# CHAAP Data Verification

**Laboratory and SDG#: TADenver 280-124912** **AECOM Chemist: Jared DeSadier**
**Date Verified: 8/1/2019** **AECOM ITR: Jeff Aust**
**Guidance: DoD QSM Version 5.1 (January 2017)**
**Applicable QAPP: Cornhusker Army Ammunition Plant QAPP (Brice and AECOM, October 2018)**
**Applicable Analytical Methods: 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034**

| Sample Identification # | Date Collected | Date Received | Matrix | Analysis |
|---|---|---|---|---|
| PZ005-19A | 6/5/2019 | 6/6/2019 | Water | Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), MEE (RSK-175), DOC (9060A), Sulfate (9056A) Sulfide (9034), Alkalinity (2320B) |
| G0103-19A | 6/5/2019 | 6/6/2019 | Water | Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), MEE (RSK-175), DOC (9060A), Sulfate (9056A) Sulfide (9034), Alkalinity (2320B) |
| G0104-19A | 6/5/2019 | 6/6/2019 | Water | Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), MEE (RSK-175), DOC (9060A), Sulfate (9056A) Sulfide (9034), Alkalinity (2320B) |
| G0102-19A | 6/5/2019 | 6/6/2019 | Water | Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), MEE (RSK-175), DOC (9060A), Sulfate (9056A) Sulfide (9034), Alkalinity (2320B) |
| PZ001-19A | 6/5/2019 | 6/6/2019 | Water | Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), MEE (RSK-175), DOC (9060A), Sulfate (9056A) Sulfide (9034), Alkalinity (2320B) |
| PZ004-19A | 6/5/2019 | 6/6/2019 | Water | Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), MEE (RSK-175), DOC (9060A), Sulfate (9056A) Sulfide (9034), Alkalinity (2320B) |
| G0044-19A | 6/5/2019 | 6/6/2019 | Water | Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), MEE (RSK-175), DOC (9060A), Sulfate (9056A) Sulfide (9034), Alkalinity (2320B) |
| PZ015-19A | 6/5/2019 | 6/6/2019 | Water | Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), MEE (RSK-175), DOC (9060A), Sulfate (9056A) Sulfide (9034), Alkalinity (2320B) |
| G0049-19A | 6/5/2019 | 6/6/2019 | Water | Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), MEE (RSK-175), DOC (9060A), Sulfate (9056A) Sulfide (9034), Alkalinity (2320B) |
| G0048-19A | 6/5/2019 | 6/6/2019 | Water | Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), MEE (RSK-175), DOC (9060A), Sulfate (9056A) Sulfide (9034), Alkalinity (2320B) |
| G0023-19A | 6/5/2019 | 6/6/2019 | Water | Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), MEE (RSK-175), DOC (9060A), Sulfate (9056A) Sulfide (9034), Alkalinity (2320B) |
| PZ007-19A | 6/5/2019 | 6/6/2019 | Water | Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), MEE (RSK-175), DOC (9060A), Sulfate (9056A) Sulfide (9034), Alkalinity (2320B) |

## 1.0 Laboratory Case Narrative \ Cooler Receipt Form

| Verification Criteria | Yes | No | N/A |
|---|---|---|---|
| Were any DoD QSM deviations noted in the laboratory case narrative? | X | | |
| Were DoD QSM corrective actions followed if deviations were noted? | X | | |
| Were any issues noted in the cooler receipt form? | | X | |

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The laboratory case narrative indicated that some surrogate, MS/MSD, and LCS/LCSD recoveries were outside evaluation criteria These issues are discussed further in the ADR report.

DOC and sulfate were detected in some blank samples. This issue is discussed further in Section 6.0. RPD between the primary and confirmation column for some explosives samples was above evaluation criteria. This issue is discussed further in Section 10.0. An explosives CCV %D was outside of evaluation criteria. This issue is discussed further in Section 5.0.

No other issues were noted in the case narrative or cooler receipt form.

