

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION  
Organic Data Review Checklist - Standard Validation

Project: Harley-Davidson

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SDG No:

180-44391-1

Analysis:

See attached

Method:

See attached

Laboratory:

TestAmerica Pittsburgh

Matrix:

Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrity of the data were based on an examination of the following:

Case Narrative  
Analytical Holding Times  
Sample Preservation

Method and Project Blanks

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks:

Double for Issues and Shk Labels

Please see attached letter from Lab - AGM 6/27/16

Definition of Qualifiers:

"U", not detected at the associated level  
"UJ", not detected and associated value estimated  
"J", associated value estimated  
"R", associated value unusable or analyte identity unfounded  
"=", compound properly identified and value positive

Reviewed by:

Chris Hurd AGM G. Mike Jr.

Date:

6/10/15

QA Reviewed by:

CA Rine

Date:

1-22-16

## I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks:

*No major issues*

## II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks:

VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

[illegible]

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

No issues

Mercury - Soils - 28 days from sample collection

**Deviations:**

[illegible]**Actions:**

1. If preserved samples exceed holding time, qualify all associated results as estimated (J/UJ).
2. If unpreserved samples exceed holding time, qualify all associated results as unusable (R).
3. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R).
4. If water samples are not acidified, use professional judgement. Minimally, qualify data as estimated (J) and non-detects unusable (R).
5. If soil samples exceed holding time, use professional judgement to qualify data.

Remarks:

No issues

**III. Holding Times**

Sample should be preserved and analyzed according to the appropriate analytical method

In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degrees C, 28 days

Sulfide, 4 degrees C, pH  $\geq 9$  with zinc acetate/sodium hydroxide, 7 days

Bromide/Chloride/Fluoride, no preservative required, 28 days

Nitrate/Nitrite or Ammonia, 4 degrees C, pH  $\leq 2$  with sulfuric acid, 28 days

Nitrate or Nitrite, 4 degrees C, 48 hours

Alkalinity, 4 degrees C, 14 days

TDS/TSS, 4degrees C, 7 days

Phosphate (total), 4 degrees C, pH  $< 2$  with sulfuric acid, 28 days

Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

**Deviations:**

| Sample # | Analyte | Date Collected | Date Extracted | Date Analyzed | Notes: |
|----------|---------|----------------|----------------|---------------|--------|
|          |         |                |                |               |        |
|          |         |                |                |               |        |
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|          |         |                |                |               |        |

**Actions:**

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

**Remarks:**

*No issues*

**VI. Blanks**

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs Yes ☐ No ☐

Review associated laboratory and project blank samples. List documented contamination below:

**Laboratory Method Blanks:**

| Date: | Lab ID # | Fraction | Compound | Conc. (ppb) |
|-------|----------|----------|----------|-------------|
|       |          |          |          |             |
|       |          |          |          |             |
|       |          |          |          |             |
|       |          |          |          |             |
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|       |          |          |          |             |
|       |          |          |          |             |

**Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)**

| Date    | Lab ID # | Fraction | Compound           | Conc. (ppb) |
|---------|----------|----------|--------------------|-------------|
| 5/29/15 | 7        | VOC      | methylene chloride | 0.156       |
| 5/31/15 | 4        | VOC      | ll ll              | 0.405       |
|         |          |          |                    |             |
|         |          |          |                    |             |
|         |          |          |                    |             |
|         |          |          |                    |             |
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|         |          |          |                    |             |
|         |          |          |                    |             |
|         |          |          |                    |             |

Remarks:

**Deviations:**

**Actions:**

- Remarks:

See glove and cuff

# Hold Time Summary

SDG 180-44321-1

| Sample Number | Sample Name        | Method      | Date Collected | Analysis Date | Date Extracted | Days to Analysis |
|---------------|--------------------|-------------|----------------|---------------|----------------|------------------|
| 180-44321-1   | HD-COD-SW-6-0/1-0  | MCAWW 300.0 | 5/20/2015      | 5/21/2015     |                | 1                |
| 180-44321-10  | HD-COD-SW-16-0/1-0 | MCAWW 300.0 | 5/20/2015      | 5/21/2015     |                | 1                |
| 180-44321-11  | HD-COD-SW-17-0/1-0 | MCAWW 300.0 | 5/20/2015      | 5/21/2015     |                | 1                |
| 180-44321-12  | HD-COD-SW-20-0/1-0 | MCAWW 300.0 | 5/20/2015      | 5/21/2015     |                | 1                |
| 180-44321-13  | HD-COD-SW-26-0/1-0 | MCAWW 300.0 | 5/20/2015      | 5/22/2015     |                | 2                |
| 180-44321-14  | HD-COD-SW-27-0/1-0 | MCAWW 300.0 | 5/20/2015      | 5/22/2015     |                | 2                |
| 180-44321-15  | HD-COD-SW-28-0/1-0 | MCAWW 300.0 | 5/20/2015      | 5/22/2015     |                | 2                |
| 180-44321-16  | HD-COD-SW-29-0/1-0 | MCAWW 300.0 | 5/20/2015      | 5/21/2015     |                | 1                |
| 180-44321-18  | HD-QC2-0/1-1       | MCAWW 300.0 | 5/20/2015      | 5/21/2015     |                | 1                |
| 180-44321-19  | HD-CW-9-0/1-0      | MCAWW 300.0 | 5/20/2015      | 5/21/2015     |                | 1                |
| 180-44321-2   | HD-COD-SW-7-0/1-0  | MCAWW 300.0 | 5/20/2015      | 5/22/2015     |                | 2                |
| 180-44321-20  | HD-CW-13-0/1-0     | MCAWW 300.0 | 5/20/2015      | 5/21/2015     |                | 1                |
| 180-44321-21  | HD-CW-15A-0/1-0    | MCAWW 300.0 | 5/20/2015      | 5/21/2015     |                | 1                |
| 180-44321-22  | HD-CW-17-0/1-0     | MCAWW 300.0 | 5/20/2015      | 5/21/2015     |                | 1                |
| 180-44321-23  | HD-CW-20-0/1-0     | MCAWW 300.0 | 5/20/2015      | 5/21/2015     |                | 1                |
| 180-44321-24  | HD-MW-95-0/1-0     | MCAWW 300.0 | 5/20/2015      | 5/21/2015     |                | 1                |
| 180-44321-25  | HD-MW-965-0/1-0    | MCAWW 300.0 | 5/20/2015      | 5/21/2015     |                | 1                |
| 180-44321-26  | HD-MW-96D-0/1-0    | MCAWW 300.0 | 5/20/2015      | 5/21/2015     |                | 1                |
| 180-44321-27  | HD-MW-97-0/1-0     | MCAWW 300.0 | 5/20/2015      | 5/22/2015     |                | 2                |
| 180-44321-28  | HD-CW-18-0/1-0     | MCAWW 300.0 | 5/20/2015      | 5/22/2015     |                | 2                |
| 180-44321-29  | HD-MW-50D-0/1-0    | MCAWW 300.0 | 5/20/2015      | 5/21/2015     |                | 1                |
| 180-44321-29  | HD-MW-50D-0/1-0    | MCAWW 300.0 | 5/20/2015      | 5/22/2015     |                | 2                |
| 180-44321-3   | HD-COD-SW-8-0/1-0  | MCAWW 300.0 | 5/20/2015      | 5/21/2015     |                | 1                |
| 180-44321-30  | HD-MW-51S-0/1-0    | MCAWW 300.0 | 5/20/2015      | 5/22/2015     |                | 2                |
| 180-44321-4   | HD-COD-SW-9-0/1-0  | MCAWW 300.0 | 5/20/2015      | 5/22/2015     |                | 2                |
| 180-44321-5   | HD-COD-SW-10-0/1-0 | MCAWW 300.0 | 5/20/2015      | 5/21/2015     |                | 1                |
| 180-44321-6   | HD-COD-SW-11-0/1-0 | MCAWW 300.0 | 5/20/2015      | 5/22/2015     |                | 2                |
| 180-44321-7   | HD-COD-SW-12-0/1-0 | MCAWW 300.0 | 5/20/2015      | 5/22/2015     |                | 2                |
| 180-44321-8   | HD-COD-SW-13-0/1-0 | MCAWW 300.0 | 5/20/2015      | 5/21/2015     |                | 1                |
| 180-44321-9   | HD-COD-SW-15-0/1-0 | MCAWW 300.0 | 5/20/2015      | 5/22/2015     |                | 2                |
| 180-44321-1   | HD-COD-SW-6-0/1-0  | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-10  | HD-COD-SW-16-0/1-0 | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-11  | HD-COD-SW-17-0/1-0 | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-12  | HD-COD-SW-20-0/1-0 | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-13  | HD-COD-SW-26-0/1-0 | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-14  | HD-COD-SW-27-0/1-0 | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-15  | HD-COD-SW-28-0/1-0 | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-16  | HD-COD-SW-29-0/1-0 | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-18  | HD-QC2-0/1-1       | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-19  | HD-CW-9-0/1-0      | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |



| Sample Number | Sample Name        | Method      | Date Collected | Analysis Date | Date Extracted | Days to Analysis |
|---------------|--------------------|-------------|----------------|---------------|----------------|------------------|
| 180-44321-2   | HD-COD-SW-7-0/1-0  | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-20  | HD-CW-13-0/1-0     | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-21  | HD-CW-15A-0/1-0    | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-22  | HD-CW-17-0/1-0     | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-23  | HD-CW-20-0/1-0     | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-24  | HD-MW-95-0/1-0     | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-25  | HD-MW-96S-0/1-0    | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-26  | HD-MW-96D-0/1-0    | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-27  | HD-MW-97-0/1-0     | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-28  | HD-CW-18-0/1-0     | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-29  | HD-MW-50D-0/1-0    | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-3   | HD-COD-SW-8-0/1-0  | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-30  | HD-MW-51S-0/1-0    | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-4   | HD-COD-SW-9-0/1-0  | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-5   | HD-COD-SW-10-0/1-0 | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-6   | HD-COD-SW-11-0/1-0 | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-7   | HD-COD-SW-12-0/1-0 | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-8   | HD-COD-SW-13-0/1-0 | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-9   | HD-COD-SW-15-0/1-0 | SM SM 2320B | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-1   | HD-COD-SW-6-0/1-0  | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-10  | HD-COD-SW-16-0/1-0 | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-11  | HD-COD-SW-17-0/1-0 | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-12  | HD-COD-SW-20-0/1-0 | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-13  | HD-COD-SW-26-0/1-0 | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-14  | HD-COD-SW-27-0/1-0 | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-15  | HD-COD-SW-28-0/1-0 | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-16  | HD-COD-SW-29-0/1-0 | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-18  | HD-QC2-0/1-1       | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-19  | HD-CW-9-0/1-0      | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-2   | HD-COD-SW-7-0/1-0  | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-20  | HD-CW-13-0/1-0     | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-21  | HD-CW-15A-0/1-0    | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-22  | HD-CW-17-0/1-0     | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-23  | HD-CW-20-0/1-0     | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-24  | HD-MW-95-0/1-0     | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-25  | HD-MW-96S-0/1-0    | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-26  | HD-MW-96D-0/1-0    | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-27  | HD-MW-97-0/1-0     | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-28  | HD-CW-18-0/1-0     | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-29  | HD-MW-50D-0/1-0    | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-3   | HD-COD-SW-8-0/1-0  | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-30  | HD-MW-51S-0/1-0    | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-4   | HD-COD-SW-9-0/1-0  | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |

| Sample Number | Sample Name        | Method      | Date Collected | Analysis Date | Date Extracted | Days to Analysis |
|---------------|--------------------|-------------|----------------|---------------|----------------|------------------|
| 180-44321-5   | HD-COD-SW-10-0/1-0 | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-6   | HD-COD-SW-11-0/1-0 | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-7   | HD-COD-SW-12-0/1-0 | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-8   | HD-COD-SW-13-0/1-0 | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-9   | HD-COD-SW-15-0/1-0 | SW846 6020A | 5/20/2015      | 6/2/2015      | 5/22/2015      | 13               |
| 180-44321-1   | HD-COD-SW-6-0/1-0  | SW846 8260C | 5/20/2015      | 5/29/2015     |                | 9                |
| 180-44321-10  | HD-COD-SW-16-0/1-0 | SW846 8260C | 5/20/2015      | 5/29/2015     |                | 9                |
| 180-44321-11  | HD-COD-SW-17-0/1-0 | SW846 8260C | 5/20/2015      | 5/29/2015     |                | 9                |
| 180-44321-12  | HD-COD-SW-20-0/1-0 | SW846 8260C | 5/20/2015      | 5/29/2015     |                | 9                |
| 180-44321-13  | HD-COD-SW-26-0/1-0 | SW846 8260C | 5/20/2015      | 5/31/2015     |                | 11               |
| 180-44321-14  | HD-COD-SW-27-0/1-0 | SW846 8260C | 5/20/2015      | 5/31/2015     |                | 11               |
| 180-44321-15  | HD-COD-SW-28-0/1-0 | SW846 8260C | 5/20/2015      | 5/31/2015     |                | 11               |
| 180-44321-16  | HD-COD-SW-29-0/1-0 | SW846 8260C | 5/20/2015      | 5/31/2015     |                | 11               |
| 180-44321-17  | HD-QC3-0/1-2       | SW846 8260C | 5/20/2015      | 5/31/2015     |                | 11               |
| 180-44321-18  | HD-QC2-0/1-1       | SW846 8260C | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-19  | HD-CW-9-0/1-0      | SW846 8260C | 5/20/2015      | 5/31/2015     |                | 11               |
| 180-44321-2   | HD-COD-SW-7-0/1-0  | SW846 8260C | 5/20/2015      | 5/31/2015     |                | 11               |
| 180-44321-20  | HD-CW-13-0/1-0     | SW846 8260C | 5/20/2015      | 5/31/2015     |                | 11               |
| 180-44321-21  | HD-CW-15A-0/1-0    | SW846 8260C | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-21  | HD-CW-15A-0/1-0    | SW846 8260C | 5/20/2015      | 6/2/2015      |                | 13               |
| 180-44321-22  | HD-CW-17-0/1-0     | SW846 8260C | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-23  | HD-CW-20-0/1-0     | SW846 8260C | 5/20/2015      | 5/31/2015     |                | 11               |
| 180-44321-23  | HD-CW-20-0/1-0     | SW846 8260C | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-24  | HD-MW-95-0/1-0     | SW846 8260C | 5/20/2015      | 5/31/2015     |                | 11               |
| 180-44321-25  | HD-MW-96S-0/1-0    | SW846 8260C | 5/20/2015      | 5/31/2015     |                | 11               |
| 180-44321-25  | HD-MW-96S-0/1-0    | SW846 8260C | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-26  | HD-MW-96D-0/1-0    | SW846 8260C | 5/20/2015      | 6/1/2015      |                | 12               |
| 180-44321-27  | HD-MW-97-0/1-0     | SW846 8260C | 5/20/2015      | 5/31/2015     |                | 11               |
| 180-44321-28  | HD-CW-18-0/1-0     | SW846 8260C | 5/20/2015      | 5/31/2015     |                | 11               |
| 180-44321-29  | HD-MW-50D-0/1-0    | SW846 8260C | 5/20/2015      | 5/31/2015     |                | 11               |
| 180-44321-3   | HD-COD-SW-8-0/1-0  | SW846 8260C | 5/20/2015      | 5/29/2015     |                | 9                |
| 180-44321-30  | HD-MW-51S-0/1-0    | SW846 8260C | 5/20/2015      | 5/31/2015     |                | 11               |
| 180-44321-31  | HD-QC4-0/1-2       | SW846 8260C | 5/20/2015      | 5/31/2015     |                | 11               |
| 180-44321-32  | HD-QC1-0/1-4       | SW846 8260C | 5/20/2015      | 5/31/2015     |                | 11               |
| 180-44321-33  | HD-QC1-0/1-3       | SW846 8260C | 5/20/2015      | 5/31/2015     |                | 11               |
| 180-44321-4   | HD-COD-SW-9-0/1-0  | SW846 8260C | 5/20/2015      | 5/29/2015     |                | 9                |
| 180-44321-5   | HD-COD-SW-10-0/1-0 | SW846 8260C | 5/20/2015      | 5/29/2015     |                | 9                |
| 180-44321-6   | HD-COD-SW-11-0/1-0 | SW846 8260C | 5/20/2015      | 5/29/2015     |                | 9                |
| 180-44321-7   | HD-COD-SW-12-0/1-0 | SW846 8260C | 5/20/2015      | 5/29/2015     |                | 9                |
| 180-44321-8   | HD-COD-SW-13-0/1-0 | SW846 8260C | 5/20/2015      | 5/31/2015     |                | 11               |
| 180-44321-9   | HD-COD-SW-15-0/1-0 | SW846 8260C | 5/20/2015      | 5/29/2015     |                | 9                |

