September 4, 2019

Healthy Babies Bright Futures/Virginia Organizing
703 Concord Avenue
Charlottesville, VA 22903-5208

Attn: Ms. Jane Houlihan

Subject: SDG Number: 649954
          SwRI Project Number: 24099.02.014
          SwRI Task Order Number: 190723-8
          SwRI Sample Receipt Number: 63739, 63791
          Samples Received: 07/23/2019, 08/05/2019
          Fraction: LC/MS/MS Analysis for Perchlorate

Dear Ms. Houlihan,

Please find the enclosed results for the twenty-five (25) overall product samples, received on the above referenced date. Should you have any questions, please feel free to contact me directly at 210.522-5042, or by email at alice.yau@swri.org.

Sincerely,

Alice Yau
Principal Scientist

APPROVED:

Michael J. Hagemann
Director

AY: mg
LC/MS/MS ANALYSIS
FOR
PERCHLORATE
CASE NARRATIVE
LC/MS/MS Determination of Perchlorate (CAS RN: 14797-73-0) in Food Samples

SwRI TAP 01-0408-102 Analysis of Perchlorate in Water and Soil Samples by Tandem LC/MS was used to determine perchlorate in the food samples in SRR 63739 & 63791. Extraction procedure of the food samples was modified but based on the FDA’s method, “Rapid Determination of Perchlorate Anion in Foods by Ion Chromatography-Tandem Mass Spectrometry”. (https://www.fda.gov/food/chemicals/rapid-determination-perchlorate-anion-foods-ion-chromatography-tandem-mass-spectrometry) A total of 25 samples were received by SwRI for the analysis. Below table is a cross reference of SwRI sample IDs and the client IDs.

<table>
<thead>
<tr>
<th>SwRI ID</th>
<th>Client ID</th>
</tr>
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<tbody>
<tr>
<td>649954</td>
<td>AK-007-PG</td>
</tr>
<tr>
<td>649955</td>
<td>AK-009-PT</td>
</tr>
<tr>
<td>649956</td>
<td>CA-99-015-PAM</td>
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<tr>
<td>649957</td>
<td>CO-001-PAM</td>
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<td>649958</td>
<td>MD-030-PG</td>
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<td>ME-001-PAM</td>
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<td>ME-002-PAM</td>
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<td>ME-004-PAM</td>
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<tr>
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<td>ME-025-PWM</td>
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<td>MI-012-PBBB</td>
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<td>MI-013-PG</td>
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<td>MN-008-PAM</td>
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<tr>
<td>649966</td>
<td>MN-013-PAM</td>
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<tr>
<td>649967</td>
<td>NY-006-PAM</td>
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<tr>
<td>649968</td>
<td>OH-005-PG</td>
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<tr>
<td>649969</td>
<td>OH-024-PAM</td>
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<tr>
<td>649970</td>
<td>OH-027-PWM</td>
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<tr>
<td>649971</td>
<td>OL-AM-008-PAM</td>
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<tr>
<td>649972</td>
<td>OL-AM-010-PAM</td>
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<tr>
<td>649973</td>
<td>OR-004-PAM</td>
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<tr>
<td>649974</td>
<td>SC-003-PAM</td>
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<tr>
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<td>VA-010-PAM</td>
</tr>
<tr>
<td>649976</td>
<td>VA-028-PAM</td>
</tr>
<tr>
<td>649977</td>
<td>VIR-WM-P002</td>
</tr>
<tr>
<td>650539</td>
<td>NY-002-PAM</td>
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</tbody>
</table>

Four samples (ME-025-PWM, MN-013-PAM, VA-028-PAM and VIR-WM-P002) were considered high moisture content. Sample weight of ~ 10 grams was used for these four samples and 20 mL of 1% acetic acid in water was used as the extraction solvent and the final volume of the extract
was assumed to be 30 mL. For the remaining 21 samples, the sample preparation for low
moisture foods (oats, corn meal and wheat flour) was followed. Sample weight of ~ 5 grams was
aliquotted for extraction. The extraction solvent consisted of 20 mL 1% acetic acid in water and
20 mL acetonitrile.

The instrument used for the analysis included Agilent 1200 series HPLC with 6410 triple
quadrupole (QQQ) mass spectrometer. The HPLC column used was Waters IC-Pak Anion HR
column, 4.6 x 75 mm (Part number: WAT026765). Mobile phase consisted of 50% - 25 mM
ammonium bicarbonate (NH₄HCO₃), adjusted to pH 10 with NH₄OH and 50% acetonitrile. Flow
rate was maintained at 0.4 mL/min and the total analysis time was 20.0 minutes.

The following transitions were used to quantitate and confirm the presence of perchlorate.

<table>
<thead>
<tr>
<th>Target</th>
<th>Quantitation</th>
<th>Confirmation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perchlorate</td>
<td>99 → 83</td>
<td>101 → 85</td>
</tr>
<tr>
<td>Perchlorate$^{18}$O₄ (internal standard)</td>
<td>107 → 89</td>
<td>109 → 91</td>
</tr>
</tbody>
</table>

The perchlorate calibration curve ranged from ~0.4 – 100 ng/mL. A first-order linear regression
calibration model was used and correlation coefficients of 0.998 or higher was achieved. The 20
ng/mL standard was injected but omitted from the calibration curve because twice the amount
of internal standard was spiked. Subsequent CCV was within 20% of the theoretical value.

Sample calculation example
Calibration curve for perchlorate:

$$0.884025 x + 0.0006872672 = y$$

LCMS File ID: B08221911.D
Sample ID: 649976 VA-028-PAM

Since: Perchlorate area = 70599.8
Perchlorate internal standard area = 119830.4
Area ratio = 70599.8 / 119830.4 = 0.589164
Solve: 0.884025 x + 0.0006872672 = 0.589164
Obtain: x = 0.66568 area ratio

$$x = 0.66568 = \text{perchlorate conc / perchlorate IS concentration}$$
Perchlorate conc = 0.66568 x 10.0 ng/mL = 6.6568 ng/mL
Client: Healthy Babies Bright Futures/Virginia Organizing
SwRI Project Number: 24099.02.014
Sample Receipts: 63739 and 63791
SwRI Task Order Number: 190723-8

Perchlorate concentration in sample:

6.6568 ng/mL x 30 mL / 10.0685 g = 19.8 ng/g (ppb)

"I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the laboratory manager or his/her designee, as verified by the following signature. This report shall not be reproduced except in full, without the written approval of SwRI."