## 2.0 Sample Documentation

| Verification Criteria | Yes | No |
|---|---|---|
| Were all samples documented correctly on the chain-of-custody (COC) and samples labels? | X | |
| Were all sample identifications (IDs) documented correctly on sample labels? | X | |
| Did samples listed on COCs match the sample labels? | X | |
| Were samples relinquished properly on the COC? | X | |

## 3.0 Initial Calibration

| **Method 8330A Initial Calibration Criteria** | | | |
|---|---|---|---|
| **Instrument:** | **CHHPL_G2_LUNA** | | |
| **Date of Calibration:** | **5/7/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was at least a five point calibration completed for all analytes prior to sample analysis and one option below? | X | | |
| Option 1: RSD for each analyte ≤ 20%? | X | | |
| Option 2: If linear least squares regression was used was the $r^2 \geq 0.99$? | | | X |
| Option 3: If non-linear regression was used was the coefficient of determination $r^2 \geq 0.99$? | | | X |
| If non-linear regression was used were 6 points used for second order and 7 points for third order? | | | X |

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| **Method 8330A Initial Calibration Criteria** | | | |
|---|---|---|---|
| **Instrument:** | **CHHPLC_X3** | | |
| **Date of Calibration:** | **5/14/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was at least a five point calibration completed for all analytes prior to sample analysis and one option below? | X | | |
| Option 1: RSD for each analyte ≤ 20%? | X | | |
| Option 2: If linear least squares regression was used was the $r^2 \geq 0.99$? | | | X |
| Option 3: If non-linear regression was used was the coefficient of determination $r^2 \geq 0.99$? | | | X |
| If non-linear regression was used were 6 points used for second order and 7 points for third order? | | | X |

| **Method 8330A Initial Calibration Criteria** | | | |
|---|---|---|---|
| **Instrument:** | **CHHPLC_X3** | | |
| **Date of Calibration:** | **7/1/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was at least a five point calibration completed for all analytes prior to sample analysis and one option below? | X | | |
| Option 1: RSD for each analyte ≤ 20%? | X | | |
| Option 2: If linear least squares regression was used was the $r^2 \geq 0.99$? | | | X |
| Option 3: If non-linear regression was used was the coefficient of determination $r^2 \geq 0.99$? | | | X |
| If non-linear regression was used were 6 points used for second order and 7 points for third order? | | | X |

| **Method RSK-175 Initial Calibration Criteria** | | | |
|---|---|---|---|
| **Instrument:** | **VGC_J** | | |
| **Date of Calibration:** | **04/15/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was at least a five point calibration completed for all analytes prior to sample analysis and one option below? | X | | |
| Option 1: RSD for each analyte ≤ 25%? | X | | |
| Option 2: If linear least squares regression was used was the $r^2 \geq 0.99$? | X | | |
| Option 3: If non-linear regression was used was the coefficient of determination $r^2 \geq 0.99$? | | | X |
| If non-linear regression was used were 6 points used for second order and 7 points for third order? | | | X |

| **Method 9056A Initial Calibration Criteria** | | | |
|---|---|---|---|
| **Instrument:** | **WC_IonChrom11** | | |
| **Date of Calibration:** | **6/26/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was a minimum of three standards and a calibration blank used for ICAL? | X | | |
| Was $r^2 \geq 0.99$? | X | | |

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**Applicable QAPP: Cornhusker Army Ammunition Plant QAPP (Brice and AECOM, October 2018)**
**Applicable Analytical Methods: 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034**

| **Method 350.1 Initial Calibration Criteria** | | | |
|---|---|---|---|
| **Instrument:** | **WC_Alp 3** | | |
| **Date of Calibration:** | **6/17/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was a minimum of three standards and a calibration blank used for ICAL? | X | | |
| Was $r^2 \geq 0.99$? | X | | |

| **Method 350.1 Initial Calibration Criteria** | | | |
|---|---|---|---|
| **Instrument:** | **WC_Alp 3** | | |
| **Date of Calibration:** | **6/20/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was a minimum of three standards and a calibration blank used for ICAL? | X | | |
| Was $r^2 \geq 0.99$? | X | | |

| **Method 353.2 Initial Calibration Criteria** | | | |
|---|---|---|---|
| **Instrument:** | **WC_Alp 2** | | |
| **Date of Calibration:** | **6/26/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was a minimum of three standards and a calibration blank used for ICAL? | X | | |
| Was $r^2 \geq 0.99$? | X | | |

| **Method 351.2 Initial Calibration Criteria** | | | |
|---|---|---|---|
| **Instrument:** | **WC_Astoria** | | |
| **Date of Calibration:** | **6/25/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was a minimum of three standards and a calibration blank used for ICAL? | X | | |
| Was $r^2 \geq 0.99$? | X | | |

| **Method 9060A Initial Calibration Criteria** | | | |
|---|---|---|---|
| **Instrument:** | **WC_SHI3** | | |
| **Date of Calibration:** | **7/1/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was a minimum of three standards and a calibration blank used for ICAL? | X | | |
| Was $r^2 \geq 0.99$? | X | | |