# Blank Detections

SDG 180-44321-1

| Sample ID         | Sample            | Analyte            | Result | Method      | Units | Qual |
|-------------------|-------------------|--------------------|--------|-------------|-------|------|
| 180-44321-33      | HD-QC1-0/1-3      | 2-Butanone (MEK)   | 1.7    | SW846 8260C | ug/L  | J    |
| 180-44321-32      | HD-QC1-0/1-4      | 2-Butanone (MEK)   | 2.2    | SW846 8260C | ug/L  | J    |
| 180-44321-32      | HD-QC1-0/1-4      | Acetone            | 2.6    | SW846 8260C | ug/L  | J    |
| 180-44321-17      | HD-QC3-0/1-2      | Methylene Chloride | 1.0    | SW846 8260C | ug/L  | B    |
| MB 180-142539/1-A | MB 180-142539/1-A | Calcium            | 13.3   | SW846 6020A | ug/L  | J    |
| MB 180-142542/1-A | MB 180-142542/1-A | Calcium            | 13.9   | SW846 6020A | ug/L  | J    |
| MB 180-142542/1-A | MB 180-142542/1-A | Potassium          | 8.13   | SW846 6020A | ug/L  | J    |
| MB 180-143153/7   | MB 180-143153/7   | Methylene Chloride | 0.156  | SW846 8260C | ug/L  | J    |
| MB 180-143337/4   | MB 180-143337/4   | Methylene Chloride | 0.405  | SW846 8260C | ug/L  | J    |

Sample #3 and #4 are MSG and  
Field blanks. The detections are from  
the di water from E+S.

# Qualifier Check

SDG 180-44321-1

| Sample ID    | Sample             | Analyte  | Result | 5x   | 10x  | Method         | Units | Qual |
|--------------|--------------------|----------|--------|------|------|----------------|-------|------|
| 180-44321-5  | HD-COD-SW-10-0/1-0 | Chloride | 120    | 600  | 1200 | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-6  | HD-COD-SW-11-0/1-0 | Chloride | 75     | 375  | 750  | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-7  | HD-COD-SW-12-0/1-0 | Chloride | 120    | 600  | 1200 | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-8  | HD-COD-SW-13-0/1-0 | Chloride | 50     | 250  | 500  | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-9  | HD-COD-SW-15-0/1-0 | Chloride | 150    | 750  | 1500 | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-10 | HD-COD-SW-16-0/1-0 | Chloride | 55     | 275  | 550  | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-11 | HD-COD-SW-17-0/1-0 | Chloride | 130    | 650  | 1300 | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-12 | HD-COD-SW-20-0/1-0 | Chloride | 110    | 550  | 1100 | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-13 | HD-COD-SW-26-0/1-0 | Chloride | 230    | 1150 | 2300 | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-14 | HD-COD-SW-27-0/1-0 | Chloride | 81     | 405  | 810  | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-16 | HD-COD-SW-29-0/1-0 | Chloride | 52     | 260  | 520  | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-1  | HD-COD-SW-6-0/1-0  | Chloride | 95     | 475  | 950  | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-2  | HD-COD-SW-7-0/1-0  | Chloride | 65     | 325  | 650  | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-3  | HD-COD-SW-8-0/1-0  | Chloride | 53     | 265  | 530  | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-4  | HD-COD-SW-9-0/1-0  | Chloride | 93     | 465  | 930  | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-20 | HD-CW-13-0/1-0     | Chloride | 140    | 700  | 1400 | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-21 | HD-CW-15A-0/1-0    | Chloride | 170    | 850  | 1700 | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-22 | HD-CW-17-0/1-0     | Chloride | 100    | 500  | 1000 | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-28 | HD-CW-18-0/1-0     | Chloride | 240    | 1200 | 2400 | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-23 | HD-CW-20-0/1-0     | Chloride | 160    | 800  | 1600 | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-19 | HD-CW-9-0/1-0      | Chloride | 180    | 900  | 1800 | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-29 | HD-MW-50D-0/1-0    | Chloride | 99     | 495  | 990  | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-30 | HD-MW-51S-0/1-0    | Chloride | 160    | 800  | 1600 | MCAWW<br>300.0 | mg/L  | B    |

| Sample ID        | Sample             | Analyte      | Result | 5x    | 10x  | Method         | Units | Qual |
|------------------|--------------------|--------------|--------|-------|------|----------------|-------|------|
| 180-44321-24     | HD-MW-95-0/1-0     | Chloride     | 52     | 260   | 520  | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-26     | HD-MW-96D-0/1-0    | Chloride     | 120    | 600   | 1200 | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-25     | HD-MW-96S-0/1-0    | Chloride     | 140    | 700   | 1400 | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-27     | HD-MW-97-0/1-0     | Chloride     | 120    | 600   | 1200 | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-18     | HD-QC2-0/1-1       | Chloride     | 130    | 650   | 1300 | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-15     | HD-COD-SW-28-0/1-0 | Chloride     | 96     | 480   | 960  | MCAWW<br>300.0 | mg/L  | B F1 |
| MB 180-142454/35 | MB 180-142454/35   | Chloride     | 0.369  | 1.845 | 3.69 | MCAWW<br>300.0 | mg/L  | J    |
| MB 180-142454/6  | MB 180-142454/6    | Chloride     | 0.289  | 1.445 | 2.89 | MCAWW<br>300.0 | mg/L  | J    |
| 180-44321-5      | HD-COD-SW-10-0/1-0 | Nitrate as N | 2.3    | 11.5  | 23   | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-6      | HD-COD-SW-11-0/1-0 | Nitrate as N | 4.2    | 21    | 42   | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-7      | HD-COD-SW-12-0/1-0 | Nitrate as N | 2.9    | 14.5  | 29   | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-8      | HD-COD-SW-13-0/1-0 | Nitrate as N | 2.3    | 11.5  | 23   | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-9      | HD-COD-SW-15-0/1-0 | Nitrate as N | 3.8    | 19    | 38   | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-10     | HD-COD-SW-16-0/1-0 | Nitrate as N | 2.5    | 12.5  | 25   | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-11     | HD-COD-SW-17-0/1-0 | Nitrate as N | 3.3    | 16.5  | 33   | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-12     | HD-COD-SW-20-0/1-0 | Nitrate as N | 1.9    | 9.5   | 19   | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-13     | HD-COD-SW-26-0/1-0 | Nitrate as N | 3.7    | 18.5  | 37   | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-14     | HD-COD-SW-27-0/1-0 | Nitrate as N | 2.8    | 14    | 28   | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-15     | HD-COD-SW-28-0/1-0 | Nitrate as N | 3.4    | 17    | 34   | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-16     | HD-COD-SW-29-0/1-0 | Nitrate as N | 2.6    | 13    | 26   | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-1      | HD-COD-SW-6-0/1-0  | Nitrate as N | 1.7    | 8.5   | 17   | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-2      | HD-COD-SW-7-0/1-0  | Nitrate as N | 2.5    | 12.5  | 25   | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-3      | HD-COD-SW-8-0/1-0  | Nitrate as N | 2.6    | 13    | 26   | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-4      | HD-COD-SW-9-0/1-0  | Nitrate as N | 3.4    | 17    | 34   | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-20     | HD-CW-13-0/1-0     | Nitrate as N | 3.2    | 16    | 32   | MCAWW<br>300.0 | mg/L  | B    |