[Signature]
Manager

[Signature]
Date
SAMPLE RESULTS
## Determination of Perchlorate by LC/MS/MS Analysis in Food

<table>
<thead>
<tr>
<th>SwRI ID</th>
<th>Client ID</th>
<th>Sample Wt (g)</th>
<th>Extract Vol (mL)</th>
<th>LCMS (ng/mL)</th>
<th>Perchlorate ng/g (ppb)</th>
<th>Qualifiers</th>
</tr>
</thead>
<tbody>
<tr>
<td>649954</td>
<td>AK-007-PG</td>
<td>5.0608</td>
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<td>0.588</td>
<td>4.6</td>
<td></td>
</tr>
<tr>
<td>649955</td>
<td>AK-009-PT</td>
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<td>1.439</td>
<td>11.4</td>
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<tr>
<td>649956</td>
<td>CA-99-015-PAM</td>
<td>5.0221</td>
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<td>0.436</td>
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<tr>
<td>649957</td>
<td>CO-001-PAM</td>
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<td>0.400</td>
<td>3.2</td>
<td>U</td>
</tr>
<tr>
<td>649958</td>
<td>MD-030-PG</td>
<td>5.0644</td>
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<td>0.973</td>
<td>7.7</td>
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<tr>
<td>649959</td>
<td>ME-001-PAM</td>
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<td>0.400</td>
<td>3.2</td>
<td>U</td>
</tr>
<tr>
<td>649960</td>
<td>ME-002-PAM</td>
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<td>0.339</td>
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<td>J</td>
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<tr>
<td>649961</td>
<td>ME-004-PAM</td>
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<td>1.5</td>
<td>J</td>
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<tr>
<td>649962</td>
<td>ME-025-PWM</td>
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<td>MI-012-PBBB</td>
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<td>649964</td>
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<tr>
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<td>MN-008-PAM</td>
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<td>649966</td>
<td>MN-013-PAM</td>
<td>10.1800</td>
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<td>649968</td>
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<td>649969</td>
<td>OH-024-PAM</td>
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<td>0.238</td>
<td>1.8</td>
<td>J</td>
</tr>
<tr>
<td>649970</td>
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<td>0.587</td>
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<td>0.400</td>
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<tr>
<td>649973</td>
<td>OR-004-PAM</td>
<td>5.0390</td>
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<td>0.535</td>
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<tr>
<td>649974</td>
<td>SC-003-PAM</td>
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<td>0.400</td>
<td>3.2</td>
<td>U</td>
</tr>
<tr>
<td>649975</td>
<td>VA-010-PAM</td>
<td>5.0442</td>
<td>40</td>
<td>0.400</td>
<td>3.2</td>
<td>U</td>
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<tr>
<td>649976</td>
<td>VA-028-PAM</td>
<td>10.0685</td>
<td>30</td>
<td>6.657</td>
<td>19.8</td>
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<td>649977</td>
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<td>10.1752</td>
<td>30</td>
<td>0.218</td>
<td>0.64</td>
<td>J</td>
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<tr>
<td>650539</td>
<td>NY-002-PAM</td>
<td>5.0155</td>
<td>40</td>
<td>0.400</td>
<td>3.2</td>
<td>U</td>
</tr>
</tbody>
</table>

### Matrix spike samples and recoveries

<table>
<thead>
<tr>
<th>SwRI ID</th>
<th>Client ID</th>
<th>Sample Wt (g)</th>
<th>Extract Vol (mL)</th>
<th>LCMS (ng/mL)</th>
<th>Perchlorate ng/g (ppb)</th>
<th>Spike amt</th>
<th>% Rec</th>
<th>% RPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>649962 MS</td>
<td>ME-025-PWM MS</td>
<td>10.0265</td>
<td>30</td>
<td>6.504</td>
<td>19.460</td>
<td>19.947</td>
<td>79%</td>
<td>2.1%</td>
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<tr>
<td>649962 MSD</td>
<td>ME-025-PWM MSD</td>
<td>10.0939</td>
<td>30</td>
<td>6.400</td>
<td>19.022</td>
<td>19.814</td>
<td>77%</td>
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<tr>
<td>649954 MS</td>
<td>AK-007-PG MS</td>
<td>5.0142</td>
<td>40</td>
<td>5.220</td>
<td>41.640</td>
<td>39.887</td>
<td>93%</td>
<td></td>
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<tr>
<td>649954 MSD</td>
<td>AK-007-PG MSD</td>
<td>5.0088</td>
<td>40</td>
<td>5.665</td>
<td>45.239</td>
<td>39.930</td>
<td>102%</td>
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</tr>
</tbody>
</table>

U: Indicates the compound was analyzed for but not detected at the reported concentration.

J: Indicates an estimated value. This flag is used when the mass spectral data indicate the presence of an analyte meeting identification criteria, but the result is less than the quantitation limit.
QC RAW DATA
**Quantitative Analysis Calibration Report**

**Batch Data Path**: D:\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate.batch.bin

**Analysis Time**: 8/23/2019 1:24 PM

**Report Time**: 8/23/2019 1:25 PM

**Last Calib Update**: 8/23/2019 1:24 PM

**Analyst Name**: SWRI01\AYY

**Reporter Name**: AYY

**Batch State**: Processed

---

### Calibration Info

#### Target Compound

Perchlorate - 8 Levels, 7 Levels Used, 8 Points, 7 Points Used, 1 QCs

\[ y = 0.884025 \times x + 6.872672E-04 \]

\[ R^2 = 0.99889928 \]

Type: Linear, Origin: Include, Weight: 1/x

---

### Calibration STD

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<thead>
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<th>Calibration</th>
<th>Cal Type</th>
<th>Level</th>
<th>Enabled</th>
<th>Response</th>
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<th>RF</th>
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### ISTD Compound

#### Perchlorate-18O4

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<th>Level</th>
<th>Enabled</th>
<th>Response</th>
<th>Exp Conc</th>
<th>RF</th>
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<td>10.0000</td>
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<td>76455.1</td>
<td>10.0000</td>
<td>7645.5136</td>
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**Perchlorate QuantReport_ISTD_Complete_B_06_00.xlsx**

Printed at: 4:00 PM on: 08/23/19
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analyst Name: SWRI01\AYY
Reporter Name: AYY
Batch State: Processed

Analysis Info
Acq Time: 2019-08-22 17:52
Position: P1-A1
Dilution: 1
Inj Vol: 20
Sample Type: Calibration

Sample Chromatogram

Quantitation Results

<table>
<thead>
<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
<th>Accuracy</th>
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</thead>
<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>14.095</td>
<td>69,475.6</td>
<td>76,455.1</td>
<td>8.9526</td>
<td>101.2636</td>
<td>101.26</td>
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</tbody>
</table>

