TETRA TECH NUS

PHIL-19523

TO: RUSS TURNER **DATE:** SEPTEMBER 29, 2005

FROM: MEGAN N. RITCHIE **COPIES:** FILE

SUBJECT: INORGANIC DATA VALIDATION – ANIONS, ORP, AND TOC
NAS JRB WILLOW GROVE, PENNSYLVANIA
SDG NO. T4384

SAMPLES: 4/Aqueous/

05MW13I	05MW15I
05MW14S	05MW15S

OVERVIEW

The sample set for NAS JRB Willow Grove Site 5 – Willow Grove, PA, SDG T4384 consists of four aqueous environmental samples (designated 05MW-). No field duplicate pairs were included in this sample set. All samples were analyzed for anions chloride, nitrate, and sulfate, oxidation reduction potential (ORP), and total organic carbon (TOC).

The samples were collected by Tetra Tech NUS on August 24, 2005 and analyzed by Chemtech of Mountainside, New Jersey.

All analyses were conducted using EPA Method 300.0 for the anions, ASTM Method D1498 for ORP, and SW-846 Method 9060 for TOC.

SUMMARY

All analytes were successfully analyzed. The findings offered in this report are based upon a general review of all available data including data completeness, holding times until analysis, calibration data, laboratory blank results, matrix spike results, laboratory control spike results, and laboratory duplicate results.

Areas of concern with respect to data quality are listed below as follows:

MAJOR PROBLEMS

- None.

MINOR PROBLEMS

- The initial calibration verification and first continuing calibration verification for chloride exhibited recoveries below the lower QC limit of 80%. The positive sample results for chloride were qualified as biased low (L).

NOTES

The matrix spike recovery for sulfate was below the lower QC limit of 75%. No qualifications were made on matrix spike criteria alone.

Dilutions were performed for chloride in two samples because the original chloride area exceeded the initial calibration concentration range. A 2X dilution was performed on sample 05MW13I and a 5X dilution was performed on sample 05MW15I.

Dilutions were performed for sulfate in all the samples because the original sulfate area exceeded the initial calibration concentration range. 2X dilutions were performed on samples 05MW13I and 05MW15S, and 5X dilutions were performed on samples 05MW14S and 05MW15I.

The ORP and TOC data were acceptable as reported by the laboratory.

EXECUTIVE SUMMARY

Laboratory Performance: The ICV and CCV recoveries for chloride were below the lower QC limit.

Other Factors Affecting Data Quality: The matrix spike recovery for sulfate was below the lower QC limit.

The data for these analyses were reviewed with reference to the EPA "Functional Guidelines for Inorganic Data Review", as amended for use within EPA Region 3 (4/93).

The text of this report has been formatted to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the Functional Guidelines and the Quality Assurance Project Plan (QAPjP)."

Megan N. Ritchie
Chemist

Tetra Tech NUS, Inc.
Russell Sloboda
Data Validation Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

Qualified Analytical Results

PROJ_NO: 2192

SDG: T4384 MEDIA: WATER DATA FRACTION: MISC

nsample	05MW13I
samp_date	8/24/2005
lab_id	T4384-04
qc_type	NM
Pct_Solids	0.0
DUP_OF:	

Parameter	units	Result	Val Qual	Qual Code
CHLORIDE	MG/L	2.88	L	C
NITRATE	MG/L	0.621		
OXIDATION REDUCTION POTEN	MV	390		
SULFATE	MG/L	29		
TOTAL ORGANIC CARBON	MG/L	0.4	U	

nsample	05MW14S
samp_date	8/24/2005
lab_id	T4384-05
qc_type	NM
Pct_Solids	0.0
DUP_OF:	

Parameter	units	Result	Val Qual	Qual Code
CHLORIDE	MG/L	2.97	L	C
NITRATE	MG/L	0.783		
OXIDATION REDUCTION POTEN	MV	400		
SULFATE	MG/L	43		
TOTAL ORGANIC CARBON	MG/L	0.4	U	

nsample	05MW15I
samp_date	8/24/2005
lab_id	T4384-02
qc_type	NM
Pct_Solids	0.0
DUP_OF:	