| Sample ID        | Sample             | Analyte                            | Result | 5x    | 10x   | Method         | Units | Qual |
|------------------|--------------------|------------------------------------|--------|-------|-------|----------------|-------|------|
| 180-44321-21     | HD-CW-15A-0/1-0    | Nitrate as N                       | 3.2    | 16    | 32    | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-22     | HD-CW-17-0/1-0     | Nitrate as N                       | 2.1    | 10.5  | 21    | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-23     | HD-CW-20-0/1-0     | Nitrate as N                       | 3.1    | 15.5  | 31    | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-19     | HD-CW-9-0/1-0      | Nitrate as N                       | 3.6    | 18    | 36    | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-30     | HD-MW-51S-0/1-0    | Nitrate as N                       | 2.8    | 14    | 28    | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-24     | HD-MW-95-0/1-0     | Nitrate as N                       | 0.84   | 4.2   | 8.4   | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-26     | HD-MW-96D-0/1-0    | Nitrate as N                       | 3.8    | 19    | 38    | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-25     | HD-MW-96S-0/1-0    | Nitrate as N                       | 3.6    | 18    | 36    | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-27     | HD-MW-97-0/1-0     | Nitrate as N                       | 1.8    | 9     | 18    | MCAWW<br>300.0 | mg/L  | B    |
| 180-44321-18     | HD-QC2-0/1-1       | Nitrate as N                       | 3.3    | 16.5  | 33    | MCAWW<br>300.0 | mg/L  | B    |
| MB 180-142454/35 | MB 180-142454/35   | Nitrate as N                       | 0.0188 | 0.094 | 0.188 | MCAWW<br>300.0 | mg/L  | J    |
| MB 180-142454/6  | MB 180-142454/6    | Nitrate as N                       | 0.0146 | 0.073 | 0.146 | MCAWW<br>300.0 | mg/L  | J    |
| 180-44321-28     | HD-CW-18-0/1-0     | Nitrate as N                       | 0.085  | 0.425 | 0.85  | MCAWW<br>300.0 | mg/L  | J B  |
| 180-44321-29     | HD-MW-50D-0/1-0    | Nitrate as N                       | 0.022  | 0.11  | 0.22  | MCAWW<br>300.0 | mg/L  | J B  |
| 180-44321-5      | HD-COD-SW-10-0/1-0 | Bicarbonate Alkalinity<br>as CaCO3 | 190    | 950   | 1900  | SM SM 2320B    | mg/L  | B    |
| 180-44321-6      | HD-COD-SW-11-0/1-0 | Bicarbonate Alkalinity<br>as CaCO3 | 190    | 950   | 1900  | SM SM 2320B    | mg/L  | B    |
| 180-44321-7      | HD-COD-SW-12-0/1-0 | Bicarbonate Alkalinity<br>as CaCO3 | 160    | 800   | 1600  | SM SM 2320B    | mg/L  | B    |
| 180-44321-8      | HD-COD-SW-13-0/1-0 | Bicarbonate Alkalinity<br>as CaCO3 | 83     | 415   | 830   | SM SM 2320B    | mg/L  | B    |
| 180-44321-9      | HD-COD-SW-15-0/1-0 | Bicarbonate Alkalinity<br>as CaCO3 | 190    | 950   | 1900  | SM SM 2320B    | mg/L  | B    |
| 180-44321-10     | HD-COD-SW-16-0/1-0 | Bicarbonate Alkalinity<br>as CaCO3 | 100    | 500   | 1000  | SM SM 2320B    | mg/L  | B    |
| 180-44321-11     | HD-COD-SW-17-0/1-0 | Bicarbonate Alkalinity<br>as CaCO3 | 230    | 1150  | 2300  | SM SM 2320B    | mg/L  | B    |
| 180-44321-12     | HD-COD-SW-20-0/1-0 | Bicarbonate Alkalinity<br>as CaCO3 | 140    | 700   | 1400  | SM SM 2320B    | mg/L  | B    |
| 180-44321-13     | HD-COD-SW-26-0/1-0 | Bicarbonate Alkalinity<br>as CaCO3 | 260    | 1300  | 2600  | SM SM 2320B    | mg/L  | B    |
| 180-44321-14     | HD-COD-SW-27-0/1-0 | Bicarbonate Alkalinity<br>as CaCO3 | 150    | 750   | 1500  | SM SM 2320B    | mg/L  | B    |
| 180-44321-15     | HD-COD-SW-28-0/1-0 | Bicarbonate Alkalinity<br>as CaCO3 | 160    | 800   | 1600  | SM SM 2320B    | mg/L  | B    |

| Sample ID       | Sample             | Analyte                             | Result | 5x   | 10x  | Method      | Units | Qual |
|-----------------|--------------------|-------------------------------------|--------|------|------|-------------|-------|------|
| 180-44321-16    | HD-COD-SW-29-0/1-0 | Bicarbonate Alkalinity as CaCO3     | 99     | 495  | 990  | SM SM 2320B | mg/L  | B    |
| 180-44321-1     | HD-COD-SW-6-0/1-0  | Bicarbonate Alkalinity as CaCO3     | 140    | 700  | 1400 | SM SM 2320B | mg/L  | B    |
| 180-44321-2     | HD-COD-SW-7-0/1-0  | Bicarbonate Alkalinity as CaCO3     | 100    | 500  | 1000 | SM SM 2320B | mg/L  | B    |
| 180-44321-3     | HD-COD-SW-8-0/1-0  | Bicarbonate Alkalinity as CaCO3     | 99     | 495  | 990  | SM SM 2320B | mg/L  | B    |
| 180-44321-4     | HD-COD-SW-9-0/1-0  | Bicarbonate Alkalinity as CaCO3     | 170    | 850  | 1700 | SM SM 2320B | mg/L  | B    |
| 180-44321-20    | HD-CW-13-0/1-0     | Bicarbonate Alkalinity as CaCO3     | 290    | 1450 | 2900 | SM SM 2320B | mg/L  | B    |
| 180-44321-21    | HD-CW-15A-0/1-0    | Bicarbonate Alkalinity as CaCO3     | 200    | 1000 | 2000 | SM SM 2320B | mg/L  | B    |
| 180-44321-22    | HD-CW-17-0/1-0     | Bicarbonate Alkalinity as CaCO3     | 230    | 1150 | 2300 | SM SM 2320B | mg/L  | B    |
| 180-44321-28    | HD-CW-18-0/1-0     | Bicarbonate Alkalinity as CaCO3     | 290    | 1450 | 2900 | SM SM 2320B | mg/L  | B    |
| 180-44321-23    | HD-CW-20-0/1-0     | Bicarbonate Alkalinity as CaCO3     | 230    | 1150 | 2300 | SM SM 2320B | mg/L  | B    |
| 180-44321-19    | HD-CW-9-0/1-0      | Bicarbonate Alkalinity as CaCO3     | 210    | 1050 | 2100 | SM SM 2320B | mg/L  | B    |
| 180-44321-29    | HD-MW-50D-0/1-0    | Bicarbonate Alkalinity as CaCO3     | 340    | 1700 | 3400 | SM SM 2320B | mg/L  | B    |
| 180-44321-30    | HD-MW-51S-0/1-0    | Bicarbonate Alkalinity as CaCO3     | 200    | 1000 | 2000 | SM SM 2320B | mg/L  | B    |
| 180-44321-24    | HD-MW-95-0/1-0     | Bicarbonate Alkalinity as CaCO3     | 260    | 1300 | 2600 | SM SM 2320B | mg/L  | B    |
| 180-44321-26    | HD-MW-96D-0/1-0    | Bicarbonate Alkalinity as CaCO3     | 270    | 1350 | 2700 | SM SM 2320B | mg/L  | B    |
| 180-44321-25    | HD-MW-96S-0/1-0    | Bicarbonate Alkalinity as CaCO3     | 310    | 1550 | 3100 | SM SM 2320B | mg/L  | B    |
| 180-44321-27    | HD-MW-97-0/1-0     | Bicarbonate Alkalinity as CaCO3     | 230    | 1150 | 2300 | SM SM 2320B | mg/L  | B    |
| 180-44321-18    | HD-QC2-0/1-1       | Bicarbonate Alkalinity as CaCO3     | 250    | 1250 | 2500 | SM SM 2320B | mg/L  | B    |
| MB 180-143418/2 | MB 180-143418/2    | Bicarbonate Alkalinity as CaCO3     | 1.98   | 9.9  | 19.8 | SM SM 2320B | mg/L  | J    |
| MB 180-143420/2 | MB 180-143420/2    | Bicarbonate Alkalinity as CaCO3     | 1.98   | 9.9  | 19.8 | SM SM 2320B | mg/L  | J    |
| 180-44321-5     | HD-COD-SW-10-0/1-0 | Total Alkalinity as CaCO3 to pH 4.5 | 190    | 950  | 1900 | SM SM 2320B | mg/L  | B    |
| 180-44321-6     | HD-COD-SW-11-0/1-0 | Total Alkalinity as CaCO3 to pH 4.5 | 190    | 950  | 1900 | SM SM 2320B | mg/L  | B    |
| 180-44321-7     | HD-COD-SW-12-0/1-0 | Total Alkalinity as CaCO3 to pH 4.5 | 160    | 800  | 1600 | SM SM 2320B | mg/L  | B    |
| 180-44321-8     | HD-COD-SW-13-0/1-0 | Total Alkalinity as CaCO3 to pH 4.5 | 83     | 415  | 830  | SM SM 2320B | mg/L  | B    |
| 180-44321-9     | HD-COD-SW-15-0/1-0 | Total Alkalinity as CaCO3 to pH 4.5 | 190    | 950  | 1900 | SM SM 2320B | mg/L  | B    |

