

INORGANIC DATA REVIEW SUMMARY

Client Wehran/N.Y. Project No. 89-16039
Site Colesville Landfill RI/FS
Contract Laboratory NYTEST Environmental, Inc.
QC Report Number 2119 Sample Delivery Group (SDG) 148
Sample Matrix 1 low water
Sampling Date (Month/Year) 8/89
Type of Request/Analyses TCL Metals

Sample No. BLL-DW-1

Data Reviewer Susan Dalla Initials/Date SD 11-10-89
QA Review by Jeff Benson JB 11/10/89 CCJM Approval Richard Cheatham RC 11/14/89

Telephone logs enclosed? Yes _____ No X

NYSDEC violations found? Yes _____ No X

Following items require action None

Note:

-- The EPA Functional Guidelines for Evaluating Inorganics Analyses (Data Review SOP) and the New York State Department of Environmental Conservation Contract Laboratory Protocol have been used by the reviewer as a basis for reviewing the data and applying qualifiers.

-- Please see data qualifier definitions on the last page. This scheme of qualifiers is intended to help indicate the reasons or problems which cause sample values to be qualified.

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Contract 787

Inorganic Data Completeness Checklist

<u>P</u>	Inorganic Cover Page
<u>P</u>	Inorganic analysis data sheets (Form I)
<u>P</u>	Initial calibration and calibration verification results (Form II)
<u>P</u>	Continuing calibration verification (Form II)
<u>P</u>	Blank results (Form III)
<u>P</u>	ICP interference check sample (Form IV)
<u>P</u>	Spike results (Form V)
<u>P</u>	Duplicate results (Form VI)
<u>P</u>	Instrument Detection limits (Form XI)
<u>P</u>	Laboratory Control Sample (LCS) Results (Form VII)
<u>P</u>	Serial Dilution Results (Form IX)
<u>P</u>	Raw data for samples
<u>P</u>	Raw data for calibration standards
<u>P</u>	Raw data for blanks
<u>P</u>	Raw data for ICP quality control (ICS and Serial Dilution)
<u>P</u>	Raw data for spikes
<u>P</u>	Raw data for duplicates
<u>P</u>	Raw data for LCS
<u>P</u>	Raw data for furnace AA
<u>P</u>	Raw data for mercury analysis
<u>NA</u>	Raw data for cyanide analysis
<u>NA</u>	Percent solids calculation - soils only
<u>P</u>	Sample prep/digestion logs
<u>P</u>	Traffic Reports/Chain of Custody
<u>P</u>	Sample description
<u>P</u>	2X CRDL Analysis
<u>P</u>	Case narrative

P = Provided in original data package

R = Provided as resubmission

NP = Not provided

NA = Not applicable

NR = Not required

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- I. A. All deliverables were present as specified in the statement of work.

Yes X No

Comments: No comment.

II. Detection Limits

- A. All results met the NYSDEC required detection limits (CRDL).

Yes X No

Comments: No comment.

III. Holding Times

- A. All NYSDEC required holding times were met.

Yes X No

Comments: No comment.

IV. Calibration Quality Control

- A. All initial instrument calibrations were performed as specified.

Yes X No

Comments: No comment.

- B. The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were analyzed at the specified frequency.

Yes X No

Comments: No comment.

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- C. The ICV and CCV standard recovery results were within the specified control limits.

Yes X No

Comments: No comment.

- D. The initial calibration blanks (ICB) and continuing calibration blanks (CCB) were analyzed at the specified frequency.

Yes X No

Comments: No comment.

- E. The ICB and CCB results were within the specified control limits.

Yes X No

Comments: No comment.

V. Preparation Blank Quality Control

- A. A Preparation blank was prepared and analyzed at the specified frequency.

Yes X No

Comments: No comment.

- B. All analytes in the preparation blank were below the CRDL.

Yes X No

Comments: No comment.

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- C. All analytes in the preparation blank were less than two times the instrument detection limit (IDL).

Yes _____ No X

Comments:

1. Iron was detected in the preparation blank (22.5 ug/l) at a level greater than two times the IDL (10 ug/l). The reported iron result for sample BLL-DW-1 is at a high enough level to not have been influenced by preparation blank contamination. No qualifier will be applied by the reviewer.

VI. Accuracy Statements

- A. Matrix (pre-digest) spike frequency was met.