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**Applicable QAPP: Cornhusker Army Ammunition Plant QAPP (Brice and AECOM, October 2018)**
**Applicable Analytical Methods: 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034**

## 4.0 Initial Calibration Verification [(ICV) Second Source]

| Method 8330A ICV Criteria (Filename) | 05070015.D | | |
|---|---|---|---|
| Instrument: | CHHLPC_G2_LUNA | | |
| Date of Initial Calibration Verification: | 5/7/2019 | | |
| | Yes | No | N/A |
| Was the ICV analyzed after each calibration? | X | | |
| Was the ICV for all analytes within ± 15% of the true value? | X | | |

| Method 8330A ICV Criteria (Filename) | 05080007.D | | |
|---|---|---|---|
| Instrument: | CHHLPC_G2_LUNA | | |
| Date of Initial Calibration Verification: | 5/8/2019 | | |
| | Yes | No | N/A |
| Was the ICV analyzed after each calibration? | X | | |
| Was the ICV for all analytes within ± 15% of the true value? | X | | |

| Method 8330A ICV Criteria (Filename) | 0514B015.D | | |
|---|---|---|---|
| Instrument: | CHHPLC_X3 | | |
| Date of Initial Calibration Verification: | 5/14/2019 | | |
| | Yes | No | N/A |
| Was the ICV analyzed after each calibration? | X | | |
| Was the ICV for all analytes within ± 15% of the true value? | X | | |

| Method 8330A ICV Criteria (Filename) | 0514B033.D | | |
|---|---|---|---|
| Instrument: | CHHPLC_X3 | | |
| Date of Initial Calibration Verification: | 5/15/2019 | | |
| | Yes | No | N/A |
| Was the ICV analyzed after each calibration? | X | | |
| Was the ICV for all analytes within ± 15% of the true value? | X | | |

| Method 8330A ICV Criteria (Filename) | 07010015.D | | |
|---|---|---|---|
| Instrument: | CHHPLC_X3 | | |
| Date of Initial Calibration Verification: | 7/1/2019 | | |
| | Yes | No | N/A |
| Was the ICV analyzed after each calibration? | X | | |
| Was the ICV for all analytes within ± 15% of the true value? | X | | |

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**Applicable QAPP: Cornhusker Army Ammunition Plant QAPP (Brice and AECOM, October 2018)**
**Applicable Analytical Methods: 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034**

| **Method 8330A ICV Criteria (Filename)** | **0701033.D** | | |
|---|---|---|---|
| **Instrument:** | **CHHPLC_X3** | | |
| **Date of Initial Calibration Verification:** | **6/21/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the ICV analyzed after each calibration? | X | | |
| Was the ICV for all analytes within ± 15% of the true value? | X | | |

| **Method RSK-175 ICV Criteria (Filename)** | **04151911.D** | | |
|---|---|---|---|
| **Instrument:** | **VGC_J** | | |
| **Date of Initial Calibration Verification:** | **4/15/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the ICV analyzed after each calibration? | X | | |
| Was the ICV for all analytes within ± 25% of the true value? | X | | |

| **Method 9056A ICV** | **WC_IonChrom11** | | |
|---|---|---|---|
| **Date of Initial Calibration Verification:** | **6/26/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the ICV analyzed after each ICAL, prior to the beginning of a sample analysis? | X | | |
| Was the ICV for all analytes within ± 10% of the true value? | X | | |

| **Method 350.1 ICV Criteria** | **11:32** | | |
|---|---|---|---|
| **Instrument:** | **WC_Alp 3** | | |
| **Date of Initial Calibration Verification:** | **6/17/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the ICV analyzed after each ICAL, prior to the beginning of a sample analysis? | X | | |
| Was the ICV for all analytes within ± 10% of the true value? | X | | |

| **Method 350.1 ICV Criteria** | **11:59** | | |
|---|---|---|---|
| **Instrument:** | **WC_Alp 3** | | |
| **Date of Initial Calibration Verification:** | **6/20/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the ICV analyzed after each ICAL, prior to the beginning of a sample analysis? | X | | |
| Was the ICV for all analytes within ± 10% of the true value? | X | | |

| **Method 353.2 ICV Criteria (Filename)** | **WC_Alp 2** | | |
|---|---|---|---|
| **Date of Initial Calibration Verification:** | **6/26/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the ICV analyzed after each ICAL, prior to the beginning of a sample analysis? | X | | |
| Was the ICV for all analytes within ± 10% of the true value? | X | | |