| Sample ID       | Sample             | Analyte                             | Result | 5x   | 10x  | Method      | Units | Qual |
|-----------------|--------------------|-------------------------------------|--------|------|------|-------------|-------|------|
| 180-44321-10    | HD-COD-SW-16-0/1-0 | Total Alkalinity as CaCO3 to pH 4.5 | 100    | 500  | 1000 | SM SM 2320B | mg/L  | B    |
| 180-44321-11    | HD-COD-SW-17-0/1-0 | Total Alkalinity as CaCO3 to pH 4.5 | 230    | 1150 | 2300 | SM SM 2320B | mg/L  | B    |
| 180-44321-12    | HD-COD-SW-20-0/1-0 | Total Alkalinity as CaCO3 to pH 4.5 | 140    | 700  | 1400 | SM SM 2320B | mg/L  | B    |
| 180-44321-13    | HD-COD-SW-26-0/1-0 | Total Alkalinity as CaCO3 to pH 4.5 | 260    | 1300 | 2600 | SM SM 2320B | mg/L  | B    |
| 180-44321-14    | HD-COD-SW-27-0/1-0 | Total Alkalinity as CaCO3 to pH 4.5 | 150    | 750  | 1500 | SM SM 2320B | mg/L  | B    |
| 180-44321-15    | HD-COD-SW-28-0/1-0 | Total Alkalinity as CaCO3 to pH 4.5 | 160    | 800  | 1600 | SM SM 2320B | mg/L  | B    |
| 180-44321-16    | HD-COD-SW-29-0/1-0 | Total Alkalinity as CaCO3 to pH 4.5 | 99     | 495  | 990  | SM SM 2320B | mg/L  | B    |
| 180-44321-1     | HD-COD-SW-6-0/1-0  | Total Alkalinity as CaCO3 to pH 4.5 | 140    | 700  | 1400 | SM SM 2320B | mg/L  | B    |
| 180-44321-2     | HD-COD-SW-7-0/1-0  | Total Alkalinity as CaCO3 to pH 4.5 | 100    | 500  | 1000 | SM SM 2320B | mg/L  | B    |
| 180-44321-3     | HD-COD-SW-8-0/1-0  | Total Alkalinity as CaCO3 to pH 4.5 | 99     | 495  | 990  | SM SM 2320B | mg/L  | B    |
| 180-44321-4     | HD-COD-SW-9-0/1-0  | Total Alkalinity as CaCO3 to pH 4.5 | 170    | 850  | 1700 | SM SM 2320B | mg/L  | B    |
| 180-44321-20    | HD-CW-13-0/1-0     | Total Alkalinity as CaCO3 to pH 4.5 | 290    | 1450 | 2900 | SM SM 2320B | mg/L  | B    |
| 180-44321-21    | HD-CW-15A-0/1-0    | Total Alkalinity as CaCO3 to pH 4.5 | 200    | 1000 | 2000 | SM SM 2320B | mg/L  | B    |
| 180-44321-22    | HD-CW-17-0/1-0     | Total Alkalinity as CaCO3 to pH 4.5 | 230    | 1150 | 2300 | SM SM 2320B | mg/L  | B    |
| 180-44321-28    | HD-CW-18-0/1-0     | Total Alkalinity as CaCO3 to pH 4.5 | 290    | 1450 | 2900 | SM SM 2320B | mg/L  | B    |
| 180-44321-23    | HD-CW-20-0/1-0     | Total Alkalinity as CaCO3 to pH 4.5 | 230    | 1150 | 2300 | SM SM 2320B | mg/L  | B    |
| 180-44321-19    | HD-CW-9-0/1-0      | Total Alkalinity as CaCO3 to pH 4.5 | 210    | 1050 | 2100 | SM SM 2320B | mg/L  | B    |
| 180-44321-29    | HD-MW-50D-0/1-0    | Total Alkalinity as CaCO3 to pH 4.5 | 340    | 1700 | 3400 | SM SM 2320B | mg/L  | B    |
| 180-44321-30    | HD-MW-51S-0/1-0    | Total Alkalinity as CaCO3 to pH 4.5 | 200    | 1000 | 2000 | SM SM 2320B | mg/L  | B    |
| 180-44321-24    | HD-MW-95-0/1-0     | Total Alkalinity as CaCO3 to pH 4.5 | 260    | 1300 | 2600 | SM SM 2320B | mg/L  | B    |
| 180-44321-26    | HD-MW-96D-0/1-0    | Total Alkalinity as CaCO3 to pH 4.5 | 270    | 1350 | 2700 | SM SM 2320B | mg/L  | B    |
| 180-44321-25    | HD-MW-96S-0/1-0    | Total Alkalinity as CaCO3 to pH 4.5 | 310    | 1550 | 3100 | SM SM 2320B | mg/L  | B    |
| 180-44321-27    | HD-MW-97-0/1-0     | Total Alkalinity as CaCO3 to pH 4.5 | 230    | 1150 | 2300 | SM SM 2320B | mg/L  | B    |
| 180-44321-18    | HD-QC2-0/1-1       | Total Alkalinity as CaCO3 to pH 4.5 | 250    | 1250 | 2500 | SM SM 2320B | mg/L  | B    |
| MB 180-143418/2 | MB 180-143418/2    | Total Alkalinity as CaCO3 to pH 4.5 | 1.98   | 9.9  | 19.8 | SM SM 2320B | mg/L  | J    |