Yes X No _____

Comments:

1. A matrix spike was analyzed on sample BLL-DW-1.

- B. Matrix spike recoveries were within specified control limits (75 - 125%).

Yes _____ No X

Comments:

1. The following is a table of samples, analytes, recoveries and qualifiers associated with spike recoveries exceeding the specified control limits:

<u>Samples</u>	<u>Analyte</u>	<u>% Recovery</u>	<u>Qualifiers</u>
BLL-DW-1	cadmium	72.4	WS
BLL-DW-1	selenium	72.0	WS
BLL-DW-1	mercury	160.0	None

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2. The reported results for cadmium and selenium on sample BLL-DW-1 are qualified as undetected but estimated, UWS, due to spike recoveries exceeding the control limits. Cadmium and selenium results reported for the above sample might be biased low and the possibility exists that false negatives have been reported.
3. Matrix spike recovery for mercury was 160%. However, when spike recovery exceeds 125% and the sample result is below the IDL, the reported value is considered to be acceptable. No qualifier will be applied by the reviewer.

- C. All analysis (post digest) spike requirements were met for the above samples that required "N" flags. This is not required for GFAA analysis and applies to Sow 787 only.

Yes ☒ No ☐ Not Applicable ☐

Comments: No comment.

- D. Laboratory control sample (LCS) frequency was met.

Yes ☒ No ☐

Comments: No comment.

- E. LCS recoveries were within NYSDEC specified control limits (80-120%, except Ag and Sb for SOW 787).

Yes ☒ No ☐

Comments: No comment.

VII. Precision Statement

- A. Matrix (pre-digest) duplicate frequency was met.

Yes ☒ No ☐

Comments:

1. Sample BLL-DW-01 was analyzed as a matrix duplicate.

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- B. Matrix (pre-digest) duplicate differences were within specified control limits (± 20 RPD or \pm CRDL for results less than 5X the CRDL).

Yes _____ No X

Comments:

1. The following is a table of samples, analytes, control limit, differences and qualifiers with RPDs exceeding the RPD ($\pm 20\%$ for waters, $\pm 35\%$ for soils) or \pm CRDL control limits:

<u>Samples</u>	<u>Analyte</u>	<u>Control Limit</u>	<u>Difference</u>	<u>Qualifier</u>
BLL-DW-1	iron	± 100 ug/l	168 ug/l	JD

2. The reported iron result for the above sample is qualified as estimated, JD, because the duplicate difference exceeds the control limit of \pm CRDL, which applies in this instance.

VIII. ICP Quality Control

- A. Serial dilution frequency was met.

Yes X No _____

Comments: No comment.

- B. Differences for the serial dilution were within specified control limits (10% difference).

Yes _____ No X

Comments:

1. The following is a table of sample, analytes, differences and qualifiers associated with serial dilution exceeding the specified control limits:

<u>Sample</u>	<u>Analyte</u>	<u>% Difference</u>	<u>Qualifier</u>
BLL-DW-1	iron	29.2	JI

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2. The reported iron result for the above sample is qualified as estimated, JI, due to the possibility of interference as demonstrated by the results of a serial dilution.

- C. The CRDL check standard was run at the appropriate frequency for the analytes required.

Yes X No

Comments: No comment.

- D. The CRDL check standard exhibited recoveries which indicate that linearity problems are not likely at the lower end of the calibration curve.

Yes No X

Comments:

- 1) The following is a table of samples, analytes and qualifiers associated with a problem in the CRDL solution.

<u>Samples</u>	<u>Analyte</u>	<u>Qualifier</u>
BLL-DW-01	copper	JQ

- 2) When the "found" value of the CRDL check standard differs from the "true" value by more than the IDL, linearity problems at the lower end of the calibration curve are suspected. The reported copper result for the above sample is qualified as estimated, JQ. This result could be biased low.

- E. The interference check sample (ICS) frequency was met.

Yes X No

Comment: No comment.

- F. ICS percent recovery results were reported for all required ICS analytes and were within NYSDEC specified control limits.

Yes X No

Comments: No comment.

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- G. No significant positive or negative values were reported for ICP analytes not contained in the standard ICS.

Yes ☒ No ☐

Comments: No comment.

IX. Graphite furnace (GFAA) Quality Control

- A. Duplicate injections were performed for all analyses (Method of Standard Addition (MSA) requires single injections only) and had RSDs of less than 20% where mean results were above the CRDL.

