SPIKED	2010/09/17	2010/09/28	N/A	2010/10/07	2010/10/01
HH7075	R2-COND-UNSPIKED	2010/09/17	2010/09/28	N/A	2010/10/07	2010/10/01
HH7076	R2-COND-SPIKED	2010/09/17	2010/09/28	N/A	2010/10/07	2010/10/01
HH7077	R3-COND-UNSPIKED	2010/09/17	2010/09/28	N/A	2010/10/07	2010/10/01
HH7078	R3-COND-SPIKED	2010/09/17	2010/09/28	N/A	2010/10/07	2010/10/01

Run Date is defined as the date of injection of the last calibration standard (12 hours or less) prior to the samples analyzed within that run sequence. Therefore the time of calibration injection that defines the run date is always within 12 hours of the time of sample injection.

b) Shipping Problems: none encountered

c) Documentation Problems: none encountered

II. SAMPLE PREP:

No problems encountered

III. SAMPLE ANALYSIS:

See also comments within the appropriate Certificate of Analysis

- a) Hold Times: all within recommended hold times
- b) Instrument Calibration: all within control limits
- c) Quality Control: All applicable QC meets control criteria, except where otherwise noted.
- d) All analytes requiring manual intergration(s) are noted on the sample chromatograms

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for other than the conditions detailed above.

In addition, I certify, that to the best of my knowledge and belief, the data as reported are true and accurate. Release of the data contained in this data package has been authorized by the cognizant laboratory official or his/her designee, as verified by this signature.

Ancy Sebastian

Digitally signed by Ancy Sebastian
DN: dc=lab, dc=maxxam, ou=Burlington,
cn=Ancy Sebastian, email=Ancy.
Sebastian@maxxamanalytics.com
Date: 2010.10.29 09:02:36 -04'00'



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2.0 Summary Report

Maxxam Analytics International
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

Attention: Andrew McNeel
 Arrow Environmental Consulting
 2 Sutton Pl
 Easton, PA
 USA 18045

Report Date: 2010/10/28

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0D5547
Received: 2010/09/28, 11:30

Sample Matrix: Stack Sampling Train
 # Samples Received: 21

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Organic Compound Analysis	6	2010/09/30	2010/10/08	NIOSH/OSHA methods	GC/FID
Organic Compound Analysis	8	2010/09/30	2010/10/20	NIOSH/OSHA methods	GC/FID
VOST Condensate (8260Cmod)	7	N/A	2010/10/07	BRL SOP-00305	EPA 8260Cmod(M0030)

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

ANCY SEBASTIAN, C.Tech., Senior Project Manager, Air Toxics
 Email: ASebastian@maxxam.ca
 Phone# (905) 817-5831

=====

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Total cover pages: 1

Maxxam Analytics International Corporation o/a Maxxam Analytics Burlington:5555 North Service Road, Burlington, Ontario L7L 5H7 Telephone(905) 332-8788 Fax(905) 332-9169

Page 1 of 9

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Page 6 of 385

Maxxam Job #: B0D5547
Report Date: 2010/10/28

RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

Maxxam ID		HH6991	HH6993	HH6997	HH7002	HH7003		
Sampling Date		2010/09/17	2010/09/17	2010/09/17	2010/09/17	2010/09/17		
	Units	BLANK-UNSPIKED TUBE	R1-T1-UNSPIKED	R1-T2-UNSPIKED-FH	R2-T1-UNSPIKED	R2-T2-UNSPIKED-FH	RDL	QC Batch

Benzene	ug	<1.0	2.8	<1.0	4.2	<1.0	1.0	2281745
---------	----	------	-----	------	-----	------	-----	---------

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		HH7005	HH7006	HH7043	HH7050	HH7052		
Sampling Date		2010/09/17	2010/09/17	2010/09/17	2010/09/17	2010/09/17		
	Units	R3-T1-UNSPIKED	R3-T2-UNSPIKED-FH	BLANK-SPIKED TUBE	R1-T1-SPIKED	R1-T2-SPIKED-FH	RDL	QC Batch