| Sample ID       | Sample             | Analyte                             | Result | 5x     | 10x     | Method      | Units | Qual |
|-----------------|--------------------|-------------------------------------|--------|--------|---------|-------------|-------|------|
| MB 180-143420/2 | MB 180-143420/2    | Total Alkalinity as CaCO3 to pH 4.5 | 1.98   | 9.9    | 19.8    | SM SM 2320B | mg/L  | J    |
| 180-44321-5     | HD-COD-SW-10-0/1-0 | Calcium                             | 83000  | 415000 | 830000  | SW846 6020A | ug/L  | B    |
| 180-44321-6     | HD-COD-SW-11-0/1-0 | Calcium                             | 69000  | 345000 | 690000  | SW846 6020A | ug/L  | B    |
| 180-44321-7     | HD-COD-SW-12-0/1-0 | Calcium                             | 65000  | 325000 | 650000  | SW846 6020A | ug/L  | B    |
| 180-44321-8     | HD-COD-SW-13-0/1-0 | Calcium                             | 35000  | 175000 | 350000  | SW846 6020A | ug/L  | B    |
| 180-44321-9     | HD-COD-SW-15-0/1-0 | Calcium                             | 87000  | 435000 | 870000  | SW846 6020A | ug/L  | B    |
| 180-44321-10    | HD-COD-SW-16-0/1-0 | Calcium                             | 38000  | 190000 | 380000  | SW846 6020A | ug/L  | B    |
| 180-44321-11    | HD-COD-SW-17-0/1-0 | Calcium                             | 89000  | 445000 | 890000  | SW846 6020A | ug/L  | B    |
| 180-44321-12    | HD-COD-SW-20-0/1-0 | Calcium                             | 51000  | 255000 | 510000  | SW846 6020A | ug/L  | B    |
| 180-44321-13    | HD-COD-SW-26-0/1-0 | Calcium                             | 110000 | 550000 | 1100000 | SW846 6020A | ug/L  | B    |
| 180-44321-14    | HD-COD-SW-27-0/1-0 | Calcium                             | 52000  | 260000 | 520000  | SW846 6020A | ug/L  | B    |
| 180-44321-15    | HD-COD-SW-28-0/1-0 | Calcium                             | 130000 | 650000 | 1300000 | SW846 6020A | ug/L  | B    |
| 180-44321-16    | HD-COD-SW-29-0/1-0 | Calcium                             | 34000  | 170000 | 340000  | SW846 6020A | ug/L  | B    |
| 180-44321-1     | HD-COD-SW-6-0/1-0  | Calcium                             | 48000  | 240000 | 480000  | SW846 6020A | ug/L  | B    |
| 180-44321-2     | HD-COD-SW-7-0/1-0  | Calcium                             | 39000  | 195000 | 390000  | SW846 6020A | ug/L  | B    |
| 180-44321-3     | HD-COD-SW-8-0/1-0  | Calcium                             | 34000  | 170000 | 340000  | SW846 6020A | ug/L  | B    |
| 180-44321-4     | HD-COD-SW-9-0/1-0  | Calcium                             | 54000  | 270000 | 540000  | SW846 6020A | ug/L  | B    |
| 180-44321-20    | HD-CW-13-0/1-0     | Calcium                             | 120000 | 600000 | 1200000 | SW846 6020A | ug/L  | B    |
| 180-44321-21    | HD-CW-15A-0/1-0    | Calcium                             | 140000 | 700000 | 1400000 | SW846 6020A | ug/L  | B    |
| 180-44321-22    | HD-CW-17-0/1-0     | Calcium                             | 100000 | 500000 | 1000000 | SW846 6020A | ug/L  | B    |
| 180-44321-28    | HD-CW-18-0/1-0     | Calcium                             | 95000  | 475000 | 950000  | SW846 6020A | ug/L  | B    |
| 180-44321-23    | HD-CW-20-0/1-0     | Calcium                             | 87000  | 435000 | 870000  | SW846 6020A | ug/L  | B    |
| 180-44321-19    | HD-CW-9-0/1-0      | Calcium                             | 86000  | 430000 | 860000  | SW846 6020A | ug/L  | B    |
| 180-44321-29    | HD-MW-50D-0/1-0    | Calcium                             | 150000 | 750000 | 1500000 | SW846 6020A | ug/L  | B    |
| 180-44321-30    | HD-MW-51S-0/1-0    | Calcium                             | 110000 | 550000 | 1100000 | SW846 6020A | ug/L  | B    |

| Sample ID         | Sample            | Analyte               | Result | 5x     | 10x     | Method      | Units | Qual |
|-------------------|-------------------|-----------------------|--------|--------|---------|-------------|-------|------|
| 180-44321-24      | HD-MW-95-0/1-0    | Calcium               | 96000  | 480000 | 960000  | SW846 6020A | ug/L  | B    |
| 180-44321-26      | HD-MW-96D-0/1-0   | Calcium               | 110000 | 550000 | 1100000 | SW846 6020A | ug/L  | B    |
| 180-44321-25      | HD-MW-96S-0/1-0   | Calcium               | 120000 | 600000 | 1200000 | SW846 6020A | ug/L  | B    |
| 180-44321-27      | HD-MW-97-0/1-0    | Calcium               | 88000  | 440000 | 880000  | SW846 6020A | ug/L  | B    |
| 180-44321-18      | HD-QC2-0/1-1      | Calcium               | 84000  | 420000 | 840000  | SW846 6020A | ug/L  | B    |
| MB 180-142539/1-A | MB 180-142539/1-A | Calcium               | 13.3   | 66.5   | 133     | SW846 6020A | ug/L  | J    |
| MB 180-142542/1-A | MB 180-142542/1-A | Calcium               | 13.9   | 69.5   | 139     | SW846 6020A | ug/L  | J    |
| 180-44321-22      | HD-CW-17-0/1-0    | Potassium             | 4900   | 24500  | 49000   | SW846 6020A | ug/L  | B    |
| 180-44321-28      | HD-CW-18-0/1-0    | Potassium             | 11000  | 55000  | 110000  | SW846 6020A | ug/L  | B    |
| 180-44321-23      | HD-CW-20-0/1-0    | Potassium             | 6000   | 30000  | 60000   | SW846 6020A | ug/L  | B    |
| 180-44321-29      | HD-MW-50D-0/1-0   | Potassium             | 2300   | 11500  | 23000   | SW846 6020A | ug/L  | B    |
| 180-44321-30      | HD-MW-51S-0/1-0   | Potassium             | 7700   | 38500  | 77000   | SW846 6020A | ug/L  | B    |
| 180-44321-24      | HD-MW-95-0/1-0    | Potassium             | 2700   | 13500  | 27000   | SW846 6020A | ug/L  | B    |
| 180-44321-26      | HD-MW-96D-0/1-0   | Potassium             | 4400   | 22000  | 44000   | SW846 6020A | ug/L  | B    |
| 180-44321-25      | HD-MW-96S-0/1-0   | Potassium             | 7000   | 35000  | 70000   | SW846 6020A | ug/L  | B    |
| 180-44321-27      | HD-MW-97-0/1-0    | Potassium             | 6400   | 32000  | 64000   | SW846 6020A | ug/L  | B    |
| MB 180-142542/1-A | MB 180-142542/1-A | Potassium             | 8.13   | 40.65  | 81.3    | SW846 6020A | ug/L  | J    |
| 180-44321-20      | HD-CW-13-0/1-0    | 1,1,1-Trichloroethane | 17     | 85     | 170     | SW846 8260C | ug/L  | J    |
| 180-44321-27      | HD-MW-97-0/1-0    | 1,1,1-Trichloroethane | 11     | 55     | 110     | SW846 8260C | ug/L  | J    |
| 180-44321-18      | HD-QC2-0/1-1      | 1,1,1-Trichloroethane |        |        |         | SW846 8260C | ug/L  | U F1 |
| 180-44321-20      | HD-CW-13-0/1-0    | 1,1-Dichloroethane    | 4.6    | 23     | 46      | SW846 8260C | ug/L  | J    |
| 180-44321-23      | HD-CW-20-0/1-0    | 1,1-Dichloroethane    | 9.9    | 49.5   | 99      | SW846 8260C | ug/L  | J    |
| 180-44321-19      | HD-CW-9-0/1-0     | 1,1-Dichloroethane    | 40     | 200    | 400     | SW846 8260C | ug/L  | J    |
| 180-44321-18      | HD-QC2-0/1-1      | 1,1-Dichloroethane    |        |        |         | SW846 8260C | ug/L  | U F1 |
| 180-44321-20      | HD-CW-13-0/1-0    | 1,1-Dichloroethene    | 10     | 50     | 100     | SW846 8260C | ug/L  | J    |
| 180-44321-22      | HD-CW-17-0/1-0    | 1,1-Dichloroethene    | 1.4    | 7      | 14      | SW846 8260C | ug/L  | J    |
| 180-44321-28      | HD-CW-18-0/1-0    | 1,1-Dichloroethene    | 0.80   | 4      | 8       | SW846 8260C | ug/L  | J    |
| 180-44321-19      | HD-CW-9-0/1-0     | 1,1-Dichloroethene    | 54     | 270    | 540     | SW846 8260C | ug/L  | J    |
| 180-44321-30      | HD-MW-51S-0/1-0   | 1,1-Dichloroethene    | 46     | 230    | 460     | SW846 8260C | ug/L  | J    |
| 180-44321-26      | HD-MW-96D-0/1-0   | 1,1-Dichloroethene    | 3.5    | 17.5   | 35      | SW846 8260C | ug/L  | J    |