Parameter	units	Result	Val Qual	Qual Code
CHLORIDE	MG/L	13	L	C
NITRATE	MG/L	0.791		
OXIDATION REDUCTION POTEN	MV	400		
SULFATE	MG/L	38		
TOTAL ORGANIC CARBON	MG/L	0.621		

PROJ_NO: 2192

SDG: T4384 MEDIA: WATER DATA FRACTION: MISC

nsample	05MW15S
samp_date	8/24/2005
lab_id	T4384-03
qc_type	NM
Pct_Solids	0.0
DUP_OF:	

Parameter	units	Result	Val Qual	Qual Code
CHLORIDE	MG/L	2.64	L	C
NITRATE	MG/L	0.678		
OXIDATION REDUCTION POTEN	MV	410		
SULFATE	MG/L	36		
TOTAL ORGANIC CARBON	MG/L	0.4	U	

Qualifier Codes:

a	=	Lab Blank Contamination
b	=	Field Blank Contamination
c	=	Calibration (i.e., %RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
d	=	MS/MSD Noncompliance
e	=	LSC/LSCD Noncompliance
f	=	Laboratory Duplicate Imprecision
g	=	Field Duplicate Imprecision
h	=	Holding Time Exceedance
i	=	ICP Serial Dilution Noncompliance
j	=	GFAA PDS – GFAA MSA's r<0.995 (correlation coefficient)
k	=	ICP Interference – include ICSAB %Rs
l	=	Instrument Calibration Range Exceedance
m	=	Sample Preservation
n	=	Internal Standard Noncompliance
o	=	Poor Instrument Performance (i.e. baseline drifting)
p	=	Uncertainty Near Detection Limit (<2 x IDL for inorganics and < CRQL for organics)
q	=	Other Problems (can encompass of number of issues)
r	=	Surrogates Recovery Noncompliance
s	=	Pesticide/PCB Resolution
t	=	% Breakdown Noncompliance for DDT and Endrin
u	=	Pesticide/PCB % Difference Between Columns for Positive Results
v	=	Non-linear Calibrations, Tuning r <0.995 (correlation coefficient)

Data Qualifier Key:

B	- Positive result is considered to be an artifact of blank contamination and should not be considered present.
J	- Value is considered estimated due to exceedance of technical quality control or because result is less than the Contract Required Quantitation Limit (CRQL).
L	- Positive result is considered biased low due to exceedance of technical quality control criteria.
R	- Positive result is considered unusable due to exceedance of technical quality control criteria.
U	- Value is a non-detected result as reported by the laboratory.
UJ	- Non-detected result is considered estimated due to exceedance of technical quality control criteria.
UL	- Non-detected result is considered biased low due to exceedance of technical quality control criteria.

APPENDIX B

Results as Reported by the Laboratory

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908-789-8900 Fax: 908-789-8922

Report of Analysis

Client:	**Tetra Tech NUS, Inc.**	**Date Collected:**	
Project:		**Date Received:**	
Client Sample ID:	**05MW13I**	**SDG No.:**	**T4384**
Lab Sample ID:	**T4384-04**	**Matrix:**	**WATER**
% Solids:	**0.00**		

Analyte	Result	Qualifier	RL	Units	DF	Date Analyzed	Method
Nitrate	0.621		0.100	mg/L	1	8/25/2005	300.0 Anions
Chloride	2.880		1.000	mg/L	2	8/25/2005	300.0 Anions
Sulfate	29		1.000	mg/L	2	8/25/2005	300.0 Anions
TOC	0.400	U	0.400	mg/L	1	9/1/2005	9060 TOC
Redox Potential	390		0.000	mV	1	8/25/2005	1498 Redox Potential

Comment

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908-789-8900 Fax: 908-789-8922

