November 30, 2016 Service Request No:R1611762

Dennis Tabor
US Environmental Protection Agency (E-343-03)
Office of Research and Development
National Risk Management Research
Laboratory
109 T.W. Alexander Drive
Research Triangle Park, NC 27711

**Laboratory Results for: US EPA RTP, NC**

Dear Dennis,

Enclosed are the results of the sample(s) submitted to our laboratory October 28, 2016
For your reference, these analyses have been assigned our service request number **R1611762.**

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and ALS Environmental is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s) for analysis of these samples, and represented by Laboratory Control Sample control limits. Any events, such as QC failures, which may add to the uncertainty are explained in the report narrative.

Please contact me if you have any questions. My extension is 7478. You may also contact me via email at Ellen.Smith@alsglobal.com.

Respectfully submitted,

**ALS Group USA, Corp. dba ALS Environmental**

Ellen Smith
Project Manager

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dba ALS Environmental

# Narrative Documents

**ALS Environmental—Rochester Laboratory**
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**Client:** US Environmental Protection Agency (EPA)
**Project:** US EPA RTP, NC
**Sample Matrix:** Filter

**Service Request:**R1611762
**Date Received:**10/28/16

## CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II data deliverables, including results of QC samples analyzed from this delivery group. Analytical procedures performed by the lab are validated in accordance with NELAC standards. Any parameters that are not included in the lab's NELAC accreditation are identified on a "Non-Certified Analytes" report in the Miscellaneous Forms Section of this report. Individual analytical results requiring further explanation are flagged with qualifiers and/or discussed below. The flags are explained in the Report Qualifiers and Definitions page in the Miscellaneous Forms section of this report.

Sample Receipt

Fourteen filter samples were received for analysis at ALS Environmental on 10/28/2016. Any discrepancies noted upon initial sample inspection are noted on the cooler receipt and preservation form included in this data package. The samples were received in good condition and consistent with the accompanying chain of custody form. Samples are refrigerated at ≤6°C upon receipt at the lab except for aqueous samples designated for metals analyses, which are stored at room temperature.

**Semi-Volatile Organic Analyses:**

No significant anomalies were noted with this analysis.

**General Chemistry Analyses:**

No significant anomalies were noted with this analysis.

**Sample Receiving Notes:**

Method 6850, One or more samples were received past the recommended holding time which is 28 days. Analysis was completed 2 days out of hold time and the customer was notified when the discrepancy was found. The analysis was performed as soon as possible after receipt by the laboratory. The data is flagged to indicate the holding time violation.

Approved by _____ Date 11/30/2016

## SAMPLE DETECTION SUMMARY

**CLIENT ID: PS-SW-HCI-092816-01 2-Bottom** **Lab ID: R1611762-002**

| Analyte | Results | Flag | MDL | PQL | Units | Method |
|---|---|---|---|---|---|---|
| Chloride | 11.4 | | 5.2 | 6.0 | ug/Filter | 300.0 |

**CLIENT ID: PS-SW-HCI-092816-02 2-Bottom** **Lab ID: R1611762-004**

| Analyte | Results | Flag | MDL | PQL | Units | Method |
|---|---|---|---|---|---|---|
| Chloride | 11.0 | | 5.2 | 6.0 | ug/Filter | 300.0 |

**CLIENT ID: PS-SW-HCI-100416-01 2-Bottom** **Lab ID: R1611762-008**

| Analyte | Results | Flag | MDL | PQL | Units | Method |
|---|---|---|---|---|---|---|
| Chloride | 9.4 | | 5.2 | 6.0 | ug/Filter | 300.0 |

# Sample Receipt Information

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## SAMPLE CROSS-REFERENCE

| SAMPLE # | CLIENT SAMPLE ID | DATE | TIME |
|---|---|---|---|
| R1611762-001 | PS-SW-HCl-092816-01 1-Topp | 9/28/2016 | |
| R1611762-002 | PS-SW-HCl-092816-01 2-Bottom | 9/28/2016 | |
| R1611762-003 | PS-SW-HCl-092816-02 1-Topp | 9/28/2016 | |
| R1611762-004 | PS-SW-HCl-092816-02 2-Bottom | 9/28/2016 | |
| R1611762-005 | PS-SW-HCl-092816-03 1-Topp | 9/28/2016 | |
| R1611762-006 | PS-SW-HCl-092816-03 2-Bottom | 9/28/2016 | |
| R1611762-007 | PS-SW-HCl-100416-01 1-Topp | 10/4/2016 | |
| R1611762-008 | PS-SW-HCl-100416-01 2-Bottom | 10/4/2016 | |
| R1611762-009 | PS-SW-HCl-100416-02 1-Topp | 10/4/2016 | |
| R1611762-010 | PS-SW-HCl-100416-02 2-Bottom | 10/4/2016 | |
| R1611762-011 | PS-SW-HCl-100416-03 1-Topp | 10/4/2016 | |
| R1611762-012 | PS-SW-HCl-100416-03 2-Bottom | 10/4/2016 | |
| R1611762-013 | BS-HCl-100416 1-Topp | 10/4/2016 | |
| R1611762-014 | BS-HCl-100416 2-Bottom | 10/4/2016 | |