| Sample ID       | Sample             | Analyte                 | Result | 5x    | 10x  | Method      | Units | Qual    |
|-----------------|--------------------|-------------------------|--------|-------|------|-------------|-------|---------|
| 180-44321-25    | HD-MW-96S-0/1-0    | 1,1-Dichloroethene      | 0.38   | 1.9   | 3.8  | SW846 8260C | ug/L  | J       |
| 180-44321-27    | HD-MW-97-0/1-0     | 1,1-Dichloroethene      | 8.6    | 43    | 86   | SW846 8260C | ug/L  | J       |
| 180-44321-18    | HD-QC2-0/1-1       | 1,1-Dichloroethene      |        |       |      | SW846 8260C | ug/L  | U F1    |
| 180-44321-1     | HD-COD-SW-6-0/1-0  | 1,1-Dichloroethene      |        |       |      | SW846 8260C | ug/L  | U F1 F2 |
| 180-44321-33    | HD-QC1-0/1-3       | 2-Butanone (MEK)        | 1.7    | 8.5   | 17   | SW846 8260C | ug/L  | J       |
| 180-44321-32    | HD-QC1-0/1-4       | 2-Butanone (MEK)        | 2.2    | 11    | 22   | SW846 8260C | ug/L  | J       |
| 180-44321-32    | HD-QC1-0/1-4       | Acetone                 | 2.6    | 13    | 26   | SW846 8260C | ug/L  | J       |
| 180-44321-18    | HD-QC2-0/1-1       | Acetone                 |        |       |      | SW846 8260C | ug/L  | U F1    |
| 180-44321-1     | HD-COD-SW-6-0/1-0  | Acetone                 |        |       |      | SW846 8260C | ug/L  | U F2    |
| 180-44321-18    | HD-QC2-0/1-1       | Carbon disulfide        |        |       |      | SW846 8260C | ug/L  | U F1    |
| 180-44321-1     | HD-COD-SW-6-0/1-0  | Carbon tetrachloride    |        |       |      | SW846 8260C | ug/L  | U F2    |
| 180-44321-14    | HD-COD-SW-27-0/1-0 | Chloroform              | 0.75   | 3.75  | 7.5  | SW846 8260C | ug/L  | J       |
| 180-44321-21    | HD-CW-15A-0/1-0    | Chloromethane           |        |       |      | SW846 8260C | ug/L  | U *     |
| 180-44321-22    | HD-CW-17-0/1-0     | Chloromethane           |        |       |      | SW846 8260C | ug/L  | U *     |
| 180-44321-23    | HD-CW-20-0/1-0     | Chloromethane           |        |       |      | SW846 8260C | ug/L  | U *     |
| 180-44321-26    | HD-MW-96D-0/1-0    | Chloromethane           |        |       |      | SW846 8260C | ug/L  | U *     |
| 180-44321-25    | HD-MW-96S-0/1-0    | Chloromethane           |        |       |      | SW846 8260C | ug/L  | U *     |
| 180-44321-18    | HD-QC2-0/1-1       | Chloromethane           |        |       |      | SW846 8260C | ug/L  | U *     |
| 180-44321-1     | HD-COD-SW-6-0/1-0  | Chloromethane           |        |       |      | SW846 8260C | ug/L  | U F2    |
| 180-44321-11    | HD-COD-SW-17-0/1-0 | cis-1,2-Dichloroethene  | 0.98   | 4.9   | 9.8  | SW846 8260C | ug/L  | J       |
| 180-44321-1     | HD-COD-SW-6-0/1-0  | cis-1,3-Dichloropropene |        |       |      | SW846 8260C | ug/L  | U F1    |
| 180-44321-5     | HD-COD-SW-10-0/1-0 | Methyl tert-butyl ether |        |       |      | SW846 8260C | ug/L  | U *     |
| 180-44321-6     | HD-COD-SW-11-0/1-0 | Methyl tert-butyl ether |        |       |      | SW846 8260C | ug/L  | U *     |
| 180-44321-7     | HD-COD-SW-12-0/1-0 | Methyl tert-butyl ether |        |       |      | SW846 8260C | ug/L  | U *     |
| 180-44321-9     | HD-COD-SW-15-0/1-0 | Methyl tert-butyl ether |        |       |      | SW846 8260C | ug/L  | U *     |
| 180-44321-10    | HD-COD-SW-16-0/1-0 | Methyl tert-butyl ether |        |       |      | SW846 8260C | ug/L  | U *     |
| 180-44321-11    | HD-COD-SW-17-0/1-0 | Methyl tert-butyl ether |        |       |      | SW846 8260C | ug/L  | U *     |
| 180-44321-12    | HD-COD-SW-20-0/1-0 | Methyl tert-butyl ether |        |       |      | SW846 8260C | ug/L  | U *     |
| 180-44321-3     | HD-COD-SW-8-0/1-0  | Methyl tert-butyl ether |        |       |      | SW846 8260C | ug/L  | U *     |
| 180-44321-4     | HD-COD-SW-9-0/1-0  | Methyl tert-butyl ether |        |       |      | SW846 8260C | ug/L  | U *     |
| 180-44321-1     | HD-COD-SW-6-0/1-0  | Methyl tert-butyl ether |        |       |      | SW846 8260C | ug/L  | U * F1  |
| 180-44321-18    | HD-QC2-0/1-1       | Methyl tert-butyl ether |        |       |      | SW846 8260C | ug/L  | U F1    |
| 180-44321-17    | HD-QC3-0/1-2       | Methylene Chloride      | 1.0    | 5     | 10   | SW846 8260C | ug/L  | B       |
| MB 180-143153/7 | MB 180-143153/7    | Methylene Chloride      | 0.156  | 0.78  | 1.56 | SW846 8260C | ug/L  | J       |
| MB 180-143337/4 | MB 180-143337/4    | Methylene Chloride      | 0.405  | 2.025 | 4.05 | SW846 8260C | ug/L  | J       |
| 180-44321-16    | HD-COD-SW-29-0/1-0 | Methylene Chloride      | 0.20   | 1     | 2    | SW846 8260C | ug/L  | J B     |
| 180-44321-1     | HD-COD-SW-6-0/1-0  | Methylene Chloride      | 0.32   | 1.6   | 3.2  | SW846 8260C | ug/L  | J B     |
| 180-44321-3     | HD-COD-SW-8-0/1-0  | Methylene Chloride      | 0.31   | 1.55  | 3.1  | SW846 8260C | ug/L  | J B     |
| 180-44321-4     | HD-COD-SW-9-0/1-0  | Methylene Chloride      | 0.26   | 1.3   | 2.6  | SW846 8260C | ug/L  | J B     |