Report of Analysis

Client:	**Tetra Tech NUS, Inc.**	**Date Collected:**	**8/24/2005**
Project:	**NAS JRB Willow Grove**	**Date Received:**	**8/25/2005**
Client Sample ID:	**05MW14S**	**SDG No.:**	**T4384**
Lab Sample ID:	**T4384-05**	**Matrix:**	**WATER**
% Solids:	**0.00**		

Analyte	Result	Qualifier	RL	Units	DF	Date Analyzed	Method
Chloride	2.970		0.500	mg/L	1	8/25/2005	300.0 Anions
Nitrate	0.783		0.100	mg/L	1	8/25/2005	300.0 Anions
Sulfate	43		2.500	mg/L	5	8/25/2005	300.0 Anions
TOC	0.400	U	0.400	mg/L	1	9/1/2005	9060 TOC
Redox Potential	400		0.000	mV	1	8/25/2005	1498 Redox Potential

Comment

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908-789-8900 Fax: 908-789-8922

Report of Analysis

Client:	**Tetra Tech NUS, Inc.**	**Date Collected:**	**8/24/2005**
Project:	**NAS JRB Willow Grove**	**Date Received:**	**8/25/2005**
Client Sample ID:	**05MW15I**	**SDG No.:**	**T4384**
Lab Sample ID:	**T4384-02**	**Matrix:**	**WATER**
% Solids:	**0.00**		

Analyte	Result	Qualifier	RL	Units	DF	Date Analyzed	Method
Nitrate	0.791		0.100	mg/L	1	8/25/2005	300.0 Anions
Chloride	13		2.500	mg/L	5	8/25/2005	300.0 Anions
Sulfate	38		2.500	mg/L	5	8/25/2005	300.0 Anions
TOC	0.621		0.400	mg/L	1	9/1/2005	9060 TOC
Redox Potential	400		0.000	mV	1	8/25/2005	1498 Redox Potential

Comment

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Report of Analysis

Client:	**Tetra Tech NUS, Inc.**	**Date Collected:**	**8/24/2005**
Project:	**NAS JRB Willow Grove**	**Date Received:**	**8/25/2005**
Client Sample ID:	**05MW15S**	**SDG No.:**	**T4384**
Lab Sample ID:	**T4384-03**	**Matrix:**	**WATER**
% Solids:	**0.00**		

Analyte	Result	Qualifier	RL	Units	DF	Date Analyzed	Method
Chloride	2.640		0.500	mg/L	1	8/25/2005	300.0 Anions
Nitrate	0.678		0.100	mg/L	1	8/25/2005	300.0 Anions
Sulfate	36		1.000	mg/L	2	8/25/2005	300.0 Anions
TOC	0.400	U	0.400	mg/L	1	9/1/2005	9060 TOC
Redox Potential	410		0.000	mV	1	8/25/2005	1498 Redox Potential

Comment

APPENDIX C

Support Documentation

CHEMTECH
CHAIN OF CUSTODY RECORD

284 Sheffield Street, Mountainside, NJ 07092
(908) 789-8900 Fax (908) 789-8922
www.chemtech.net

CHEMTECH PROJECT NO. T4384

COC Number 054193

CLIENT INFORMATION

REPORT TO BE SENT TO:

COMPANY: Tetra Tech NUS

ADDRESS: 600 Clark Ave

CITY: King of Prussia STATE: PA ZIP: 19406

ATTENTION: Russ Turner

PHONE: 610 491 9688 FAX: 610 491 9645

CLIENT PROJECT INFORMATION

PROJECT NAME: NASJRB Willow Grove

PROJECT NO.: 2192 LOCATION: Willow Grove, PA

PROJECT MANAGER: Russ Turner

e-mail: rturner@ttnus.com

PHONE: FAX:

CLIENT BILLING INFORMATION

BILL TO: Tetra Tech NUS PO#:

ADDRESS: Foster Plaza 7 661 Anderson Dr.