Compound Graphics

Target Compound: Perchlorate

ISTD Compound: Perchlorate-1804

Perchlorate QuantReport_ISTD_Complete_B_06_00.xlsx
Printed at: 3:44 PM on: 08/23/19
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_PercloRate\QuantResults\PercloRate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analysis Info
Acq Time: 2019-08-22 18:13
Position: P1-A2
Dilution: 1
Inj Vol: 20
Sample Type: Calibration

Data File: 08221902.d
Sample Name: Perchlorate 50 ng/mL
Sample Info: 11-STD7-Lab102_2019
Acq Method File: Perchlorate.m
Project & TO: 24099.02.014 / TO: 190723-8

Sample Chromatogram

Quantitation Results

<table>
<thead>
<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>14.036</td>
<td>353374.9</td>
<td>79758.7</td>
<td>4.4306</td>
<td>50.1102</td>
<td>100.22</td>
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</tbody>
</table>

Compound Graphics

Target Compound: Perchlorate

- MRM (99.0 -> 83.0) B08221902.d Smo...
  14.036 min.
  Counts x10^4
  Acquisition Time (min)
  Relative Abundance (%)
  Ratio = 31.9 (100.4 %)

ISTD Compound: Perchlorate-1804

- MRM (107.0 -> 89.0) B08221902.d Smo...
  14.048 min.
  Counts x10^3
  Acquisition Time (min)
  Relative Abundance (%)
  Ratio = 33.2 (108.1 %)

- MRM (13.429-15.276 min) (107.0->**.101...
# Quantitative Analysis Calibration Report

**Batch Data Path**: D:\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate.batch.bin  
**Analysis Time**: 8/23/2019 1:24 PM  
**Report Time**: 8/23/2019 1:25 PM  
**Last Calib Update**: 8/23/2019 1:24 PM  
**Analyst Name**: SWRI\AYY  
**Reporter Name**: AYY  
**Batch State**: Processed

## Analysis Info

<table>
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<th>Value</th>
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<tbody>
<tr>
<td><strong>Acq Time</strong></td>
<td>2019-08-22 18:34</td>
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<tr>
<td><strong>Position</strong></td>
<td>P1-A3</td>
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<tr>
<td><strong>Dilution</strong></td>
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<td><strong>Inj Vol</strong></td>
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<td><strong>Sample Type</strong></td>
<td>Calibration</td>
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<tr>
<td><strong>Data File</strong></td>
<td>B08221903.d</td>
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<tr>
<td><strong>Sample Name</strong></td>
<td>Perchlorate 20 ng/mL</td>
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<td><strong>Sample Info</strong></td>
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<td><strong>Acq Method File</strong></td>
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<td><strong>Project &amp; TO</strong></td>
<td>24099.02.014 / TO: 190723-8</td>
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</table>

## Sample Chromatogram

![Sample Chromatogram](image)

## Quantitation Results

<table>
<thead>
<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>14.015</td>
<td>138243.5</td>
<td>182336.0</td>
<td>0.7582</td>
<td>8.5687</td>
<td>42.84</td>
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</table>

## Compound Graphics

### Target Compound: Perchlorate

- **MRM (99.0 -> 83.0)**: B08221903.d Sm:
  
  *14.015 min.

- **Relative Abundance (%)**: 99.0 -> 83.0, 101.0 -> 85.0: Ratio = 33.0 (104.0 %)

### ISTD Compound: Perchlorate-1804

- **MRM (107.0 -> 89.0)**: B08221903.d Sm:
  
  13.977 min.

- **Relative Abundance (%)**: 107.0 -> 89.0, 109.0 -> 91.0: Ratio = 30.8 (100.2 %)

---

Perchlorate QuantReport_ISTD_Complete_B_06_00.xlsx  
Printed at: 3:44 PM on 08/23/19
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_Pерхлорат\QuantResults\Perchlorate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analysis Info
Acq Time: 2019-08-22 18:55
Position: P1-A4
Dilution: 1
Inj Vol: 20
Sample Type: Calibration

Data File: B08221904.d
Sample Name: Perchlorate 10 ng/mL
Sample Info: 11-STD5-Lab102_2019
Acq Method File: Perchlorate.m
Project & TO: 24099.02.014 / TO: 190723-8

Sample Chromatogram

Quantitation Results

<table>
<thead>
<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>14.016</td>
<td>73183.0</td>
<td>91366.6</td>
<td>0.8008</td>
<td>9.0509</td>
<td>90.51</td>
</tr>
</tbody>
</table>

Compound Graphics

**Target Compound** Perchlorate

- MRM (99.0 -> 83.0) B08221904.d
  - Smo...
  - 14.015 min.
  - Counts $\times 10^3$
  - Relative Abundance (%)

- MRM (99.0 -> 83.0, 101.0 -> 85.0)
  - Ratio = 34.5 (108.6 %)

**ISTD Compound** Perchlorate-1804

- MRM (107.0 -> 89.0) B08221904.d
  - Smo...
  - 13.969 min.
  - Counts $\times 10^3$
  - Relative Abundance (%)

- MRM (107.0 -> 89.0, 109.0 -> 91.0)
  - Ratio = 30.4 (99.0 %)

Printed at: 3:44 PM on: 08/23/19
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analysis Info
Acq Time: 2019-08-22 19:16
Position: P1-A5
Dilution: 1
Inj Vol: 20
Sample Type: Calibration

Data File: B08221905.d
Sample Name: Perchlorate 5 ng/mL
Sample Info: 11-STD4-Labi02_2019
Acq Method File: Perchlorate.m
Project & TO: 24099.02.014 / TO: 190723-8

Sample Chromatogram

Acquisition Time (min)
Counts

Quantitation Results

<table>
<thead>
<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>13.917</td>
<td>37549.0</td>
<td>93592.2</td>
<td>0.4012</td>
<td>4.5305</td>
<td>90.61</td>
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</table>

Compound Graphics

Target Compound: Perchlorate

<table>
<thead>
<tr>
<th>Graph 1</th>
<th>Graph 2</th>
<th>Graph 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRM (99.0 -&gt; 83.0) B08221905.d Smo..</td>
<td>13.917 min.</td>
<td>99.0 -&gt; 83.0, 101.0 -&gt; 85.0</td>
</tr>
</tbody>
</table>

ISTD Compound: Perchlorate-1804

<table>
<thead>
<tr>
<th>Graph 4</th>
<th>Graph 5</th>
<th>Graph 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRM (107.0 -&gt; 89.0) B08221905.d Smo..</td>
<td>13.934 min.</td>
<td>107.0 -&gt; 89.0, 109.0 -&gt; 91.0</td>
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</table>