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| Method 351.2 ICV Criteria (Filename) | 19:01 | | |
|---|---|---|---|
| Instrument: | WC_Astoria | | |
| Date of Initial Calibration Verification: | 6/25/2019 | | |
| | Yes | No | N/A |
| Was the ICV analyzed after each ICAL, prior to the beginning of a sample analysis? | X | | |
| Was the ICV for all analytes within ± 10% of the true value? | X | | |

| Method 9060A ICV Criteria (Filename) | 14:01 | | |
|---|---|---|---|
| Instrument: | WC_SHI3 | | |
| Date of Initial Calibration Verification: | 7/1/2019 | | |
| | Yes | No | N/A |
| Was the ICV analyzed after each ICAL, prior to the beginning of a sample analysis? | X | | |
| Was the ICV for all analytes within ± 10% of the true value? | X | | |

## 5.0 Continuing Calibration Verification (CCV)

| Method 8330A CCV Criteria (Filename) | 06140040_1.D | | |
|---|---|---|---|
| Instrument: | CHHPLC_G2_LUNA | | |
| Date of Calibration Verification: | 6/14/2019 | | |
| | Yes | No | N/A |
| Was the CCV analyzed daily before sample analysis? | X | | |
| Was the CCV analyzed every 10 field samples and at the end of the analysis sequence? | X | | |
| Was the CCV for all analytes within ± 15% of the true value? | | X | |

The %D for RDX (60.5) was outside evaluation criteria. The RFs indicated a high bias. Qualification of data is shown in the table below.

| Sample ID | Parameter | Analyte | Qual |
|---|---|---|---|
| G0044-19A | Explosives | RDX | **J** |
| PZ015-19A | Explosives | RDX | **J** |

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| **Method 8330A CCV Criteria (Filename)** | **06140049_50.D** | | |
|---|---|---|---|
| **Instrument:** | **CHHPLC_G2_LUNA** | | |
| **Date of Calibration Verification:** | **6/15/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the CCV analyzed daily before sample analysis? | X | | |
| Was the CCV analyzed every 10 field samples and at the end of the analysis sequence? | X | | |
| Was the CCV for all analytes within ± 15% of the true value? | X | | |

| **Method 8330A CCV Criteria (Filename)** | **06170025_6.D** | | |
|---|---|---|---|
| **Instrument:** | **CHHPLC_G2_LUNA** | | |
| **Date of Calibration Verification:** | **6/18/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the CCV analyzed daily before sample analysis? | X | | |
| Was the CCV analyzed every 10 field samples and at the end of the analysis sequence? | X | | |
| Was the CCV for all analytes within ± 15% of the true value? | X | | |

| **Method 8330A CCV Criteria (Filename)** | **06170038_007-3801.D** | | |
|---|---|---|---|
| **Instrument:** | **CHHPLC_G2_LUNA** | | |
| **Date of Calibration Verification:** | **6/18/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the CCV analyzed daily before sample analysis? | X | | |
| Was the CCV analyzed every 10 field samples and at the end of the analysis sequence? | X | | |
| Was the CCV for all analytes within ± 15% of the true value? | X | | |

| **Method 8330A CCV Criteria (Filename)** | **06130036_8.D** | | |
|---|---|---|---|
| **Instrument:** | **CHHPLC_X3** | | |
| **Date of Calibration Verification:** | **6/13/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the CCV analyzed daily before sample analysis? | X | | |
| Was the CCV analyzed every 10 field samples and at the end of the analysis sequence? | X | | |
| Was the CCV for all analytes within ± 15% of the true value? | X | | |