CITY: Pittsburgh STATE: PA ZIP: 15220

ATTENTION: PHONE:

DATA TURNAROUND INFORMATION

FAX: _____ DAYS *

HARD COPY: _____ DAYS *

EDD: _____ DAYS *

* TO BE APPROVED BY CHEMTECH
STANDARD TURNAROUND TIME IS 10 BUSINESS DAYS

DATA DELIVERABLE INFORMATION

☐ RESULTS ONLY ☐ USEPA CLP

☐ RESULTS + QC ☐ New York State ASP "B"

☐ New Jersey REDUCED ☐ New York State ASP "A"

☐ New Jersey CLP ☐ Other _____

☐ EDD FORMAT _____

ANALYSIS

1	2	3	4	5	6	7	8	9
40 ml VOA Vial TCL VOC	1 Liter Amber Eq-Pharmap	1 Liter Poly Anions, ORP	40 ml VOA vial Methane	500 ml Poly TOC				

CHEMTECH SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE COLLECTION DATE	SAMPLE COLLECTION TIME	# OF BOTTLES	PRESERVATIVES 1	2	3	4	5	6	7	8	9	COMMENTS
								HCl	ICE	ICE	HCl	H_2SO_4					← Specify Preservatives A-HCl B-HNO_3 C-H_2SO_4 D-NaOH E-ICE F-Other
1.	TB-082405	AQ		X	8/24/05	0700	3	3									Trip Blank Laboratory supplied
2.	05MW15I	GW		X	8/24/05	1040	8	3	1	1	2	1					
3.	05MW15S	GW		X	8/24/05	1230	8	3	1	1	2	1					
4.	05MW13I	GW		X	8/24/05	1355	8	3	1	1	2	1					
5.	05MW14S	GW		X	8/24/05	1605	8	3	1	1	2	1					
6.																	
7.																	
8.																	
9.																	
10.																	

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION INCLUDING COURIER DELIVERY

	RELINQUISHED BY SAMPLER:	DATE/TIME:	RECEIVED BY:
1.	Donald Kubala	8/24/05 1900	1.
2.	RELINQUISHED BY:	DATE/TIME:	RECEIVED BY: 2.
3.	ED BY:	DATE/TIME: 950	RECEIVED FOR LAB BY:
	edex	8/25/05	3. Jim Munoz

Conditions of bottles or coolers at receipt: ☒ Compliant ☐ Non Compliant

Cooler Temp. 4 °C

MeOH extraction requires an additional 4 oz jar for percent solid.

Comments: Trip blank supplied by laboratory

Ice in Cooler?: Yes

Shipped via FedEx airbill No. 8455 3266 2972

Page 1 of 1

SHIPPED VIA: CLIENT: ☐ HAND DELIVERED ☒ OVERNIGHT
CHEMTECH: ☐ PICKED UP ☐ OVERNIGHT

Shipment Complete: ☒ YES ☐ NO

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CHEMTECH

CASE NARRATIVE

Tetra Tech NUS, Inc.
Project Name: NAS JRB Willow Grove
Project # N/A
Chemtech Project # T4384

A. Number of Samples and Date of Receipt:
5 Water samples were received on 8/25/05.

B. Parameters:
According to the Chain of Custody document, the following analyses were requested: Anions, Gases methane, ethane, ethene, Redox Potential, SVOCMS Group1, Total Organic Carbon, and VOCMS Group1. This data package contains results for Anions, Redox Potential and Total Organic Carbon.

C. Analytical Techniques:
The analysis of Anions was based on method 300.0, Redox Potential was based on method 1498 and Total Organic Carbon was based on method 9060.

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

E. Additional Comments:
Sample # 2,4 were diluted for Sulfate and chloride and sample # 3 & 5 were diluted for only sulfate because of bad matrix.