Printed at: 3:44 PM on 08/23/19
**Quantitative Analysis Calibration Report**

**Batch Data Path**: D:\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate.batch.bin

**Analysis Time**: 8/23/2019 1:24 PM

**Report Time**: 8/23/2019 1:25 PM

**Last Calib Update**: 8/23/2019 1:24 PM

**Analyst Name**: SWRI01\AYY

**Data File**: B08221907.d

**Sample Name**: Perchlorate 0.8 ng/mL

**Sample Info**: 11-STD2-Lab102_2019

**Acq Method File**: Perchlorate.m

**Project & TO**: 24099.02.014 / TO: 190723-8

---

### Sample Chromatogram

- TIC MRM (** -> **) B08221907.d

---

### Quantitation Results

**Compound**

- Perchlorate

**ISTD**

- Perchlorate-1804

**RT**

13.958

**Response**

9801.7

**ISTD Resp**

98801.4

**RR**

0.0812

**Conc**

0.9104

**Accuracy**

113.80

---

### Compound Graphics

**Target Compound**: Perchlorate

**ISTD Compound**: Perchlorate-1804

---

**Perchlorate**

**MRM** (99.0 -> 83.0) B08221907.d Smo...

- Counts $x 10^2$ vs Acquisition Time (min)

- Ratio = 36.2 (14.1 %)

**Perchlorate-1804**

**MRM** (107.0 -> 91.0) B08221907.d Smo...

- Counts $x 10^2$ vs Acquisition Time (min)

- Ratio = 31.0 (101.0 %)

---

Printed at: 3:44 PM on: 08/23/19

Perchlorate QuantReport_ISTD_Complete_B_06_00.xlsx
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analyst Name: SWRI01\AYY
Reporter Name: AYY
Batch State: Processed

Acq Time: 2019-08-22 20:19
Position: P1-AB
Dilution: 1
Inj Vol: 20
Sample Type: Calibration

Data File: 082221908.d
Sample Name: Perchlorate 0.4 ng/mL
Sample Info: 11-STD1-Lab102_2019
Acq Method File: Perchlorate.m
Project & TO: 24099.02.014 / TO: 190723-8

Sample Chromatogram

Quantitation Results

<table>
<thead>
<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>13.775</td>
<td>3874.9</td>
<td>99135.8</td>
<td>0.0391</td>
<td>0.4344</td>
<td>108.59</td>
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</table>

Compound Graphics

Target Compound: Perchlorate

ISTD Compound: Perchlorate-1804

Perchlorate QuantReport_ISTD_Complete_B_06_00.xlsx
Printed at: 3:44 PM on: 08/23/19
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analyst Name: SWRI01\AYY
Reporter Name: AYY
Batch State: Processed

Acq Time: 2019-08-23 07:35
Position: P1-A5
Dilution: 1
Inj Vol: 20
Sample Type: QC

Data File: B08221941.d
Sample Name: Perchlorate CCV 5 ng/mL
Sample Info: 11-STD4-Lab102_2019
Acq Method File: Perchlorate.m
Project & TO: 24099.02.014 / TO: 190723-8

Sample Chromatogram

Quantitation Results

<table>
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<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
<th>Accuracy</th>
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<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>13.377</td>
<td>47403.5</td>
<td>125814.7</td>
<td>0.3768</td>
<td>4.2542</td>
<td>85.08</td>
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</tbody>
</table>

Compound Graphics

Target Compound: Perchlorate

- MRM (99.0 -> 83.0) B08221941.d Smo...
  13.377 min.
  99.0 -> 83.0, 101.0 -> 85.0
  Ratio = 34.1 (107.4 %)

ISTD Compound: Perchlorate-1804

- MRM (107.0 -> 89.0) B08221941.d Smo...
  13.287 min.
  107.0 -> 89.0, 109.0 -> 91.0
  Ratio = 30.4 (98.8 %)

Printed at: 3:44 PM on: 06/23/19
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM
Analyst Name: SWRI01\AYY
Reporter Name: AYY
Batch State: Processed

Analysis Info
Acq Time: ZU19-08-22 ZU:41
Position: P1-A9
Dilution: 1
Inj Vol: 20
Sample Type: Sample
Data File: B08221909.d
Sample Name: 651352
Sample Info: BLK_15AUG19
Acq Method File: Perchlorate.m
Project & TO: 24099.02.014 / TO: 190723-8

Sample Chromatogram

- TIC MRM ("->") B08221909.d

Quantitation Results

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<tr>
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<th>ISTD</th>
<th>RT</th>
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<th>Conc</th>
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<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>14.145</td>
<td>0.0</td>
<td>100832.1</td>
<td>0.0000</td>
<td>0.0000</td>
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Compound Graphics

Target Compound: Perchlorate

- MRM (99.0 -> 83.0) B08221909.d Smo...

ISTD Compound: Perchlorate-1804

- MRM (107.0 -> 89.0) B08221909.d Smo...

Perchlorate QuantReport_ISTD_Complete_B_06_00.xlsx
Printed at: 3:44 PM on: 08/23/19
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analyst Name: SWRI01\AYY
Reporter Name: AYY
Batch State: Processed

Acq Time: 2019-08-22 21:02
Position: P1-B1
Dilution: 1
Inj Vol: 20
Sample Type: Sample

Data File: 08221910.d
Sample Name: 649977
Sample Info: VIR-WM-P002
Acq Method File: Perchlorate.m
Project & TO: 24099.02.014 / TO: 190723-8

Sample Chromatogram

Quantitation Results

<table>
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<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
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<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>13.732</td>
<td>2496.7</td>
<td>125025.9</td>
<td>0.0200</td>
<td>0.2181</td>
</tr>
</tbody>
</table>

Compound Graphics

Target Compound: Perchlorate

- MRM (99.0 -> 83.0) B08221910.d Sm:
  *13.732 min.

  Counts x10^2
  1.2
  1.0
  0.8
  0.6
  0.4
  0.2
  0.0

  Acquisition Time (min)

- MRM (107.0 -> 89.0) B08221910.d Sm:
  *13.770 min.

  Counts x10^3
  3.0
  2.5
  2.0
  1.5
  1.0
  0.5
  0.0

  Acquisition Time (min)

ISTD Compound: Perchlorate-1804

- MRM (107.0 -> 89.0) B08221910.d Sm:
  *13.770 min.

  Counts x10^2
  1.2
  1.0
  0.8
  0.6
  0.4
  0.2
  0.0

  Acquisition Time (min)

- MRM (12.506-14.666 min) (107.0->**,101...