Benzene	ug	3.1	<1.0	30	35	<1.0	1.0	2281745
---------	----	-----	------	----	----	------	-----	---------

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		HH7062	HH7063	HH7065	HH7066		
Sampling Date		2010/09/17	2010/09/17	2010/09/17	2010/09/17		
	Units	R2-T1-SPIKED	R2-T2-SPIKED-FH	R3-T1-SPIKED	R3-T2-SPIKED-FH	RDL	QC Batch

Benzene	ug	31	<1.0	46	<1.0	1.0	2281745
---------	----	----	------	----	------	-----	---------

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B0D5547
Report Date: 2010/10/28

VOLATILE ORGANICS BY GC/MS (STACK SAMPLING TRAIN)

Maxxam ID		HH7070	HH7072	HH7073	HH7075		
Sampling Date		2010/09/17	2010/09/17	2010/09/17	2010/09/17		
	Units	BLANK-CONDENSATE	R1-COND-UNSPIKED	R1-COND-SPIKED	R2-COND-UNSPIKED	RDL	QC Batch
Benzene	ug/L	<1.3	<1.3	<1.3	<1.3	1.3	2287052
Surrogate Recovery (%)							
4-Bromofluorobenzene	%	82	81	82	80	N/A	2287052
D4-1,2-Dichloroethane	%	109	113	111	110	N/A	2287052
D8-Toluene	%	114	113	113	114	N/A	2287052
N/A = Not Applicable RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam ID		HH7076	HH7077	HH7078		
Sampling Date		2010/09/17	2010/09/17	2010/09/17		
	Units	R2-COND-SPIKED	R3-COND-UNSPIKED	R3-COND-SPIKED	RDL	QC Batch
Benzene	ug/L	<1.3	<1.3	<1.3	1.3	2287052
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	81	80	81	N/A	2287052
D4-1,2-Dichloroethane	%	110	111	111	N/A	2287052
D8-Toluene	%	113	114	116 (1)	N/A	2287052
N/A = Not Applicable RDL = Reportable Detection Limit QC Batch = Quality Control Batch (1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.						

Maxxam Job #: B0D5547
Report Date: 2010/10/28

Test Summary

Maxxam ID HH6991
Sample ID BLANK-UNSPIKED TUBE
Matrix Stack Sampling Train
Collected 2010/09/17
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Organic Compound Analysis	GC/FID	2281745	2010/09/30	2010/10/08	LTO

Maxxam ID HH6993
Sample ID R1-T1-UNSPIKED
Matrix Stack Sampling Train
Collected 2010/09/17
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Organic Compound Analysis	GC/FID	2281745	2010/09/30	2010/10/08	LTO

Maxxam ID HH6997
Sample ID R1-T2-UNSPIKED-FH
Matrix Stack Sampling Train
Collected 2010/09/17
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Organic Compound Analysis	GC/FID	2281745	2010/09/30	2010/10/08	LTO

Maxxam ID HH7002
Sample ID R2-T1-UNSPIKED
Matrix Stack Sampling Train
Collected 2010/09/17
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Organic Compound Analysis	GC/FID	2281745	2010/09/30	2010/10/08	LTO

Maxxam ID HH7003
Sample ID R2-T2-UNSPIKED-FH
Matrix Stack Sampling Train
Collected 2010/09/17
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Organic Compound Analysis	GC/FID	2281745	2010/09/30	2010/10/08	LTO

Maxxam ID HH7005
Sample ID R3-T1-UNSPIKED
Matrix Stack Sampling Train
Collected 2010/09/17
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Organic Compound Analysis	GC/FID	2281745	2010/09/30	2010/10/08	LTO

Maxxam ID HH7006
Sample ID R3-T2-UNSPIKED-FH
Matrix Stack Sampling Train
Collected 2010/09/17
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Organic Compound Analysis	GC/FID	2281745	2010/09/30	2010/10/20	LTO