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| **Method 8330A CCV Criteria (Filename)** | **06130049_51.D** | | |
|---|---|---|---|
| **Instrument:** | **CHHPLC_X3** | | |
| **Date of Calibration Verification:** | **6/14/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the CCV analyzed daily before sample analysis? | X | | |
| Was the CCV analyzed every 10 field samples and at the end of the analysis sequence? | X | | |
| Was the CCV for all analytes within ± 15% of the true value? | X | | |

| **Method 8330A CCV Criteria (Filename)** | **06130062_4.D** | | |
|---|---|---|---|
| **Instrument:** | **CHHPLC_X3** | | |
| **Date of Calibration Verification:** | **6/14/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the CCV analyzed daily before sample analysis? | X | | |
| Was the CCV analyzed every 10 field samples and at the end of the analysis sequence? | X | | |
| Was the CCV for all analytes within ± 15% of the true value? | X | | |

| **Method 8330A CCV Criteria (Filename)** | **007-7101_038-7301.D** | | |
|---|---|---|---|
| **Instrument:** | **CHHPLC_X3** | | |
| **Date of Calibration Verification:** | **6/14/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the CCV analyzed daily before sample analysis? | X | | |
| Was the CCV analyzed every 10 field samples and at the end of the analysis sequence? | X | | |
| Was the CCV for all analytes within ± 15% of the true value? | X | | |

| **Method 8330A CCV Criteria (Filename)** | **06140066_8.D** | | |
|---|---|---|---|
| **Instrument:** | **CHHPLC_X3** | | |
| **Date of Calibration Verification:** | **6/15/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the CCV analyzed daily before sample analysis? | X | | |
| Was the CCV analyzed every 10 field samples and at the end of the analysis sequence? | X | | |
| Was the CCV for all analytes within ± 15% of the true value? | X | | |

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| **Method 8330A CCV Criteria (Filename)** | **06140079_81.D** | | |
|---|---|---|---|
| **Instrument:** | **CHHPLC_X3** | | |
| **Date of Calibration Verification:** | **6/15/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the CCV analyzed daily before sample analysis? | X | | |
| Was the CCV analyzed every 10 field samples and at the end of the analysis sequence? | X | | |
| Was the CCV for all analytes within ± 15% of the true value? | X | | |

| **Method 8330A CCV Criteria (Filename)** | **07110042_4.D** | | |
|---|---|---|---|
| **Instrument:** | **CHHPLC_X3** | | |
| **Date of Calibration Verification:** | **7/11/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the CCV analyzed daily before sample analysis? | X | | |
| Was the CCV analyzed every 10 field samples and at the end of the analysis sequence? | X | | |
| Was the CCV for all analytes within ± 15% of the true value? | X | | |

| **Method 8330A CCV Criteria (Filename)** | **07110055_7.D** | | |
|---|---|---|---|
| **Instrument:** | **CHHPLC_X3** | | |
| **Date of Calibration Verification:** | **7/12/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the CCV analyzed daily before sample analysis? | X | | |
| Was the CCV analyzed every 10 field samples and at the end of the analysis sequence? | X | | |
| Was the CCV for all analytes within ± 15% of the true value? | X | | |

| **Method 8330A CCV Criteria (Filename)** | **07110068_70.D** | | |
|---|---|---|---|
| **Instrument:** | **CHHPLC_X3** | | |
| **Date of Calibration Verification:** | **7/12/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the CCV analyzed daily before sample analysis? | X | | |
| Was the CCV analyzed every 10 field samples and at the end of the analysis sequence? | X | | |
| Was the CCV for all analytes within ± 15% of the true value? | X | | |

# CHAAP Data Verification

**Laboratory and SDG#: TADenver 280-124912** **AECOM Chemist: Jared DeSadier**
**Date Verified: 8/1/2019** **AECOM ITR: Jeff Aust**
**Guidance: DoD QSM Version 5.1 (January 2017)**
**Applicable QAPP: Cornhusker Army Ammunition Plant QAPP (Brice and AECOM, October 2018)**
**Applicable Analytical Methods: 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034**

| **Method 8330A CCV Criteria (Filename)** | **07150007_9.D** | | |
|---|---|---|---|
| **Instrument:** | **CHHPLC_X3** | | |
| **Date of Calibration Verification:** | **7/15/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the CCV analyzed daily before sample analysis? | X | | |
| Was the CCV analyzed every 10 field samples and at the end of the analysis sequence? | X | | |
| Was the CCV for all analytes within ± 15% of the true value? | X | | |

| **Method 8330A CCV Criteria (Filename)** | **07150020_22.D** | | |
|---|---|---|---|
| **Instrument:** | **CHHPLC_X3** | | |
| **Date of Calibration Verification:** | **7/15/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the CCV analyzed daily before sample analysis? | X | | |
| Was the CCV analyzed every 10 field samples and at the end of the analysis sequence? | X | | |
| Was the CCV for all analytes within ± 15% of the true value? | X | | |