  Mass-to-Charge (m/z)

- MRM (12.506-14.666 min) (107.0->**,101...

  Mass-to-Charge (m/z)
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analysis Info
Acq Time: 2019-08-22 21:23
Position: P1-B2
Dilution: 1
Inj Vol: 20
Sample Type: Sample

Data File: B08221911.d
Sample Name: 649976
Sample Info: VA-028-PAM
Acq Method File: Perchlorate.m
Project & TO: 24099.02.014 / TO: 190723-8

Sample Chromatogram

Quantitation Results

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<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
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<th>Conc</th>
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<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>13.569</td>
<td>70599.8</td>
<td>119830.4</td>
<td>0.5892</td>
<td>6.6568</td>
</tr>
</tbody>
</table>

Compound Graphics

**Target Compound: Perchlorate**

**ISTD Compound: Perchlorate-1804**
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_Permanganate\QuantResults\Permanganate.bath.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM
Analyst Name: SWRI01\AYY
Reporter Name: AYY
Batch State: Processed

Acq Time: 2019-08-22 21:44
Position: P1-B3
Dilution: 1
Inj Vol: 20
Sample Type: Sample

Data File: 082221912.d
Sample Name: 649966
Sample Info: MN-013-PAM
Acq Method File: Permanganate.m
Project & TO: 24099.02.014 / TO: 190723-8

Sample Chromatogram

- TIC MRM (\(\text{**} \rightarrow \text{**}\)) 082221912.d

Quantitation Results

<table>
<thead>
<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>13.490</td>
<td>8892.2</td>
<td>129125.6</td>
<td>0.0689</td>
<td>0.7712</td>
</tr>
</tbody>
</table>

Compound Graphics

**Target Compound**: Perchlorate

- MRM (99.0 \(\rightarrow\) 83.0) 082221912.d Smo...
  *13.490 min.

- Relative Abundance [%]
  - 99.0 \(\rightarrow\) 83.0, 101.0 \(\rightarrow\) 85.0
  - Ratio = 34.2 (107.9 %)

- MRM (12.637-14.050 min) (99.0 \(\rightarrow\), 101...

**ISTD Compound**: Perchlorate-1804

- MRM (107.0 \(\rightarrow\) 89.0) 082221912.d Smo...
  *13.483 min.

- Relative Abundance [%]
  - 107.0 \(\rightarrow\) 89.0, 109.0 \(\rightarrow\) 91.0
  - Ratio = 31.7 (103.0 %)

- MRM (12.641-15.070 min) (107.0 \(\rightarrow\), 109...

Perchlorate QuantReport_ISTD_Complete_B_06_00.xlsx Printed at: 3:44 PM on: 08/23/19
Batch Data Path: D:\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analysis Info:
Acq Time: 2019-08-22 22:05
Position: P1-B4
Dilution: 1
Inj Vol: 20
Sample Type: Sample

Data File: D00221913.d
Sample Name: 649962
Sample Info: ME-025-PWM
Acq Method File: Perchlorate.m
Project & TO: 24059.02.014 / TO: 190723-8

Sample Chromatogram

Quantitation Results

<table>
<thead>
<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-18O4</td>
<td>13.064</td>
<td>13703.4</td>
<td>121210.1</td>
<td>0.1131</td>
<td>1.2711</td>
</tr>
</tbody>
</table>

Compound Graphics

Target Compound: Perchlorate

ISTD Compound: Perchlorate-18O4
**Quantitative Analysis Calibration Report**

**Batch Data Path**: D:\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate.batch.bin  
**Analysis Time**: 8/23/2019 1:24 PM  
**Report Time**: 8/23/2019 1:25 PM  
**Last Calib Update**: 8/23/2019 1:24 PM  
**Analyst Name**: SWRI01\AYY  
**Reporter Name**: AYY  
**Batch State**: Processed

**Analysis Info**
- **Acq Time**: 2019-08-22 22:26  
- **Position**: P1-B5  
- **Dilution**: 1  
- **Inj Vol**: 20  
- **Sample Type**: Sample  
- **Data File**: B08221914.d  
- **Sample Name**: 649959  
- **Sample Info**: ME-001-PAM  
- **Acq Method File**: Perchlorate.m  
- **Project & TO**: 24099.02.014 / TO: 190723-8

**Sample Chromatogram**

![Sample Chromatogram](image)

**Quantitation Results**

<table>
<thead>
<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>14.285</td>
<td>0.0</td>
<td>47358.9</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

**Compound Graphics**

**Target Compound** Perchlorate

- **MRM (99.0 -> 83.0) B08221914.d Smo...**: 1.285 min.  

**ISTD Compound** Perchlorate-1804

- **MRM (107.0 -> 89.0) B08221914.d Smo...**: 13.388 min.  
- **MRM (12.549-14.700 min) (107.0->**,109...**: Mass-to-Charge (m/z)

Printed at: 3:44 PM on: 08/23/19
Quantitative Analysis Calibration Report

Batch Data Path: D:\\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analysis Info
Acq Time: 2019-08-22 22:47
Position: P1-B6
Dilution: 1
Inj Vol: 20
Sample Type: Sample

Sample Chromatogram

Quantitation Results
Compound | ISTD | RT | Response | ISTD Resp | RR | Conc
----------|------|----|----------|-----------|----|----
Perchlorate | Perchlorate-1804 | 13.483 | 7167.8 | 82674.8 | 0.0867 | 0.9729

Compound Graphics
**Target Compound**: Perchlorate

**ISTD Compound**: Perchlorate-1804
Sample Chromatogram

Quantitation Results

<table>
<thead>
<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>14.143</td>
<td>0</td>
<td>97298.3</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Compound Graphics

**Target Compound** Perchlorate

**ISTD Compound** Perchlorate-1804
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analysis Info
Acq Time: 2019-09-22 23:29
Position: PI-B8
Dilution: 1
Inj Vol: 20
Sample Type: Sample

Sample Chromatogram
-TIC MRM (** -> **) B08221917.d

Quantitation Results

<table>
<thead>
<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>13.275</td>
<td>2122.6</td>
<td>54091.5</td>
<td>0.0392</td>
<td>0.4361</td>
</tr>
</tbody>
</table>

Compound Graphics

Target Compound: Perchlorate

- MRM (99.0 -> 83.0) B08221917.d Smo... 13.275 min.
- MRM (12.216-13.732 min) (99.0->**, 101...