Maxxam Job #: B0D5547
Report Date: 2010/10/28

Test Summary

Maxxam ID HH7043
Sample ID BLANK-SPIKED TUBE
Matrix Stack Sampling Train
Collected 2010/09/17
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Organic Compound Analysis	GC/FID	2281745	2010/09/30	2010/10/20	LTO

Maxxam ID HH7050
Sample ID R1-T1-SPIKED
Matrix Stack Sampling Train
Collected 2010/09/17
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Organic Compound Analysis	GC/FID	2281745	2010/09/30	2010/10/20	LTO

Maxxam ID HH7052
Sample ID R1-T2-SPIKED-FH
Matrix Stack Sampling Train
Collected 2010/09/17
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Organic Compound Analysis	GC/FID	2281745	2010/09/30	2010/10/20	LTO

Maxxam ID HH7062
Sample ID R2-T1-SPIKED
Matrix Stack Sampling Train
Collected 2010/09/17
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Organic Compound Analysis	GC/FID	2281745	2010/09/30	2010/10/20	LTO

Maxxam ID HH7063
Sample ID R2-T2-SPIKED-FH
Matrix Stack Sampling Train
Collected 2010/09/17
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Organic Compound Analysis	GC/FID	2281745	2010/09/30	2010/10/20	LTO

Maxxam ID HH7065
Sample ID R3-T1-SPIKED
Matrix Stack Sampling Train
Collected 2010/09/17
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Organic Compound Analysis	GC/FID	2281745	2010/09/30	2010/10/20	LTO

Maxxam ID HH7066
Sample ID R3-T2-SPIKED-FH
Matrix Stack Sampling Train
Collected 2010/09/17
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Organic Compound Analysis	GC/FID	2281745	2010/09/30	2010/10/20	LTO

Maxxam Job #: B0D5547
Report Date: 2010/10/28

Test Summary

Maxxam ID HH7070
Sample ID BLANK-CONDENSATE
Matrix Stack Sampling Train

Collected 2010/09/17
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
VOST Condensate (8260Cmod)	P&T/MS	2287052	N/A	2010/10/07	AH

Maxxam ID HH7072
Sample ID R1-COND-UNSPIKED
Matrix Stack Sampling Train

Collected 2010/09/17
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
VOST Condensate (8260Cmod)	P&T/MS	2287052	N/A	2010/10/07	AH

Maxxam ID HH7073
Sample ID R1-COND-SPIKED
Matrix Stack Sampling Train

Collected 2010/09/17
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
VOST Condensate (8260Cmod)	P&T/MS	2287052	N/A	2010/10/07	AH

Maxxam ID HH7075
Sample ID R2-COND-UNSPIKED
Matrix Stack Sampling Train

Collected 2010/09/17
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
VOST Condensate (8260Cmod)	P&T/MS	2287052	N/A	2010/10/07	AH

Maxxam ID HH7076
Sample ID R2-COND-SPIKED
Matrix Stack Sampling Train

Collected 2010/09/17
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
VOST Condensate (8260Cmod)	P&T/MS	2287052	N/A	2010/10/07	AH

Maxxam ID HH7077
Sample ID R3-COND-UNSPIKED
Matrix Stack Sampling Train

Collected 2010/09/17
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
VOST Condensate (8260Cmod)	P&T/MS	2287052	N/A	2010/10/07	AH

Maxxam ID HH7078
Sample ID R3-COND-SPIKED
Matrix Stack Sampling Train

Collected 2010/09/17
Shipped
Received 2010/09/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
VOST Condensate (8260Cmod)	P&T/MS	2287052	N/A	2010/10/07	AH

Maxxam Job #: B0D5547
Report Date: 2010/10/28

GENERAL COMMENTS

VOC Analysis: The samples were analyzed after the 14 day holding time specified by the method had expired.