| **Method RSK-175 CCV Criteria (Filename)** | **06111928.D** | | |
|---|---|---|---|
| **Instrument:** | **VGC_J** | | |
| **Date of Calibration Verification:** | **6/11/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the CCV analyzed daily before sample analysis? | X | | |
| Was the CCV analyzed every 10 field samples and at the end of the analysis sequence? | X | | |
| Was the CCV %D or %drift for all target compounds ≤ 20%? | X | | |

| **Method RSK-175 CCV Criteria (Filename)** | **06111947.D** | | |
|---|---|---|---|
| **Instrument:** | **VGC_J** | | |
| **Date of Calibration Verification:** | **6/11/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the CCV analyzed daily before sample analysis? | X | | |
| Was the CCV analyzed every 10 field samples and at the end of the analysis sequence? | X | | |
| Was the CCV for all analytes within ± 25% of the true value? | X | | |

# CHAAP Data Verification

**Laboratory and SDG#: TADenver 280-124912** **AECOM Chemist: Jared DeSadier**
**Date Verified: 8/1/2019** **AECOM ITR: Jeff Aust**
**Guidance: DoD QSM Version 5.1 (January 2017)**
**Applicable QAPP: Cornhusker Army Ammunition Plant QAPP (Brice and AECOM, October 2018)**
**Applicable Analytical Methods: 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034**

| **Method RSK-175 CCV Criteria (Filename)** | **06111961.D** | | |
|---|---|---|---|
| **Instrument:** | **VGC_J** | | |
| **Date of Calibration Verification:** | **6/11/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the CCV analyzed daily before sample analysis? | X | | |
| Was the CCV analyzed every 10 field samples and at the end of the analysis sequence? | X | | |
| Was the CCV for all analytes within ± 25% of the true value? | X | | |

| **Method RSK-175 CCVRT Criteria (Filename)** | **06121901.D** | | |
|---|---|---|---|
| **Instrument:** | **VGC_J** | | |
| **Date of Calibration Verification:** | **6/12/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the CCV analyzed daily before sample analysis? | X | | |
| Was the CCV analyzed every 10 field samples and at the end of the analysis sequence? | X | | |
| Was the CCV for all analytes within ± 25% of the true value? | X | | |

| **Method RSK-175 CCV Criteria (Filename)** | **06121916.D** | | |
|---|---|---|---|
| **Instrument:** | **VGC_J** | | |
| **Date of Calibration Verification:** | **6/12/2019** | | |
| | **Yes** | **No** | **N/A** |
| Was the CCV analyzed daily before sample analysis? | X | | |
| Was the CCV analyzed every 10 field samples and at the end of the analysis sequence? | X | | |
| Was the CCV for all analytes within ± 25% of the true value? | X | | |

| **Method 9056A, Instrument: WC_IonChrom11, All CCVs on 6/26/2019** | **Yes** | **No** |
|---|---|---|
| Was a CCV analyzed after every 10 field samples and at the end of the analysis sequence? | X | |
| Were the CCVs for all analytes within ± 10% of the true value? | X | |

| **Method 9056A, Instrument: WC_IonChrom11, All CCVs on 7/1/2019** | **Yes** | **No** |
|---|---|---|
| Was a CCV analyzed after every 10 field samples and at the end of the analysis sequence? | X | |
| Were the CCVs for all analytes within ± 10% of the true value? | X | |

| **Method 350.1, Instrument: WC_Alp 3, All CCVs on 6/17/2019** | **Yes** | **No** |
|---|---|---|
| Was a CCV analyzed after every 10 field samples and at the end of the analysis sequence? | X | |
| Were the CCVs for all analytes within ± 10% of the true value? | X | |

| **Method 350.1, Instrument: WC_Alp 3, All CCVs on 6/20/2019** | **Yes** | **No** |
|---|---|---|
| Was a CCV analyzed after every 10 field samples and at the end of the analysis sequence? | X | |
| Were the CCVs for all analytes within ± 10% of the true value? | X | |