| Sample ID    | Sample             | Analyte            | Result | 5x   | 10x  | Method      | Units | Qual    |
|--------------|--------------------|--------------------|--------|------|------|-------------|-------|---------|
| 180-44321-20 | HD-CW-13-0/1-0     | Methylene Chloride | 24     | 120  | 240  | SW846 8260C | ug/L  | J B     |
| 180-44321-23 | HD-CW-20-0/1-0     | Methylene Chloride | 48     | 240  | 480  | SW846 8260C | ug/L  | J B     |
| 180-44321-19 | HD-CW-9-0/1-0      | Methylene Chloride | 110    | 550  | 1100 | SW846 8260C | ug/L  | J B     |
| 180-44321-29 | HD-MW-50D-0/1-0    | Methylene Chloride | 110    | 550  | 1100 | SW846 8260C | ug/L  | J B     |
| 180-44321-30 | HD-MW-51S-0/1-0    | Methylene Chloride | 24     | 120  | 240  | SW846 8260C | ug/L  | J B     |
| 180-44321-24 | HD-MW-95-0/1-0     | Methylene Chloride | 0.58   | 2.9  | 5.8  | SW846 8260C | ug/L  | J B     |
| 180-44321-25 | HD-MW-96S-0/1-0    | Methylene Chloride | 4.6    | 23   | 46   | SW846 8260C | ug/L  | J B     |
| 180-44321-27 | HD-MW-97-0/1-0     | Methylene Chloride | 23     | 115  | 230  | SW846 8260C | ug/L  | J B     |
| 180-44321-16 | HD-COD-SW-29-0/1-0 | Tetrachloroethene  | 0.17   | 0.85 | 1.7  | SW846 8260C | ug/L  | J       |
| 180-44321-28 | HD-CW-18-0/1-0     | Tetrachloroethene  | 0.34   | 1.7  | 3.4  | SW846 8260C | ug/L  | J       |
| 180-44321-1  | HD-COD-SW-6-0/1-0  | Tetrachloroethene  |        |      |      | SW846 8260C | ug/L  | U F1    |
| 180-44321-23 | HD-CW-20-0/1-0     | Trichloroethene    | 290    | 1450 | 2900 | SW846 8260C | ug/L  | E       |
| 180-44321-24 | HD-MW-95-0/1-0     | Trichloroethene    | 2.8    | 14   | 28   | SW846 8260C | ug/L  | F1      |
| 180-44321-11 | HD-COD-SW-17-0/1-0 | Trichloroethene    | 0.94   | 4.7  | 9.4  | SW846 8260C | ug/L  | J       |
| 180-44321-16 | HD-COD-SW-29-0/1-0 | Trichloroethene    | 0.16   | 0.8  | 1.6  | SW846 8260C | ug/L  | J       |
| 180-44321-29 | HD-MW-50D-0/1-0    | Vinyl chloride     | 40     | 200  | 400  | SW846 8260C | ug/L  | J       |
| 180-44321-1  | HD-COD-SW-6-0/1-0  | Vinyl chloride     |        |      |      | SW846 8260C | ug/L  | U F1 F2 |

June 27, 2016

Steve Snyder  
Groundwater Sciences Corporation  
2601 Market Place Street, Suite 310  
Harrisburg, PA 17110

Dear Steve Snyder,

This letter is in reference to corrective action and data review performed for the Harley Davidson groundwater monitoring project for samples collected in 2014 and 2015.

You contacted TestAmerica in February 2016 regarding the results from a sampling event in May of 2015. In reviewing this data, we found an error in applying a dilution factor to the results and initiated corrected action. Root cause analysis revealed the analyst was not noting the sample dilution in the name of the sample when they set up the run and they were not noting that a sample was a reanalysis. Both of these are important so that the dilution is documented at the time it is performed (and the analyst doesn't have to remember the dilution they prepared to document it later) and so that the data reviewer can verify that multiple runs correlate with one another. We corrected the report in question and performed review of the rest of the samples submitted for the project.

Virginia Zusman, QA Manager, reviewed the remaining 189 reports (over 2100 analytical runs) that were analyzed during the requested time period. The first review was looking at samples with multiple runs to check for correlation between them. The second review was looking at those results within the historical range of results that we have for that sampling point. Comparing results in this manner is a somewhat subjective exercise. There are inherent biases from instrument to instrument, analyst to analyst and sample aliquot to sample aliquot and the laboratory is not always aware of field conditions that may be dynamic. Methods typically reference 20% as an allowable relative percent difference between replicates; a lot of industry standard project limits allow for 40% RPD. In some cases one analyte was in agreement between analyses but other analytes were not. Applying a dilution factor to any bias will magnify that bias by that dilution factor. This can explain some of the discrepancies but from these two reviews we identified three more dilution documentation errors and one case where there were missing analytes from the dilutions (analytes reported in one dilution but not the other).

We then performed an additional review concentrating on specific samples at your request. After this review, we found two more instances where the dilution factor was incorrectly documented; one of which we could not determine the dilution factor that was analyzed. In two more cases we provided data from dilutions that were analyzed but not originally reported.



A summary table of the revisions is listed below.

**Summary Table of Revisions**

| Lab ID       | Field ID         | Date sampled | Revision issued | Comments                                                                                                                                  |
|--------------|------------------|--------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 180-32564-6  | HD-CW-15A-0/1-0  | 5/7/2014     | 4/26/2016       | 20X dilution factor changed to 500X                                                                                                       |
| 180-44321-21 | HD-CW-15A-0/1-0  | 5/20/2015    | 2/23/2016       | 1X dilution factor changed to 250X                                                                                                        |
| 180-38183-3  | HD-MW-100S-0/1-0 | 10/28/2014   | 4/26/2016       | 1X dilution factor changed to 5X                                                                                                          |
| 180-42391-11 | HD-MW-37S-0/1-0  | 3/25/2015    | 3/9/2016        | 1X dilution factor changed to 40X                                                                                                         |
| 180-44401-5  | HD-MW-132-0/1-0  | 5/21/2015    | 4/26/2016       | DCA/DCE missing in dilutions                                                                                                              |
| 180-44321-19 | HD-CW-9-0/1-0    | 5/20/2015    | 6/15/2016       | 125X dilution factor changed to 12.5X                                                                                                     |
| 180-38183-9  | HD-MW-93D-0/1-0  | 10/28/2014   | 6/15/2016       | 2X was reported; 10X also analyzed. 10X results were reported additionally.                                                               |
| 180-42391-7  | HD-MW-100D-0/1-0 | 3/25/2015    | 6/15/2016       | 1X was reported; 5X also analyzed. 5X results were reported additionally.                                                                 |
| 180-42504-8  | HD-MW-51D-0/1-0  | 3/27/2015    |                 | Results do not fit in with historical results; could not definitively determine dilution factor. GSC indicated they would reject results. |

The corrective action report is attached for your reference.

We apologize for these errors and are confident that the common root cause has been corrected. Future analyses will also be compared to historical context so that we can alert you to any discrepancies.

Please let me know if you have any questions or additional concerns.

Sincerely,  
Deborah L. Lowe



Laboratory Director  
TestAmerica - Pittsburgh

**iCAT #1651 – VOA dilution reporting error**

**Created 3/1/16**

**Incident Reported 2/29/16**

**iCAT closed 3/18/16**

**Incident description**

Sample 180-44321-21 was originally analyzed at a x250 dilution. Recovery of 1 surrogate was below control limits, so the sample was reanalyzed. For the reanalysis, the analyst forgot to enter the x250 dilution factor in the worklist, therefore, when it was reported, the results were reported as undiluted. The discrepancy in the results was not caught when the reanalysis data was reviewed or during review of the report.

**Investigation**

Analyst noted that initial analysis was analyzed at a x250 dilution and resulted with surrogates out. Analyst then re-analyzed the sample to confirm matrix but did not enter into the work list that it was a x250 dilution. After placing the 250x dilution factor to re-analysis, the concentrations confirmed Analyst checked to see why there was an issue. The rerun was not designated with a RS (for reanalysis), therefore the 2nd level data reviewer did not know to look for an initial analysis to compare the results to. Final report completeness reviews are done by PM's, however they do not check that sample results are comparable. If the lab indicates that a dilution or reanalysis was needed, the PM checks to make sure that the dilution or reanalysis data is present, but they do not review the data to compare results. The way that the results appear in the final data package (all samples in numerical order and THEN any dilutions or re-analyses) makes it difficult to compare results for the same sample.

**Corrective Action**

Re-issued report to the client correcting the dilution factor and describing this incident. Analyst will add the dilution factor and/or RA, as appropriate, to the sample name on the chrome worklist so that it will appear on the raw data in the header information. If the TALS batch dilution does not match the dilution in the header, this will be immediately obvious to the data reviewer. Data review will include generating a prelim report for that sections data to check final results as they will appear in the report and make sure that all needed data is present and comparable.