VOC Analysis: Due to insufficient sample volume, the samples required dilution. Detection limits were adjusted accordingly.

Benzene Analysis: All samples and QC were run in triplicate injection as per Method 18. The data entered into LIMS is the average of the 3 injections. Reported result for the sample HH7043 is average of two injections due to poor third injection. Re-injection could not be performed due to evaporation of solvent in the sample

Samples have been corrected for desorption efficiencies if average percent recoveries are less than 80% (does not apply to gravimetric and inorganic analysis).

Results relate only to the items tested.

Arrow Environmental Consulting
Attention: Andrew McNeel
Client Project #:
P.O. #:
Project name:

Quality Assurance Report

Maxxam Job Number: GB0D5547

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2281745 LTO	Spiked Blank	Benzene	2010/10/08		91	%	N/A
	Method Blank	Benzene	2010/10/08	<1.0		ug	
2287052 AH	Spiked Blank	4-Bromofluorobenzene	2010/10/07		89	%	76 - 120
		D4-1,2-Dichloroethane	2010/10/07		113	%	67 - 122
		D8-Toluene	2010/10/07		111	%	75 - 114
	Method Blank	Benzene	2010/10/07		103	%	70 - 130
		4-Bromofluorobenzene	2010/10/07		82	%	76 - 120
		D4-1,2-Dichloroethane	2010/10/07		112	%	67 - 122
		D8-Toluene	2010/10/07		112	%	75 - 114
		Benzene	2010/10/07	<0.50		ug/L	

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burlington:5555 North Service Road, Burlington, Ontario L7L 5H7 Telephone(905) 332-8788 Fax(905) 332-9169

Validation Signature Page

Maxxam Job #: B0D5547

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Eva Pranjic



EWA PRANJIC, M.Sc., C.Chem, Scientific Specialist

Karen Nicol

KAREN NICOL, C.E.T., Supervisor, Semi-Volatiles

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Driven by Service and Science

3.0 Sample Custody

Maxxam Analytics International
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

Arrow Environmental Consulting, LLC

PO Box 3658

Easton PA 18043

610-587-1770 610-258-2470 FAX

andrewmcanee@arcon.com

Chain of Custody Record

Page 1 of 1

DUE DATE
Final

Pls fax /email results by 10/08/10.

Samples Submitted to:

Maxxam Analytical

5555 North Service Rd

Burlington Ontario Canada L7L 5H7

(905) 332-8788

Attn: A. Sebastian (905) 332-9169 fx

Container Type

B. Gas Bag

D. Petri Dish

E. Method 25 Trank

F. Method 25 Trap

G. Glass

N. NIOSH Tube

P. Plastic Bottle

S. Summa Canister

T. VOST Tube

V. VOC Vial

X. XAD-2 Trap

O. Other: TUBE, Anasorb CSC

Sample Type

1. Liquid

2. Gas

3. Filter

4. Charcoal

5. Resin

6. Other

Requested Analysis / Method

Benzene per EPA M18

Lab ID #

Sample Identification	Sample Vol (mls)	Sample Type	Container Type	Size	Sampling Information Date	Tech	Reagents and/or Preservatives	Lab ID #
Run 1, condensate, unspiked train	43	1 V	43	9/17/2010	JMC		charcoal	X
Run 1, Tube 1, unspiked train	---	4 O	---	9/17/2010	JMC		charcoal	X
Run 1, Tube 2, unspiked train	---	4 O	---	9/17/2010	JMC		charcoal	X
Run 2, condensate, unspiked train	43	1 V	43	9/17/2010	JMC		charcoal	X
Run 2, Tube 1, unspiked train	---	4 O	---	9/17/2010	JMC		charcoal	X
Run 2, Tube 2, unspiked train	---	4 O	---	9/17/2010	JMC		charcoal	X
Run 3, condensate, unspiked train	43	1 V	43	9/17/2010	JMC		charcoal	X
Run 3, Tube 1, unspiked train	---	4 O	---	9/17/2010	JMC		charcoal	X
Run 3, Tube 2, unspiked train	---	4 O	---	9/17/2010	JMC		charcoal	X
Run 1, condensate, spiked train	43	1 V	43	9/17/2010	JMC		charcoal	X
Run 1, Tube 1, spiked, spiked train	---	4 O	---	9/17/2010	JMC		charcoal	X
Run 1, Tube 2, spiked train	---	4 O	---	9/17/2010	JMC		charcoal	X
Run 2, condensate, spiked train	43	1 V	43	9/17/2010	JMC		charcoal	X
Run 2, Tube 1, spiked, spiked train	---	4 O	---	9/17/2010	JMC		charcoal	X
Run 2, Tube 2, spiked train	---	4 O	---	9/17/2010	JMC		charcoal	X
Run 3, condensate, spiked train	43	1 V	43	9/17/2010	JMC		charcoal	X
Run 3, Tube 1, spiked, spiked train	---	4 O	---	9/17/2010	JMC		charcoal	X
Run 3, Tube 2, spiked train	---	4 O	---	9/17/2010	JMC		charcoal	X
Blank - spiked tube	---	4 O	---	9/17/2010	JMC		charcoal	X
Blank - unspiked tube	---	4 O	---	9/17/2010	JMC		charcoal	X
Blank - DIH2O	43	1 V	43	9/17/2010	JMC		DIH2O	X

Special Instructions: See attached sheet for details of spiked tubes.

Submitted By: <i>M. Canale</i>	Date: 9/23/2010	Received By: <i>A. Sebastian</i>	Date: 9/23/2010
Relinquished By:	Date:	Received By:	Date:
Relinquished By:	Date:	Received By:	Date:

QA/QC Report Package
Compliance ☒ Non-compliance
NJDEP ☐ USEPA ☐ Method ☐ Normal ☐

see attached for spike info



4 Charcoal tubes spiked
with 30 µg benzene in the front
section
[15 µl @ 2 mg/ml

CLP-BTEX-10x PAK
2 µg/µl in HEDH
AccuStandard

lot #


2010/09/08

Lidij Louie

10 Each
Tube, Anasorb CSC
Lot 2000 Exp. July/2015
Cat No. 226-09
Made In The USA

SKC Inc., 863 Valley View Road, Eighty Four PA 15330 USA www.skcinco.com

NELAC - SAMPLE RECEIPT LOG

Lab Name: Maxxam Analytics, Mississauga Laboratory	
Received by (Name): Marsela Wijaya	
Received by (Signature): 	Date: 09-28-10 Time: 11:30 AM
Where Applicable:	
Client Name: Arrow Environmental Consulting	
Mode of delivery: Pick up at: <input type="checkbox"/> Client <input checked="" type="checkbox"/> FEDEX <input type="checkbox"/> UPS <input type="checkbox"/> Purolator <input type="checkbox"/> Other	
Waybill #: MD120396	
Assigned job#: BOD5127, BOD5547	
Number of Package: Number of Boxes: - or Coolers: 1	
REMARKS:	Condition of Sample(s) Shipment - Comments
Sample Reception Documentation	
Samples Packed in Coolers? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
Cooler Contains ice? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
Custody seal(s) on cooler? Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/>	
Chain of Custody (CoC) present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
Cooler Temperature measured? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
Containers intact? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
Correct containers used? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
CoC agrees with samples? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
Samples rec'd after hold time? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/>	
Project Mgr contacted via SIF? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	
Project Manager Documentation	
Client contacted if discrepancies in shipment are observed Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
Client acceptance of deficiencies (if observed at sample receipt) Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
Cooler temperatures upon receipt	
Cooler ID: CM 27 + M18 Temp. 4/4/4°C	
Cooler ID: Temp.	
Cooler ID: Temp.	
Cooler ID: Temp.	