# CHAAP Data Verification

**Laboratory and SDG#: TADenver 280-124912** **AECOM Chemist: Jared DeSadier**
**Date Verified: 8/1/2019** **AECOM ITR: Jeff Aust**
**Guidance: DoD QSM Version 5.1 (January 2017)**
**Applicable QAPP: Cornhusker Army Ammunition Plant QAPP (Brice and AECOM, October 2018)**
**Applicable Analytical Methods: 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034**

| Method 353.2, Instrument: WC_Alp 2, All CCVs on 6/26/2019 | Yes | No |
|---|---|---|
| Was a CCV analyzed after every 10 field samples and at the end of the analysis sequence? | X | |
| Were the CCVs for all analytes within ± 10% of the true value? | X | |

| Method 351.2, Instrument: WC_Astoria, All CCVs on 6/25/2019 | Yes | No |
|---|---|---|
| Was a CCV analyzed after every 10 field samples and at the end of the analysis sequence? | X | |
| Were the CCVs for all analytes within ± 10% of the true value? | X | |

| Method 9060A, Instrument: WC_SHI3, All CCVs on 7/1/2019 | Yes | No |
|---|---|---|
| Was a CCV analyzed after every 10 field samples and at the end of the analysis sequence? | X | |
| Were the CCVs for all analytes within ± 10% of the true value? | X | |

| Method 9060A, Instrument: WC_SHI3, All CCVs on 7/2/2019 | Yes | No |
|---|---|---|
| Was a CCV analyzed after every 10 field samples and at the end of the analysis sequence? | X | |
| Were the CCVs for all analytes within ± 10% of the true value? | X | |

## 6.0 Blank Samples

| Blank Criteria | Yes | No | N/A |
|---|---|---|---|
| Were method blanks analyzed with every preparatory batch? | X | | |
| Were target analytes detected > ½ the LOQ and > 1/10 the amount measured in any sample or 1/10 the regulatory limit (whichever is greater)? | | X | |
| Were target analytes detected in method, trip or calibration blanks? | X | | |

| Blank ID | Parameter | Analyte | Concentration | LOQ | Units |
|---|---|---|---|---|---|
| MB 280-463267/2-A | DOC | DOC | 0.177 | 1.0 | ug/L |
| MB 280-463396/2-A | DOC | DOC | 0.183 | 1.0 | ug/L |

All analytical data were reported nondetect or at concentrations greater than five times (5X) the associated blank concentration and did not require qualification.

## 7.0 Field Duplicate Samples

| Field Duplicate Criteria | Yes | No | N/A |
|---|---|---|---|
| Were field duplicate samples collected for this SDG? (if yes, list below) | | X | |
| Were parent sample / field duplicate RPDs ≤ 30% for water samples and ≤ 50% for soils for analytes that had concentrations > 5x the LOQ? | | | X |
| Were the differences between the parent sample / field duplicate < 2x the LOQ for analytes that had concentrations < 5x the LOQ? | | | X |

# CHAAP Data Verification

**Laboratory and SDG#: TADenver 280-124912** **AECOM Chemist: Jared DeSadier**
**Date Verified: 8/1/2019** **AECOM ITR: Jeff Aust**
**Guidance: DoD QSM Version 5.1 (January 2017)**
**Applicable QAPP: Cornhusker Army Ammunition Plant QAPP (Brice and AECOM, October 2018)**
**Applicable Analytical Methods: 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034**

## 8.0 Sensitivity

| Sensitivity Criteria | Yes | No | N/A |
|---|---|---|---|
| Was the laboratory sensitivity consistent with project (QAPP) requirements? | X | | |
| Did all analytes meet sensitivity requirements? | X | | |

## 9.0 Additional Qualifications

| Additional Qualification Criteria | Yes | No | N/A |
|---|---|---|---|
| Were common laboratory contaminants detected? | | X | |
| Was professional judgment used to qualify data (if yes, list below)? | X | | |

The RPD between the primary and confirmation column for some explosives samples was above evaluation criteria. Qualification of data is shown in the table below.

| Sample ID | Analysis | Analyte | RPD | Qual |
|---|---|---|---|---|
| G0044-19A | Explosives | RDX | 44.8 | **J** |
| PZ015-19A | Explosives | RDX | 117.4 | **J** |
| G0103-19A | Explosives | 3-nitrotoluene | 145.7 | **J** |

## 10.0 Completeness

| Completeness Criteria | Yes | No | N/A |
|---|---|---|---|
| Were any data rejected during the verification process? | | X | |
| Were any samples lost, broken, or in any other manner in not verified? | | X | |
| Were requested sample analyses performed, the correct analyte lists used, and correct sample preparation and analyses methods and units utilized? | X | | |