ISTD Compound: Perchlorate-1804

- MRM (107.0 -> 89.0) B08221917.d Smo... 13.102 min.
- MRM (12.236-14.579 min) (107.0->**, 109...
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_Perklorate\QuantResults\Perchlorate.bash.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analyst Name: SWRI01\AYY
Reporter Name: AYY
Batch State: Processed

Analysis Info
Acq Time: 2019-08-22 23:50
Position: PI-B9
Dilution: 1
Inj Vol: 20
Sample Type: Sample

Data File: B08221918.d
Sample Name: 649955
Sample Info: AK-009-PT
Acq Method File: Perchlorate.m
Project & TO: 24099.02.014 / TO: 190723-8

Sample Chromatogram

Quantitation Results
Compound: Perchlorate
ISTD: Perchlorate-1804
RT: 12.843
Response: 3777.8
ISTD Resp: 29545.2
RR: 0.1279
Conc: 1.4386

Compound Graphics
Target Compound: Perchlorate

ISTD Compound: Perchlorate-1804
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate\batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analysis Info
Acq Time: 2019-08-23 00:12
Position: P1-C1
Dilution: 1
Inj Vol: 20
Sample Type: Sample

Data File: B08221920.d
Sample Name: 649954
Sample Info: AK-007-PG
Acq Method File: Perchlorate.m
Project & TO: 24099.02.014 / TO: 190723-8

Sample Chromatogram

Quantitation Results

<table>
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<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
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</thead>
<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>13.428</td>
<td>5283.3</td>
<td>100272.9</td>
<td>0.0527</td>
<td>0.5882</td>
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</table>

Compound Graphics

Target Compound: Perchlorate

ISTD Compound: Perchlorate-1804

Perchlorate QuantReport_ISTD_Complete_B_06_00.xlsx
Printed at: 3:44 PM on: 08/23/19
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_P perchlorate\QuantResults\Perchlorate\batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analysis Info
Acq Time: 2019-08-23 00:33
Position: P1-C2
Dilution: 1
Inj Vol: 20
Sample Type: Sample

Data File: B08221921.d
Sample Name: 649967
Sample Info: NY-006-PAM
Acq Method File: Perchlorate.m
Project & TO: 24099.02.014 / TO: 190723-8

Sample Chromatogram

Quantitation Results

<table>
<thead>
<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>13.682</td>
<td>2177.8</td>
<td>115401.6</td>
<td>0.0189</td>
<td>0.2057</td>
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</table>

Compound Graphics

**Target Compound** Perchlorate

**ISTD Compound** Perchlorate-1804
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analyst Name: SWRI01YAY
Reporter Name: AYY
Batch State: Processed

Sample Chromatogram:

Quantitation Results

<table>
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<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>13.640</td>
<td>2973.1</td>
<td>107504.5</td>
<td>0.0277</td>
<td>0.3051</td>
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</tbody>
</table>

Compound Graphics

Target Compound: Perchlorate

ISTD Compound: Perchlorate-1804

Perchlorate QuantReport_ISTD_Complete_B_06_00.xlsx  Printed at: 3:44 PM on: 08/23/19
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_Percarbonate\QuantResults\Percarbonate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analysis Info
Acq Time: 2019-08-23 01:15
Position: P1-C4
Dilution: 1
Inj Vol: 20
Sample Type: Sample

Data File: B08221923.d
Sample Name: 649964
Sample Info: MI-013-PG
Acq Method File: Perchlorate.m
Project & TO: 24099.02.014 / TO: 190723-8

Sample Chromatogram

Quantitation Results
Compound | ISTD | RT | Response | ISTD Resp | RR | Conc
---------- | ---- | -- | -------- | -------- | -- | ----
Percarbonate | Perchlorate-1804 | 13.220 | 6714.0 | 67814.9 | 0.0989 | 1.1110

Compound Graphics

Target Compound: Perchlorate

ISTD Compound: Perchlorate-1804

Perchlorate QuantReport_ISTD_Complete_B_06_00.xlsx
Printed at: 3:44 PM on: 08/23/19
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analysis Info:
Acq Time: 2019-08-23 02:18
Position: P1-C7
Dilution: 1
Inj Vol: 20
Sample Type: Sample

Data File: B08221926.d
Sample Name: 649960
Sample Info: ME-002-PAM
Acq Method File: Perchlorate.m
Project & TO: 24099.02.014 / TO: 190723-8

Sample Chromatogram:

- TIC MRM (** -> **) B08221926.d

Quantitation Results:
- Compound: Perchlorate
  - ISTD: Perchlorate-1804

<table>
<thead>
<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>13.460</td>
<td>1637.7</td>
<td>53357.0</td>
<td>0.0307</td>
<td>0.3394</td>
</tr>
</tbody>
</table>

Compound Graphics:

- **Target Compound**: Perchlorate
  - MRM (99.0 -> 83.0) B08221926.d Sm...
    - *13.460 min.
  - MRM (99.0 -> 83.0, 101.0 -> 85.0)
    - Ratio = 36.0 (113.3 %)

- **ISTD Compound**: Perchlorate-1804
  - MRM (107.0 -> 89.0) B08221926.d Sm...
    - 13.429 min.
  - MRM (107.0 -> 89.0, 109.0 -> 91.0)
    - Ratio = 32.0 (104.0 %)

Printed at: 3:44 PM on: 08/23/19
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analysis Info
Acq Time: 2019-08-23 02:39
Position: P1-C8
Dilution: 1
Inj Vol: 20
Sample Type: Sample

Data File: B08221927.d
Sample Name: 649963
Sample Info: MI-012-PBBB
Acq Method File: Perchlorate.m
Project & TO: 24099.02.014 / TO: 190723-8

Sample Chromatogram

Quantitation Results

<table>
<thead>
<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>13.222</td>
<td>2129.9</td>
<td>56612.2</td>
<td>0.0376</td>
<td>0.4178</td>
</tr>
</tbody>
</table>

Compound Graphics

Target Compound: Perchlorate

- MRM (99.0 -> 83.0) B08221927.d Smo...
  *13.222 min.

- MRM (99.0 -> 83.0, 101.0 -> 85.0)
  x10^2
  Ratio = 37.4 (117.9 %)

ISTD Compound: Perchlorate-1804

- MRM (107.0 -> 89.0) B08221927.d Smo...
  13.232 min.

- MRM (107.0 -> 89.0, 109.0 -> 91.0)
  x10^2
  Ratio = 31.9 (103.9 %)

- MRM (12.419-14.223 min) (99.0->**,101...
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_Percloir\QuantResults\Percloirate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analyst Name: SWRI01\AYY
Reporter Name: AYY
Batch State: Processed

Acq Time: 2019-08-23 03:00
Position: P1-C9
Dilution: 1
Inj Vol: 20
Sample Type: Sample

Data File: B08221928.dJ
Sample Name: 650539
Sample Info: NY-002-PAM
Acq Method File: Pernlclorate.m
Project & TO: 24099.02.014 / TO: 190723-8

Sample Chromatogram

Quantitation Results

<table>
<thead>
<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>13.341</td>
<td>0</td>
<td>79585.7</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Compound Graphics

Target Compound: Perchlorate

- MRM (99.0 -> 83.0) B08221928.d Smo. *13.341 min.
- MRM (99.0 -> 83.0, 101.0 -> 85.0) Ratio =
- MRM (13.341-13.341 min) (99.0->**,101...)

ISTD Compound: Perchlorate-1804

- MRM (107.0 -> 89.0) B08221928.d Smo. 13.445 min.
- MRM (107.0 -> 89.0, 109.0 -> 91.0) Ratio = 32.5 (105.6 %)
- MRM (12.343-14.366 min) (107.0->**,10...
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM
Analyst Name: SWRIDAYY
Reporter Name: AYY
Batch State: Processed

Data File: 08221929.d
Sample Name: 649968
Sample Info: OH-005-PG
Acq Method File: Perchlorate.m
Project & TO: 24099.02.014 / TO: 190723-8

Sample Chromatogram

Quantitation Results

<table>
<thead>
<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>13.283</td>
<td>2959.9</td>
<td>61965.7</td>
<td>0.0478</td>
<td>0.5324</td>
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</tbody>
</table>

Compound Graphics

Target Compound: Perchlorate

ISTD Compound: Perchlorate-1804
Quantitative Analysis Calibration Report

Data Path: D:\MassHunter\Data\082219_Perclorate\QuantResults\Perclorate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analyst Name: SWRIO1\AYY
Reporter Name: AYY
Batch State: Processed

Acq Time: 2019-08-23 03:43
Data File: B08221930.d
Position: P1-D2
Sample Name: 649969
Dilution: 1
Sample Info: OH-024-PAM
Inj Vol: 20
Acq Method File: Perchlorate.m
Sample Type: Sample
Project & TO: 24099.02.014 / TO: 190723-8

Sample Chromatogram

Quantitation Results

<table>
<thead>
<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>13.305</td>
<td>1523.9</td>
<td>70237.2</td>
<td>0.0217</td>
<td>0.2377</td>
</tr>
</tbody>
</table>

Compound Graphics

Target Compound: Perchlorate

ISTD Compound: Perchlorate-1804
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_Porchlorate\QuantResults\Perchlorate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analyst Name: SWRI01VAYY
Reporter Name: AYY
Batch State: Processed

Acq Time: 2019-08-23 04:04
Position: P1-D3
Dilution: 1
Inj Vol: 20
Sample Type: Sample

Data File: 006221931.d
Sample Name: 649970
Sample Info: 0H-027-PWM
Acq Method File: Perchlorate.m
Project & TO: 24099.02.014 / TO: 190723-8

Sample Chromatogram

Quantitation Results

<table>
<thead>
<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>13.626</td>
<td>5058.5</td>
<td>96141.7</td>
<td>0.0526</td>
<td>0.5874</td>
</tr>
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</table>

Compound Graphics

Target Compound: Perchlorate

ISTD Compound: Perchlorate-1804

Perchlorate QuantReport_ISTD_Complete_B_06_00.xlsx
Printed at: 3:44 PM on: 08/23/19
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analysis Info
Acq Time: 2019-06-23 04:25
Position: P1-D4
Dilution: 1
Inj Vol: 20
Sample Type: Sample

Data File: B08221932.d
Sample Name: 649971
Sample Info: OL-AM-008-PAM
Acq Method File: Perchlorate.m
Project & TO: 24099.02.014 / TO: 190723-8

Sample Chromatogram

Quantitation Results
Compound | ISTD | RT | Response | ISTD Resp | RR | Conc
--- | --- | --- | --- | --- | --- | ---
Perchlorate | Perchlorate-1804 | 13.702 | 13415.2 | 167543.1 | 0.0801 | 0.8980

Compound Graphics
Target Compound: Perchlorate

ISTD Compound: Perchlorate-1804

Printed at: 3:44 PM on: 08/23/19
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analyst Name: SWRI01\AYY
Reporter Name: AYY
Batch State: Processed

Analysis Info
Acq Time: 2019-08-23 09:46
Position: P1-D5
Dilution: 1
Inj Vol: 20
Sample Type: Sample

Data File: B08221933.d
Sample Name: 649972
Sample Info: OL-AM-010-PAM
Acq Method File: Perchlorate.m
Project & TO: 24099.02.014 / TO: 190723-8

Sample Chromatogram

- TIC MRM (** -> ***) B08221933.d

Quantitation Results

<table>
<thead>
<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>14.029</td>
<td>0</td>
<td>104427.0</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Compound Graphics

- MRM (99.0 -> 83.0) B08221933.d Smo...

ISTD Compound

- MRM (107.0 -> 89.0) B08221933.d Smo...

Perchlorate QuantReport_ISTD_Complete_B_06_00.xlsx
Printed at: 3:44 PM on: 08/23/19
Batch Data Path: D:\MassHunter\Data\082219_Percalor\QuantResults\Percalor\batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analysis Info
Acq Time: 2019-08-23 05:07
Position: P1-D6
Dilution: 1
Inj Vol: 20
Sample Type: Sample

Data File: B08221934.d
Sample Name: 649973
Sample Info: OR-004-PAM
Acq Method File: Perchlorate.m
Project & TO: 24099.02.014 / TO: 190722-8

Sample Chromatogram

Quantitation Results
Compound
Percalor

<table>
<thead>
<tr>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perchlorate-18O4</td>
<td>13.510</td>
<td>3283.0</td>
<td>68425.6</td>
<td>0.0480</td>
<td>0.5350</td>
</tr>
</tbody>
</table>

Compound Graphics

Target Compound: Perchlorate

- MRM (99.0 -> 83.0) B08221934.d Smo...
  *13.510 min.

- MRM (99.0 -> 83.0, 101.0 -> 85.0)
  Ratio = 38.8 (121.7 %)

- MRM (12.688-14.079 min) (99.0->**,101...

ISTD Compound: Perchlorate-18O4

- MRM (107.0 -> 89.0) B08221934.d Smo...
  13.366 min.

- MRM (107.0 -> 89.0, 109.0 -> 91.0)
  Ratio = 30.8 (100.1 %)

- MRM (12.535-14.730 min) (107.0->**,10...