Lab Work Order #



# CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

**SAMPLERS:**

**Requested Analyses**

| SAMPLE ID | DATE | TIME | MATRIX | Burn # | Filter # | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PS-SW-HCl-092816-01 | 9/28/2016 | | Skid waste | 1 | Cassette 1 | | | | | | | | | | | |
| | | | | | 1-Topp | x | x | | | | | | | | | |
| | | | | | 2-Bottom | | | x | | | | | | | | |
| PS-SW-HCl-092816-02 | 9/28/2016 | | Skid waste | 2 | Cassette 2 | | | | | | | | | | | |
| | | | | | 1-Topp | x | x | | | | | | | | | |
| | | | | | 2-Bottom | | | x | | | | | | | | |
| PS-SW-HCl-092816-03 | 9/28/2016 | | Skid waste | 3 | Cassette 3 | | | | | | | | | | | |
| | | | | | 1-Topp | x | x | | | | | | | | | |
| | | | | | 2-Bottom | | | x | | | | | | | | |
| PS-SW-HCl-100416-01 | 10/4/2016 | | Skid waste | 1 | Cassette 4 | | | | | | | | | | | |
| | | | | | 1-Topp | x | x | | | | | | | | | |
| | | | | | 2-Bottom | | | x | | | | | | | | |
| PS-SW-HCl-100416-01 | 10/4/2016 | | Skid waste | 2 | Cassette 5 | | | | | | | | | | | |
| | | | | | 1-Topp | x | x | | | | | | | | | |
| | | | | | 2-Bottom | | | x | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

| Requested Analyses | |
|---|---|
| 1 | Perchlorate |
| 2 | Chlorate |
| 3 | Chloride |
| 4 | |
| 5 | |
| 6 | |
| 7 | |

**Special Instructions/Comments:**

☐ **Special QA/QC Instructions**

**Laboratory Information and Receipt**

Lab Name:

Shipping Tracking #

Specify Turnaround Requirements:

☐ Cooler packed with ice

☐ Cooler custody seal intact

Sample Receipt:

Condition/Cooler Temp:

| Relinquished by: | DATE | TIME | Received by: | Relinquished by: | DATE | TIME | Received by: |
|---|---|---|---|---|---|---|---|
| John Bell | 10/11/2016 | 13:00 | 10-28 0930 | | | | |
| Relinquished by: | DATE | TIME | Received by: | Relinquished by: | | | |
| | | | | | | | |

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US Environmental Protection Agency (E-343-03)
US EPA RTP, NC

# CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Lab Work Order #



SAMPLERS:

Requested Analyses

| SAMPLE ID | DATE | TIME | MATRIX | Burn # | Filter # | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PS-SW-HCl-100416-01 | 10/4/2016 | | Skid waste | 3 | Cassette 6 | | | | | | | | | | | |
| | | | | | 1-Topp | X | X | | | | | | | | | |
| | | | | | 2-Bottom | | | X | | | | | | | | |
| BS-HCl-100416 | 10/4/2016 | | Ambient | Ambient | Cassette 8 | | | | | | | | | | | |
| | | | | | 1-Topp | X | X | | | | | | | | | |
| | | | | | 2-Bottom | | | X | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

| Requested Analyses | |
|---|---|
| 1 | Perchlorate |
| 2 | Chlorate |
| 3 | Chloride |
| 4 | |
| 5 | |
| 6 | |
| 7 | |

Special Instructions/Comments:

☐ Special QA/QC Instructions

Laboratory Information and Receipt

Lab Name:

Shipping Tracking #

Specify Turnaround Requirements:

☐ Cooler packed with ice

☐ Cooler custody seal intact

Sample Receipt:

Condition/Cooler Temp:

| Relinquished by: | DATE | TIME | Received by: | Relinquished by: | DATE | TIME | Received by: |
|---|---|---|---|---|---|---|---|
| | | | 10-28 0930 | | | | |
| Relinquished by: | DATE | TIME | Received by: | Relinquished by: | | | |
| | | | | | | | |

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US Environmental Protection Agency (E-343-03)
US EPA RTP, NC

# Cooler Receipt and Preservation Check Form

Project/Client US EPA Folder Number_____.

Cooler received on 10-28 by: T.S **COURIER:** ALS UPS FEDEX VELOCITY CLIENT

| | | | | | |
|---|---|---|---|---|---|
| 1 | Were **Custody seals** on outside of cooler? | Y N | 5a | **Perchlorate** samples have required headspace? | Y N NA |
| 2 | **Custody papers** properly completed (ink, signed)? | Y N | 5b | Did VOA vials, Alk,or Sulfide have sig* **bubbles**? | Y N NA |
| 3 | Did all bottles arrive in good **condition** (unbroken)? | Y N | 6 | Where did the bottles originate? ALS/ROC | CLIENT |
| 4 | Circle: **Wet Ice Dry Ice Gel packs** present? | Y N | 7 | Soil VOA received as: Bulk Encore 5035set | NA |

8. Temperature Readings Date: 10-25-16 Time: 0440 ID: IR#7 IR#8 From: Temp Blank Sample Bottle

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Observed Temp (°C) | 7.4 | | | | | | |
| Correction Factor (°C) | 0 | | | | | | |
| Corrected Temp (°C) | 7.4 | | | | | | |
| Within 0-6°C? | Y N | Y N | Y N | Y N | Y N | Y N | Y N |
| If <0°C, were samples frozen? | Y N | Y N | Y N | Y N | Y N | Y N | Y N |

**If out of Temperature, note packing/ice condition:** _____Ice melted Poorly Packed Same Day Rule

**&Client Approval to Run Samples:**_____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: R002 by TS on 10-25-16 at 0440
5035 samples placed in storage location: _____ by _____ on _____ at _____

Cooler Breakdown: Date : 11/7/16 Time: 1100 by: @

1. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? YES NO
2. Did all bottle labels and tags agree with custody papers? YES NO
3. Were correct containers used for the tests indicated? YES NO
4. Were 5035 vials acceptable (no extra labels, not leaking)? YES NO N/A
5. Air Samples: Cassettes / Tubes Intact Canisters Pressurized Tedlar® Bags Inflated N/A

Explain any discrepancies:

| pH | Reagent | Yes | No | Lot Received | Exp | Sample ID | Vol. Added | Lot Added | Final pH |
|---|---|---|---|---|---|---|---|---|---|
| ≥12 | NaOH | | | | | | | | |
| ≤2 | $HNO_3$ | | | | | | | | |
| ≤2 | $H_2SO_4$ | | | | | | | | |
| <4 | $NaHSO_4$ | | | | | | | | |
| Residual Chlorine (-) | For CN Phenol and 522 | | | If +, contact PM to add $Na_2S_2O_3$ (CN), ascorbic (phenol). | | | | | |
| | $Na_2S_2O_3$ | - | - | | | | | | |
| | ZnAcetate | - | - | | | | | | |
| | HCl | ** | ** | | | | | | |

**Not to be tested before analysis – pH tested and recorded by VOAs on a separate worksheet

Yes=All samples OK

No=Samples were preserved at The lab as listed

PM OK to Adjust: _____

Bottle lot numbers: Client
Other Comments:

| | |
|---|---|
| CLRES | BULK |
| DO | FLDT |
| HPROD | HGFB |
| HTR | LL3541 |
| PH | SUB |
| SO3 | MARRS |
| ALS | REV |

PC Secondary Review: _____

*significant air bubbles: VOA > 5-6 mm : WC >1 in. diameter

# Miscellaneous Forms

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# REPORT QUALIFIERS AND DEFINITIONS

U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.

J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).

B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.

E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.

E Organics- Concentration has exceeded the calibration range for that specific analysis.

D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.

* Indicates that a quality control parameter has exceeded laboratory limits. Under the Notes column of the Form I, this qualifier denotes analysis was performed out of Holding Time.

H Analysis was performed out of hold time for tests that have an immediate hold time criteria.

# Spike was diluted out.

+ Correlation coefficient for MSA is <0.995.

N Inorganics- Matrix spike recovery was outside laboratory limits.

N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.

S Concentration has been determined using Method of Standard Additions (MSA).

W Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.

P Concentration >40% (25% for CLP) difference between the two GC columns.

C Confirmed by GC/MS

Q DoD reports: indicates a pesticide/Aroclor is not confirmed ("e100% Difference between two GC columns).

X See Case Narrative for discussion.

MRL Method Reporting Limit. Also known as:
LOQ Limit of Quantitation (LOQ)
The lowest concentration at which the method analyte may be reliably quantified under the method conditions.

MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).

LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.

ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

ACCREDITED IN ACCORDANCE WITH nelac

## Rochester Lab ID # for State Certifications[1]

| | | |
|---|---|---|
| Connecticut ID # PH0556 | Maine ID #NY0032 | New Hampshire ID # 294100 A/B |
| Delaware Accredited | Nebraska Accredited | |
| DoD ELAP #65817 | New Jersey ID # NY004 | Pennsylvania ID# 68-786 |
| Florida ID # E87674 | New York ID # 10145 | Rhode Island ID # 158 |
| Illinois ID #200047 | North Carolina #676 | Virginia #460167 |

[1] Analyses were performed according to our laboratory s NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to http://www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads/North-America-Downloads

## Acronyms

| | |
|---|---|
| ASTM | American Society for Testing and Materials |
| A2LA | American Association for Laboratory Accreditation |
| CARB | California Air Resources Board |
| CAS Number | Chemical Abstract Service registry Number |
| CFC | Chlorofluorocarbon |
| CFU | Colony-Forming Unit |
| DEC | Department of Environmental Conservation |
| DEQ | Department of Environmental Quality |
| DHS | Department of Health Services |
| DOE | Department of Ecology |
| DOH | Department of Health |
| EPA | U. S. Environmental Protection Agency |
| ELAP | Environmental Laboratory Accreditation Program |
| GC | Gas Chromatography |
| GC/MS | Gas Chromatography/Mass Spectrometry |
| LUFT | Leaking Underground Fuel Tank |
| M | Modified |
| MCL | Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA. |
| MDL | Method Detection Limit |
| MPN | Most Probable Number |
| MRL | Method Reporting Limit |
| NA | Not Applicable |
| NC | Not Calculated |
| NCASI | National Council of the Paper Industry for Air and Stream Improvement |
| ND | Not Detected |
| NIOSH | National Institute for Occupational Safety and Health |
| PQL | Practical Quantitation Limit |
| RCRA | Resource Conservation and Recovery Act |
| SIM | Selected Ion Monitoring |
| TPH | Total Petroleum Hydrocarbons |
| tr | Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL. |

**Client:** US Environmental Protection Agency (EPA) **Service Request:** R1611762
**Project:** US EPA RTP, NC

## Non-Certified Analytes

**Certifying Agency:** New York Department of Health

| Method | Matrix | Analyte |
|---|---|---|
| 300.0 | Filter | Chloride |
| 6850 | Filter | Chlorate |
| 6850 | Filter | Perchlorate |

**Client:** US Environmental Protection Agency (EPA) **Service Request:** R1611762
**Project:** US EPA RTP, NC

**Sample Name:** PS-SW-HCl-092816-01 1-Topp **Date Collected:** 09/28/16
**Lab Code:** R1611762-001 **Date Received:** 10/28/16
**Sample Matrix:** Filter

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 6850 | MPEDRO | MPEDRO |

**Sample Name:** PS-SW-HCl-092816-01 2-Bottom **Date Collected:** 09/28/16
**Lab Code:** R1611762-002 **Date Received:** 10/28/16
**Sample Matrix:** Filter

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 300.0 | CWOODS | CWOODS |

**Sample Name:** PS-SW-HCl-092816-02 1-Topp **Date Collected:** 09/28/16
**Lab Code:** R1611762-003 **Date Received:** 10/28/16
**Sample Matrix:** Filter

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 6850 | MPEDRO | MPEDRO |

**Sample Name:** PS-SW-HCl-092816-02 2-Bottom **Date Collected:** 09/28/16
**Lab Code:** R1611762-004 **Date Received:** 10/28/16
**Sample Matrix:** Filter

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 300.0 | CWOODS | CWOODS |

**Sample Name:** PS-SW-HCl-092816-03 1-Topp **Date Collected:** 09/28/16
**Lab Code:** R1611762-005 **Date Received:** 10/28/16
**Sample Matrix:** Filter

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 6850 | MPEDRO | MPEDRO |

**Client:** US Environmental Protection Agency (EPA) **Service Request:** R1611762
**Project:** US EPA RTP, NC

**Sample Name:** PS-SW-HCl-092816-03 2-Bottom **Date Collected:** 09/28/16
**Lab Code:** R1611762-006 **Date Received:** 10/28/16
**Sample Matrix:** Filter

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 300.0 | CWOODS | CWOODS |

**Sample Name:** PS-SW-HCl-100416-01 1-Topp **Date Collected:** 10/4/16
**Lab Code:** R1611762-007 **Date Received:** 10/28/16
**Sample Matrix:** Filter

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 6850 | MPEDRO | MPEDRO |

**Sample Name:** PS-SW-HCl-100416-01 2-Bottom **Date Collected:** 10/4/16
**Lab Code:** R1611762-008 **Date Received:** 10/28/16
**Sample Matrix:** Filter

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 300.0 | CWOODS | CWOODS |

**Sample Name:** PS-SW-HCl-100416-02 1-Topp **Date Collected:** 10/4/16
**Lab Code:** R1611762-009 **Date Received:** 10/28/16
**Sample Matrix:** Filter

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 6850 | MPEDRO | MPEDRO |

**Sample Name:** PS-SW-HCl-100416-02 2-Bottom **Date Collected:** 10/4/16
**Lab Code:** R1611762-010 **Date Received:** 10/28/16
**Sample Matrix:** Filter

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 300.0 | CWOODS | CWOODS |

**Client:** US Environmental Protection Agency (EPA) **Service Request:** R1611762
**Project:** US EPA RTP, NC

**Sample Name:** PS-SW-HCl-100416-03 1-Topp **Date Collected:** 10/4/16
**Lab Code:** R1611762-011 **Date Received:** 10/28/16
**Sample Matrix:** Filter

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 6850 | MPEDRO | MPEDRO |

**Sample Name:** PS-SW-HCl-100416-03 2-Bottom **Date Collected:** 10/4/16
**Lab Code:** R1611762-012 **Date Received:** 10/28/16
**Sample Matrix:** Filter

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 300.0 | CWOODS | CWOODS |

**Sample Name:** BS-HCl-100416 1-Topp **Date Collected:** 10/4/16
**Lab Code:** R1611762-013 **Date Received:** 10/28/16
**Sample Matrix:** Filter

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 6850 | MPEDRO | MPEDRO |

**Sample Name:** BS-HCl-100416 2-Bottom **Date Collected:** 10/4/16
**Lab Code:** R1611762-014 **Date Received:** 10/28/16
**Sample Matrix:** Filter

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 300.0 | CWOODS | CWOODS |

# INORGANIC PREPARATION METHODS

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

**Water/Liquid Matrix**

| Analytical Method | Preparation Method |
|---|---|
| 200.7 | 200.2 |
| 200.8 | 200.2 |
| 6010C | 3005A/3010A |
| 6020A | ILM05.3 |
| 9014 Cyanide Reactivity | SW846 Ch7, 7.3.4.2 |
| 9034 Sulfide Reactivity | SW846 Ch7, 7.3.4.2 |
| 9034 Sulfide Acid Soluble | 9030B |
| 9056A Bomb (Halogens) | 5050A |
| 9066 Manual Distillation | 9065 |
| SM 4500-CN-E Residual Cyanide | SM 4500-CN-G |
| SM 4500-CN-E WAD Cyanide | SM 4500-CN-I |

**Solid/Soil/Non-Aqueous Matrix**

| Analytical Method | Preparation Method |
|---|---|
| 6010C | 3050B |
| 6020A | 3050B |
| 6010C TCLP (1311) extract | 3005A/3010A |
| 6010 SPLP (1312) extract | 3005A/3010A |
| 7196A | 3060A |
| 7199 | 3060A |
| 9056A Halogens/Halides | 5050 |
| 300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions | DI extraction |

For analytical methods not listed, the preparation method is the same as the analytical method reference.

# Sample Results

**ALS Environmental—Rochester Laboratory**
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# Semivolatile Organic Compounds by GC

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**ALS Group USA, Corp.**
**dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | US Environmental Protection Agency (EPA) | **Service Request:** | R1611762 |
| **Project:** | US EPA RTP, NC | **Date Collected:** | 09/28/16 |
| **Sample Matrix:** | Filter | **Date Received:** | 10/28/16 09:30 |
| **Sample Name:** | PS-SW-HCl-092816-01 1-Topp | **Units:** | ug/Filter |
| **Lab Code:** | R1611762-001 | **Basis:** | As Received |

**Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry**

**Analysis Method:** 6850
**Prep Method:** Method

| Analyte Name | Result | MRL | Dil. | Date Analyzed | Date Extracted | Q |
|---|---|---|---|---|---|---|
| Chlorate | 0.0040 U | 0.0040 | 1 | 11/09/16 10:57 | 11/8/16 | * |
| Perchlorate | 0.0040 U | 0.0040 | 1 | 11/09/16 10:57 | 11/8/16 | * |

**ALS Group USA, Corp.**
**dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | US Environmental Protection Agency (EPA) | **Service Request:** | R1611762 |
| **Project:** | US EPA RTP, NC | **Date Collected:** | 09/28/16 |
| **Sample Matrix:** | Filter | **Date Received:** | 10/28/16 09:30 |
| **Sample Name:** | PS-SW-HCl-092816-02 1-Topp | **Units:** | ug/Filter |
| **Lab Code:** | R1611762-003 | **Basis:** | As Received |

**Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry**

**Analysis Method:** 6850
**Prep Method:** Method

| Analyte Name | Result | MRL | Dil. | Date Analyzed | Date Extracted | Q |
|---|---|---|---|---|---|---|
| Chlorate | 0.0040 U | 0.0040 | 1 | 11/09/16 11:12 | 11/8/16 | * |
| Perchlorate | 0.0040 U | 0.0040 | 1 | 11/09/16 11:12 | 11/8/16 | * |

**ALS Group USA, Corp.**
**dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | US Environmental Protection Agency (EPA) | **Service Request:** | R1611762 |
| **Project:** | US EPA RTP, NC | **Date Collected:** | 09/28/16 |
| **Sample Matrix:** | Filter | **Date Received:** | 10/28/16 09:30 |
| **Sample Name:** | PS-SW-HCl-092816-03 1-Topp | **Units:** | ug/Filter |
| **Lab Code:** | R1611762-005 | **Basis:** | As Received |

**Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry**

**Analysis Method:** 6850
**Prep Method:** Method

| Analyte Name | Result | MRL | Dil. | Date Analyzed | Date Extracted | Q |
|---|---|---|---|---|---|---|
| Chlorate | 0.0040 U | 0.0040 | 1 | 11/09/16 11:26 | 11/8/16 | * |
| Perchlorate | 0.0040 U | 0.0040 | 1 | 11/09/16 11:26 | 11/8/16 | * |

**ALS Group USA, Corp.**
**dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | US Environmental Protection Agency (EPA) | **Service Request:** | R1611762 |
| **Project:** | US EPA RTP, NC | **Date Collected:** | 10/04/16 |
| **Sample Matrix:** | Filter | **Date Received:** | 10/28/16 09:30 |
| **Sample Name:** | PS-SW-HCl-100416-01 1-Topp | **Units:** | ug/Filter |
| **Lab Code:** | R1611762-007 | **Basis:** | As Received |

**Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry**

**Analysis Method:** 6850
**Prep Method:** Method

| Analyte Name | Result | MRL | Dil. | Date Analyzed | Date Extracted | Q |
|---|---|---|---|---|---|---|
| Chlorate | 0.0040 U | 0.0040 | 1 | 11/09/16 11:41 | 11/8/16 | * |
| Perchlorate | 0.0040 U | 0.0040 | 1 | 11/09/16 11:41 | 11/8/16 | * |

**ALS Group USA, Corp.**
**dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | US Environmental Protection Agency (EPA) | **Service Request:** | R1611762 |
| **Project:** | US EPA RTP, NC | **Date Collected:** | 10/04/16 |
| **Sample Matrix:** | Filter | **Date Received:** | 10/28/16 09:30 |
| **Sample Name:** | PS-SW-HCl-100416-02 1-Topp | **Units:** | ug/Filter |
| **Lab Code:** | R1611762-009 | **Basis:** | As Received |

**Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry**

**Analysis Method:** 6850
**Prep Method:** Method

| Analyte Name | Result | MRL | Dil. | Date Analyzed | Date Extracted | Q |
|---|---|---|---|---|---|---|
| Chlorate | 0.0040 U | 0.0040 | 1 | 11/09/16 16:59 | 11/8/16 | * |
| Perchlorate | 0.0040 U | 0.0040 | 1 | 11/09/16 16:59 | 11/8/16 | * |

**ALS Group USA, Corp.**
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Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | US Environmental Protection Agency (EPA) | **Service Request:** | R1611762 |
| **Project:** | US EPA RTP, NC | **Date Collected:** | 10/04/16 |
| **Sample Matrix:** | Filter | **Date Received:** | 10/28/16 09:30 |
| **Sample Name:** | PS-SW-HCl-100416-03 1-Topp | **Units:** | ug/Filter |
| **Lab Code:** | R1611762-011 | **Basis:** | As Received |

**Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry**

**Analysis Method:** 6850
**Prep Method:** Method

| Analyte Name | Result | MRL | Dil. | Date Analyzed | Date Extracted | Q |
|---|---|---|---|---|---|---|
| Chlorate | 0.0040 U | 0.0040 | 1 | 11/09/16 12:41 | 11/8/16 | * |
| Perchlorate | 0.0040 U | 0.0040 | 1 | 11/09/16 12:41 | 11/8/16 | * |

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Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | US Environmental Protection Agency (EPA) | **Service Request:** | R1611762 |
| **Project:** | US EPA RTP, NC | **Date Collected:** | 10/04/16 |
| **Sample Matrix:** | Filter | **Date Received:** | 10/28/16 09:30 |
| **Sample Name:** | BS-HCl-100416 1-Topp | **Units:** | ug/Filter |
| **Lab Code:** | R1611762-013 | **Basis:** | As Received |

**Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry**

**Analysis Method:** 6850
**Prep Method:** Method

| Analyte Name | Result | MRL | Dil. | Date Analyzed | Date Extracted | Q |
|---|---|---|---|---|---|---|
| Chlorate | 0.0040 U | 0.0040 | 1 | 11/09/16 12:55 | 11/8/16 | * |
| Perchlorate | 0.0040 U | 0.0040 | 1 | 11/09/16 12:55 | 11/8/16 | * |

# General Chemistry

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**ALS Group USA, Corp.**
**dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | US Environmental Protection Agency (EPA) | **Service Request:** | R1611762 |
| **Project:** | US EPA RTP, NC | **Date Collected:** | 09/28/16 |
| **Sample Matrix:** | Filter | **Date Received:** | 10/28/16 09:30 |
| **Sample Name:** | PS-SW-HCl-092816-01 2-Bottom | **Basis:** | As Received |
| **Lab Code:** | R1611762-002 | | |

## Inorganic Parameters

| Analyte Name | Analysis Method | Result | Units | MRL | Dil. | Date Analyzed | Date Extracted | Q |
|---|---|---|---|---|---|---|---|---|
| Chloride | 300.0 | **11.4** | ug/Filter | 6.0 | 1 | 11/21/16 19:44 | 11/21/16 | * |

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Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | US Environmental Protection Agency (EPA) | **Service Request:** | R1611762 |
| **Project:** | US EPA RTP, NC | **Date Collected:** | 09/28/16 |
| **Sample Matrix:** | Filter | **Date Received:** | 10/28/16 09:30 |
| **Sample Name:** | PS-SW-HCl-092816-02 2-Bottom | **Basis:** | As Received |
| **Lab Code:** | R1611762-004 | | |

## Inorganic Parameters

| Analyte Name | Analysis Method | Result | Units | MRL | Dil. | Date Analyzed | Date Extracted | Q |
|---|---|---|---|---|---|---|---|---|
| Chloride | 300.0 | **11.0** | ug/Filter | 6.0 | 1 | 11/21/16 19:57 | 11/21/16 | * |

**ALS Group USA, Corp.**
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Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | US Environmental Protection Agency (EPA) | **Service Request:** | R1611762 |
| **Project:** | US EPA RTP, NC | **Date Collected:** | 09/28/16 |
| **Sample Matrix:** | Filter | **Date Received:** | 10/28/16 09:30 |
| **Sample Name:** | PS-SW-HCl-092816-03 2-Bottom | **Basis:** | As Received |
| **Lab Code:** | R1611762-006 | | |

## Inorganic Parameters

| Analyte Name | Analysis Method | Result | Units | MRL | Dil. | Date Analyzed | Date Extracted | Q |
|---|---|---|---|---|---|---|---|---|
| Chloride | 300.0 | 6.0 U | ug/Filter | 6.0 | 1 | 11/21/16 20:10 | 11/21/16 | * |

**ALS Group USA, Corp.**
**dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | US Environmental Protection Agency (EPA) | **Service Request:** | R1611762 |
| **Project:** | US EPA RTP, NC | **Date Collected:** | 10/04/16 |
| **Sample Matrix:** | Filter | **Date Received:** | 10/28/16 09:30 |
| **Sample Name:** | PS-SW-HCl-100416-01 2-Bottom | **Basis:** | As Received |
| **Lab Code:** | R1611762-008 | | |

## Inorganic Parameters

| Analyte Name | Analysis Method | Result | Units | MRL | Dil. | Date Analyzed | Date Extracted | Q |
|---|---|---|---|---|---|---|---|---|
| Chloride | 300.0 | **9.4** | ug/Filter | 6.0 | 1 | 11/21/16 20:49 | 11/21/16 | * |

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Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | US Environmental Protection Agency (EPA) | **Service Request:** | R1611762 |
| **Project:** | US EPA RTP, NC | **Date Collected:** | 10/04/16 |
| **Sample Matrix:** | Filter | **Date Received:** | 10/28/16 09:30 |
| **Sample Name:** | PS-SW-HCl-100416-02 2-Bottom | **Basis:** | As Received |
| **Lab Code:** | R1611762-010 | | |

## Inorganic Parameters

| Analyte Name | Analysis Method | Result | Units | MRL | Dil. | Date Analyzed | Date Extracted | Q |
|---|---|---|---|---|---|---|---|---|
| Chloride | 300.0 | 6.0 U | ug/Filter | 6.0 | 1 | 11/21/16 21:02 | 11/21/16 | * |

**ALS Group USA, Corp.**
**dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | US Environmental Protection Agency (EPA) | **Service Request:** | R1611762 |
| **Project:** | US EPA RTP, NC | **Date Collected:** | 10/04/16 |
| **Sample Matrix:** | Filter | **Date Received:** | 10/28/16 09:30 |
| **Sample Name:** | PS-SW-HCl-100416-03 2-Bottom | **Basis:** | As Received |
| **Lab Code:** | R1611762-012 | | |

## Inorganic Parameters

| Analyte Name | Analysis Method | Result | Units | MRL | Dil. | Date Analyzed | Date Extracted | Q |
|---|---|---|---|---|---|---|---|---|
| Chloride | 300.0 | 6.0 U | ug/Filter | 6.0 | 1 | 11/21/16 21:15 | 11/21/16 | * |

**ALS Group USA, Corp.**
**dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | US Environmental Protection Agency (EPA) | **Service Request:** | R1611762 |
| **Project:** | US EPA RTP, NC | **Date Collected:** | 10/04/16 |
| **Sample Matrix:** | Filter | **Date Received:** | 10/28/16 09:30 |
| **Sample Name:** | BS-HCl-100416 2-Bottom | **Basis:** | As Received |
| **Lab Code:** | R1611762-014 | | |

## Inorganic Parameters

| Analyte Name | Analysis Method | Result | Units | MRL | Dil. | Date Analyzed | Date Extracted | Q |
|---|---|---|---|---|---|---|---|---|
| Chloride | 300.0 | 6.0 U | ug/Filter | 6.0 | 1 | 11/21/16 21:28 | 11/21/16 | * |

# QC Summary Forms

**ALS Environmental—Rochester Laboratory**
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ED_001349_00003166-00035

# Semivolatile Organic Compounds by GC

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Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

**ALS Group USA, Corp.**
**dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | US Environmental Protection Agency (EPA) | **Service Request:** | R1611762 |
| **Project:** | US EPA RTP, NC | **Date Collected:** | NA |
| **Sample Matrix:** | Filter | **Date Received:** | NA |
| **Sample Name:** | Method Blank | **Units:** | ug/Filter |
| **Lab Code:** | RQ1613608-01 | **Basis:** | As Received |

**Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry**

**Analysis Method:** 6850
**Prep Method:** Method

| Analyte Name | Result | MRL | Dil. | Date Analyzed | Date Extracted | Q |
|---|---|---|---|---|---|---|
| Chlorate | 0.0040 U | 0.0040 | 1 | 11/09/16 09:44 | 11/8/16 | |
| Perchlorate | 0.0040 U | 0.0040 | 1 | 11/09/16 09:44 | 11/8/16 | |

**ALS Group USA, Corp.**
**dba ALS Environmental**

QA/QC Report

**Client:** US Environmental Protection Agency (EPA)
**Project:** US EPA RTP, NC
**Sample Matrix:** Filter

**Service Request:** R1611762
**Date Analyzed:** 11/09/16

## Duplicate Lab Control Sample Summary
## Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

**Units:** ug/Filter
**Basis:** As Received

| | | Lab Control Sample | | | Duplicate Lab Control Sample | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | RQ1613608-02 | | | RQ1613608-03 | | | | | |
| **Analyte Name** | **Analytical Method** | **Result** | **Spike Amount** | **% Rec** | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| Chlorate | 6850 | 0.00460 | 0.00400 | 115 | 0.00440 | 0.00400 | 110 | 80-120 | 4 | 15 |
| Perchlorate | 6850 | 0.00400 | 0.00400 | 100 | 0.00380 J | 0.00400 | 95 | 80-120 | 5 | 15 |

# General Chemistry

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**ALS Group USA, Corp.**
**dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | US Environmental Protection Agency (EPA) | **Service Request:** | R1611762 |
| **Project:** | US EPA RTP, NC | **Date Collected:** | NA |
| **Sample Matrix:** | Filter | **Date Received:** | NA |
| **Sample Name:** | Method Blank | **Basis:** | As Received |
| **Lab Code:** | R1611762-MB | | |

## Inorganic Parameters

| Analyte Name | Analysis Method | Result | Units | MRL | Dil. | Date Analyzed | Date Extracted | Q |
|---|---|---|---|---|---|---|---|---|
| Chloride | 300.0 | 6.0 U | ug/Filter | 6.0 | 1 | 11/21/16 14:15 | 11/21/16 | |

**ALS Group USA, Corp.**
**dba ALS Environmental**

QA/QC Report

**Client:** US Environmental Protection Agency (EPA)
**Project:** US EPA RTP, NC
**Sample Matrix:** Filter

**Service Request:** R1611762
**Date Analyzed:** 11/21/16

## Duplicate Lab Control Sample Summary
## General Chemistry Parameters

**Units:** ug/Filter
**Basis:** As Received

| | | | Lab Control Sample R1611762-LCS | | | Duplicate Lab Control Sample R1611762-DLCS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Analytical Method** | **Result** | **Spike Amount** | **% Rec** | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| Chloride | 300.0 | 42.9 | 40.0 | 107 | 43.0 | 40.0 | 108 | 90-110 | <1 | 30 |