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

Signature_____ Name: Krupa Dubey

Date: 9/15/05 Title: QA/QC

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908-789-8900 Fax: 908-789-8922

Initial and Continuing Calibration Verification

Client: Tetra Tech NUS, Inc. **SDG No.:** T4384

Project:

Analyte	Units	Result	True Value	% Recovery	Acceptance Window (%R)	Analysis Date
Sample ID: ICV1						
Chloride	mg/L	1.97	3.00	65.7	80-120	8/23/2005
Nitrate	mg/L	0.96	1.00	95.5	80-120	8/23/2005
Sulfate	mg/L	4.77	5.00	95.4	80-120	8/23/2005
TOC	mg/L	5.30	5.00	106.0	80-120	8/30/2005
Sample ID: CCV1						
Chloride	mg/L	2.36	3.00	78.7	80-120	8/24/2005
Sulfate	mg/L	12.80	15.00	85.3	80-120	8/24/2005
TOC	mg/L	8.70	10.00	87.0	80-120	9/1/2005
Sample ID: CCV2						
Chloride	mg/L	2.42	3.00	80.7	80-120	8/24/2005
Sulfate	mg/L	13.10	15.00	87.3	80-120	8/24/2005
TOC	mg/L	9.30	10.00	93.0	80-120	9/1/2005
Sample ID: CCV3						
Chloride	mg/L	2.44	3.00	81.3	80-120	8/24/2005
Nitrate	mg/L	1.96	2.26	86.7	80-120	8/24/2005
Sulfate	mg/L	13.20	15.00	88.0	80-120	8/24/2005
TOC	mg/L	9.30	10.00	93.0	80-120	9/1/2005
Sample ID: CCV4						
Chloride	mg/L	2.40	3.00	80.0	80-120	8/25/2005
Nitrate	mg/L	1.93	2.26	85.4	80-120	8/25/2005
Sulfate	mg/L	13.00	15.00	86.7	80-120	8/25/2005
TOC	mg/L	9.50	10.00	95.0	80-120	9/1/2005
Sample ID: CCV5						
Chloride	mg/L	2.42	3.00	80.7	80-120	8/25/2005
Nitrate	mg/L	1.95	2.26	86.3	80-120	8/25/2005
Sulfate	mg/L	13.10	15.00	87.3	80-120	8/25/2005
TOC	mg/L	9.70	10.00	97.0	80-120	9/1/2005
Sample ID: CCV6						
Chloride	mg/L	2.50	3.00	83.3	80-120	8/25/2005
Nitrate	mg/L	1.96	2.26	86.7	80-120	8/25/2005
Sulfate	mg/L	12.90	15.00	86.0	80-120	8/25/2005
TOC	mg/L	9.50	10.00	95.0	80-120	9/1/2005
Sample ID: CCV7						
Chloride	mg/L	2.43	3.00	81.0	80-120	8/25/2005
Nitrate	mg/L	1.99	2.26	88.1	80-120	8/25/2005
Sulfate	mg/L	13.00	15.00	86.7	80-120	8/25/2005
Sample ID: CCV8						
Chloride	mg/L	2.48	3.00	82.7	80-120	8/25/2005
Nitrate	mg/L	2.02	2.26	89.4	80-120	8/25/2005
Sulfate	mg/L	13.30	15.00	88.7	80-120	8/25/2005

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Matrix Spike Summary

Client: Tetra Tech NUS, Inc.
SDG No.: T4384
Project:
Sample ID: T4384-02
Client ID: 05MW15IS
Percent Solids for Spike Sample: 0.0

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	Dilution Factor	% Rec	Qual	Date Analyzed
Chloride	mg/L	75-125	14.7		13.2		0.60	5	50.0		8/25/2005
Nitrate	mg/L	75-125	2.7		0.7		0.45	5	88.8		8/25/2005
Sulfate	mg/L	75-125	46.2		38.0		15.00	5	54.6		8/25/2005
TOC	mg/L	75-125	9.9		0.6		10.00	1	93.0		9/1/2005