Mass-to-Charge (m/z)

Percalor QuantReport_ISTD_Complete_R_06_00.xlsx
Printed at: 3:44 PM on: 08/23/19
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate.batch.bin

Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analyst Name: SWRI01\AYY
Reporter Name: AYY
Batch State: Processed

Analysis Info
Acq Time: 2019-08-23 05:28
Position: P1-D7
Dilution: 1
Inj Vol: 20
Sample Type: Sample

Data File: B08221935.d
Sample Name: 649975
Sample Info: VA-010-PAM
Acq Method File: Perchlorate.m
Project & TO: 24099.02.014 / TO: 190723-8

Sample Chromatogram

Quantitation Results

<table>
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<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
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<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>13.938</td>
<td>0</td>
<td>114974.6</td>
<td>0.0000</td>
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Compound Graphics

Target Compound: Perchlorate

ISTD Compound: Perchlorate-1804

Printed at: 3:44 PM on: 08/23/19
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analysis Info:
Acq Time: 2019-08-23 05:49
Position: P1-D8
Dilution: 1
Inj Vol: 20
Sample Type: Sample

Data File: DU8221936.d
Sample Name: 649962 MS
Sample Info: ME-025-PWM MS
Acq Method File: Perchlorate.m
Project & TO: 24099.02.014 / TO: 190722-8

Sample Chromatogram

Quantitation Results

<table>
<thead>
<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
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</thead>
<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>13.007</td>
<td>83536.7</td>
<td>145117.4</td>
<td>0.5756</td>
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Compound Graphics

Target Compound: Perchlorate

- MRM (99.0 -> 83.0) B08221936.d Smo...
- MRM (11.999-14.448 min) (99.0->**.101...

ISTD Compound: Perchlorate-1804

- MRM (107.0 -> 89.0) B08221936.d Smo...
- MRM (11.996-14.898 min) (107.0->**.10...
Batch Data Path: D:\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analysis Info
Acq Time: 2019-08-23 06:10
Position: P1-D9
Dilution: 1
Inj Vol: 20
Sample Type: Sample

Data File: B08221937.d
Sample Name: 649962 MSD
Sample Info: ME-025-PWM MSD
Acq Method File: Perchlorate.m
Project & TO: 24099.02.014 / TO: 190722-8

Sample Chromatogram

Quantitation Results

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<tr>
<th>Compound</th>
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<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
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<tbody>
<tr>
<td>Perchlorate</td>
<td>Perchlorate-1804</td>
<td>12.838</td>
<td>39181.1</td>
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Compound Graphics

Target Compound: Perchlorate

ISTD Compound: Perchlorate-1804
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_PercloRate\QuantResults\PercloRate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analyst Name: SWRI01\AYY
Reporter Name: AYY
Batch State: Processed

Acq Time: 2U19-08-25 06:31
Position: PI-E1
Dilution: 1
Inj Vol: 20
Sample Type: Sample

Data File: B08221938.j
Sample Name: 649954 MS
Sample Info: AK-007-PG MS
Acq Method File: Perchlorate.m
Project & TO: 24099.02.014 / TO: 190723-8

Sample Chromatogram

- TIC MRM (** -> **) B08221938.d

Quantitation Results

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<tr>
<th>Compound</th>
<th>ISTD</th>
<th>RT</th>
<th>Response</th>
<th>ISTD Resp</th>
<th>RR</th>
<th>Conc</th>
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<tbody>
<tr>
<td>Perchlorate</td>
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<tr>
<td>Perchlorate-1804</td>
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<td></td>
<td>13.300</td>
<td>24510.4</td>
<td>53037.5</td>
<td>0.4621</td>
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</table>

Compound Graphics

Target Compound: Perchlorate

- MRM (99.0 -> 83.0) B08221938.d Smo...
  *13.300 min.

- MRM (99.0 -> 83.0), 101.0 -> 85.0
  x10^2

  Ratio = 37.7 (118.8 %)

- MRM (12.518-14.015 min) (99.0->**,101... x10^6

  83.0

  85.0

  99.0

ISTD Compound: Perchlorate-1804

- MRM (107.0 -> 89.0) B08221938.d Smo...
  13.346 min.

- MRM (107.0 -> 89.0), 109.0 -> 91.0
  x10^2

  Ratio = 31.7 (103.1 %)

- MRM (12.259-14.190 min) (107.0->**,10... x10^6

  89.0

  107.0

Printed at: 3:44 PM on: 06/23/19
Quantitative Analysis Calibration Report

Batch Data Path: D:\MassHunter\Data\082219_Perchlorate\QuantResults\Perchlorate.batch.bin
Analysis Time: 8/23/2019 1:24 PM
Report Time: 8/23/2019 1:25 PM
Last Calib Update: 8/23/2019 1:24 PM

Analyst Name: SWRIDAYY
Reporter Name: AYY
Batch State: Processed

Analysis Info
- Acq Time: 2019-08-23 02:52
- Position: P1-E2
- Dilution: 1
- Inj Vol: 20
- Sample Type: Sample
- Data File: B08221939.d1
- Sample Name: 649954 MSD
- Sample Info: AK-007-PG MSD
- Acq Method File: Perchlorate.m
- Project & TO: 24099.02.014 / TO: 190723-8

Sample Chromatogram

Quantitation Results

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<tr>
<th>Compound</th>
<th>ISTD</th>
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<th>Response</th>
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<th>Conc</th>
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<td>Perchlorate-1804</td>
<td>13.813</td>
<td>67444.3</td>
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<td>0.5015</td>
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Compound Graphics

Target Compound: Perchlorate
- MRM (99.0 -> 83.0) B08221939.d: *13.613 min.
  - Relative Abundance (%): 33.1 (104.3 %)

ISTD Compound: Perchlorate-1804
- MRM (107.0 -> 89.0) B08221939.d: 13.552 min.
  - Relative Abundance (%): 31.2 (101.6 %)

Mass-to-Charge (m/z)
INJECTION LOG
**LC/MS/MS analysis of perchlorate in food**  
**SwRI Project: 24099.02.014**  
**Client: HBBF/Virginia Organizing**  
**Task order: 190723-8**  
Column: Waters IC-Pak Anion HR 4.6 x 75 mm Part no: WAT026765  
Mobile phase A: 50% - 25 mM ammonium bicarbonate in water (pH 10)  
Mobile phase B: 50% Acetonitrile  
Flow rate: 0.4 mL/min  
Injection volume: 20 µL  
Stop time: 20 minutes  
Column temp: 40 °C  
Mass spec: ESI- MRM mode

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<th>Acq. Date-Time</th>
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