Yes ☒ No ☐

Comments: No comment.

- B. Analysis (post-digest) spikes were performed on all required samples and at the concentration (2X CRDL) required.

Yes ☒ No ☐

Comments: No comment.

- C. Sample dilution and re-spiking was performed on all samples whose initial spike %R was less than 40%.

Yes ☐ No ☐ Not applicable ☒

Comments:

1. Sample dilution and re-spiking were not required as no initial spike recovery was less than 40%.

- D. MSA was performed when required and followed the criteria specified in Exhibit E.

Yes ☐ No ☐ No Applicable ☒

Comments:

1. MSA was not necessary for sample BLL-DW-1.

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IX. General Comments

1. Sample Summary Form I indicates that this sample was received by the laboratory on 8-7-89. According to the Chain of Custody the VTSR is 8-4-89. The sample was analyzed within the required holding time based on the earlier date.
2. Matrix Spike Summary Form V has the "spiked sample result" and "spike added" values reversed. The percent recovery calculation is correct and since this transcription error does not affect data quality, no action is taken by the reviewer.

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Definition of Qualifiers
(Used by Data Reviewer)

The following qualifiers are those whose use is mandated by the Functional Guidelines for Inorganic Data Validation.

- (R) = Rejected ('R' used by laboratory under SOW 784 indicates matrix spike recovery problems)
- (U) = Undetected but the number being reported at the detection limit is estimated
- (J) = Estimated

The following subqualifiers give further detail of the type and amount of qualification a given data point has received.

- H = Qualified due to holding time violation
- I = Qualified due to interference problems (ICP serial dilution or poor analytical spike recovery by graphite furnace)
- D = Qualified due to duplicate control limits being exceeded
- S = Qualified due to matrix spike recoveries outside control limits
- C = Qualified due to instrument calibration problems
- L = Qualified due to LCS recoveries outside control limits
- B = Qualified due to blank contamination problems
- Q = Qualified due to reasons not stated above - refer to the text of the report

Example: The percent recovery of the Aluminum matrix spike was only 65%. Undetected values (e.g., Al 200u) will be flagged as follows:

Al 200u (U-S)

meaning the number being reported at the detection limit (200u) is estimated (U) due to spike recovery problems (-S).

Reported positive Aluminum values (e.g., Al 250) will be flagged as follows:

Al 250 (J-S)

meaning the reported positive result (250) is estimated (J) due to spike recovery problems (-S).

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Summary of Sample Data Deficiencies (Qualifiers)

2119	SDG# 148				
<u>Sample ID</u>	<u>Matrix</u>	<u>Cu</u>	<u>Cd</u>	<u>Se</u>	<u>Fe</u>
BLL-DW-1	low water	JQ	WS	WS	JD, I

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Nytest Environmental, Inc.Contract: 8916039

BLLDW-1

Lab Code: 9-13-89Case No.: 2119

SAS No.: _____

SDG No.: 148Matrix (soil/water): WATERLab Sample ID: N901203Level (low/med): LOWDate Received: 8-7-89Solids: 0Concentration Units (ug/L or mg/kg dry weight): Mg/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	100	U		P
7440-36-0	Antimony	50.0	U		P
7440-38-2	Arsenic	5.0	U		F
7440-39-3	Barium	50.0	U		P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U	N	P
7440-70-2	Calcium	60100.0			P
7440-47-3	Chromium	5.0	U		P
7440-48-4	Cobalt	10.0	U		P
7440-50-8	Copper	35.2			P
7439-89-6	Iron	543.0		*	P
7439-92-1	Lead	5.0	U		F
7439-95-4	Magnesium	11300			P
7439-96-5	Manganese	26.0			P
7439-97-6	Mercury	0.2	U	N	CV
7440-02-0	Nickel	20.0	U		P
7440-09-7	Potassium	920	B		P
7782-49-2	Selenium	5.0	U	N	P
7440-22-4	Silver	10.0	U		F
7440-23-5	Sodium	26600			P
7440-28-0	Thallium	5.0	U		F
7440-62-2	Vanadium	11.7	B		P
7440-66-6	Zinc	59.9			P
	Cyanide				NR

Color Before: ColorlessClarity Before: clear

Texture: _____

Color After: colorlessClarity After: clear

Artifacts: _____

Comments: