



Via FedEx

February 14, 2020

In reply refer to SHEA-116198

Information Technology Unit  
Los Angeles Regional Water Quality Control Board  
320 West 4th Street, Suite 200  
Los Angeles, California 90013

Subject: Fourth Quarter 2019 NPDES Discharge Monitoring Report  
Compliance File CI-6027 and NPDES No. CA0001309  
Santa Susana Field Laboratory  
Ventura County, California

The Boeing Company (Boeing) hereby submits this Discharge Monitoring Report (DMR) for the Santa Susana Field Laboratory (Santa Susana Site) for the period of October 1 through December 31 (Fourth Quarter 2019). This DMR was prepared as required by, and in accordance with the National Pollutant Discharge Elimination System Permit No. CA0001309 (NPDES Permit) issued by the Los Angeles California Regional Water Quality Control Board (Regional Board) in 2015. The NPDES Permit covers the entire Santa Susana Site, which includes approximately 2,400 acres owned by Boeing, approximately 450 acres owned by the United States and administered by the National Aeronautics and Space Administration (NASA), and approximately 290 acres of Boeing's land for which the Department of Energy (DOE) has assumed responsibility for soil remediation.

Hard copies of this DMR are available to the public at the California State University Northridge Oviatt Library, the Simi Valley Public Library, and the Platt Branch of the Los Angeles Public Library. An electronic version of this DMR is located at: <http://www.boeing.com/principles/environment/santa-susana/monitoring-reports.page>

## FOURTH QUARTER 2019 DMR CONTENTS

This DMR includes the following sections and appendices:

- **Discharge and Sample Collection Summary:** This section describes the number of rain events, the number of samples collected, sample dates, and sample locations during the Fourth Quarter 2019. Table I summarizes the Fourth Quarter 2019 sampling record by outfall or location and sample type collected according to the requirements of the NPDES Permit.
- **Fourth Quarter 2019 Summary of Exceedances and/or Non-Compliance:** This section summarizes the Fourth Quarter 2019 sample results that exceeded NPDES Permit Limits, Benchmarks, and Receiving Water Limits, and the potential causes thereof.
- **Fourth Quarter 2019 Santa Susana Site Stormwater Pollution Prevention Plan (SWPPP)/BMP Activities:** This section presents the Santa Susana Site SWPPP and BMP-related activities implemented in the Fourth Quarter 2019 as well as activities associated with NASA, DOE, the Stormwater Expert Panel (Expert Panel), the Northern Drainage, and the Outfall 001/002 BMP Compliance Report. Table II summarizes typical BMP-related activities that occur at outfalls every quarter. Table III summarizes specific BMP activities completed during the Fourth Quarter 2019 by outfall location.
- **Reasonable Potential Analysis:** This section discusses the results of the analysis.

- **Figure 1** shows the stormwater collection and conveyance system, the Bell Creek Receiving Water sampling location (RSW-001, Outfall 002), and Santa Susana Site features; **Figure 2** shows the Arroyo Simi Receiving Water sampling location (RSW 002, Frontier Park) and upstream monitoring location.
- **Appendix A** summarizes the rainfall measured at the Santa Susana Site during the Fourth Quarter 2019.
- **Appendix B** tabulates waste shipment details during the Fourth Quarter 2019.
- **Appendix C** presents chemical analytical results from the Fourth Quarter 2019 stormwater and/or receiving water sample discharge monitoring in tabular form by outfall locations, constituents evaluated (analytes), sample dates, and data validation qualifiers.
- **Appendix D** summarizes the NPDES Permit Limit, Benchmark, and Receiving Water Limit exceedances.
- **Appendix E** contains copies of the laboratory analytical reports, chain of custody forms, and data validation reports (if validation was performed).
- **Appendix F** tabulates the Reasonable Potential Analysis.
- **Appendix G** presents the observations of the receiving water monitoring program required by the NPDES Permit and includes the Arroyo Simi, Bell Creek, and Dayton Canyon surveys.

## DISCHARGE AND SAMPLE COLLECTION SUMMARY

The Santa Susana Site had 4 qualifying rain events during the Fourth Quarter 2019 that measured greater than 0.1 inch of rainfall within a 24-hour period and were preceded by at least 72 hours of dry weather (Appendix A). Automated flow-weighted composite samplers (autosamplers) were set in preparation for all four rain events. Two of the qualifying rain events produced stormwater discharges. Stormwater samples were collected at Outfalls 001, 002, 008, and 009 in one or more rain events this quarter. There were no changes in the discharge as described in the NPDES Permit during the reporting period.

In addition to outfall sampling, receiving water samples were collected. An offsite receiving water sample was collected at the Arroyo Simi location (RSW-002, Frontier Park; see Figure 2) and an onsite receiving water sample was collected at Outfall 002 (RSW-001).

Table I summarizes the Fourth Quarter 2019 sampling record by location, sample frequency, and sample type collected per NPDES Permit requirements; the results are included in Appendix C.

**TABLE I: Sampling Record during the Fourth Quarter 2019**

Date	Outfall/Location	Sample Frequency	Sample Type
12/04 – 12/05/2019	Outfall 002	Quarterly, Routine; Quarterly (RSW-001)	Grab, Composite
12/23 – 12/24/2019	Outfall 002	Routine	Grab, Composite
12/23 – 12/24/2019	Outfall 009	Semiannual, Routine	Grab, Composite
12/23/2019	Arroyo Simi Receiving Water (RSW-002, Frontier Park)	Quarterly Surface Water	Grab
12/26 – 12/27/2019	Outfall 001	Quarterly, Routine	Grab, Composite
12/26 – 12/27/2019	Outfall 008	Routine	Grab, Composite

**Notes:**

Routine = 1 per discharge event.

All analyses were conducted at analytical laboratories certified by the State Water Resources Control Board (SWRCB) for such analyses (i.e., all have current certification from the Environmental Laboratory Accreditation Program [ELAP] established by the California Environmental Laboratory Improvement Act) or have been approved by the SWRCB Executive Officer in accordance with current U.S. Environmental Protection Agency (EPA) guideline procedures or as specified in the NPDES Permit. Laboratory analytical reports, including validation reports (if validation was performed) and notes, are included in Appendix E. Attachment H of the NPDES Permit presents the SWRCB’s minimum levels laboratories are expected to achieve for reporting and determining compliance with NPDES Permit Limits. The analytical laboratory achieved these minimum levels in the Fourth Quarter 2019 except when reporting limits were above the minimum levels (generally due to matrix). In cases where the NPDES Permit Limit was less than the reporting limit and minimum level, the reporting limit was used to determine compliance.

## FOURTH QUARTER 2019 SUMMARY OF EXCEEDANCES AND/OR NON-COMPLIANCE

As summarized in Appendix D, the Fourth Quarter 2019 exceedances of Daily Maximum Benchmarks, Daily Maximum Permit Limits, or Receiving Water Limits included:

- Lead, iron, gross alpha<sup>1</sup> and Dioxins (TCDD) Toxic Equivalent (TEQ) at Outfall 001; and
- Iron and TCDD TEQ at Outfall 002.

A detailed discussion of the exceedances is provided below.

Boeing is committed to fulfilling the requirements of the NPDES Permit. Boeing and NASA each took actions during the Fourth Quarter 2019 to manage stormwater discharges (e.g., erosion and sediment transport, road run-off, etc.) on each party's property and/or area of responsibility. Boeing's actions are described in Tables II and III and in the sections below related to SWPPP/BMP Activities, and Outfall 001/002 BMP Compliance Report Related Activities. Repair and other erosion control measures associated with BMPs undertaken by NASA and DOE are also described below. The Expert Panel is currently evaluating the data contained in this DMR and will include the results of their analysis on the likely causes of the exceedances described below in their 2020 Annual Report.

### Outfall 001

#### Metals: Iron and Lead

On December 27, 2019, a stormwater sample was collected from Outfall 001. Iron was detected at 14 milligrams per liter (mg/L), above the Daily Maximum Benchmark of 0.3 mg/L, and lead was detected at 6.6 micrograms per liter (µg/L), above the Daily Maximum Benchmark of 5.2 µg/L.

The industrial areas upstream of Outfall 001 are monitored by Outfall 011. Given that Outfall 011 did not produce flow, and the property in the watershed between Outfall 011 and Outfall 001 includes little to no industrial materials, equipment, activities or developed areas, and the primary developed surfaces are dirt roads, Boeing believes the higher metals concentrations at Outfall 001 during the Fourth Quarter 2019 are attributable to the 2018 Woolsey Wildfire. This conclusion is consistent with the findings in prior site studies conducted by the Expert Panel which confirm that elevated metals are naturally occurring at the site unrelated to former industrial operations and were mobilized by the wildfire.

As discussed in the 2019 Expert Panel Annual Report, Section 2.2.1.1, "spatial and temporal patterns indicate the elevated iron [and lead] concentrations in stormwater this year [were] likely due to post-fire conditions." Recently published research supports that wildfires may produce elevated iron and lead concentrations in stormwater runoff. The Expert Panel compared particulate strengths in stormwater samples and solids concentration in potential source material samples and determined that natural background soils were likely the source of iron and atmospheric deposition, road run-off, and/or natural background soils were the likely sources of lead. The Expert Panel also reviewed metal ratio fingerprinting that further supports natural background soils as the likely source of both iron and lead in the samples having exceedances. Geosyntec and the Expert Panel are in the process of updating the analysis from the "SSFL Metals Background Report: Sources of Metals in SSFL Watersheds" (Pitt, 2009), and analyzing the latest NPDES outfall exceedances to determine their causes and formulating additional actions to reduce sources; the results of the Expert Panel's analysis will be included in their 2020 Annual Report.

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<sup>1</sup> Gross alpha results are in a separate section below.

The actions completed during Fourth Quarter 2019 to control sources in the Outfall 001 watershed are described in the Fourth Quarter 2019 Santa Susana Site SWPPP/BMP Activities section below. Boeing and the Expert Panel will continue to monitor and evaluate the effectiveness of BMPs within the Outfall 001 watershed.

#### Dioxins (TCDD) Toxic Equivalent (TEQ)

On December 27, 2019, TCDD TEQ was calculated in a stormwater sample collected from Outfall 001 at 5.1E-08 µg/L, which is above the Daily Maximum Benchmark of 2.8E-08 µg/L.

The Department of Toxic Substances Control's (DTSC) Chemical Soil Background Study found TCDD congeners in background soils and concluded that they could have originated from wildfire combustion processes and atmospheric deposition (DTSC, 2012). In addition, the Expert Panel has reported that elevated dioxin concentrations may be found in road run-off and soils adjacent to telephone/utility poles (treated wood), both of which can be mobilized by surface water flow following a wildfire event.

As discussed in the 2019 Expert Panel Annual Report, a comparison of particulate strengths in stormwater samples and solids concentration in potential source material samples indicated that soil near treated wood, atmospheric deposition, and/or road run-off were the likely sources of TCDD TEQ in samples exhibiting exceedances. The Expert Panel also reviewed congener fingerprinting that further supports that soil near treated wood as the likely source of TCDD TEQ in the exceeding samples.

The Expert Panel is evaluating the data contained in this DMR, as well as potential dioxin sources, and will include the results of their analysis on the likely cause of this exceedance in their 2020 Annual Report.

#### **Outfall 002**

##### Metals: Iron

On December 5, 2019, a stormwater sample was collected from Outfall 002. Iron was detected 1.5 mg/L, above the Daily Maximum Benchmark of 0.3 mg/L.

On December 24, 2019, a stormwater sample was collected from Outfall 002. Iron was detected 8.7 mg/L, above the Daily Maximum Benchmark of 0.3 mg/L.

The industrial areas upstream of Outfall 002 are monitored at Outfall 018. Given that Outfall 018 did not produce flow, and the property in the watershed between Outfall 018 and Outfall 002 lacks industrial materials, equipment, activities or developed areas, and the primary developed surfaces are dirt roads, Boeing believes that the higher iron concentrations at Outfall 002 during the Fourth Quarter 2019 are attributable to the 2018 Woolsey Wildfire. This conclusion is consistent with the findings in prior site studies conducted by the Expert Panel which confirm that elevated metals are naturally occurring at the site unrelated to former industrial operations and were mobilized by the wildfire.

As discussed in the 2019 Expert Panel Annual Report, Section 2.2.1.2, "spatial and temporal patterns indicate the elevated iron concentrations in stormwater this year was likely due to post-fire conditions." Recently published research supports that wildfires may produce elevated iron concentrations in stormwater runoff. The Expert Panel compared particulate strengths in stormwater samples and solids concentration in potential source material samples and determined that natural background soils were likely the source of iron. The Expert Panel also reviewed metal ratio fingerprinting that further supports natural background soils as the likely source of iron in samples having exceedances. Geosyntec and the Expert Panel are in the process of updating the analysis from the "SSFL Metals Background Report: Sources of Metals in SSFL Watersheds" (Pitt, 2009), and analyzing the latest NPDES

outfall exceedances to determine their causes and formulating additional actions to reduce sources; the results of the Expert Panel's analysis will be included in their 2020 Annual Report.

The actions completed during Fourth Quarter 2019 to control sources in Outfall 002 are described in the Fourth Quarter 2019 Santa Susana Site SWPPP/BMP Activities section below. Boeing and the Expert Panel will continue to monitor and evaluate the effectiveness of BMPs within the Outfall 002 watershed.

#### Dioxins (TCDD) Toxic Equivalent (TEQ)

On December 24, 2019, TCDD TEQ was calculated in a stormwater sample collected from Outfall 002 at 5.1E-08 µg/L, above the Daily Maximum Benchmark of 2.8E-08 µg/L.

As discussed above, the DTSC's Chemical Soil Background Study found TCDD congeners in background soils and concluded that they could have originated from wildfire combustion processes and atmospheric deposition (DTSC, 2012). In addition, the Expert Panel has reported that elevated dioxin concentrations may be found in road run-off and soils adjacent to telephone/utility pole (treated wood), both of which can be mobilized by surface water flow following a wildfire event.

As discussed in the 2019 Expert Panel Annual Report, a comparison of particulate strengths in stormwater samples and solids concentration in potential source material samples indicated that soil near treated wood and atmospheric deposition were the likely sources of TCDD TEQ in samples exhibiting exceedances. The Expert Panel also reviewed congener fingerprinting that further supports that soil near treated wood as the likely source of TCDD TEQ in the exceeding samples.

The Expert Panel is evaluating the data contained in this DMR, as well as potential dioxin sources, and will include the results of their analysis on the likely cause of this exceedance in their 2020 Annual Report.

#### **Gross Alpha at Outfalls 001, 002, and 008**

According to the NPDES Permit, if gross alpha is greater than 15 pCi/L, additional calculations and analysis must be made: uranium analysis must be performed, uranium results must be less than 20 pCi/L, gross alpha minus total uranium must be compared to the Daily Maximum Benchmark of 15 pCi/L, and the average gross alpha results for the calendar year must also be compared to the Daily Maximum Benchmark of 15 pCi/L.

#### Outfall 001

On December 27, 2019, a stormwater sample was collected from Outfall 001. Gross alpha was reported at 14.1 +/- 3.61 picocuries per liter [pCi/L], which is indeterminate when compared to the Daily Maximum Benchmark of 15 pCi/L. Uranium analysis was performed, and the result was 0.664 +/- 0.436 pCi/L. Gross alpha minus total uranium was calculated to be 13.4 +/- 3.64 pCi/L, which is indeterminate when compared to the Daily Maximum Benchmark of 15 pCi/L, and the average gross alpha results for the calendar year must also be compared to the Daily Maximum Benchmark of 15 pCi/L.

Averaging the First Quarter and Fourth Quarter 2019 data gives an annual average of 3.65 +/- 0.64 pCi/L, below the Daily Maximum Benchmark. Thus, gross alpha at Outfall 001 is in compliance for 2019.

In addition, Boeing tested the December 27, 2019 sample from Outfall 001 at an independent, State-certified laboratory for an additional thirteen naturally occurring and four man-made alpha emitting radionuclides. That isotopic analysis confirmed that only naturally-occurring radioactive material (NORM) was detected. No anthropogenic (man-made) alpha emitting radionuclides were detected in the sample (Appendix C).

Outfall 002

Averaging First Quarter and Fourth Quarter 2019 data gives an annual average of 7.82 +/- 2.13 pCi/L, below the Daily Maximum Benchmark required by the Permit.

Outfall 008

Averaging the First Quarter and Fourth Quarter 2019 data gives an annual average of 3.74 +/- 0.78 pCi/L, below the Daily Maximum Benchmark required by the Permit.

Summary Evaluation of Gross Alpha at Outfalls 001, 002, and 008

These analytical results and the 2019 Expert Panel Annual Report support the conclusion that the gross alpha detected did not originate from previous nuclear industrial activities at the site but are rather a result of natural processes. Sections 2.2.1.2 and 2.2.1.3 of the 2019 Expert Panel Annual Report state that “spatial and temporal patterns indicate the elevated gross alpha concentration in stormwater this year was likely due to post-fire conditions.” The Expert Panel compared particulate strengths in stormwater samples and solids concentration in potential source material samples and determined that none of the industrial activities were responsible for the gross alpha exceedance in stormwater. The Expert Panel also reviewed metal ratio fingerprinting and found that it supports natural background soils as the likely source of gross alpha in the samples with exceedances. The Expert Panel further considered laboratory analyses that indicated only naturally occurring alpha-emitting radionuclides were detected. No man-made alpha-emitting radionuclides were detected. The Expert Panel is evaluating the data contained in this DMR and will include the results of their analysis in their 2020 Annual Report.

## FOURTH QUARTER 2019 SANTA SUSANA SITE SWPPP/BMP ACTIVITIES

Boeing implemented significant BMP activities in compliance with the Site-Wide SWPPP (Haley & Aldrich, 2019) to assist in improving stormwater quality and compliance at the Santa Susana Site. Table II summarizes typical BMP-related activities that occur at outfalls every quarter.

**TABLE II: Routine Quarterly Outfall BMP Activities**

BMP Activities	Outfalls												
	001	002	003	004	005	006	007	008	009	010	011	018	
Conducted erosion, sediment control, and drainage stabilization inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation.	X	X	X	X	X	X	X	X	X	X	X	X	X
Inspected the flume for sediment/debris.	X	X	X	X	N/A	X	N/A	X	X	X	N/A	X	
Inspected the weir for sediment/debris.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	X	N/A	
Cleaned the sample box of sediment and debris, checked for the presence of animals, and performed weed abatement as needed.	X	X	X	X	X	X	X	X	N/A	X	X	X	
Checked the flow meter control box for the presence of debris and/or animals.	X	X	X	X	N/A	X	N/A	X	X	X	X	X	
Cleaned the outfall area of sediment and debris and performed weed abatement as needed.	X	X	X	X	X	X	X	X	X	X	X	X	
Reset the flow meter and replaced the tape monthly.	X	X	X	X	N/A	X	N/A	X	X	X	X	X	
Conducted maintenance inspections of the stormwater conveyance system.	N/A	N/A	X	X	X	X	X	N/A	N/A	X	X	X	
Conducted maintenance inspections of the stormwater retention system.	N/A	N/A	X	X	X	X	X	N/A	N/A	X	X	X	
Conducted maintenance inspections of the flow-through structure.	N/A	N/A	X	X	N/A	X	N/A	N/A	N/A	X	X	N/A	

**Notes:**

X = BMP activity is applicable to the outfall and was completed in Fourth Quarter 2019.

N/A = BMP activity is not applicable to the outfall because the outfall does not have a flume, sample box, flow meter, retention system or flow-through structure or is not part of the stormwater conveyance system.



Table III summarizes the additional activities completed during the Fourth Quarter 2019 by outfall or BMP location.

**TABLE III: Additional Fourth Quarter 2019 BMP Activities**

Outfall or BMP Location	BMP Activities During Fourth Quarter 2019
001	Installed fiber roll and jute netting near flume. Removed sediment with the use of the SuperVac upstream of the flume and installed and rebuilt check structures.
002	Removed sediment with the use of the SuperVac upstream of the flume. Installed a riprap floor and check structure.
003	Repaired PVC pipe on manifold. Repaired the grout along the flume.
005	Removed damaged snow fencing.
006	Repaired the bleeder valve on the Charles King line. Redesigned and fabricated a new suction and discharge line for the Charles King pump.
008	Removed fallen tree downstream of sample box. Installed three check structures upstream of the flume.
010	Repaired the mesh covering on the large white PVC pipe. Resealed the upper sump basin.
011	Installed a thrust block for the conveyance pump line.
018	Designed and fabricated a new 12" HDPE suction line for the Charles King pump.
Lower Lot	Performed pump maintenance on low flow alarm.

**Notes:**

PVC = polyvinyl chloride

HDPE = high-density polyethylene

In addition to SWPPP-related activities, specific BMP projects included: NASA, DOE, Expert Panel, Northern Drainage, and Outfall 001/002 BMP Compliance Report. These are discussed in more detail below.

**NASA-Related Activities**

Demolition BMPs and stormwater activities covered by NASA’s Construction SWPPP (dated May 16, 2017) for the Alfa and Bravo Areas are inspected in accordance with the Construction General Permit (CGP). All demolition and soil disturbance activities were completed in 2018. During the Fourth Quarter 2019, NASA maintained fiber rolls as linear sediment controls, maintained silt fencing, and maintained hydroseeded areas within these sites where construction activities had been completed.

Demolition BMPs and stormwater control activities covered by NASA’s Construction SWPPP (dated December 4, 2017) in the Coca Test Stand Area are inspected in accordance with the CGP. All demolition and soil disturbance activities in the Coca Test Stand Area were completed in Fourth Quarter 2018. During the Fourth Quarter 2019, NASA maintained fiber rolls as linear sediment controls and maintained sandbags.

Demolition BMPs and stormwater control activities covered by NASA’s Construction SWPPP (dated September 20, 2018) for the LOX and Bravo Areas are inspected in accordance with the CGP. During the Fourth Quarter 2019, NASA completed demolition activities in these areas and maintained fiber rolls as linear sediment controls and maintained sandbags.

**DOE Related Activities**

During the Fourth Quarter 2019, DOE removed silt buildup at the silt fences and replaced fiber rolls at the downstream end of the slope of the Building 54 landfill.

### **Expert Panel-Related Activities**

The BMP activities discussed below were performed, commenced, or completed during the Fourth Quarter 2019 in coordination with the Expert Panel.

#### Culvert Modifications

Twelve culvert modifications (CMs) were constructed in 2009 at various locations at or along the main road adjacent to the Northern Drainage. The CMs were designed to treat stormwater from roads and/or the surrounding hillsides. The Fourth Quarter 2019 activities included:

- BMP inspections, including the culvert inlets and riprap check dams; and
- All CMs, basins, and weir boards were cleaned of debris, as applicable.

#### NASA Expendable Launch Vehicle (ELV) Area BMPs

BMPs and drainage improvements were installed between June and October 2013 at the NASA ELV to improve the quality of stormwater from the ELV area. After being pumped from the cistern at the bottom of the swale to the ELV system, stormwater is gravity-driven through the tank system, starting with the settling tanks, then through the filter media tank, before discharging to a tributary that flows to Outfall 009. In the Second Quarter 2016, a sandbag berm was placed across the ELV asphalt swale to divert stormwater toward CM-1 for treatment instead of directly discharging to the Northern Drainage. A generator was installed at the ELV system during the Third Quarter 2019. The Fourth Quarter 2019 activities included BMP inspections.

#### Well 13 Road

Sandbag berms located near the culvert inlet and downgradient of the hydroseeded area were reinforced and increased in height during Fourth Quarter 2017. The Fourth Quarter 2019 activities included BMP inspections.

#### B-1 Area

The B-1 Area BMPs include:

- A sedimentation basin, constructed in 2012;
- A media filter, constructed in 2012; and
- An upper parking lot media filter, constructed in 2017.

The Fourth Quarter 2019 activities included continued BMP inspections and clearing the areas of sediment and debris.

#### Upper Parking Lot Media Filter

Construction of a media filter at the northeast corner of the upper parking lot was completed during the Second Quarter 2017. This BMP included a new media filter similar in style to the B-1 media filter and designed to treat runoff from parts of the parking lot as well as parts of the adjacent entrance road. The Fourth Quarter 2019 activities included BMP inspections and sediment and debris removal in and around the media bed.

### Former Building 1436 Detention Bioswales

Two detention bioswales were constructed at the former Building 1436 following its removal in Third Quarter 2014. The graded surface was hydroseeded, and more than 2,900 native plantings were installed in December 2014. The bioswales were designed to capture, pretreat, and detain stormwater from the adjacent parking lot and from approximately 13.9 acres of drainage area east and upgradient prior to releasing the stormwater to the former Instrument and Equipment Laboratories (IEL) storm drain, where flow is diverted to the lower lot biofilter for treatment. The Fourth Quarter 2019 activities included BMP inspections, inlet cleaning, and wattle replacement.

### Lower Lot Biofilter

The lower lot biofilter is a stormwater treatment BMP designed and built to capture, convey, and treat stormwater from the lower parking lot and former IEL watershed. The lower lot biofilter consists of a 30,000-gallon cistern, a stormwater conveyance line, a sedimentation basin, and a media biofilter.

The Fourth Quarter 2019 activities included inspections to verify that the sedimentation basin and biofilter were free of sediment and debris, checks of the cistern area and pump, weed abatement as needed, and inspections of surrounding BMPs.

Approximately 456,300 gallons of stormwater was pumped from the cistern to the sedimentation basin during the Fourth Quarter 2019.

### Administration Area Inlet Filters

Four storm drain inlets were modified with either drop inlet filters or weighted wattles filled with media mixtures during the Second Quarter 2017. At the inlet closest to the lower lot, a storm drain filter sock was placed upstream of the inlet to increase solids settling. The Fourth Quarter 2019 activities included BMP inspections and sediment removal from the drop inlet structure.

### Former Shooting Range

BMPs at the Former Shooting Range consist of:

- Slope stabilization measures (i.e., vegetation planting areas);
- Riprap berms along the Northern Drainage;
- A culvert maintenance media filter;
- Fiber rolls;
- Sandbag berm;
- Silt fencing;
- Water bar across the trail;
- Three check structures on the Northern trail;
- Sandbags with fiber rolls;
- A check structure at the dissipater; and
- Hydroseeding.

The entire area continues to benefit from the growth of dense vegetation that shields lead shot from direct contact with or dislodging during precipitation events.

The Fourth Quarter 2019 activities included BMP inspections, sediment removal from the upper check structure, straw wattle replacement, and sandbag replacement. At the request of the Expert Panel, the Sage Ranch side of the Former Shooting Range was inspected to confirm that BMPs (i.e., fiber rolls, silt fence, etc.) control and/or treat from that side of the Former Shooting Range to the Northern Drainage.

#### Non-Industrial Sources Special Studies

Non-industrial sources special studies are intended to help identify source pollutants within various watersheds. The non-industrial sources special studies sampling have been discontinued according to the recommendations of the 2019 Expert Panel Annual Report (Geosyntec and the Expert Panel, 2019). Onsite and offsite samples were not collected during the Fourth Quarter 2019.

#### **Northern Drainage BMPs**

Boeing restored the Northern Drainage (Outfall 009) following cleanup activities performed under the Department of Toxic Substance Control oversight and in accordance with the requirements of the Regional Board's Cleanup and Abatement Order No. R4-2007-0054 (Regional Water Quality Control Board, 2007). The restoration and mitigation activities proposed in the Northern Drainage Restoration, Mitigation, and Monitoring Plan (RMMP)<sup>2</sup> were implemented in 2012. In accordance with the RMMP, regular maintenance, monitoring, and reporting were implemented in the Northern Drainage from 2012 through the Third Quarter 2017 for the stream's plant biology and geomorphology. The successful restoration and mitigation of the Northern Drainage according to the success criteria of the RMMP were documented in the fifth and final Annual Mitigation Monitoring Report (Haley & Aldrich, 2017). Based on the success of the project, Boeing requested that the Regional Board provide written notice stating that Boeing had complied with all terms of the Cleanup and Abatement Order and Boeing's obligations under the Order would therefore be terminated. Boeing will continue to inspect the Northern Drainage BMPs annually and maintain them on an as-needed basis. No RMMP-related inspections of Northern Drainage BMPs were performed during Fourth Quarter 2019.

#### **Outfall 001/002 BMP Compliance Report Related Activities**

Boeing and the Expert Panel will continue to monitor and evaluate the effectiveness of BMPs within the watersheds of Outfall 001 and Outfall 002. Recommendations for these watersheds are included 2019 Expert Panel Annual Report (Geosyntec and the Expert Panel, 2019).

#### **OTHER BMP ACTIVITIES**

BMP observations and maintenance inspections were conducted in conformance with the Site-Wide SWPPP (Haley & Aldrich, 2019) at and around the former test stands Alfa and Bravo and former Advanced Propulsion Test Facility.

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<sup>2</sup> Available at: <http://www.boeing.com/principles/environment/santa-susana/technical-reports.page>

## REASONABLE POTENTIAL ANALYSIS

Stormwater discharges from the Santa Susana Site occurred at Outfalls 001, 002, 008 and 009 during the Fourth Quarter 2019. Analytical results from this quarter were added to the Reasonable Potential Analysis (RPA) dataset (Appendix F). Boeing believes that the analytical results for the Fourth Quarter 2019 did not trigger a reasonable potential for any other constituent not already regulated under the current NPDES Permit.

## CONCLUSIONS

While naturally occurring constituent concentrations in stormwater continue to be elevated due to the Woolsey Wildfire, the Expert Panel has stated that concentrations are decreasing as vegetation and soil stabilization recover in the previously burned areas.

Boeing continues to implement, maintain, and monitor wide ranging control practices intended to improve water quality at stormwater discharge locations at the Santa Susana Site through methods designed to preserve the natural conditions in the watershed to the maximum extent feasible by implementing distributed, sustainable erosion control/restoration measures. The Expert Panel is reviewing the data collected this year and will make BMP and monitoring recommendations that will be communicated in the Expert Panel's 2020 Annual Report.

## FACILITY CONTACT

If there are any questions regarding this report or its enclosures, you may contact Mr. Jeffrey Wokurka of Boeing at (818) 466-8800.

## CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on the 15th of February 2020 at The Boeing Company, Seal Beach, California, Site.

Sincerely,



Kim O'Rourke  
Remediation Program Manager  
Environment, Health & Safety

## Enclosures:

## References

Figure 1 – Site Map with Stormwater Collection and Conveyance System and Site Features

Figure 2 – Arroyo Simi Receiving Water (RSW-002, Frontier Park) Sampling Location and Upstream Monitoring Point

Appendix A – Fourth Quarter 2019 Rainfall Data Summary

Appendix B – Fourth Quarter 2019 Waste Shipment Summary Tables

Appendix C – Fourth Quarter 2019 Discharge Monitoring Data Summary Tables

Appendix D – Fourth Quarter 2019 Summary of Permit Limit Exceedances and/or Non-Compliance

Appendix E – Fourth Quarter 2019 Analytical Laboratory Reports, Chain of Custody Forms, and Validation Reports

Appendix F – Fourth Quarter 2019 Reasonable Potential Analysis Tables

Appendix G – Fourth Quarter 2019 Receiving Water Surveys

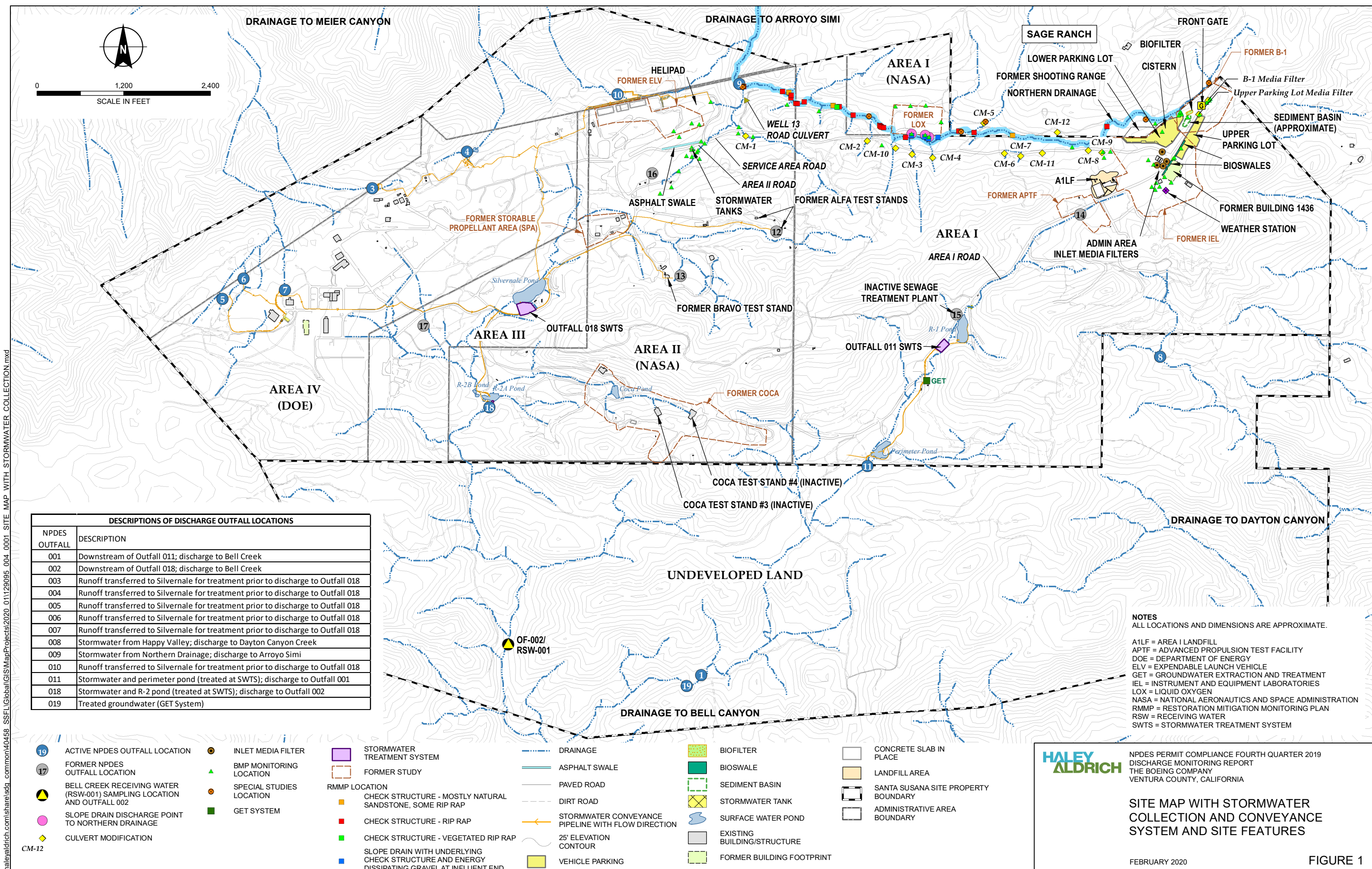
- c: Los Angeles Regional Water Quality Control Board; Attn: Ms. Cassandra Owens  
California Department of Toxic Substances Control; Attn: Mr. Mark Malinowski  
California State University Northridge Oviatt Library  
Simi Valley Public Library  
Los Angeles Public Library, Platt Branch

## REFERENCES

1. California Regional Water Quality Control Board, 2007. Cleanup and Abatement Order No. R4-2007-0054. 6 November.
2. California Regional Water Quality Control Board, Los Angeles Region, 2015. Waste Discharge Requirements for The Boeing Company, Santa Susana Field Laboratory (Order No. R4-2015-0033, NPDES No. CA0001309). 12 February.
3. Department of Toxic Substances Control, 2012. Final Results Report, chemical Soil Background Study. December 28.
4. Geosyntec and the Expert Panel, 2019. Santa Susana Field Laboratory Site-Wide Stormwater Annual Report, 2018/19 Reporting Year, Ventura County, California (NPDES No. CA0001309, CI No.6027). 31 October.
5. Haley & Aldrich, Inc., 2017. Northern Drainage 2017 Annual Report, Clean Water Act Section 401 Water Quality Certification, File No. 12-001, Cleanup and Abatement Order No. R4-2007-0054, Streambed Alteration Agreement No. 1600-2003-5052-R5, Streambed Alteration Agreement No. 1600-2015-0079-R5, U.S. Army Corps of Engineers SPL-2012-00015, Santa Susana Field Laboratory, Ventura County, California. 13 December.
6. Haley & Aldrich, Inc., 2019. Stormwater Pollution and Prevention Plan (Version 6 for Compliance with 2015 NPDES Permit). 26 September.
7. Pitt, Robert, 2009. Boeing SSFL Metals Background Report – Sources of Metals in SSFL Watersheds. November 21.

## FIGURES





DESCRIPTIONS OF DISCHARGE OUTFALL LOCATIONS	
NPDES OUTFALL	DESCRIPTION
001	Downstream of Outfall 011; discharge to Bell Creek
002	Downstream of Outfall 018; discharge to Bell Creek
003	Runoff transferred to Silvernale for treatment prior to discharge to Outfall 018
004	Runoff transferred to Silvernale for treatment prior to discharge to Outfall 018
005	Runoff transferred to Silvernale for treatment prior to discharge to Outfall 018
006	Runoff transferred to Silvernale for treatment prior to discharge to Outfall 018
007	Runoff transferred to Silvernale for treatment prior to discharge to Outfall 018
008	Stormwater from Happy Valley; discharge to Dayton Canyon Creek
009	Stormwater from Northern Drainage; discharge to Arroyo Simi
010	Runoff transferred to Silvernale for treatment prior to discharge to Outfall 018
011	Stormwater and perimeter pond (treated at SWTS); discharge to Outfall 001
018	Stormwater and R-2 pond (treated at SWTS); discharge to Outfall 002
019	Treated groundwater (GET System)

**NOTES**  
 ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

A1LF = AREA I LANDFILL  
 APTF = ADVANCED PROPELLION TEST FACILITY  
 DOE = DEPARTMENT OF ENERGY  
 ELV = EXPENDABLE LAUNCH VEHICLE  
 GET = GROUNDWATER EXTRACTION AND TREATMENT  
 IEL = INSTRUMENT AND EQUIPMENT LABORATORIES  
 LOX = LIQUID OXYGEN  
 NASA = NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
 RMMP = RESTORATION MITIGATION MONITORING PLAN  
 RSW = RECEIVING WATER  
 SWTS = STORMWATER TREATMENT SYSTEM

- 19 ACTIVE NPDES OUTFALL LOCATION
- 17 FORMER NPDES OUTFALL LOCATION
- ▲ BELL CREEK RECEIVING WATER (RSW-001) SAMPLING LOCATION AND OUTFALL 002
- SLOPE DRAIN DISCHARGE POINT TO NORTHERN DRAINAGE
- ◆ CULVERT MODIFICATION
- INLET MEDIA FILTER
- ▲ BMP MONITORING LOCATION
- SPECIAL STUDIES LOCATION
- GET SYSTEM
- STORMWATER TREATMENT SYSTEM
- FORMER STUDY
- RMMP LOCATION
- CHECK STRUCTURE - MOSTLY NATURAL SANDSTONE, SOME RIP RAP
- CHECK STRUCTURE - RIP RAP
- CHECK STRUCTURE - VEGETATED RIP RAP
- SLOPE DRAIN WITH UNDERLYING CHECK STRUCTURE AND ENERGY DISSIPATING GRAVEL AT INFLUENT END
- DRAINAGE
- ASPHALT SWALE
- PAVED ROAD
- - - DIRT ROAD
- STORMWATER CONVEYANCE PIPELINE WITH FLOW DIRECTION
- 25' ELEVATION CONTOUR
- VEHICLE PARKING
- BIOFILTER
- BIOSWALE
- SEDIMENT BASIN
- STORMWATER TANK
- SURFACE WATER POND
- EXISTING BUILDING/STRUCTURE
- FORMER BUILDING FOOTPRINT
- CONCRETE SLAB IN PLACE
- LANDFILL AREA
- SANTA SUSANA SITE PROPERTY BOUNDARY
- ADMINISTRATIVE AREA BOUNDARY

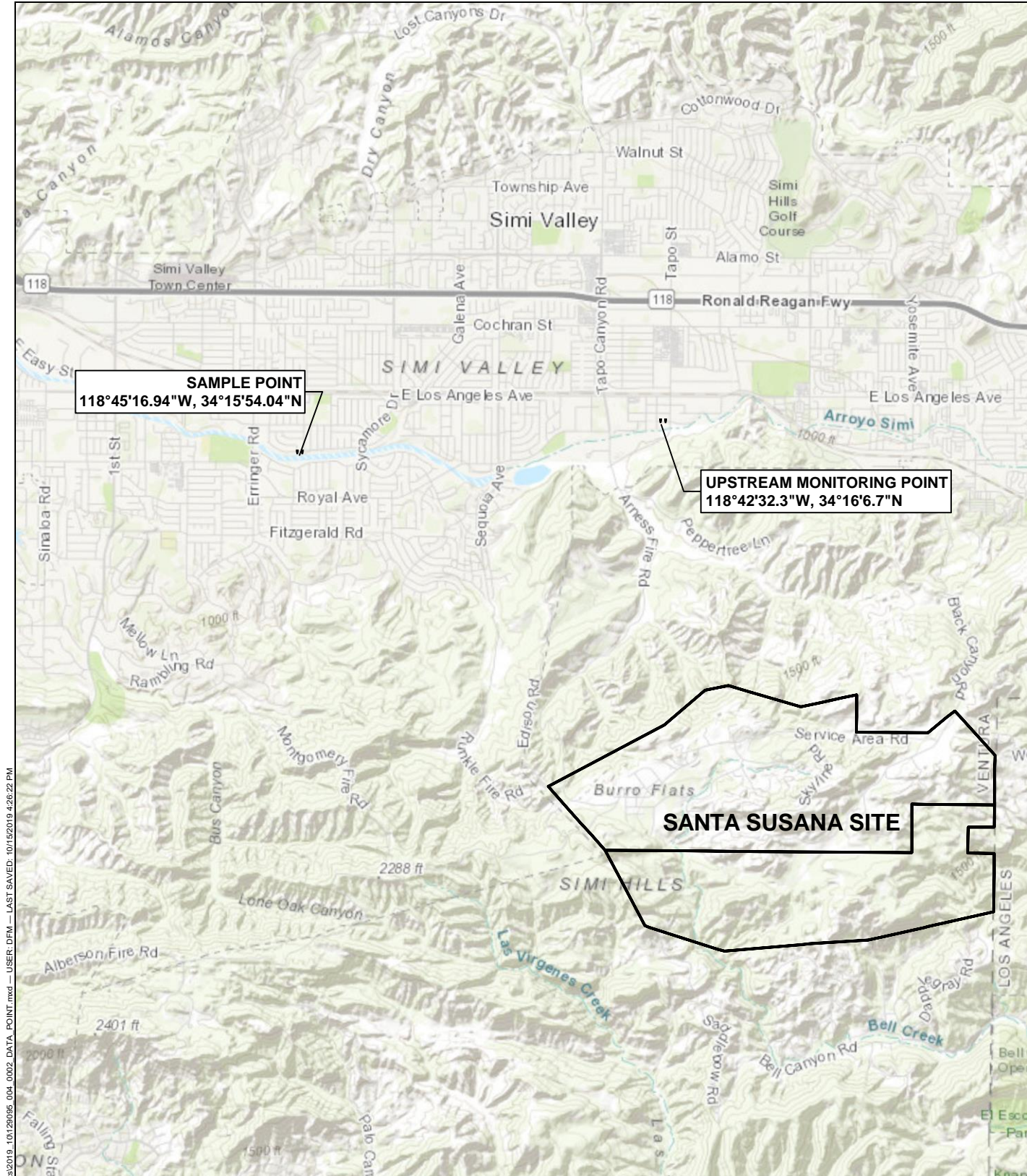
**HALEY ALDRICH**

NPDES PERMIT COMPLIANCE FOURTH QUARTER 2019  
 DISCHARGE MONITORING REPORT  
 THE BOEING COMPANY  
 VENTURA COUNTY, CALIFORNIA

**SITE MAP WITH STORMWATER COLLECTION AND CONVEYANCE SYSTEM AND SITE FEATURES**

FEBRUARY 2020 FIGURE 1

\\haleyaldrich.com\share\sdg\_common\40458\_SSF\Global\GIS\MapProjects\2020\_011129095\_004\_0001\_SITE\_MAP\_WITH\_STORMWATER\_COLLECTION.mxd



**SAMPLE POINT**  
 118°45'16.94"W, 34°15'54.04"N

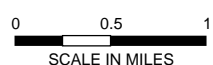
**UPSTREAM MONITORING POINT**  
 118°42'32.3"W, 34°16'6.7"N

**SANTA SUSANA SITE**

GIS FILE PATH: C:\40468\_SSE\GlobalGIS\MapProjects\2019\_10112019\_004\_0002\_DATA\_POINT.mxd — USER: DFM — LAST SAVED: 10/15/2019 4:28:22 PM

**NOTES**

1. THE SAMPLE POINT IS FOR QUARTERLY WATER QUALITY AND ANNUAL SEDIMENT SAMPLING.
2. THE UPSTREAM SAMPLE POINT LOCATION WAS CHOSEN BASED ON IT BEING UPSTREAM OF ALL POSSIBLE DISCHARGE FROM THE SANTA SUSANA SITE.



**HALEY  
ALDRICH**

NPDES PERMIT COMPLIANCE FOURTH QUARTER 2019  
 DISCHARGE MONITORING REPORT  
 THE BOEING COMPANY  
 VENTURA COUNTY, CALIFORNIA

**ARROYO SIMI RECEIVING WATER  
 (RSW-002, FRONTIER PARK)  
 SAMPLING LOCATION AND UPSTREAM  
 MONITORING POINT**

FEBRUARY 2020

**FIGURE 2**

**APPENDIX A**

**Fourth Quarter 2019 Rainfall Data Summary**

**APPENDIX A**  
**TABLE OF CONTENTS**

Table A – Daily Rainfall Summary



**TABLE A  
DAILY RAINFALL SUMMARY**

**THE BOEING COMPANY  
NPDES PERMIT CA0001309**

Station: AREA 1  
Parameter: Rain  
Month/Year: Novmeber 2019

**HOUR OF THE DAY, PACIFIC STANDARD TIME**

	HR-BEG	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total
	HR-END	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
DAY																										
D	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Y	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
F	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
T	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H	7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
M	9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O	10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
T	12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H	13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	d	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
M	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O	16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
T	18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H	19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
M	20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37
O	21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
T	23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H	24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	27	0.00	0.00	0.00	0.00	0.02	0.04	0.09	0.28	0.16	0.05	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.05	0.06	0.00	0.00	0.00	0.00	0.06	0.82
	28	0.00	0.01	0.00	0.13	0.02	0.09	0.12	0.10	0.07	0.08	0.01	0.00	0.16	0.03	0.00	0.00	0.00	0.01	0.08	0.02	0.11	0.11	0.00	0.00	1.15
	29	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.04	0.01	0.00	0.01	0.01	0.00	0.00	0.12

Flags: d = Off-line part of hour, invalid hour due to semi-annual audit (November 14). For the off-line event, the rain gauge at Sage Ranch did not record rainfall on November 14 during hour 07:00-08:00, however field forms confirm there was no rain on November 14.

**TABLE A  
DAILY RAINFALL SUMMARY**

**THE BOEING COMPANY  
NPDES PERMIT CA0001309**

**Station: AREA 1**

**Parameter: Rain**

**Month/Year: December 2019**

**HOUR OF THE DAY, PACIFIC STANDARD TIME**

	HR-BEG	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
	HR-END	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total	
DAY																											
D	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Y	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O	4	0.03	0.10	0.13	0.16	0.31	0.09	0.04	0.04	0.13	0.25	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.30
F	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
T	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.03	0.08	0.00
H	7	0.01	0.02	0.02	0.02	0.04	0.01	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
E	8	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.07	0.13	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.43
M	9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O	10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
T	12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H	13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	14	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.11	0.13	0.18	0.29	0.49	0.41	0.21	1.83
	23	0.06	0.09	0.05	0.05	0.06	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34
	24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.22	0.41	0.40	0.29	1.34	
	26	0.24	0.03	0.08	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37
	27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**APPENDIX B**

**Fourth Quarter 2019 Waste Shipment Summary Tables**



**APPENDIX B**  
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Table B – Waste Shipment Summary Table

**TABLE B  
WASTE SHIPMENT SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

TYPE OF WASTE		QTY.	UNITS	TRANSPORTER 1	TRANSPORTER 2	DESTINATION
Hazardous Waste	Liquid	8,438	G	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	n/a	US Ecology Vernon 5375 South Boyle Avenue Los Angeles, CA 90058
Hazardous Waste	Liquid	17	P	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	Basin Transportation LLC 130 Express Lane Mcalester, OK 74501	Clean Harbors Aragonite LLC 11600 North Aptus Road Grantsville, UT 84029
Hazardous Waste	Liquid	4,069	P	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	n/a	Clean Harbors Wilmington LLC 1737 East Denni Street Wilmington, CA 90744
Hazardous Waste	Liquid	900	G	Patriot Environmental Services 508 East E Street Wilmington, CA 90744	n/a	US Ecology Vernon 5375 Boyle Avenue Los Angeles, CA 90056
Non-RCRA Hazardous Waste	Liquid	2,408	P	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	n/a	Clean Harbors Wilmington LLC 1737 East Denni Street Wilmington, CA 90744
Non Hazardous, Non D.O.T Regulated	Liquid	703	P	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	n/a	Clean Harbors Buttonwillow LLC 2500 West Lokern Road Buttonwillow, CA 93206
Non Hazardous Waste	Liquid	4,234	G	American Integrated Services, Inc. 1502 East Opp Street Wilmington, CA 90744	n/a	Crosby & Overton 1630 West 17th Street Long Beach, CA 90813
Asbestos	Liquid	70	Y	MP Environmental Services 3400 Manor Street Bakersfield, CA 96608	n/a	US Ecology Idaho 20400 Lemley Road Grand View, Idaho 83624
Hazardous Waste	Solid	210	P	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	Basin Transportation LLC 130 Express Lane Mcalester, OK 74501	Clean Harbors Environmental Services, Inc. 2247 South Highway 71 Kimball, NE 69145
Hazardous Waste	Solid	14	P	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	n/a	Clean Harbors Wilmington LLC 1737 East Denni Street Wilmington, CA 90744

**TABLE B  
WASTE SHIPMENT SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

TYPE OF WASTE		QTY.	UNITS	TRANSPORTER 1	TRANSPORTER 2	DESTINATION
Hazardous Waste	Solid	112	P	Patriot Environmental Services 508 East E Street Wilmington, CA 90744	n/a	US Ecology Nevada HWY 95 11 Mi South of Beatty Beatty, NV 89003
Non-RCRA Hazardous Waste	Solid	202	P	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	n/a	Clean Harbors Wilmington LLC 1737 East Denni Street Wilmington, CA 90744
Non Hazardous, Non D.O.T Regulated	Solid	7,619	P	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	n/a	Clean Harbors Buttonwillow LLC 2500 West Lokern Road Buttonwillow, CA 93206
Batteries, Dry, Sealed	Solid	60	P	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	n/a	Clean Harbors Wilmington LLC 1737 East Denni Street Wilmington, CA 90744

Notes:

G = Gallons  
n/a = Not Applicable  
P = Pounds  
Y = Yards

## **APPENDIX C**

### **Fourth Quarter 2019 Discharge Monitoring Data Summary Tables**

## **APPENDIX C**

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Reporting Summary Notes

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Outfall 008 - Discharge Monitoring Mass Summary Table

Outfall 009 - Discharge Monitoring Data Summary Table  
Outfall 009 - Discharge Monitoring Mass Summary Table

Arroyo Simi - Discharge Monitoring Data Summary Table

Extended Radiochemistry

**REPORTING SUMMARY NOTES  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**Not all of the following notes, abbreviations, symbols, or acronyms occur on every table:**

1. 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) toxic equivalents (TEQs) for the purpose of determining permit compliance are the sum of the products of the detected dioxin congener concentration multiplied by that congener's toxicity equivalency factor (TEF) and bioaccumulation equivalency factor (BEF). The resulting compliance TCDD TEQ does not include those congener concentrations that are reported as detected but not quantified (DNQ), as specified on page 26 of the NPDES permit (Water Board, 2015).
2. Temperature, total residual chlorine (TRC), dissolved oxygen (DO), and pH are measured in the field and are not validated.
3. pH and temperature are identified on the table as daily maximum discharge limits. The NPDES permit limit has an instantaneous minimum (6.5) and maximum (8.5) for pH and an instantaneous maximum of 86°F for temperature.
4. Exceedances are defined on page 6 of the NPDES permit as constituents in excess of daily maximum benchmark limits, daily maximum permit limits, or receiving water limits. Analytical concentrations or calculations to determine compliance to the NPDES permit are compared to the same number of significant figures as the daily maximum benchmark limits, daily maximum permit limits, or receiving water limits.
5. Priority pollutants, sampled once every five years, at Arroyo Simi Receiving Water sampling location (RSW-002, Frontier Park) were analyzed during the First Quarter 2018.
6. Dissolved metals are filtered by the laboratory and reported as "Metal, dissolved". Total metals are not filtered by the laboratory and reported as "Metal".
7. Abbreviations, symbols, and acronyms:

-92.9 +/-200	A negative radiochemical analytical result indicates the count rate of the sample was less than the background condition. Radiological results are presented as activity plus or minus total uncertainty.
%	Percent.
\$	Reported result or other information was incorrectly reported by the laboratory; result was corrected by the data validator.
--	Based on validation of the data, a qualifier was not required.
-	No NPDES permit limit established for daily maximum or receiving water limit.
<(value)	Analyte not detected at a concentration greater than or equal to the detection limit (DL), method detection limit (MDL), or laboratory reporting limit (RL); see laboratory report for specific detail.
>(value)	Greater than most probable number.
*	Result not validated.
**	Flow for each outfall is calculated over the 24-hour period when the outfall autosampler is operating to collect the composite sample. See definition of "Daily Discharge" on page A-2 of attachment A of the NPDES permit.
*1	Improper preservation of sample.

**REPORTING SUMMARY NOTES  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

*2	The inductively coupled plasma (ICP)/matrix spike (MS) parts per billion (ppb) check standard was recovered above the control limit; therefore, the constituent detected was qualified as estimated (J).
*3	Initial and or continuing calibration recoveries were outside acceptable control limits.
*5	Blank spike/blank spike duplicate relative percent difference was outside the control limit.
*10	Value was estimated detect or estimated non-detect (J, UJ) due to deficiencies in quantitation of the constituent including constituents reported by the laboratory as estimated maximum possible concentration (EMPC) values.
*11	No calibration was performed for this compound; result is reported as a tentatively identified compound (TIC).
*II *III	Unusual problems found with the data that have been described in Section II, "sample management", or Section III, "method analysis". The number following the asterisk (*) will indicated the validation report section where a description of the problem can be found.
ANR	Analysis not required; e.g., constituent or outfall was not required by the NPDES permit to be sampled and analyzed over the reporting period (annual, semi-annual, etc.).
Avg	Average.
B	Laboratory method blank contamination.
BA	Relative percent difference out of control.
BEF	Bioaccumulation equivalency factor.
BU	Analyzed out of holding time.
BV	Sample received after holding time expired.
C	Calibration percent relative standard deviation (%RSD) or percent difference (%D) were noncompliant.
CaCO3	Calcium carbonate
Chromium VI	Hexavalent chromium
Comp	Composite sample type.
C5	Calibration verification percent recovery (%R) was outside method control limits.
CEs/100 ml	Cell equivalents per 100 milliliters.
D	The analysis with this flag should not be used because another more technically sound analysis is available.
%D	Percent difference between the initial and continuing calibration relative response factors.
Deg C	Degrees Celsius.
Deg F	Degrees Fahrenheit.
DL	Detection limit.
DNQ	Detected but not quantified (constituent value greater than or equal to the laboratory method detection limit and less than the laboratory reporting limit).
E	E in validation qualifier indicates that duplicates show poor agreement.

**REPORTING SUMMARY NOTES  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

EB	Equipment blank.
EMPC	Estimated maximum possible concentration.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
FB	Field blank.
F1	Matrix spike (MS) and/or matrix spike duplicate (MSD) recovery is outside acceptance limits.
ft/sec	Feet per second.
G	Gallons.
gpd	Gallons per day.
H	Holding time was exceeded.
Hardness	Equivalent of calcium carbonate (CaCO <sub>3</sub> ).
Hp	Hepta.
Hx	Hexa.
ICP	Interference check solution results were unsatisfactory.
J	Estimated value.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
J, DX	Estimated value, value < lowest standard method quantitation limit (MQL), but > than method detection limit (MDL).
K	The sample dilution's set-up did not meet the oxygen depletion criteria of at least 2 milligrams per liter (mg/L); therefore, the reported result is an estimated value only.
L	Laboratory control sample percent recovery (%R) was outside control limits.
L1	Laboratory control standard (LCS)/laboratory control standard duplicate (LCSD), relative percent difference (RPD) was outside the control limit.
L2	The laboratory control sample percent recovery (%R) was below the method control limits.
LBS/DAY	Pounds per day.
LCS	Laboratory control standard.
LCSD	Laboratory control standard duplicate.
LQ	Laboratory control standard (LCS)/ laboratory control standard duplicate (LCSD) recovery above method control limits.
M1	Matrix spike (MS) and/or matrix spike duplicate (MSD) were above the acceptance limits due to sample matrix interference.
M2	The matrix spike (MS) and/or matrix spike duplicate (MSD) were below the acceptance limits due to sample matrix interference.
Max	Maximum.
MB	Analyte present in the method blank.
MDA/MDC	Minimum detectable activity/minimum detectable concentration.



**REPORTING SUMMARY NOTES  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

MDL	Method detection limit.
Meas	Measure sample type.
MFL	Million fibers per liter.
MGD	Million gallons per day.
MHA	Due to high level of analyte in the sample, the matrix spike (MS)/matrix spike duplicate (MSD) calculation does not provide useful spike recovery information.
mg/L	Milligrams per liter.
mg/kg	Milligrams per kilogram.
ml/L	Milliliters per liter
ml/L/hr	Milliliters per liter per hour.
MPN/100 mL	Most probable number per 100 milliliters.
MQL	Method quantitation limit.
MS	Matrix spike.
MSD	Matrix spike duplicate.
mS/cm	MilliSiemens per centimeter
NA	Not applicable; no NPDES permit limit established for the constituent and/or outfall or analyte not required per receiving water monitoring requirements.
ND	Analyte not detected.
NM	Not measured or determined or minimum detectable activities (MDAs) are not calculated as there is no statistical method for combining MDAs.
NPDES	National Pollutant Discharge Elimination System.
NR	Not reported by laboratory by the deadline of this report.
NTU	Nephelometric turbidity unit.
OCDD	Octa CDD.
OCDF	Octa CDF.
P	Pounds.
ppb	Parts per billion.
pCi/L	PicoCuries per liter.
Pe	Penta.
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio; the measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.
Q	Matrix spike (MS) recovery outside of control limits.
Q1	Matrix spike (MS)/matrix spike duplicate (MSD) relative percent difference (RPD) was outside the control limit.
R	As a validation qualifier, results are rejected; the presence or absence of analyte cannot be verified.
(R)	Percent recovery (%R) for calibration not within control limits.
RL	Laboratory reporting limit.

**REPORTING SUMMARY NOTES  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

RL-1	Reporting limit raised due to sample matrix effects.
RPD	Relative percent difference.
%R	Percent recovery.
%RSD	Percent relative standard deviation.
% Normal/Alive	Percent normal and alive.
% Survival	Percent survival.
S	Surrogate recovery was outside control limits.
s.u.	Standard unit.
TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin.
TCDF	2,3,7,8-tetrachlorodibenzo-p-furan.
TEQ	Toxic equivalent.
TIC	Tentatively identified compound
TIE	Toxicity identification evaluation
TOC	Total organic carbon
T	Presumed contamination, as indicated by a detect in the trip blank.
U	Result not detected.
µg/L	Micrograms per liter.
µg/g	Micrograms per gram.
µg/kg	Micrograms per kilogram.
µmhos/cm	Micromhos per centimeter.
UJ	Result not detected at the estimated reporting limit.
WHO TEF	World Health Organization toxic equivalency factor.
w/out	Without.
^	Analysis not completed due to hold time exceedance or insufficient sample volume.
#	Per Order No. R4-2015-0033, page 16, Footnote 1. The effluent limitations for total suspended solids and settleable solids are not applicable for discharges during wet weather. During wet weather flow, a discharge event is greater than 0.1 inch of rainfall in a 24-hour period. No more than one sample per week need be obtained during extended periods of rainfall or the discharge of collected stormwater. A storm event must be preceded by at least 72 hours of dry weather.
(1)	Based on the NPDES permit, table E-3a footnote 2, receiving water samples for pH, hardness, and priority pollutants must be collected on the same day as effluent samples.
(2)	Additional sample, not required by the NPDES permit.
(4.0)3.1/-	Represents (dry weather limit) wet weather limit / monthly average limit.
(3)	Secondary maximum contaminant level.

**REPORTING SUMMARY NOTES  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

(4)	The drinking water maximum contaminant level of 3.00E-05 µg/L is for the dioxin congener 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD). TCDD Toxic Equivalent (TEQ) without detected but not quantified (DNQ) values is the sum of the products of the detected dioxin congener concentration multiplied by that congener's toxic Equivalency factor (TEF) and bioaccumulation equivalency factor (BEF). There are 17 dioxin congeners.
(a)	Based on Order No. R4-2015-0033, page 17, footnote 7, sampling event is a dry discharge and the NPDES Permit Limit for cadmium is 4.0 ug/L and 3.93 lbs/day at OF001,002,011,018 and 0.24 lbs/day at OF008.
(b)	Based on Order No. R4-2015-0033, page 17, footnote 7, sampling event is a wet discharge and the NPDES Permit Limit for cadmium is 3.1 ug/L and 4.91 lbs/day at OF001,002,011,018 and 3.05 lbs/day at OF008.
(c)	Based on Order No. R4-2015-0033, page 16, footnote 1, sampled during wet weather flow. The effluent limitations for total suspended solids and/or settleable solids are not applicable for discharges during wet weather.
(d)	Based on Order No. R4-2015-0033, page 16, footnote 1, sampled during dry weather flow. The effluent limitations for total suspended solids and/or settleable solids are applicable for discharges during dry weather.
(e)	Based on Order No. R4-2015-0033, page 17, footnote 8, sampling event is a dry discharge and the NPDES Permit Limit for selenium is 5 ug/L and 4.91 lbs/day.
(f)	Based on Order No. R4-2015-0033, page 17, footnote 8, sampling event is a wet discharge and the NPDES Permit Limit for selenium is 8.2 ug/L and 8.06 lbs/day.
(g)	The sampling frequency of this constituent is increased from once per year to once per discharge until four consecutive sample results demonstrate compliance per the NPDES permit. The corresponding dissolved metal also increased in sampling frequency to once per discharge.
(h)	Total Ammonia is reported in wet weight units milligrams per kilogram (mg/kg).
(i)	Total organic carbon (TOC) is reported in dry weight units. Permit asks for TOC units in % dry weight, but data is provided in dry unit milligrams per kilogram (mg/kg).
(j)	Analyte does not have a receiving water limit for Bell Creek Receiving Water (RSW-001, OF002).
(k)	Reserved.
(l)	When field staff arrived onsite to collect the composite sample they discovered that the autosampler had malfunctioned and had not collected "sips." Field staff repaired the autosampler, reset it, determined it was functioning properly, then returned the next day to collect the composite sample.
(m)	The composite sample was collected as a grab sample from the sample box due to insufficient flow.
(n)	The grab sample was collected at the first opportunity given the short duration and low-flow at this Outfall.
(o)	Unsafe conditions all day prevented access to the Outfall.
(p)	Various annual constituents were analyzed by laboratory due to field and laboratory error.
(q)	Minimum level not met due to laboratory error.

**OUTFALL 001  
DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	UNITS	DAILY MAXIMUM BENCHMARK	SAMPLE FREQUENCY	12/26/2019 07:45 - 12/27/2019 07:25		
				SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Flow**	MGD	117.83	1/Discharge	Meas	0.131101	*
<b>CONVENTIONAL POLLUTANTS</b>						
Biochemical Oxygen Demand (BOD)(5-Day @ 20 deg. C)	mg/L	30	1/Discharge	Composite	2.9	*
Oil & Grease	mg/L	15	1/Discharge	Grab	ND < 1.3	U*
pH (Field)	s.u.	6.5-8.5	1/Discharge	Grab	7.78	*
Total Suspended Solids <sup>†</sup>	mg/L	45	1/Discharge	Composite	190 <sup>(c)</sup>	--
<b>PRIORITY POLLUTANTS</b>						
1,1-Dichloroethene	µg/L	6.0	1/Discharge	Grab	ND < 0.25	U*
1,2-Dichloroethane	µg/L	0.5	1/Discharge	Grab	ND < 0.25	U*
2,4,6-Trichlorophenol	µg/L	13	1/Discharge	Composite	ND < 0.11	U*
2,4-Dinitrotoluene	µg/L	18	1/Discharge	Composite	ND < 2.2	U*
alpha-BHC	µg/L	0.03	1/Discharge	Composite	ND < 0.0026	U*
Antimony	µg/L	6.0	1/Year	ANR	ANR	ANR
Arsenic	µg/L	10.0	1/Year	ANR	ANR	ANR
Beryllium	µg/L	4.0	1/Year	ANR	ANR	ANR
Bis (2-Ethylhexyl) Phthalate	µg/L	4.0	1/Discharge	Composite	ND < 2.2	U*
Cadmium	µg/L	(4.0) 3.1	1/Discharge	Composite	ND < 0.25 <sup>(b)</sup>	U
Chromium VI (Hexavalent)	µg/L	16	1/Year	ANR	ANR	ANR
Copper	µg/L	14	1/Discharge	Composite	7.2	--
Cyanide	µg/L	8.5	1/Discharge	Composite	ND < 2.5	U*
Lead	µg/L	5.2	1/Discharge	Composite	6.6	--
Mercury	µg/L	0.1	1/Discharge	Composite	ND < 0.10	U*
Nickel	µg/L	94	1/Year	ANR	ANR	ANR
N-Nitrosodimethylamine	µg/L	16	1/Discharge	Composite	ND < 5.4	U (B)
Pentachlorophenol	µg/L	16.5	1/Discharge	Composite	ND < 1.1	U*
Selenium	µg/L	(5) 8.2	1/Discharge	Composite	ND < 1.7 <sup>(f)</sup>	U (B)
Silver	µg/L	4.1	1/Year	ANR	ANR	ANR
Thallium	µg/L	2.0	1/Year	ANR	ANR	ANR
Trichloroethene	µg/L	5.0	1/Discharge	Grab	ND < 0.25	U*
Zinc	µg/L	119	1/Discharge	Composite	47	*
<b>NON-CONVENTIONAL POLLUTANTS</b>						
Ammonia - N	mg/L	10.1	1/Discharge	Composite	0.181	J (DNQ)
Barium	mg/L	1.0	1/Year	ANR	ANR	ANR
Chloride	mg/L	150	1/Discharge	Composite	4.1	*
Chlorine, Total Residual (Field)	mg/L	0.1	1/Year	ANR	ANR	ANR
Chronic Toxicity	Pass or Fail and % Effect	Pass or % Effect <50	1st & 2nd rain event/Year	ANR	ANR	ANR
Detergents (as MBAS)	mg/L	0.5	1/Discharge	Composite	ND < 0.050	U*
Fluoride	mg/L	1.6	1/Year	ANR	ANR	ANR
Iron	mg/L	0.3	1/Discharge <sup>(g)</sup>	Composite	14	--
Manganese	µg/L	50	1/Year	ANR	ANR	ANR
Nitrate - N	mg/L	8	1/Discharge	Composite	1.6	*
Nitrate + Nitrite as Nitrogen (N)	mg/L	8	1/Discharge	Composite	1.6	*
Nitrite - N	mg/L	1	1/Discharge	Composite	ND < 0.025	U*
Perchlorate	µg/L	6.0	1/Discharge	Composite	ND < 0.95	U*
Settleable Solids#	ml/L	0.3	1/Discharge	Grab	ND < 0.10 <sup>(c)</sup>	U*
Sulfate	mg/L	300	1/Discharge	Composite	6.8	*
Temperature (Field)	Deg F	86	1/Discharge	Grab	43.4	*
Total Dissolved Solids	mg/L	950	1/Discharge	Composite	86	*
<b>REMAINING PRIORITY POLLUTANTS<sup>(p)</sup></b>						
1,1,1-Trichloroethane	µg/L	-	1/Year	Grab	ND < 0.25	U
1,1,2,2-Tetrachloroethane	µg/L	-	1/Year	Grab	ND < 0.25	U
1,1,2-Trichloroethane	µg/L	-	1/Year	Grab	ND < 0.25	U
1,1-Dichloroethane	µg/L	-	1/Year	Grab	ND < 0.25	U
1,2,4-Trichlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR
1,2-Dichlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR
1,2-Dichlorobenzene	µg/L	-	1/Year	Grab	ND < 0.25	U
1,2-Dichloropropane	µg/L	-	1/Year	Grab	ND < 0.25	U
1,2-Diphenylhydrazine/Azobenzene	µg/L	-	1/Year	ANR	ANR	ANR
1,3-Dichlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR
1,3-Dichlorobenzene	µg/L	-	1/Year	Grab	ND < 0.25	U
1,4-Dichlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR
1,4-Dichlorobenzene	µg/L	-	1/Year	Grab	ND < 0.25	U

**OUTFALL 001  
DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	UNITS	DAILY MAXIMUM BENCHMARK	SAMPLE FREQUENCY	12/26/2019 07:45 - 12/27/2019 07:25		
				SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
2,4-Dichlorophenol	µg/L	-	1/Year	ANR	ANR	ANR
2,4-Dimethylphenol	µg/L	-	1/Year	ANR	ANR	ANR
2,4-Dinitrophenol	µg/L	-	1/Year	ANR	ANR	ANR
2,6-Dinitrotoluene	µg/L	-	1/Year	ANR	ANR	ANR
2-Chloroethyl vinyl ether	µg/L	-	1/Year	ANR	ANR	ANR
2-Chloronaphthalene	µg/L	-	1/Year	ANR	ANR	ANR
2-Chlorophenol	µg/L	-	1/Year	ANR	ANR	ANR
2-Methyl-4,6-dinitrophenol	µg/L	-	1/Year	ANR	ANR	ANR
2-Nitrophenol	µg/L	-	1/Year	ANR	ANR	ANR
3,3'-Dichlorobenzidine	µg/L	-	1/Year	ANR	ANR	ANR
4,4'-DDD	µg/L	-	1/Year	ANR	ANR	ANR
4,4'-DDE	µg/L	-	1/Year	ANR	ANR	ANR
4,4'-DDT	µg/L	-	1/Year	ANR	ANR	ANR
4-Bromophenyl phenyl ether	µg/L	-	1/Year	ANR	ANR	ANR
4-Chloro-3-methylphenol	µg/L	-	1/Year	ANR	ANR	ANR
4-Chlorophenyl phenyl ether	µg/L	-	1/Year	ANR	ANR	ANR
4-Nitrophenol	µg/L	-	1/Year	ANR	ANR	ANR
Acenaphthene	µg/L	-	1/Year	ANR	ANR	ANR
Acenaphthylene	µg/L	-	1/Year	ANR	ANR	ANR
Acrolein	µg/L	-	1/Year	ANR	ANR	ANR
Acrylonitrile	µg/L	-	1/Year	ANR	ANR	ANR
Aldrin	µg/L	-	1/Year	ANR	ANR	ANR
alpha-Endosulfan	µg/L	-	1/Year	ANR	ANR	ANR
Anthracene	µg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1016	µg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1221	µg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1232	µg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1242	µg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1248	µg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1254	µg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1260	µg/L	-	1/Year	ANR	ANR	ANR
Benzene	µg/L	-	1/Year	Grab	ND < 0.25	U
Benzidine	µg/L	-	1/Year	ANR	ANR	ANR
Benzo(a)anthracene	µg/L	-	1/Year	ANR	ANR	ANR
Benzo(a)pyrene	µg/L	-	1/Year	ANR	ANR	ANR
Benzo(b)fluoranthene	µg/L	-	1/Year	ANR	ANR	ANR
Benzo(g,h,i)perylene	µg/L	-	1/Year	ANR	ANR	ANR
Benzo(k)fluoranthene	µg/L	-	1/Year	ANR	ANR	ANR
beta-BHC	µg/L	-	1/Year	ANR	ANR	ANR
beta-Endosulfan	µg/L	-	1/Year	ANR	ANR	ANR
Bis (2-Chloroethoxy) Methane	µg/L	-	1/Year	ANR	ANR	ANR
Bis (2-Chloroethyl) Ether	µg/L	-	1/Year	ANR	ANR	ANR
Bis (2-Chloroisopropyl) Ether	µg/L	-	1/Year	ANR	ANR	ANR
Bromoform	µg/L	-	1/Year	Grab	ND < 0.40	U
Bromomethane	µg/L	-	1/Year	Grab	ND < 0.25	U
Butyl benzylphthalate	µg/L	-	1/Year	ANR	ANR	ANR
Carbon tetrachloride	µg/L	-	1/Year	Grab	ND < 0.25	UJ (C)
Chlordane	µg/L	-	1/Year	ANR	ANR	ANR
Chlorobenzene	µg/L	-	1/Year	Grab	ND < 0.25	U
Chlorodibromomethane	µg/L	-	1/Year	Grab	ND < 0.25	U
Chloroethane	µg/L	-	1/Year	Grab	ND < 0.40	U
Chloroform	µg/L	-	1/Year	Grab	ND < 0.25	U
Chloromethane (Methyl Chloride)	µg/L	-	1/Year	Grab	ND < 0.25	U
Chromium	µg/L	-	1/Year	ANR	ANR	ANR
Chrysene	µg/L	-	1/Year	ANR	ANR	ANR
cis-1,3-Dichloropropene	µg/L	-	1/Year	Grab	ND < 0.25	U
delta-BHC	µg/L	-	1/Year	ANR	ANR	ANR
Dibenz(a,h)anthracene	µg/L	-	1/Year	ANR	ANR	ANR
Dichlorobromomethane	µg/L	-	1/Year	Grab	ND < 0.25	U
Dieldrin	µg/L	-	1/Year	ANR	ANR	ANR
Diethyl phthalate	µg/L	-	1/Year	ANR	ANR	ANR
Dimethyl phthalate	µg/L	-	1/Year	ANR	ANR	ANR
Di-n-butyl phthalate	µg/L	-	1/Year	ANR	ANR	ANR
Di-n-octyl phthalate	µg/L	-	1/Year	ANR	ANR	ANR

OUTFALL 001  
DISCHARGE MONITORING DATA SUMMARY TABLE

FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309

October 1 through December 31, 2019

ANALYTE	UNITS	DAILY MAXIMUM BENCHMARK	SAMPLE FREQUENCY	12/26/2019 07:45 - 12/27/2019 07:25		
				SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Endosulfan sulfate	µg/L	-	1/Year	ANR	ANR	ANR
Endrin	µg/L	-	1/Year	ANR	ANR	ANR
Endrin aldehyde	µg/L	-	1/Year	ANR	ANR	ANR
Ethylbenzene	µg/L	-	1/Year	Grab	ND < 0.25	U
Fluoranthene	µg/L	-	1/Year	ANR	ANR	ANR
Fluorene	µg/L	-	1/Year	ANR	ANR	ANR
gamma-BHC (Lindane)	µg/L	-	1/Year	ANR	ANR	ANR
Heptachlor	µg/L	-	1/Year	ANR	ANR	ANR
Heptachlor epoxide	µg/L	-	1/Year	ANR	ANR	ANR
Hexachlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR
Hexachlorobutadiene	µg/L	-	1/Year	ANR	ANR	ANR
Hexachlorocyclopentadiene	µg/L	-	1/Year	ANR	ANR	ANR
Hexachloroethane	µg/L	-	1/Year	ANR	ANR	ANR
Indeno(1,2,3-cd)pyrene	µg/L	-	1/Year	ANR	ANR	ANR
Isophorone	µg/L	-	1/Year	ANR	ANR	ANR
m,p-Xylenes	µg/L	-	1/Year	ANR	ANR	ANR
Methylene chloride	µg/L	-	1/Year	Grab	ND < 0.88	U
Naphthalene	µg/L	-	1/Year	ANR	ANR	ANR
Naphthalene	µg/L	-	1/Year	Grab	ND < 0.40	U
Nitrobenzene	µg/L	-	1/Year	ANR	ANR	ANR
N-Nitroso-di-n-propylamine	µg/L	-	1/Year	ANR	ANR	ANR
N-Nitrosodiphenylamine	µg/L	-	1/Year	ANR	ANR	ANR
o-Xylene	µg/L	-	1/Year	ANR	ANR	ANR
Phenanthrene	µg/L	-	1/Year	ANR	ANR	ANR
Phenol	µg/L	-	1/Year	ANR	ANR	ANR
Pyrene	µg/L	-	1/Year	ANR	ANR	ANR
Tetrachloroethene	µg/L	-	1/Year	Grab	ND < 0.25	U
Toluene	µg/L	-	1/Year	Grab	ND < 0.25	U
Toxaphene	µg/L	-	1/Year	ANR	ANR	ANR
trans-1,2-Dichloroethene	µg/L	-	1/Year	Grab	ND < 0.25	U
trans-1,3-Dichloropropene	µg/L	-	1/Year	Grab	ND < 0.25	U
Trichlorofluoromethane	µg/L	-	1/Year	ANR	ANR	ANR
Vinyl chloride	µg/L	-	1/Year	Grab	ND < 0.25	U
Xylenes (Total)	µg/L	-	1/Year	ANR	ANR	ANR
<b>EFFLUENT MONITORING (NO LIMITATIONS) POLLUTANTS</b>						
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/L	-	1/Quarter	Grab	ND < 0.50	U
1,2-Dichloro-1,1,2-trifluoroethane	µg/L	-	1/Year	ANR	ANR	ANR
1,4-Dioxane	µg/L	-	1/Year	ANR	ANR	ANR
Boron	mg/L	-	1/Year	ANR	ANR	ANR
cis-1,2-Dichloroethene <sup>(P)</sup>	µg/L	-	1/Year	Grab	ND < 0.25	U
Cobalt	µg/L	-	1/Year	ANR	ANR	ANR
Conductivity	µmhos/cm	-	1/Discharge	Grab	1,400	--
Cyclohexane	µg/L	-	1/Year	ANR	ANR	ANR
Diesel Range Organics (DRO C13-C28)	mg/L	-	1/Year	ANR	ANR	ANR
Dissolved Oxygen (Field)	mg/L	-	1/Discharge	Grab	16.31	*
E. Coli	mpn/100mL	-	1/Year	ANR	ANR	ANR
Gasoline Range Organics (GRO C4-C12)	mg/L	-	1/Year	ANR	ANR	ANR
Hardness (as CaCO3)	mg/L	-	1/Year	ANR	ANR	ANR
Monomethyl hydrazine	µg/L	-	1/Year	ANR	ANR	ANR
Total Organic Carbon	mg/L	-	1/Year	ANR	ANR	ANR
Turbidity	NTU	-	1/Discharge	Composite	200	*
Vanadium	µg/L	-	1/Year	ANR	ANR	ANR
<b>ADDITIONAL POLLUTANTS<sup>(2)</sup></b>						
Antimony, dissolved	µg/L	-	Additional/Year	ANR	ANR	ANR
Arsenic, dissolved	µg/L	-	Additional/Year	ANR	ANR	ANR
Barium, dissolved	mg/L	-	Additional/Year	ANR	ANR	ANR
Beryllium, dissolved	µg/L	-	Additional/Year	ANR	ANR	ANR
Boron, dissolved	mg/L	-	Additional/Year	ANR	ANR	ANR
Cadmium, dissolved	µg/L	-	Additional/Discharge	Composite	ND < 0.25	U
Chromium, dissolved	µg/L	-	Additional/Year	ANR	ANR	ANR
Cobalt, dissolved	µg/L	-	Additional/Year	ANR	ANR	ANR
Copper, dissolved	µg/L	-	Additional/Discharge	Composite	1.9	J (DNQ)
Hardness, Dissolved (as CaCO3)	mg/L	-	Additional/Year	ANR	ANR	ANR

**OUTFALL 001  
DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	UNITS	DAILY MAXIMUM BENCHMARK	SAMPLE FREQUENCY	12/26/2019 07:45 - 12/27/2019 07:25		
				SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Human Bacteroides	CEs/100mL	-	Additional/Year	ANR	ANR	ANR
Iron, dissolved	mg/L	-	Additional/Discharge <sup>(9)</sup>	Composite	0.29	--
Lead, dissolved	µg/L	-	Additional/Discharge	Composite	ND < 0.50	U
Manganese, dissolved	µg/L	-	Additional/Year	ANR	ANR	ANR
Mercury, dissolved	µg/L	-	Additional/Discharge	Composite	ND < 0.10	U*
Nickel, dissolved	µg/L	-	Additional/Year	ANR	ANR	ANR
Selenium, dissolved	µg/L	-	Additional/Discharge	Composite	ND < 0.50	U
Silver, dissolved	µg/L	-	Additional/Year	ANR	ANR	ANR
Thallium, dissolved	µg/L	-	Additional/Year	ANR	ANR	ANR
Vanadium, dissolved	µg/L	-	Additional/Year	ANR	ANR	ANR
Zinc, dissolved	µg/L	-	Additional/Discharge	Composite	ND < 12	U*

**OUTFALL 001  
DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

					12/27/2019 07:25 (Composite)			
ANALYTE	OUTFALL SAMPLE FREQUENCY	1998 WHO TEF	BEF GREAT LAKES WATER QUALITY INITIATIVE	UNITS	LAB MDL	LAB RESULT	LABORATORY/ VALIDATION QUALIFIER	TCDD EQUIVALENT (w/out DNQ Values)
1,2,3,4,6,7,8-HpCDD	1/Discharge	0.01	0.05	µg/L	1.2E-06	1.0E-04	--	5.0E-08
1,2,3,4,6,7,8-HpCDF	1/Discharge	0.01	0.01	µg/L	7.6E-07	3.6E-05	U (B)	ND
1,2,3,4,7,8,9-HpCDF	1/Discharge	0.01	0.4	µg/L	9.2E-07	2.9E-06	UJ (*III)	ND
1,2,3,4,7,8-HxCDD	1/Discharge	0.1	0.3	µg/L	4.4E-07	3.4E-06	U (B)	ND
1,2,3,4,7,8-HxCDF	1/Discharge	0.1	0.08	µg/L	5.8E-07	2.9E-06	J (DNQ)	ND
1,2,3,6,7,8-HxCDD	1/Discharge	0.1	0.1	µg/L	4.7E-07	4.5E-06	U (B)	ND
1,2,3,6,7,8-HxCDF	1/Discharge	0.1	0.2	µg/L	6.0E-07	2.4E-06	J (DNQ)	ND
1,2,3,7,8,9-HxCDD	1/Discharge	0.1	0.1	µg/L	4.1E-07	3.5E-06	U (B)	ND
1,2,3,7,8,9-HxCDF	1/Discharge	0.1	0.6	µg/L	4.1E-07	2.2E-06	U (B)	ND
1,2,3,7,8-PeCDD	1/Discharge	1.0	0.9	µg/L	5.5E-07	1.7E-06	UJ (*III)	ND
1,2,3,7,8-PeCDF	1/Discharge	0.05	0.2	µg/L	4.4E-07	1.5E-06	J (DNQ)	ND
2,3,4,6,7,8-HxCDF	1/Discharge	0.1	0.7	µg/L	4.4E-07	2.6E-06	U (B)	ND
2,3,4,7,8-PeCDF	1/Discharge	0.5	1.6	µg/L	4.4E-07	1.4E-06	J (DNQ)	ND
2,3,7,8-TCDD	1/Discharge	1.0	1.0	µg/L	4.4E-07	1.6E-06	UJ (*III)	ND
2,3,7,8-TCDF	1/Discharge	0.1	0.8	µg/L	5.3E-07	1.2E-06	J (DNQ)	ND
OCDD	1/Discharge	0.0001	0.01	µg/L	8.9E-07	7.8E-04	--	7.8E-10
OCDF	1/Discharge	0.0001	0.02	µg/L	5.7E-07	7.0E-05	U (B)	ND

TCDD TEQ w/out DNQ Values <sup>(4)</sup>	5.1E-08
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TCDD TEQ (PRIORITY POLLUTANTS) DAILY MAXIMUM BENCHMARK = 2.8E-08



OUTFALL 001  
DISCHARGE MONITORING DATA SUMMARY TABLE

FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309

October 1 through December 31, 2019

				12/27/2019 07:25 (Composite)		
ANALYTE	UNITS	DAILY MAXIMUM BENCHMARK	SAMPLE FREQUENCY	RESULT	MDA	LABORATORY/ VALIDATION QUALIFIER
<b>NON-CONVENTIONAL POLLUTANTS</b>						
Gross Alpha	pCi/L	15	1/Discharge	14.1 +/-3.61	2.76	J- (*III)
Gross Beta	pCi/L	50	1/Discharge	7.80 +/-1.42	1.14	--
Combined Radium-226 & Radium-228	pCi/L	5	1/Discharge	1.54 +/-0.616	NM	J+ (B, *III)
Strontium-90	pCi/L	8	1/Discharge	0.107 +/-0.410	0.719	U
Tritium	pCi/L	20,000	1/Discharge	-27.5 +/-152	283	U
<b>ADDITIONAL POLLUTANTS</b>						
Cesium-137	pCi/L	200	1/Discharge	5.01 +/-9.91	16.8	U
Uranium	pCi/L	20	1/Discharge	0.664 +/-0.436	0.407	U (B)
<b>ADDITIONAL POLLUTANTS WITHOUT LIMITS</b>						
Potassium-40	pCi/L	-	1/Discharge	32.7 +/-90.4	152	U

**OUTFALL 001  
DISCHARGE MONITORING MASS SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	UNITS	BENCHMARK DAILY MAX	SAMPLE FREQUENCY	12/26/2019 7:45 - 12/27/2019 7:25		
				SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Flow**	MGD	117.83	1/Discharge	Meas	0.131101	*
<b>CONVENTIONAL POLLUTANTS</b>						
Biochemical Oxygen Demand (BOD)	LBS/DAY	29,481	1/Discharge	Composite	3.2	*
Oil & Grease	LBS/DAY	14,741	1/Discharge	Grab	ND	U*
Total Suspended Solids <sup>#</sup>	LBS/DAY	44,222	1/Discharge	Composite	207.7 <sup>(c)</sup>	--
<b>PRIORITY POLLUTANTS</b>						
1,1-Dichloroethene	LBS/DAY	5.9	1/Discharge	Grab	ND	U*
1,2-Dichloroethane	LBS/DAY	0.49	1/Discharge	Grab	ND	U*
2,4,6-Trichlorophenol	LBS/DAY	12.8	1/Discharge	Composite	ND	U*
2,4-Dinitrotoluene	LBS/DAY	17.7	1/Discharge	Composite	ND	U*
alpha-BHC	LBS/DAY	0.03	1/Discharge	Composite	ND	U*
Antimony	LBS/DAY	5.9	1/Year	ANR	ANR	ANR
Arsenic	LBS/DAY	9.83	1/Year	ANR	ANR	ANR
Beryllium	LBS/DAY	3.93	1/Year	ANR	ANR	ANR
Bis (2-Ethylhexyl) Phthalate	LBS/DAY	3.93	1/Discharge	Composite	ND	U*
Cadmium	LBS/DAY	(3.93) 3.05	1/Discharge	Composite	ND <sup>(b)</sup>	U
Chromium VI (Hexavalent)	LBS/DAY	15.72	1/Year	ANR	ANR	ANR
Copper	LBS/DAY	13.76	1/Discharge	Composite	0.0079	--
Cyanide	LBS/DAY	8.35	1/Discharge	Composite	ND	U*
Lead	LBS/DAY	5.11	1/Discharge	Composite	0.0072	--
Mercury	LBS/DAY	0.1	1/Discharge	Composite	ND	U*
Nickel	LBS/DAY	92.4	1/Year	ANR	ANR	ANR
N-Nitrosodimethylamine	LBS/DAY	15.72	1/Discharge	Composite	ND	U (B)
Pentachlorophenol	LBS/DAY	16.22	1/Discharge	Composite	ND	U*
Selenium	LBS/DAY	(4.91) 8.06	1/Discharge	Composite	ND <sup>(f)</sup>	U (B)
Silver	LBS/DAY	4.03	1/Year	ANR	ANR	ANR
TCDD TEQ NoDNQ <sup>(4)</sup>	LBS/DAY	2.75E-08	1/Discharge	Composite	5.6E-11	*
Thallium	LBS/DAY	1.97	1/Year	ANR	ANR	ANR
Trichloroethene	LBS/DAY	4.91	1/Discharge	Grab	ND	U*
Zinc	LBS/DAY	117	1/Discharge	Composite	0.051	*
<b>NON-CONVENTIONAL POLLUTANTS</b>						
Ammonia - N	LBS/DAY	9,925.3	1/Discharge	Composite	0.198	J (DNQ)
Barium	LBS/DAY	983	1/Year	ANR	ANR	ANR
Chloride	LBS/DAY	147,405	1/Discharge	Composite	4.5	*
Chlorine, Total Residual (Field)	LBS/DAY	98.3	1/Year	ANR	ANR	ANR
Detergents (as MBAS)	LBS/DAY	491.4	1/Discharge	Composite	ND	U*
Fluoride	LBS/DAY	1,572.3	1/Year	ANR	ANR	ANR
Iron	LBS/DAY	295	1/Discharge <sup>(l)</sup>	Composite	15	--
Manganese	LBS/DAY	49.1	1/Year	ANR	ANR	ANR
Nitrate - N	LBS/DAY	7,862	1/Discharge	Composite	1.7	*
Nitrate + Nitrite as Nitrogen (N)	LBS/DAY	7,862	1/Discharge	Composite	1.7	*
Nitrite - N	LBS/DAY	983	1/Discharge	Composite	ND	U*
Perchlorate	LBS/DAY	5.9	1/Discharge	Composite	ND	U*
Sulfate	LBS/DAY	294,810	1/Discharge	Composite	7.4	*
Total Dissolved Solids	LBS/DAY	933,567	1/Discharge	Composite	94	*

**OUTFALL 002  
DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	UNITS	BENCHMARK DAILY MAXIMUM	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	12/4/2019 13:30 - 12/5/2019 09:50 <sup>(n)</sup>		
						SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Flow**	MGD	117.83	1/Discharge	1/Quarter	-	Meas	0.006605	*
<b>CONVENTIONAL POLLUTANTS</b>								
Biochemical Oxygen Demand (BOD)(5-Day @ 20 deg. C)	mg/L	30	1/Discharge	NA	-	Composite	16	*
Oil & Grease	mg/L	15	1/Discharge	NA	-	Grab	ND < 1.4	U*
pH (Field)	s.u.	6.5-8.5	1/Discharge	1/Quarter	6.5-8.5	Grab	7.63	*
Total Suspended Solids <sup>#</sup>	mg/L	45	1/Discharge	1/Year	-	Composite	49 <sup>(c)</sup>	--
<b>PRIORITY POLLUTANTS</b>								
1,1-Dichloroethene	µg/L	6.0	1/Discharge	1/5 Years	-	Grab	ND < 0.25	U*
1,2-Dichloroethane	µg/L	0.5	1/Discharge	1/5 Years	-	Grab	ND < 0.25	U*
2,4,6-Trichlorophenol	µg/L	13	1/Discharge	1/5 Years	-	Composite	ND < 0.10	U*
2,4-Dinitrotoluene	µg/L	18	1/Discharge	1/5 Years	-	Composite	ND < 2.1	U*
alpha-BHC	µg/L	0.03	1/Discharge	1/5 Years	-	Composite	ND < 0.0026	U*
Antimony	µg/L	6.0	1/Year	1/5 Years	-	ANR	ANR	ANR
Arsenic	µg/L	10.0	1/Year	1/5 Years	-	ANR	ANR	ANR
Beryllium	µg/L	4.0	1/Year	1/5 Years	-	ANR	ANR	ANR
Bis (2-Ethylhexyl) Phthalate	µg/L	4.0	1/Discharge	1/5 Years	-	Composite	ND < 2.1	U*
Cadmium	µg/L	(4.0) 3.1	1/Discharge	1/5 Years	-	Composite	ND < 0.25 <sup>(b)</sup>	U
Chromium VI (Hexavalent)	µg/L	16	1/Year	1/5 Years	-	ANR	ANR	ANR
Copper	µg/L	14	1/Discharge	1/5 Years	-	Composite	3.6	--
Cyanide	µg/L	8.5	1/Discharge	1/5 Years	-	Composite	ND < 2.5	U*
Lead	µg/L	5.2	1/Discharge	1/5 Years	-	Composite	1.1	--
Mercury	µg/L	0.1	1/Discharge	1/5 Years	-	Composite	ND < 0.10	U*
Nickel	µg/L	94	1/Year	1/5 Years	-	ANR	ANR	ANR
N-Nitrosodimethylamine	µg/L	16	1/Discharge	1/5 Years	-	Composite	ND < 0.31	U*
Pentachlorophenol	µg/L	16.5	1/Discharge	1/5 Years	-	Composite	1.2	J (DNQ)
Selenium	µg/L	(5) 8.2	1/Discharge	1/5 Years	-	Composite	0.62 <sup>(f)</sup>	J (DNQ)
Silver	µg/L	4.1	1/Year	1/5 Years	-	ANR	ANR	ANR
Thallium	µg/L	2.0	1/Year	1/5 Years	-	ANR	ANR	ANR
Trichloroethene	µg/L	5.0	1/Discharge	1/5 Years	-	Grab	ND < 0.25	U*
Zinc	µg/L	119	1/Discharge	1/5 Years	-	Composite	18	J (DNQ)
<b>NON-CONVENTIONAL POLLUTANT</b>								
Ammonia - N	mg/L	10.1	1/Discharge	NA	-	Composite	0.147	J (DNQ)
Barium	mg/L	1.0	1/Year	NA	-	ANR	ANR	ANR
Chloride	mg/L	150	1/Discharge	NA	-	Composite	31	*
Chlorine, Total Residual (Field)	mg/L	0.1	1/Year	NA	-	ANR	ANR	ANR
Chronic Toxicity	Pass or Fail and % Effect	Pass or % Effect <50	1st & 2nd rain event/Year	NA	-	ANR	ANR	ANR

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**OUTFALL 002  
DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	UNITS	BENCHMARK DAILY MAXIMUM	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	12/4/2019 13:30 - 12/5/2019 09:50 <sup>(n)</sup>		
						SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Detergents (as MBAS)	mg/L	0.5	1/Discharge	NA	-	Composite	0.12	*
Fluoride	mg/L	1.6	1/Year	NA	-	ANR	ANR	ANR
Iron	mg/L	0.3	1/Discharge(g)	NA	-	Composite	1.5	J+ (Q)
Manganese	µg/L	50	1/Year	NA	-	ANR	ANR	ANR
Nitrate - N	mg/L	8	1/Discharge	NA	-	Composite	1.0	*
Nitrate + Nitrite as Nitrogen (N)	mg/L	8	1/Discharge	NA	-	Composite	1.0	*
Nitrite - N	mg/L	1	1/Discharge	NA	-	Composite	ND < 0.025	U*
Perchlorate	µg/L	6.0	1/Discharge	NA	-	Composite	ND < 0.95	U*
Settleable Solids#	ml/L	0.3	1/Discharge	NA	-	Grab	ND < 0.10 <sup>(c)</sup>	U*
Sulfate	mg/L	300	1/Discharge	NA	-	Composite	210	*
Temperature (Field)	Deg F	86	1/Discharge	1/Quarter	-	Grab	54.9	*
Total Dissolved Solids	mg/L	950	1/Discharge	NA	-	Composite	500	*
<b>REMAINING PRIORITY POLLUTANTS<sup>(p)</sup></b>								
1,1,1-Trichloroethane	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
1,1,2,2-Tetrachloroethane	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
1,1,2-Trichloroethane	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
1,1-Dichloroethane	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
1,2,4-Trichlorobenzene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,2-Dichlorobenzene	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
1,2-Dichlorobenzene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,2-Dichloropropane	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
1,2-Diphenylhydrazine/Azobenzene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,3-Dichlorobenzene	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
1,3-Dichlorobenzene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,4-Dichlorobenzene	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
1,4-Dichlorobenzene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2,4-Dichlorophenol	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2,4-Dimethylphenol	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2,4-Dinitrophenol	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2,6-Dinitrotoluene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2-Chloroethyl vinyl ether	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2-Chloronaphthalene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2-Chlorophenol	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2-Methyl-4,6-Dinitrophenol	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2-Nitrophenol	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
3,3'-Dichlorobenzidine	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
4,4'-DDD	µg/L	-	1/Year	1/Quarter	0.0014	Composite	ND < 0.0042	U

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**OUTFALL 002  
DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	UNITS	BENCHMARK DAILY MAXIMUM	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	12/4/2019 13:30 - 12/5/2019 09:50 <sup>(n)</sup>		
						SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
4,4'-DDE	µg/L	-	1/Year	1/Quarter	0.001	Composite	ND < 0.0032	U
4,4'-DDT	µg/L	-	1/Year	1/Quarter	0.001	Composite	ND < 0.0042	U
4-Bromophenyl phenyl ether	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
4-Chloro-3-methylphenol	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
4-Chlorophenyl phenyl ether	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
4-Nitrophenol	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Acenaphthene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Acenaphthylene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Acrolein	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Acrylonitrile	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Aldrin	µg/L	-	1/Year	1/5 Years	-	Composite	ND < 0.0016	U
alpha-Endosulfan	µg/L	-	1/Year	1/5 Years	-	Composite	ND < 0.0032	U
Anthracene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Aroclor 1016	µg/L	-	1/Year	1/Quarter	0.0003	Composite	ND < 0.26	U
Aroclor 1221	µg/L	-	1/Year	1/Quarter	0.0003	Composite	ND < 0.26	U
Aroclor 1232	µg/L	-	1/Year	1/Quarter	0.0003	Composite	ND < 0.26	U
Aroclor 1242	µg/L	-	1/Year	1/Quarter	0.0003	Composite	ND < 0.26	U
Aroclor 1248	µg/L	-	1/Year	1/Quarter	0.0003	Composite	ND < 0.26	U
Aroclor 1254	µg/L	-	1/Year	1/Quarter	0.0003	Composite	ND < 0.26	U
Aroclor 1260	µg/L	-	1/Year	1/Quarter	0.0003	Composite	ND < 0.26	U
Benzene	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
Benzidine	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Benzo(a)anthracene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Benzo(a)pyrene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Benzo(b)fluoranthene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Benzo(g,h,i)Perylene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Benzo(k)fluoranthene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
beta-BHC	µg/L	-	1/Year	1/5 Years	-	Composite	ND < 0.0042	U
beta-Endosulfan	µg/L	-	1/Year	1/5 Years	-	Composite	ND < 0.0021	U
Bis (2-Chloroethoxy) Methane	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Bis (2-Chloroethyl) Ether	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Bis (2-Chloroisopropyl) Ether	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Bromoform	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.40	U
Bromomethane	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
Butyl benzylphthalate	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Carbon Tetrachloride	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
Chlordane	µg/L	-	1/Year	1/Quarter	0.001	Composite	ND < 0.084	U
Chlorobenzene	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U

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**OUTFALL 002  
DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	UNITS	BENCHMARK DAILY MAXIMUM	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	12/4/2019 13:30 - 12/5/2019 09:50 <sup>(n)</sup>		
						SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Chlorodibromomethane	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
Chloroethane	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.40	U
Chloroform	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
Chloromethane (Methyl Chloride)	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
Chromium	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Chrysene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
cis-1,3-Dichloropropene	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
delta-BHC	µg/L	-	1/Year	1/5 Years	-	Composite	ND < 0.0037	U
Dibenz(a,h)anthracene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Dichlorobromomethane	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
Dieldrin	µg/L	-	1/Year	1/Quarter	0.0002	Composite	ND < 0.0021	U
Diethyl phthalate	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Dimethyl phthalate	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Di-n-butyl phthalate	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Di-n-octyl phthalate	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Endosulfan Sulfate	µg/L	-	1/Year	1/5 Years	-	Composite	ND < 0.0032	U
Endrin	µg/L	-	1/Year	1/5 Years	-	Composite	ND < 0.0021	U
Endrin Aldehyde	µg/L	-	1/Year	1/5 Years	-	Composite	ND < 0.0021	U
Ethylbenzene	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
Fluoranthene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Fluorene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
gamma-BHC (Lindane)	µg/L	-	1/Year	1/5 Years	-	Composite	ND < 0.0032	U
Heptachlor	µg/L	-	1/Year	1/5 Years	-	Composite	ND < 0.0032	U
Heptachlor Epoxide	µg/L	-	1/Year	1/5 Years	-	Composite	ND < 0.0026	U
Hexachlorobenzene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Hexachlorobutadiene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Hexachlorocyclopentadiene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Hexachloroethane	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Indeno(1,2,3-cd)pyrene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Isophorone	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
m,p-Xylenes	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Methylene chloride	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.88	U
Naphthalene	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.40	U
Naphthalene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Nitrobenzene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
N-Nitroso-di-n-propylamine	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
N-Nitrosodiphenylamine	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
o-Xylene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR

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DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	UNITS	BENCHMARK DAILY MAXIMUM	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	12/4/2019 13:30 - 12/5/2019 09:50 <sup>(n)</sup>		
						SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Phenanthrene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Phenol	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Pyrene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Tetrachloroethene	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
Toluene	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
Toxaphene	µg/L	-	1/Year	1/Quarter	0.0003	Composite	ND < 0.25	U
trans-1,2-Dichloroethene	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
trans-1,3-Dichloropropene	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
Trichlorofluoromethane	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Vinyl chloride	µg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
Xylenes (Total)	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
<b>EFFLUENT MONITORING (NO LIMITATIONS) POLLUTANTS</b>								
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/L	-	1/Quarter	NA	-	Grab	ND < 0.50	U
1,2-Dichloro-1,1,2-trifluoroethane	µg/L	-	1/Year	NA	-	ANR	ANR	ANR
1,4-Dioxane	µg/L	-	1/Year	NA	-	ANR	ANR	ANR
Boron	mg/L	-	1/Year	NA	-	ANR	ANR	ANR
cis-1,2-Dichloroethene <sup>(p)</sup>	µg/L	-	1/Year	NA	-	Grab	ND < 0.25	U
Cobalt	µg/L	-	1/Year	NA	-	ANR	ANR	ANR
Conductivity	µmhos/cm	-	1/Discharge	NA	-	Grab	680	--
Cyclohexane	µg/L	-	1/Year	NA	-	ANR	ANR	ANR
Diesel Range Organics (DRO C13-C28)	mg/L	-	1/Year	NA	-	ANR	ANR	ANR
Dissolved Oxygen (Field)	mg/L	-	1/Discharge	NA	-	Grab	23.2	*
E. Coli	mpn/100mL	-	1/Year	1/Year	235	ANR	ANR	ANR
Gasoline Range Organics (GRO C4-C12)	mg/L	-	1/Year	NA	-	ANR	ANR	ANR
Hardness (as CaCO3)	mg/L	-	1/Year	1/Quarter	-	Composite	230	--
Monomethyl hydrazine	µg/L	-	1/Year	NA	-	ANR	ANR	ANR
Total Organic Carbon	mg/L	-	1/Year	NA	-	ANR	ANR	ANR
Turbidity	NTU	-	1/Discharge	NA	-	Composite	35	--
Vanadium	µg/L	-	1/Year	NA	-	ANR	ANR	ANR
<b>ADDITIONAL POLLUTANTS<sup>(2)</sup></b>								
Antimony, dissolved	µg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Arsenic, dissolved	µg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Barium, dissolved	mg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Beryllium, dissolved	µg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Boron, dissolved	mg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Cadmium, dissolved	µg/L	-	Additional/Discharge	NA	-	Composite	ND < 0.25	U
Chlorpyrifos	µg/L	-	Additional <sup>(p)</sup>	1/Quarter	-	Composite	ND < 0.0069	U*

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DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	UNITS	BENCHMARK DAILY MAXIMUM	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	12/4/2019 13:30 - 12/5/2019 09:50 <sup>(n)</sup>		
						SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Chromium, dissolved	µg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Cobalt, dissolved	µg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Copper, dissolved	µg/L	-	Additional/Discharge	NA	-	Composite	2.0	--
Diazinon	µg/L	-	Additional <sup>(p)</sup>	1/Quarter	-	Composite	ND < 0.0052	U*
Hardness, Dissolved (as CaCO3)	mg/L	-	Additional/Year	NA	-	Composite	250	--
Human Bacteroides	CEs/100mL	-	Additional/Year	NA	-	ANR	ANR	ANR
Iron, dissolved	mg/L	-	Additional/Discharge <sup>(g)</sup>	NA	-	Composite	ND < 0.050	U
Lead, dissolved	µg/L	-	Additional/Discharge	NA	-	Composite	ND < 0.50	U
Manganese, dissolved	µg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Mercury, dissolved	µg/L	-	Additional/Discharge	NA	-	Composite	ND < 0.10	U*
Nickel, dissolved	µg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Selenium, dissolved	µg/L	-	Additional/Discharge	NA	-	Composite	ND < 0.50	U
Silver, dissolved	µg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Thallium, dissolved	µg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Vanadium, dissolved	µg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Zinc, dissolved	µg/L	-	Additional/Discharge	NA	-	Composite	15	J (DNQ)



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SANTA SUSANA FIELD LABORATORY  
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October 1 through December 31, 2019

ANALYTE	UNITS	BENCHMARK DAILY MAXIMUM	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	12/23/2019 09:30 - 12/24/2019 08:20 <sup>(n)</sup>		
						SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Flow**	MGD	117.83	1/Discharge	1/Quarter	-	Meas	0.028787	*
<b>CONVENTIONAL POLLUTANTS</b>								
Biochemical Oxygen Demand (BOD)(5-Day @ 20 deg. C)	mg/L	30	1/Discharge	NA	-	Composite	3.6	*
Oil & Grease	mg/L	15	1/Discharge	NA	-	Grab	ND < 1.3	U*
pH (Field)	s.u.	6.5-8.5	1/Discharge	1/Quarter	6.5-8.5	Grab	7.21	*
Total Suspended Solids <sup>#</sup>	mg/L	45	1/Discharge	1/Year	-	Composite	110 <sup>(c)</sup>	--
<b>PRIORITY POLLUTANTS</b>								
1,1-Dichloroethene	µg/L	6.0	1/Discharge	1/5 Years	-	Grab	ND < 0.25	U*
1,2-Dichloroethane	µg/L	0.5	1/Discharge	1/5 Years	-	Grab	ND < 0.25	U*
2,4,6-Trichlorophenol	µg/L	13	1/Discharge	1/5 Years	-	Composite	ND < 0.10	U*
2,4-Dinitrotoluene	µg/L	18	1/Discharge	1/5 Years	-	Composite	ND < 2.1	U*
alpha-BHC	µg/L	0.03	1/Discharge	1/5 Years	-	Composite	ND < 0.021	U*
Antimony	µg/L	6.0	1/Year	1/5 Years	-	ANR	ANR	ANR
Arsenic	µg/L	10.0	1/Year	1/5 Years	-	ANR	ANR	ANR
Beryllium	µg/L	4.0	1/Year	1/5 Years	-	ANR	ANR	ANR
Bis (2-Ethylhexyl) Phthalate	µg/L	4.0	1/Discharge	1/5 Years	-	Composite	ND < 2.1	U*
Cadmium	µg/L	(4.0) 3.1	1/Discharge	1/5 Years	-	Composite	ND < 0.25 <sup>(b)</sup>	U
Chromium VI (Hexavalent)	µg/L	16	1/Year	1/5 Years	-	ANR	ANR	ANR
Copper	µg/L	14	1/Discharge	1/5 Years	-	Composite	6.6	--
Cyanide	µg/L	8.5	1/Discharge	1/5 Years	-	Composite	ND < 2.5	U*
Lead	µg/L	5.2	1/Discharge	1/5 Years	-	Composite	3.5	--
Mercury	µg/L	0.1	1/Discharge	1/5 Years	-	Composite	ND < 0.10	U*
Nickel	µg/L	94	1/Year	1/5 Years	-	ANR	ANR	ANR
N-Nitrosodimethylamine	µg/L	16	1/Discharge	1/5 Years	-	Composite	ND < 5.1	U (B)
Pentachlorophenol	µg/L	16.5	1/Discharge	1/5 Years	-	Composite	ND < 1.0	U*
Selenium	µg/L	(5) 8.2	1/Discharge	1/5 Years	-	Composite	ND < 0.50 <sup>(f)</sup>	U
Silver	µg/L	4.1	1/Year	1/5 Years	-	ANR	ANR	ANR
Thallium	µg/L	2.0	1/Year	1/5 Years	-	ANR	ANR	ANR
Trichloroethene	µg/L	5.0	1/Discharge	1/5 Years	-	Grab	ND < 0.25	U*
Zinc	µg/L	119	1/Discharge	1/5 Years	-	Composite	31	--
<b>NON-CONVENTIONAL POLLUTANT</b>								
Ammonia - N	mg/L	10.1	1/Discharge	NA	-	Composite	ND < 0.100	U*
Barium	mg/L	1.0	1/Year	NA	-	ANR	ANR	ANR
Chloride	mg/L	150	1/Discharge	NA	-	Composite	18	*
Chlorine, Total Residual (Field)	mg/L	0.1	1/Year	NA	-	ANR	ANR	ANR
Chronic Toxicity	Pass or Fail and % Effect	Pass or % Effect <50	1st & 2nd rain event/Year	NA	-	ANR	ANR	ANR

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**OUTFALL 002  
DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	UNITS	BENCHMARK DAILY MAXIMUM	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	12/23/2019 09:30 - 12/24/2019 08:20 <sup>(n)</sup>		
						SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Detergents (as MBAS)	mg/L	0.5	1/Discharge	NA	-	Composite	0.055	J (DNQ*)
Fluoride	mg/L	1.6	1/Year	NA	-	ANR	ANR	ANR
Iron	mg/L	0.3	1/Discharge(g)	NA	-	Composite	8.7	--
Manganese	µg/L	50	1/Year	NA	-	ANR	ANR	ANR
Nitrate - N	mg/L	8	1/Discharge	NA	-	Composite	0.63	*
Nitrate + Nitrite as Nitrogen (N)	mg/L	8	1/Discharge	NA	-	Composite	0.72	*
Nitrite - N	mg/L	1	1/Discharge	NA	-	Composite	0.092	J (DNQ*)
Perchlorate	µg/L	6.0	1/Discharge	NA	-	Composite	ND < 0.95	U*
Settleable Solids#	ml/L	0.3	1/Discharge	NA	-	Grab	0.10 <sup>(c)</sup>	*
Sulfate	mg/L	300	1/Discharge	NA	-	Composite	130	*
Temperature (Field)	Deg F	86	1/Discharge	1/Quarter	-	Grab	50	*
Total Dissolved Solids	mg/L	950	1/Discharge	NA	-	Composite	360	*
<b>REMAINING PRIORITY POLLUTANTS<sup>(p)</sup></b>								
1,1,1-Trichloroethane	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,1,2,2-Tetrachloroethane	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,1,2-Trichloroethane	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,1-Dichloroethane	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,2,4-Trichlorobenzene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,2-Dichlorobenzene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,2-Dichlorobenzene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,2-Dichloropropane	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,2-Diphenylhydrazine/Azobenzene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,3-Dichlorobenzene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,3-Dichlorobenzene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,4-Dichlorobenzene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,4-Dichlorobenzene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2,4-Dichlorophenol	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2,4-Dimethylphenol	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2,4-Dinitrophenol	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2,6-Dinitrotoluene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2-Chloroethyl vinyl ether	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2-Chloronaphthalene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2-Chlorophenol	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2-Methyl-4,6-Dinitrophenol	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2-Nitrophenol	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
3,3'-Dichlorobenzidine	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
4,4'-DDD	µg/L	-	1/Year	1/Quarter	0.0014	ANR	ANR	ANR

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**OUTFALL 002  
DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	UNITS	BENCHMARK DAILY MAXIMUM	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	12/23/2019 09:30 - 12/24/2019 08:20 <sup>(n)</sup>		
						SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
4,4'-DDE	µg/L	-	1/Year	1/Quarter	0.001	ANR	ANR	ANR
4,4'-DDT	µg/L	-	1/Year	1/Quarter	0.001	ANR	ANR	ANR
4-Bromophenyl phenyl ether	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
4-Chloro-3-methylphenol	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
4-Chlorophenyl phenyl ether	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
4-Nitrophenol	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Acenaphthene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Acenaphthylene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Acrolein	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Acrylonitrile	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Aldrin	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
alpha-Endosulfan	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Anthracene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Aroclor 1016	µg/L	-	1/Year	1/Quarter	0.0003	ANR	ANR	ANR
Aroclor 1221	µg/L	-	1/Year	1/Quarter	0.0003	ANR	ANR	ANR
Aroclor 1232	µg/L	-	1/Year	1/Quarter	0.0003	ANR	ANR	ANR
Aroclor 1242	µg/L	-	1/Year	1/Quarter	0.0003	ANR	ANR	ANR
Aroclor 1248	µg/L	-	1/Year	1/Quarter	0.0003	ANR	ANR	ANR
Aroclor 1254	µg/L	-	1/Year	1/Quarter	0.0003	ANR	ANR	ANR
Aroclor 1260	µg/L	-	1/Year	1/Quarter	0.0003	ANR	ANR	ANR
Benzene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Benzidine	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Benzo(a)anthracene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Benzo(a)pyrene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Benzo(b)fluoranthene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Benzo(g,h,i)Perylene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Benzo(k)fluoranthene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
beta-BHC	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
beta-Endosulfan	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Bis (2-Chloroethoxy) Methane	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Bis (2-Chloroethyl) Ether	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Bis (2-Chloroisopropyl) Ether	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Bromoform	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Bromomethane	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Butyl benzylphthalate	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Carbon Tetrachloride	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Chlordane	µg/L	-	1/Year	1/Quarter	0.001	ANR	ANR	ANR
Chlorobenzene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR

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**OUTFALL 002  
DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	UNITS	BENCHMARK DAILY MAXIMUM	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	12/23/2019 09:30 - 12/24/2019 08:20 <sup>(n)</sup>		
						SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Chlorodibromomethane	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Chloroethane	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Chloroform	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Chloromethane (Methyl Chloride)	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Chromium	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Chrysene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
cis-1,3-Dichloropropene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
delta-BHC	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Dibenz(a,h)anthracene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Dichlorobromomethane	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Dieldrin	µg/L	-	1/Year	1/Quarter	0.0002	ANR	ANR	ANR
Diethyl phthalate	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Dimethyl phthalate	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Di-n-butyl phthalate	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Di-n-octyl phthalate	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Endosulfan Sulfate	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Endrin	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Endrin Aldehyde	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Ethylbenzene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Fluoranthene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Fluorene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
gamma-BHC (Lindane)	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Heptachlor	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Heptachlor Epoxide	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Hexachlorobenzene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Hexachlorobutadiene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Hexachlorocyclopentadiene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Hexachloroethane	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Indeno(1,2,3-cd)pyrene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Isophorone	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
m,p-Xylenes	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Methylene chloride	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Naphthalene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Naphthalene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Nitrobenzene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
N-Nitroso-di-n-propylamine	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
N-Nitrosodiphenylamine	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
o-Xylene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR

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**OUTFALL 002  
DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	UNITS	BENCHMARK DAILY MAXIMUM	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	12/23/2019 09:30 - 12/24/2019 08:20 <sup>(n)</sup>		
						SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Phenanthrene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Phenol	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Pyrene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Tetrachloroethene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Toluene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Toxaphene	µg/L	-	1/Year	1/Quarter	0.0003	ANR	ANR	ANR
trans-1,2-Dichloroethene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
trans-1,3-Dichloropropene	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Trichlorofluoromethane	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Vinyl chloride	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Xylenes (Total)	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
<b>EFFLUENT MONITORING (NO LIMITATIONS) POLLUTANTS</b>								
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/L	-	1/Quarter	NA	-	ANR	ANR	ANR
1,2-Dichloro-1,1,2-trifluoroethane	µg/L	-	1/Year	NA	-	ANR	ANR	ANR
1,4-Dioxane	µg/L	-	1/Year	NA	-	ANR	ANR	ANR
Boron	mg/L	-	1/Year	NA	-	ANR	ANR	ANR
cis-1,2-Dichloroethene <sup>(p)</sup>	µg/L	-	1/Year	NA	-	ANR	ANR	ANR
Cobalt	µg/L	-	1/Year	NA	-	ANR	ANR	ANR
Conductivity	µmhos/cm	-	1/Discharge	NA	-	Grab	510	--
Cyclohexane	µg/L	-	1/Year	NA	-	ANR	ANR	ANR
Diesel Range Organics (DRO C13-C28)	mg/L	-	1/Year	NA	-	ANR	ANR	ANR
Dissolved Oxygen (Field)	mg/L	-	1/Discharge	NA	-	Grab	7.17	*
E. Coli	mpn/100mL	-	1/Year	1/Year	235	ANR	ANR	ANR
Gasoline Range Organics (GRO C4-C12)	mg/L	-	1/Year	NA	-	ANR	ANR	ANR
Hardness (as CaCO3)	mg/L	-	1/Year	1/Quarter	-	ANR	ANR	ANR
Monomethyl hydrazine	µg/L	-	1/Year	NA	-	ANR	ANR	ANR
Total Organic Carbon	mg/L	-	1/Year	NA	-	ANR	ANR	ANR
Turbidity	NTU	-	1/Discharge	NA	-	Composite	220	*
Vanadium	µg/L	-	1/Year	NA	-	ANR	ANR	ANR
<b>ADDITIONAL POLLUTANTS<sup>(2)</sup></b>								
Antimony, dissolved	µg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Arsenic, dissolved	µg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Barium, dissolved	mg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Beryllium, dissolved	µg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Boron, dissolved	mg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Cadmium, dissolved	µg/L	-	Additional/Discharge	NA	-	Composite	ND < 0.25	UJ (H)
Chlorpyrifos	µg/L	-	Additional <sup>(p)</sup>	1/Quarter	-	Composite	ND < 0.034	U*

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**OUTFALL 002  
DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	UNITS	BENCHMARK DAILY MAXIMUM	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	12/23/2019 09:30 - 12/24/2019 08:20 <sup>(n)</sup>		
						SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Chromium, dissolved	µg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Cobalt, dissolved	µg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Copper, dissolved	µg/L	-	Additional/Discharge	NA	-	Composite	1.9	J (H, DNQ)
Diazinon	µg/L	-	Additional <sup>(p)</sup>	1/Quarter	-	Composite	ND < 0.026	U*
Hardness, Dissolved (as CaCO3)	mg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Human Bacteroides	CEs/100mL	-	Additional/Year	NA	-	ANR	ANR	ANR
Iron, dissolved	mg/L	-	Additional/Discharge <sup>(q)</sup>	NA	-	Composite	0.061	J (H, DNQ)
Lead, dissolved	µg/L	-	Additional/Discharge	NA	-	Composite	ND < 0.50	UJ (H)
Manganese, dissolved	µg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Mercury, dissolved	µg/L	-	Additional/Discharge	NA	-	Composite	ND < 0.10	U*
Nickel, dissolved	µg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Selenium, dissolved	µg/L	-	Additional/Discharge	NA	-	Composite	ND < 0.65	UJ (H, B)
Silver, dissolved	µg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Thallium, dissolved	µg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Vanadium, dissolved	µg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Zinc, dissolved	µg/L	-	Additional/Discharge	NA	-	Composite	27	J (H)

**OUTFALL 002  
DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	1998 WHO TEF	BEF GREAT LAKES WATER QUALITY INITIATIVE	UNITS	12/5/2019 9:50 (Composite) <sup>(n)</sup>			
						LAB MDL	LAB RESULT	LABORATORY/ VALIDATION QUALIFIER	TCDD EQUIVALENT (w/out DNQ Values)
1,2,3,4,6,7,8-HpCDD	1/Discharge	1/Year	0.01	0.05	µg/L	1.5E-06	1.5E-06	U (B)	ND
1,2,3,4,6,7,8-HpCDF	1/Discharge	1/Year	0.01	0.01	µg/L	2.1E-06	2.1E-06	U (B)	ND
1,2,3,4,7,8,9-HpCDF	1/Discharge	1/Year	0.01	0.4	µg/L	2.6E-06	ND	U	ND
1,2,3,4,7,8-HxCDD	1/Discharge	1/Year	0.1	0.3	µg/L	1.5E-06	ND	U	ND
1,2,3,4,7,8-HxCDF	1/Discharge	1/Year	0.1	0.08	µg/L	1.3E-06	ND	U	ND
1,2,3,6,7,8-HxCDD	1/Discharge	1/Year	0.1	0.1	µg/L	1.6E-06	ND	U	ND
1,2,3,6,7,8-HxCDF	1/Discharge	1/Year	0.1	0.2	µg/L	1.3E-06	ND	U	ND
1,2,3,7,8,9-HxCDD	1/Discharge	1/Year	0.1	0.1	µg/L	1.3E-06	ND	U	ND
1,2,3,7,8,9-HxCDF	1/Discharge	1/Year	0.1	0.6	µg/L	1.0E-06	ND	U	ND
1,2,3,7,8-PeCDD	1/Discharge	1/Year	1.0	0.9	µg/L	1.8E-06	ND	U	ND
1,2,3,7,8-PeCDF	1/Discharge	1/Year	0.05	0.2	µg/L	1.5E-06	ND	U	ND
2,3,4,6,7,8-HxCDF	1/Discharge	1/Year	0.1	0.7	µg/L	9.6E-07	ND	U	ND
2,3,4,7,8-PeCDF	1/Discharge	1/Year	0.5	1.6	µg/L	1.6E-06	ND	U	ND
2,3,7,8-TCDD	1/Discharge	1/Year	1.0	1.0	µg/L	1.3E-06	ND	U	ND
2,3,7,8-TCDF	1/Discharge	1/Year	0.1	0.8	µg/L	9.0E-07	ND	U	ND
OCDD	1/Discharge	1/Year	0.0001	0.01	µg/L	2.1E-06	3.7E-04	--	3.7E-10
OCDF	1/Discharge	1/Year	0.0001	0.02	µg/L	2.3E-06	3.6E-05	J (DNQ)	ND

TCDD TEQ w/out DNQ Values <sup>(4)</sup>	3.7E-10
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TCDD TEQ (PRIORITY POLLUTANTS) DAILY MAXIMUM BENCHMARK<sup>(1)</sup> = 2.8E-08

**OUTFALL 002  
DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	1998 WHO TEF	BEF GREAT LAKES WATER QUALITY INITIATIVE	UNITS	12/24/2019 8:20 (Composite) <sup>(n)</sup>			
						LAB MDL	LAB RESULT	LABORATORY/ VALIDATION QUALIFIER	TCDD EQUIVALENT (w/out DNQ Values)
1,2,3,4,6,7,8-HpCDD	1/Discharge	1/Year	0.01	0.05	µg/L	2.5E-06	9.9E-05	--	<b>5.0E-08</b>
1,2,3,4,6,7,8-HpCDF	1/Discharge	1/Year	0.01	0.01	µg/L	1.6E-06	3.7E-05	U (B)	<b>ND</b>
1,2,3,4,7,8,9-HpCDF	1/Discharge	1/Year	0.01	0.4	µg/L	1.8E-06	ND	U	<b>ND</b>
1,2,3,4,7,8-HxCDD	1/Discharge	1/Year	0.1	0.3	µg/L	2.4E-06	6.8E-06	U (B)	<b>ND</b>
1,2,3,4,7,8-HxCDF	1/Discharge	1/Year	0.1	0.08	µg/L	2.9E-06	ND	U	<b>ND</b>
1,2,3,6,7,8-HxCDD	1/Discharge	1/Year	0.1	0.1	µg/L	2.5E-06	6.5E-06	U (B)	<b>ND</b>
1,2,3,6,7,8-HxCDF	1/Discharge	1/Year	0.1	0.2	µg/L	3.0E-06	ND	U	<b>ND</b>
1,2,3,7,8,9-HxCDD	1/Discharge	1/Year	0.1	0.1	µg/L	2.2E-06	ND	U	<b>ND</b>
1,2,3,7,8,9-HxCDF	1/Discharge	1/Year	0.1	0.6	µg/L	2.3E-06	ND	U	<b>ND</b>
1,2,3,7,8-PeCDD	1/Discharge	1/Year	1.0	0.9	µg/L	4.1E-06	ND	U	<b>ND</b>
1,2,3,7,8-PeCDF	1/Discharge	1/Year	0.05	0.2	µg/L	2.6E-06	ND	U	<b>ND</b>
2,3,4,6,7,8-HxCDF	1/Discharge	1/Year	0.1	0.7	µg/L	2.3E-06	ND	U	<b>ND</b>
2,3,4,7,8-PeCDF	1/Discharge	1/Year	0.5	1.6	µg/L	2.6E-06	ND	U	<b>ND</b>
2,3,7,8-TCDD	1/Discharge	1/Year	1.0	1.0	µg/L	1.7E-06	ND	U	<b>ND</b>
2,3,7,8-TCDF	1/Discharge	1/Year	0.1	0.8	µg/L	1.5E-06	ND	U	<b>ND</b>
OCDD	1/Discharge	1/Year	0.0001	0.01	µg/L	6.6E-06	1.3E-03	--	<b>1.3E-09</b>
OCDF	1/Discharge	1/Year	0.0001	0.02	µg/L	4.9E-06	1.1E-04	U (B)	<b>ND</b>

<b>TCDD TEQ w/out DNQ Values<sup>(4)</sup></b>	<b>5.1E-08</b>
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TCDD TEQ (PRIORITY POLLUTANTS) DAILY MAXIMUM BENCHMARK<sup>(1)</sup> = 2.8E-08



OUTFALL 002  
DISCHARGE MONITORING DATA SUMMARY TABLE

FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309

October 1 through December 31, 2019

ANALYTE	UNITS	DAILY MAXIMUM BENCHMARK	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	12/5/2019 09:50 (Composite) <sup>(n)</sup>		
						RESULT	MDA	LABORATORY/ VALIDATION QUALIFIER
<b>NON-CONVENTIONAL POLLUTANTS</b>								
Gross Alpha	pCi/L	15	1/Discharge	NA	-/-	0.868 +/-3.14	5.64	UJ (*III)
Gross Beta	pCi/L	50	1/Discharge	NA	-/-	4.77 +/-1.50	1.85	--
Combined Radium-226 & Radium-228	pCi/L	5.0	1/Discharge	NA	-/-	0.546+/-0.323	NM	UJ (*III)
Strontium-90	pCi/L	8.0	1/Discharge	NA	-/-	0.463 +/-0.493	0.804	U
Tritium	pCi/L	20,000	1/Discharge	NA	-/-	-207 +/-171	338	U
<b>ADDITIONAL POLLUTANTS</b>								
Cesium-137	pCi/L	200	1/Discharge	NA	-/-	3.02 +/-7.82	9.83	U
Uranium	pCi/L	20	1/Discharge	NA	-/-	1.55 +/-0.516	0.303	--
<b>ADDITIONAL POLLUTANTS WITHOUT LIMITS</b>								
Potassium-40	pCi/L	-	1/Discharge	NA	-/-	-12.2 +/-85.5	157	U

OUTFALL 002  
DISCHARGE MONITORING DATA SUMMARY TABLE

FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309

October 1 through December 31, 2019

ANALYTE	UNITS	DAILY MAXIMUM BENCHMARK	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	12/24/2019 08:20 (Composite) <sup>(n)</sup>		
						RESULT	MDA	LABORATORY/ VALIDATION QUALIFIER
<b>NON-CONVENTIONAL POLLUTANTS</b>								
Gross Alpha	pCi/L	15	1/Discharge	NA	-/-	3.41 +/-2.32	3.29	UJ (B, *III)
Gross Beta	pCi/L	50	1/Discharge	NA	-/-	5.02 +/-1.14	1.14	--
Combined Radium-226 & Radium-228	pCi/L	5.0	1/Discharge	NA	-/-	1.48 +/-0.661	NM	U
Strontium-90	pCi/L	8.0	1/Discharge	NA	-/-	0.0221 +/-0.345	0.618	U
Tritium	pCi/L	20,000	1/Discharge	NA	-/-	34.7 +/-159	281	U
<b>ADDITIONAL POLLUTANTS</b>								
Cesium-137	pCi/L	200	1/Discharge	NA	-/-	0.725 +/-8.27	14.8	U
Uranium	pCi/L	20	1/Discharge	NA	-/-	1.31 +/-0.507	0.395	J+ (B)
<b>ADDITIONAL POLLUTANTS WITHOUT LIMITS</b>								
Potassium-40	pCi/L	-	1/Discharge	NA	-/-	-19.5 +/-165	214	U

**OUTFALL 002  
DISCHARGE MONITORING MASS SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	UNITS	BENCHMARK DAILY MAX	SAMPLE FREQUENCY	12/4/2019 13:30 - 12/5/2019 9:50 <sup>(n)</sup>		
				SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Flow**	MGD	117.83	1/Discharge	Meas	0.006605	*
<b>CONVENTIONAL POLLUTANTS</b>						
Biochemical Oxygen Demand (BOD)	LBS/DAY	29,481	1/Discharge	Composite	0.88	*
Oil & Grease	LBS/DAY	14,741	1/Discharge	Grab	ND	U*
Total Suspended Solids <sup>#</sup>	LBS/DAY	44,222	1/Discharge	Composite	2.7 <sup>(c)</sup>	--
<b>PRIORITY POLLUTANTS</b>						
1,1-Dichloroethene	LBS/DAY	5.9	1/Discharge	Grab	ND	U*
1,2-Dichloroethane	LBS/DAY	0.49	1/Discharge	Grab	ND	U*
2,4,6-Trichlorophenol	LBS/DAY	12.8	1/Discharge	Composite	ND	U*
2,4-Dinitrotoluene	LBS/DAY	17.7	1/Discharge	Composite	ND	U*
alpha-BHC	LBS/DAY	0.03	1/Discharge	Composite	ND	U*
Antimony	LBS/DAY	5.9	1/Year	ANR	ANR	ANR
Arsenic	LBS/DAY	9.83	1/Year	ANR	ANR	ANR
Beryllium	LBS/DAY	3.93	1/Year	ANR	ANR	ANR
Bis (2-Ethylhexyl) Phthalate	LBS/DAY	3.93	1/Discharge	Composite	ND	U*
Cadmium	LBS/DAY	(3.93) 3.05	1/Discharge	Composite	ND <sup>(b)</sup>	U
Chromium VI (Hexavalent)	LBS/DAY	15.72	1/Year	ANR	ANR	ANR
Copper	LBS/DAY	13.76	1/Discharge	Composite	2.0E-04	--
Cyanide	LBS/DAY	8.35	1/Discharge	Composite	ND	U*
Lead	LBS/DAY	5.11	1/Discharge	Composite	6.1E-05	--
Mercury	LBS/DAY	0.1	1/Discharge	Composite	ND	U*
Nickel	LBS/DAY	92.4	1/Year	ANR	ANR	ANR
N-Nitrosodimethylamine	LBS/DAY	15.72	1/Discharge	Composite	ND	U*
Pentachlorophenol	LBS/DAY	16.22	1/Discharge	Composite	6.6E-05	J (DNQ)
Selenium	LBS/DAY	(4.91) 8.06	1/Discharge	Composite	0.034 <sup>(f)</sup>	J (DNQ)
Silver	LBS/DAY	4.03	1/Year	ANR	ANR	ANR
TCDD TEQ NoDNQ <sup>(4)</sup>	LBS/DAY	2.75E-08	1/Discharge	Composite	2.0E-14	*
Thallium	LBS/DAY	1.97	1/Year	ANR	ANR	ANR
Trichloroethene	LBS/DAY	4.91	1/Discharge	Grab	ND	U*
Zinc	LBS/DAY	117	1/Discharge	Composite	9.9E-04	J (DNQ)
<b>NON-CONVENTIONAL POLLUTANTS</b>						
Ammonia - N	LBS/DAY	9,925.3	1/Discharge	Composite	0.00810	J (DNQ)
Barium	LBS/DAY	983	1/Year	ANR	ANR	ANR
Chloride	LBS/DAY	147,405	1/Discharge	Composite	1.7	*
Chlorine, Total Residual (Field)	LBS/DAY	98.3	1/Year	ANR	ANR	ANR
Detergents (as MBAS)	LBS/DAY	491.4	1/Discharge	Composite	0.0066	*
Fluoride	LBS/DAY	1,572.3	1/Year	ANR	ANR	ANR
Iron	LBS/DAY	295	1/Discharge <sup>(l)</sup>	Composite	0.083	J+ (Q)
Manganese	LBS/DAY	49.1	1/Year	ANR	ANR	ANR
Nitrate - N	LBS/DAY	7,862	1/Discharge	Composite	0.055	*
Nitrate + Nitrite as Nitrogen (N)	LBS/DAY	7,862	1/Discharge	Composite	0.055	*
Nitrite - N	LBS/DAY	983	1/Discharge	Composite	ND	U*
Perchlorate	LBS/DAY	5.9	1/Discharge	Composite	ND	U*
Sulfate	LBS/DAY	294,810	1/Discharge	Composite	12	*
Total Dissolved Solids	LBS/DAY	933,567	1/Discharge	Composite	28	*

**OUTFALL 002  
DISCHARGE MONITORING MASS SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	UNITS	BENCHMARK DAILY MAX	SAMPLE FREQUENCY	12/23/2019 9:30 - 12/24/2019 8:20 <sup>(n)</sup>		
				SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Flow**	MGD	117.83	1/Discharge	Meas	0.028787	*
<b>CONVENTIONAL POLLUTANTS</b>						
Biochemical Oxygen Demand (BOD)	LBS/DAY	29,481	1/Discharge	Composite	0.86	*
Oil & Grease	LBS/DAY	14,741	1/Discharge	Grab	ND	U*
Total Suspended Solids <sup>#</sup>	LBS/DAY	44,222	1/Discharge	Composite	26.4 <sup>(c)</sup>	--
<b>PRIORITY POLLUTANTS</b>						
1,1-Dichloroethene	LBS/DAY	5.9	1/Discharge	Grab	ND	U*
1,2-Dichloroethane	LBS/DAY	0.49	1/Discharge	Grab	ND	U*
2,4,6-Trichlorophenol	LBS/DAY	12.8	1/Discharge	Composite	ND	U*
2,4-Dinitrotoluene	LBS/DAY	17.7	1/Discharge	Composite	ND	U*
alpha-BHC	LBS/DAY	0.03	1/Discharge	Composite	ND	U*
Antimony	LBS/DAY	5.9	1/Year	ANR	ANR	ANR
Arsenic	LBS/DAY	9.83	1/Year	ANR	ANR	ANR
Beryllium	LBS/DAY	3.93	1/Year	ANR	ANR	ANR
Bis (2-Ethylhexyl) Phthalate	LBS/DAY	3.93	1/Discharge	Composite	ND	U*
Cadmium	LBS/DAY	(3.93) 3.05	1/Discharge	Composite	ND <sup>(b)</sup>	U
Chromium VI (Hexavalent)	LBS/DAY	15.72	1/Year	ANR	ANR	ANR
Copper	LBS/DAY	13.76	1/Discharge	Composite	0.0016	--
Cyanide	LBS/DAY	8.35	1/Discharge	Composite	ND	U*
Lead	LBS/DAY	5.11	1/Discharge	Composite	8.4E-04	--
Mercury	LBS/DAY	0.1	1/Discharge	Composite	ND	U*
Nickel	LBS/DAY	92.4	1/Year	ANR	ANR	ANR
N-Nitrosodimethylamine	LBS/DAY	15.72	1/Discharge	Composite	ND	U (B)
Pentachlorophenol	LBS/DAY	16.22	1/Discharge	Composite	ND	U*
Selenium	LBS/DAY	(4.91) 8.06	1/Discharge	Composite	ND <sup>(f)</sup>	U
Silver	LBS/DAY	4.03	1/Year	ANR	ANR	ANR
TCDD TEQ NoDNQ <sup>(4)</sup>	LBS/DAY	2.75E-08	1/Discharge	Composite	1.2E-11	*
Thallium	LBS/DAY	1.97	1/Year	ANR	ANR	ANR
Trichloroethene	LBS/DAY	4.91	1/Discharge	Grab	ND	U*
Zinc	LBS/DAY	117	1/Discharge	Composite	0.0074	--
<b>NON-CONVENTIONAL POLLUTANTS</b>						
Ammonia - N	LBS/DAY	9,925.3	1/Discharge	Composite	ND	U*
Barium	LBS/DAY	983	1/Year	ANR	ANR	ANR
Chloride	LBS/DAY	147,405	1/Discharge	Composite	4.3	*
Chlorine, Total Residual (Field)	LBS/DAY	98.3	1/Year	ANR	ANR	ANR
Detergents (as MBAS)	LBS/DAY	491.4	1/Discharge	Composite	0.013	J (DNQ*)
Fluoride	LBS/DAY	1,572.3	1/Year	ANR	ANR	ANR
Iron	LBS/DAY	295	1/Discharge <sup>(l)</sup>	Composite	2.1	--
Manganese	LBS/DAY	49.1	1/Year	ANR	ANR	ANR
Nitrate - N	LBS/DAY	7,862	1/Discharge	Composite	0.15	*
Nitrate + Nitrite as Nitrogen (N)	LBS/DAY	7,862	1/Discharge	Composite	0.17	*
Nitrite - N	LBS/DAY	983	1/Discharge	Composite	0.022	J (DNQ*)
Perchlorate	LBS/DAY	5.9	1/Discharge	Composite	ND	U*
Sulfate	LBS/DAY	294,810	1/Discharge	Composite	31.2	*
Total Dissolved Solids	LBS/DAY	933,567	1/Discharge	Composite	86.4	*

**OUTFALL 008  
DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	UNITS	DAILY MAXIMUM PERMIT LIMIT	SAMPLE FREQUENCY	12/26/2019 08:10 - 12/27/2019 08:25		
				SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Flow**	MGD	7.21	1/Discharge	Meas	0.034524	*
<b>CONVENTIONAL POLLUTANTS</b>						
Oil & Grease	mg/L	15	1/Discharge	Grab	ND < 1.4	U*
pH (Field)	s.u	6.5-8.5	1/Discharge	Grab	7.45	*
<b>PRIORITY POLLUTANTS</b>						
Antimony	µg/L	6.0	1/Discharge	Composite	ND < 0.50	U
Cadmium	µg/L	(4.0) 3.1	1/Discharge	Composite	ND < 0.25 <sup>(b)</sup>	U
Copper	µg/L	14	1/Discharge	Composite	3.0	--
Cyanide	µg/L	9.5	1/Discharge	Composite	ND < 2.5	U*
Lead	µg/L	5.2	1/Discharge	Composite	0.77	J (DNQ)
Mercury	µg/L	0.13	1/Discharge	Composite	ND < 0.10	U*
Nickel	µg/L	86	1/Discharge	Composite	ND < 5.0	U
Selenium	µg/L	5	1/Discharge	Composite	ND < 1.2	U (B)
Thallium	µg/L	2.0	1/Discharge	Composite	ND < 0.20	U
Zinc	µg/L	120	1/Discharge	Composite	12	J (DNQ)
<b>NON-CONVENTIONAL POLLUTANTS</b>						
Ammonia - N	mg/L	10.1	1/Discharge	Composite	0.183	J- (Q, DNQ)
Boron	mg/L	1.0	1/Year	ANR	ANR	ANR
Chloride	mg/L	150	1/Discharge	Composite	5.1	*
Chronic Toxicity	Pass or Fail and % Effect	Pass or % Effect <50	1st & 2nd rain event/Year	ANR	ANR	ANR
Fluoride	mg/L	1.6	1/Year	ANR	ANR	ANR
Nitrate - N	mg/L	8	1/Discharge	Composite	2.8	*
Nitrate + Nitrite as Nitrogen (N)	mg/L	8	1/Discharge	Composite	2.8	*
Nitrite - N	mg/L	1	1/Discharge	Composite	0.049	J (DNQ*)
Perchlorate	µg/L	6.0	1/Discharge	Composite	ND < 0.95	U*
Sulfate	mg/L	300	1/Discharge	Composite	4.9	*
Temperature (Field)	Deg F	86	1/Discharge	Grab	45.9	*
Total Dissolved Solids	mg/L	950	1/Discharge	Composite	130	*
<b>REMAINING PRIORITY POLLUTANTS</b>						
1,1,1-Trichloroethane	µg/L	-	1/Year	ANR	ANR	ANR
1,1,2,2-Tetrachloroethane	µg/L	-	1/Year	ANR	ANR	ANR
1,1,2-Trichloroethane	µg/L	-	1/Year	ANR	ANR	ANR
1,1-Dichloroethane	µg/L	-	1/Year	ANR	ANR	ANR
1,1-Dichloroethene	µg/L	-	1/Year	ANR	ANR	ANR
1,2,4-Trichlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR
1,2-Dichlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR
1,2-Dichlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR
1,2-Dichloroethane	µg/L	-	1/Year	ANR	ANR	ANR
1,2-Dichloropropane	µg/L	-	1/Year	ANR	ANR	ANR
1,2-Diphenylhydrazine/Azobenzene	µg/L	-	1/Year	ANR	ANR	ANR
1,3-Dichlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR
1,3-Dichlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR
1,4-Dichlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR
1,4-Dichlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR
2,4,6-Trichlorophenol	µg/L	-	1/Year	ANR	ANR	ANR
2,4-Dichlorophenol	µg/L	-	1/Year	ANR	ANR	ANR
2,4-Dimethylphenol	µg/L	-	1/Year	ANR	ANR	ANR
2,4-Dinitrophenol	µg/L	-	1/Year	ANR	ANR	ANR
2,4-Dinitrotoluene	µg/L	-	1/Year	ANR	ANR	ANR
2,6-Dinitrotoluene	µg/L	-	1/Year	ANR	ANR	ANR
2-Chloroethyl vinyl ether	µg/L	-	1/Year	ANR	ANR	ANR
2-Chloronaphthalene	µg/L	-	1/Year	ANR	ANR	ANR
2-Chlorophenol	µg/L	-	1/Year	ANR	ANR	ANR
2-Methyl-4,6-dinitrophenol	µg/L	-	1/Year	ANR	ANR	ANR
2-Nitrophenol	µg/L	-	1/Year	ANR	ANR	ANR
3,3'-Dichlorobenzidine	µg/L	-	1/Year	ANR	ANR	ANR
4,4'-DDD	µg/L	-	1/Year	ANR	ANR	ANR
4,4'-DDE	µg/L	-	1/Year	ANR	ANR	ANR
4,4'-DDT	µg/L	-	1/Year	ANR	ANR	ANR
4-Bromophenyl phenyl ether	µg/L	-	1/Year	ANR	ANR	ANR
4-Chloro-3-methylphenol	µg/L	-	1/Year	ANR	ANR	ANR
4-Chlorophenyl phenyl ether	µg/L	-	1/Year	ANR	ANR	ANR
4-Nitrophenol	µg/L	-	1/Year	ANR	ANR	ANR

OUTFALL 008  
DISCHARGE MONITORING DATA SUMMARY TABLE

FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309

October 1 through December 31, 2019

ANALYTE	UNITS	DAILY MAXIMUM PERMIT LIMIT	SAMPLE FREQUENCY	12/26/2019 08:10 - 12/27/2019 08:25		
				SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Acenaphthene	µg/L	-	1/Year	ANR	ANR	ANR
Acenaphthylene	µg/L	-	1/Year	ANR	ANR	ANR
Acrolein	µg/L	-	1/Year	ANR	ANR	ANR
Acrylonitrile	µg/L	-	1/Year	ANR	ANR	ANR
Aldrin	µg/L	-	1/Year	ANR	ANR	ANR
alpha-BHC	µg/L	-	1/Year	ANR	ANR	ANR
alpha-Endosulfan	µg/L	-	1/Year	ANR	ANR	ANR
Anthracene	µg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1016	µg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1221	µg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1232	µg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1242	µg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1248	µg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1254	µg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1260	µg/L	-	1/Year	ANR	ANR	ANR
Arsenic	µg/L	-	1/Year	ANR	ANR	ANR
Asbestos	MFL	-	1/Year	ANR	ANR	ANR
Benzene	µg/L	-	1/Year	ANR	ANR	ANR
Benzidine	µg/L	-	1/Year	ANR	ANR	ANR
Benzo(a)anthracene	µg/L	-	1/Year	ANR	ANR	ANR
Benzo(a)pyrene	µg/L	-	1/Year	ANR	ANR	ANR
Benzo(b)fluoranthene	µg/L	-	1/Year	ANR	ANR	ANR
Benzo(g,h,i)perylene	µg/L	-	1/Year	ANR	ANR	ANR
Benzo(k)fluoranthene	µg/L	-	1/Year	ANR	ANR	ANR
Beryllium	µg/L	-	1/Year	ANR	ANR	ANR
beta-BHC	µg/L	-	1/Year	ANR	ANR	ANR
beta-Endosulfan	µg/L	-	1/Year	ANR	ANR	ANR
Bis (2-Chloroethoxy) Methane	µg/L	-	1/Year	ANR	ANR	ANR
Bis (2-Chloroethyl) Ether	µg/L	-	1/Year	ANR	ANR	ANR
Bis (2-Chloroisopropyl) Ether	µg/L	-	1/Year	ANR	ANR	ANR
Bis (2-Ethylhexyl) Phthalate	µg/L	-	1/Year	ANR	ANR	ANR
Bromoform	µg/L	-	1/Year	ANR	ANR	ANR
Bromomethane	µg/L	-	1/Year	ANR	ANR	ANR
Butyl benzylphthalate	µg/L	-	1/Year	ANR	ANR	ANR
Carbon tetrachloride	µg/L	-	1/Year	ANR	ANR	ANR
Chlordane	µg/L	-	1/Year	ANR	ANR	ANR
Chlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR
Chlorodibromomethane	µg/L	-	1/Year	ANR	ANR	ANR
Chloroethane	µg/L	-	1/Year	ANR	ANR	ANR
Chloroform	µg/L	-	1/Year	ANR	ANR	ANR
Chloromethane (Methyl Chloride)	µg/L	-	1/Year	ANR	ANR	ANR
Chromium	µg/L	-	1/Year	ANR	ANR	ANR
Chromium VI (Hexavalent)	µg/L	-	1/Year	ANR	ANR	ANR
Chrysene	µg/L	-	1/Year	ANR	ANR	ANR
cis-1,3-Dichloropropene	µg/L	-	1/Year	ANR	ANR	ANR
delta-BHC	µg/L	-	1/Year	ANR	ANR	ANR
Dibenz(a,h)anthracene	µg/L	-	1/Year	ANR	ANR	ANR
Dichlorobromomethane	µg/L	-	1/Year	ANR	ANR	ANR
Dieldrin	µg/L	-	1/Year	ANR	ANR	ANR
Diethyl phthalate	µg/L	-	1/Year	ANR	ANR	ANR
Dimethyl phthalate	µg/L	-	1/Year	ANR	ANR	ANR
Di-n-butyl phthalate	µg/L	-	1/Year	ANR	ANR	ANR
Di-n-octyl phthalate	µg/L	-	1/Year	ANR	ANR	ANR
Endosulfan sulfate	µg/L	-	1/Year	ANR	ANR	ANR
Endrin	µg/L	-	1/Year	ANR	ANR	ANR
Endrin aldehyde	µg/L	-	1/Year	ANR	ANR	ANR
Ethylbenzene	µg/L	-	1/Year	ANR	ANR	ANR
Fluoranthene	µg/L	-	1/Year	ANR	ANR	ANR
Fluorene	µg/L	-	1/Year	ANR	ANR	ANR
gamma-BHC (Lindane)	µg/L	-	1/Year	ANR	ANR	ANR
Heptachlor	µg/L	-	1/Year	ANR	ANR	ANR
Heptachlor epoxide	µg/L	-	1/Year	ANR	ANR	ANR
Hexachlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR
Hexachlorobutadiene	µg/L	-	1/Year	ANR	ANR	ANR

OUTFALL 008  
DISCHARGE MONITORING DATA SUMMARY TABLE

FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309

October 1 through December 31, 2019

ANALYTE	UNITS	DAILY MAXIMUM PERMIT LIMIT	SAMPLE FREQUENCY	12/26/2019 08:10 - 12/27/2019 08:25		
				SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Hexachlorocyclopentadiene	µg/L	-	1/Year	ANR	ANR	ANR
Hexachloroethane	µg/L	-	1/Year	ANR	ANR	ANR
Indeno(1,2,3-cd)pyrene	µg/L	-	1/Year	ANR	ANR	ANR
Isophorone	µg/L	-	1/Year	ANR	ANR	ANR
Methylene chloride	µg/L	-	1/Year	ANR	ANR	ANR
Naphthalene	µg/L	-	1/Year	ANR	ANR	ANR
Naphthalene	µg/L	-	1/Year	ANR	ANR	ANR
Nitrobenzene	µg/L	-	1/Year	ANR	ANR	ANR
N-Nitrosodimethylamine	µg/L	-	1/Year	ANR	ANR	ANR
N-Nitroso-di-n-propylamine	µg/L	-	1/Year	ANR	ANR	ANR
N-Nitrosodiphenylamine	µg/L	-	1/Year	ANR	ANR	ANR
Pentachlorophenol	µg/L	-	1/Year	ANR	ANR	ANR
Phenanthrene	µg/L	-	1/Year	ANR	ANR	ANR
Phenol	µg/L	-	1/Year	ANR	ANR	ANR
Pyrene	µg/L	-	1/Year	ANR	ANR	ANR
Tetrachloroethene	µg/L	-	1/Year	ANR	ANR	ANR
Toluene	µg/L	-	1/Year	ANR	ANR	ANR
Toxaphene	µg/L	-	1/Year	ANR	ANR	ANR
trans-1,2-Dichloroethene	µg/L	-	1/Year	ANR	ANR	ANR
trans-1,3-Dichloropropene	µg/L	-	1/Year	ANR	ANR	ANR
Trichloroethene	µg/L	-	1/Year	ANR	ANR	ANR
Trichlorofluoromethane	µg/L	-	1/Year	ANR	ANR	ANR
Vinyl chloride	µg/L	-	1/Year	ANR	ANR	ANR
Xylenes (Total)	µg/L	-	1/Year	ANR	ANR	ANR
<b>EFFLUENT MONITORING (NO LIMITATIONS) POLLUTANTS</b>						
Aluminum	µg/L	-	1/Year	ANR	ANR	ANR
Chlorpyrifos	µg/L	-	1/Year	ANR	ANR	ANR
Diazinon	µg/L	-	1/Year	ANR	ANR	ANR
E. Coli	mpn/100mL	-	1/Year	ANR	ANR	ANR
Hardness (as CaCO3)	mg/L	-	1/Year	ANR	ANR	ANR
Iron	mg/L	-	1/Year	ANR	ANR	ANR
Silver	µg/L	-	1/Discharge	Composite	ND < 0.50	U
Total Suspended Solids	mg/L	-	1/Year	Composite	12	*
Vanadium	µg/L	-	1/Year	ANR	ANR	ANR
<b>ADDITIONAL POLLUTANTS<sup>(2)</sup></b>						
Aluminum, dissolved	µg/L	-	Additional/Year	ANR	ANR	ANR
Antimony, dissolved	µg/L	-	Additional/Discharge	Composite	ND < 0.50	U
Arsenic, dissolved	µg/L	-	Additional/Year	ANR	ANR	ANR
Beryllium, dissolved	µg/L	-	Additional/Year	ANR	ANR	ANR
Boron, dissolved	mg/L	-	Additional/Year	ANR	ANR	ANR
Cadmium, dissolved	µg/L	-	Additional/Discharge	Composite	ND < 0.25	U
Chromium, dissolved	µg/L	-	Additional/Year	ANR	ANR	ANR
cis-1,2-Dichloroethene	µg/L	-	Additional/Year	ANR	ANR	ANR
Copper, dissolved	µg/L	-	Additional/Discharge	Composite	5.0	--
Dissolved Oxygen (Field)	mg/L	-	Additional	ANR	ANR	ANR
Hardness, Dissolved (as CaCO3)	mg/L	-	Additional/Year	ANR	ANR	ANR
Human Bacteriodes	CEs/100mL	-	Additional/Year	ANR	ANR	ANR
Iron, dissolved	mg/L	-	Additional/Year	ANR	ANR	ANR
Lead, dissolved	µg/L	-	Additional/Discharge	Composite	ND < 0.50	U
Mercury, dissolved	µg/L	-	Additional/Discharge	Composite	ND < 0.10	U*
Nickel, dissolved	µg/L	-	Additional/Discharge	Composite	ND < 5.0	U
Selenium, dissolved	µg/L	-	Additional/Discharge	Composite	ND < 0.50	U
Silver, dissolved	µg/L	-	Additional/Discharge	Composite	ND < 0.50	U
Thallium, dissolved	µg/L	-	Additional/Discharge	Composite	ND < 0.20	U
Turbidity	NTU	-	Additional	ANR	ANR	ANR
Vanadium, dissolved	µg/L	-	Additional/Year	ANR	ANR	ANR
Zinc, dissolved	µg/L	-	Additional/Discharge	Composite	ND < 12	U

**OUTFALL 008  
DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	OUTFALL SAMPLE FREQUENCY	1998 WHO TEF	BEF GREAT LAKES WATER QUALITY INITIATIVE	UNITS	12/27/2019 08:25 (Composite)			
					LAB MDL	LAB RESULT	LABORATORY/ VALIDATION QUALIFIER	TCDD EQUIVALENT (w/out DNQ Values)
1,2,3,4,6,7,8-HpCDD	1/Discharge	0.01	0.05	µg/L	4.2E-07	5.0E-06	U (B)	ND
1,2,3,4,6,7,8-HpCDF	1/Discharge	0.01	0.01	µg/L	4.8E-07	3.4E-06	U (B)	ND
1,2,3,4,7,8,9-HpCDF	1/Discharge	0.01	0.4	µg/L	5.7E-07	1.2E-06	UJ (*III)	ND
1,2,3,4,7,8-HxCDD	1/Discharge	0.1	0.3	µg/L	4.7E-07	2.1E-06	U (B)	ND
1,2,3,4,7,8-HxCDF	1/Discharge	0.1	0.08	µg/L	5.5E-07	9.3E-07	J (DNQ)	ND
1,2,3,6,7,8-HxCDD	1/Discharge	0.1	0.1	µg/L	5.1E-07	1.1E-06	U (B)	ND
1,2,3,6,7,8-HxCDF	1/Discharge	0.1	0.2	µg/L	5.7E-07	9.3E-07	J (DNQ)	ND
1,2,3,7,8,9-HxCDD	1/Discharge	0.1	0.1	µg/L	4.4E-07	1.0E-06	U (B)	ND
1,2,3,7,8,9-HxCDF	1/Discharge	0.1	0.6	µg/L	4.0E-07	1.2E-06	U (B)	ND
1,2,3,7,8-PeCDD	1/Discharge	1.0	0.9	µg/L	6.4E-07	8.2E-07	UJ (*III)	ND
1,2,3,7,8-PeCDF	1/Discharge	0.05	0.2	µg/L	4.8E-07	8.9E-07	J (DNQ)	ND
2,3,4,6,7,8-HxCDF	1/Discharge	0.1	0.7	µg/L	4.1E-07	8.1E-07	U (B)	ND
2,3,4,7,8-PeCDF	1/Discharge	0.5	1.6	µg/L	4.8E-07	8.4E-07	J (DNQ)	ND
2,3,7,8-TCDD	1/Discharge	1.0	1.0	µg/L	4.6E-07	ND	U	ND
2,3,7,8-TCDF	1/Discharge	0.1	0.8	µg/L	7.6E-07	ND	U	ND
OCDD	1/Discharge	0.0001	0.01	µg/L	7.2E-07	3.4E-05	U (B)	ND
OCDF	1/Discharge	0.0001	0.02	µg/L	6.1E-07	9.4E-06	U (B)	ND
<b>TCDD TEQ w/out DNQ Values<sup>(4)</sup></b>								<b>ND</b>

TCDD TEQ (PRIORITY POLLUTANTS) DAILY MAXIMUM PERMIT LIMIT = 2.8E-08



**OUTFALL 008  
DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	UNITS	PERMIT LIMIT DAILY MAX	SAMPLE FREQUENCY	12/27/2019 08:25 (Composite)		
				RESULT	MDA	LABORATORY/ VALIDATION QUALIFIER
<b>NON-CONVENTIONAL POLLUTANTS</b>						
Gross Alpha	pCi/L	15	1/Discharge	1.62 +/-1.18	1.71	UJ (*III, C)
Gross Beta	pCi/L	50	1/Discharge	2.78 +/-0.820	0.968	--
Combined Radium-226 & Radium-228	pCi/L	5.0	1/Discharge	0.609 +/-0.368	NM	U
Strontium-90	pCi/L	8.0	1/Discharge	0.0203 +/-0.325	0.582	U
Tritium	pCi/L	20,000	1/Discharge	32.9 +/-156	276	U
<b>ADDITIONAL POLLUTANTS</b>						
Cesium-137	pCi/L	200	1/Discharge	2.85 +/-6.80	11.7	U
Uranium	pCi/L	20	1/Discharge	0.465 +/-0.270	0.222	U (B)
<b>ADDITIONAL POLLUTANTS WITHOUT LIMITS</b>						
Potassium-40	pCi/L	-	1/Discharge	-82.1 +/-191	238	U

**OUTFALL 008  
DISCHARGE MONITORING MASS SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	UNITS	PERMIT LIMIT DAILY MAX	SAMPLE FREQUENCY	12/26/2019 8:10 - 12/27/2019 8:25		
				SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Flow**	MGD	7.21	1/Discharge	Meas	0.034524	*
<b>CONVENTIONAL POLLUTANTS</b>						
Oil & Grease	LBS/DAY	902	1/Discharge	Grab	ND	U*
<b>PRIORITY POLLUTANTS</b>						
Antimony	LBS/DAY	0.36	1/Discharge	Composite	ND	U
Cadmium	LBS/DAY	(0.24)0.19	1/Discharge	Composite	ND <sup>(b)</sup>	U
Copper	LBS/DAY	0.84	1/Discharge	Composite	8.6E-04	--
Cyanide	LBS/DAY	0.57	1/Discharge	Composite	ND	U*
Lead	LBS/DAY	0.31	1/Discharge	Composite	2.2E-04	J (DNQ)
Mercury	LBS/DAY	0.008	1/Discharge	Composite	ND	U*
Nickel	LBS/DAY	5.2	1/Discharge	Composite	ND	U
Selenium	LBS/DAY	0.3	1/Discharge	Composite	ND	U (B)
TCDD TEQ NoDNQ <sup>(4)</sup>	LBS/DAY	1.70E-09	1/Discharge	Composite	ND	U*
Thallium	LBS/DAY	0.12	1/Discharge	Composite	ND	U
Zinc	LBS/DAY	7.22	1/Discharge	Composite	3.5E-03	J (DNQ)
<b>NON-CONVENTIONAL POLLUTANTS</b>						
Ammonia - N	LBS/DAY	607.3	1/Discharge	Composite	0.0527	J- (Q, DNQ)
Boron	LBS/DAY	60	1/Year	ANR	ANR	ANR
Chloride	LBS/DAY	9,020	1/Discharge	Composite	1.5	*
Fluoride	LBS/DAY	96.2	1/Year	ANR	ANR	ANR
Nitrate - N	LBS/DAY	481	1/Discharge	Composite	0.81	*
Nitrate + Nitrite as Nitrogen (N)	LBS/DAY	481	1/Discharge	Composite	0.81	*
Nitrite - N	LBS/DAY	60	1/Discharge	Composite	0.01	J (DNQ*)
Perchlorate	LBS/DAY	0.36	1/Discharge	Composite	ND	U*
Sulfate	LBS/DAY	18,039	1/Discharge	Composite	1.4	*
Total Dissolved Solids	LBS/DAY	57,124	1/Discharge	Composite	37	*

**OUTFALL 009  
DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	UNITS	DAILY MAXIMUM PERMIT LIMIT	SAMPLE FREQUENCY	12/23/2019 09:00 - 12/24/2019 07:35		
				SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Flow**	MGD	64.33	1/Discharge	Meas	0.514717	*
<b>CONVENTIONAL POLLUTANTS</b>						
Oil & Grease	mg/L	15	1/Discharge	Grab	ND < 1.5	U*
pH (Field)	s.u	6.5-8.5	1/Discharge	Grab	7.4	*
<b>PRIORITY POLLUTANTS</b>						
Antimony	µg/L	6.0	1/Discharge	Composite	ND < 2.0	U (B)
Cadmium	µg/L	4.0	1/Discharge	Composite	ND < 0.25	U
Copper	µg/L	13	1/Discharge	Composite	3.7	--
Cyanide	µg/L	9.5	1/Discharge	Composite	ND < 2.5	U*
Lead	µg/L	5.2	1/Discharge	Composite	1.3	--
Mercury	µg/L	0.13	1/Discharge	Composite	ND < 0.10	U*
Nickel	µg/L	86	1/Discharge	Composite	ND < 5.0	U
Thallium	µg/L	2.0	1/Discharge	Composite	ND < 0.20	U
Zinc	µg/L	120	1/Discharge	Composite	27	--
<b>NON-CONVENTIONAL POLLUTANTS</b>						
Boron	mg/L	1.0	1/Year	ANR	ANR	ANR
Chloride	mg/L	150	1/Discharge	Composite	3.2	--
Chronic Toxicity	Pass or Fail and % Effect	Pass or % Effect <50	1st & 2nd rain event/Year	ANR	ANR	ANR
Fluoride	mg/L	1.6	1/Year	ANR	ANR	ANR
Nitrate + Nitrite as Nitrogen (N)	mg/L	10	1/Discharge	Composite	1.1	--
Perchlorate	µg/L	6.0	1/Semiannual	Composite	ND < 0.95	U*
Sulfate	mg/L	250	1/Discharge	Composite	3.0	--
Temperature (Field)	Deg F	86	1/Discharge	Grab	49.6	*
Total Dissolved Solids	mg/L	850	1/Discharge	Composite	62	*
<b>REMAINING PRIORITY POLLUTANTS</b>						
1,1,1-Trichloroethane	µg/L	-	1/Year	ANR	ANR	ANR
1,1,2,2-Tetrachloroethane	µg/L	-	1/Year	ANR	ANR	ANR
1,1,2-Trichloroethane	µg/L	-	1/Year	ANR	ANR	ANR
1,1-Dichloroethane	µg/L	-	1/Year	ANR	ANR	ANR
1,1-Dichloroethene	µg/L	-	1/Year	ANR	ANR	ANR
1,2,4-Trichlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR
1,2-Dichlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR
1,2-Dichlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR
1,2-Dichloroethane	µg/L	-	1/Year	ANR	ANR	ANR
1,2-Dichloropropane	µg/L	-	1/Year	ANR	ANR	ANR
1,2-Diphenylhydrazine/Azobenzene	µg/L	-	1/Year	ANR	ANR	ANR
1,3-Dichlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR
1,3-Dichlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR
1,4-Dichlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR
1,4-Dichlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR
1,4-Dichlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR
2,4,6-Trichlorophenol	µg/L	-	1/Year	ANR	ANR	ANR
2,4-Dichlorophenol	µg/L	-	1/Year	ANR	ANR	ANR
2,4-Dimethylphenol	µg/L	-	1/Year	ANR	ANR	ANR
2,4-Dinitrophenol	µg/L	-	1/Year	ANR	ANR	ANR
2,4-Dinitrotoluene	µg/L	-	1/Year	ANR	ANR	ANR
2,6-Dinitrotoluene	µg/L	-	1/Year	ANR	ANR	ANR
2-Chloroethyl vinyl ether	µg/L	-	1/Year	ANR	ANR	ANR
2-Chloronaphthalene	µg/L	-	1/Year	ANR	ANR	ANR
2-Chlorophenol	µg/L	-	1/Year	ANR	ANR	ANR
2-Methyl-4,6-dinitrophenol	µg/L	-	1/Year	ANR	ANR	ANR
2-Nitrophenol	µg/L	-	1/Year	ANR	ANR	ANR
3,3'-Dichlorobenzidine	µg/L	-	1/Year	ANR	ANR	ANR
4,4'-DDD	µg/L	-	1/Year	ANR	ANR	ANR
4,4'-DDE	µg/L	-	1/Year	ANR	ANR	ANR
4,4'-DDT	µg/L	-	1/Year	ANR	ANR	ANR
4-Bromophenyl phenyl ether	µg/L	-	1/Year	ANR	ANR	ANR
4-Chloro-3-methylphenol	µg/L	-	1/Year	ANR	ANR	ANR
4-Chlorophenyl phenyl ether	µg/L	-	1/Year	ANR	ANR	ANR
4-Nitrophenol	µg/L	-	1/Year	ANR	ANR	ANR
Acenaphthene	µg/L	-	1/Year	ANR	ANR	ANR
Acenaphthylene	µg/L	-	1/Year	ANR	ANR	ANR
Acrolein	µg/L	-	1/Year	ANR	ANR	ANR
Acrylonitrile	µg/L	-	1/Year	ANR	ANR	ANR

**OUTFALL 009  
DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	UNITS	DAILY MAXIMUM PERMIT LIMIT	SAMPLE FREQUENCY	12/23/2019 09:00 - 12/24/2019 07:35		
				SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Aldrin	µg/L	-	1/Year	ANR	ANR	ANR
alpha-BHC	µg/L	-	1/Year	ANR	ANR	ANR
alpha-Endosulfan	µg/L	-	1/Year	ANR	ANR	ANR
Anthracene	µg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1016	µg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1221	µg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1232	µg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1242	µg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1248	µg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1254	µg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1260	µg/L	-	1/Year	ANR	ANR	ANR
Arsenic	µg/L	-	1/Year	ANR	ANR	ANR
Asbestos	MFL	-	1/Year	ANR	ANR	ANR
Benzene	µg/L	-	1/Year	ANR	ANR	ANR
Benidine	µg/L	-	1/Year	ANR	ANR	ANR
Benzo(a)anthracene	µg/L	-	1/Year	ANR	ANR	ANR
Benzo(a)pyrene	µg/L	-	1/Year	ANR	ANR	ANR
Benzo(b)fluoranthene	µg/L	-	1/Year	ANR	ANR	ANR
Benzo(g,h,i)perylene	µg/L	-	1/Year	ANR	ANR	ANR
Benzo(k)fluoranthene	µg/L	-	1/Year	ANR	ANR	ANR
Beryllium	µg/L	-	1/Year	ANR	ANR	ANR
beta-BHC	µg/L	-	1/Year	ANR	ANR	ANR
beta-Endosulfan	µg/L	-	1/Year	ANR	ANR	ANR
Bis (2-Chloroethoxy) Methane	µg/L	-	1/Year	ANR	ANR	ANR
Bis (2-Chloroethyl) Ether	µg/L	-	1/Year	ANR	ANR	ANR
Bis (2-Chloroisopropyl) Ether	µg/L	-	1/Year	ANR	ANR	ANR
Bis (2-Ethylhexyl) Phthalate	µg/L	-	1/Year	ANR	ANR	ANR
Bromoform	µg/L	-	1/Year	ANR	ANR	ANR
Bromomethane	µg/L	-	1/Year	ANR	ANR	ANR
Butyl benzylphthalate	µg/L	-	1/Year	ANR	ANR	ANR
Carbon tetrachloride	µg/L	-	1/Year	ANR	ANR	ANR
Chlordane	µg/L	-	1/Year	ANR	ANR	ANR
Chlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR
Chlorodibromomethane	µg/L	-	1/Year	ANR	ANR	ANR
Chloroethane	µg/L	-	1/Year	ANR	ANR	ANR
Chloroform	µg/L	-	1/Year	ANR	ANR	ANR
Chloromethane (Methyl Chloride)	µg/L	-	1/Year	ANR	ANR	ANR
Chromium	µg/L	-	1/Year	ANR	ANR	ANR
Chromium VI (Hexavalent)	µg/L	-	1/Year	ANR	ANR	ANR
Chrysene	µg/L	-	1/Year	ANR	ANR	ANR
cis-1,3-Dichloropropene	µg/L	-	1/Year	ANR	ANR	ANR
delta-BHC	µg/L	-	1/Year	ANR	ANR	ANR
Dibenz(a,h)anthracene	µg/L	-	1/Year	ANR	ANR	ANR
Dichlorobromomethane	µg/L	-	1/Year	ANR	ANR	ANR
Dieldrin	µg/L	-	1/Year	ANR	ANR	ANR
Diethyl phthalate	µg/L	-	1/Year	ANR	ANR	ANR
Dimethyl phthalate	µg/L	-	1/Year	ANR	ANR	ANR
Di-n-butyl phthalate	µg/L	-	1/Year	ANR	ANR	ANR
Di-n-octyl phthalate	µg/L	-	1/Year	ANR	ANR	ANR
Endosulfan sulfate	µg/L	-	1/Year	ANR	ANR	ANR
Endrin	µg/L	-	1/Year	ANR	ANR	ANR
Endrin aldehyde	µg/L	-	1/Year	ANR	ANR	ANR
Ethylbenzene	µg/L	-	1/Year	ANR	ANR	ANR
Fluoranthene	µg/L	-	1/Year	ANR	ANR	ANR
Fluorene	µg/L	-	1/Year	ANR	ANR	ANR
gamma-BHC (Lindane)	µg/L	-	1/Year	ANR	ANR	ANR
Heptachlor	µg/L	-	1/Year	ANR	ANR	ANR
Heptachlor epoxide	µg/L	-	1/Year	ANR	ANR	ANR
Hexachlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR
Hexachlorobutadiene	µg/L	-	1/Year	ANR	ANR	ANR
Hexachlorocyclopentadiene	µg/L	-	1/Year	ANR	ANR	ANR
Hexachloroethane	µg/L	-	1/Year	ANR	ANR	ANR
Indeno(1,2,3-cd)pyrene	µg/L	-	1/Year	ANR	ANR	ANR
Isophorone	µg/L	-	1/Year	ANR	ANR	ANR

**OUTFALL 009  
DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	UNITS	DAILY MAXIMUM PERMIT LIMIT	SAMPLE FREQUENCY	12/23/2019 09:00 - 12/24/2019 07:35		
				SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Methylene chloride	µg/L	-	1/Year	ANR	ANR	ANR
Naphthalene	µg/L	-	1/Year	ANR	ANR	ANR
Naphthalene	µg/L	-	1/Year	ANR	ANR	ANR
Nitrobenzene	µg/L	-	1/Year	ANR	ANR	ANR
N-Nitrosodimethylamine	µg/L	-	1/Year	ANR	ANR	ANR
N-Nitroso-di-n-propylamine	µg/L	-	1/Year	ANR	ANR	ANR
N-Nitrosodiphenylamine	µg/L	-	1/Year	ANR	ANR	ANR
Pentachlorophenol	µg/L	-	1/Year	ANR	ANR	ANR
Phenanthrene	µg/L	-	1/Year	ANR	ANR	ANR
Phenol	µg/L	-	1/Year	ANR	ANR	ANR
Pyrene	µg/L	-	1/Year	ANR	ANR	ANR
Tetrachloroethene	µg/L	-	1/Year	ANR	ANR	ANR
Toluene	µg/L	-	1/Year	ANR	ANR	ANR
Toxaphene	µg/L	-	1/Year	ANR	ANR	ANR
trans-1,2-Dichloroethene	µg/L	-	1/Year	ANR	ANR	ANR
trans-1,3-Dichloropropene	µg/L	-	1/Year	ANR	ANR	ANR
Trichloroethene	µg/L	-	1/Year	ANR	ANR	ANR
Trichlorofluoromethane	µg/L	-	1/Year	ANR	ANR	ANR
Vinyl chloride	µg/L	-	1/Year	ANR	ANR	ANR
Xylenes (Total)	µg/L	-	1/Year	ANR	ANR	ANR
<b>EFFLUENT MONITORING (NO LIMITATIONS) POLLUTANTS</b>						
Aluminum	µg/L	-	1/Year	ANR	ANR	ANR
Chlorpyrifos	µg/L	-	1/Year	ANR	ANR	ANR
Diazinon	µg/L	-	1/Year	ANR	ANR	ANR
E. Coli	mpn/100mL	-	1/Year	ANR	ANR	ANR
Hardness (as CaCO3)	mg/L	-	1/Year	ANR	ANR	ANR
Iron	mg/L	-	1/Year	ANR	ANR	ANR
Selenium	µg/L	-	1/Discharge	Composite	ND < 0.50	U
Silver	µg/L	-	1/Discharge	Composite	ND < 0.50	U
Total Suspended Solids	mg/L	-	1/Year	Composite	11	--
Vanadium	µg/L	-	1/Year	ANR	ANR	ANR
<b>ADDITIONAL POLLUTANTS<sup>(2)</sup></b>						
Aluminum, dissolved	µg/L	-	Additional/Year	ANR	ANR	ANR
Antimony, dissolved	µg/L	-	Additional/Discharge	Composite	0.62	J (H, DNQ)
Arsenic, dissolved	µg/L	-	Additional/Year	ANR	ANR	ANR
Beryllium, dissolved	µg/L	-	Additional/Year	ANR	ANR	ANR
Biochemical Oxygen Demand (BOD)(5-Day @ 20 deg. C)	mg/L	-	Additional	ANR	ANR	ANR
Boron, dissolved	mg/L	-	Additional/Year	ANR	ANR	ANR
Cadmium, dissolved	µg/L	-	Additional/Discharge	Composite	ND < 0.25	UJ (H)
Chromium, dissolved	µg/L	-	Additional/Year	ANR	ANR	ANR
cis-1,2-Dichloroethene	µg/L	-	Additional/Year	ANR	ANR	ANR
Copper, dissolved	µg/L	-	Additional/Discharge	Composite	3.2	J (H)
Hardness, dissolved (as CaCO3)	mg/L	-	Additional/Year	ANR	ANR	ANR
Human Bacteriodes	CEs/100mL	-	Additional/Year	ANR	ANR	ANR
Iron, dissolved	mg/L	-	Additional/Year	ANR	ANR	ANR
Lead, dissolved	µg/L	-	Additional/Discharge	Composite	ND < 0.50	UJ (H)
Mercury, dissolved	µg/L	-	Additional/Discharge	Composite	ND < 0.10	U*
Nickel, dissolved	µg/L	-	Additional/Discharge	Composite	ND < 5.0	UJ (H)
Selenium, dissolved	µg/L	-	Additional/Discharge	Composite	ND < 0.50	UJ (H)
Silver, dissolved	µg/L	-	Additional/Discharge	Composite	ND < 0.50	UJ (H)
Thallium, dissolved	µg/L	-	Additional/Discharge	Composite	ND < 0.20	UJ (H)
Vanadium, dissolved	µg/L	-	Additional/Year	ANR	ANR	ANR
Zinc, dissolved	µg/L	-	Additional/Discharge	Composite	15	J (H, DNQ)

**OUTFALL 009  
DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through December 31, 2019

ANALYTE	SAMPLE FREQUENCY	1998 WHO TEF	BEF GREAT LAKES WATER QUALITY INITIATIVE	UNITS	12/24/2019 07:35 (Composite)			
					LAB MDL	LAB RESULT	LABORATORY/ VALIDATION QUALIFIER	TCDD EQUIVALENT (w/out DNQ Values)
1,2,3,4,6,7,8-HpCDD	1/Discharge	0.01	0.05	µg/L	1.7E-06	1.8E-05	U (B)	ND
1,2,3,4,6,7,8-HpCDF	1/Discharge	0.01	0.01	µg/L	1.5E-06	5.2E-06	U (B)	ND
1,2,3,4,7,8,9-HpCDF	1/Discharge	0.01	0.4	µg/L	1.7E-06	1.8E-06	U (B)	ND
1,2,3,4,7,8-HxCDD	1/Discharge	0.1	0.3	µg/L	1.4E-06	2.4E-06	U (B)	ND
1,2,3,4,7,8-HxCDF	1/Discharge	0.1	0.08	µg/L	2.7E-06	ND	U	ND
1,2,3,6,7,8-HxCDD	1/Discharge	0.1	0.1	µg/L	1.5E-06	ND	U	ND
1,2,3,6,7,8-HxCDF	1/Discharge	0.1	0.2	µg/L	2.8E-06	ND	U	ND
1,2,3,7,8,9-HxCDD	1/Discharge	0.1	0.1	µg/L	1.3E-06	ND	U	ND
1,2,3,7,8,9-HxCDF	1/Discharge	0.1	0.6	µg/L	2.2E-06	ND	U	ND
1,2,3,7,8-PeCDD	1/Discharge	1.0	0.9	µg/L	2.2E-06	ND	U	ND
1,2,3,7,8-PeCDF	1/Discharge	0.05	0.2	µg/L	1.7E-06	ND	U	ND
2,3,4,6,7,8-HxCDF	1/Discharge	0.1	0.7	µg/L	2.1E-06	ND	U	ND
2,3,4,7,8-PeCDF	1/Discharge	0.5	1.6	µg/L	1.6E-06	ND	U	ND
2,3,7,8-TCDD	1/Discharge	1.0	1.0	µg/L	2.2E-06	3.3E-06	UJ (*III)	ND
2,3,7,8-TCDF	1/Discharge	0.1	0.8	µg/L	2.0E-06	ND	U	ND
OCDD	1/Discharge	0.0001	0.01	µg/L	3.3E-06	2.0E-04	--	2.0E-10
OCDF	1/Discharge	0.0001	0.02	µg/L	2.6E-06	1.3E-05	U (B)	ND

TCDD TEQ w/out DNQ Values <sup>(4)</sup>	2.0E-10
--	---------

TCDD TEQ (PRIORITY POLLUTANTS) DAILY MAXIMUM PERMIT LIMIT = 2.8E-08

OUTFALL 009  
DISCHARGE MONITORING DATA SUMMARY TABLE

FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309

October 1 through December 31, 2019

				12/24/2019 07:35 (Composite)		
ANALYTE	UNITS	PERMIT LIMIT DAILY MAX	SAMPLE FREQUENCY	RESULT	MDA	LABORATORY/ VALIDATION QUALIFIER
<b>NON-CONVENTIONAL POLLUTANTS</b>						
Gross Alpha	pCi/L	15	1/Discharge	1.38 +/-0.871	1.16	U (B, *III, C)
Gross Beta	pCi/L	50	1/Discharge	1.56 +/-0.741	1.04	J- (B)
Combined Radium-226 & Radium-228	pCi/L	5.0	1/Discharge	0.529 +/-0.307	NM	U
Strontium-90	pCi/L	8.0	1/Discharge	0.147 +/-0.251	0.426	U
Tritium	pCi/L	20,000	1/Discharge	40.5 +/-157	276	U
<b>ADDITIONAL POLLUTANTS</b>						
Cesium-137	pCi/L	200	1/Discharge	-5.64 +/-10.7	18.1	U
Uranium	pCi/L	20	1/Discharge	0.158 +/-0.322	0.432	U
<b>ADDITIONAL POLLUTANTS WITHOUT LIMITS</b>						
Potassium-40	pCi/L	-	1/Discharge	-1.92 +/-118	176	U

OUTFALL 009  
DISCHARGE MONITORING MASS SUMMARY TABLE

FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309

October 1 through December 31, 2019

				12/23/2019 9:00 - 12/24/2019 7:35		
ANALYTE	UNITS	PERMIT LIMIT DAILY MAX	SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Flow**	MGD	64.33	1/Discharge	Meas	0.514717	*
<b>CONVENTIONAL POLLUTANTS</b>						
Oil & Grease	LBS/DAY	8,048	1/Discharge	Grab	ND	U*
<b>PRIORITY POLLUTANTS</b>						
Antimony	LBS/DAY	3.22	1/Discharge	Composite	ND	U (B)
Cadmium	LBS/DAY	2.15	1/Discharge	Composite	ND	U
Copper	LBS/DAY	7	1/Discharge	Composite	0.016	--
Cyanide	LBS/DAY	5.1	1/Discharge	Composite	ND	U*
Lead	LBS/DAY	2.8	1/Discharge	Composite	0.0056	--
Mercury	LBS/DAY	0.07	1/Discharge	Composite	ND	U*
Nickel	LBS/DAY	46.14	1/Discharge	Composite	ND	U
TCDD TEQ, NoDNQ <sup>(4)</sup>	LBS/DAY	1.5E-08	1/Discharge	Composite	8.6E-13	*
Thallium	LBS/DAY	1.1	1/Discharge	Composite	ND	U
Zinc	LBS/DAY	64.4	1/Discharge	Composite	0.12	--
<b>NON-CONVENTIONAL POLLUTANTS</b>						
Boron	LBS/DAY	537	1/Year	ANR	ANR	ANR
Chloride	LBS/DAY	80,477	1/Discharge	Composite	14	--
Fluoride	LBS/DAY	858	1/Year	ANR	ANR	ANR
Nitrate + Nitrite as Nitrogen (N)	LBS/DAY	5,365	1/Discharge	Composite	4.7	--
Perchlorate	LBS/DAY	3.22	1/Semiannual	Composite	ND	U*
Sulfate	LBS/DAY	134,128	1/Discharge	Composite	13	--
Total Dissolved Solids	LBS/DAY	456,034	1/Discharge	Composite	266	*



**ARROYO SIMI  
DISCHARGE MONITORING DATA SUMMARY TABLE**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

October 1 through January 31, 2019

				12/23/2019 08:00		
ANALYTE	UNITS	PERMIT LIMIT DAILY MAX	SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
<b>POLLUTANTS WITH LIMITS</b>						
4,4'-DDD	µg/L	0.0014	1/Quarter	Grab	ND < 0.0044	U*
4,4'-DDE	µg/L	0.001	1/Quarter	Grab	ND < 0.0033	U*
4,4'-DDT	µg/L	0.001	1/Quarter	Grab	ND < 0.0044	U*
Aroclor 1016	µg/L	0.0003	1/Quarter	Grab	ND < 0.10	U*
Aroclor 1221	µg/L	0.0003	1/Quarter	Grab	ND < 0.10	U*
Aroclor 1232	µg/L	0.0003	1/Quarter	Grab	ND < 0.10	U*
Aroclor 1242	µg/L	0.0003	1/Quarter	Grab	ND < 0.10	U*
Aroclor 1248	µg/L	0.0003	1/Quarter	Grab	ND < 0.10	U*
Aroclor 1254	µg/L	0.0003	1/Quarter	Grab	ND < 0.10	U*
Aroclor 1260	µg/L	0.0003	1/Quarter	Grab	ND < 0.10	U*
Chlordane	µg/L	0.001	1/Quarter	Grab	ND < 0.089	U*
Chlorpyrifos	µg/L	0.02	1/Quarter	Grab	ND < 0.034	U*
Diazinon	µg/L	0.16	1/Quarter	Grab	ND < 0.026	U*
Dieldrin	µg/L	0.0002	1/Quarter	Grab	ND < 0.0022	U*
E. coli	MPN/100mL	235	1/Year	ANR	ANR	ANR
pH (Field)	s.u.	6.5-8.5	1/Quarter	Grab	7.11	*
Toxaphene	µg/L	0.0003	1/Quarter	Grab	ND < 0.27	U*
<b>POLLUTANTS WITHOUT LIMITS</b>						
Hardness (as CaCO3)	mg/L	-	1/Quarter	Grab	100	*
Priority Pollutants	NA	-	1/5 Years	ANR	ANR	ANR
Temperature (Field)	Deg F	-	1/Quarter	Grab	50.3	*
TCDD - Equivalents	µg/L	-	1/Year	ANR	ANR	ANR
Total Suspended Solids	mg/L	-	1/Year	ANR	ANR	ANR
Water Velocity	ft/sec	-	1/Quarter	Meas	0.1	*

EXTENDED RADIOCHEMISTRY

FOURTH QUARTER 2019  
 THE BOEING COMPANY  
 SANTA SUSANA FIELD LABORATORY  
 NPDES PERMIT CA0001309

October 1 through December 31, 2019

			OUTFALL 001		
			12/27/2019 7:25 (Composite)		
ANALYTE	UNITS	DAILY MAXIMUM BENCHMARK	RESULT	MDA	LABORATORY/ VALIDATION QUALIFIER
<b>MAN-MADE RADIOCHEMISTRY RESULTS</b>					
Americium-241	pCi/L	-/-	0.000 +/-0.0918	0.274	U*
Plutonium-238	pCi/L	-/-	0.0238 +/-0.101	0.267	U*
Plutonium-239/240	pCi/L	-/-	-0.0239 +/-0.0338	0.267	U*
<b>NATURALLY OCCURRING RADIOCHEMISTRY RESULTS BY GAMMA SPECTROSCOPY</b>					
Actinium-227	pCi/L	-/-	29.3 +/-43.3	99.0	U*
Bismuth-211	pCi/L	-/-	29.3 +/-43.3	99.0	U*
Bismuth-212	pCi/L	-/-	28.4 +/-89.6	157	U*
Cesium-137	pCi/L	-/-	3.88 +/-8.12	13.9	U*
Polonium-210	pCi/L	-/-	0.524 +/-0.318	0.445	*
Protactinium-231	pCi/L	-/-	51.3 +/-172	564	U*
Radium-223	pCi/L	-/-	29.3 +/-43.3	99.0	U*
Radium-224	pCi/L	-/-	13.5 +/-14.0	17.9	U*
Thorium-227	pCi/L	-/-	29.3 +/-43.3	99.0	U*
<b>NATURALLY OCCURRING RADIOCHEMISTRY RESULTS BY ALPHA SPECTROSCOPY</b>					
Thorium-228	pCi/L	-/-	0.957 +/-0.487	0.515	*
Thorium-230	pCi/L	-/-	0.669 +/-0.431	0.445	*
Thorium-232	pCi/L	-/-	0.774 +/-0.399	0.361	*

**APPENDIX D**

**Fourth Quarter 2019 NPDES Permit Limit Exceedances  
and/or Non-Compliance**

**APPENDIX D**

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Table D – Summary of Permit Limit Exceedances and/or Non-Compliance

**TABLE D  
SUMMARY OF PERMIT LIMIT EXCEEDANCES AND/OR NON-COMPLIANCE**

Fourth QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309

October 1 through December 31, 2019

DAILY MAXIMUM BENCHMARK EXCEEDANCES AND/OR NON-COMPLIANCE							
OUTFALL	SAMPLE DATE	SAMPLE TYPE	ANALYTE	PERMIT LIMIT DAILY MAX	DAILY MAX RESULT	UNITS	LABORATORY/ VALIDATION QUALIFIER
Outfall 001	12/27/2019	Comp	Lead	5.2	6.6	µg/L	--
Outfall 001	12/27/2019	Comp	Iron	0.3	14	mg/L	--
Outfall 001	12/27/2019	Comp	Gross Alpha <sup>(1)</sup>	15	14.1 +/- 3.61	pCi/L	J- (*III)
Outfall 001	12/27/2019	Comp	TCDD TEQ w/out DNQ	2.8E-08	5.1E-08	µg/L	*
Outfall 002	12/05/2019	Comp	Iron	0.3	1.5	mg/L	J+ (Q)
Outfall 002	12/24/2019	Comp	Iron	0.3	8.7	mg/L	--
Outfall 002	12/24/2019	Comp	TCDD TEQ w/out DNQ	2.8E-08	5.1E-08	µg/L	*

(1) = Gross Alpha minus total uranium was calculated to be 13.4 +/- 3.64 pCi/L, which is indeterminate of the Daily Maximum Benchmark Limit of 15 pCi/L. Gross Alpha is in compliance based on the annual average at Outfall 001, which is 3.65 +/- 0.64 pCi/L.

**APPENDIX E**

**Fourth Quarter 2019 Analytical Laboratory Reports,  
Chain of Custody Forms, and Validation Reports**

## APPENDIX E

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7	Outfall 001 – 440-258219-4 – December 27, 2019, TestAmerica Analytical Report
8	Outfall 002 – 440-256471-1 – December 4, 2019, MECx Data Validation Report
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14	Outfall 002 – 440-256464-3 – December 5, 2019, MECx Data Validation Report
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17	Outfall 002 – 440-258020-1 – December 23, 2019, MECx Data Validation Report
18	Outfall 002 – 440-258020-1 – December 23, 2019, TestAmerica Analytical Report
19	Outfall 002 – 440-258085-1 – December 24, 2019, MECx Data Validation Report
20	Outfall 002 – 440-258085-1 – December 24, 2019, TestAmerica Analytical Report
21	Outfall 002 – 440-258085-3 – December 24, 2019, MECx Data Validation Report
22	Outfall 002 – 440-258085-3 – December 24, 2019, TestAmerica Analytical Report
23	Outfall 008 – 440-258164-1 – December 26, 2019, TestAmerica Analytical Report
24	Outfall 008 – 440-258227-1 – December 27, 2019, MECx Data Validation Report
25	Outfall 008 – 440-258227-1 – December 27, 2019, TestAmerica Analytical Report
26	Outfall 008 – 440-258227-2 – December 27, 2019, MECx Data Validation Report
27	Outfall 008 – 440-258227-2 – December 27, 2019, TestAmerica Analytical Report
28	Outfall 009 – 440-258020-3 – December 23, 2019, TestAmerica Analytical Report
29	Outfall 009 – 440-258077-1 – December 24, 2019, MECx Data Validation Report
30	Outfall 009 – 440-258077-1 – December 24, 2019, TestAmerica Analytical Report
31	Outfall 009 – 440-258077-3 – December 24, 2019, MECx Data Validation Report
32	Outfall 009 – 440-258077-3 – December 24, 2019, TestAmerica Analytical Report
33	Arroyo Simi – 440- 258025-1 – December 23, 2019, TestAmerica Analytical Report

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**DATA VALIDATION REPORT**

**Boeing SSFL NPDES**

**SAMPLE DELIVERY GROUP: 440-258161-1**

**Prepared for**

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

**16 January 2020**

**MEC<sup>x</sup>, Inc.**  
12269 East Vassar Drive  
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- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



## I. INTRODUCTION

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**Task Order Title:** Boeing SSFL NPDES

**Contract:** 40458-078 and 40458-083

**MEC<sup>X</sup> Project No.:** 1272.003D.01 002

**Sample Delivery Group:** 440-258161-1

**Project Manager:** Katherine Miller

**Matrix:** Water

**QC Level:** IV

**No. of Samples:** 1

**No. of Reanalyses/Dilutions:** 0

**Laboratory:** TestAmerica-Irvine

**TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Matrix	Collection	Method
OUTFALL001_20191226_ GRAB	440-258161-1	WM	12/26/2019 7:45:00 AM	E120.1, E624.1



## II. SAMPLE MANAGEMENT

---

According to the case narrative, Login Sample Receipt Checklist, and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-258161-1:

- The laboratory received the samples in this SDG on ice and within the temperature limits of <6 degrees Celsius (°C) and >0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the Login Sample Receipt Checklist, custody seals were absent on the coolers; however, no evidence of tampering was noted.
- It should be noted that, although marked for validation, no data was submitted for field parameter dissolved oxygen. This parameter was not reviewed for validation.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination ( $r^2$ ) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



### III. EPA METHOD 624.1—VOLATILE ORGANIC COMPOUNDS (VOCs)

---

L. Calvin of MEC<sup>x</sup> reviewed the SDG on January 16, 2020

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC<sup>x</sup> Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624.1*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2017)*.

#### III.1. HOLDING TIMES

The analytical holding time was met. The preserved water site sample was analyzed within 14 days of collection.

#### III.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. Samples were analyzed within 12 hours of the BFB injection time.

Except as noted below, calibration criteria were met. The initial calibration average RRFs and the ICV and continuing calibration RRFs were  $\geq 0.05$  for all applicable target compounds. The initial calibration %RSDs were  $\leq 35\%$ , or  $r^2$  values  $\geq 0.990$ . The second source ICV and applicable CCV recoveries were within the method control limits, except the high response in the CCV for carbon tetrachloride (141%). Though not detected in the site sample, the sample result for carbon tetrachloride was qualified as estimated (UJ).

#### III.3. QUALITY CONTROL SAMPLES

##### III.3.1. METHOD BLANKS

Target compounds were not detected above the MDL in the method blank.

##### III.3.2. LABORATORY CONTROL SAMPLES

The LCS had a recovery above the method control limits for carbon tetrachloride; however, as carbon tetrachloride was not detected in the sample, qualifications were not assigned. Remaining LCS recoveries were within the method control limits.

##### III.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

##### III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the site sample in this SDG. MEC<sup>x</sup> evaluated method accuracy based on the associated LCS results.

#### III.4. FIELD QC SAMPLES

MEC<sup>x</sup> evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC<sup>x</sup> used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.





#### III.4.1. TRIP BLANKS

Sample TB-20191226 was identified as the trip blank associated with the site sample in this SDG. The trip blank had no target compound detects above the MDL.

#### III.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

#### III.4.3. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

#### III.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the continuing calibration standards:  $\pm 30$  seconds for retention times and  $-50\%/+100\%$  for internal standard areas.

#### III.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for 29 target compounds by Method 624.1. Review of the sample chromatograms, retention times, and spectra indicated no issues with target compound identification.

#### III.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

#### III.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

#### III.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

### IV. METHOD EPA 120.1 — SPECIFIC CONDUCTANCE

---

M. Hilchey of MEC<sup>X</sup> reviewed the SDG on January 16, 2020.

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC<sup>X</sup> Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 120.1* and the *National Functional Guidelines for Inorganic Superfund Methods Data Review (2017)*.

#### IV.1. HOLDING TIMES

The QAPP holding time, 28 days for specific conductance, was met.



## **IV.2. CALIBRATION**

Probe calibration data was not provided. The initial and continuing calibration verification recoveries met laboratory control limits.

## **IV.3. QUALITY CONTROL SAMPLES**

### **IV.3.1. METHOD BLANKS**

The method blank had no detection of specific conductivity.

### **IV.3.2. LABORATORY CONTROL SAMPLES**

Laboratory control sample recovery met QAPP control limits.

### **IV.3.3. LABORATORY DUPLICATES**

Laboratory duplicate analyses were performed on the sample in this SDG. The RPD met laboratory limits.

### **IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

MS/MSD analyses are not applicable to this method.

## **IV.4. SAMPLE RESULT VERIFICATION**

Raw data was not provided; therefore, sample results could not be verified against raw data. Reported nondetects are valid to the MDL.

## **IV.5. FIELD QC SAMPLES**

MEC<sup>X</sup> evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC<sup>X</sup> used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

### **IV.5.1. FIELD BLANKS AND EQUIPMENT BLANKS**

Field blank or equipment blank samples were not identified for this SDG.

### **IV.5.2. FIELD DUPLICATES**

Field duplicate samples were not identified in this SDG.

# Validated Sample Result Forms: 4402581611

## Analysis Method E120.1

Sample Name OUTFALL001\_20191226\_GRAB Matrix Type: WM Result Type: TRG

Sample Date: 12/26/2019 7:45:00 AM Validation Level: 8

Lab Sample Name: 440-258161-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Specific Conductance	N	CONDSPEC	1400	1.0	1.0	umhos/c			

## Analysis Method E624.1

Sample Name OUTFALL001\_20191226\_GRAB Matrix Type: WM Result Type: TRG

Sample Date: 12/26/2019 7:45:00 AM Validation Level: 8

Lab Sample Name: 440-258161-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1,1-Trichloroethane	N	71-55-6	ND	0.50	0.25	ug/L	U	U	
1,1,2,2-Tetrachloroethane	N	79-34-5	ND	0.50	0.25	ug/L	U	U	
1,1,2-Trichloroethane	N	79-00-5	ND	0.50	0.25	ug/L	U	U	
1,1-Dichloroethane	N	75-34-3	ND	0.50	0.25	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloropropane	N	78-87-5	ND	0.50	0.25	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	ND	0.50	0.25	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	ND	0.50	0.25	ug/L	U	U	
Benzene	N	71-43-2	ND	0.50	0.25	ug/L	U	U	
Bromodichloromethane	N	75-27-4	ND	0.50	0.25	ug/L	U	U	
Bromoform	N	75-25-2	ND	1.0	0.40	ug/L	U	U	
Bromomethane (Methyl Bromide)	N	74-83-9	ND	0.50	0.25	ug/L	U	U	
Carbon tetrachloride	N	56-23-5	ND	0.50	0.25	ug/L	ULQ	UJ	C
Chlorobenzene	N	108-90-7	ND	0.50	0.25	ug/L	U	U	
Chloroethane	N	75-00-3	ND	1.0	0.40	ug/L	U	U	
Chloroform (Trichloromethane)	N	67-66-3	ND	0.50	0.25	ug/L	U	U	
Chloromethane (Methyl Chloride)	N	74-87-3	ND	0.50	0.25	ug/L	U	U	
cis-1,2-Dichloroethene	N	156-59-2	ND	0.50	0.25	ug/L	U	U	
cis-1,3-Dichloropropene	N	10061-01-5	ND	0.50	0.25	ug/L	U	U	
Dibromochloromethane	N	124-48-1	ND	0.50	0.25	ug/L	U	U	
Ethylbenzene	N	100-41-4	ND	0.50	0.25	ug/L	U	U	
Methylene chloride	N	75-09-2	ND	2.0	0.88	ug/L	U	U	
Naphthalene	N	91-20-3	ND	1.0	0.40	ug/L	U	U	
Tetrachloroethene	N	127-18-4	ND	0.50	0.25	ug/L	U	U	
Toluene	N	108-88-3	ND	0.50	0.25	ug/L	U	U	
trans-1,2-Dichloroethene	N	156-60-5	ND	0.50	0.25	ug/L	U	U	
trans-1,3-Dichloropropene	N	10061-02-6	ND	0.50	0.25	ug/L	U	U	

*Analysis Method*    *E624.1*

Trifluorotrichloroethane (Freon 113)	N	76-13-1	ND	2.0	0.50	ug/L	U	<b>U</b>
Vinyl chloride	N	75-01-4	ND	0.50	0.25	ug/L	U	<b>U</b>

## ANALYTICAL REPORT

Eurofins Calscience Irvine  
17461 Derian Ave  
Suite 100  
Irvine, CA 92614-5817  
Tel: (949)261-1022

Laboratory Job ID: 440-258161-1

Client Project/Site: Quarterly Outfall 001 Grab

**For:**

Haley & Aldrich, Inc.  
400 E Van Buren St.  
Suite 545  
Phoenix, Arizona 85004

Attn: Katherine Miller



---

Authorized for release by:  
1/10/2020 10:02:05 AM

Christian Bondoc, Project Manager I  
(949)260-3218  
[christian.bondoc@testamericainc.com](mailto:christian.bondoc@testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



---

Christian Bondoc  
Project Manager I  
1/10/2020 10:02:05 AM



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# Sample Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Grab

Job ID: 440-258161-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-258161-1	Outfall001_20191226_Grab	Water	12/26/19 07:45	12/26/19 11:45	
440-258161-3	TB-20191226	Water	12/26/19 07:45	12/26/19 11:45	

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# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Grab

Job ID: 440-258161-1

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## Job ID: 440-258161-1

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### Laboratory: Eurofins Calscience Irvine

#### Narrative

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#### Job Narrative 440-258161-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/26/2019 11:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.9° C.

#### Receipt Exceptions

The following sample was received with headspace in the sample container: TB-20191226 (440-258161-3). All containers had headspace.

#### GC/MS VOA

Method 624.1: The following volatile sample was received and analyzed with significant headspace in the sample container(s): TB-20191226 (440-258161-3). Significant headspace is defined as a bubble greater than 6 mm in diameter.

Method 624.1: The continuing calibration verification (CCV) associated with batch 440-588294 recovered above the upper control limit for 1,1,1-Trichloroethane and Carbon tetrachloride. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method 624.1: The laboratory control sample (LCS) for analytical batch 440-588294 recovered outside control limits for the following analytes: Carbon tetrachloride. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### General Chemistry

Method SM 2540F: Insufficient sample volume was available to perform a sample duplicate (DUP) associated with analytical batch 440-588030.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### Organic Prep

Methods 1664A, 1664B: Lowered reporting limits are provided for the following samples due to excess sample provided for preparation/analysis: (LCS 440-589086/2-A), (440-258344-A-4-A) and (440-258344-A-4-B MS). Note that these samples are composites: there were 2 full liters for each composite. Method 1664A/1664B.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Grab

Job ID: 440-258161-1

**Client Sample ID: Outfall001\_20191226\_Grab**

**Lab Sample ID: 440-258161-1**

**Date Collected: 12/26/19 07:45**

**Matrix: Water**

**Date Received: 12/26/19 11:45**

**Method: 624.1 - Volatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			12/28/19 14:34	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			12/28/19 14:34	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			12/28/19 14:34	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			12/28/19 14:34	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			12/28/19 14:34	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			12/28/19 14:34	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			12/28/19 14:34	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Benzene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Bromoform	ND		1.0	0.40	ug/L			12/28/19 14:34	1
Bromomethane	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Carbon tetrachloride	ND	LQ	0.50	0.25	ug/L			12/28/19 14:34	1
Chlorobenzene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Dibromochloromethane	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Chloroethane	ND		1.0	0.40	ug/L			12/28/19 14:34	1
Chloroform	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Chloromethane	ND		0.50	0.25	ug/L			12/28/19 14:34	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Bromodichloromethane	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Ethylbenzene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Methylene Chloride	ND		2.0	0.88	ug/L			12/28/19 14:34	1
Naphthalene	ND		1.0	0.40	ug/L			12/28/19 14:34	1
Tetrachloroethene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Toluene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Trichloroethene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Vinyl chloride	ND		0.50	0.25	ug/L			12/28/19 14:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	103		60 - 140		12/28/19 14:34	1
Dibromofluoromethane (Surr)	108		60 - 140		12/28/19 14:34	1
Toluene-d8 (Surr)	106		60 - 140		12/28/19 14:34	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		4.8	1.3	mg/L		01/03/20 15:57	01/03/20 18:27	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Specific Conductance</b>	<b>1400</b>		1.0	1.0	umhos/cm			12/27/19 08:39	1
Settleable Solids	ND		0.10	0.10	mL/L/Hr			12/26/19 15:03	1

# Client Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 001 Grab

Job ID: 440-258161-1

**Client Sample ID: TB-20191226**

**Lab Sample ID: 440-258161-3**

**Date Collected: 12/26/19 07:45**

**Matrix: Water**

**Date Received: 12/26/19 11:45**

**Method: 624.1 - Volatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			12/28/19 15:03	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			12/28/19 15:03	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			12/28/19 15:03	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			12/28/19 15:03	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			12/28/19 15:03	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			12/28/19 15:03	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			12/28/19 15:03	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Benzene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Bromoform	ND		1.0	0.40	ug/L			12/28/19 15:03	1
Bromomethane	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Carbon tetrachloride	ND	LQ	0.50	0.25	ug/L			12/28/19 15:03	1
Chlorobenzene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Dibromochloromethane	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Chloroethane	ND		1.0	0.40	ug/L			12/28/19 15:03	1
Chloroform	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Chloromethane	ND		0.50	0.25	ug/L			12/28/19 15:03	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Bromodichloromethane	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Ethylbenzene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Methylene Chloride	ND		2.0	0.88	ug/L			12/28/19 15:03	1
Naphthalene	ND		1.0	0.40	ug/L			12/28/19 15:03	1
Tetrachloroethene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Toluene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Trichloroethene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Vinyl chloride	ND		0.50	0.25	ug/L			12/28/19 15:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	105		60 - 140		12/28/19 15:03	1
Dibromofluoromethane (Surr)	112		60 - 140		12/28/19 15:03	1
Toluene-d8 (Surr)	104		60 - 140		12/28/19 15:03	1

# Method Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Grab

Job ID: 440-258161-1

Method	Method Description	Protocol	Laboratory
624.1	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
120.1	Conductivity, Specific Conductance	MCAWW	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 2540F	Solids, Settleable	SM	TAL IRV
1664A	HEM and SGT-HEM (SPE)	1664A	TAL IRV

#### Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater"

#### Laboratory References:

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Grab

Job ID: 440-258161-1

**Client Sample ID: Outfall001\_20191226\_Grab**

**Lab Sample ID: 440-258161-1**

**Date Collected: 12/26/19 07:45**

**Matrix: Water**

**Date Received: 12/26/19 11:45**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624.1		1	10 mL	10 mL	588294	12/28/19 14:34	JB	TAL IRV
Total/NA	Analysis	120.1		1			588120	12/27/19 08:39	XL	TAL IRV
Total/NA	Prep	1664A			1045 mL	1000 mL	589086	01/03/20 15:57	AJH	TAL IRV
Total/NA	Analysis	1664A		1			589113	01/03/20 18:27	AJH	TAL IRV
Total/NA	Analysis	SM 2540F		1	1000 mL	1 L	588030	12/26/19 15:03	HZ	TAL IRV

**Client Sample ID: TB-20191226**

**Lab Sample ID: 440-258161-3**

**Date Collected: 12/26/19 07:45**

**Matrix: Water**

**Date Received: 12/26/19 11:45**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624.1		1	10 mL	10 mL	588294	12/28/19 15:03	JB	TAL IRV

**Laboratory References:**

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Grab

Job ID: 440-258161-1

## Method: 624.1 - Volatile Organic Compounds (GC/MS)

**Lab Sample ID: MB 440-588294/4**  
**Matrix: Water**  
**Analysis Batch: 588294**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			12/28/19 11:38	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			12/28/19 11:38	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			12/28/19 11:38	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			12/28/19 11:38	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			12/28/19 11:38	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			12/28/19 11:38	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			12/28/19 11:38	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Benzene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Bromoform	ND		1.0	0.40	ug/L			12/28/19 11:38	1
Bromomethane	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Chlorobenzene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Dibromochloromethane	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Chloroethane	ND		1.0	0.40	ug/L			12/28/19 11:38	1
Chloroform	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Chloromethane	ND		0.50	0.25	ug/L			12/28/19 11:38	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Bromodichloromethane	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Ethylbenzene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Methylene Chloride	ND		2.0	0.88	ug/L			12/28/19 11:38	1
Naphthalene	ND		1.0	0.40	ug/L			12/28/19 11:38	1
Tetrachloroethene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Toluene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Trichloroethene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Vinyl chloride	ND		0.50	0.25	ug/L			12/28/19 11:38	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		60 - 140		12/28/19 11:38	1
Dibromofluoromethane (Surr)	106		60 - 140		12/28/19 11:38	1
Toluene-d8 (Surr)	105		60 - 140		12/28/19 11:38	1

**Lab Sample ID: LCS 440-588294/1002**  
**Matrix: Water**  
**Analysis Batch: 588294**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	25.0	35.0		ug/L		140	69 - 151
1,1,2,2-Tetrachloroethane	25.0	22.5		ug/L		90	68 - 136
1,1,2-Trichloroethane	25.0	23.3		ug/L		93	75 - 136
1,1-Dichloroethane	25.0	29.9		ug/L		120	71 - 143
1,1-Dichloroethene	25.0	27.0		ug/L		108	19 - 212

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Grab

Job ID: 440-258161-1

## Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: LCS 440-588294/1002**  
**Matrix: Water**  
**Analysis Batch: 588294**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dichlorobenzene	25.0	26.9		ug/L		108	59 - 174
1,2-Dichloroethane	25.0	28.6		ug/L		115	72 - 137
1,2-Dichloropropane	25.0	25.5		ug/L		102	19 - 181
1,3-Dichlorobenzene	25.0	27.9		ug/L		112	75 - 144
1,4-Dichlorobenzene	25.0	27.1		ug/L		108	59 - 174
Benzene	25.0	25.5		ug/L		102	75 - 125
Bromoform	25.0	28.3		ug/L		113	57 - 156
Bromomethane	25.0	26.9		ug/L		108	10 - 206
Carbon tetrachloride	25.0	35.3	LQ	ug/L		141	65 - 125
Chlorobenzene	25.0	25.9		ug/L		104	82 - 137
Dibromochloromethane	25.0	30.3		ug/L		121	69 - 133
Chloroethane	25.0	27.9		ug/L		111	42 - 202
Chloroform	25.0	27.7		ug/L		111	68 - 121
Chloromethane	25.0	28.0		ug/L		112	10 - 230
cis-1,2-Dichloroethene	25.0	24.4		ug/L		98	60 - 140
cis-1,3-Dichloropropene	25.0	25.6		ug/L		103	5 - 195
Bromodichloromethane	25.0	30.5		ug/L		122	50 - 140
Ethylbenzene	25.0	27.7		ug/L		111	75 - 134
Methylene Chloride	25.0	24.8		ug/L		99	10 - 205
Naphthalene	25.0	17.4		ug/L		70	60 - 140
Tetrachloroethene	25.0	31.1		ug/L		124	70 - 130
Toluene	25.0	27.0		ug/L		108	75 - 134
trans-1,2-Dichloroethene	25.0	27.3		ug/L		109	70 - 130
trans-1,3-Dichloropropene	25.0	25.5		ug/L		102	38 - 162
Trichloroethene	25.0	29.5		ug/L		118	75 - 138
Vinyl chloride	25.0	27.1		ug/L		108	10 - 218

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	106		60 - 140
Dibromofluoromethane (Surr)	106		60 - 140
Toluene-d8 (Surr)	99		60 - 140

**Lab Sample ID: 440-258180-F-1 MS**  
**Matrix: Water**  
**Analysis Batch: 588294**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	ND		10.0	12.4		ug/L		124	52 - 162
1,1,2,2-Tetrachloroethane	ND		10.0	8.33		ug/L		83	46 - 157
1,1,2-Trichloroethane	ND		10.0	8.84		ug/L		88	52 - 150
1,1-Dichloroethane	ND		10.0	10.5		ug/L		105	59 - 155
1,1-Dichloroethene	ND		10.0	9.19		ug/L		92	10 - 234
1,2-Dichlorobenzene	ND		10.0	10.1		ug/L		101	18 - 190
1,2-Dichloroethane	ND		10.0	10.5		ug/L		105	49 - 155
1,2-Dichloropropane	ND		10.0	9.07		ug/L		91	10 - 210
1,3-Dichlorobenzene	ND		10.0	10.1		ug/L		101	59 - 156
1,4-Dichlorobenzene	ND		10.0	10.4		ug/L		104	18 - 190
Benzene	ND		10.0	9.26		ug/L		93	37 - 151

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Grab

Job ID: 440-258161-1

## Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: 440-258180-F-1 MS**

**Matrix: Water**

**Analysis Batch: 588294**

**Client Sample ID: Matrix Spike**

**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Bromoform	ND		10.0	10.1		ug/L		101	45 - 169
Bromomethane	ND		10.0	9.24		ug/L		92	10 - 242
Carbon tetrachloride	ND	LQ	10.0	12.7		ug/L		127	70 - 140
Chlorobenzene	ND		10.0	9.74		ug/L		97	37 - 160
Dibromochloromethane	ND		10.0	10.6		ug/L		106	53 - 149
Chloroethane	ND		10.0	9.47		ug/L		95	14 - 230
Chloroform	ND		10.0	9.90		ug/L		99	51 - 138
Chloromethane	ND		10.0	9.04		ug/L		90	10 - 273
cis-1,2-Dichloroethene	ND		10.0	9.01		ug/L		90	60 - 140
cis-1,3-Dichloropropene	ND		10.0	9.05		ug/L		91	10 - 227
Bromodichloromethane	ND		10.0	10.9		ug/L		109	35 - 155
Ethylbenzene	ND		10.0	10.2		ug/L		102	37 - 162
Methylene Chloride	ND		10.0	7.85		ug/L		78	10 - 221
Naphthalene	ND		10.0	6.85		ug/L		68	60 - 140
Tetrachloroethene	ND		10.0	11.2		ug/L		112	64 - 148
Toluene	ND		10.0	10.1		ug/L		101	47 - 150
trans-1,2-Dichloroethene	ND		10.0	9.40		ug/L		94	54 - 156
trans-1,3-Dichloropropene	ND		10.0	9.24		ug/L		92	17 - 183
Trichloroethene	ND		10.0	10.9		ug/L		109	70 - 157
Vinyl chloride	ND		10.0	9.09		ug/L		91	10 - 251

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	104		60 - 140
Dibromofluoromethane (Surr)	107		60 - 140
Toluene-d8 (Surr)	99		60 - 140

**Lab Sample ID: 440-258180-F-1 MSD**

**Matrix: Water**

**Analysis Batch: 588294**

**Client Sample ID: Matrix Spike Duplicate**

**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND		10.0	12.5		ug/L		125	52 - 162	0	36
1,1,2,2-Tetrachloroethane	ND		10.0	9.67		ug/L		97	46 - 157	15	61
1,1,2-Trichloroethane	ND		10.0	8.67		ug/L		87	52 - 150	2	45
1,1-Dichloroethane	ND		10.0	10.5		ug/L		105	59 - 155	0	40
1,1-Dichloroethene	ND		10.0	9.32		ug/L		93	10 - 234	1	32
1,2-Dichlorobenzene	ND		10.0	10.7		ug/L		107	18 - 190	6	57
1,2-Dichloroethane	ND		10.0	10.9		ug/L		109	49 - 155	3	49
1,2-Dichloropropane	ND		10.0	9.55		ug/L		96	10 - 210	5	55
1,3-Dichlorobenzene	ND		10.0	10.8		ug/L		108	59 - 156	6	43
1,4-Dichlorobenzene	ND		10.0	10.4		ug/L		104	18 - 190	1	57
Benzene	ND		10.0	9.59		ug/L		96	37 - 151	4	61
Bromoform	ND		10.0	10.3		ug/L		103	45 - 169	2	42
Bromomethane	ND		10.0	9.37		ug/L		94	10 - 242	1	61
Carbon tetrachloride	ND	LQ	10.0	13.1		ug/L		131	70 - 140	3	41
Chlorobenzene	ND		10.0	10.0		ug/L		100	37 - 160	3	53
Dibromochloromethane	ND		10.0	11.2		ug/L		112	53 - 149	5	50
Chloroethane	ND		10.0	9.20		ug/L		92	14 - 230	3	78

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 001 Grab

Job ID: 440-258161-1

## Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-258180-F-1 MSD  
 Matrix: Water  
 Analysis Batch: 588294

Client Sample ID: Matrix Spike Duplicate  
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloroform	ND		10.0	10.6		ug/L		106	51 - 138	7	54
Chloromethane	ND		10.0	9.24		ug/L		92	10 - 273	2	60
cis-1,2-Dichloroethene	ND		10.0	9.29		ug/L		93	60 - 140	3	35
cis-1,3-Dichloropropene	ND		10.0	9.16		ug/L		92	10 - 227	1	58
Bromodichloromethane	ND		10.0	11.4		ug/L		114	35 - 155	4	56
Ethylbenzene	ND		10.0	10.3		ug/L		103	37 - 162	1	63
Methylene Chloride	ND		10.0	8.17		ug/L		82	10 - 221	4	28
Naphthalene	ND		10.0	7.37		ug/L		74	60 - 140	7	35
Tetrachloroethene	ND		10.0	12.0		ug/L		120	64 - 148	7	39
Toluene	ND		10.0	10.1		ug/L		101	47 - 150	0	41
trans-1,2-Dichloroethene	ND		10.0	9.43		ug/L		94	54 - 156	0	45
trans-1,3-Dichloropropene	ND		10.0	9.38		ug/L		94	17 - 183	2	86
Trichloroethene	ND		10.0	10.8		ug/L		108	70 - 157	1	48
Vinyl chloride	ND		10.0	9.25		ug/L		92	10 - 251	2	66
	<b>MSD MSD</b>										
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>									
4-Bromofluorobenzene (Surr)	107			60 - 140							
Dibromofluoromethane (Surr)	105			60 - 140							
Toluene-d8 (Surr)	97			60 - 140							

## Method: 120.1 - Conductivity, Specific Conductance

Lab Sample ID: MB 440-588120/3  
 Matrix: Water  
 Analysis Batch: 588120

Client Sample ID: Method Blank  
 Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		1.0	1.0	umhos/cm			12/27/19 08:39	1

Lab Sample ID: LCS 440-588120/4  
 Matrix: Water  
 Analysis Batch: 588120

Client Sample ID: Lab Control Sample  
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Specific Conductance	1030	1000		umhos/cm		97	90 - 110

Lab Sample ID: 440-258161-1 DU  
 Matrix: Water  
 Analysis Batch: 588120

Client Sample ID: Outfall001\_20191226\_Grab  
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Specific Conductance	1400		1440		umhos/cm		0	5

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 001 Grab

Job ID: 440-258161-1

## Method: 1664A - HEM and SGT-HEM

**Lab Sample ID: MB 440-589086/1-A**  
**Matrix: Water**  
**Analysis Batch: 589113**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 589086**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		01/03/20 15:57	01/03/20 18:27	1

**Lab Sample ID: LCS 440-589086/2-A**  
**Matrix: Water**  
**Analysis Batch: 589113**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 589086**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	40.0	38.3		mg/L		96	78 - 114

**Lab Sample ID: LCSD 440-589086/3-A**  
**Matrix: Water**  
**Analysis Batch: 589113**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 589086**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HEM (Oil & Grease)	40.0	37.2		mg/L		93	78 - 114	3	11

**Lab Sample ID: 440-258344-A-4-B MS**  
**Matrix: Water**  
**Analysis Batch: 589113**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 589086**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	6.3		20.5	26.0		mg/L		96	78 - 114

# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Grab

Job ID: 440-258161-1

## GC/MS VOA

### Analysis Batch: 588294

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258161-1	Outfall001_20191226_Grab	Total/NA	Water	624.1	
440-258161-3	TB-20191226	Total/NA	Water	624.1	
MB 440-588294/4	Method Blank	Total/NA	Water	624.1	
LCS 440-588294/1002	Lab Control Sample	Total/NA	Water	624.1	
440-258180-F-1 MS	Matrix Spike	Total/NA	Water	624.1	
440-258180-F-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624.1	

## General Chemistry

### Analysis Batch: 588030

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258161-1	Outfall001_20191226_Grab	Total/NA	Water	SM 2540F	

### Analysis Batch: 588120

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258161-1	Outfall001_20191226_Grab	Total/NA	Water	120.1	
MB 440-588120/3	Method Blank	Total/NA	Water	120.1	
LCS 440-588120/4	Lab Control Sample	Total/NA	Water	120.1	
440-258161-1 DU	Outfall001_20191226_Grab	Total/NA	Water	120.1	

### Prep Batch: 589086

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258161-1	Outfall001_20191226_Grab	Total/NA	Water	1664A	
MB 440-589086/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-589086/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-589086/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	
440-258344-A-4-B MS	Matrix Spike	Total/NA	Water	1664A	

### Analysis Batch: 589113

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258161-1	Outfall001_20191226_Grab	Total/NA	Water	1664A	589086
MB 440-589086/1-A	Method Blank	Total/NA	Water	1664A	589086
LCS 440-589086/2-A	Lab Control Sample	Total/NA	Water	1664A	589086
LCSD 440-589086/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	589086
440-258344-A-4-B MS	Matrix Spike	Total/NA	Water	1664A	589086

# Definitions/Glossary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Grab

Job ID: 440-258161-1

## Qualifiers

### GC/MS VOA

Qualifier	Qualifier Description
LQ	LCS/LCSD recovery above method control limits

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Grab

Job ID: 440-258161-1

## Laboratory: Eurofins Calscience Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
California	State Program	CA ELAP 2706	06-30-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
624.1		Water	1,1,2-Trichloro-1,2,2-trifluoroethane



CHAIN OF CUSTODY FORM

Page 1 of 2  
MS

<p><b>Client Name/Address:</b> Haley &amp; Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108</p>			<p><b>Project:</b> Boeing-SSFL NPDES Permit 2019 Quarterny Outfall 001, 002, 011, 018] Outfall 001 Grab</p>			<p><b>Field Readings:</b> Meter serial # Field Readings: (Include units) 7414 FT98 Time of Readings: 0740</p>		
<p><b>Test America Contact:</b> Unvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055</p>			<p><b>Project Manager:</b> Katherine Miller 520 289 8606, 520 904 6944 (cell)</p>			<p>DO 16.31 mg/L pH 7.78 pH unit Temp 43.4 °C</p>		
<p><b>Resampler's services under the CoC shall be performed in accordance with the TACs within Blanket Service Agreement 2019-22: Reference by and between Haley &amp; Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.</b></p>			<p><b>Field Manager:</b> Mark Dominick 978.234.5033, 818.569.0702 (cell)</p>			<p>Field readings QC by: <i>Mark Dominick</i> Checked Date/Time: 12-26-19/0740</p>		
<p><b>Sampler:</b> Dan Smith</p>			<p><b>Oil &amp; Grease (E1684-HEM)</b> X</p>			<p><b>Comments:</b></p>		
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont	Preservative	Bottle #	MS/MSD
Outfall 001	Outfall001_20191226_Grab	12/26/2019 0745	WM	1 L Glass Amber	2	HCl	15	No
Outfall 001	Outfall001_20191226_Grab_Extra	12/26/2019 0745	WM	40 mL VOA	3	HCl	20	No
Trip Blank	TB-20191226	12/26/2019 0745	WM	1 L Poly	1	None	70	No
			WM	500 mL Poly	1	None	75	No
			WM	1 L Glass Amber	2	HCl	15	No
			WM	40 mL VOA	3	HCl	20	No
			WM	500 mL Poly	1	None	75	No
			WQ	40 mL VOA	2	HCl	20	No

<p><b>Legend:</b> A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quarterly, QRSW=Quarterly Receiving Water, S=Semi-Annual</p>	<p>Turn-around time: (Check) 24 Hour _____ 72 Hour _____ 10 Day _____ X 48 Hour _____ 5 Day _____ Normal _____</p>
<p>Received By: <i>Mark Dominick</i> Date/Time: 12/26/19 10:10</p>	<p>Sample Integrity (Check) Intact: _____ On Ice _____ Store samples for 6 months. Data Requirements: (Check) No Level IV _____ All Level IV _____ X</p>
<p>Received By: <i>Roberto GARGES</i> Date/Time: 12-26-19 11:45</p>	<p>Received By: <i>TARU</i> Date/Time: 12/26/19 1145</p>

440-258161 Chain of Custody

Barcode: [Barcode]

Date: 12/26/19



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**DATA VALIDATION REPORT**

**Boeing SSFL NPDES**

**SAMPLE DELIVERY GROUP: 440-258219-1**

**Prepared for**

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

**23 January 2020**

**MEC<sup>x</sup>, Inc.**  
12269 East Vassar Drive  
Aurora, Colorado 80014

[www.mecx.net](http://www.mecx.net)





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**TABLES**

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



## I. INTRODUCTION

---

**Task Order Title:** Boeing SSFL NPDES

**Contract:** 40458-078 and 40458-083

**MEC<sup>x</sup> Project No.:** 1272.003D.01 002

**Sample Delivery Group:** 440-258219-1

**Project Manager:** Katherine Miller

**Matrix:** Water

**QC Level:** IV

**No. of Samples:** 2

**No. of Reanalyses/Dilutions:** 0

**Laboratory:** TestAmerica-Irvine

**TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Matrix	Collection	Method
OUTFALL001_20191227_COMP	440-258219-1	Water	12/27/19 7:25 AM	E1613B, E200.7, E200.8, E625.1, SM2540D, SM4500-NH3G
OUTFALL001_20191227_COMP_F	440-258219-3	Water	12/27/19 7:25 AM	E200.7, E200.8



## II. SAMPLE MANAGEMENT

---

According to the case narrative, Login Sample Receipt Checklist, and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-258219-1:

- The laboratory received the samples in this SDG on ice and within the temperature limits of <6 degrees Celsius (°C) and >0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and/or laboratory personnel signed and dated the appropriate original and transfer COCs.
- According to the Login Sample Receipt Checklists, custody seals were absent on the coolers upon receipt at TA-Irvine; however, no evidence of tampering was noted. A custody seal was present on the cooler received at TA-Sacramento.
- The case narrative indicated that the site sample for the 1613B analysis was received in a wide-mouth amber glass bottle, and slightly less sample volume (954 milliliters) was available for extraction.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination ( $r^2$ ) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



### III. EPA METHOD 1613B — DIOXIN/FURANS

---

L. Calvin of MEC<sup>X</sup> reviewed the SDG on January 23, 2020

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC<sup>X</sup> *Data Validation Procedure for Dioxins and Furans* (DVP-19, Rev. 0), *USEPA Method 1613B* and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review* (2011).

#### III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

#### III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

##### III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as <25%.

##### III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power >10,000.

#### III.3. CALIBRATION

Initial Calibration: Calibration criteria were met. The initial calibration was acceptable with %RSDs ≤20% for the 15 native compounds (calibration by isotope dilution) and ≤35% for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

#### III.4. QUALITY CONTROL SAMPLES

##### III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit (RL) for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8-HxCDD, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 1,2,3,7,8,9-HxCDF, 2,3,4,6,7,8-HxCDF, 2,3,7,8-TCDF, OCDD and OCDF, and for totals HpCDD, HpCDF HxCDD, HxCDF and total TCDF. The sample results for isomers detected below the RL in the sample were qualified as nondetects (U) at the level of contamination. The method blank concentrations of 1,2,3,4,6,7,8-HpCDD and OCDD were not sufficient to qualify the sample concentrations above the RL. The reviewer compared peaks comprising the method blank totals to those in the sample totals. Totals HpCDD, HpCDF HxCDD, HxCDF and TCDF were





qualified as estimated (J), as only a portion of each total was determined to be method blank contamination.

#### III.4.2. **LABORATORY CONTROL SAMPLES**

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B.

#### III.5. **FIELD QC SAMPLES**

MEC<sup>x</sup> evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC<sup>x</sup> used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

##### III.5.1. **FIELD BLANKS AND EQUIPMENT BLANKS**

Field blank or equipment blank samples were not identified for this SDG.

##### III.5.2. **FIELD DUPLICATES**

Field duplicate samples were not identified in this SDG.

#### III.6. **INTERNAL STANDARDS PERFORMANCE**

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

#### III.7. **COMPOUND IDENTIFICATION**

Compound identification was verified. With the exception of estimated maximum possible concentrations (EMPCs), detected compounds met the ion abundance ratio, retention time window and signal-to-noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B.

Second-column confirmation analysis was performed for isomer 2,3,7,8-TCDF detected in the initial analysis of the sample and its method blank. The sample result was confirmed and the method blank result was not. Both initial and confirmation results were reported for the sample. As the confirmation column is more specific for the detection of 2,3,7,8-TCDF, the confirmation result was retained and the initial result rejected (R) as duplicate data.

#### III.8. **COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

As noted in the case narrative, RLs and EDLs were slightly elevated due to somewhat limited sample volume. Rather than approximately 1000 milliliters (ml), a 954 ml sample volume was available for extraction.

Isomers previously qualified as method blank contamination were not further qualified as EMPCs. Isomer results reported as EMPCs were qualified as estimated nondetects (UJ). The concentrations of total TCDD and total PeCDD matched the associated isomer results qualified as EMPCs, and were therefore also



qualified as estimated nondetects (UJ). Totals HpCDF and HxCDD including one or more EMPC peaks were qualified as estimated (J).

#### IV. METHODS 200.7 AND 200.8 — METALS

---

M. Hilchey of MEC<sup>x</sup> reviewed the SDG on January 26, 2020.

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC<sup>x</sup> *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.7 and 200.8* and the *National Functional Guidelines for Inorganic Methods Data Review (2017)*.

##### IV.1. HOLDING TIMES

The analytical holding time, six months for metals, was met. Sample Outfall001\_20191227\_Comp\_F was filtered and preserved within 24 hours after receipt.

##### IV.2. CALIBRATION

QAPP calibration criteria were met. A blank and two to four standards were used for calibration of ICP-AES and ICP-MS target analytes. The initial calibration *r* values were  $\geq 0.995$ . CRQL recoveries were within the laboratory control limits of 50-150%. Initial calibration verification recoveries were within QAPP control limits of 95-105% for ICP-AES and 90-110% for ICP-MS. Continuing calibration verification recoveries were within QAPP control limits of 90-110%.

##### IV.3. QUALITY CONTROL SAMPLES

###### IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks or calibration blanks of sufficient concentration to warrant qualification of associated site sample results with the following exception. Selenium was detected (0.940  $\mu\text{g/L}$ ) in a calibration blank bracketing sample OUTFALL001\_20191227\_COMP. The selenium result for this sample was a detect below the reporting limit and was qualified as nondetect (U).

###### IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or  $\pm 2\times$  the reporting limit, whichever is greater. Interferents were not present in the samples at concentrations comparable to those in the ICSAs; therefore, interference was not suspected.

###### IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries (total and dissolved) were within the QAPP control limits of 85-115%.

###### IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.



#### IV.3.5. **MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

MS/MSD analyses were performed on sample OUTFALL001\_20191227\_COMP-F for Method 200.7. Results were not assessed when the parent sample concentration exceeded the spike amount by 4x. Recoveries and RPDs were within the QAPP control limits of 70-130% and  $\leq 20\%$ .

The laboratory did not perform post-digestion spike analyses as there were no MS/MSD outliers.

#### IV.4. **SERIAL DILUTION**

No serial dilution analyses were performed on a sample in this SDG.

#### IV.5. **COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Calculations were verified, and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. Results reported below the RL and above the MDL were qualified as estimated (J) and coded with a DNQ to comply with the NPDES permit reporting requirements. Nondetects are valid to the MDL.

#### IV.6. **FIELD QC SAMPLES**

MEC<sup>X</sup> evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC<sup>X</sup> used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

##### IV.6.1. **FIELD BLANKS AND EQUIPMENT BLANKS**

Field blank or equipment blank samples were not identified for this SDG.

##### IV.6.2. **FIELD DUPLICATES**

There were no field duplicate samples identified for this SDG.

### V. **EPA METHOD 625.1 — N-NITROSODIMETHYLAMINE**

---

L. Calvin of MEC<sup>X</sup> reviewed the SDG on January 23, 2020

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC<sup>X</sup> *Data Validation Procedure for Semivolatile Organics* (DVP-3, Rev. 1), *EPA Method 625.1* and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2017).

#### V.1. **HOLDING TIMES**

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

#### V.2. **GC/MS TUNING AND CALIBRATION**

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met. Initial calibration average relative response factors (RRFs) were within the method control limits, and the %RSDs were  $\leq 35\%$  or  $r^2$  values  $\geq 0.990$ . For applicable target compound n-



nitrosodimethylamine, ICV and CCV RRFs were within the method control limits. ICV recoveries and CCV %Ds were within method control limits.

### **V.3. QUALITY CONTROL SAMPLES**

#### **V.3.1. METHOD BLANKS**

The method blank had a detect above the RL for n-nitrosodimethylamine (7.5 µg/L). The sample result below the RL was qualified as a nondetect (U) at the RL.

#### **V.3.2. LABORATORY CONTROL SAMPLES**

LCS/LCS recoveries and the RPD were within the laboratory control limits.

#### **V.3.3. SURROGATE RECOVERY**

Surrogate recoveries were within laboratory control limits.

#### **V.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

MS/MSD analyses were not performed on the site sample in this SDG. MEC<sup>x</sup> evaluated method accuracy and precision based on the LCS/LCSD results.

### **V.4. FIELD QC SAMPLES**

MEC<sup>x</sup> evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC<sup>x</sup> used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

#### **V.4.1. FIELD BLANKS AND EQUIPMENT BLANKS:**

Field blank or equipment blank samples were not identified for this SDG.

#### **V.4.2. FIELD DUPLICATES:**

Field duplicate samples were not identified in this SDG.

### **V.5. INTERNAL STANDARDS PERFORMANCE**

The internal standard retention times and area counts were within the control limits established by the midpoint of the initial calibration standards: ±30 seconds for retention times and -50%/+100% for internal standard areas.

### **V.6. COMPOUND IDENTIFICATION**

Compound identification was verified. The laboratory analyzed for n-nitrosodimethylamine by EPA Method 625.1. Review of the sample chromatogram, retention times, and spectra indicated no issues with target compound identification.

### **V.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. The result reported below the RL was initially qualified as estimated (J) and coded with DNQ to comply with the NPDES permit reporting requirements; however, the result was subsequently qualified as a nondetect (see Method Blanks section). The nondetect is valid to the RL. The



sample did not require dilution.

The laboratory's preparation bench sheet indicated the sample extract was light yellow and cloudy.

#### **V.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)**

The laboratory did not report TICs for this SDG.

#### **V.9. SYSTEM PERFORMANCE**

Review of the raw data indicated no issues with system performance.

### **VI. METHODS EPA SM2540C AND 4500-NH3G —TOTAL SUSPENDED SOLIDS (TSS) AND AMMONIA**

---

M. Hilchey of MEC<sup>x</sup> reviewed the SDG on January 26, 2020.

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC<sup>x</sup> *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 2540D and 4500-NH3G* and the *National Functional Guidelines for Inorganic Superfund Methods Data Review (2017)*.

#### **VI.1. HOLDING TIMES**

The QAPP holding times, 7 days for TSS and 28 days for ammonia, were met.

#### **VI.2. CALIBRATION**

Calibration criteria were met. The Method 4500-NH3G initial calibration  $r^2$  values were  $\geq 0.995$  and all initial calibration verification recoveries met QAPP requirements. All ammonia continuing calibration verification recoveries were within 90-110%. Analytical balance calibration logs were provided by the laboratory and found to be correctly calibrated and verified.

#### **VI.3. QUALITY CONTROL SAMPLES**

##### **VI.3.1. METHOD BLANKS**

The method blanks and calibration blanks had no detects.

##### **VI.3.2. LABORATORY CONTROL SAMPLES**

Laboratory control sample recoveries were within the QAPP control limits.

##### **VI.3.3. LABORATORY DUPLICATES**

Laboratory duplicate analysis was performed on the sample in this SDG for ammonia. Laboratory precision criteria were met.

##### **VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

MS/MSD analyses were not performed on the sample in this SDG.



#### **VI.4. SAMPLE RESULT VERIFICATION**

Calculations were verified, and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. The result reported below the RL was initially qualified as estimated (J) and coded with DNQ to comply with the NPDES permit reporting requirements. The sample did not require dilution.

#### **VI.5. FIELD QC SAMPLES**

MEC<sup>X</sup> evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC<sup>X</sup> used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

##### **VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS**

Field blank or equipment blank samples were not identified for this SDG.

##### **VI.5.2. FIELD DUPLICATES**

Field duplicate samples were not identified in this SDG.

# Validated Sample Result Forms: 4402582191

*Analysis Method E1613B*

**Sample Name** OUTFALL001\_20191227\_COMP      **Matrix Type:** WM      **Result Type:** TRG

**Sample Date:** 12/27/2019 7:25:00 AM      **Validation Level:** 8

**Lab Sample Name:** 440-258219-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.000070	0.00010	0.00000057	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.00078	0.00010	0.00000089	ug/L	MB		
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.000036	0.000052	0.00000076	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.00010	0.000052	0.0000012	ug/L	MB		
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.0000029	0.000052	0.00000092	ug/L	J,DXq	UJ	*III
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.0000029	0.000052	0.00000058	ug/L	J,DX	J	DNQ
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.0000034	0.000052	0.00000044	ug/L	J,DXMB	U	B
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.0000024	0.000052	0.00000060	ug/L	J,DX	J	DNQ
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.0000045	0.000052	0.00000047	ug/L	J,DXMB	U	B
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.0000022	0.000052	0.00000041	ug/L	J,DXMB	U	B
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.0000035	0.000052	0.00000041	ug/L	J,DXMB	U	B
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.0000015	0.000052	0.00000044	ug/L	J,DX	J	DNQ
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	0.0000017	0.000052	0.00000055	ug/L	J,DXq	UJ	*III
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.0000026	0.000052	0.00000044	ug/L	J,DXMB	U	B
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	0.0000014	0.000052	0.00000044	ug/L	J,DX	J	DNQ
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.0000077	0.00010	0.00000022	ug/L	J,DXMB	R	D
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.0000012	0.00010	0.00000053	ug/L	J,DX	J	DNQ
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	0.0000016	0.00010	0.00000044	ug/L	J,DXq	UJ	*III
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000068	0.000052	0.00000076	ug/L	J,DXMBq	J	B, DNQ, *III
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.00018	0.000052	0.0000012	ug/L	MB	J	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.000026	0.000052	0.00000041	ug/L	J,DXMB	J	B, DNQ
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.000024	0.000052	0.00000041	ug/L	J,DXMBq	J	B, DNQ, *III

*Analysis Method*    *E1613B*

Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.0000063	0.000052	0.00000044	ug/L	J,DXq	J	DNQ, *III
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.0000017	0.000052	0.00000055	ug/L	J,DXq	UJ	*III
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.00000077	0.000010	0.00000022	ug/L	J,DXMB	J	B, DNQ
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	0.0000016	0.000010	0.00000044	ug/L	J,DXq	UJ	*III

*Analysis Method*    *E200.7*

**Sample Name**    OUTFALL001\_20191227\_COMP    **Matrix Type:**    WM    **Result Type:**    TRG

**Sample Date:**    12/27/2019 7:25:00 AM    **Validation Level:**    8

**Lab Sample Name:**    440-258219-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Iron	T	7439-89-6	14000	100	50	ug/L			

**Sample Name**    OUTFALL001\_20191227\_COMP\_F    **Matrix Type:**    WM    **Result Type:**    TRG

**Sample Date:**    12/27/2019 7:25:00 AM    **Validation Level:**    8

**Lab Sample Name:**    440-258219-3

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Iron	D	7439-89-6	0.29	0.10	0.050	mg/L			

*Analysis Method*    *E200.8*

**Sample Name**    OUTFALL001\_20191227\_COMP    **Matrix Type:**    WM    **Result Type:**    TRG

**Sample Date:**    12/27/2019 7:25:00 AM    **Validation Level:**    8

**Lab Sample Name:**    440-258219-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	7.2	2.0	0.50	ug/L			
Lead	T	7439-92-1	6.6	1.0	0.50	ug/L			
Selenium	T	7782-49-2	1.7	2.0	0.50	ug/L	J,DX	U	B

**Sample Name**    OUTFALL001\_20191227\_COMP\_F    **Matrix Type:**    WM    **Result Type:**    TRG

**Sample Date:**    12/27/2019 7:25:00 AM    **Validation Level:**    8

**Lab Sample Name:**    440-258219-3

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	D	7440-50-8	1.9	2.0	0.50	ug/L	J,DX	J	DNQ
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	U	U	
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	U	U	



*Analysis Method E625.1*

**Sample Name** OUTFALL001\_20191227\_COMP **Matrix Type:** WM **Result Type:** TRG

**Sample Date:** 12/27/2019 7:25:00 AM **Validation Level:** 8

**Lab Sample Name:** 440-258219-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
N-Nitrosodimethylamine	N	62-75-9	ND	5.4	0.32	ug/L	J,DXMB	U	B

*Analysis Method SM2540D*

**Sample Name** OUTFALL001\_20191227\_COMP **Matrix Type:** WM **Result Type:** TRG

**Sample Date:** 12/27/2019 7:25:00 AM **Validation Level:** 8

**Lab Sample Name:** 440-258219-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	190	40	20	mg/L			

*Analysis Method SM4500-NH3G*

**Sample Name** OUTFALL001\_20191227\_COMP **Matrix Type:** WM **Result Type:** TRG

**Sample Date:** 12/27/2019 7:25:00 AM **Validation Level:** 8

**Lab Sample Name:** 440-258219-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	0.181	0.200	0.100	mg/L	J,DX	J	DNQ

## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-258161-1

**Login Number: 258161**

**List Number: 1**

**Creator: Soderblom, Tim**

**List Source: Eurofins Irvine**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	False	Headspace larger than 1/4".
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## ANALYTICAL REPORT

Eurofins Calscience Irvine  
17461 Derian Ave  
Suite 100  
Irvine, CA 92614-5817  
Tel: (949)261-1022

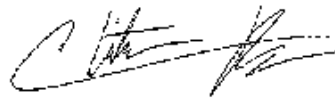
Laboratory Job ID: 440-258219-1

Client Project/Site: Quarterly Outfall 001 Comp  
Revision: 1

**For:**

Haley & Aldrich, Inc.  
400 E Van Buren St.  
Suite 545  
Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:  
1/21/2020 11:23:20 AM

Christian Bondoc, Project Manager I  
(949)260-3218  
[christian.bondoc@testamericainc.com](mailto:christian.bondoc@testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



---

Christian Bondoc  
Project Manager I  
1/21/2020 11:23:20 AM



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# Sample Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-258219-1	Outfall001_20191227_Comp	Water	12/27/19 07:25	12/27/19 11:20	
440-258219-3	Outfall001_20191227_Comp_F	Water	12/27/19 07:25	12/27/19 11:20	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## Job ID: 440-258219-1

### Laboratory: Eurofins Calscience Irvine

#### Narrative

#### Job Narrative 440-258219-1

#### Comments

Revised to add Zn.

#### Receipt

The samples were received on 12/27/2019 11:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.6° C, 1.7° C and 1.8° C.

#### GC/MS Semi VOA

Method 625.1: N-Nitrosodimethylamine was detected above the reporting limit (RL) in the method blank associated with preparation batch 440-589031 and analytical batch 440-589221. The affected samples have a concentration for N-Nitrosodimethylamine <RL and >MDL. Samples are reported possible high bias for N-Nitrosodimethylamine. Outfall001\_20191227\_Comp (440-258219-1) and (MB 440-589031/1-A).

Method 625.1: Surrogate (Terphenyl-d14) recovery for the following sample was outside below control limits: Outfall001\_20191227\_Comp (440-258219-1). Re-extraction and re-analysis was performed with concurring results. The second analysis has been reported with possible low bias.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### HPLC/IC

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### GC Semi VOA

Method 608.3: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with batch preparation batch 440-588273 and analytical batch 440-588436. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Metals

Method FILTRATION: The following samples requested dissolved metals and were not filtered in the field: Outfall001\_20191227\_Comp\_F (440-258219-3). These samples were filtered and preserved upon receipt to the laboratory.

12/28/19

150mL of sample filtered  
2.5mL of HNO3  
LOt: 0000234822

Method 200.7 Rev 4.4: The matrix spike / matrix spike duplicate (MS/MSD) recoveries of Iron for preparation batch 440-588241 and analytical batch 440-588599 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Organic Prep

# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

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## Job ID: 440-258219-1 (Continued)

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### Laboratory: Eurofins Calscience Irvine (Continued)

Methods 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-588273. Method 8081-8082

Methods 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 8270C preparation batch 440-588303. LCS was performed in duplicate to provide precision of data.

Method 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 8270C preparation batch 440-589031. LCS was performed in duplicate to provide precision of data.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### Dioxin Prep

Method 1613B: Elevated reporting limits are provided for the following sample due to insufficient sample provided for 1613B\_Sox\_Sep\_P preparation/analysis: Sample Outfall001\_20191227\_Comp (440-258219-1) was received in a narrow-mouth amber glass bottle.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.





# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

**Client Sample ID: Outfall001\_20191227\_Comp**

**Lab Sample ID: 440-258219-1**

Date Collected: 12/27/19 07:25

Matrix: Water

Date Received: 12/27/19 11:20

## Method: 625.1 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.5	0.11	ug/L		01/03/20 10:02	01/06/20 11:33	1
Bis(2-ethylhexyl) phthalate	ND		5.4	2.2	ug/L		01/03/20 10:02	01/06/20 11:33	1
<b>N-Nitrosodimethylamine</b>	<b>1.2</b>	<b>J,DX MB</b>	5.4	0.32	ug/L		01/03/20 10:02	01/06/20 11:33	1
Pentachlorophenol	ND		5.4	1.1	ug/L		01/03/20 10:02	01/06/20 11:33	1
2,4-Dinitrotoluene	ND		5.4	2.2	ug/L		01/03/20 10:02	01/06/20 11:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	83		60 - 140	01/03/20 10:02	01/06/20 11:33	1
2-Fluorobiphenyl	78		60 - 140	01/03/20 10:02	01/06/20 11:33	1
2-Fluorophenol	78		60 - 140	01/03/20 10:02	01/06/20 11:33	1
Nitrobenzene-d5	83		15 - 314	01/03/20 10:02	01/06/20 11:33	1
Terphenyl-d14	53	LG	60 - 140	01/03/20 10:02	01/06/20 11:33	1
Phenol-d5	71		8 - 424	01/03/20 10:02	01/06/20 11:33	1

## Method: 608.3 - Organochlorine Pesticides in Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.0051	0.0026	ug/L		12/28/19 07:02	12/30/19 13:46	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>	<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>			
Tetrachloro-m-xylene	60		10 - 104	12/28/19 07:02	12/30/19 13:46	1			
DCB Decachlorobiphenyl (Surr)	75		18 - 134	12/28/19 07:02	12/30/19 13:46	1			

## Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Chloride</b>	<b>4.1</b>		0.50	0.25	mg/L			12/27/19 15:24	1
<b>Nitrate as N</b>	<b>1.6</b>		0.11	0.055	mg/L			12/27/19 15:24	1
Nitrite as N	ND		0.15	0.025	mg/L			12/27/19 15:24	1
<b>Sulfate</b>	<b>6.8</b>		0.50	0.25	mg/L			12/27/19 15:24	1

## Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			12/30/19 15:57	1

## Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Nitrate Nitrite as N</b>	<b>1.6</b>		0.15	0.055	mg/L			01/09/20 13:02	1

## Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>2,3,7,8-TCDD</b>	<b>0.0000016</b>	<b>J,DX q</b>	0.000010	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:00	1
<b>1,2,3,7,8-PeCDD</b>	<b>0.0000017</b>	<b>J,DX q</b>	0.000052	0.0000005	ug/L		01/08/20 11:27	01/13/20 21:00	1
<b>1,2,3,7,8-PeCDF</b>	<b>0.0000015</b>	<b>J,DX</b>	0.000052	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:00	1
<b>2,3,4,7,8-PeCDF</b>	<b>0.0000014</b>	<b>J,DX</b>	0.000052	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:00	1
<b>1,2,3,4,7,8-HxCDD</b>	<b>0.0000034</b>	<b>J,DX MB</b>	0.000052	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:00	1
<b>1,2,3,6,7,8-HxCDD</b>	<b>0.0000045</b>	<b>J,DX MB</b>	0.000052	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:00	1
<b>1,2,3,7,8,9-HxCDD</b>	<b>0.0000035</b>	<b>J,DX MB</b>	0.000052	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:00	1

Eurofins Calscience Irvine

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

**Client Sample ID: Outfall001\_20191227\_Comp**

**Lab Sample ID: 440-258219-1**

Date Collected: 12/27/19 07:25

Matrix: Water

Date Received: 12/27/19 11:20

**Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8-HxCDF	0.000029	J,DX	0.000052	0.0000005	ug/L		01/08/20 11:27	01/13/20 21:00	1
1,2,3,6,7,8-HxCDF	0.000024	J,DX	0.000052	0.0000006	ug/L		01/08/20 11:27	01/13/20 21:00	1
1,2,3,7,8,9-HxCDF	0.000022	J,DX MB	0.000052	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:00	1
2,3,4,6,7,8-HxCDF	0.000026	J,DX MB	0.000052	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:00	1
1,2,3,4,6,7,8-HpCDD	0.00010	MB	0.000052	0.0000012	ug/L		01/08/20 11:27	01/13/20 21:00	1
1,2,3,4,6,7,8-HpCDF	0.000036	J,DX MB	0.000052	0.0000007	ug/L		01/08/20 11:27	01/13/20 21:00	1
1,2,3,4,7,8,9-HpCDF	0.000029	J,DX q	0.000052	0.0000009	ug/L		01/08/20 11:27	01/13/20 21:00	1
OCDD	0.00078	MB	0.00010	0.0000008	ug/L		01/08/20 11:27	01/13/20 21:00	1
OCDF	0.000070	J,DX MB	0.00010	0.0000005	ug/L		01/08/20 11:27	01/13/20 21:00	1
Total TCDD	0.0000016	J,DX q	0.000010	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:00	1
Total TCDF	0.0000077	J,DX MB	0.000010	0.0000002	ug/L		01/08/20 11:27	01/13/20 21:00	1
Total PeCDD	0.0000017	J,DX q	0.000052	0.0000005	ug/L		01/08/20 11:27	01/13/20 21:00	1
Total PeCDF	0.0000063	J,DX q	0.000052	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:00	1
Total HxCDD	0.000024	J,DX MB q	0.000052	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:00	1
Total HxCDF	0.000026	J,DX MB	0.000052	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:00	1
Total HpCDD	0.00018	MB	0.000052	0.0000012	ug/L		01/08/20 11:27	01/13/20 21:00	1
Total HpCDF	0.000068	J,DX MB q	0.000052	0.0000007	ug/L		01/08/20 11:27	01/13/20 21:00	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	60		25 - 164	01/08/20 11:27	01/13/20 21:00	1
13C-2,3,7,8-TCDF	61		24 - 169	01/08/20 11:27	01/13/20 21:00	1
13C-1,2,3,7,8-PeCDD	61		25 - 181	01/08/20 11:27	01/13/20 21:00	1
13C-1,2,3,7,8-PeCDF	62		24 - 185	01/08/20 11:27	01/13/20 21:00	1
13C-2,3,4,7,8-PeCDF	67		21 - 178	01/08/20 11:27	01/13/20 21:00	1
13C-1,2,3,4,7,8-HxCDD	66		32 - 141	01/08/20 11:27	01/13/20 21:00	1
13C-1,2,3,6,7,8-HxCDD	57		28 - 130	01/08/20 11:27	01/13/20 21:00	1
13C-1,2,3,4,7,8-HxCDF	63		26 - 152	01/08/20 11:27	01/13/20 21:00	1
13C-1,2,3,6,7,8-HxCDF	54		26 - 123	01/08/20 11:27	01/13/20 21:00	1
13C-1,2,3,7,8,9-HxCDF	59		29 - 147	01/08/20 11:27	01/13/20 21:00	1
13C-2,3,4,6,7,8-HxCDF	58		28 - 136	01/08/20 11:27	01/13/20 21:00	1
13C-1,2,3,4,6,7,8-HpCDD	57		23 - 140	01/08/20 11:27	01/13/20 21:00	1
13C-1,2,3,4,6,7,8-HpCDF	57		28 - 143	01/08/20 11:27	01/13/20 21:00	1
13C-1,2,3,4,7,8,9-HpCDF	63		26 - 138	01/08/20 11:27	01/13/20 21:00	1
13C-OCDD	54		17 - 157	01/08/20 11:27	01/13/20 21:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	96		35 - 197	01/08/20 11:27	01/13/20 21:00	1

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

**Client Sample ID: Outfall001\_20191227\_Comp**

**Lab Sample ID: 440-258219-1**

Date Collected: 12/27/19 07:25

Matrix: Water

Date Received: 12/27/19 11:20

**Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0000012	J,DX	0.000010	0.0000005	ug/L		01/08/20 11:27	01/16/20 16:31	1
3									
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	66		24 - 169				01/08/20 11:27	01/16/20 16:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	98		35 - 197				01/08/20 11:27	01/16/20 16:31	1

**Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	14000		100	50	ug/L		12/30/19 08:35	12/30/19 18:00	1
Zinc	47		20	12	ug/L		12/30/19 08:35	12/30/19 18:00	1

**Method: 200.8 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		12/28/19 09:46	12/30/19 18:34	1
Copper	7.2		2.0	0.50	ug/L		12/28/19 09:46	12/30/19 18:34	1
Lead	6.6		1.0	0.50	ug/L		12/28/19 09:46	12/30/19 18:34	1
Selenium	1.7	J,DX	2.0	0.50	ug/L		12/28/19 09:46	12/30/19 18:34	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		12/31/19 12:32	01/02/20 13:28	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	200		2.0	0.80	NTU			12/27/19 18:11	20
Total Dissolved Solids	86		10	5.0	mg/L			12/30/19 08:51	1
Total Suspended Solids	190		40	20	mg/L			12/27/19 16:12	1
Cyanide, Total	ND		5.0	2.5	ug/L		01/02/20 10:20	01/02/20 12:53	1
Ammonia (as N)	0.181	J,DX	0.200	0.100	mg/L			12/30/19 15:38	1
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			12/27/19 15:06	1
Biochemical Oxygen Demand	2.9		2.0	0.50	mg/L			12/28/19 08:14	1

**Client Sample ID: Outfall001\_20191227\_Comp\_F**

**Lab Sample ID: 440-258219-3**

Date Collected: 12/27/19 07:25

Matrix: Water

Date Received: 12/27/19 11:20

**Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.29		0.10	0.050	mg/L		12/28/19 11:55	01/03/20 16:19	1
Zinc	ND		0.020	0.012	mg/L		12/28/19 11:55	01/03/20 16:19	1

**Method: 200.8 - Metals (ICP/MS) - Dissolved**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		12/30/19 11:16	12/30/19 20:43	1
Copper	1.9	J,DX	2.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:43	1
Lead	ND		1.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:43	1
Selenium	ND		2.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:43	1

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

**Client Sample ID: Outfall001\_20191227\_Comp\_F**

**Lab Sample ID: 440-258219-3**

**Date Collected: 12/27/19 07:25**

**Matrix: Water**

**Date Received: 12/27/19 11:20**

**Method: 245.1 - Mercury (CVAA) - Dissolved**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/15/20 11:35	01/16/20 11:11	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

# Method Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

Method	Method Description	Protocol	Laboratory
625.1	Semivolatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
608.3	Organochlorine Pesticides in Water	40CFR136A	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.7 Rev 4.4	Metals (ICP)	EPA	TAL IRV
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV
SM 5540C	Methylene Blue Active Substances (MBAS)	SM	TAL IRV
SM5210B	BOD, 5 Day	SM	TAL IRV
1613B	Separatory Funnel (L/L) Extraction with Soxhlet Extraction of Dioxin and Furans	40CFR136A	TAL SAC
200.2	Preparation, Total Recoverable Metals	EPA	TAL IRV
245.1	Preparation, Mercury	EPA	TAL IRV
608	Liquid-Liquid Extraction (Separatory Funnel)	40CFR136A	TAL IRV
625	Liquid-Liquid Extraction	40CFR136A	TAL IRV
Distill/CN	Distillation, Cyanide	None	TAL IRV
FILTRATION	Sample Filtration	None	TAL IRV

#### Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

#### Laboratory References:

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

**Client Sample ID: Outfall001\_20191227\_Comp**

**Lab Sample ID: 440-258219-1**

**Date Collected: 12/27/19 07:25**

**Matrix: Water**

**Date Received: 12/27/19 11:20**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	625			925 mL	2.0 mL	589031	01/03/20 10:02	FTD	TAL IRV
Total/NA	Analysis	625.1		1			589221	01/06/20 11:33	HN	TAL IRV
Total/NA	Prep	608			975 mL	2 mL	588273	12/28/19 07:02	L1H	TAL IRV
Total/NA	Analysis	608.3		1			588436	12/30/19 13:46	D1D	TAL IRV
Total/NA	Analysis	300.0		1			588133	12/27/19 15:24	NTN	TAL IRV
Total/NA	Analysis	300.0		1			588134	12/27/19 15:24	NTN	TAL IRV
Total/NA	Analysis	314.0		1			588445	12/30/19 15:57	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			589801	01/09/20 13:02	TLN	TAL IRV
Total/NA	Prep	1613B			953.6 mL	20 uL	349535	01/08/20 11:27	NIR	TAL SAC
Total/NA	Analysis	1613B		1			350522	01/13/20 21:00	ALM	TAL SAC
Total/NA	Prep	1613B	RA		953.6 mL	20 uL	349535	01/08/20 11:27	NIR	TAL SAC
Total/NA	Analysis	1613B	RA	1			351318	01/16/20 16:31	ALM	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	588241	12/30/19 08:35	EP	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1			588599	12/30/19 18:00	TQN	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	588198	12/28/19 09:46	M1G	TAL IRV
Total Recoverable	Analysis	200.8		1			588597	12/30/19 18:34	B1H	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	588737	12/31/19 12:32	MEM	TAL IRV
Total/NA	Analysis	245.1		1			588954	01/02/20 13:28	MEM	TAL IRV
Total/NA	Analysis	180.1		20			588245	12/27/19 18:11	HZ	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	588440	12/30/19 08:51	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	25 mL	1000 mL	588223	12/27/19 16:12	KL	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	588874	01/02/20 10:20	CKL	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			588897	01/02/20 12:53	CKL	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8.0 mL	588582	12/30/19 15:38	KMY	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	588210	12/27/19 15:06	KMY	TAL IRV
Total/NA	Analysis	SM5210B		1	300 mL	300 mL	588283	12/28/19 08:14	MMP	TAL IRV

**Client Sample ID: Outfall001\_20191227\_Comp\_F**

**Lab Sample ID: 440-258219-3**

**Date Collected: 12/27/19 07:25**

**Matrix: Water**

**Date Received: 12/27/19 11:20**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	588288	12/28/19 09:35	EP	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	588307	12/28/19 11:55	EP	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1			589092	01/03/20 16:19	P1R	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	588288	12/28/19 09:35	EP	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	588503	12/30/19 11:16	EP	TAL IRV
Dissolved	Analysis	200.8		1			588634	12/30/19 20:43	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			100 mL	100 mL	589977	01/10/20 11:30	EP	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	590663	01/15/20 11:35	MEM	TAL IRV
Dissolved	Analysis	245.1		1			590948	01/16/20 11:11	MEM	TAL IRV

# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## Laboratory References:

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## Method: 625.1 - Semivolatile Organic Compounds (GC/MS)

**Lab Sample ID: MB 440-589031/1-A**  
**Matrix: Water**  
**Analysis Batch: 589221**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 589031**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.0	0.10	ug/L		01/03/20 10:02	01/06/20 10:10	1
Bis(2-ethylhexyl) phthalate	ND		5.0	2.0	ug/L		01/03/20 10:02	01/06/20 10:10	1
N-Nitrosodimethylamine	7.53		5.0	0.30	ug/L		01/03/20 10:02	01/06/20 10:10	1
Pentachlorophenol	ND		5.0	1.0	ug/L		01/03/20 10:02	01/06/20 10:10	1
2,4-Dinitrotoluene	ND		5.0	2.0	ug/L		01/03/20 10:02	01/06/20 10:10	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	89		60 - 140	01/03/20 10:02	01/06/20 10:10	1
2-Fluorobiphenyl	85		60 - 140	01/03/20 10:02	01/06/20 10:10	1
2-Fluorophenol	84		60 - 140	01/03/20 10:02	01/06/20 10:10	1
Nitrobenzene-d5	85		15 - 314	01/03/20 10:02	01/06/20 10:10	1
Terphenyl-d14	100		60 - 140	01/03/20 10:02	01/06/20 10:10	1
Phenol-d5	82		8 - 424	01/03/20 10:02	01/06/20 10:10	1

**Lab Sample ID: LCS 440-589031/2-A**  
**Matrix: Water**  
**Analysis Batch: 589221**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 589031**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,4,6-Trichlorophenol	15.0	14.8		ug/L		98	52 - 129
Bis(2-ethylhexyl) phthalate	15.0	17.2		ug/L		115	29 - 137
N-Nitrosodimethylamine	15.0	20.9		ug/L		139	60 - 140
Pentachlorophenol	30.0	29.3		ug/L		98	38 - 152

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4,6-Tribromophenol	95		60 - 140
2-Fluorobiphenyl	84		60 - 140
2-Fluorophenol	85		60 - 140
Nitrobenzene-d5	84		15 - 314
Terphenyl-d14	92		60 - 140
Phenol-d5	83		8 - 424

**Lab Sample ID: LCSD 440-589031/3-A**  
**Matrix: Water**  
**Analysis Batch: 589221**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 589031**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2,4,6-Trichlorophenol	15.0	15.1		ug/L		100	52 - 129	2	35
Bis(2-ethylhexyl) phthalate	15.0	17.7		ug/L		118	29 - 137	3	35
N-Nitrosodimethylamine	15.0	20.3		ug/L		136	60 - 140	3	35
Pentachlorophenol	30.0	27.2		ug/L		91	38 - 152	8	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
2,4,6-Tribromophenol	95		60 - 140
2-Fluorobiphenyl	85		60 - 140
2-Fluorophenol	84		60 - 140
Nitrobenzene-d5	87		15 - 314

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## Method: 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: LCSD 440-589031/3-A**  
**Matrix: Water**  
**Analysis Batch: 589221**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 589031**

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
Terphenyl-d14	90		60 - 140
Phenol-d5	87		8 - 424

## Method: 608.3 - Organochlorine Pesticides in Water

**Lab Sample ID: MB 440-588273/1-A**  
**Matrix: Water**  
**Analysis Batch: 588436**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 588273**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.0050	0.0025	ug/L		12/28/19 07:02	12/30/19 11:47	1

Surrogate	MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Tetrachloro-m-xylene	48		10 - 104	12/28/19 07:02	12/30/19 11:47	1
DCB Decachlorobiphenyl (Surr)	63		18 - 134	12/28/19 07:02	12/30/19 11:47	1

**Lab Sample ID: LCS 440-588273/2-A**  
**Matrix: Water**  
**Analysis Batch: 588436**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 588273**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
alpha-BHC	0.400	0.327		ug/L		82	37 - 140

Surrogate	LCS		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	74		10 - 104
DCB Decachlorobiphenyl (Surr)	81		18 - 134

**Lab Sample ID: LCSD 440-588273/3-A**  
**Matrix: Water**  
**Analysis Batch: 588436**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 588273**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
alpha-BHC	0.400	0.332		ug/L		83	37 - 140	1	36

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	72		10 - 104
DCB Decachlorobiphenyl (Surr)	80		18 - 134

## Method: 300.0 - Anions, Ion Chromatography

**Lab Sample ID: MB 440-588133/6**  
**Matrix: Water**  
**Analysis Batch: 588133**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			12/27/19 12:01	1
Nitrite as N	ND		0.15	0.025	mg/L			12/27/19 12:01	1

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## Method: 300.0 - Anions, Ion Chromatography (Continued)

**Lab Sample ID: LCS 440-588133/5**  
**Matrix: Water**  
**Analysis Batch: 588133**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.13	1.10		mg/L		97	90 - 110
Nitrite as N	1.52	1.51		mg/L		99	90 - 110

**Lab Sample ID: 440-258197-G-1 MS**  
**Matrix: Water**  
**Analysis Batch: 588133**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.60		1.13	1.70		mg/L		98	80 - 120
Nitrite as N	0.094	J,DX	1.52	1.53		mg/L		94	80 - 120

**Lab Sample ID: 440-258197-G-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 588133**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Nitrate as N	0.60		1.13	1.74		mg/L		101	80 - 120	2	20
Nitrite as N	0.094	J,DX	1.52	1.55		mg/L		96	80 - 120	1	20

**Lab Sample ID: MB 440-588134/6**  
**Matrix: Water**  
**Analysis Batch: 588134**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			12/27/19 12:01	1
Sulfate	ND		0.50	0.25	mg/L			12/27/19 12:01	1

**Lab Sample ID: LCS 440-588134/5**  
**Matrix: Water**  
**Analysis Batch: 588134**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.85		mg/L		97	90 - 110
Sulfate	5.00	5.04		mg/L		101	90 - 110

**Lab Sample ID: 440-258197-G-1 MS**  
**Matrix: Water**  
**Analysis Batch: 588134**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.3		5.00	10.4		mg/L		102	80 - 120
Sulfate	700	EY	5.00	702	EY BB	mg/L		44	80 - 120

**Lab Sample ID: 440-258197-G-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 588134**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Chloride	5.3		5.00	10.5		mg/L		104	80 - 120	1	20
Sulfate	700	EY	5.00	702	EY BB	mg/L		51	80 - 120	0	20

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## Method: 314.0 - Perchlorate (IC)

**Lab Sample ID: MB 440-588445/6**  
**Matrix: Water**  
**Analysis Batch: 588445**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			12/30/19 10:57	1

**Lab Sample ID: LCS 440-588445/5**  
**Matrix: Water**  
**Analysis Batch: 588445**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	25.2		ug/L		101	85 - 115

**Lab Sample ID: MRL 440-588445/4**  
**Matrix: Water**  
**Analysis Batch: 588445**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	1.00	1.04	J,DX	ug/L		104	75 - 125

**Lab Sample ID: MRL 440-588445/8**  
**Matrix: Water**  
**Analysis Batch: 588445**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	3.96	J,DX	ug/L		99	75 - 125

**Lab Sample ID: 440-258138-C-1 MS**  
**Matrix: Water**  
**Analysis Batch: 588445**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	3.3	J,DX	25.0	28.2		ug/L		100	80 - 120

**Lab Sample ID: 440-258138-C-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 588445**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	3.3	J,DX	25.0	27.6		ug/L		97	80 - 120	2	15

## Method: 1613B - Dioxins and Furans (HRGC/HRMS)

**Lab Sample ID: MB 320-349535/1-A**  
**Matrix: Water**  
**Analysis Batch: 350522**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 349535**

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000007	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000007	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000005	ug/L		01/08/20 11:27	01/13/20 14:52	1

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

**Lab Sample ID: MB 320-349535/1-A**  
**Matrix: Water**  
**Analysis Batch: 350522**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 349535**

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,4,7,8-PeCDF	ND		0.000050	0.0000005	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,4,7,8-HxCDD	0.00000175	J,DX	0.000050	0.0000004	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,6,7,8-HxCDD	0.000000762	J,DX	0.000050	0.0000005	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,7,8,9-HxCDD	0.00000109	J,DX	0.000050	0.0000004	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000007	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,6,7,8-HxCDF	ND		0.000050	0.0000008	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,7,8,9-HxCDF	0.00000119	J,DX	0.000050	0.0000005	ug/L		01/08/20 11:27	01/13/20 14:52	1
2,3,4,6,7,8-HxCDF	0.000000647	J,DX	0.000050	0.0000005	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,4,6,7,8-HpCDD	0.00000175	J,DX	0.000050	0.0000004	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,4,6,7,8-HpCDF	0.00000215	J,DX	0.000050	0.0000004	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,4,7,8,9-HpCDF	ND		0.000050	0.0000005	ug/L		01/08/20 11:27	01/13/20 14:52	1
OCDD	0.0000115	J,DX	0.00010	0.0000007	ug/L		01/08/20 11:27	01/13/20 14:52	1
OCDF	0.00000502	J,DX	0.00010	0.0000007	ug/L		01/08/20 11:27	01/13/20 14:52	1
Total TCDD	ND		0.000010	0.0000007	ug/L		01/08/20 11:27	01/13/20 14:52	1
Total TCDF	0.000000535	J,DX	0.000010	0.0000004	ug/L		01/08/20 11:27	01/13/20 14:52	1
Total PeCDD	ND		0.000050	0.0000007	ug/L		01/08/20 11:27	01/13/20 14:52	1
Total PeCDF	ND		0.000050	0.0000005	ug/L		01/08/20 11:27	01/13/20 14:52	1
Total HxCDD	0.00000360	J,DX	0.000050	0.0000004	ug/L		01/08/20 11:27	01/13/20 14:52	1
Total HxCDF	0.00000184	J,DX	0.000050	0.0000005	ug/L		01/08/20 11:27	01/13/20 14:52	1
Total HpCDD	0.00000357	J,DX	0.000050	0.0000004	ug/L		01/08/20 11:27	01/13/20 14:52	1
Total HpCDF	0.00000309	J,DX	0.000050	0.0000004	ug/L		01/08/20 11:27	01/13/20 14:52	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	63		25 - 164	01/08/20 11:27	01/13/20 14:52	1
13C-2,3,7,8-TCDF	65		24 - 169	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,7,8-PeCDD	69		25 - 181	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,7,8-PeCDF	68		24 - 185	01/08/20 11:27	01/13/20 14:52	1
13C-2,3,4,7,8-PeCDF	74		21 - 178	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,4,7,8-HxCDD	75		32 - 141	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,6,7,8-HxCDD	64		28 - 130	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,4,7,8-HxCDF	73		26 - 152	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,6,7,8-HxCDF	62		26 - 123	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,7,8,9-HxCDF	67		29 - 147	01/08/20 11:27	01/13/20 14:52	1

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

**Lab Sample ID: MB 320-349535/1-A**  
**Matrix: Water**  
**Analysis Batch: 350522**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 349535**

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C-2,3,4,6,7,8-HxCDF	66		28 - 136	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,4,6,7,8-HpCDD	64		23 - 140	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,4,6,7,8-HpCDF	64		28 - 143	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,4,7,8,9-HpCDF	71		26 - 138	01/08/20 11:27	01/13/20 14:52	1
13C-OCDD	63		17 - 157	01/08/20 11:27	01/13/20 14:52	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
37Cl4-2,3,7,8-TCDD	96		35 - 197	01/08/20 11:27	01/13/20 14:52	1

**Lab Sample ID: LCS 320-349535/2-A**  
**Matrix: Water**  
**Analysis Batch: 350522**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 349535**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.	Limits
2,3,7,8-TCDF	0.000200	0.000184	MB	ug/L		92	75 - 158	
1,2,3,7,8-PeCDD	0.00100	0.000970		ug/L		97	70 - 142	
1,2,3,7,8-PeCDF	0.00100	0.000964		ug/L		96	80 - 134	
2,3,4,7,8-PeCDF	0.00100	0.000876		ug/L		88	68 - 160	
1,2,3,4,7,8-HxCDD	0.00100	0.000883	MB	ug/L		88	70 - 164	
1,2,3,6,7,8-HxCDD	0.00100	0.000966	MB	ug/L		97	76 - 134	
1,2,3,7,8,9-HxCDD	0.00100	0.000917	MB	ug/L		92	64 - 162	
1,2,3,4,7,8-HxCDF	0.00100	0.000860		ug/L		86	72 - 134	
1,2,3,6,7,8-HxCDF	0.00100	0.000900		ug/L		90	84 - 130	
1,2,3,7,8,9-HxCDF	0.00100	0.000917	MB	ug/L		92	78 - 130	
2,3,4,6,7,8-HxCDF	0.00100	0.000914	MB	ug/L		91	70 - 156	
1,2,3,4,6,7,8-HpCDD	0.00100	0.000990	MB	ug/L		99	70 - 140	
1,2,3,4,6,7,8-HpCDF	0.00100	0.000972	MB	ug/L		97	82 - 122	
1,2,3,4,7,8,9-HpCDF	0.00100	0.000900		ug/L		90	78 - 138	
OCDD	0.00200	0.00194	MB	ug/L		97	78 - 144	
OCDF	0.00200	0.00199	MB	ug/L		99	63 - 170	

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	64		20 - 175
13C-2,3,7,8-TCDF	65		22 - 152
13C-1,2,3,7,8-PeCDD	69		21 - 227
13C-1,2,3,7,8-PeCDF	66		21 - 192
13C-2,3,4,7,8-PeCDF	73		13 - 328
13C-1,2,3,4,7,8-HxCDD	74		21 - 193
13C-1,2,3,6,7,8-HxCDD	60		25 - 163
13C-1,2,3,4,7,8-HxCDF	69		19 - 202
13C-1,2,3,6,7,8-HxCDF	61		21 - 159
13C-1,2,3,7,8,9-HxCDF	65		17 - 205
13C-2,3,4,6,7,8-HxCDF	64		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	62		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	63		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	71		20 - 186
13C-OCDD	62		13 - 199

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-349535/2-A  
Matrix: Water  
Analysis Batch: 350522

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 349535

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	97		31 - 191

## Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Lab Sample ID: MB 320-349535/1-A  
Matrix: Water  
Analysis Batch: 351071

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 349535

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF - RA	ND		0.000010	0.0000005	ug/L		01/08/20 11:27	01/15/20 15:46	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF - RA	70		24 - 169	01/08/20 11:27	01/15/20 15:46	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD - RA	96		35 - 197	01/08/20 11:27	01/15/20 15:46	1

## Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-588241/1-A  
Matrix: Water  
Analysis Batch: 588599

Client Sample ID: Method Blank  
Prep Type: Total Recoverable  
Prep Batch: 588241

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		100	50	ug/L		12/30/19 08:35	12/30/19 17:25	1
Zinc	ND		20	12	ug/L		12/30/19 08:35	12/30/19 17:25	1

Lab Sample ID: LCS 440-588241/2-A  
Matrix: Water  
Analysis Batch: 588599

Client Sample ID: Lab Control Sample  
Prep Type: Total Recoverable  
Prep Batch: 588241

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Iron	500	438		ug/L		88	85 - 115
Zinc	500	504		ug/L		101	85 - 115

Lab Sample ID: 440-257890-E-6-C MS  
Matrix: Water  
Analysis Batch: 588599

Client Sample ID: Matrix Spike  
Prep Type: Total Recoverable  
Prep Batch: 588241

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Iron	1700		500	2570	LM	ug/L		167	70 - 130
Zinc	ND		500	516		ug/L		103	70 - 130

Lab Sample ID: 440-257890-E-6-D MSD  
Matrix: Water  
Analysis Batch: 588599

Client Sample ID: Matrix Spike Duplicate  
Prep Type: Total Recoverable  
Prep Batch: 588241

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Iron	1700		500	2540	LM	ug/L		162	70 - 130	1	20

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

**Lab Sample ID: 440-257890-E-6-D MSD**  
**Matrix: Water**  
**Analysis Batch: 588599**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total Recoverable**  
**Prep Batch: 588241**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Zinc	ND		500	501		ug/L		100	70 - 130	3	20

**Lab Sample ID: MB 440-588288/1-C**  
**Matrix: Water**  
**Analysis Batch: 589092**

**Client Sample ID: Method Blank**  
**Prep Type: Dissolved**  
**Prep Batch: 588307**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.10	0.050	mg/L		12/28/19 11:55	01/03/20 16:14	1
Zinc	ND		0.020	0.012	mg/L		12/28/19 11:55	01/03/20 16:14	1

**Lab Sample ID: LCS 440-588288/2-C**  
**Matrix: Water**  
**Analysis Batch: 589092**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Dissolved**  
**Prep Batch: 588307**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	0.500	0.447		mg/L		89	85 - 115
Zinc	0.500	0.511		mg/L		102	85 - 115

**Lab Sample ID: 440-258219-3 MS**  
**Matrix: Water**  
**Analysis Batch: 589092**

**Client Sample ID: Outfall001\_20191227\_Comp\_F**  
**Prep Type: Dissolved**  
**Prep Batch: 588307**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	0.29		0.500	0.766		mg/L		95	70 - 130
Zinc	ND		0.500	0.511		mg/L		102	70 - 130

**Lab Sample ID: 440-258219-3 MSD**  
**Matrix: Water**  
**Analysis Batch: 589092**

**Client Sample ID: Outfall001\_20191227\_Comp\_F**  
**Prep Type: Dissolved**  
**Prep Batch: 588307**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Iron	0.29		0.500	0.761		mg/L		94	70 - 130	1	20
Zinc	ND		0.500	0.518		mg/L		104	70 - 130	1	20

## Method: 200.8 - Metals (ICP/MS)

**Lab Sample ID: MB 440-588198/1-A**  
**Matrix: Water**  
**Analysis Batch: 588597**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 588198**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		12/28/19 09:46	12/30/19 17:42	1
Copper	ND		2.0	0.50	ug/L		12/28/19 09:46	12/30/19 17:42	1
Lead	ND		1.0	0.50	ug/L		12/28/19 09:46	12/30/19 17:42	1
Selenium	ND		2.0	0.50	ug/L		12/28/19 09:46	12/30/19 17:42	1

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## Method: 200.8 - Metals (ICP/MS) (Continued)

**Lab Sample ID: LCS 440-588198/2-A**  
**Matrix: Water**  
**Analysis Batch: 588597**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 588198**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	85.7		ug/L		107	85 - 115
Copper	80.0	88.0		ug/L		110	85 - 115
Lead	80.0	83.1		ug/L		104	85 - 115
Selenium	80.0	84.9		ug/L		106	85 - 115

**Lab Sample ID: 440-258216-B-4-B MS**  
**Matrix: Water**  
**Analysis Batch: 588597**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total Recoverable**  
**Prep Batch: 588198**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cadmium	ND		80.0	79.1		ug/L		99	70 - 130
Copper	1.4	J,DX	80.0	77.5		ug/L		95	70 - 130
Lead	ND		80.0	77.3		ug/L		97	70 - 130
Selenium	0.80	J,DX	80.0	83.6		ug/L		103	70 - 130

**Lab Sample ID: 440-258216-B-4-C MSD**  
**Matrix: Water**  
**Analysis Batch: 588597**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total Recoverable**  
**Prep Batch: 588198**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cadmium	ND		80.0	79.2		ug/L		99	70 - 130	0	20
Copper	1.4	J,DX	80.0	78.8		ug/L		97	70 - 130	2	20
Lead	ND		80.0	76.9		ug/L		96	70 - 130	1	20
Selenium	0.80	J,DX	80.0	81.5		ug/L		101	70 - 130	3	20

**Lab Sample ID: MB 440-588288/1-D**  
**Matrix: Water**  
**Analysis Batch: 588634**

**Client Sample ID: Method Blank**  
**Prep Type: Dissolved**  
**Prep Batch: 588503**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		12/30/19 11:16	12/30/19 20:12	1
Copper	ND		2.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:12	1
Lead	ND		1.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:12	1
Selenium	ND		2.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:12	1

**Lab Sample ID: LCS 440-588288/2-D**  
**Matrix: Water**  
**Analysis Batch: 588634**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Dissolved**  
**Prep Batch: 588503**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	79.6		ug/L		100	85 - 115
Copper	80.0	77.1		ug/L		96	85 - 115
Lead	80.0	79.5		ug/L		99	85 - 115
Selenium	80.0	80.7		ug/L		101	85 - 115



# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## Method: 200.8 - Metals (ICP/MS) (Continued)

**Lab Sample ID: 440-258227-B-2-G MS**  
**Matrix: Water**  
**Analysis Batch: 588634**

**Client Sample ID: Matrix Spike**  
**Prep Type: Dissolved**  
**Prep Batch: 588503**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cadmium	ND		80.0	78.9		ug/L		99	70 - 130
Copper	5.0		80.0	80.9		ug/L		95	70 - 130
Lead	ND		80.0	79.3		ug/L		99	70 - 130
Selenium	ND		80.0	80.8		ug/L		101	70 - 130

**Lab Sample ID: 440-258227-B-2-H MSD**  
**Matrix: Water**  
**Analysis Batch: 588634**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Dissolved**  
**Prep Batch: 588503**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cadmium	ND		80.0	80.6		ug/L		101	70 - 130	2	20
Copper	5.0		80.0	81.4		ug/L		96	70 - 130	1	20
Lead	ND		80.0	81.1		ug/L		101	70 - 130	2	20
Selenium	ND		80.0	81.2		ug/L		102	70 - 130	0	20

## Method: 245.1 - Mercury (CVAA)

**Lab Sample ID: MB 440-588737/1-A**  
**Matrix: Water**  
**Analysis Batch: 588954**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 588737**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		12/31/19 12:32	01/02/20 13:12	1

**Lab Sample ID: LCS 440-588737/2-A**  
**Matrix: Water**  
**Analysis Batch: 588954**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 588737**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	4.00	3.55		ug/L		89	85 - 115

**Lab Sample ID: 440-258077-D-1-H MS**  
**Matrix: Water**  
**Analysis Batch: 588954**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 588737**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		4.00	3.43		ug/L		86	75 - 125

**Lab Sample ID: 440-258077-D-1-I MSD**  
**Matrix: Water**  
**Analysis Batch: 588954**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 588737**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		4.00	3.55		ug/L		89	75 - 125	3	20

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: MB 440-589977/1-C  
Matrix: Water  
Analysis Batch: 590948

Client Sample ID: Method Blank  
Prep Type: Dissolved  
Prep Batch: 590663

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/15/20 11:35	01/16/20 11:00	1

Lab Sample ID: LCS 440-589977/2-C  
Matrix: Water  
Analysis Batch: 590948

Client Sample ID: Lab Control Sample  
Prep Type: Dissolved  
Prep Batch: 590663

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	4.00	3.98		ug/L		99	85 - 115

Lab Sample ID: 440-258718-A-2-H MS  
Matrix: Water  
Analysis Batch: 590948

Client Sample ID: Matrix Spike  
Prep Type: Dissolved  
Prep Batch: 590663

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		4.00	4.11		ug/L		103	75 - 125

Lab Sample ID: 440-258718-A-2-I MSD  
Matrix: Water  
Analysis Batch: 590948

Client Sample ID: Matrix Spike Duplicate  
Prep Type: Dissolved  
Prep Batch: 590663

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		4.00	3.97		ug/L		99	75 - 125	3	20

## Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-588245/5  
Matrix: Water  
Analysis Batch: 588245

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			12/27/19 18:11	1

Lab Sample ID: 440-258219-1 DU  
Matrix: Water  
Analysis Batch: 588245

Client Sample ID: Outfall001\_20191227\_Comp  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Turbidity	200		191		NTU		3	20

## Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-588440/1  
Matrix: Water  
Analysis Batch: 588440

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			12/30/19 08:51	1

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: LCS 440-588440/2  
 Matrix: Water  
 Analysis Batch: 588440

Client Sample ID: Lab Control Sample  
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	996		mg/L		100	90 - 110

Lab Sample ID: 440-258259-K-14 DU  
 Matrix: Water  
 Analysis Batch: 588440

Client Sample ID: Duplicate  
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	47		47.0		mg/L		0	5

## Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-588223/1  
 Matrix: Water  
 Analysis Batch: 588223

Client Sample ID: Method Blank  
 Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			12/27/19 16:12	1

Lab Sample ID: LCS 440-588223/2  
 Matrix: Water  
 Analysis Batch: 588223

Client Sample ID: Lab Control Sample  
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	969		mg/L		97	85 - 115

Lab Sample ID: 440-258219-1 DU  
 Matrix: Water  
 Analysis Batch: 588223

Client Sample ID: Outfall001\_20191227\_Comp  
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	190		184		mg/L		4	10

## Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-588874/1-A  
 Matrix: Water  
 Analysis Batch: 588897

Client Sample ID: Method Blank  
 Prep Type: Total/NA  
 Prep Batch: 588874

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		01/02/20 10:20	01/02/20 12:52	1

Lab Sample ID: LCS 440-588874/2-A  
 Matrix: Water  
 Analysis Batch: 588897

Client Sample ID: Lab Control Sample  
 Prep Type: Total/NA  
 Prep Batch: 588874

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	95.1		ug/L		95	80 - 120

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## Method: SM 4500 CN E - Cyanide, Total (Low Level) (Continued)

Lab Sample ID: 440-258219-1 MS  
 Matrix: Water  
 Analysis Batch: 588897

Client Sample ID: Outfall001\_20191227\_Comp  
 Prep Type: Total/NA  
 Prep Batch: 588874  
 %Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	ND		100	96.8		ug/L		97	75 - 125

Lab Sample ID: 440-258219-1 MSD  
 Matrix: Water  
 Analysis Batch: 588897

Client Sample ID: Outfall001\_20191227\_Comp  
 Prep Type: Total/NA  
 Prep Batch: 588874  
 %Rec. RPD

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	ND		100	95.3		ug/L		95	75 - 125	2	20

## Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-588582/10  
 Matrix: Water  
 Analysis Batch: 588582

Client Sample ID: Method Blank  
 Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.200	0.100	mg/L			12/30/19 13:17	1

Lab Sample ID: LCS 440-588582/11  
 Matrix: Water  
 Analysis Batch: 588582

Client Sample ID: Lab Control Sample  
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	5.00	5.080		mg/L		102	90 - 110

Lab Sample ID: MRL 440-588582/9  
 Matrix: Water  
 Analysis Batch: 588582

Client Sample ID: Lab Control Sample  
 Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	0.200	0.1740	J,DX	mg/L		87	50 - 150

Lab Sample ID: 440-258185-K-1 MS  
 Matrix: Water  
 Analysis Batch: 588582

Client Sample ID: Matrix Spike  
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	ND		5.00	5.040		mg/L		101	90 - 110

Lab Sample ID: 440-258185-K-1 MSD  
 Matrix: Water  
 Analysis Batch: 588582

Client Sample ID: Matrix Spike Duplicate  
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Ammonia (as N)	ND		5.00	4.890		mg/L		98	90 - 110	3	15

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## Method: SM 5540C - Methylene Blue Active Substances (MBAS)

**Lab Sample ID: MB 440-588210/4**  
**Matrix: Water**  
**Analysis Batch: 588210**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			12/27/19 15:06	1

**Lab Sample ID: LCS 440-588210/5**  
**Matrix: Water**  
**Analysis Batch: 588210**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.250	0.248		mg/L		99	90 - 110

**Lab Sample ID: MRL 440-588210/3**  
**Matrix: Water**  
**Analysis Batch: 588210**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.100	0.110		mg/L		110	50 - 150

**Lab Sample ID: 440-258219-1 MS**  
**Matrix: Water**  
**Analysis Batch: 588210**

**Client Sample ID: Outfall001\_20191227\_Comp**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	ND		0.250	0.257		mg/L		103	50 - 125

**Lab Sample ID: 440-258219-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 588210**

**Client Sample ID: Outfall001\_20191227\_Comp**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Blue Active Substances	ND		0.250	0.256		mg/L		102	50 - 125	0	20

## Method: SM5210B - BOD, 5 Day

**Lab Sample ID: USB 440-588283/1**  
**Matrix: Water**  
**Analysis Batch: 588283**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	ND		2.0	0.50	mg/L			12/28/19 08:14	1

**Lab Sample ID: LCS 440-588283/5**  
**Matrix: Water**  
**Analysis Batch: 588283**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biochemical Oxygen Demand	199	218		mg/L		110	85 - 115

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## Method: SM5210B - BOD, 5 Day (Continued)

**Lab Sample ID: LCSD 440-588283/6**  
**Matrix: Water**  
**Analysis Batch: 588283**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Biochemical Oxygen Demand	199	220		mg/L		111	85 - 115	1	20

**Lab Sample ID: LCSD 440-588283/7**  
**Matrix: Water**  
**Analysis Batch: 588283**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Biochemical Oxygen Demand	199	216		mg/L		109	85 - 115	1	20

**Lab Sample ID: 440-258213-A-1 DU**  
**Matrix: Water**  
**Analysis Batch: 588283**

**Client Sample ID: Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Biochemical Oxygen Demand	2.1		2.07		mg/L		0	20

# QC Association Summary

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## GC/MS Semi VOA

### Prep Batch: 589031

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	625	
MB 440-589031/1-A	Method Blank	Total/NA	Water	625	
LCS 440-589031/2-A	Lab Control Sample	Total/NA	Water	625	
LCSD 440-589031/3-A	Lab Control Sample Dup	Total/NA	Water	625	

### Analysis Batch: 589221

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	625.1	589031
MB 440-589031/1-A	Method Blank	Total/NA	Water	625.1	589031
LCS 440-589031/2-A	Lab Control Sample	Total/NA	Water	625.1	589031
LCSD 440-589031/3-A	Lab Control Sample Dup	Total/NA	Water	625.1	589031

## GC Semi VOA

### Prep Batch: 588273

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	608	
MB 440-588273/1-A	Method Blank	Total/NA	Water	608	
LCS 440-588273/2-A	Lab Control Sample	Total/NA	Water	608	
LCSD 440-588273/3-A	Lab Control Sample Dup	Total/NA	Water	608	

### Analysis Batch: 588436

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	608.3	588273
MB 440-588273/1-A	Method Blank	Total/NA	Water	608.3	588273
LCS 440-588273/2-A	Lab Control Sample	Total/NA	Water	608.3	588273
LCSD 440-588273/3-A	Lab Control Sample Dup	Total/NA	Water	608.3	588273

## HPLC/IC

### Analysis Batch: 588133

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	300.0	
MB 440-588133/6	Method Blank	Total/NA	Water	300.0	
LCS 440-588133/5	Lab Control Sample	Total/NA	Water	300.0	
440-258197-G-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-258197-G-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

### Analysis Batch: 588134

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	300.0	
MB 440-588134/6	Method Blank	Total/NA	Water	300.0	
LCS 440-588134/5	Lab Control Sample	Total/NA	Water	300.0	
440-258197-G-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-258197-G-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

### Analysis Batch: 588445

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	314.0	
MB 440-588445/6	Method Blank	Total/NA	Water	314.0	
LCS 440-588445/5	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-588445/4	Lab Control Sample	Total/NA	Water	314.0	

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## HPLC/IC (Continued)

### Analysis Batch: 588445 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MRL 440-588445/8	Lab Control Sample	Total/NA	Water	314.0	
440-258138-C-1 MS	Matrix Spike	Total/NA	Water	314.0	
440-258138-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0	

### Analysis Batch: 589801

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	NO3NO2 Calc	

## Specialty Organics

### Prep Batch: 349535

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	1613B	
440-258219-1 - RA	Outfall001_20191227_Comp	Total/NA	Water	1613B	
MB 320-349535/1-A	Method Blank	Total/NA	Water	1613B	
MB 320-349535/1-A - RA	Method Blank	Total/NA	Water	1613B	
LCS 320-349535/2-A	Lab Control Sample	Total/NA	Water	1613B	

### Analysis Batch: 350522

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	1613B	349535
MB 320-349535/1-A	Method Blank	Total/NA	Water	1613B	349535
LCS 320-349535/2-A	Lab Control Sample	Total/NA	Water	1613B	349535

### Analysis Batch: 351071

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-349535/1-A - RA	Method Blank	Total/NA	Water	1613B	349535

### Analysis Batch: 351318

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1 - RA	Outfall001_20191227_Comp	Total/NA	Water	1613B	349535

## Metals

### Prep Batch: 588198

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total Recoverable	Water	200.2	
MB 440-588198/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-588198/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-258216-B-4-B MS	Matrix Spike	Total Recoverable	Water	200.2	
440-258216-B-4-C MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

### Prep Batch: 588241

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total Recoverable	Water	200.2	
MB 440-588241/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-588241/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-257890-E-6-C MS	Matrix Spike	Total Recoverable	Water	200.2	
440-257890-E-6-D MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## Metals

### Filtration Batch: 588288

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-3	Outfall001_20191227_Comp_F	Dissolved	Water	FILTRATION	
MB 440-588288/1-C	Method Blank	Dissolved	Water	FILTRATION	
MB 440-588288/1-D	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-588288/2-C	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-588288/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
440-258219-3 MS	Outfall001_20191227_Comp_F	Dissolved	Water	FILTRATION	
440-258219-3 MSD	Outfall001_20191227_Comp_F	Dissolved	Water	FILTRATION	
440-258227-B-2-G MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-258227-B-2-H MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

### Prep Batch: 588307

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-3	Outfall001_20191227_Comp_F	Dissolved	Water	200.2	588288
MB 440-588288/1-C	Method Blank	Dissolved	Water	200.2	588288
LCS 440-588288/2-C	Lab Control Sample	Dissolved	Water	200.2	588288
440-258219-3 MS	Outfall001_20191227_Comp_F	Dissolved	Water	200.2	588288
440-258219-3 MSD	Outfall001_20191227_Comp_F	Dissolved	Water	200.2	588288

### Prep Batch: 588503

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-3	Outfall001_20191227_Comp_F	Dissolved	Water	200.2	588288
MB 440-588288/1-D	Method Blank	Dissolved	Water	200.2	588288
LCS 440-588288/2-D	Lab Control Sample	Dissolved	Water	200.2	588288
440-258227-B-2-G MS	Matrix Spike	Dissolved	Water	200.2	588288
440-258227-B-2-H MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	588288

### Analysis Batch: 588597

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total Recoverable	Water	200.8	588198
MB 440-588198/1-A	Method Blank	Total Recoverable	Water	200.8	588198
LCS 440-588198/2-A	Lab Control Sample	Total Recoverable	Water	200.8	588198
440-258216-B-4-B MS	Matrix Spike	Total Recoverable	Water	200.8	588198
440-258216-B-4-C MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	588198

### Analysis Batch: 588599

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total Recoverable	Water	200.7 Rev 4.4	588241
MB 440-588241/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	588241
LCS 440-588241/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	588241
440-257890-E-6-C MS	Matrix Spike	Total Recoverable	Water	200.7 Rev 4.4	588241
440-257890-E-6-D MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.7 Rev 4.4	588241

### Analysis Batch: 588634

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-3	Outfall001_20191227_Comp_F	Dissolved	Water	200.8	588503
MB 440-588288/1-D	Method Blank	Dissolved	Water	200.8	588503
LCS 440-588288/2-D	Lab Control Sample	Dissolved	Water	200.8	588503
440-258227-B-2-G MS	Matrix Spike	Dissolved	Water	200.8	588503
440-258227-B-2-H MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	588503

# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## Metals

### Prep Batch: 588737

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	245.1	
MB 440-588737/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-588737/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-258077-D-1-H MS	Matrix Spike	Total/NA	Water	245.1	
440-258077-D-1-I MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

### Analysis Batch: 588954

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	245.1	588737
MB 440-588737/1-A	Method Blank	Total/NA	Water	245.1	588737
LCS 440-588737/2-A	Lab Control Sample	Total/NA	Water	245.1	588737
440-258077-D-1-H MS	Matrix Spike	Total/NA	Water	245.1	588737
440-258077-D-1-I MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	588737

### Analysis Batch: 589092

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-3	Outfall001_20191227_Comp_F	Dissolved	Water	200.7 Rev 4.4	588307
MB 440-588288/1-C	Method Blank	Dissolved	Water	200.7 Rev 4.4	588307
LCS 440-588288/2-C	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	588307
440-258219-3 MS	Outfall001_20191227_Comp_F	Dissolved	Water	200.7 Rev 4.4	588307
440-258219-3 MSD	Outfall001_20191227_Comp_F	Dissolved	Water	200.7 Rev 4.4	588307

### Filtration Batch: 589977

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-3	Outfall001_20191227_Comp_F	Dissolved	Water	FILTRATION	
MB 440-589977/1-C	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-589977/2-C	Lab Control Sample	Dissolved	Water	FILTRATION	
440-258718-A-2-H MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-258718-A-2-I MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

### Prep Batch: 590663

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-3	Outfall001_20191227_Comp_F	Dissolved	Water	245.1	589977
MB 440-589977/1-C	Method Blank	Dissolved	Water	245.1	589977
LCS 440-589977/2-C	Lab Control Sample	Dissolved	Water	245.1	589977
440-258718-A-2-H MS	Matrix Spike	Dissolved	Water	245.1	589977
440-258718-A-2-I MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	589977

### Analysis Batch: 590948

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-3	Outfall001_20191227_Comp_F	Dissolved	Water	245.1	590663
MB 440-589977/1-C	Method Blank	Dissolved	Water	245.1	590663
LCS 440-589977/2-C	Lab Control Sample	Dissolved	Water	245.1	590663
440-258718-A-2-H MS	Matrix Spike	Dissolved	Water	245.1	590663
440-258718-A-2-I MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	590663

## General Chemistry

### Analysis Batch: 588210

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	SM 5540C	

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## General Chemistry (Continued)

### Analysis Batch: 588210 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-588210/4	Method Blank	Total/NA	Water	SM 5540C	
LCS 440-588210/5	Lab Control Sample	Total/NA	Water	SM 5540C	
MRL 440-588210/3	Lab Control Sample	Total/NA	Water	SM 5540C	
440-258219-1 MS	Outfall001_20191227_Comp	Total/NA	Water	SM 5540C	
440-258219-1 MSD	Outfall001_20191227_Comp	Total/NA	Water	SM 5540C	

### Analysis Batch: 588223

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	SM 2540D	
MB 440-588223/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-588223/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-258219-1 DU	Outfall001_20191227_Comp	Total/NA	Water	SM 2540D	

### Analysis Batch: 588245

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	180.1	
MB 440-588245/5	Method Blank	Total/NA	Water	180.1	
440-258219-1 DU	Outfall001_20191227_Comp	Total/NA	Water	180.1	

### Analysis Batch: 588283

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	SM5210B	
USB 440-588283/1	Method Blank	Total/NA	Water	SM5210B	
LCS 440-588283/5	Lab Control Sample	Total/NA	Water	SM5210B	
LCSD 440-588283/6	Lab Control Sample Dup	Total/NA	Water	SM5210B	
LCSD 440-588283/7	Lab Control Sample Dup	Total/NA	Water	SM5210B	
440-258213-A-1 DU	Duplicate	Total/NA	Water	SM5210B	

### Analysis Batch: 588440

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	SM 2540C	
MB 440-588440/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-588440/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-258259-K-14 DU	Duplicate	Total/NA	Water	SM 2540C	

### Analysis Batch: 588582

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-588582/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-588582/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-588582/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-258185-K-1 MS	Matrix Spike	Total/NA	Water	SM 4500 NH3 G	
440-258185-K-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 NH3 G	

### Prep Batch: 588874

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	Distill/CN	
MB 440-588874/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-588874/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
440-258219-1 MS	Outfall001_20191227_Comp	Total/NA	Water	Distill/CN	
440-258219-1 MSD	Outfall001_20191227_Comp	Total/NA	Water	Distill/CN	

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## General Chemistry

### Analysis Batch: 588897

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	SM 4500 CN E	588874
MB 440-588874/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	588874
LCS 440-588874/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	588874
440-258219-1 MS	Outfall001_20191227_Comp	Total/NA	Water	SM 4500 CN E	588874
440-258219-1 MSD	Outfall001_20191227_Comp	Total/NA	Water	SM 4500 CN E	588874

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

# Definitions/Glossary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## Qualifiers

### GC/MS Semi VOA

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
LG	LG=Surrogate recovery below the acceptance limits
MB	Analyte present in the method blank

### HPLC/IC

Qualifier	Qualifier Description
BB	Sample > 4X spike concentration
EY	Result exceeds normal dynamic range; reported as a min. est.
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

### Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

### Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
LM	MS and/or MSD above acceptance limits. See Blank Spike (LCS)

### General Chemistry

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## Laboratory: Eurofins Calscience Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
California	State Program	CA ELAP 2706	06-30-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
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## Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20 *
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20 *
Hawaii	State	<cert No.>	01-29-20 *
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20 *
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20 *
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19 *
Wyoming	State Program	8TMS-L	01-28-19 *

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

CHAIN OF CUSTODY FORM

Page 2 of 2  
PAGE 1 of 2

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2019 Quarterly Outfall (001, 002, 011, 018) Outfall 001 Comp		ANALYSIS REQUIRED														
Test America Contact: Unvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 978.234.5033, 618.599.0702 (cell)		Total Recoverable Metals: (E2007), Zn (E2008), Cu, Pb, Cd, Se (E2007), Ni	TCCD (and all congeners) (E1613B)	BOD5 (20 degrees C) (E405)	(SM5210B, BODCalc)	Surfactants (MBAS) (SM540C/E425)	Cl-, SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Perchlorate (E300)	Turbidity, TDS (SM2540C/E180-1)	TSS (160.2 (SM2540D))	Ammonia-N (350.2)	alpha-BHC (E608)	2,4,6 TCP, 2,4 Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, PCP (SVOCs E625)	Total Recoverable Metals: Mercury (E245.1)	(E2007) Ar, As, Mn, Fe	Comments	
Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD										Comments
	Outfall001_20191227_Comp	12/27/2019 6:25	WM	600 mL Poly	1	HNO3	90	No	X							X		
			WM	1L Glass Amber	2	None	110	No	X									
			WM	1L Poly	1	None	115	No		X								
			WM	600 mL Poly	2	None	120	No										
			WM	500 mL Poly	2	None	130	No			X							
			WM	500 mL Poly	1	None	150	No									48 hours Holding Time NO3 & NO2	
			WM	500 mL Poly	1	H2SO4	160	No				X					48 hours Holding Time for Turbidity	
			WM	1L Glass Amber	2	None	170	No					X					
			WM	1L Glass Amber	2	None	180	No						X				
			WM	1L Poly	1	None	185	No										
			WM	1L Glass Amber	2	None	110	No									Hold	
			WM	500 mL Poly	2	None	120	No									Hold	
			WM	500 mL Poly	2	None	130	No									Hold	
			WM	1L Glass Amber	2	None	170	No					H				Hold	
			WM	1L Glass Amber	2	None	180	No									Hold	

Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quarterly, QRSW=Quarterly Receiving Water, S=Semi-Annual

Requisitioned By: [Signature] Date/Time: 12/27/19 09:40 Company: HALEY & ALDRICH

Received By: [Signature] Date/Time: 12/27/19 11:20 Company: TARY

Requisitioned By: [Signature] Date/Time: 12/27/19 09:40 Company: HALEY & ALDRICH

Received By: [Signature] Date/Time: 12/27/19 11:20 Company: TARY

Turn-around time: (Check) 24 Hour: \_\_\_\_\_ 72 Hour: \_\_\_\_\_ 10 Day: \_\_\_\_\_ X  
48 Hour: \_\_\_\_\_ 5 Day: \_\_\_\_\_ Normal: \_\_\_\_\_

Sample integrity: (Check) Intact: \_\_\_\_\_ On Ice: \_\_\_\_\_  
Store samples for 6 months. Data Requirements: (Check) No Level IV: \_\_\_\_\_ All Level IV: \_\_\_\_\_ X

1.4/1.7 1.5/1.8 1.3/1.6 1R/4

12/27/19 LD

440-258219 Chain of Custody

CHAIN OF CUSTODY FORM

Client Name/Address: Haley & Aldrich 3333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2019 Quarterly Outfall 001, 002, 011, 018] Outfall 001 Comp		Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)		Field Manager: Mark Dominick 978.234.5033, 818.599.0702 (cell)		ANALYSIS REQUIRED		Comments						
Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	Total Dissolved Metals (E2007), Cu, Pb, Cd, Se	Gross Alpha(E900.0), Gross Beta(E900.0), Tritium (T-3) (E900.0), Sr-90 (E905.0), Total Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1)	Chronic Toxicity - Selenium (EPA-821-R-02-019) AEC Class 1 in Ventura Co	Total Dissolved Metals: Mercury (E245.1)	Priority Pollutants-Pesticides+PCBs (E508)	Total Recoverable Metals	Total Dissolved Metals: (E2007), Ag, As, Mn, Fe Chlorides, Diazine (E525.2)	Filler and preserve with 24hrs of receipt at lab at OF001,002,011, or 018.
Outfall 001	Outfall001_20181227_Comp_F	12/27/2019 10:35	WM	1L Poly	1	None	190 *	No	X							Filler and preserve with 24hrs of receipt at lab at OF001,002,011, or 018. at OF001,002,011, or 018. Filler and preserve with 24hrs of receipt at lab at OF001,002,011, or 018. Chlorine, DDE, DDT, dieldrin, PCBs, o,p,p'-DDE, DDE, DDD, or DDT. Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures. Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD. Only test if first or second run exceeds of the year. Deliver to ABC Labs in Ventura, CA. Extract within 24-Hours of sampling at Week Labs
			WM	500 mL Poly	1	HNO <sub>3</sub>	80 *	No								
			WM	1L Poly	1	None	200 *	No								
			WM	1L Glass Amber	2	None	250 *	No								
			WM	borosilicate vials	1	None	320 *	No								
			WM	500 mL Poly	1	NaOH	220 *	No	X							
			WM	2.5 Gal Cube	1	None	225 *	No								
			WM	1L Glass Amber	1	None	230 *	No								
	Outfall001_20181227_Comp	12/27/2019 10:35	WM	1 Gal Cube	6	None	235	No								
			WM	1L Glass Amber	2	HCl	275	No								

Requested By: *[Signature]* Date/Time: 12/27/2019 09:40 Company: HALEY & ALDRICH

Received By: *[Signature]* Date/Time: 12/27/2019 09:45

Requested By: *[Signature]* Date/Time: 12/27/2019 11:20 Company: TA IDV

Received By: *[Signature]* Date/Time: 12/27/2019 11:20

Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quarterly, QR=Quarterly Receiving Water, S=Semi-Annual

Turn-around time (Check): 24 Hour:  72 Hour:  10 Day:  Normal:   
 48 Hour:  5 Day:

Sample integrity (Check): Intact:  On Ice:   
 Store samples for 3 months:   
 Data Requirements (Check): No Level IV:  All Level IV:



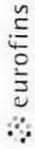
**Chain of Custody Record**



<b>Client Information (Sub Contract Lab)</b>		Lab P#:	Patel, Urvashi	Carrier Tracking No(s):	COC No: 440-150639.1														
Client Contact: Shipping/Receiving		E-Mail:	urvashi.patel@testamericainc.com	State of Origin:	Page: Page 1 of 1														
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - California		Job #:	440-258219-1														
Address: 13715 Rider Trail North, Earth City State, Zip: MO, 63045 Phone: 314-298-8566(Tel) 314-298-8757(Fax) Email:		Due Date Requested: 1/9/2020	Analysis Requested																
Project Name: Boeing NPDES SSFL outfalls Site:		TAT Requested (days): 1/9/2020	Preservation Codes: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 X - EDTA Y - EDA Z - other (specify) Other:																
PO #:	WO #:	Project #: 44009879	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (Water, Solid, Organic)	Preservation Code:	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	A01R_U/ExChrom_Actin Total Uranium	901_1_Cs/Fill_Geo_0 K-40 and Cesium-137	903_0/PrecSep_21 Radium-226	904_0/PrecSep_0 Radium-228	905_Sr/PrecSep_7 Strontium-90	906_0/LSC_Dist_Susp Tritium	Total Number of Containers	Special Instructions/Note:		
			12/27/19	07:25 Pacific		Water		X	X	X	X	X	X	X	X	2	Boeing SSFL; DO NOT FILTER; use prep date from preservation		
Sample Identification - Client ID (Lab ID) Outfall001_20191227_Comp (440-258219-1)		<p>Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte &amp; accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.</p>																	
Possible Hazard Identification Unconfirmed		<p>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)  <input type="checkbox"/> Return To Client    <input type="checkbox"/> Disposal By Lab    <input type="checkbox"/> Archive For _____ Months                  Special Instructions/QC Requirements:</p>																	
Deliverable Requested: I, II, III, IV, Other (specify)		Primary Deliverable Rank: 2																	
Empty Kit Relinquished by:		Time:																	
Relinquished by:		Date/Time:		Company:		Method of Shipment:										Date/Time:			
Relinquished by:		Date/Time:		Company:		Received by:										Date/Time:			
Relinquished by:		Date/Time:		Company:		Received by:										Date/Time:			
Custody Seals Intact: Δ Yes Δ No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:															



**Chain of Custody Record**



<b>Client Information (Sub Contract Lab)</b>		Lab PM: Patel, Unvashi		Carrier Tracking Note:		COC No: 440-150636-1	
Client Contact: Shipping/Receiving		E-Mail: unvashi.patel@testamericainc.com		State of Origin: California		Page: Page 1 of 1	
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - California		Job #: 440-258219-1		Preservation Codes:	
Address: 880 Riverside Parkway, West Sacramento, CA, 95605		Due Date Requested: 1/9/2020		Analysis Requested:		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	
City: West Sacramento		TAT Requested (days):		Field Filtered Sample (Yes or No)		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Phone: 916-373-5600(Tel) 916-372-1059(Fax)		PO #:		Perform MS/MSD (Yes or No)		Total Number of Containers	
Email:		WFO #:		1613B/1613B_Sox_Sep_P Standard List w/ Totals		2	
Project Name: Boeing NPDES SSFL outfalls		Project #: 44009879		Preservation Code:		Special Instructions/Note:	
Site:		SSOW#:		Water		See QAS. Boeing. w/lu to zero. ug/L. Use Boeing glassware.	
<b>Sample Identification - Client ID (Lab ID)</b>		Sample Date		Sample Time		Matrix	
Outfall001_20191227_Comp (440-258219-1)		12/27/19		07:25 Pacific		Water	
Sample Date		Sample Time		Sample Type (C=Comp, G=grab)		Matrix (W=water, S=solid, O=volatile, BT=Tissue, AA=As)	
12/27/19		07:25 Pacific		Water		Water	

**Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)**  
 Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Months  
 Special Instructions/QC Requirements:

**Possible Hazard Identification**  
 Unconfirmed  
 Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2  
 Empty Kit Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_ Method of Shipment: \_\_\_\_\_

Relinquished by: *A. Kenney* Date/Time: *1/7/2020 17:00* Company: *IA, PR*  
 Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_

Custody Seal No.: *961* Cooler Temperature(s) °C and Other Remarks: *0.2 cov 0.0*



## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-258219-1

**Login Number: 258219**

**List Number: 1**

**Creator: Soderblom, Tim**

**List Source: Eurofins Irvine**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-258219-1

**Login Number: 258219**

**List Number: 3**

**Creator: Guzman, Juan**

**List Source: Eurofins TestAmerica, Sacramento**

**List Creation: 12/28/19 11:10 AM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	Seal present with no number.
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.3c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# Isotope Dilution Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

## Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF (24-185)	PeCF (21-178)	HxCDD (32-141)	HxDD (28-130)	HxCDF (26-152)
440-258219-1	Outfall001_20191227_Comp	60	61	61	62	67	66	57	63
440-258219-1 - RA	Outfall001_20191227_Comp		66						
MB 320-349535/1-A	Method Blank	63	65	69	68	74	75	64	73
MB 320-349535/1-A - RA	Method Blank		70						

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxDF (26-123)	HxCF (29-147)	13CHxCF (28-136)	HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	OCDD (17-157)
440-258219-1	Outfall001_20191227_Comp	54	59	58	57	57	63	54
440-258219-1 - RA	Outfall001_20191227_Comp							
MB 320-349535/1-A	Method Blank	62	67	66	64	64	71	63
MB 320-349535/1-A - RA	Method Blank							

#### Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD  
 TCDF = 13C-2,3,7,8-TCDF  
 PeCDD = 13C-1,2,3,7,8-PeCDD  
 PeCDF = 13C-1,2,3,7,8-PeCDF  
 PeCF = 13C-2,3,4,7,8-PeCDF  
 HxCDD = 13C-1,2,3,4,7,8-HxCDD  
 HxDD = 13C-1,2,3,6,7,8-HxCDD  
 HxCDF = 13C-1,2,3,4,7,8-HxCDF  
 HxDF = 13C-1,2,3,6,7,8-HxCDF  
 HxCF = 13C-1,2,3,7,8,9-HxCDF  
 13CHxCF = 13C-2,3,4,6,7,8-HxCDF  
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD  
 HpCDF = 13C-1,2,3,4,6,7,8-HpCDF  
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF  
 OCDD = 13C-OCDD

## Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF (21-192)	PeCF (13-328)	HxCDD (21-193)	HxDD (25-163)	HxCDF (19-202)
LCS 320-349535/2-A	Lab Control Sample	64	65	69	66	73	74	60	69

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxDF (21-159)	HxCF (17-205)	13CHxCF (22-176)	HpCDD (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-349535/2-A	Lab Control Sample	61	65	64	62	63	71	62

#### Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD  
 TCDF = 13C-2,3,7,8-TCDF  
 PeCDD = 13C-1,2,3,7,8-PeCDD  
 PeCDF = 13C-1,2,3,7,8-PeCDF  
 PeCF = 13C-2,3,4,7,8-PeCDF  
 HxCDD = 13C-1,2,3,4,7,8-HxCDD  
 HxDD = 13C-1,2,3,6,7,8-HxCDD  
 HxCDF = 13C-1,2,3,4,7,8-HxCDF

Eurofins Calscience Irvine

# Isotope Dilution Summary

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

HxDF = 13C-1,2,3,6,7,8-HxCDF

HxCF = 13C-1,2,3,7,8,9-HxCDF

13CHxCF = 13C-2,3,4,6,7,8-HxCDF

HpCDD = 13C-1,2,3,4,6,7,8-HpCDD

HpCDF = 13C-1,2,3,4,6,7,8-HpCDF

HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF

OCDD = 13C-OCDD

Job ID: 440-258219-1

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Environment Testing  
TestAmerica

Sacramento  
Sample Receiving Notes



440-258219 Field Sheet

Tracking #: 1119-9742-5322

Job: \_\_\_\_\_

SO /  FO / SAT / 2-Day / Ground / UPS / CDO / Courier  
GSO / OnTrac / Goldstreak / USPS / Other \_\_\_\_\_

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.  
File in the job folder with the COC.

Notes: \_\_\_\_\_  
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Therm. ID: AK-12 Corr. Factor: (+/-) 0 °C

Ice  Wet  Gel \_\_\_\_\_ Other \_\_\_\_\_

Cooler Custody Seal: Seal

Cooler ID: 2082

Temp Observed: 1.3 °C Corrected: 1.3 °C

From: Temp Blank  Sample

**During Initial Triage**

	Yes	No	NA
Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature is acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CoC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Initials: JL Date: 12/28/19

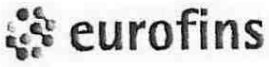
**During Labeling**

	Yes	No	NA
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample custody seal?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample date/times are provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appropriate containers are used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample bottles are completely filled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zero headspace?*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Perchlorate has headspace? (Methods 314, 331, 6850)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Multiphasic samples are not present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NCM Filed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Initials: JL Date: 12/28/19

\*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

W18-A



Environment Testing  
TestAmerica

Sacramento  
Sample Receiving Notes

Place Field Sheet Label Here

Job: \_\_\_\_\_

Tracking #: 1119 9742 5311

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier  
GSO / OnTrac / Goldstreak / USPS / Other \_\_\_\_\_

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.  
File in the job folder with the COC.

Notes: \_\_\_\_\_  
\_\_\_\_\_  
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Therm. ID: AKF Corr. Factor: (+) 0.2 °C  
Ice  Wet  Gel \_\_\_\_\_ Other \_\_\_\_\_  
Cooler Custody Seal: SCA1  
Cooler ID: 10F2  
Temp Observed: 0.2 °C Corrected: 0.0 °C  
From: Temp Blank  Sample

During Initial Triage	Yes	No	NA
Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature is acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CoC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Initials: ST Date: 12/28/19

During Labeling	Yes	No	NA
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample custody seal?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample date/times are provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appropriate containers are used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample bottles are completely filled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zero headspace?*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Perchlorate has headspace? (Methods 314, 331, 6850)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Multiphasic samples are not present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NCM Filed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Initials: SW Date: 12/18/19

\*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

W18-A



**Christine, Mark B.**

**From:** Baluran, Dwayne <DBaluran@haleyaldrich.com>  
**Sent:** Monday, December 30, 2019 2:54 PM  
**To:** Christine, Mark B.  
**Cc:** Miller, Katherine  
**Subject:** FW: Eurofins TestAmerica sample confirmation files from 440-258216-1 BMP Performance OF 001, 002, and/or 009  
**Attachments:** SmpLoginAckLimits\_440-258216-1 [Std\_Tal\_Login\_Limits].pdf; COC 440-258216 (201912271418).pdf; SampleLoginAck\_440-258216-1 [Std\_Tal\_Login\_Ack].pdf; Eurofins TestAmerica sample confirmation files from 440-258219-1 Outfall 001 Comp.msg  
**Importance:** High

**-External Email-**

Hi Mark,

After reviewing the sample receipts for recent events (BMP sampling, OF001 comp, OF008 comp) I have the following comments:

Sampling Event	Sample Delivery Group	Samples Included	Work Order or COC Corrections?
ISRA/BMP	440-258216-1	A1BMP0002_20191226, A1BMP0003_20191226, LXBMP0011_20191226, LXBMP0012_20191226, EPSW0011E01_20191226, EPSW002BG01_20191226	COC - incorrect sample ID names. All should be readjusted to "20191226" (the date the samples were collected) in the work order. Incorrect project number. Please update Work Order to "129095-004 5.1"  I assume the Gross Alpha Total and Dissolved for the last two sample IDs are in a separate SDG (440-258216-2) that will be sent to us at a later date?
OF001 -Qtrly	440-258219-1	Outfall001_20191227_Comp, Outfall001_20191227_Comp_F	Work Order - per the comments, only test for Fe at OF001. Please remove Al, As, and Mn from both Total and Dissolved Metals.

**From:** Miller, Katherine <KMiller@haleyaldrich.com>  
**Sent:** Monday, December 30, 2019 9:15 AM  
**To:** Baluran, Dwayne <DBaluran@haleyaldrich.com>  
**Subject:** FW: Eurofins TestAmerica sample confirmation files from 440-258216-1 BMP Performance OF 001, 002, and/or 009  
**Importance:** High

Please review and see email below

Katherine Miller  
**HALEY & ALDRICH**

Tel: 520.289.8606

---

**From:** Mark Christine <[mark.christine@testamericainc.com](mailto:mark.christine@testamericainc.com)>

**Sent:** Monday, December 30, 2019 10:01 AM

**To:** Kim Schultz <[kim.schultz@mecx.net](mailto:kim.schultz@mecx.net)>; Miller, Katherine <[KMiller@haleyaldrich.com](mailto:KMiller@haleyaldrich.com)>

**Subject:** Eurofins TestAmerica sample confirmation files from 440-258216-1 BMP Performance OF 001, 002, and/or 009

**CAUTION: External Email**

---

Hello,

Attached please find the sample confirmation files for job 440-258216-1; BMP Performance OF 001, 002, and/or 009.

Please verify sample IDs. COC SAMPLE #\_2019121226, looks like it is doubled up on the 12s. Logged in per COC.

Sample #1 A1BMP002\_2019121226 (440-258216-1) has a "1" instead of an "X" under the 1613 Dioxons. Sample was logged in for the dioxins, please confirm.

Please feel free to contact me or your PM Urvashi Patel if you have any questions.

Thank you.

**Mark B Christine**

Project Manager Assistant

Eurofins TestAmerica, Irvine

E-mail: [mark.christine@testamericainc.com](mailto:mark.christine@testamericainc.com)

[www.eurofinsus.com](http://www.eurofinsus.com) | [www.testamericainc.com](http://www.testamericainc.com)



Reference: [440-575685]

Attachments: 3

Please let us know if we met your expectations by rating the service you received from Eurofins TestAmerica on this project by visiting our website at: [Project Feedback](#)

---

**DATA VALIDATION REPORT**

**Boeing SSFL NPDES**

**SAMPLE DELIVERY GROUP: 440-258219-2**

**Prepared for**

Haley & Aldrich, Inc.  
600 South Meyer Avenue, Suite 100  
Tucson, Arizona 85701

**29 January 2020**

MEC<sup>x</sup>, Inc.  
8864 Interchange Drive  
Houston, Texas 77054

[www.mecx.net](http://www.mecx.net)





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**TABLES**

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



## I. INTRODUCTION

---

**Task Order Title:** Boeing SSFL NPDES

**Contract:** 40458-078 and 40458-083

**MEC<sup>x</sup> Project No.:** 1272.003H.01

**Sample Delivery Group:** 440-258219-2

**Project Manager:** Katherine Miller

**Matrix:** Water

**QC Level:** IV

**No. of Samples:** 1

**No. of Reanalyses/Dilutions:** 0

**Laboratory:** TestAmerica-Irvine

**TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
OUTFALL001_201912 27_COMP	440-258219-1	N/A	Water	12/27/2019 7:25:00 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod



## II. SAMPLE MANAGEMENT

---

According to the case narrative, sample condition upon receipt forms and the chains-of-custody (COCs) provided by the laboratories for sample delivery group (SDG) 440-258219-2:

- The laboratories received the sample in this SDG on ice and within the temperature limits of  $\leq 6$  degrees Celsius ( $^{\circ}\text{C}$ ) and  $> 0^{\circ}\text{C}$ .
- The laboratories received the sample containers intact.
- Field and laboratory personnel signed and dated the COCs.
- Some corrections to the original COCs were initialed but not dated. The cross-outs did not affect data quality.
- Sample containers were transferred to TestAmerica – St. Louis laboratory for all radionuclide analyses. Sample condition upon receipt information was taken from the case narrative.



**TABLE 2 - DATA QUALIFIER REFERENCE**

Qualifier	Organics	Inorganics
U	The analyte was analyzed for but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination ( $r^2$ ) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.





Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



### III. VARIOUS EPA METHODS — RADIONUCLIDES

---

E. Wessling of MEC<sup>x</sup> reviewed the SDG on January 29, 2020

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the *EPA Methods 900, 901.1, 903.0, 904.0, 905.0, 906.0 and HASL-300 U Mod*, and the *National Functional Guidelines for Inorganic Data Review* (2014).

#### III.1. HOLDING TIMES:

The sample was received with proper preservation according the laboratory case narrative.

#### III.2. CALIBRATION:

The daily calibrations were acceptable. The detector efficiencies for gross alpha (7.481%) and radium-226 (18.714%) were <20%; therefore, the results for gross alpha and radium-226 were qualified as estimated with a potential negative bias (J- for the detect and UJ for the nondetect following blank evaluation). All other detector efficiencies were >20% and no further qualifications were required. Carrier/tracer recoveries were within the laboratory control limits.

#### III.3. QUALITY CONTROL SAMPLES

##### III.3.1. METHOD BLANKS

Target isotopes were not detected in the method blanks above the MDA; however, a comparison normalized absolute difference of the sample results and the method blank results indicated the method blank and the sample results were not significantly different at the 1% level of confidence for Ra-226 and total uranium. The detected sample results for Ra-226 and total uranium were qualified as nondetect (U). A comparison normalized absolute difference of the sample results and the method blank results indicated the method blank and the sample results were not significantly different at the 5% level of confidence for Ra-228. The detected sample result for Ra-228 was qualified as estimated (J+). No further qualifications were required.

##### III.3.2. LABORATORY CONTROL SAMPLES:

The recoveries were within laboratory-established control limits.

##### III.3.3. LABORATORY DUPLICATES:

Laboratory duplicates were performed on the sample from this SDG for potassium-40 and cesium-137. The DER was <2.13 and therefore acceptable.

##### III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE:

Matrix spike (MS)/MSD analyses were not performed on the sample from this SDG.

#### III.4. SAMPLE RESULT VERIFICATION:

An EPA Level IV review was performed on the sample in this data package. Detected sample results were verified. Reported nondetects are valid to the MDC. Several aliquots for prep were reduced due to sediment or discoloration in the sample resulting in elevated MDCs.



### III.5. FIELD QC SAMPLES:

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. The following are findings associated with field QC samples:

#### III.5.1. *FIELD BLANKS AND EQUIPMENT BLANKS:*

This SDG had no identified field blank or equipment blank samples.

#### III.5.2. *FIELD DUPLICATES:*

There were no field duplicate samples identified for this SDG.

# Validated Sample Result Forms: 4402582192

## Analysis Method E900

Sample Name OUTFALL001\_20191227\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 7:25:00 AM Validation Level: 8

Lab Sample Name: 440-258219-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	14.1	3.61	3.00	2.76	pCi/L		J-	*III
Gross Beta Analytes	GROSSBETA	7.80	1.42	4.00	1.14	pCi/L			

## Analysis Method E901.1

Sample Name OUTFALL001\_20191227\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 7:25:00 AM Validation Level: 8

Lab Sample Name: 440-258219-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	5.01	9.91	20.0	16.8	pCi/L	U	U	
Potassium-40	13966-00-2	32.7	90.4	152	152	pCi/L	U	U	

## Analysis Method E903.0

Sample Name OUTFALL001\_20191227\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 7:25:00 AM Validation Level: 8

Lab Sample Name: 440-258219-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.334	0.178	1.00	0.227	pCi/L		UJ	B, *III

## Analysis Method E904.0

Sample Name OUTFALL001\_20191227\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 7:25:00 AM Validation Level: 8

Lab Sample Name: 440-258219-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	1.54	0.607	1.00	0.824	pCi/L		J+	B

*Analysis Method E905.0*

Sample Name OUTFALL001\_20191227\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 7:25:00 AM Validation Level: 8

Lab Sample Name: 440-258219-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.107	0.410	3.00	0.719	pCi/L	U	U	

*Analysis Method E906.0*

Sample Name OUTFALL001\_20191227\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 7:25:00 AM Validation Level: 8

Lab Sample Name: 440-258219-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-27.5	152	500	283	pCi/L	U	U	

*Analysis Method HASL-300 U Mod*

Sample Name OUTFALL001\_20191227\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 7:25:00 AM Validation Level: 8

Lab Sample Name: 440-258219-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.664	0.436	1.00	0.407	pCi/L		U	B

## ANALYTICAL REPORT

Eurofins Calscience Irvine  
17461 Derian Ave  
Suite 100  
Irvine, CA 92614-5817  
Tel: (949)261-1022

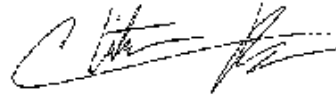
Laboratory Job ID: 440-258219-2

Client Project/Site: Quarterly Outfall 001 Comp

**For:**

Haley & Aldrich, Inc.  
400 E Van Buren St.  
Suite 545  
Phoenix, Arizona 85004

Attn: Katherine Miller



---

Authorized for release by:  
1/28/2020 9:39:24 AM

Christian Bondoc, Project Manager I  
(949)260-3218  
[christian.bondoc@testamericainc.com](mailto:christian.bondoc@testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



---

Christian Bondoc  
Project Manager I  
1/28/2020 9:39:24 AM



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# Sample Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

---

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-258219-1	Outfall001_20191227_Comp	Water	12/27/19 07:25	12/27/19 11:20	

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# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

## Job ID: 440-258219-2

### Laboratory: Eurofins Calscience Irvine

#### Narrative

#### Job Narrative 440-258219-2

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/27/2019 11:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.6° C, 1.7° C and 1.8° C.

#### RAD

Method 900.0: Gross Alpha Beta Prep Batch 160-455777

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall001\_20191227\_Comp (440-258219-1), (LCS 160-455777/2-A), (LCSB 160-455777/3-A), (MB 160-455777/1-A), (440-258077-J-1-F), (440-258077-J-1-G MS), (440-258077-J-1-I MSBT), (440-258077-J-1-J MSBTD) and (440-258077-J-1-H MSD)

Method 901.1: Gamma Prep Batch: 160-455659

The cesium-137 MDC (20.8 pCi/L) for the method blank (MB) is above the requested limit of 20 pCi/L. Cesium-137 activity was not observed in the MB above the MDC or RL. The MDC for the associated samples is less than the requested limit. The data have been reported with the MDC achieved. Outfall001\_20191227\_Comp (440-258219-1), (LCS 160-455659/2-A), (MB 160-455659/1-A) and (440-258219-Q-1-B DU).

Method 901.1: Gamma Prep Batch 160-455659

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred from    Reported to Analyte

Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Pb-212	Po-216
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-211
Th-227	Pb-211

# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

## Job ID: 440-258219-2 (Continued)

### Laboratory: Eurofins Calscience Irvine (Continued)

Bi-214 Ra-226  
Outfall001\_20191227\_Comp (440-258219-1), (LCS 160-455659/2-A), (MB 160-455659/1-A) and (440-258219-Q-1-B DU)

Methods 904.0, 9320: Radium-228 Prep Batch 160-455727  
Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall001\_20191227\_Comp (440-258219-1), (LCS 160-455727/1-A), (MB 160-455727/22-A), (160-36828-B-23-C) and (160-36828-B-23-D DU)

Method 905: Strontium-90 Prep Batch 160-455843  
Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.  
Outfall001\_20191227\_Comp (440-258219-1), (LCS 160-455843/1-A), (MB 160-455843/10-A), (440-258077-J-1-K), (440-258077-F-1-G MS) and (440-258077-F-1-H MSD)

Method 906.0: LSC Tritium Prep Batch 160-455651

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall001\_20191227\_Comp (440-258219-1), (LCS 160-455651/2-A), (MB 160-455651/1-A), (440-258077-I-1-A), (440-258077-I-1-B MS) and (440-258077-I-1-C MSD)

Method A-01-R: Isotopic Uranium Prep Batch 160-455686  
Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.  
Outfall001\_20191227\_Comp (440-258219-1), (LCS 160-455686/2-A), (MB 160-455686/1-A), (440-258077-J-1-E), (440-258077-F-1-E MS) and (440-258077-F-1-F MSD)

Method ExtChrom: Uranium Prep Batch 160-455686

The following samples were prepared at a reduced aliquot due to a yellow discoloration. Outfall001\_20191227\_Comp (440-258219-1). Samples 440-258085-1 and 440-258219-1 was a darker yellow than the other samples and had suspended solids. Sample 440-258227-1 also had suspended solids present.

Method PrecSep\_0: Radium 228 Prep Batch 160-455727:

The following sample was prepared at a reduced aliquot due to possible matrix interference: Outfall001\_20191227\_Comp (440-258219-1). Sample 440-258219-1 was reduced due to brown discoloration and heavy sediment levels. Sample 440-258227-1 was reduced due to yellow discoloration. Sample 280-132316-9 was reduced due to sample containing white floating particulates.

Method PrecSep-21: Radium 226 Prep Batch 160-455705:

The following sample was prepared at a reduced aliquot due to possible matrix interference: Outfall001\_20191227\_Comp (440-258219-1). Sample 440-258219-1 was reduced due to brown discoloration and heavy sediment levels. Sample 440-258227-1 was reduced due to yellow discoloration. Sample 280-132316-9 was reduced due to sample containing white floating particulates.

# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

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## Job ID: 440-258219-2 (Continued)

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### Laboratory: Eurofins Calscience Irvine (Continued)

Method PrecSep-7: Strontium 90 Prep Batch 160-445843:

Sample 258227-1 and samples 258077-1, 1MS, and 1MSD were reduced due to yellow discoloration. Samples 258085-1 and 258219-1 were reduced due to brown discoloration and a cloudy appearance: Outfall001\_20191227\_Comp (440-258219-1).

1/8/2020- Samples 440-258077-1, 440-258077-1MS, 440-258077-1MSD, 110-258227-1, 440-258085-1 all had 1-2x smaller pellets than the QC samples at the end of the into-ingrowth process. While decanting the presence of matrix interference was seen in the amount of sediment at the bottom of the beaker.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

**Client Sample ID: Outfall001\_20191227\_Comp**

**Lab Sample ID: 440-258219-1**

Date Collected: 12/27/19 07:25

Matrix: Water

Date Received: 12/27/19 11:20

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	14.1		3.23	3.61	3.00	2.76	pCi/L	01/06/20 07:19	01/12/20 12:26	1
Gross Beta	7.80		1.18	1.42	4.00	1.14	pCi/L	01/06/20 07:19	01/12/20 12:26	1

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Cesium-137	5.01	U	9.90	9.91	20.0	16.8	pCi/L	12/30/19 13:52	12/30/19 18:50	1
Potassium-40	32.7	U	90.4	90.4		152	pCi/L	12/30/19 13:52	12/30/19 18:50	1

## Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.334		0.176	0.178	1.00	0.227	pCi/L	12/31/19 09:06	01/27/20 11:12	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	96.4		40 - 110					12/31/19 09:06	01/27/20 11:12	1

## Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	1.54		0.590	0.607	1.00	0.824	pCi/L	12/31/19 11:01	01/14/20 17:00	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	96.4		40 - 110					12/31/19 11:01	01/14/20 17:00	1
Y Carrier	88.7		40 - 110					12/31/19 11:01	01/14/20 17:00	1

## Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Strontium-90	0.107	U	0.410	0.410	3.00	0.719	pCi/L	01/07/20 06:20	01/15/20 10:01	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Sr Carrier	73.7		40 - 110					01/07/20 06:20	01/15/20 10:01	1
Y Carrier	87.5		40 - 110					01/07/20 06:20	01/15/20 10:01	1

## Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Tritium	-27.5	U	152	152	500	283	pCi/L	12/30/19 13:27	12/31/19 11:34	1

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Total Uranium	0.664		0.434	0.436	1.00	0.407	pCi/L	12/30/19 16:10	01/16/20 09:32	1

Eurofins Calscience Irvine

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

**Client Sample ID: Outfall001\_20191227\_Comp**

**Lab Sample ID: 440-258219-1**

**Date Collected: 12/27/19 07:25**

**Matrix: Water**

**Date Received: 12/27/19 11:20**

<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Uranium-232	51.6		30 - 110	12/30/19 16:10	01/16/20 09:32	1

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# Method Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL
Evaporation	Preparation, Evaporation	None	TAL SL
ExtChrom	Preparation, Extraction Chromatography Resin Actinide Separation	None	TAL SL
Fill_Geo-0	Fill Geometry, No In-Growth	None	TAL SL
LSC_Dist_Susp	Distillation and Suspension (LSC)	None	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL
PrecSep-7	Preparation, Precipitate Separation (7-Day In-Growth)	None	TAL SL

#### Protocol References:

DOE = U.S. Department of Energy  
EPA = US Environmental Protection Agency  
None = None

#### Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# Lab Chronicle

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

**Client Sample ID: Outfall001\_20191227\_Comp**

**Lab Sample ID: 440-258219-1**

**Date Collected: 12/27/19 07:25**

**Matrix: Water**

**Date Received: 12/27/19 11:20**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200.24 mL	1.0 g	455777	01/06/20 07:19	RJD	TAL SL
Total/NA	Analysis	900.0		1	1.0 mL	1.0 mL	456563	01/12/20 12:26	AJD	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	455659	12/30/19 13:52	SCB	TAL SL
Total/NA	Analysis	901.1		1			455612	12/30/19 18:50	KLS	TAL SL
Total/NA	Prep	PrecSep-21			500.40 mL	1.0 g	455705	12/31/19 09:06	JLC	TAL SL
Total/NA	Analysis	903.0		1			458192	01/27/20 11:12	AJD	TAL SL
Total/NA	Prep	PrecSep_0			500.40 mL	1.0 g	455727	12/31/19 11:01	JLC	TAL SL
Total/NA	Analysis	904.0		1			456741	01/14/20 17:00	AJD	TAL SL
Total/NA	Prep	PrecSep-7			500.2 mL	1.0 g	455843	01/07/20 06:20	MNH	TAL SL
Total/NA	Analysis	905		1			456913	01/15/20 10:01	AJD	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.3 mL	1.0 g	455651	12/30/19 13:27	KNF	TAL SL
Total/NA	Analysis	906.0		1			456022	12/31/19 11:34	JS	TAL SL
Total/NA	Prep	ExtChrom			250.01 mL	1.0 mL	455686	12/30/19 16:10	KLH	TAL SL
Total/NA	Analysis	A-01-R		1			457046	01/16/20 09:32	KRR	TAL SL

**Laboratory References:**

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

**Lab Sample ID: MB 160-455777/1-A**  
**Matrix: Water**  
**Analysis Batch: 456563**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	0.01239	U	0.607	0.607	3.00	1.18	pCi/L	01/06/20 07:19	01/12/20 12:20	1
Gross Beta	-0.2482	U	0.440	0.440	4.00	0.843	pCi/L	01/06/20 07:19	01/12/20 12:20	1

**Lab Sample ID: LCS 160-455777/2-A**  
**Matrix: Water**  
**Analysis Batch: 456563**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Alpha	49.6	48.74		7.33	3.00	1.85	pCi/L	98	75 - 125

**Lab Sample ID: LCSB 160-455777/3-A**  
**Matrix: Water**  
**Analysis Batch: 456567**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Beta	85.0	79.96		8.53	4.00	0.814	pCi/L	94	75 - 125

**Lab Sample ID: 440-258077-J-1-G MS**  
**Matrix: Water**  
**Analysis Batch: 456567**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Alpha	1.38		49.6	41.94		6.03	3.00	1.42	pCi/L	82	60 - 140

**Lab Sample ID: 440-258077-J-1-H MSD**  
**Matrix: Water**  
**Analysis Batch: 456563**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec.	RER	RER Limit
						Uncert. (2σ+/-)					Limits	0.42	1
Gross Alpha	1.38		49.6	47.24		6.58	3.00	1.16	pCi/L	93	60 - 140	0.42	1

**Lab Sample ID: 440-258077-J-1-I MSBT**  
**Matrix: Water**  
**Analysis Batch: 456563**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Beta	1.56		85.0	84.01		8.91	4.00	0.935	pCi/L	97	60 - 140

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-258077-J-1-J MSBTD  
Matrix: Water  
Analysis Batch: 456563

Client Sample ID: Matrix Spike Duplicate  
Prep Type: Total/NA  
Prep Batch: 455777

Analyte	Sample	Sample	Spike Added	MSBTD	MSBTD	Total	RL	MDC	Unit	%Rec	%Rec.	RER	RER
	Result	Qual		Result	Qual	Uncert. (2σ+/-)					Limits		Limit
Gross Beta	1.56		84.9	82.77		8.79	4.00	0.852	pCi/L	96	60 - 140	0.07	1

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-455659/1-A  
Matrix: Water  
Analysis Batch: 455610

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 455659

Analyte	MB	MB	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier								
Cesium-137	0.0000	U G	5.31	5.31	20.0	20.8	pCi/L	12/30/19 13:52	12/30/19 18:47	1
Potassium-40	-41.44	U	118	118		173	pCi/L	12/30/19 13:52	12/30/19 18:47	1

Lab Sample ID: LCS 160-455659/2-A  
Matrix: Water  
Analysis Batch: 455611

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 455659

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.
									Limits
Americium-241	136000	129800		15000		400	pCi/L	96	90 - 111
Cesium-137	44000	43660		4380	20.0	99.2	pCi/L	99	90 - 111
Cobalt-60	27300	26580		2630		64.0	pCi/L	97	89 - 110

Lab Sample ID: 440-258219-1 DU  
Matrix: Water  
Analysis Batch: 455610

Client Sample ID: Outfall001\_20191227\_Comp  
Prep Type: Total/NA  
Prep Batch: 455659

Analyte	Sample	Sample	DU	DU	Total	RL	MDC	Unit	%Rec	RER	RER
	Result	Qual		Result	Qual						Uncert. (2σ+/-)
Cesium-137	5.01	U	3.919	U	8.21	20.0	14.2	pCi/L		0.06	1
Potassium-40	32.7	U	-100.9	U	92.3		234	pCi/L		0.73	1

## Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-455705/22-B  
Matrix: Water  
Analysis Batch: 458192

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 455705

Analyte	MB	MB	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier								
Radium-226	0.3893		0.114	0.119	1.00	0.109	pCi/L	12/31/19 09:06	01/27/20 13:04	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	105		40 - 110					12/31/19 09:06	01/27/20 13:04	1

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

## Method: 903.0 - Radium-226 (GFPC) (Continued)

**Lab Sample ID: LCS 160-455705/1-A**  
**Matrix: Water**  
**Analysis Batch: 458192**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455705**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.3	9.173		0.960	1.00	0.0876	pCi/L	81	75 - 125	
<b>Carrier</b>	<b>LCS %Yield</b>	<b>LCS Qualifier</b>	<b>Limits</b>							
Ba Carrier	105		40 - 110							

**Lab Sample ID: 160-36828-B-23-B DU**  
**Matrix: Water**  
**Analysis Batch: 458192**

**Client Sample ID: Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 455705**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-226	0.620		0.4687		0.127	1.00	0.102	pCi/L	0.56	1
<b>Carrier</b>	<b>DU %Yield</b>	<b>DU Qualifier</b>	<b>Limits</b>							
Ba Carrier	108		40 - 110							

## Method: 904.0 - Radium-228 (GFPC)

**Lab Sample ID: MB 160-455727/22-A**  
**Matrix: Water**  
**Analysis Batch: 456742**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 455727**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.09351	U	0.211	0.211	1.00	0.362	pCi/L	12/31/19 11:01	01/14/20 16:49	1
<b>Carrier</b>	<b>MB %Yield</b>	<b>MB Qualifier</b>	<b>Limits</b>							
Ba Carrier	105		40 - 110							
Y Carrier	88.7		40 - 110							
								<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
								12/31/19 11:01	01/14/20 16:49	1
								12/31/19 11:01	01/14/20 16:49	1

**Lab Sample ID: LCS 160-455727/1-A**  
**Matrix: Water**  
**Analysis Batch: 456741**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455727**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	9.20	9.320		1.08	1.00	0.346	pCi/L	101	75 - 125
<b>Carrier</b>	<b>LCS %Yield</b>	<b>LCS Qualifier</b>	<b>Limits</b>						
Ba Carrier	105		40 - 110						
Y Carrier	86.6		40 - 110						

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

## Method: 904.0 - Radium-228 (GFPC) (Continued)

**Lab Sample ID: 160-36828-B-23-D DU**  
**Matrix: Water**  
**Analysis Batch: 456742**

**Client Sample ID: Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 455727**

Analyte	Sample	Sample	DU		Total	RL	MDC	Unit	RER	Limit
	Result	Qual	Result	Qual	Uncert. (2σ+/-)					
Radium-228	1.14		0.7430		0.265	1.00	0.340	pCi/L	0.64	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>							
Ba Carrier	108		40 - 110							
Y Carrier	85.7		40 - 110							

## Method: 905 - Strontium-90 (GFPC)

**Lab Sample ID: MB 160-455843/10-A**  
**Matrix: Water**  
**Analysis Batch: 456913**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 455843**

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Strontium-90	-0.05834	U	0.268	0.268	3.00	0.482	pCi/L	01/07/20 06:20	01/15/20 10:02	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Sr Carrier	85.9		40 - 110					01/07/20 06:20	01/15/20 10:02	1
Y Carrier	91.2		40 - 110					01/07/20 06:20	01/15/20 10:02	1

**Lab Sample ID: LCS 160-455843/1-A**  
**Matrix: Water**  
**Analysis Batch: 456913**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455843**

Analyte	Spike Added	LCS	LCS	Total	RL	MDC	Unit	%Rec	%Rec. Limits
		Result	Qual	Uncert. (2σ+/-)					
Strontium-90	10.6	8.906		0.945	3.00	0.327	pCi/L	84	75 - 125
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>						
Sr Carrier	96.9		40 - 110						
Y Carrier	96.8		40 - 110						

**Lab Sample ID: 440-258077-F-1-G MS**  
**Matrix: Water**  
**Analysis Batch: 456913**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 455843**

Analyte	Sample	Sample	Spike	MS	MS	Total	RL	MDC	Unit	%Rec	%Rec. Limits
	Result	Qual	Added	Result	Qual	Uncert. (2σ+/-)					
Strontium-90	0.147	U	10.6	10.38		1.21	3.00	0.501	pCi/L	97	19 - 150
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>								
Sr Carrier	59.4		40 - 110								
Y Carrier	92.3		40 - 110								

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

## Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: 440-258077-F-1-H MSD  
Matrix: Water  
Analysis Batch: 456913

Client Sample ID: Matrix Spike Duplicate  
Prep Type: Total/NA  
Prep Batch: 455843

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total	RL	MDC	Unit	%Rec	%Rec.	RER	RER
	Result	Qual		Result	Qual	Uncert. (2σ+/-)					Limits		Limit
Strontium-90	0.147	U	10.6	10.34		1.15	3.00	0.477	pCi/L	96	19 - 150	0.02	1
<b>MSD MSD</b>													
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>										
Sr Carrier	70.6		40 - 110										
Y Carrier	95.3		40 - 110										

## Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-455651/1-A  
Matrix: Water  
Analysis Batch: 456022

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 455651

Analyte	MB	MB	Count Uncert. (2σ+/-)	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier		Uncert. (2σ+/-)						
Tritium	-49.55	U	149	149	500	280	pCi/L	12/30/19 13:27	12/31/19 09:18	1

Lab Sample ID: LCS 160-455651/2-A  
Matrix: Water  
Analysis Batch: 456022

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 455651

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Tritium	2510	2646		413	500	286	pCi/L	105	75 - 114

Lab Sample ID: 440-258077-I-1-B MS  
Matrix: Water  
Analysis Batch: 456022

Client Sample ID: Matrix Spike  
Prep Type: Total/NA  
Prep Batch: 455651

Analyte	Sample	Sample	Spike Added	MS	MS	Total	RL	MDC	Unit	%Rec	%Rec.
	Result	Qual		Result	Qual	Uncert. (2σ+/-)					Limits
Tritium	40.5	U	2510	2556		410	500	294	pCi/L	100	67 - 130

Lab Sample ID: 440-258077-I-1-C MSD  
Matrix: Water  
Analysis Batch: 456022

Client Sample ID: Matrix Spike Duplicate  
Prep Type: Total/NA  
Prep Batch: 455651

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total	RL	MDC	Unit	%Rec	%Rec.	RER	RER
	Result	Qual		Result	Qual	Uncert. (2σ+/-)					Limits	Limit	
Tritium	40.5	U	2500	2430		391	500	279	pCi/L	95	67 - 130	0.16	1

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-455686/1-A  
Matrix: Water  
Analysis Batch: 457035

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 455686

Analyte	MB	MB	Count Uncert. (2σ+/-)	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier		Uncert. (2σ+/-)						
Total Uranium	0.2103		0.180	0.181	1.00	0.182	pCi/L	12/30/19 16:10	01/16/20 09:32	1

Eurofins Calscience Irvine

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

<i>Tracer</i>	<i>MB MB</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Uranium-232	83.2		30 - 110	12/30/19 16:10	01/16/20 09:32	1

**Lab Sample ID: LCS 160-455686/2-A**  
**Matrix: Water**  
**Analysis Batch: 457036**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455686**

<i>Analyte</i>	<i>Spike Added</i>	<i>LCS Result</i>	<i>LCS Qual</i>	<i>Total Uncert. (2σ+/-)</i>	<i>RL</i>	<i>MDC</i>	<i>Unit</i>	<i>%Rec</i>	<i>%Rec. Limits</i>
Uranium-234	25.5	24.59		2.97	1.00	0.329	pCi/L	97	75 - 125
Uranium-238	26.0	25.84		3.08	1.00	0.309	pCi/L	99	75 - 125

<i>Tracer</i>	<i>LCS %Yield</i>	<i>LCS Qualifier</i>	<i>Limits</i>
Uranium-232	60.6		30 - 110

**Lab Sample ID: 440-258077-F-1-E MS**  
**Matrix: Water**  
**Analysis Batch: 457038**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 455686**

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qual</i>	<i>Spike Added</i>	<i>MS Result</i>	<i>MS Qual</i>	<i>Total Uncert. (2σ+/-)</i>	<i>RL</i>	<i>MDC</i>	<i>Unit</i>	<i>%Rec</i>	<i>%Rec. Limits</i>
Uranium-234	0.128	U	25.5	23.28		2.86	1.00	0.424	pCi/L	91	65 - 146
Uranium-238	0.0960	U	26.0	25.85		3.09	1.00	0.349	pCi/L	99	68 - 143

<i>Tracer</i>	<i>MS %Yield</i>	<i>MS Qualifier</i>	<i>Limits</i>
Uranium-232	61.7		30 - 110

**Lab Sample ID: 440-258077-F-1-F MSD**  
**Matrix: Water**  
**Analysis Batch: 457042**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 455686**

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qual</i>	<i>Spike Added</i>	<i>MSD Result</i>	<i>MSD Qual</i>	<i>Total Uncert. (2σ+/-)</i>	<i>RL</i>	<i>MDC</i>	<i>Unit</i>	<i>%Rec</i>	<i>%Rec. Limits</i>	<i>RER</i>	<i>RER Limit</i>
Uranium-234	0.128	U	25.5	23.64		2.93	1.00	0.446	pCi/L	92	65 - 146	0.06	1
Uranium-238	0.0960	U	26.0	24.68		3.02	1.00	0.367	pCi/L	94	68 - 143	0.19	1

<i>Tracer</i>	<i>MSD %Yield</i>	<i>MSD Qualifier</i>	<i>Limits</i>
Uranium-232	68.1		30 - 110

# QC Association Summary

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

## Rad

### Prep Batch: 455651

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-455651/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-455651/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-258077-I-1-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-258077-I-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

### Prep Batch: 455659

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-455659/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-455659/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-258219-1 DU	Outfall001_20191227_Comp	Total/NA	Water	Fill_Geo-0	

### Prep Batch: 455686

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	ExtChrom	
MB 160-455686/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-455686/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-258077-F-1-E MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-258077-F-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

### Prep Batch: 455705

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	PrecSep-21	
MB 160-455705/22-B	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-455705/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
160-36828-B-23-B DU	Duplicate	Total/NA	Water	PrecSep-21	

### Prep Batch: 455727

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	PrecSep_0	
MB 160-455727/22-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-455727/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
160-36828-B-23-D DU	Duplicate	Total/NA	Water	PrecSep_0	

### Prep Batch: 455777

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	Evaporation	
MB 160-455777/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-455777/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-455777/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-258077-J-1-G MS	Matrix Spike	Total/NA	Water	Evaporation	
440-258077-J-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-258077-J-1-I MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-258077-J-1-J MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

### Prep Batch: 455843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	PrecSep-7	
MB 160-455843/10-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-455843/1-A	Lab Control Sample	Total/NA	Water	PrecSep-7	

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

## Rad (Continued)

### Prep Batch: 455843 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-F-1-G MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-258077-F-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

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# Definitions/Glossary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

## Qualifiers

### Rad

Qualifier	Qualifier Description
G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

## Laboratory: Eurofins Calscience Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State Program	CA ELAP 2706	06-30-20

## Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-20
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Illinois	NELAP	004553	11-30-19 *
Iowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-20
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-20
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
West Virginia DEP	State	381	10-31-20

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

CHAIN OF CUSTODY FORM

Page 2 of 2  
PAGE 1 of 2

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2019 Quarterly Outfall (001, 002, 011, 018) Outfall 001 Comp		ANALYSIS REQUIRED Total Recoverable Metals: Mercury (E245.1) <input checked="" type="checkbox"/> X ethylhexylphthalate, NDMA, PCP (SVOCs E625) <input checked="" type="checkbox"/> X alpha-BHC (E608) <input checked="" type="checkbox"/> X Ammonia-N (350.2) <input checked="" type="checkbox"/> X TSS (160.2 (SM2540D)) <input checked="" type="checkbox"/> X Turbidity, TDS (SM2540C/E180.1) <input checked="" type="checkbox"/> X Cl-, SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Perchlorate (E300) <input checked="" type="checkbox"/> X Surfactants (MBAS) (SM540C/E425.1) <input checked="" type="checkbox"/> X BOD5 (20 degrees C) (E405.1) (SM5210B, BODCalc) <input checked="" type="checkbox"/> X TCDD (and all congeners) (E1613B) <input checked="" type="checkbox"/> X Total Recoverable Metals: (E200.7), Zn (E200.8), Cu, Pb, Cd, Se <input checked="" type="checkbox"/> X											
Test America Contact: Unvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 978.234.5033, 618.599.0702 (cell)		MS/MSD Bottle # 90 * 110 * 115 * 120 * 130 * 150 * 160 * 170 * 180 * 185 * 110 * 120 * 130 * 170 * 180 *											
Sample ID: Outfall001_20191227_Comp		Sampling Date/Time: 12/27/2019 09:40		Sample Matrix: WM		Container Type: 600 mL Poly		# of Cont: 1		Preservative: HNO3		MS/MSD No		Comments: 48 hours Holding Time NO3 & NO2 48 hours Holding Time for Turbidity	
Sample Description: Outfall001_20191227_Comp_Eteta		Sampling Date/Time: 12/27/2019 11:20		Sample Matrix: WM		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		MS/MSD No		Comments: 48 hours Holding Time NO3 & NO2 48 hours Holding Time for Turbidity	

Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quarterly, QRSW=Quarterly Receiving Water, S=Semi-Annual

Relinquished by: [Signature] Date/Time: 12/27/19 09:40 Company: HALEY & ALDRICH

Relinquished by: [Signature] Date/Time: 12/27/19 11:20 Company: TARY

Relinquished by: [Signature] Date/Time: 12/27/19 11:20 Company: TARY

Turn-around time (Check): 24 Hour: \_\_\_\_\_ 72 Hour: \_\_\_\_\_ 10 Day: \_\_\_\_\_ X  
 48 Hour: \_\_\_\_\_ 5 Day: \_\_\_\_\_ Normal: \_\_\_\_\_

Sample integrity (Check): Intact: \_\_\_\_\_ On Ice: \_\_\_\_\_  
 Store samples for 6 months. Data Requirements: (Check) No Level IV: \_\_\_\_\_ All Level IV: \_\_\_\_\_ X

1.4/1.7 1.5/1.8 1.3/1.6 1R/4

12/27/19 LD



440-258219 Chain of Custody





## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-258219-2

**Login Number: 258219**

**List Number: 1**

**Creator: Soderblom, Tim**

**List Source: Eurofins Irvine**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-258219-2

**Login Number: 258219**

**List Number: 2**

**Creator: Harris, Lorin C**

**List Source: Eurofins TestAmerica, St. Louis**

**List Creation: 12/28/19 12:04 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

## Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

			Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)		
160-36828-B-23-B DU	Duplicate	108		
440-258219-1	Outfall001_20191227_Comp	96.4		
LCS 160-455705/1-A	Lab Control Sample	105		
MB 160-455705/22-B	Method Blank	105		
<b>Tracer/Carrier Legend</b>				
Ba Carrier = Ba Carrier				

## Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

				Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)		
160-36828-B-23-D DU	Duplicate	108	85.7		
440-258219-1	Outfall001_20191227_Comp	96.4	88.7		
LCS 160-455727/1-A	Lab Control Sample	105	86.6		
MB 160-455727/22-A	Method Blank	105	88.7		
<b>Tracer/Carrier Legend</b>					
Ba Carrier = Ba Carrier					
Y Carrier = Y Carrier					

## Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

				Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Sr Carrier (40-110)	Y Carrier (40-110)		
440-258077-F-1-G MS	Matrix Spike	59.4	92.3		
440-258077-F-1-H MSD	Matrix Spike Duplicate	70.6	95.3		
440-258219-1	Outfall001_20191227_Comp	73.7	87.5		
LCS 160-455843/1-A	Lab Control Sample	96.9	96.8		
MB 160-455843/10-A	Method Blank	85.9	91.2		
<b>Tracer/Carrier Legend</b>					
Sr Carrier = Sr Carrier					
Y Carrier = Y Carrier					

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

			Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	uranium-232 (30-110)		
440-258077-F-1-E MS	Matrix Spike	61.7		
440-258077-F-1-F MSD	Matrix Spike Duplicate	68.1		
440-258219-1	Outfall001_20191227_Comp	51.6		
LCS 160-455686/2-A	Lab Control Sample	60.6		
MB 160-455686/1-A	Method Blank	83.2		
<b>Tracer/Carrier Legend</b>				
Uranium-232 = Uranium-232				

**Christine, Mark B.**

**From:** Baluran, Dwayne <DBaluran@haleyaldrich.com>  
**Sent:** Monday, December 30, 2019 2:54 PM  
**To:** Christine, Mark B.  
**Cc:** Miller, Katherine  
**Subject:** FW: Eurofins TestAmerica sample confirmation files from 440-258216-1 BMP Performance OF 001, 002, and/or 009  
**Attachments:** SmpLoginAckLimits\_440-258216-1 [Std\_Tal\_Login\_Limits].pdf; COC 440-258216 (201912271418).pdf; SampleLoginAck\_440-258216-1 [Std\_Tal\_Login\_Ack].pdf; Eurofins TestAmerica sample confirmation files from 440-258219-1 Outfall 001 Comp.msg  
**Importance:** High

**-External Email-**

Hi Mark,

After reviewing the sample receipts for recent events (BMP sampling, OF001 comp, OF008 comp) I have the following comments:

Sampling Event	Sample Delivery Group	Samples Included	Work Order or COC Corrections?
ISRA/BMP	440-258216-1	A1BMP0002_20191226, A1BMP0003_20191226, LXBMP0011_20191226, LXBMP0012_20191226, EPSW0011E01_20191226, EPSW002BG01_20191226	COC - incorrect sample ID names. All should be readjusted to "20191226" (the date the samples were collected) in the work order. Incorrect project number. Please update Work Order to "129095-004 5.1"  I assume the Gross Alpha Total and Dissolved for the last two sample IDs are in a separate SDG (440-258216-2) that will be sent to us at a later date?
OF001 -Qtrly	440-258219-1	Outfall001_20191227_Comp, Outfall001_20191227_Comp_F	Work Order - per the comments, only test for Fe at OF001. Please remove Al, As, and Mn from both Total and Dissolved Metals.

**From:** Miller, Katherine <KMiller@haleyaldrich.com>  
**Sent:** Monday, December 30, 2019 9:15 AM  
**To:** Baluran, Dwayne <DBaluran@haleyaldrich.com>  
**Subject:** FW: Eurofins TestAmerica sample confirmation files from 440-258216-1 BMP Performance OF 001, 002, and/or 009  
**Importance:** High

Please review and see email below

Katherine Miller  
**HALEY & ALDRICH**



Tel: 520.289.8606

---

**From:** Mark Christine <[mark.christine@testamericainc.com](mailto:mark.christine@testamericainc.com)>

**Sent:** Monday, December 30, 2019 10:01 AM

**To:** Kim Schultz <[kim.schultz@mecx.net](mailto:kim.schultz@mecx.net)>; Miller, Katherine <[KMiller@haleyaldrich.com](mailto:KMiller@haleyaldrich.com)>

**Subject:** Eurofins TestAmerica sample confirmation files from 440-258216-1 BMP Performance OF 001, 002, and/or 009

**CAUTION: External Email**

---

Hello,

Attached please find the sample confirmation files for job 440-258216-1; BMP Performance OF 001, 002, and/or 009.

Please verify sample IDs. COC SAMPLE #\_2019121226, looks like it is doubled up on the 12s. Logged in per COC.

Sample #1 A1BMP002\_2019121226 (440-258216-1) has a "1" instead of an "X" under the 1613 Dioxons. Sample was logged in for the dioxins, please confirm.

Please feel free to contact me or your PM Urvashi Patel if you have any questions.

Thank you.

**Mark B Christine**

Project Manager Assistant

Eurofins TestAmerica, Irvine

E-mail: [mark.christine@testamericainc.com](mailto:mark.christine@testamericainc.com)

[www.eurofinsus.com](http://www.eurofinsus.com) | [www.testamericainc.com](http://www.testamericainc.com)



Reference: [440-575685]

Attachments: 3

Please let us know if we met your expectations by rating the service you received from Eurofins TestAmerica on this project by visiting our website at: [Project Feedback](#)

## ANALYTICAL REPORT

Eurofins Calscience Irvine  
17461 Derian Ave  
Suite 100  
Irvine, CA 92614-5817  
Tel: (949)261-1022

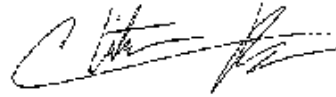
Laboratory Job ID: 440-258219-4

Client Project/Site: Quarterly Outfall 001 Comp

**For:**

Haley & Aldrich, Inc.  
400 E Van Buren St.  
Suite 545  
Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:  
2/13/2020 10:01:08 AM

Christian Bondoc, Project Manager I  
(949)260-3218  
[christian.bondoc@testamericainc.com](mailto:christian.bondoc@testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

- 1
- 2
- 3
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- 11
- 12
- 13
- 14

I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



---

Christian Bondoc  
Project Manager I  
2/13/2020 10:01:08 AM



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# Sample Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-4

---

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-258219-1	Outfall001_20191227_Comp	Water	12/27/19 07:25	12/27/19 11:20	

---

- 1
- 2
- 3
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- 9
- 10
- 11
- 12
- 13
- 14

# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-4

## Job ID: 440-258219-4

### Laboratory: Eurofins Calscience Irvine

#### Narrative

#### Job Narrative 440-258219-4

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/27/2019 11:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.6° C, 1.7° C and 1.8° C.

#### RAD

Method 901.1: Gamma Prep Batch 160-457943

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred from    Reported to Analyte

Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Pb-212	Po-216
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-211
Th-227	Pb-211
Bi-214	Ra-226

Outfall001\_20191227\_Comp (440-258219-1), (LCS 160-457943/2-A), (MB 160-457943/1-A) and (440-258219-Q-1-I DU)

Method A-01-R: Isotopic Americium Prep Batch 160-458734

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall001\_20191227\_Comp (440-258219-1), (LCS 160-458734/2-A), (LCSD 160-458734/3-A) and (MB 160-458734/1-A)

Method A-01-R: Isotopic Polonium Prep Batch 160-459832

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-4

## Job ID: 440-258219-4 (Continued)

### Laboratory: Eurofins Calscience Irvine (Continued)

Outfall001\_20191227\_Comp (440-258219-1), (LCS 160-459832/2-A), (MB 160-459832/1-A) and (440-258219-Q-1-P DU)

Method A-01-R: Isotopic Plutonium Prep Batch 160-458733

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall001\_20191227\_Comp (440-258219-1), (LCS 160-458733/2-A), (LCSD 160-458733/3-A) and (MB 160-458733/1-A)

Method A-01-R: Isotopic Thorium Prep Batch 160-458735

A blank population correction was applied to account for contributions to the analyte count rate from sources other than the sample itself. Interferences may include, but are not limited to, impurities in reagents, tracers, or glassware, or effects due to the measurement process (such as tailing or crosstalk).

Outfall001\_20191227\_Comp (440-258219-1), (LCS 160-458735/2-A), (LCSD 160-458735/3-A) and (MB 160-458735/1-A)

Method A-01-R: Isotopic Thorium Prep Batch 160-458735

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall001\_20191227\_Comp (440-258219-1), (LCS 160-458735/2-A), (LCSD 160-458735/3-A) and (MB 160-458735/1-A)

Method Digest/Cu Plate: Polonium Prep Batch 458677:

The following samples were run at a reduced aliquot due to heavy sediment in the sample matrix: Outfall001\_20191227\_Comp (440-258219-1) and (440-258219-Q-1 DU).

Method ExtChrom: Plutonium Prep Batch 160-458733

The following samples were prepared at a reduced aliquot due to a brown discoloration and suspended solids:

Outfall001\_20191227\_Comp (440-258219-1). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead of a sample (DUP) to demonstrate batch precision.

Method ExtChrom: Americium Prep Batch 160-458734

The following samples were prepared at a reduced aliquot due to a brown discoloration and suspended solids:

Outfall001\_20191227\_Comp (440-258219-1). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead of a sample (DUP) to demonstrate batch precision.

Method ExtChrom: Thorium Prep Batch 160-458735

The following samples were prepared at a reduced aliquot due to a brown discoloration and suspended solids:

Outfall001\_20191227\_Comp (440-258219-1). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead of a sample (DUP) to demonstrate batch precision.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-4

**Client Sample ID: Outfall001\_20191227\_Comp**

**Lab Sample ID: 440-258219-1**

Date Collected: 12/27/19 07:25

Matrix: Water

Date Received: 12/27/19 11:20

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Actinium-227	29.3	U	43.2	43.3		99.0	pCi/L	01/23/20 16:27	01/24/20 07:55	1
Cesium-137	3.88	U	8.11	8.12	20.0	13.9	pCi/L	01/23/20 16:27	01/24/20 07:55	1
Bismuth-211	29.3	U	43.2	43.3		99.0	pCi/L	01/23/20 16:27	01/24/20 07:55	1
Bismuth-212	28.4	U	89.6	89.6		157	pCi/L	01/23/20 16:27	01/24/20 07:55	1
Thorium-227	29.3	U	43.2	43.3		99.0	pCi/L	01/23/20 16:27	01/24/20 07:55	1
Radium-223	29.3	U	43.2	43.3		99.0	pCi/L	01/23/20 16:27	01/24/20 07:55	1
Radium-224	13.5	U	13.9	14.0		17.9	pCi/L	01/23/20 16:27	01/24/20 07:55	1
Protactinium-231	51.3	U	171	172		564	pCi/L	01/23/20 16:27	01/24/20 07:55	1

## Method: A-01-R - Isotopic Curium and/or Americium 241 (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Americium-241	0.000	U	0.0918	0.0918	1.00	0.274	pCi/L	01/30/20 17:21	02/07/20 12:36	1
<b>Tracer</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Americium-243	81.5		30 - 110					01/30/20 17:21	02/07/20 12:36	1

## Method: A-01-R - Isotopic Plutonium and Neptunium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Plutonium-238	0.0238	U	0.101	0.101	1.00	0.267	pCi/L	01/30/20 17:10	02/07/20 12:35	1
Plutonium-239/240	-0.0239	U	0.0337	0.0338	1.00	0.267	pCi/L	01/30/20 17:10	02/07/20 12:35	1
<b>Tracer</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Pu-242 (T)	65.8		30 - 110					01/30/20 17:10	02/07/20 12:35	1

## Method: A-01-R - Isotopic Polonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
<b>Polonium-210</b>	<b>0.524</b>		0.315	0.318	1.00	0.445	pCi/L	02/10/20 16:01	02/12/20 06:46	1
<b>Tracer</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Polonium-209	92.4		30 - 110					02/10/20 16:01	02/12/20 06:46	1

## Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
<b>Thorium-228</b>	<b>0.957</b>		0.480	0.487	1.00	0.515	pCi/L	01/30/20 17:24	02/07/20 12:31	1
<b>Thorium-230</b>	<b>0.669</b>		0.427	0.431	1.00	0.445	pCi/L	01/30/20 17:24	02/07/20 12:31	1
<b>Thorium-232</b>	<b>0.774</b>		0.394	0.399	1.00	0.361	pCi/L	01/30/20 17:24	02/07/20 12:31	1
<b>Tracer</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Thorium-229	61.1		30 - 110					01/30/20 17:24	02/07/20 12:31	1



# Method Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-4

Method	Method Description	Protocol	Laboratory
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
A-01-R	Isotopic Curium and/or Americium 241 (Alpha Spectrometry)	DOE	TAL SL
A-01-R	Isotopic Plutonium and Neptunium (Alpha Spectrometry)	DOE	TAL SL
A-01-R	Isotopic Polonium (Alpha Spectrometry)	DOE	TAL SL
A-01-R	Isotopic Thorium (Alpha Spectrometry)	DOE	TAL SL
Digest/Cu Plate	Preparation, Digestion & Copper Plating	TAL-STL	TAL SL
ExtChrom	Preparation, Extraction Chromatography Resin Actinide Separation	None	TAL SL
Fill_Geo-0	Fill Geometry, No In-Growth	None	TAL SL

#### Protocol References:

- DOE = U.S. Department of Energy
- EPA = US Environmental Protection Agency
- None = None
- TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

#### Laboratory References:

- TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# Lab Chronicle

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-4

**Client Sample ID: Outfall001\_20191227\_Comp**

**Lab Sample ID: 440-258219-1**

**Date Collected: 12/27/19 07:25**

**Matrix: Water**

**Date Received: 12/27/19 11:20**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	457943	01/23/20 16:27	CLP	TAL SL
Total/NA	Analysis	901.1		1			458007	01/24/20 07:55	KLS	TAL SL
Total/NA	Prep	ExtChrom			250.08 mL	1.0 mL	458735	01/30/20 17:24	KLH	TAL SL
Total/NA	Analysis	A-01-R		1			459694	02/07/20 12:31	KRR	TAL SL
Total/NA	Prep	ExtChrom			250.08 mL	1.0 mL	458733	01/30/20 17:10	KLH	TAL SL
Total/NA	Analysis	A-01-R		1			459653	02/07/20 12:35	KRR	TAL SL
Total/NA	Prep	ExtChrom			250.08 mL	1.0 mL	458734	01/30/20 17:21	KLH	TAL SL
Total/NA	Analysis	A-01-R		1			459648	02/07/20 12:36	KRR	TAL SL
Total/NA	Prep	Digest/Cu Plate			100.08 mL	1.0 g	459832	02/10/20 16:01	HET	TAL SL
Total/NA	Analysis	A-01-R		1			460122	02/12/20 06:46	KRR	TAL SL

**Laboratory References:**

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-4

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

**Lab Sample ID: MB 160-457943/1-A**  
**Matrix: Water**  
**Analysis Batch: 458006**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 457943**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Actinium-227	37.48	U	79.8	79.9		99.1	pCi/L	01/23/20 16:27	01/24/20 07:54	1
Cesium-137	-3.689	U	13.3	13.3	20.0	19.2	pCi/L	01/23/20 16:27	01/24/20 07:54	1
Bismuth-211	37.48	U	79.8	79.9		99.1	pCi/L	01/23/20 16:27	01/24/20 07:54	1
Bismuth-212	40.33	U	89.3	89.4		153	pCi/L	01/23/20 16:27	01/24/20 07:54	1
Thorium-227	37.48	U	79.8	79.9		99.1	pCi/L	01/23/20 16:27	01/24/20 07:54	1
Radium-223	37.48	U	79.8	79.9		99.1	pCi/L	01/23/20 16:27	01/24/20 07:54	1
Radium-224	-4.012	U	16.9	16.9		29.1	pCi/L	01/23/20 16:27	01/24/20 07:54	1
Protactinium-231	0.0000	U	129	129		624	pCi/L	01/23/20 16:27	01/24/20 07:54	1

**Lab Sample ID: LCS 160-457943/2-A**  
**Matrix: Water**  
**Analysis Batch: 458006**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 457943**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Americium-241	136000	129000		14900		414	pCi/L	95	90 - 111
Cesium-137	43900	43850		4400	20.0	101	pCi/L	100	90 - 111
Cobalt-60	27000	26420		2610		60.7	pCi/L	98	89 - 110

**Lab Sample ID: 440-258219-1 DU**  
**Matrix: Water**  
**Analysis Batch: 458005**

**Client Sample ID: Outfall001\_20191227\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 457943**

Analyte	Sample Sample		DU DU	Total	RL	MDC	Unit	RER	RER
	Result	Qual	Result	Qual					Uncert. (2σ+/-)
Actinium-227	29.3	U	6.297	U	17.0	133	pCi/L	0.38	1
Cesium-137	3.88	U	0.2454	U	7.65	20.0	pCi/L	0.23	1
Bismuth-211	29.3	U	6.297	U	17.0	133	pCi/L	0.38	1
Bismuth-212	28.4	U	35.23	U	73.2	128	pCi/L	0.04	1
Thorium-227	29.3	U	6.297	U	17.0	133	pCi/L	0.38	1
Radium-223	29.3	U	6.297	U	17.0	133	pCi/L	0.38	1
Radium-224	13.5	U	-7.191	U	21.6	37.2	pCi/L	0.58	1
Protactinium-231	51.3	U	95.84	U	248	571	pCi/L	0.11	1

## Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

**Lab Sample ID: MB 160-458735/1-A**  
**Matrix: Water**  
**Analysis Batch: 459688**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 458735**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Thorium-228	-0.2270	U	0.210	0.211	1.00	0.551	pCi/L	01/30/20 17:24	02/07/20 12:31	1
Thorium-230	-0.1018	U	0.259	0.259	1.00	0.507	pCi/L	01/30/20 17:24	02/07/20 12:31	1
Thorium-232	-0.005540	U	0.150	0.150	1.00	0.361	pCi/L	01/30/20 17:24	02/07/20 12:31	1
Tracer	MB	MB						Prepared	Analyzed	Dil Fac
Thorium-229	%Yield	Qualifier	Limits					01/30/20 17:24	02/07/20 12:31	1

Eurofins Calscience Irvine

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-4

## Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

**Lab Sample ID: LCS 160-458735/2-A**  
**Matrix: Water**  
**Analysis Batch: 459689**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 458735**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Thorium-230	16.1	17.08		2.10	1.00	0.421	pCi/L	106	81 - 125	
<b>Tracer</b>	<b>LCS %Yield</b>	<b>LCS Qualifier</b>	<b>Limits</b>							
Thorium-229	95.7		30 - 110							

**Lab Sample ID: LCSD 160-458735/3-A**  
**Matrix: Water**  
**Analysis Batch: 459693**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 458735**

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Thorium-230	16.1	17.10		2.10	1.00	0.376	pCi/L	106	81 - 125	0	1
<b>Tracer</b>	<b>LCSD %Yield</b>	<b>LCSD Qualifier</b>	<b>Limits</b>								
Thorium-229	92.6		30 - 110								

## Method: A-01-R - Isotopic Polonium (Alpha Spectrometry)

**Lab Sample ID: MB 160-459832/1-A**  
**Matrix: Water**  
**Analysis Batch: 460119**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 459832**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Polonium-210	0.02111	U	0.302	0.302	1.00	0.555	pCi/L	02/10/20 16:01	02/12/20 06:46	1
<b>Tracer</b>	<b>MB %Yield</b>	<b>MB Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>	
Polonium-209	85.0		30 - 110				02/10/20 16:01	02/12/20 06:46	1	

**Lab Sample ID: LCS 160-459832/2-A**  
**Matrix: Water**  
**Analysis Batch: 460120**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 459832**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Polonium-210	83.8	82.35		7.41	1.00	0.395	pCi/L	98	79 - 124
<b>Tracer</b>	<b>LCS %Yield</b>	<b>LCS Qualifier</b>	<b>Limits</b>						
Polonium-209	89.8		30 - 110						

**Lab Sample ID: 440-258219-1 DU**  
**Matrix: Water**  
**Analysis Batch: 460127**

**Client Sample ID: Outfall001\_20191227\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 459832**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Polonium-210	0.524		0.6624		0.337	1.00	0.437	pCi/L	0.21	1

Eurofins Calscience Irvine

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-4

## Method: A-01-R - Isotopic Polonium (Alpha Spectrometry) (Continued)

Tracer	DU DU		Limits
	%Yield	Qualifier	
Polonium-209	74.5		30 - 110

## Method: A-01-R - Isotopic Curium and/or Americium 241 (Alpha Spectrometry)

Lab Sample ID: MB 160-458734/1-A  
Matrix: Water  
Analysis Batch: 459645

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 458734

Analyte	MB MB		Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier								
Americium-241	-0.04445	U	0.0398	0.0401	1.00	0.253	pCi/L	01/30/20 17:21	02/07/20 12:36	1

Tracer	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Yield	Qualifier				
Americium-243	86.3		30 - 110	01/30/20 17:21	02/07/20 12:36	1

Lab Sample ID: LCS 160-458734/2-A  
Matrix: Water  
Analysis Batch: 459646

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 458734

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits

Tracer	LCS LCS		Limits
	%Yield	Qualifier	
Americium-24	97.6		30 - 110

Lab Sample ID: LCSD 160-458734/3-A  
Matrix: Water  
Analysis Batch: 459647

Client Sample ID: Lab Control Sample Dup  
Prep Type: Total/NA  
Prep Batch: 458734

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	Limit

Tracer	LCSD LCSD		Limits
	%Yield	Qualifier	
Americium-24	84.2		30 - 110

## Method: A-01-R - Isotopic Plutonium and Neptunium (Alpha Spectrometry)

Lab Sample ID: MB 160-458733/1-A  
Matrix: Water  
Analysis Batch: 459649

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 458733

Analyte	MB MB		Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier								
Plutonium-238	0.07358	U	0.133	0.133	1.00	0.246	pCi/L	01/30/20 17:10	02/07/20 12:34	1
Plutonium-239/240	0.01841	U	0.0781	0.0781	1.00	0.206	pCi/L	01/30/20 17:10	02/07/20 12:34	1

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-4

## Method: A-01-R - Isotopic Plutonium and Neptunium (Alpha Spectrometry) (Continued)

**Lab Sample ID: MB 160-458733/1-A**  
**Matrix: Water**  
**Analysis Batch: 459649**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 458733**

Tracer	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Yield	Qualifier				
Pu-242 (T)	75.7		30 - 110	01/30/20 17:10	02/07/20 12:34	1

**Lab Sample ID: LCS 160-458733/2-A**  
**Matrix: Water**  
**Analysis Batch: 459651**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 458733**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
									Plutonium-238	21.0
Plutonium-239/240	21.1	21.16		2.44	1.00	0.161	pCi/L	100	85 - 120	

Tracer	LCS LCS		Limits
	%Yield	Qualifier	
Pu-242 (T)	84.5		30 - 110

**Lab Sample ID: LCSD 160-458733/3-A**  
**Matrix: Water**  
**Analysis Batch: 459652**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 458733**

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	RER Limit
									Plutonium-238	21.0	23.98	
Plutonium-239/240	21.1	23.58		2.75	1.00	0.256	pCi/L	112	85 - 120	0.47	1	

Tracer	LCSD LCSD		Limits
	%Yield	Qualifier	
Pu-242 (T)	73.6		30 - 110

# QC Association Summary

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-4

## Rad

### Prep Batch: 457943

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-457943/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-457943/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-258219-1 DU	Outfall001_20191227_Comp	Total/NA	Water	Fill_Geo-0	

### Prep Batch: 458733

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	ExtChrom	
MB 160-458733/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-458733/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
LCSD 160-458733/3-A	Lab Control Sample Dup	Total/NA	Water	ExtChrom	

### Prep Batch: 458734

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	ExtChrom	
MB 160-458734/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-458734/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
LCSD 160-458734/3-A	Lab Control Sample Dup	Total/NA	Water	ExtChrom	

### Prep Batch: 458735

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	ExtChrom	
MB 160-458735/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-458735/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
LCSD 160-458735/3-A	Lab Control Sample Dup	Total/NA	Water	ExtChrom	

### Prep Batch: 459832

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	Digest/Cu Plate	
MB 160-459832/1-A	Method Blank	Total/NA	Water	Digest/Cu Plate	
LCS 160-459832/2-A	Lab Control Sample	Total/NA	Water	Digest/Cu Plate	
440-258219-1 DU	Outfall001_20191227_Comp	Total/NA	Water	Digest/Cu Plate	

# Definitions/Glossary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-4

## Qualifiers

### Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)



# Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-4

## Laboratory: Eurofins Calscience Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State Program	CA ELAP 2706	06-30-20

## Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-20
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Illinois	NELAP	004553	11-30-19 *
Iowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-20
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-20
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20 *
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
West Virginia DEP	State	381	10-31-20

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

## Bondoc, Christian M.

---

**From:** Miller, Katherine <KMiller@haleyaldrich.com>  
**Sent:** Thursday, January 23, 2020 10:13 AM  
**To:** Bondoc, Christian M.  
**Subject:** RE: 440-258219-2

**Importance:** High

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

### **-External Email-**

---

Please add the following to 440-258219-2 (similar to 440-226830-1) on the fastest turn possible. Please let me know when this can report.

<b>MAN-MADE RADIOCHEMISTRY RESULTS</b>
Americium-241
Plutonium-238
Plutonium-239/240
<b>NATURALLY OCCURRING RADIOCHEMISTRY RESULTS BY GAMMA SPECTROSCOPY</b>
Actinium-227
Bismuth-211
Bismuth-212
Polonium-210
Protactinium-231
Radium-223
Radium-224
Thorium-227
<b>NATURALLY OCCURRING RADIOCHEMISTRY RESULTS BY ALPHA SPECTROSCOPY</b>
Thorium-228
Thorium-230
Thorium-232

Katherine Miller  
**HALEY & ALDRICH**  
Tel: 520.289.8606

---

**From:** Bondoc, Christian M. <[Christian.Bondoc@testamericainc.com](mailto:Christian.Bondoc@testamericainc.com)>  
**Sent:** Thursday, January 23, 2020 10:47 AM  
**To:** Miller, Katherine <[KMiller@haleyaldrich.com](mailto:KMiller@haleyaldrich.com)>  
**Subject:** RE: 440-258219-2

**CAUTION: External Email**

---

Here is the L2 prelim report. Let me know if you need anything further.

Thanks,

**Christian Bondoc**

Main: 949-261-1022  
Direct: 949-260-3218  
Cell: 657-250-0229

E-mail: [Christian.bondoc@testamericainc.com](mailto:Christian.bondoc@testamericainc.com)

---

**From:** Miller, Katherine [<mailto:KMiller@haleyaldrich.com>]

**Sent:** Thursday, January 23, 2020 9:33 AM

**To:** Bondoc, Christian M.

**Subject:** 440-258219-2

**Importance:** High

**-External Email-**

---

Christian,

Could you get me the prelim results for 440-258219-2 Gross Alpha including result, error, and MDA? If I have an exceedance, we will need to ask for gamma list.

**Katherine Miller**

Project Manager

**Haley Aldrich, Inc.**

600 South Meyer Ave. | Suite 100

Tucson, AZ 85701

T: (520) 289.8606

C: (520) 904.6944

[www.haleyaldrich.com](http://www.haleyaldrich.com)

# CHAIN OF CUSTODY FORM

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PAGE 1 of 2

R C

**Client Name/Address:**  
 Haley & Aldrich  
 5333 Mission Center Rd Suite 300  
 San Diego, CA 92108

**Project:**  
 Boeing-SSFL NPDES  
 Permit 2019  
 Quarterly Outfall #001\_002\_011\_018  
 Outfall 001  
 Comp

**Test America Contact:** Unvashi Patel  
 17461 Derian Ave Suite #100  
 Irvine CA 92614  
 Tel 949-260-3269  
 Cell 949-333-9055

**Project Manager:** Katherine Miller  
 520.289.8606, 520.904.6944 (cell)

**Field Manager:** Mark Dominick  
 978.234.5033, 818.599.0702 (cell)

**Sampler:** Dan Smith

*Test America's services under this CSC shall be performed in accordance with the TSC's with Blanket Service Agreement 2019-22, applicable to all Test America and between Haley & Aldrich, Inc. its subsidiaries and affiliates, and TestAmerica Laboratories Inc.*

Sample Description	Sample Matrix	Sampling Date/Time	Sample ID	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	ANALYSIS REQUIRED												Comments			
									Total Recoverable Metals: Lead (2007), Zn (2007), Cu, Pb, Cd, Se (2007)	TCDD (and all congeners) (E161B)	BOD5 (20 degrees C) (E405)	(SM5210B, BODChlor)	Surfactants (MBS) (SM540C/E425)	C, SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Perchlorate (E300)	Turbidity, TDS (SM2540C/E180)	TSS (1602 (SM2540D))	Ammonia-N (3502)	alpha-BHC (E908)	2,4,6-TPC, 2,4-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, PCP (SVOCs E625)	Total Recoverable Metals: Mercury (E245.1)		(Total Recoverable Metals (E2007), Ar, As, Mn, Fe)		
Outfall 001	WM		Outfall001_20191227_Comp	600 mL Poly	1	HNO3	90	No		X														
	WM			1L Glass Amber	2	None	110	No																
	WM			1L Poly	1	None	115	No		X														
	WM			600 mL Poly	2	None	120	No																
	WM	12/27/2019 1:30		500 mL Poly	2	None	130	No			X													48 hours Holding Time NO3 & NO2
	WM			500 mL Poly	1	None	150	No					X											48 hours Holding Time for Turbidity
	WM			500 mL Poly	1	H2SO4	160	No						X										
	WM			1L Glass Amber	2	None	170	No							X									
	WM			1L Glass Amber	2	None	180	No								X								
	WM			1L Poly	1	None	185	No																
	WM			1L Glass Amber	2	None	110	No																
	WM			500 mL Poly	2	None	120	No																
	WM			500 mL Poly	2	None	130	No							X									
	WM			1L Glass Amber	2	None	170	No																
	WM			1L Glass Amber	2	None	180	No																

**Legend:** A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quarterly, QRSW=Quarterly Receiving Water, S=Semi-Annual

**Received By:** [Signature] Date/Time: 12/27/19 09:40 Company: HALEY & ALDRICH

**Received By:** [Signature] Date/Time: 12/27/19 11:20 Company: TARY

**Received By:** [Signature] Date/Time: 12/27/19 11:20 Company: TARY

**Turn-around time (Check):** 24 Hour: \_\_\_ 72 Hour: \_\_\_ 10 Day: \_\_\_ X  
 48 Hour: \_\_\_ 5 Day: \_\_\_ Normal: \_\_\_

**Sample integrity (Check):** Intact: \_\_\_  
 Store samples for 6 months: \_\_\_  
 Data Requirements: (Check) No Level IV: \_\_\_ All Level IV: \_\_\_ X

1.4/1.7 1.5/1.8 1.3/1.6 1R/14

12/27/19 LD



440-258219 Chain of Custody



CHAIN OF CUSTODY FORM

Pages 01 of 2  
PAGE 1 of 2

Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	Total Dissolved Metals (E200.7), Zn (E200.8), Cu, Pb, Cd, Se	Cyanide (SM4500-CN-E / E335.2)	Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (T-3) (E900.0), Sr-90 (E905.0), Total Combined Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1)	Chronic Toxicity - Selenium (EPA-821-R-02-019) AEC Class in Ventura Co	Total Dissolved Metals: Mercury (E245.1)	Priority Pollutants-Pesticides+PCBs (E508)	Total Recoverable Metals	Total Dissolved Metals: (E200.7), As, Mn, Pb	Chlorpyrifos, Diazinon (E525.2)	Comments
Outfall 001	Outfall001_20191227_Comp_F	12/27/2019 10:35	WM	1L Poly	1	None	190 *	No	X				X					Filler and preserve with 24hrs of receipt at lab at OF001,002,011, or 018.  at OF001,002,011, or 018.  Filler and preserve with 24hrs of receipt at lab at OF001,002,011, or 018. Chlorine, DDE, DDT, dieldrin, PCBs, toxaphene at OF001,002,011, or 018. Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.  Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD.  Only test if first or second run exceeds of the year. Deliver to ABC Labs in Ventura, CA.  Extract within 24-hours of sampling at Weick Labs
			WM	500 mL Poly	1	HNO <sub>3</sub>	80 *	No										
Outfall 001	Outfall001_20191227_Comp	12/27/2019 10:35	WM	1L Glass Amber	2	None	250 *	No					X					Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD.  Only test if first or second run exceeds of the year. Deliver to ABC Labs in Ventura, CA.  Extract within 24-hours of sampling at Weick Labs
			WM	borosilicate vials	1	None	320 *	No										
Outfall 001	Outfall001_20191227_Comp	12/27/2019 10:35	WM	500 mL Poly	1	NaOH	220 *	No	X									Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD.  Only test if first or second run exceeds of the year. Deliver to ABC Labs in Ventura, CA.  Extract within 24-hours of sampling at Weick Labs
			WM	2.5 Gal Cube	1	None	225 *	No										
Outfall 001	Outfall001_20191227_Comp	12/27/2019 10:35	WM	1L Glass Amber	1	None	230 *	No										Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD.  Only test if first or second run exceeds of the year. Deliver to ABC Labs in Ventura, CA.  Extract within 24-hours of sampling at Weick Labs
			WM	1 Gal Cube	6	None	235	No										
Outfall 001	Outfall001_20191227_Comp	12/27/2019 10:35	WM	1L Glass Amber	2	HCl	275	No										Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD.  Only test if first or second run exceeds of the year. Deliver to ABC Labs in Ventura, CA.  Extract within 24-hours of sampling at Weick Labs
			WM	1L Glass Amber	2	HCl	275	No										

Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quarterly, QRSW=Quarterly Receiving Water, S=Semi-Annual

Relinquished By: *[Signature]* Date/Time: 12/27/2019 09:40 Company: HALEY & ALDRICH  
 Relinquished By: *[Signature]* Date/Time: 12/27/2019 11:20 Company: TA IDV  
 Relinquished By: *[Signature]* Date/Time: 12/27/2019 11:20 Company: TA IDV

Received By: *[Signature]* Date/Time: 12/27/2019 09:45  
 Received By: *[Signature]* Date/Time: 12/27/2019 11:20  
 Received By: *[Signature]* Date/Time: 12/27/2019 11:20

Turn-around time (Check): 24 Hour:  72 Hour:  10 Day:   
 48 Hour:  5 Day:  Normal:   
 Sample integrity (Check): Intact:  On Ice:   
 Store samples for 3 months. Data Requirements (Check): No Level IV:  All Level IV:



## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-258219-4

**Login Number: 258219**

**List Number: 1**

**Creator: Soderblom, Tim**

**List Source: Eurofins Irvine**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-258219-4

**Login Number: 258219**

**List Number: 2**

**Creator: Harris, Lorin C**

**List Source: Eurofins TestAmerica, St. Louis**

**List Creation: 12/28/19 12:04 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-4

## Method: A-01-R - Isotopic Curium and/or Americium 241 (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

### Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Americium-241 (30-110)
440-258219-1	Outfall001_20191227_Comp	81.5
LCS 160-458734/2-A	Lab Control Sample	97.6
LCSD 160-458734/3-A	Lab Control Sample Dup	84.2
MB 160-458734/1-A	Method Blank	86.3

#### Tracer/Carrier Legend

Americium-243 = Americium-243

## Method: A-01-R - Isotopic Plutonium and Neptunium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

### Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Pu-242 (T) (30-110)
440-258219-1	Outfall001_20191227_Comp	65.8
LCS 160-458733/2-A	Lab Control Sample	84.5
LCSD 160-458733/3-A	Lab Control Sample Dup	73.6
MB 160-458733/1-A	Method Blank	75.7

#### Tracer/Carrier Legend

Pu-242 (T) = Pu-242 (T)

## Method: A-01-R - Isotopic Polonium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

### Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Polonium-209 (30-110)
440-258219-1	Outfall001_20191227_Comp	92.4
440-258219-1 DU	Outfall001_20191227_Comp	74.5
LCS 160-459832/2-A	Lab Control Sample	89.8
MB 160-459832/1-A	Method Blank	85.0

#### Tracer/Carrier Legend

Polonium-209 = Polonium-209

## Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

### Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Thorium-229 (30-110)
440-258219-1	Outfall001_20191227_Comp	61.1
LCS 160-458735/2-A	Lab Control Sample	95.7
LCSD 160-458735/3-A	Lab Control Sample Dup	92.6
MB 160-458735/1-A	Method Blank	86.8

#### Tracer/Carrier Legend

Thorium-229 = Thorium-229



---

**DATA VALIDATION REPORT**

**Boeing SSFL NPDES**

**SAMPLE DELIVERY GROUP: 440-256471-1**

**Prepared for**

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

**09 January 2020**

**MEC<sup>x</sup>, Inc.**  
12269 East Vassar Drive  
Aurora, Colorado 80014

[www.mecx.net](http://www.mecx.net)





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**TABLES**

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



## I. INTRODUCTION

---

**Task Order Title:** Boeing SSFL NPDES

**Contract:** 40458-078 and 40458-083

**MEC<sup>X</sup> Project No.:** 1272.003D.01 002

**Sample Delivery Group:** 440-256471-1

**Project Manager:** Katherine Miller

**Matrix:** Water

**QC Level:** IV

**No. of Samples:** 1

**No. of Reanalyses/Dilutions:** 0

**Laboratory:** TestAmerica-Irvine

**TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Matrix	Collection	Method
OUTFALL002_20191204_GRAB	440-256471-1	WM	12/4/19 1:30 PM	E120.1, E624



## II. SAMPLE MANAGEMENT

---

According to the case narrative, Login Sample Receipt Checklist, and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-256471-1:

- The laboratory received the sample in this SDG on ice and within the temperature limits of <6 degrees Celsius (°C) and >0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the Login Sample Receipt Checklist, custody seals were absent on the coolers; however, no evidence of tampering was noted.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination ( $r^2$ ) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.





### III. EPA METHOD 624.1—VOLATILE ORGANIC COMPOUNDS (VOCs)

---

L. Calvin of MEC<sup>X</sup> reviewed the SDG on January 9, 2020

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC<sup>X</sup> Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624.1*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2017)*.

#### III.1. HOLDING TIMES

The analytical holding time was met. The preserved water site sample was analyzed within 14 days of collection.

#### III.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. Samples were analyzed within 12 hours of the BFB injection time.

Calibration criteria were met. The initial calibration average RRFs and the ICV and continuing calibration RRFs were  $\geq 0.05$  for all applicable target compounds. The initial calibration %RSDs were  $\leq 35\%$ , or  $r^2$  values  $\geq 0.990$ . The second source ICV and all applicable CCV recoveries were within the method control limits. No qualifications were required.

#### III.3. QUALITY CONTROL SAMPLES

##### III.3.1. METHOD BLANKS

Target compounds were not detected in the method blank above the MDL.

##### III.3.2. LABORATORY CONTROL SAMPLES

LCS/LCSD recoveries and RPDs were within the method control limits.

##### III.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

##### III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the site sample in this SDG. MEC<sup>X</sup> evaluated method accuracy and precision based on the associated LCS/LCSD results.

#### III.4. FIELD QC SAMPLES

MEC<sup>X</sup> evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC<sup>X</sup> used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

##### III.4.1. TRIP BLANKS

Sample TB-20191204 was identified as the trip blank associated with the site sample in this SDG. The trip blank had no target compounds detected above the MDL.

##### III.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.



### III.4.3. **FIELD DUPLICATES**

Field duplicate samples were not identified in this SDG.

### III.5. **INTERNAL STANDARDS PERFORMANCE**

The internal standard retention times and area counts were within the control limits established by the continuing calibration standards:  $\pm 30$  seconds for retention times and  $-50\%/+100\%$  for internal standard areas.

### III.6. **COMPOUND IDENTIFICATION**

Compound identification was verified. The laboratory analyzed for 32 target compounds by Method 624.1. Review of the sample chromatograms, retention times, and spectra indicated no issues with target compound identification.

### III.7. **COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

### III.8. **TENTATIVELY IDENTIFIED COMPOUNDS**

The laboratory did not report TICs for this SDG.

### III.9. **SYSTEM PERFORMANCE**

Review of the raw data indicated no issues with system performance.

## IV. **METHOD EPA 120.1 — SPECIFIC CONDUCTANCE**

---

M. Hilchey of MEC<sup>x</sup> reviewed the SDG on January 16, 2020.

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC<sup>x</sup> Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 120.1* and the *National Functional Guidelines for Inorganic Superfund Methods Data Review (2017)*.

### IV.1. **HOLDING TIMES**

The QAPP holding time, 28 days for specific conductance, was met.

### IV.2. **CALIBRATION**

Probe calibration data was not provided. The initial and continuing calibration verification recoveries met laboratory control limits.

### IV.3. **QUALITY CONTROL SAMPLES**

#### IV.3.1. **METHOD BLANKS**

The method blank had no detection of specific conductivity.



#### **IV.3.2. LABORATORY CONTROL SAMPLES**

Laboratory control sample recovery met QAPP control limits.

#### **IV.3.3. LABORATORY DUPLICATES**

Laboratory duplicate analyses were not performed on the sample in this SDG.

#### **IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

MS/MSD analyses are not applicable to this method.

#### **IV.4. SAMPLE RESULT VERIFICATION**

Raw data was not provided; therefore, sample results could not be verified against raw data. Reported nondetects are valid to the MDL.

#### **IV.5. FIELD QC SAMPLES**

MEC<sup>X</sup> evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC<sup>X</sup> used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

##### **IV.5.1. FIELD BLANKS AND EQUIPMENT BLANKS**

Field blank or equipment blank samples were not identified for this SDG.

##### **IV.5.2. FIELD DUPLICATES**

Field duplicate samples were not identified in this SDG.

# Validated Sample Result Forms: 4402564711

## Analysis Method E120.1

Sample Name OUTFALL002\_20191204\_GRAB Matrix Type: WM Result Type: TRG

Sample Date: 12/4/2019 1:30:00 PM Validation Level: 8

Lab Sample Name: 440-256471-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Specific Conductance	N	CONDSPEC	680	1.0	1.0	umhos/c			

## Analysis Method E624.1

Sample Name OUTFALL002\_20191204\_GRAB Matrix Type: WM Result Type: TRG

Sample Date: 12/4/2019 1:30:00 PM Validation Level: 8

Lab Sample Name: 440-256471-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1,1-Trichloroethane	N	71-55-6	ND	0.50	0.25	ug/L	U	U	
1,1,2,2-Tetrachloroethane	N	79-34-5	ND	0.50	0.25	ug/L	U	U	
1,1,2-Trichloroethane	N	79-00-5	ND	0.50	0.25	ug/L	U	U	
1,1-Dichloroethane	N	75-34-3	ND	0.50	0.25	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloropropane	N	78-87-5	ND	0.50	0.25	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	ND	0.50	0.25	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	ND	0.50	0.25	ug/L	U	U	
Benzene	N	71-43-2	ND	0.50	0.25	ug/L	U	U	
Bromodichloromethane	N	75-27-4	ND	0.50	0.25	ug/L	U	U	
Bromoform	N	75-25-2	ND	1.0	0.40	ug/L	U	U	
Bromomethane (Methyl Bromide)	N	74-83-9	ND	0.50	0.25	ug/L	U	U	
Carbon tetrachloride	N	56-23-5	ND	0.50	0.25	ug/L	U	U	
Chlorobenzene	N	108-90-7	ND	0.50	0.25	ug/L	U	U	
Chloroethane	N	75-00-3	ND	1.0	0.40	ug/L	U	U	
Chloroform (Trichloromethane)	N	67-66-3	ND	0.50	0.25	ug/L	U	U	
Chloromethane (Methyl Chloride)	N	74-87-3	ND	0.50	0.25	ug/L	U	U	
cis-1,2-Dichloroethene	N	156-59-2	ND	0.50	0.25	ug/L	U	U	
cis-1,3-Dichloropropene	N	10061-01-5	ND	0.50	0.25	ug/L	U	U	
Dibromochloromethane	N	124-48-1	ND	0.50	0.25	ug/L	U	U	
Ethylbenzene	N	100-41-4	ND	0.50	0.25	ug/L	U	U	
Methylene chloride	N	75-09-2	ND	2.0	0.88	ug/L	U	U	
Naphthalene	N	91-20-3	ND	1.0	0.40	ug/L	U	U	
Tetrachloroethene	N	127-18-4	ND	0.50	0.25	ug/L	U	U	
Toluene	N	108-88-3	ND	0.50	0.25	ug/L	U	U	
trans-1,2-Dichloroethene	N	156-60-5	ND	0.50	0.25	ug/L	U	U	
trans-1,3-Dichloropropene	N	10061-02-6	ND	0.50	0.25	ug/L	U	U	

*Analysis Method*    *E624.1*

Trifluorotrichloroethane (Freon 113)	N	76-13-1	ND	2.0	0.50	ug/L	U	<b>U</b>
Vinyl chloride	N	75-01-4	ND	0.50	0.25	ug/L	U	<b>U</b>

## ANALYTICAL REPORT

Eurofins TestAmerica, Irvine  
17461 Derian Ave  
Suite 100  
Irvine, CA 92614-5817  
Tel: (949)261-1022

Laboratory Job ID: 440-256471-1

Client Project/Site: Quarterly Outfall 002 Grab

**For:**

Haley & Aldrich, Inc.  
400 E Van Buren St.  
Suite 545  
Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:  
12/27/2019 10:30:45 PM

Urvashi Patel, Manager of Project Management  
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---

Urvashi Patel  
Manager of Project Management  
12/27/2019 10:30:45 PM



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# Sample Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Grab

Job ID: 440-256471-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-256471-1	Outfall002_20191204_Grab	Water	12/04/19 13:30	12/05/19 16:37	
440-256471-3	TB_20191204	Water	12/04/19 13:30	12/05/19 16:37	

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# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Grab

Job ID: 440-256471-1

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**Job ID: 440-256471-1**

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**Laboratory: Eurofins TestAmerica, Irvine**

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**Narrative**

**Job Narrative  
440-256471-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 12/5/2019 4:37 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 1.0° C, 1.8° C, 2.1° C, 2.5° C and 2.6° C.

**GC/MS VOA**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

**General Chemistry**

Methods 120.1, SM 2510B: Conductivity result was reported at a dilution and may have increased error compared to an undiluted sample.

(440-257042-G-1) and (440-257042-G-1 DU)

Method SM 2540F: Insufficient sample volume was available to perform a sample duplicate (DUP) associated with analytical batch 440-584130.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**Organic Prep**

Methods 1664A, 1664B: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-587436 and analytical batch 440-587447. The Laboratory Control Sample (LCS) was performed in duplicate to provide precise data for this batch. Method 1664A/1664B.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**VOA Prep**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Grab

Job ID: 440-256471-1

**Client Sample ID: Outfall002\_20191204\_Grab**

**Lab Sample ID: 440-256471-1**

Date Collected: 12/04/19 13:30

Matrix: Water

Date Received: 12/05/19 16:37

## Method: 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			12/06/19 11:50	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			12/06/19 11:50	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			12/06/19 11:50	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			12/06/19 11:50	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			12/06/19 11:50	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			12/06/19 11:50	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			12/06/19 11:50	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			12/06/19 11:50	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			12/06/19 11:50	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			12/06/19 11:50	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			12/06/19 11:50	1
Benzene	ND		0.50	0.25	ug/L			12/06/19 11:50	1
Bromoform	ND		1.0	0.40	ug/L			12/06/19 11:50	1
Bromomethane	ND		0.50	0.25	ug/L			12/06/19 11:50	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			12/06/19 11:50	1
Chlorobenzene	ND		0.50	0.25	ug/L			12/06/19 11:50	1
Dibromochloromethane	ND		0.50	0.25	ug/L			12/06/19 11:50	1
Chloroethane	ND		1.0	0.40	ug/L			12/06/19 11:50	1
Chloroform	ND		0.50	0.25	ug/L			12/06/19 11:50	1
Chloromethane	ND		0.50	0.25	ug/L			12/06/19 11:50	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/06/19 11:50	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/06/19 11:50	1
Bromodichloromethane	ND		0.50	0.25	ug/L			12/06/19 11:50	1
Ethylbenzene	ND		0.50	0.25	ug/L			12/06/19 11:50	1
Methylene Chloride	ND		2.0	0.88	ug/L			12/06/19 11:50	1
Naphthalene	ND		1.0	0.40	ug/L			12/06/19 11:50	1
Tetrachloroethene	ND		0.50	0.25	ug/L			12/06/19 11:50	1
Toluene	ND		0.50	0.25	ug/L			12/06/19 11:50	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/06/19 11:50	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/06/19 11:50	1
Trichloroethene	ND		0.50	0.25	ug/L			12/06/19 11:50	1
Vinyl chloride	ND		0.50	0.25	ug/L			12/06/19 11:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	97		60 - 140		12/06/19 11:50	1
Dibromofluoromethane (Surr)	99		60 - 140		12/06/19 11:50	1
Toluene-d8 (Surr)	102		60 - 140		12/06/19 11:50	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		4.8	1.4	mg/L		12/22/19 15:12	12/22/19 18:06	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	680		1.0	1.0	umhos/cm			12/16/19 13:04	1
Settleable Solids	ND		0.10	0.10	mL/L/Hr			12/05/19 18:53	1

# Client Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 002 Grab

Job ID: 440-256471-1

**Client Sample ID: TB\_20191204**

**Lab Sample ID: 440-256471-3**

**Date Collected: 12/04/19 13:30**

**Matrix: Water**

**Date Received: 12/05/19 16:37**

**Method: 624.1 - Volatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			12/06/19 12:19	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			12/06/19 12:19	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			12/06/19 12:19	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			12/06/19 12:19	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			12/06/19 12:19	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			12/06/19 12:19	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			12/06/19 12:19	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Benzene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Bromoform	ND		1.0	0.40	ug/L			12/06/19 12:19	1
Bromomethane	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Chlorobenzene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Dibromochloromethane	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Chloroethane	ND		1.0	0.40	ug/L			12/06/19 12:19	1
Chloroform	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Chloromethane	ND		0.50	0.25	ug/L			12/06/19 12:19	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Bromodichloromethane	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Ethylbenzene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Methylene Chloride	ND		2.0	0.88	ug/L			12/06/19 12:19	1
Naphthalene	ND		1.0	0.40	ug/L			12/06/19 12:19	1
Tetrachloroethene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Toluene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Trichloroethene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Vinyl chloride	ND		0.50	0.25	ug/L			12/06/19 12:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	104		60 - 140		12/06/19 12:19	1
Dibromofluoromethane (Surr)	103		60 - 140		12/06/19 12:19	1
Toluene-d8 (Surr)	101		60 - 140		12/06/19 12:19	1

# Method Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Grab

Job ID: 440-256471-1

Method	Method Description	Protocol	Laboratory
624.1	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
120.1	Conductivity, Specific Conductance	MCAWW	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 2540F	Solids, Settleable	SM	TAL IRV
1664A	HEM and SGT-HEM (SPE)	1664A	TAL IRV

#### Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater"

#### Laboratory References:

TAL IRV = Eurofins TestAmerica, Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

# Lab Chronicle

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 002 Grab

Job ID: 440-256471-1

**Client Sample ID: Outfall002\_20191204\_Grab**

**Lab Sample ID: 440-256471-1**

**Date Collected: 12/04/19 13:30**

**Matrix: Water**

**Date Received: 12/05/19 16:37**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624.1		1	10 mL	10 mL	584182	12/06/19 11:50	RM	TAL IRV
Total/NA	Analysis	120.1		1			586195	12/16/19 13:04	XL	TAL IRV
Total/NA	Prep	1664A			1035 mL	1000 mL	587436	12/22/19 15:12	AJH	TAL IRV
Total/NA	Analysis	1664A		1			587447	12/22/19 18:06	AJH	TAL IRV
Total/NA	Analysis	SM 2540F		1	1000 mL	1 L	584130	12/05/19 18:53	HZ	TAL IRV

**Client Sample ID: TB\_20191204**

**Lab Sample ID: 440-256471-3**

**Date Collected: 12/04/19 13:30**

**Matrix: Water**

**Date Received: 12/05/19 16:37**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624.1		1	10 mL	10 mL	584182	12/06/19 12:19	RM	TAL IRV

**Laboratory References:**

TAL IRV = Eurofins TestAmerica, Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Grab

Job ID: 440-256471-1

## Method: 624.1 - Volatile Organic Compounds (GC/MS)

**Lab Sample ID: MB 440-584182/5**  
**Matrix: Water**  
**Analysis Batch: 584182**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			12/06/19 08:59	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			12/06/19 08:59	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			12/06/19 08:59	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			12/06/19 08:59	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			12/06/19 08:59	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			12/06/19 08:59	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			12/06/19 08:59	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			12/06/19 08:59	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			12/06/19 08:59	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			12/06/19 08:59	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			12/06/19 08:59	1
Benzene	ND		0.50	0.25	ug/L			12/06/19 08:59	1
Bromoform	ND		1.0	0.40	ug/L			12/06/19 08:59	1
Bromomethane	ND		0.50	0.25	ug/L			12/06/19 08:59	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			12/06/19 08:59	1
Chlorobenzene	ND		0.50	0.25	ug/L			12/06/19 08:59	1
Dibromochloromethane	ND		0.50	0.25	ug/L			12/06/19 08:59	1
Chloroethane	ND		1.0	0.40	ug/L			12/06/19 08:59	1
Chloroform	ND		0.50	0.25	ug/L			12/06/19 08:59	1
Chloromethane	ND		0.50	0.25	ug/L			12/06/19 08:59	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/06/19 08:59	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/06/19 08:59	1
Bromodichloromethane	ND		0.50	0.25	ug/L			12/06/19 08:59	1
Ethylbenzene	ND		0.50	0.25	ug/L			12/06/19 08:59	1
Methylene Chloride	ND		2.0	0.88	ug/L			12/06/19 08:59	1
Naphthalene	ND		1.0	0.40	ug/L			12/06/19 08:59	1
Tetrachloroethene	ND		0.50	0.25	ug/L			12/06/19 08:59	1
Toluene	ND		0.50	0.25	ug/L			12/06/19 08:59	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/06/19 08:59	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/06/19 08:59	1
Trichloroethene	ND		0.50	0.25	ug/L			12/06/19 08:59	1
Vinyl chloride	ND		0.50	0.25	ug/L			12/06/19 08:59	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		60 - 140		12/06/19 08:59	1
Dibromofluoromethane (Surr)	102		60 - 140		12/06/19 08:59	1
Toluene-d8 (Surr)	102		60 - 140		12/06/19 08:59	1

**Lab Sample ID: LCS 440-584182/1002**  
**Matrix: Water**  
**Analysis Batch: 584182**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	25.0	29.1		ug/L		117	69 - 151
1,1,2,2-Tetrachloroethane	25.0	24.6		ug/L		98	68 - 136
1,1,2-Trichloroethane	25.0	23.2		ug/L		93	75 - 136
1,1-Dichloroethane	25.0	27.5		ug/L		110	71 - 143
1,1-Dichloroethene	25.0	26.8		ug/L		107	19 - 212

Eurofins TestAmerica, Irvine

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Grab

Job ID: 440-256471-1

## Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: LCS 440-584182/1002**

**Matrix: Water**

**Analysis Batch: 584182**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dichlorobenzene	25.0	25.1		ug/L		100	59 - 174
1,2-Dichloroethane	25.0	27.9		ug/L		112	72 - 137
1,2-Dichloropropane	25.0	27.5		ug/L		110	19 - 181
1,3-Dichlorobenzene	25.0	25.7		ug/L		103	75 - 144
1,4-Dichlorobenzene	25.0	24.7		ug/L		99	59 - 174
Benzene	25.0	26.6		ug/L		107	75 - 125
Bromoform	25.0	29.1		ug/L		116	57 - 156
Bromomethane	25.0	24.4		ug/L		98	10 - 206
Carbon tetrachloride	25.0	31.2		ug/L		125	65 - 125
Chlorobenzene	25.0	23.8		ug/L		95	82 - 137
Dibromochloromethane	25.0	28.7		ug/L		115	69 - 133
Chloroethane	25.0	26.0		ug/L		104	42 - 202
Chloroform	25.0	26.6		ug/L		106	68 - 121
Chloromethane	25.0	25.8		ug/L		103	10 - 230
cis-1,2-Dichloroethene	25.0	26.1		ug/L		105	60 - 140
cis-1,3-Dichloropropene	25.0	24.5		ug/L		98	5 - 195
Bromodichloromethane	25.0	30.2		ug/L		121	50 - 140
Ethylbenzene	25.0	24.3		ug/L		97	75 - 134
Methylene Chloride	25.0	27.2		ug/L		109	10 - 205
Naphthalene	25.0	23.0		ug/L		92	60 - 140
Tetrachloroethene	25.0	25.6		ug/L		102	70 - 130
Toluene	25.0	24.2		ug/L		97	75 - 134
trans-1,2-Dichloroethene	25.0	26.9		ug/L		108	70 - 130
trans-1,3-Dichloropropene	25.0	25.3		ug/L		101	38 - 162
Trichloroethene	25.0	28.5		ug/L		114	75 - 138
Vinyl chloride	25.0	25.0		ug/L		100	10 - 218

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	99		60 - 140
Dibromofluoromethane (Surr)	107		60 - 140
Toluene-d8 (Surr)	91		60 - 140

**Lab Sample ID: LCSD 440-584182/3**

**Matrix: Water**

**Analysis Batch: 584182**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	25.0	27.8		ug/L		111	69 - 151	5	35
1,1,2,2-Tetrachloroethane	25.0	25.9		ug/L		104	68 - 136	5	35
1,1,2-Trichloroethane	25.0	26.0		ug/L		104	75 - 136	12	35
1,1-Dichloroethane	25.0	26.4		ug/L		106	71 - 143	4	35
1,1-Dichloroethene	25.0	25.0		ug/L		100	19 - 212	7	35
1,2-Dichlorobenzene	25.0	25.8		ug/L		103	59 - 174	3	35
1,2-Dichloroethane	25.0	27.6		ug/L		110	72 - 137	1	35
1,2-Dichloropropane	25.0	26.2		ug/L		105	19 - 181	5	35
1,3-Dichlorobenzene	25.0	24.8		ug/L		99	75 - 144	4	35
1,4-Dichlorobenzene	25.0	24.8		ug/L		99	59 - 174	0	35
Benzene	25.0	25.2		ug/L		101	75 - 125	6	35

Eurofins TestAmerica, Irvine



# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Grab

Job ID: 440-256471-1

## Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: LCSD 440-584182/3**  
**Matrix: Water**  
**Analysis Batch: 584182**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Bromoform	25.0	28.7		ug/L		115	57 - 156	1	35
Bromomethane	25.0	23.8		ug/L		95	10 - 206	3	35
Carbon tetrachloride	25.0	29.0		ug/L		116	65 - 125	7	35
Chlorobenzene	25.0	24.5		ug/L		98	82 - 137	3	35
Dibromochloromethane	25.0	29.3		ug/L		117	69 - 133	2	35
Chloroethane	25.0	24.4		ug/L		98	42 - 202	6	35
Chloroform	25.0	25.8		ug/L		103	68 - 121	3	35
Chloromethane	25.0	25.3		ug/L		101	10 - 230	2	35
cis-1,2-Dichloroethene	25.0	24.7		ug/L		99	60 - 140	6	35
cis-1,3-Dichloropropene	25.0	26.1		ug/L		104	5 - 195	6	35
Bromodichloromethane	25.0	29.0		ug/L		116	50 - 140	4	35
Ethylbenzene	25.0	25.8		ug/L		103	75 - 134	6	35
Methylene Chloride	25.0	26.2		ug/L		105	10 - 205	3	35
Naphthalene	25.0	23.6		ug/L		95	60 - 140	3	35
Tetrachloroethene	25.0	26.4		ug/L		106	70 - 130	3	35
Toluene	25.0	24.2		ug/L		97	75 - 134	0	35
trans-1,2-Dichloroethene	25.0	26.4		ug/L		106	70 - 130	2	35
trans-1,3-Dichloropropene	25.0	26.0		ug/L		104	38 - 162	3	35
Trichloroethene	25.0	26.8		ug/L		107	75 - 138	6	35
Vinyl chloride	25.0	23.7		ug/L		95	10 - 218	5	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	103		60 - 140
Dibromofluoromethane (Surr)	101		60 - 140
Toluene-d8 (Surr)	94		60 - 140

**Lab Sample ID: 550-134255-A-1 MS**  
**Matrix: Water**  
**Analysis Batch: 584182**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	ND		10.0	11.5		ug/L		115	52 - 162
1,1,2,2-Tetrachloroethane	ND		10.0	10.3		ug/L		103	46 - 157
1,1,2-Trichloroethane	ND		10.0	10.1		ug/L		101	52 - 150
1,1-Dichloroethane	ND		10.0	10.8		ug/L		108	59 - 155
1,1-Dichloroethene	ND		10.0	9.90		ug/L		99	10 - 234
1,2-Dichlorobenzene	ND		10.0	10.3		ug/L		103	18 - 190
1,2-Dichloroethane	ND		10.0	11.2		ug/L		112	49 - 155
1,2-Dichloropropane	ND		10.0	10.4		ug/L		104	10 - 210
1,3-Dichlorobenzene	ND		10.0	9.81		ug/L		98	59 - 156
1,4-Dichlorobenzene	ND		10.0	10.3		ug/L		103	18 - 190
Benzene	ND		10.0	10.2		ug/L		102	37 - 151
Bromoform	ND		10.0	12.1		ug/L		121	45 - 169
Bromomethane	ND		10.0	8.91		ug/L		89	10 - 242
Carbon tetrachloride	ND		10.0	11.3		ug/L		113	70 - 140
Chlorobenzene	ND		10.0	10.1		ug/L		101	37 - 160
Dibromochloromethane	ND		10.0	11.8		ug/L		118	53 - 149
Chloroethane	ND		10.0	9.35		ug/L		94	14 - 230

Eurofins TestAmerica, Irvine

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 002 Grab

Job ID: 440-256471-1

## Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: 550-134255-A-1 MS**

**Matrix: Water**

**Analysis Batch: 584182**

**Client Sample ID: Matrix Spike**

**Prep Type: Total/NA**

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec. Limits
	Result	Qualifier	Added	Result	Qualifier				
Chloroform	ND		10.0	10.4		ug/L		104	51 - 138
Chloromethane	ND		10.0	9.22		ug/L		92	10 - 273
cis-1,2-Dichloroethene	ND		10.0	10.1		ug/L		101	60 - 140
cis-1,3-Dichloropropene	ND		10.0	10.9		ug/L		109	10 - 227
Bromodichloromethane	ND		10.0	11.7		ug/L		117	35 - 155
Ethylbenzene	ND		10.0	10.0		ug/L		100	37 - 162
Methylene Chloride	ND		10.0	10.1		ug/L		101	10 - 221
Naphthalene	ND		10.0	9.16		ug/L		92	60 - 140
Tetrachloroethene	ND		10.0	10.5		ug/L		105	64 - 148
Toluene	ND		10.0	10.2		ug/L		102	47 - 150
trans-1,2-Dichloroethene	ND		10.0	9.91		ug/L		99	54 - 156
trans-1,3-Dichloropropene	ND		10.0	11.5		ug/L		115	17 - 183
Trichloroethene	ND		10.0	10.9		ug/L		109	70 - 157
Vinyl chloride	ND		10.0	8.70		ug/L		87	10 - 251
		<b>MS</b>	<b>MS</b>						
<b>Surrogate</b>		<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>					
4-Bromofluorobenzene (Surr)		99		60 - 140					
Dibromofluoromethane (Surr)		103		60 - 140					
Toluene-d8 (Surr)		97		60 - 140					

**Lab Sample ID: 550-134255-A-1 MSD**

**Matrix: Water**

**Analysis Batch: 584182**

**Client Sample ID: Matrix Spike Duplicate**

**Prep Type: Total/NA**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
	Result	Qualifier	Added	Result	Qualifier						
1,1,1-Trichloroethane	ND		10.0	11.5		ug/L		115	52 - 162	1	36
1,1,2,2-Tetrachloroethane	ND		10.0	10.9		ug/L		109	46 - 157	5	61
1,1,2-Trichloroethane	ND		10.0	10.7		ug/L		107	52 - 150	6	45
1,1-Dichloroethane	ND		10.0	10.6		ug/L		106	59 - 155	2	40
1,1-Dichloroethene	ND		10.0	10.2		ug/L		102	10 - 234	3	32
1,2-Dichlorobenzene	ND		10.0	10.6		ug/L		106	18 - 190	3	57
1,2-Dichloroethane	ND		10.0	11.2		ug/L		112	49 - 155	0	49
1,2-Dichloropropane	ND		10.0	10.8		ug/L		108	10 - 210	4	55
1,3-Dichlorobenzene	ND		10.0	10.2		ug/L		102	59 - 156	3	43
1,4-Dichlorobenzene	ND		10.0	9.99		ug/L		100	18 - 190	3	57
Benzene	ND		10.0	10.1		ug/L		101	37 - 151	1	61
Bromoform	ND		10.0	12.0		ug/L		120	45 - 169	1	42
Bromomethane	ND		10.0	9.13		ug/L		91	10 - 242	2	61
Carbon tetrachloride	ND		10.0	11.2		ug/L		112	70 - 140	1	41
Chlorobenzene	ND		10.0	10.2		ug/L		102	37 - 160	1	53
Dibromochloromethane	ND		10.0	12.2		ug/L		122	53 - 149	3	50
Chloroethane	ND		10.0	9.44		ug/L		94	14 - 230	1	78
Chloroform	ND		10.0	10.2		ug/L		102	51 - 138	3	54
Chloromethane	ND		10.0	9.87		ug/L		99	10 - 273	7	60
cis-1,2-Dichloroethene	ND		10.0	9.58		ug/L		96	60 - 140	6	35
cis-1,3-Dichloropropene	ND		10.0	10.2		ug/L		102	10 - 227	6	58
Bromodichloromethane	ND		10.0	11.7		ug/L		117	35 - 155	0	56
Ethylbenzene	ND		10.0	10.3		ug/L		103	37 - 162	3	63

Eurofins TestAmerica, Irvine

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Grab

Job ID: 440-256471-1

## Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: 550-134255-A-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 584182**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Chloride	ND		10.0	9.11		ug/L		91	10 - 221	11	28
Naphthalene	ND		10.0	9.51		ug/L		95	60 - 140	4	35
Tetrachloroethene	ND		10.0	10.8		ug/L		108	64 - 148	3	39
Toluene	ND		10.0	10.1		ug/L		101	47 - 150	0	41
trans-1,2-Dichloroethene	ND		10.0	10.0		ug/L		100	54 - 156	1	45
trans-1,3-Dichloropropene	ND		10.0	10.5		ug/L		105	17 - 183	8	86
Trichloroethene	ND		10.0	10.7		ug/L		107	70 - 157	2	48
Vinyl chloride	ND		10.0	9.56		ug/L		96	10 - 251	9	66
<b>Surrogate</b>	<b>MSD %Recovery</b>	<b>MSD Qualifier</b>	<b>Limits</b>								
4-Bromofluorobenzene (Surr)	100		60 - 140								
Dibromofluoromethane (Surr)	102		60 - 140								
Toluene-d8 (Surr)	96		60 - 140								

## Method: 120.1 - Conductivity, Specific Conductance

**Lab Sample ID: MB 440-586195/3**  
**Matrix: Water**  
**Analysis Batch: 586195**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		1.0	1.0	umhos/cm			12/16/19 13:04	1

**Lab Sample ID: LCS 440-586195/4**  
**Matrix: Water**  
**Analysis Batch: 586195**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Specific Conductance	1030	1010		umhos/cm		98	90 - 110

**Lab Sample ID: 320-56690-D-1 DU**  
**Matrix: Water**  
**Analysis Batch: 586195**

**Client Sample ID: Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Specific Conductance	120		125		umhos/cm		2	5

## Method: 1664A - HEM and SGT-HEM

**Lab Sample ID: MB 440-587436/1-A**  
**Matrix: Water**  
**Analysis Batch: 587447**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 587436**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		12/22/19 15:12	12/22/19 18:06	1

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 002 Grab

Job ID: 440-256471-1

## Method: 1664A - HEM and SGT-HEM (Continued)

**Lab Sample ID: LCS 440-587436/2-A**  
**Matrix: Water**  
**Analysis Batch: 587447**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 587436**  
**%Rec.**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	40.0	32.8		mg/L		82	78 - 114

**Lab Sample ID: LCSD 440-587436/3-A**  
**Matrix: Water**  
**Analysis Batch: 587447**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 587436**  
**%Rec.**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HEM (Oil & Grease)	40.0	36.4		mg/L		91	78 - 114	10	11



# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Grab

Job ID: 440-256471-1

## GC/MS VOA

### Analysis Batch: 584182

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256471-1	Outfall002_20191204_Grab	Total/NA	Water	624.1	
440-256471-3	TB_20191204	Total/NA	Water	624.1	
MB 440-584182/5	Method Blank	Total/NA	Water	624.1	
LCS 440-584182/1002	Lab Control Sample	Total/NA	Water	624.1	
LCSD 440-584182/3	Lab Control Sample Dup	Total/NA	Water	624.1	
550-134255-A-1 MS	Matrix Spike	Total/NA	Water	624.1	
550-134255-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624.1	

## General Chemistry

### Analysis Batch: 584130

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256471-1	Outfall002_20191204_Grab	Total/NA	Water	SM 2540F	

### Analysis Batch: 586195

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256471-1	Outfall002_20191204_Grab	Total/NA	Water	120.1	
MB 440-586195/3	Method Blank	Total/NA	Water	120.1	
LCS 440-586195/4	Lab Control Sample	Total/NA	Water	120.1	
320-56690-D-1 DU	Duplicate	Total/NA	Water	120.1	

### Prep Batch: 587436

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256471-1	Outfall002_20191204_Grab	Total/NA	Water	1664A	
MB 440-587436/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-587436/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-587436/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

### Analysis Batch: 587447

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256471-1	Outfall002_20191204_Grab	Total/NA	Water	1664A	587436
MB 440-587436/1-A	Method Blank	Total/NA	Water	1664A	587436
LCS 440-587436/2-A	Lab Control Sample	Total/NA	Water	1664A	587436
LCSD 440-587436/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	587436

# Definitions/Glossary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Grab

Job ID: 440-256471-1

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Grab

Job ID: 440-256471-1

## Laboratory: Eurofins TestAmerica, Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
California	State Program	CA ELAP 2706	06-30-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
624.1		Water	1,1,2-Trichloro-1,2,2-trifluoroethane

# CHAIN OF CUSTODY FORM

Test America

<p><b>Client Name/Address:</b>                  Haley &amp; Aldrich                  5333 Mission Center Rd Suite 300                  San Diego, CA 92108                  Test America Contact Urvaashi Patel                  17461 Derran Ave Suite #100                  Irvine CA 92614                  Tel 949-260-3269                  Cell 949-333-9055</p>		<p><b>Project:</b>                  Boeing-SSFL NPDES                  Permit 2019                  Quarterly Outfall [001, 002, 011, 018]                  Outfall 002                  Grab</p>		<p><b>Field Readings</b>                  (Include units) <i>V2300</i>                  Time of Readings: <i>1325</i>                  DO <i>23.2</i> mg/L                  pH <i>7.63</i> pH unit                  Temp <i>54.9</i> °C/°F</p>		<p>Meter serial #                  Checked by: <i>[Signature]</i>                  Date/Time: <i>12/4/19/1330</i></p>	
<p><b>Test America's services under this CoC shall be performed in accordance with the T&amp;Cs within Blanket Service Agreement# 2015-18-TestAmerica by and between Haley &amp; Aldrich, inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc</b></p>		<p><b>Project Manager:</b> Katherine Miller                  520.289.8606; 520.904.6944 (cell)</p>		<p><b>Field readings QC</b>                  by: <i>[Signature]</i>                  Checked</p>		<p><b>Comments</b>                  JUL 12/5/19</p>	
<p><b>Sampler:</b> Neal Smith</p>		<p><b>Field Manager:</b> Mark Dominick                  978.234.5033, 818.599.0702 (cell)</p>		<p><b>Oil &amp; Grease (E1664-HEM)</b> X</p>		<p><b>VOCs + Freon 113 (E824)</b> X</p>	
<p><b>Field Readings (Include units)</b></p>		<p><b>Settleable Solids (E1605 (SM2540F))</b> X</p>		<p><b>Conductivity (SM2510B / E1201)</b> X</p>		<p><b>Turn-around time (Check)</b>                  24 Hour: _____ 72 Hour: _____ 10 Day: _____ X                  48 Hour: _____ 5 Day: _____ Normal: _____</p>	
<p><b>Sample Description</b></p>		<p><b>Sample I.D.</b></p>		<p><b>Sample Matrix</b></p>		<p><b>Container Type</b></p>	
<p>Outfall 002</p>		<p>Outfall002_20191204_Grab</p>		<p>WM</p>		<p>1 L Glass Amber</p>	
<p>1330</p>		<p>12/4/2019</p>		<p>WM</p>		<p>40 mL VOA</p>	
<p>1330</p>		<p>12/4/2019</p>		<p>WM</p>		<p>1 L Poly</p>	
<p>1330</p>		<p>12/4/2019</p>		<p>WM</p>		<p>500 mL Poly</p>	
<p>1330</p>		<p>12/4/2019</p>		<p>WM</p>		<p>1 L Glass Amber</p>	
<p>Trip Blank</p>		<p>TB-20191204</p>		<p>WC</p>		<p>40 mL VOA</p>	
<p>1330</p>		<p>12/4/2019</p>		<p>WC</p>		<p>40 mL VOA</p>	



440-256471 Chain of Custody

<p><b>Relinquished By</b>                  Rachel Hahn                  Date/Time: 12/05/19                  Company: H&amp;A</p>		<p><b>Received By</b>                  [Signature]                  Date/Time: 12/15/19                  Company: [Signature]</p>	
<p><b>Relinquished By</b>                  [Signature]                  Date/Time: 12/15/19                  Company: 1637</p>		<p><b>Received By</b>                  [Signature]                  Date/Time: 12/15/19                  Company: 1637</p>	

*1.5/18, 0.8/1.0; 2.4/2.6; 1.9/2.1; 2.3/2.5 #89*





# Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-256471-1

**Login Number: 256471**

**List Source: Eurofins TestAmerica, Irvine**

**List Number: 1**

**Creator: Soderblom, Tim**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



---

**DATA VALIDATION REPORT**

**Boeing SSFL NPDES**

**SAMPLE DELIVERY GROUP: 440-256464-1**

**Prepared for**

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

**14 January 2020**

**MEC<sup>x</sup>, Inc.**  
12269 East Vassar Drive  
Aurora, Colorado 80014

[www.mecx.net](http://www.mecx.net)





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- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



## I. INTRODUCTION

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**Task Order Title:** Boeing SSFL NPDES

**Contract:** 40458-078 and 40458-083

**MEC<sup>X</sup> Project No.:** 1272.003D.01 002

**Sample Delivery Group:** 440-256464-1

**Project Manager:** Katherine Miller

**Matrix:** Water

**QC Level:** IV

**No. of Samples:** 2

**No. of Reanalyses/Dilutions:** 0

**Laboratory:** TestAmerica-Irvine

**TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Matrix	Collection	Method
OUTFALL002_20191205_ COMP_F	440-256464-3	WM	12/5/19 9:50 AM	E200.7, E200.8, E608.3, SM2340
OUTFALL002_20191205_ COMP	440-256464-1	WM	12/5/19 9:50 AM	E180.1, E200.7, E200.8, E625.1, SM2340, SM2540D, SM4500- NH3G



## II. SAMPLE MANAGEMENT

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According to the case narrative, Login Sample Receipt Checklist, and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-256464-1:

- The laboratory received the samples in this SDG on ice and within the temperature limits of <6 degrees Celsius ( $^{\circ}\text{C}$ ) and  $>0^{\circ}\text{C}$ .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the Login Sample Receipt Checklist, custody seals were absent on the coolers; however, no evidence of tampering was noted.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.





TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination ( $r^2$ ) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



### III. METHODS 200.7 AND 200.8 — METALS

---

M. Hilchey of MEC<sup>x</sup> reviewed the SDG on January 14, 2020.

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC<sup>x</sup> *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, EPA Methods 200.7 and 200.8 and the *National Functional Guidelines for Inorganic Method Data Review (2017)*.

#### III.1. HOLDING TIMES

The analytical holding time, six months for metals, was met. Sample OUTFALL002\_20191205\_COMP\_F was filtered and preserved within 24 hours of receipt.

#### III.2. CALIBRATION

QAPP calibration criteria were met. A blank and two to four standards were used for calibration of ICP-AES and ICP-MS target analytes. The initial calibration *r* values were  $\geq 0.995$ . CRQL, at the reporting limit, recoveries were within the laboratory control limits of 50-150%. Initial calibration verification recoveries were within QAPP control limits of 95-105% for ICP-AES and 90-110% for ICP-MS. Continuing calibration verification recoveries were within QAPP control limits of 90-110%.

#### III.3. QUALITY CONTROL SAMPLES

##### III.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks or calibration blanks of sufficient concentration to warrant qualification of associated site sample results.

##### III.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or  $\pm 2\times$  the reporting limit, whichever is greater. No non-spiked analytes were detected in the ICSAs; therefore, interference was not evaluated.

##### III.3.3. LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries (total and dissolved) were within the QAPP control limits of 85-115%.

##### III.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

##### III.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on samples OUTFALL002\_20191205\_COMP and OUTFALL002\_20191205\_COMP-F for ICP-AES analytes. Results were not assessed when the parent sample concentration exceeded the spike amount by  $4\times$ . Recoveries and RPDs were within the QAPP control limits of 70-130% and  $\leq 20\%$  with the exception of total iron (227%/235% recovery). The detected result for total iron was qualified as estimated with potential high bias (J+). MS/MSD analyses were not performed on a sample in this SDG for ICP-MS.

The laboratory did not perform post-digestion spike analyses.



### III.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

### III.5. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified, and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. Results reported below the RL and above the MDL were qualified as estimated (J) and coded with a DNQ to comply with the NPDES permit reporting requirements. Nondetects are valid to the MDL.

### III.6. FIELD QC SAMPLES

MEC<sup>X</sup> evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC<sup>X</sup> used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

#### III.6.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

#### III.6.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

## IV. EPA METHOD 608.3 –PESTICIDES AND PCBs

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L. Calvin of MEC<sup>X</sup> reviewed the SDG on May 23, 2019

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC<sup>X</sup> Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1)*, *EPA Method 608.3* and the *National Functional Guidelines for Superfund Organic Methods Data Review (2017)*.

### IV.1. HOLDING TIMES

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.

### IV.2. CALIBRATION

The initial calibration %RSDs were  $\leq 15\%$  or  $r^2 \geq 0.990$ . The initial calibration verification (ICV) recoveries were within the control limit of  $\pm 20\%$ , and continuing calibration verification (CCV) %Ds met method criteria.

### IV.3. QUALITY CONTROL SAMPLES

#### IV.3.1. METHOD BLANKS

The pesticide method blank had a detect below the RL for aldrin (0.00205  $\mu\text{g/L}$ ); however, as aldrin was not detected in the sample, no qualification was necessary. The method blanks had no other detects for pesticides and no detects for Aroclors.



#### IV.3.2. LABORATORY CONTROL SAMPLES

LCS/LCSD recoveries and RPDs were within the respective laboratory control limits for pesticides and PCBs. Toxaphene and chlordane were not spiked into the pesticide LCS/LCSD samples.

#### IV.3.3. SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) was recovered within the laboratory control limits of 10-104% in the site sample and PCB surrogate decachlorobiphenyl (DCB) was recovered within the laboratory control limits of 18-134%.

#### IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG due to insufficient sample volume. MEC<sup>X</sup> evaluated method accuracy and precision based on the LCS/LCSD results.

#### IV.4. FIELD QC SAMPLES

MEC<sup>X</sup> evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC<sup>X</sup> used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

##### IV.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

##### IV.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

#### IV.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no issues with target compound identification. The laboratory analyzed for seven Aroclors and 18 pesticide target compounds by Method 608.3.

#### IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibrations and the laboratory MDLs. Pesticides and PCB Aroclors were not detected in the sample. Reported nondetects are valid to the reporting limit.

The laboratory's extraction bench sheet for pesticides indicated the sample extract was brown with an emulsion.

## V. EPA METHOD 625.1 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

---

L. Calvin of MEC<sup>X</sup> reviewed the SDG on January 15, 2020

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC<sup>X</sup> *Data Validation Procedure for Semivolatile Organics* (DVP-3, Rev. 1), *EPA Method 625.1* and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2017).

---



### V.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

### V.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met. Initial calibration average relative response factors (RRFs) were within the method control limits, and the %RSDs were  $\leq 35\%$  or  $r^2$  values  $\geq 0.990$ . For applicable target compound pentachlorophenol, ICV and CCV RRFs were within the method control limits. ICV recoveries and CCV %Ds were within method control limits.

### V.3. QUALITY CONTROL SAMPLES

#### V.3.1. *METHOD BLANKS*

The target compound was not detected in the method blank.

#### V.3.2. *LABORATORY CONTROL SAMPLES*

LCS recovery was within the laboratory control limits.

#### V.3.3. *SURROGATE RECOVERY*

Surrogate recoveries were within laboratory control limits.

#### V.3.4. *MATRIX SPIKE/MATRIX SPIKE DUPLICATE*

MS/MSD analyses were not performed on the site sample in this SDG. MEC<sup>X</sup> evaluated method accuracy based on the LCS result.

### V.4. FIELD QC SAMPLES

MEC<sup>X</sup> evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC<sup>X</sup> used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

#### V.4.1. *FIELD BLANKS AND EQUIPMENT BLANKS:*

Field blank or equipment blank samples were not identified for this SDG.

#### V.4.2. *FIELD DUPLICATES:*

Field duplicate samples were not identified in this SDG.

### V.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the midpoint of the initial calibration standards:  $\pm 30$  seconds for retention times and  $-50\%/+100\%$  for internal standard areas.



#### V.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for pentachlorophenol by EPA Method 625.1. Review of the sample chromatogram, retention times, and spectra indicated no issues with target compound identification.

#### V.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. The result reported below the RL was qualified as estimated (J) and coded with DNQ to comply with the NPDES permit reporting requirements. The sample did not require dilution.

The laboratory's preparation bench sheet indicated the sample extract was light yellow and cloudy.

#### V.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

#### V.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

### VI. VARIOUS METHODS — GENERAL CHEMISTRY

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M. Hilchey of MEC<sup>x</sup> reviewed the SDG on January 14, 2020.

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the *MEC<sup>x</sup> Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 180.1, Standard Methods for the Examination of Water and Wastewater 2340B, 2540D and 4500 NH<sub>3</sub> G* and the *National Functional Guidelines for Inorganic Superfund Method Data Review (2017)*.

#### VI.1. HOLDING TIMES

The QAPP holding times, as listed below, were met.

- 7 days for total suspended solids (TSS) by Method SM2540D
- 28 days for ammonia by Method SM4500 NH<sub>3</sub> G
- 48 hours for turbidity by Method 180.1
- 180 days for hardness by Method SM2340B

#### VI.2. CALIBRATION

The initial calibration  $r^2$  value for ammonia was  $\geq 0.995$  and all initial calibration verification recoveries were within QC limits. All continuing calibration verification recoveries were within 90-110% for ammonia. Analytical balance calibration logs were provided by the laboratory and found to be correctly calibrated and verified. No calibration data were provided for Method 180.1. See section III Metals for Method 2340B (magnesium and calcium) calibration review.



### **VI.3. QUALITY CONTROL SAMPLES**

#### **VI.3.1. METHOD BLANKS**

The method blanks and calibration blanks had no detects of sufficient concentration to warrant qualification of associated site sample results.

#### **VI.3.2. LABORATORY CONTROL SAMPLES**

Laboratory control sample recoveries were within the laboratory control limits. See section III Metals for Method 2340B (magnesium and calcium) LCS review.

#### **VI.3.3. LABORATORY DUPLICATES**

Laboratory duplicate analyses were not performed on the sample in this SDG.

#### **VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

MS/MSD analyses were not performed on the sample in this SDG. See section III Metals for Method 2340B (magnesium and calcium) MS/MSD review.

### **VI.4. SAMPLE RESULT VERIFICATION**

Calculations were verified, and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Results reported below the RL and above the MDL were qualified as estimated (J) and coded with a DNQ to comply with the NPDES permit reporting requirements. Reported nondetects are valid to the MDL.

### **VI.5. FIELD QC SAMPLES**

MEC<sup>X</sup> evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC<sup>X</sup> used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

#### **VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS**

Field blank or equipment blank samples were not identified for this SDG.

#### **VI.5.2. FIELD DUPLICATES**

Field duplicate samples were not identified in this SDG.



# Validated Sample Result Forms: 4402564641

## Analysis Method E180.1

Sample Name OUTFALL002\_20191205\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

Lab Sample Name: 440-256464-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Turbidity	N	TURBIDITY	35	1.0	0.40	NTU			

## Analysis Method E200.7

Sample Name OUTFALL002\_20191205\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

Lab Sample Name: 440-256464-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Iron	T	7439-89-6	1500	100	50	ug/L		J+	Q
Zinc	T	7440-66-6	18	20	12	ug/L	J,DX	J	DNQ

Sample Name OUTFALL002\_20191205\_COMP\_F Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

Lab Sample Name: 440-256464-3

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Iron	D	7439-89-6	ND	0.10	0.050	mg/L	U	U	
Zinc	D	7440-66-6	15	20	12	ug/L	J,DX	J	DNQ

## Analysis Method E200.8

Sample Name OUTFALL002\_20191205\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

Lab Sample Name: 440-256464-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	3.6	2.0	0.50	ug/L			
Lead	T	7439-92-1	1.1	1.0	0.50	ug/L			
Selenium	T	7782-49-2	0.62	2.0	0.50	ug/L	J,DX	J	DNQ

Sample Name OUTFALL002\_20191205\_COMP\_F Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

Lab Sample Name: 440-256464-3

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	D	7440-50-8	2.0	2.0	0.50	ug/L			

**Analysis Method** E200.8

Lead	D	7439-92-1	ND	1.0	0.50	ug/L	U	U
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	U	U

**Analysis Method** E608.3

**Sample Name** OUTFALL002\_20191205\_COMP\_F **Matrix Type:** WM **Result Type:** TRG

**Sample Date:** 12/5/2019 9:50:00 AM **Validation Level:** 8

**Lab Sample Name:** 440-256464-3

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
4,4'-DDD	N	72-54-8	ND	0.0053	0.0042	ug/L	U	U	
4,4'-DDE	N	72-55-9	ND	0.0053	0.0032	ug/L	U	U	
4,4'-DDT	N	50-29-3	ND	0.011	0.0042	ug/L	U	U	
Aldrin	N	309-00-2	ND	0.0053	0.0016	ug/L	U	U	
Aroclor-1016 (PCB-1016)	N	12674-11-2	ND	0.53	0.26	ug/L	U	U	
Aroclor-1221 (PCB-1221)	N	11104-28-2	ND	0.53	0.26	ug/L	U	U	
Aroclor-1232 (PCB-1232)	N	11141-16-5	ND	0.53	0.26	ug/L	U	U	
Aroclor-1242 (PCB-1242)	N	53469-21-9	ND	0.53	0.26	ug/L	U	U	
Aroclor-1248 (PCB-1248)	N	12672-29-6	ND	0.53	0.26	ug/L	U	U	
Aroclor-1254 (PCB-1254)	N	11097-69-1	ND	0.53	0.26	ug/L	U	U	
Aroclor-1260 (PCB-1260)	N	11096-82-5	ND	0.53	0.26	ug/L	U	U	
beta-BHC	N	319-85-7	ND	0.011	0.0042	ug/L	U	U	
Chlordane	N	57-74-9	ND	0.11	0.084	ug/L	U	U	
delta-BHC	N	319-86-8	ND	0.0053	0.0037	ug/L	U	U	
Dieldrin	N	60-57-1	ND	0.0053	0.0021	ug/L	U	U	
Endosulfan I	N	959-98-8	ND	0.0053	0.0032	ug/L	U	U	
Endosulfan II	N	33213-65-9	ND	0.0053	0.0021	ug/L	U	U	
Endosulfan sulfate	N	1031-07-8	ND	0.011	0.0032	ug/L	U	U	
Endrin	N	72-20-8	ND	0.0053	0.0021	ug/L	U	U	
Endrin aldehyde	N	7421-93-4	ND	0.011	0.0021	ug/L	U	U	
gamma-BHC (Lindane)	N	58-89-9	ND	0.011	0.0032	ug/L	U	U	
Heptachlor	N	76-44-8	ND	0.0095	0.0032	ug/L	U	U	
Heptachlor epoxide	N	1024-57-3	ND	0.0053	0.0026	ug/L	U	U	
Toxaphene	N	8001-35-2	ND	0.53	0.25	ug/L	U	U	

**Analysis Method** E625.1

**Sample Name** OUTFALL002\_20191205\_COMP **Matrix Type:** WM **Result Type:** TRG

**Sample Date:** 12/5/2019 9:50:00 AM **Validation Level:** 8

**Lab Sample Name:** 440-256464-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Pentachlorophenol	N	87-86-5	1.2	5.2	1.0	ug/L	J,DX	J	DNQ

*Analysis Method SM2340*

Sample Name OUTFALL002\_20191205\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

Lab Sample Name: 440-256464-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	T	HARDNESSCA CO3	230	0.33	0.17	mg/L			

Sample Name OUTFALL002\_20191205\_COMP\_F Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

Lab Sample Name: 440-256464-3

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	D	HARDNESSCA CO3	250	0.33	0.17	mg/L			

*Analysis Method SM2540D*

Sample Name OUTFALL002\_20191205\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level:

Lab Sample Name: 440-256464-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	49	13	6.7	mg/L			

*Analysis Method SM4500-NH3G*

Sample Name OUTFALL002\_20191205\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

Lab Sample Name: 440-256464-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	0.147	0.200	0.100	mg/L	J,DX	J	DNQ

## ANALYTICAL REPORT

Eurofins Calscience Irvine  
17461 Derian Ave  
Suite 100  
Irvine, CA 92614-5817  
Tel: (949)261-1022

Laboratory Job ID: 440-256464-1

Client Project/Site: Quaterly Outfall 002 Comp

**For:**

Haley & Aldrich, Inc.  
400 E Van Buren St.  
Suite 545  
Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:  
1/7/2020 1:19:30 PM

Christian Bondoc, Project Manager I  
(949)260-3218  
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*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



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Christian Bondoc  
Project Manager I  
1/7/2020 1:19:30 PM



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# Sample Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-256464-1	Outfall002_20191205_Comp	Water	12/05/19 09:50	12/05/19 16:37	
440-256464-3	Outfall002_20191205_Comp_F	Water	12/05/19 09:50	12/05/19 16:37	

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# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

**Job ID: 440-256464-1**

**Laboratory: Eurofins Calscience Irvine**

## Narrative

### Job Narrative 440-256464-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/5/2019 4:37 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 1.0° C, 1.8° C, 2.1° C, 2.5° C and 2.6° C.

#### GC/MS Semi VOA

Method 625.1: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 440-584297 and analytical batch 440-584602 were outside control limits. Sample matrix interference is suspected .

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### HPLC/IC

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### GC Semi VOA

Method 608.3: The method blank (MB) for preparation batch 440-584166 and analytical batch 440-584266 contained Aldrin above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and re-analysis of samples was not performed. Samples associated with this MB are non-detect (ND).

Method 608.3: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-584166 and analytical batch 440-584266. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### Metals

Method 200.2: The following samples requested dissolved metals and were not filtered in the field: Outfall002\_20191205\_Comp (440-256464-1). These samples were filtered and preserved upon receipt to the laboratory.

Method 200.7 Rev 4.4: The continuing calibration blank (CCB) for 440-584548 contained Magnesium above the reporting limit (RL). All reported samples associated with this CCB were either ND for this analyte or contained this analyte at a concentration greater than 10X the value found in the CCB; therefore, re-analysis of samples was not performed.

Method 200.7 Rev 4.4: The continuing calibration blank (CCB) for 440-584548 contained Calcium above the method detection limit (MDL). This target analyte concentration was less than the reporting limit (RL).(CCB 440-584548/47)

Method 200.7 Rev 4.4: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision of Iron for preparation batch 440-584128 and analytical batch 440-584599 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected. The associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

Method 200.7 Rev 4.4: The method blank for preparation batch 440-584128 and analytical batch 440-584599 contained Calcium above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

Method 200.7 Rev 4.4: The continuing calibration blank (CCB) for 440-584548 contained Magnesium above the method detection limit (MDL). This target analyte concentration was less than the reporting limit (RL).(CCB 440-584548/17)

Method 200.7 Rev 4.4: The method blank for preparation batch 440-584365 and 440-584398 and analytical batch 440-584548 contained Magnesium above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore,



# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

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## Job ID: 440-256464-1 (Continued)

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### Laboratory: Eurofins Calscience Irvine (Continued)

re-extraction and/or re-analysis of samples was not performed.

Method 245.1: The method blank for preparation batch 440-584987 contained Mercury above the reporting limit (RL). None of the samples associated with this method blank contained the target compound; therefore, re-extraction and/or re-analysis of samples were not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

### Organic Prep

Methods 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-584166. Method 8081-8082

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

**Client Sample ID: Outfall002\_20191205\_Comp**

**Lab Sample ID: 440-256464-1**

Date Collected: 12/05/19 09:50

Matrix: Water

Date Received: 12/05/19 16:37

## Method: 625.1 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.2	0.10	ug/L		12/06/19 11:21	12/11/19 11:58	1
Bis(2-ethylhexyl) phthalate	ND		5.2	2.1	ug/L		12/06/19 11:21	12/11/19 11:58	1
N-Nitrosodimethylamine	ND		5.2	0.31	ug/L		12/06/19 11:21	12/11/19 11:58	1
<b>Pentachlorophenol</b>	<b>1.2</b>	<b>J,DX</b>	5.2	1.0	ug/L		12/06/19 11:21	12/11/19 11:58	1
2,4-Dinitrotoluene	ND		5.2	2.1	ug/L		12/06/19 11:21	12/11/19 11:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	97		60 - 140	12/06/19 11:21	12/11/19 11:58	1
2-Fluorobiphenyl	87		60 - 140	12/06/19 11:21	12/11/19 11:58	1
2-Fluorophenol	82		60 - 140	12/06/19 11:21	12/11/19 11:58	1
Nitrobenzene-d5	95		15 - 314	12/06/19 11:21	12/11/19 11:58	1
Terphenyl-d14	67		60 - 140	12/06/19 11:21	12/11/19 11:58	1

## Method: 608.3 - Organochlorine Pesticides in Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.0051	0.0026	ug/L		12/06/19 05:36	12/06/19 13:36	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>	<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>			
Tetrachloro-m-xylene	51		10 - 104	12/06/19 05:36	12/06/19 13:36	1			
DCB Decachlorobiphenyl (Surr)	68		18 - 134	12/06/19 05:36	12/06/19 13:36	1			

## Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Chloride</b>	<b>31</b>		10	5.0	mg/L			12/05/19 22:44	20
<b>Nitrate as N</b>	<b>1.0</b>		0.11	0.055	mg/L			12/05/19 22:26	1
Nitrite as N	ND		0.15	0.025	mg/L			12/05/19 22:26	1
<b>Sulfate</b>	<b>210</b>		10	5.0	mg/L			12/05/19 22:44	20

## Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			12/10/19 13:45	1

## Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Nitrate Nitrite as N</b>	<b>1.0</b>		0.15	0.055	mg/L			12/13/19 14:22	1

## Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Zinc</b>	<b>18</b>	<b>J,DX</b>	20	12	ug/L		12/06/19 07:20	12/08/19 18:20	1
<b>Iron</b>	<b>1500</b>		100	50	ug/L		12/06/19 07:20	12/08/19 18:20	1

## Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		12/06/19 08:00	12/06/19 23:53	1
<b>Copper</b>	<b>3.6</b>		2.0	0.50	ug/L		12/06/19 08:00	12/06/19 23:53	1
<b>Lead</b>	<b>1.1</b>		1.0	0.50	ug/L		12/06/19 08:00	12/06/19 23:53	1
<b>Selenium</b>	<b>0.62</b>	<b>J,DX</b>	2.0	0.50	ug/L		12/06/19 08:00	12/06/19 23:53	1

## Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		12/10/19 13:41	12/10/19 19:48	1

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

**Client Sample ID: Outfall002\_20191205\_Comp**

**Lab Sample ID: 440-256464-1**

Date Collected: 12/05/19 09:50

Matrix: Water

Date Received: 12/05/19 16:37

**Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	230		0.33	0.17	mg/L			12/10/19 19:14	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	35		1.0	0.40	NTU			12/05/19 18:56	10
Total Dissolved Solids	500		10	5.0	mg/L			12/12/19 08:56	1
Total Suspended Solids	49		13	6.7	mg/L			12/06/19 13:19	1
Cyanide, Total	ND		5.0	2.5	ug/L		12/11/19 15:57	12/12/19 14:41	1
Ammonia (as N)	0.147	J,DX	0.200	0.100	mg/L			12/11/19 13:14	1
Methylene Blue Active Substances	0.12		0.10	0.050	mg/L			12/05/19 20:18	1
Biochemical Oxygen Demand	16		10	2.5	mg/L			12/06/19 16:10	1

**Client Sample ID: Outfall002\_20191205\_Comp\_F**

**Lab Sample ID: 440-256464-3**

Date Collected: 12/05/19 09:50

Matrix: Water

Date Received: 12/05/19 16:37

**Method: 608.3 - Organochlorine Pesticides in Water**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0053	0.0016	ug/L		12/06/19 05:36	12/06/19 13:51	1
alpha-BHC	ND		0.0053	0.0026	ug/L		12/06/19 05:36	12/06/19 13:51	1
beta-BHC	ND		0.011	0.0042	ug/L		12/06/19 05:36	12/06/19 13:51	1
delta-BHC	ND		0.0053	0.0037	ug/L		12/06/19 05:36	12/06/19 13:51	1
gamma-BHC (Lindane)	ND		0.011	0.0032	ug/L		12/06/19 05:36	12/06/19 13:51	1
Chlordane (technical)	ND		0.11	0.084	ug/L		12/06/19 05:36	12/06/19 13:51	1
4,4'-DDD	ND		0.0053	0.0042	ug/L		12/06/19 05:36	12/06/19 13:51	1
4,4'-DDE	ND		0.0053	0.0032	ug/L		12/06/19 05:36	12/06/19 13:51	1
4,4'-DDT	ND		0.011	0.0042	ug/L		12/06/19 05:36	12/06/19 13:51	1
Dieldrin	ND		0.0053	0.0021	ug/L		12/06/19 05:36	12/06/19 13:51	1
Endosulfan I	ND		0.0053	0.0032	ug/L		12/06/19 05:36	12/06/19 13:51	1
Endosulfan II	ND		0.0053	0.0021	ug/L		12/06/19 05:36	12/06/19 13:51	1
Endosulfan sulfate	ND		0.011	0.0032	ug/L		12/06/19 05:36	12/06/19 13:51	1
Endrin	ND		0.0053	0.0021	ug/L		12/06/19 05:36	12/06/19 13:51	1
Endrin aldehyde	ND		0.011	0.0021	ug/L		12/06/19 05:36	12/06/19 13:51	1
Heptachlor	ND		0.0095	0.0032	ug/L		12/06/19 05:36	12/06/19 13:51	1
Heptachlor epoxide	ND		0.0053	0.0026	ug/L		12/06/19 05:36	12/06/19 13:51	1
Toxaphene	ND		0.53	0.25	ug/L		12/06/19 05:36	12/06/19 13:51	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Tetrachloro-m-xylene	70		10 - 104				12/06/19 05:36	12/06/19 13:51	1

**Method: 608.3 - Polychlorinated Biphenyls (PCBs) (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.53	0.26	ug/L		12/06/19 05:36	12/09/19 17:41	1
Aroclor 1221	ND		0.53	0.26	ug/L		12/06/19 05:36	12/09/19 17:41	1
Aroclor 1232	ND		0.53	0.26	ug/L		12/06/19 05:36	12/09/19 17:41	1
Aroclor 1242	ND		0.53	0.26	ug/L		12/06/19 05:36	12/09/19 17:41	1
Aroclor 1248	ND		0.53	0.26	ug/L		12/06/19 05:36	12/09/19 17:41	1
Aroclor 1254	ND		0.53	0.26	ug/L		12/06/19 05:36	12/09/19 17:41	1
Aroclor 1260	ND		0.53	0.26	ug/L		12/06/19 05:36	12/09/19 17:41	1

# Client Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

**Client Sample ID: Outfall002\_20191205\_Comp\_F**

**Lab Sample ID: 440-256464-3**

Date Collected: 12/05/19 09:50

Matrix: Water

Date Received: 12/05/19 16:37

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	77		18 - 134	12/06/19 05:36	12/09/19 17:41	1

**Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	15	J,DX	20	12	ug/L		12/31/19 10:18	12/31/19 16:36	1
Iron	ND		0.10	0.050	mg/L		12/31/19 10:18	12/31/19 16:36	1

**Method: 200.8 - Metals (ICP/MS) - Dissolved**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		12/06/19 18:24	12/08/19 16:00	1
Copper	2.0		2.0	0.50	ug/L		12/06/19 18:24	12/06/19 23:37	1
Lead	ND		1.0	0.50	ug/L		12/06/19 18:24	12/06/19 23:37	1
Selenium	ND		2.0	0.50	ug/L		12/06/19 18:24	12/08/19 16:00	1

**Method: 245.1 - Mercury (CVAA) - Dissolved**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		12/09/19 18:03	12/10/19 10:30	1

**Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Dissolved**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	250		0.33	0.17	mg/L			01/06/20 10:47	1

# Method Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

Method	Method Description	Protocol	Laboratory
625.1	Semivolatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
608.3	Organochlorine Pesticides in Water	40CFR136A	TAL IRV
608.3	Polychlorinated Biphenyls (PCBs) (GC)	40CFR136A	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
200.7 Rev 4.4	Metals (ICP)	EPA	TAL IRV
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL IRV
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV
SM 5540C	Methylene Blue Active Substances (MBAS)	SM	TAL IRV
SM5210B	BOD, 5 Day	SM	TAL IRV
200.2	Preparation, Total Recoverable Metals	EPA	TAL IRV
245.1	Preparation, Mercury	EPA	TAL IRV
608	Liquid-Liquid Extraction (Separatory Funnel)	40CFR136A	TAL IRV
625	Liquid-Liquid Extraction	40CFR136A	TAL IRV
Distill/CN	Distillation, Cyanide	None	TAL IRV
FILTRATION	Sample Filtration	None	TAL IRV

#### Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

#### Laboratory References:

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

**Client Sample ID: Outfall002\_20191205\_Comp**

**Lab Sample ID: 440-256464-1**

**Date Collected: 12/05/19 09:50**

**Matrix: Water**

**Date Received: 12/05/19 16:37**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	625			960 mL	2.0 mL	584297	12/06/19 11:21	HN	TAL IRV
Total/NA	Analysis	625.1		1			585174	12/11/19 11:58	L1B	TAL IRV
Total/NA	Prep	608			980 mL	2 mL	584166	12/06/19 05:36	L1H	TAL IRV
Total/NA	Analysis	608.3		1			584266	12/06/19 13:36	D1D	TAL IRV
Total/NA	Analysis	300.0		1			583996	12/05/19 22:26	NTN	TAL IRV
Total/NA	Analysis	300.0		20			583997	12/05/19 22:44	NTN	TAL IRV
Total/NA	Analysis	314.0		1			584890	12/10/19 13:45	PS	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			585814	12/13/19 14:22	NN	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	584128	12/06/19 07:20	M1G	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1			584599	12/08/19 18:20	KE	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	584107	12/06/19 08:00	EP	TAL IRV
Total Recoverable	Analysis	200.8		1			584511	12/06/19 23:53	MQP	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	584987	12/10/19 13:41	MEM	TAL IRV
Total/NA	Analysis	245.1		1			585123	12/10/19 19:48	DB	TAL IRV
Total Recoverable	Analysis	SM 2340B		1			583360	12/10/19 19:14	P1R	TAL IRV
Total/NA	Analysis	180.1		10			584132	12/05/19 18:56	HZ	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	585486	12/12/19 08:56	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	75 mL	1000 mL	584312	12/06/19 13:19	XL	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	585328	12/11/19 15:57	KMY	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			585569	12/12/19 14:41	KMY	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8.0 mL	585315	12/11/19 13:14	KMY	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	584147	12/05/19 20:18	HTL	TAL IRV
Total/NA	Analysis	SM5210B		1	60 mL	300 mL	584278	12/06/19 16:10	MMP	TAL IRV

**Client Sample ID: Outfall002\_20191205\_Comp\_F**

**Lab Sample ID: 440-256464-3**

**Date Collected: 12/05/19 09:50**

**Matrix: Water**

**Date Received: 12/05/19 16:37**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	608			950 mL	2 mL	584166	12/06/19 05:36	L1H	TAL IRV
Total/NA	Analysis	608.3		1			584266	12/06/19 13:51	D1D	TAL IRV
Total/NA	Prep	608			950 mL	2 mL	584166	12/06/19 05:36	L1H	TAL IRV
Total/NA	Analysis	608.3		1			584714	12/09/19 17:41	JM	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	584365	12/06/19 16:00	EP	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	588693	12/31/19 10:18	EP	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1			588791	12/31/19 16:36	TQN	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	584365	12/06/19 16:00	EP	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	584391	12/06/19 18:24	EP	TAL IRV
Dissolved	Analysis	200.8		1			584509	12/06/19 23:37	MQP	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	584365	12/06/19 16:00	EP	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	584391	12/06/19 18:24	EP	TAL IRV
Dissolved	Analysis	200.8		1			584550	12/08/19 16:00	MQP	TAL IRV

# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

**Client Sample ID: Outfall002\_20191205\_Comp\_F**

**Lab Sample ID: 440-256464-3**

**Date Collected: 12/05/19 09:50**

**Matrix: Water**

**Date Received: 12/05/19 16:37**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	584365	12/06/19 16:00	EP	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	584800	12/09/19 18:03	DB	TAL IRV
Dissolved	Analysis	245.1		1			585048	12/10/19 10:30	DB	TAL IRV
Dissolved	Analysis	SM 2340B		1			588702	01/06/20 10:47	A1S	TAL IRV

**Laboratory References:**

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

## Method: 625.1 - Semivolatile Organic Compounds (GC/MS)

**Lab Sample ID: MB 440-584297/1-A**  
**Matrix: Water**  
**Analysis Batch: 584602**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 584297**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.0	0.10	ug/L		12/06/19 11:21	12/09/19 10:14	1
Bis(2-ethylhexyl) phthalate	ND		5.0	2.0	ug/L		12/06/19 11:21	12/09/19 10:14	1
N-Nitrosodimethylamine	ND		5.0	0.30	ug/L		12/06/19 11:21	12/09/19 10:14	1
Pentachlorophenol	ND		5.0	1.0	ug/L		12/06/19 11:21	12/09/19 10:14	1
2,4-Dinitrotoluene	ND		5.0	2.0	ug/L		12/06/19 11:21	12/09/19 10:14	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	89		60 - 140	12/06/19 11:21	12/09/19 10:14	1
2-Fluorobiphenyl	85		60 - 140	12/06/19 11:21	12/09/19 10:14	1
2-Fluorophenol	81		60 - 140	12/06/19 11:21	12/09/19 10:14	1
Nitrobenzene-d5	60		15 - 314	12/06/19 11:21	12/09/19 10:14	1
Terphenyl-d14	97		60 - 140	12/06/19 11:21	12/09/19 10:14	1

**Lab Sample ID: LCS 440-584297/2-A**  
**Matrix: Water**  
**Analysis Batch: 584602**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 584297**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,4,6-Trichlorophenol	15.0	13.9		ug/L		92	52 - 129
Bis(2-ethylhexyl) phthalate	15.0	15.8		ug/L		105	29 - 137
N-Nitrosodimethylamine	15.0	11.6		ug/L		77	60 - 140
Pentachlorophenol	30.0	27.1		ug/L		90	38 - 152

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4,6-Tribromophenol	95		60 - 140
2-Fluorobiphenyl	79		60 - 140
2-Fluorophenol	78		60 - 140
Nitrobenzene-d5	76		15 - 314
Terphenyl-d14	88		60 - 140

**Lab Sample ID: 440-256489-O-1-A MS**  
**Matrix: Water**  
**Analysis Batch: 584602**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 584297**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
2,4,6-Trichlorophenol	ND		14.4	14.1		ug/L		98	37 - 144
Bis(2-ethylhexyl) phthalate	3.8	J,DX	14.4	15.7		ug/L		83	8 - 158
N-Nitrosodimethylamine	ND		14.4	11.0		ug/L		76	60 - 140
Pentachlorophenol	ND		28.7	27.6		ug/L		96	14 - 176

Surrogate	MS %Recovery	MS Qualifier	Limits
2,4,6-Tribromophenol	105		60 - 140
2-Fluorobiphenyl	85		60 - 140
2-Fluorophenol	81		60 - 140
Nitrobenzene-d5	80		15 - 314
Terphenyl-d14	94		60 - 140



# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

## Method: 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-256489-O-1-B MSD

Matrix: Water

Analysis Batch: 584602

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 584297

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2,4,6-Trichlorophenol	ND		14.4	13.1		ug/L		92	37 - 144	7	58
Bis(2-ethylhexyl) phthalate	3.8	J,DX	14.4	15.0		ug/L		78	8 - 158	5	82
N-Nitrosodimethylamine	ND		14.4	10.8		ug/L		75	60 - 140	2	35
Pentachlorophenol	ND		28.7	26.0		ug/L		91	14 - 176	6	86

Surrogate	MSD %Recovery	MSD Qualifier	MSD Limits
2,4,6-Tribromophenol	94		60 - 140
2-Fluorobiphenyl	80		60 - 140
2-Fluorophenol	74		60 - 140
Nitrobenzene-d5	76		15 - 314
Terphenyl-d14	87		60 - 140

## Method: 608.3 - Organochlorine Pesticides in Water

Lab Sample ID: MB 440-584166/1-A

Matrix: Water

Analysis Batch: 584266

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 584166

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	0.00205	J,DX	0.0050	0.0015	ug/L		12/06/19 05:36	12/06/19 14:06	1
alpha-BHC	ND		0.0050	0.0025	ug/L		12/06/19 05:36	12/06/19 14:06	1
beta-BHC	ND		0.010	0.0040	ug/L		12/06/19 05:36	12/06/19 14:06	1
delta-BHC	ND		0.0050	0.0035	ug/L		12/06/19 05:36	12/06/19 14:06	1
gamma-BHC (Lindane)	ND		0.010	0.0030	ug/L		12/06/19 05:36	12/06/19 14:06	1
Chlordane (technical)	ND		0.10	0.080	ug/L		12/06/19 05:36	12/06/19 14:06	1
4,4'-DDD	ND		0.0050	0.0040	ug/L		12/06/19 05:36	12/06/19 14:06	1
4,4'-DDE	ND		0.0050	0.0030	ug/L		12/06/19 05:36	12/06/19 14:06	1
4,4'-DDT	ND		0.010	0.0040	ug/L		12/06/19 05:36	12/06/19 14:06	1
Dieldrin	ND		0.0050	0.0020	ug/L		12/06/19 05:36	12/06/19 14:06	1
Endosulfan I	ND		0.0050	0.0030	ug/L		12/06/19 05:36	12/06/19 14:06	1
Endosulfan II	ND		0.0050	0.0020	ug/L		12/06/19 05:36	12/06/19 14:06	1
Endosulfan sulfate	ND		0.010	0.0030	ug/L		12/06/19 05:36	12/06/19 14:06	1
Endrin	ND		0.0050	0.0020	ug/L		12/06/19 05:36	12/06/19 14:06	1
Endrin aldehyde	ND		0.010	0.0020	ug/L		12/06/19 05:36	12/06/19 14:06	1
Heptachlor	ND		0.0090	0.0030	ug/L		12/06/19 05:36	12/06/19 14:06	1
Heptachlor epoxide	ND		0.0050	0.0025	ug/L		12/06/19 05:36	12/06/19 14:06	1
Toxaphene	ND		0.50	0.24	ug/L		12/06/19 05:36	12/06/19 14:06	1

Surrogate	MB %Recovery	MB Qualifier	MB Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	40		10 - 104	12/06/19 05:36	12/06/19 14:06	1

Lab Sample ID: LCS 440-584166/2-A

Matrix: Water

Analysis Batch: 584266

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 584166

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Aldrin	0.400	0.273		ug/L		68	42 - 140
alpha-BHC	0.400	0.268		ug/L		67	37 - 140

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

## Method: 608.3 - Organochlorine Pesticides in Water (Continued)

Lab Sample ID: LCS 440-584166/2-A  
Matrix: Water  
Analysis Batch: 584266

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 584166

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
beta-BHC	0.400	0.288		ug/L		72	17 - 147
delta-BHC	0.400	0.293		ug/L		73	19 - 140
gamma-BHC (Lindane)	0.400	0.269		ug/L		67	32 - 140
4,4'-DDD	0.400	0.312		ug/L		78	31 - 141
4,4'-DDE	0.400	0.300		ug/L		75	30 - 145
4,4'-DDT	0.400	0.326		ug/L		81	25 - 160
Dieldrin	0.400	0.292		ug/L		73	36 - 146
Endosulfan I	0.400	0.294		ug/L		73	45 - 153
Endosulfan II	0.400	0.291		ug/L		73	10 - 202
Endosulfan sulfate	0.400	0.304		ug/L		76	26 - 144
Endrin	0.400	0.281		ug/L		70	30 - 147
Endrin aldehyde	0.400	0.287		ug/L		72	60 - 140
Heptachlor	0.400	0.263		ug/L		66	34 - 140
Heptachlor epoxide	0.400	0.292		ug/L		73	37 - 142

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	76		18 - 134
Tetrachloro-m-xylene	65		10 - 104

Lab Sample ID: LCSD 440-584166/3-A  
Matrix: Water  
Analysis Batch: 584266

Client Sample ID: Lab Control Sample Dup  
Prep Type: Total/NA  
Prep Batch: 584166

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Aldrin	0.400	0.297		ug/L		74	42 - 140	8	35
alpha-BHC	0.400	0.293		ug/L		73	37 - 140	9	36
beta-BHC	0.400	0.306		ug/L		76	17 - 147	6	44
delta-BHC	0.400	0.313		ug/L		78	19 - 140	6	52
gamma-BHC (Lindane)	0.400	0.288		ug/L		72	32 - 140	7	39
4,4'-DDD	0.400	0.326		ug/L		82	31 - 141	5	39
4,4'-DDE	0.400	0.315		ug/L		79	30 - 145	5	35
4,4'-DDT	0.400	0.343		ug/L		86	25 - 160	5	42
Dieldrin	0.400	0.307		ug/L		77	36 - 146	5	49
Endosulfan I	0.400	0.310		ug/L		78	45 - 153	5	28
Endosulfan II	0.400	0.305		ug/L		76	10 - 202	5	53
Endosulfan sulfate	0.400	0.319		ug/L		80	26 - 144	5	38
Endrin	0.400	0.294		ug/L		73	30 - 147	4	48
Endrin aldehyde	0.400	0.302		ug/L		76	60 - 140	5	30
Heptachlor	0.400	0.287		ug/L		72	34 - 140	9	43
Heptachlor epoxide	0.400	0.308		ug/L		77	37 - 142	5	26

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	82		18 - 134
Tetrachloro-m-xylene	72		10 - 104

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

## Method: 608.3 - Polychlorinated Biphenyls (PCBs) (GC)

**Lab Sample ID: MB 440-584166/1-A**  
**Matrix: Water**  
**Analysis Batch: 584714**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 584166**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.50	0.25	ug/L		12/06/19 05:36	12/09/19 15:13	1
Aroclor 1221	ND		0.50	0.25	ug/L		12/06/19 05:36	12/09/19 15:13	1
Aroclor 1232	ND		0.50	0.25	ug/L		12/06/19 05:36	12/09/19 15:13	1
Aroclor 1242	ND		0.50	0.25	ug/L		12/06/19 05:36	12/09/19 15:13	1
Aroclor 1248	ND		0.50	0.25	ug/L		12/06/19 05:36	12/09/19 15:13	1
Aroclor 1254	ND		0.50	0.25	ug/L		12/06/19 05:36	12/09/19 15:13	1
Aroclor 1260	ND		0.50	0.25	ug/L		12/06/19 05:36	12/09/19 15:13	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
DCB Decachlorobiphenyl (Surr)	57		18 - 134				12/06/19 05:36	12/09/19 15:13	1

**Lab Sample ID: LCS 440-584166/4-A**  
**Matrix: Water**  
**Analysis Batch: 584373**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 584166**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Aroclor 1016	4.00	3.30		ug/L		82	50 - 140
Aroclor 1260	4.00	3.70		ug/L		93	8 - 140
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				
DCB Decachlorobiphenyl (Surr)	81		18 - 134				

**Lab Sample ID: 440-256489-Q-1-A MS**  
**Matrix: Water**  
**Analysis Batch: 584373**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 584166**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Aroclor 1016	ND		3.83	3.30		ug/L		86	50 - 140
Aroclor 1260	ND		3.83	3.38		ug/L		88	8 - 140
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>						
DCB Decachlorobiphenyl (Surr)	77		18 - 134						

**Lab Sample ID: 440-256489-Q-1-B MSD**  
**Matrix: Water**  
**Analysis Batch: 584373**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 584166**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Aroclor 1016	ND		3.83	3.82		ug/L		100	50 - 140	15	36
Aroclor 1260	ND		3.83	3.91		ug/L		102	8 - 140	14	38
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>								
DCB Decachlorobiphenyl (Surr)	88		18 - 134								

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

## Method: 300.0 - Anions, Ion Chromatography

**Lab Sample ID: MB 440-583996/6**  
**Matrix: Water**  
**Analysis Batch: 583996**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			12/05/19 13:58	1
Nitrite as N	ND		0.15	0.025	mg/L			12/05/19 13:58	1

**Lab Sample ID: LCS 440-583996/7**  
**Matrix: Water**  
**Analysis Batch: 583996**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.13	1.11		mg/L		98	90 - 110
Nitrite as N	1.52	1.50		mg/L		98	90 - 110

**Lab Sample ID: 440-256222-A-4 MS**  
**Matrix: Water**  
**Analysis Batch: 583996**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	9.2		22.6	31.9		mg/L		101	80 - 120
Nitrite as N	ND		30.4	30.7		mg/L		101	80 - 120

**Lab Sample ID: 440-256222-A-4 MSD**  
**Matrix: Water**  
**Analysis Batch: 583996**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	9.2		22.6	32.0		mg/L		101	80 - 120	0	20
Nitrite as N	ND		30.4	30.8		mg/L		101	80 - 120	0	20

**Lab Sample ID: MB 440-583997/6**  
**Matrix: Water**  
**Analysis Batch: 583997**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			12/05/19 13:58	1
Sulfate	ND		0.50	0.25	mg/L			12/05/19 13:58	1

**Lab Sample ID: LCS 440-583997/7**  
**Matrix: Water**  
**Analysis Batch: 583997**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.90		mg/L		98	90 - 110
Sulfate	5.00	5.07		mg/L		101	90 - 110

**Lab Sample ID: 440-256222-A-4 MS**  
**Matrix: Water**  
**Analysis Batch: 583997**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	120		100	229		mg/L		111	80 - 120
Sulfate	110		100	208		mg/L		101	80 - 120

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

## Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: 440-256222-A-4 MSD  
Matrix: Water  
Analysis Batch: 583997

Client Sample ID: Matrix Spike Duplicate  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	120		100	229		mg/L		111	80 - 120	0	20
Sulfate	110		100	209		mg/L		103	80 - 120	1	20

## Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-584890/5  
Matrix: Water  
Analysis Batch: 584890

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			12/10/19 09:55	1

Lab Sample ID: LCS 440-584890/6  
Matrix: Water  
Analysis Batch: 584890

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	10.0	10.3		ug/L		103	85 - 115

Lab Sample ID: MRL 440-584890/4  
Matrix: Water  
Analysis Batch: 584890

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	1.00	ND		ug/L		94	75 - 125

Lab Sample ID: MRL 440-584890/8  
Matrix: Water  
Analysis Batch: 584890

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	3.86	J,DX	ug/L		96	75 - 125

Lab Sample ID: 320-56783-D-2 MS  
Matrix: Water  
Analysis Batch: 584890

Client Sample ID: Matrix Spike  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		10.0	10.4		ug/L		104	80 - 120

Lab Sample ID: 320-56783-D-2 MSD  
Matrix: Water  
Analysis Batch: 584890

Client Sample ID: Matrix Spike Duplicate  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	ND		10.0	10.4		ug/L		104	80 - 120	0	15

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

## Method: 200.7 Rev 4.4 - Metals (ICP)

**Lab Sample ID: MB 440-584128/1-A**  
**Matrix: Water**  
**Analysis Batch: 584599**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 584128**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	12	ug/L		12/06/19 07:20	12/08/19 18:15	1
Iron	ND		100	50	ug/L		12/06/19 07:20	12/08/19 18:15	1

**Lab Sample ID: LCS 440-584128/2-A**  
**Matrix: Water**  
**Analysis Batch: 584599**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 584128**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	500	489		ug/L		98	85 - 115
Iron	500	462		ug/L		92	85 - 115

**Lab Sample ID: 440-256464-1 MS**  
**Matrix: Water**  
**Analysis Batch: 584599**

**Client Sample ID: Outfall002\_20191205\_Comp**  
**Prep Type: Total Recoverable**  
**Prep Batch: 584128**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	18	J,DX	500	508		ug/L		98	70 - 130
Iron	1500		500	2670	LM	ug/L		227	70 - 130

**Lab Sample ID: 440-256464-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 584599**

**Client Sample ID: Outfall002\_20191205\_Comp**  
**Prep Type: Total Recoverable**  
**Prep Batch: 584128**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Zinc	18	J,DX	500	510		ug/L		98	70 - 130	0	20
Iron	1500		500	2710	LM	ug/L		235	70 - 130	1	20

**Lab Sample ID: MB 440-584365/1-F**  
**Matrix: Water**  
**Analysis Batch: 588791**

**Client Sample ID: Method Blank**  
**Prep Type: Dissolved**  
**Prep Batch: 588693**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	12	ug/L		12/31/19 10:18	12/31/19 16:14	1
Iron	ND		0.10	0.050	mg/L		12/31/19 10:18	12/31/19 16:14	1

**Lab Sample ID: LCS 440-584365/2-F**  
**Matrix: Water**  
**Analysis Batch: 588791**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Dissolved**  
**Prep Batch: 588693**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	500	475		ug/L		95	85 - 115
Iron	0.500	0.456		mg/L		91	85 - 115

**Lab Sample ID: 440-256464-3 MS**  
**Matrix: Water**  
**Analysis Batch: 588791**

**Client Sample ID: Outfall002\_20191205\_Comp\_F**  
**Prep Type: Dissolved**  
**Prep Batch: 588693**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	15	J,DX	500	449		ug/L		87	70 - 130
Iron	ND		0.500	0.437		mg/L		87	70 - 130

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

## Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: 440-256464-3 MSD  
Matrix: Water  
Analysis Batch: 588791

Client Sample ID: Outfall002\_20191205\_Comp\_F  
Prep Type: Dissolved  
Prep Batch: 588693

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.		RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits	RPD		
Zinc	15	J,DX	500	473		ug/L		92	70 - 130	5	20	
Iron	ND		0.500	0.498		mg/L		100	70 - 130	13	20	

## Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-584107/1-A  
Matrix: Water  
Analysis Batch: 584511

Client Sample ID: Method Blank  
Prep Type: Total Recoverable  
Prep Batch: 584107

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
	Result	Qualifier								
Cadmium	ND		1.0	0.25	ug/L		12/06/19 08:00	12/06/19 23:08	1	
Copper	ND		2.0	0.50	ug/L		12/06/19 08:00	12/06/19 23:08	1	
Lead	ND		1.0	0.50	ug/L		12/06/19 08:00	12/06/19 23:08	1	
Selenium	ND		2.0	0.50	ug/L		12/06/19 08:00	12/06/19 23:08	1	

Lab Sample ID: LCS 440-584107/2-A  
Matrix: Water  
Analysis Batch: 584511

Client Sample ID: Lab Control Sample  
Prep Type: Total Recoverable  
Prep Batch: 584107

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec.	
		Added	Result				Qualifier	Limits
Cadmium	80.0	80.6		ug/L		101	85 - 115	
Copper	80.0	80.1		ug/L		100	85 - 115	
Lead	80.0	76.5		ug/L		96	85 - 115	
Selenium	80.0	76.6		ug/L		96	85 - 115	

Lab Sample ID: 440-256457-A-1-B MS  
Matrix: Water  
Analysis Batch: 584511

Client Sample ID: Matrix Spike  
Prep Type: Total Recoverable  
Prep Batch: 584107

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	
	Result	Qualifier	Added	Result	Qualifier				Limits	
Cadmium	0.50	J,DX	80.0	77.0		ug/L		96	70 - 130	
Copper	69		80.0	148		ug/L		98	70 - 130	
Lead	6.6		80.0	81.4		ug/L		94	70 - 130	
Selenium	ND		80.0	78.6		ug/L		98	70 - 130	

Lab Sample ID: 440-256457-A-1-C MSD  
Matrix: Water  
Analysis Batch: 584511

Client Sample ID: Matrix Spike Duplicate  
Prep Type: Total Recoverable  
Prep Batch: 584107

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.		RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits	RPD		
Cadmium	0.50	J,DX	80.0	77.0		ug/L		96	70 - 130	0	20	
Copper	69		80.0	147		ug/L		98	70 - 130	0	20	
Lead	6.6		80.0	81.4		ug/L		94	70 - 130	0	20	
Selenium	ND		80.0	76.7		ug/L		96	70 - 130	2	20	

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

## Method: 200.8 - Metals (ICP/MS) (Continued)

**Lab Sample ID: MB 440-584365/1-B**  
**Matrix: Water**  
**Analysis Batch: 584509**

**Client Sample ID: Method Blank**  
**Prep Type: Dissolved**  
**Prep Batch: 584391**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	ND		2.0	0.50	ug/L		12/06/19 18:24	12/06/19 22:10	1
Lead	ND		1.0	0.50	ug/L		12/06/19 18:24	12/06/19 22:10	1

**Lab Sample ID: MB 440-584365/1-B**  
**Matrix: Water**  
**Analysis Batch: 584550**

**Client Sample ID: Method Blank**  
**Prep Type: Dissolved**  
**Prep Batch: 584391**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		12/06/19 18:24	12/08/19 15:48	1
Selenium	ND		2.0	0.50	ug/L		12/06/19 18:24	12/08/19 15:48	1

**Lab Sample ID: LCS 440-584365/2-B**  
**Matrix: Water**  
**Analysis Batch: 584509**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Dissolved**  
**Prep Batch: 584391**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Copper	80.0	76.5		ug/L		96	85 - 115
Lead	80.0	77.4		ug/L		97	85 - 115

**Lab Sample ID: LCS 440-584365/2-B**  
**Matrix: Water**  
**Analysis Batch: 584550**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Dissolved**  
**Prep Batch: 584391**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	80.1		ug/L		100	85 - 115
Selenium	80.0	79.4		ug/L		99	85 - 115

**Lab Sample ID: 440-256253-B-7-C MS**  
**Matrix: Water**  
**Analysis Batch: 584509**

**Client Sample ID: Matrix Spike**  
**Prep Type: Dissolved**  
**Prep Batch: 584391**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Copper	6.5		80.0	81.4		ug/L		94	70 - 130
Lead	ND		80.0	76.0		ug/L		95	70 - 130

**Lab Sample ID: 440-256253-B-7-C MS**  
**Matrix: Water**  
**Analysis Batch: 584550**

**Client Sample ID: Matrix Spike**  
**Prep Type: Dissolved**  
**Prep Batch: 584391**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND		80.0	78.9		ug/L		99	70 - 130
Selenium	0.61	J,DX	80.0	78.4		ug/L		97	70 - 130

**Lab Sample ID: 440-256253-B-7-D MSD**  
**Matrix: Water**  
**Analysis Batch: 584509**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Dissolved**  
**Prep Batch: 584391**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Copper	6.5		80.0	78.5		ug/L		90	70 - 130	4	20
Lead	ND		80.0	73.8		ug/L		92	70 - 130	3	20

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

## Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: 440-256253-B-7-D MSD  
Matrix: Water  
Analysis Batch: 584550

Client Sample ID: Matrix Spike Duplicate  
Prep Type: Dissolved  
Prep Batch: 584391

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
Cadmium	ND		80.0	76.7		ug/L		96	70 - 130	3	20
Selenium	0.61	J,DX	80.0	75.0		ug/L		93	70 - 130	5	20

## Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-584987/1-A  
Matrix: Water  
Analysis Batch: 585123

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 584987

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	0.236		0.20	0.10	ug/L		12/10/19 13:41	12/10/19 19:24	1

Lab Sample ID: LCS 440-584987/2-A  
Matrix: Water  
Analysis Batch: 585123

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 584987

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
							Limits
Mercury	4.00	4.09		ug/L		102	85 - 115

Lab Sample ID: 440-256668-A-7-B MS  
Matrix: Water  
Analysis Batch: 585123

Client Sample ID: Matrix Spike  
Prep Type: Total/NA  
Prep Batch: 584987

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.
	Result	Qualifier	Added	Result	Qualifier				Limits
Mercury	ND		4.00	4.01		ug/L		100	75 - 125

Lab Sample ID: 440-256668-A-7-C MSD  
Matrix: Water  
Analysis Batch: 585123

Client Sample ID: Matrix Spike Duplicate  
Prep Type: Total/NA  
Prep Batch: 584987

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
Mercury	ND		4.00	4.02		ug/L		101	75 - 125	0	20

Lab Sample ID: MB 440-584365/1-D  
Matrix: Water  
Analysis Batch: 585048

Client Sample ID: Method Blank  
Prep Type: Dissolved  
Prep Batch: 584800

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.20	0.10	ug/L		12/09/19 18:03	12/10/19 10:28	1

Lab Sample ID: LCS 440-584365/2-D  
Matrix: Water  
Analysis Batch: 585048

Client Sample ID: Lab Control Sample  
Prep Type: Dissolved  
Prep Batch: 584800

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
							Limits
Mercury	4.00	3.96		ug/L		99	85 - 115

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

## Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: 440-256464-3 MS  
Matrix: Water  
Analysis Batch: 585048

Client Sample ID: Outfall002\_20191205\_Comp\_F  
Prep Type: Dissolved  
Prep Batch: 584800

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		4.00	4.09		ug/L		102	75 - 125

Lab Sample ID: 440-256464-3 MSD  
Matrix: Water  
Analysis Batch: 585048

Client Sample ID: Outfall002\_20191205\_Comp\_F  
Prep Type: Dissolved  
Prep Batch: 584800

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		4.00	3.74		ug/L		94	75 - 125	9	20

## Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-584132/5  
Matrix: Water  
Analysis Batch: 584132

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			12/05/19 18:56	1

Lab Sample ID: 440-256466-A-12 DU  
Matrix: Water  
Analysis Batch: 584132

Client Sample ID: Duplicate  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Turbidity	150		144		NTU		4	20

## Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-585486/1  
Matrix: Water  
Analysis Batch: 585486

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			12/12/19 08:56	1

Lab Sample ID: LCS 440-585486/2  
Matrix: Water  
Analysis Batch: 585486

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Total Dissolved Solids	1000	992		mg/L		99	90 - 110

Lab Sample ID: 440-256464-1 DU  
Matrix: Water  
Analysis Batch: 585486

Client Sample ID: Outfall002\_20191205\_Comp  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Total Dissolved Solids	500		507		mg/L		0.8	5

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

## Method: SM 2540D - Solids, Total Suspended (TSS)

**Lab Sample ID: MB 440-584312/1**  
**Matrix: Water**  
**Analysis Batch: 584312**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			12/06/19 13:19	1

**Lab Sample ID: LCS 440-584312/2**  
**Matrix: Water**  
**Analysis Batch: 584312**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	1020		mg/L		102	85 - 115

**Lab Sample ID: 440-256390-A-1 DU**  
**Matrix: Water**  
**Analysis Batch: 584312**

**Client Sample ID: Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	3900		3960		mg/L		3	10

## Method: SM 4500 CN E - Cyanide, Total (Low Level)

**Lab Sample ID: MB 440-585328/1-A**  
**Matrix: Water**  
**Analysis Batch: 585569**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 585328**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		12/11/19 15:57	12/12/19 14:40	1

**Lab Sample ID: LCS 440-585328/2-A**  
**Matrix: Water**  
**Analysis Batch: 585569**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 585328**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	99.2		ug/L		99	80 - 120

**Lab Sample ID: LCSD 440-585328/3-A**  
**Matrix: Water**  
**Analysis Batch: 585569**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 585328**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	100	97.3		ug/L		97	80 - 120	2	20

**Lab Sample ID: 440-256718-D-2-A MS**  
**Matrix: Water**  
**Analysis Batch: 585569**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 585328**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	ND		100	97.0		ug/L		97	75 - 125

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

## Method: SM 4500 CN E - Cyanide, Total (Low Level) (Continued)

Lab Sample ID: 440-256718-D-2-B MSD  
Matrix: Water  
Analysis Batch: 585569

Client Sample ID: Matrix Spike Duplicate  
Prep Type: Total/NA  
Prep Batch: 585328

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	ND		100	91.1		ug/L		91	75 - 125	6	20

## Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-585315/10  
Matrix: Water  
Analysis Batch: 585315

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.200	0.100	mg/L			12/11/19 12:37	1

Lab Sample ID: LCS 440-585315/11  
Matrix: Water  
Analysis Batch: 585315

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	5.00	5.060		mg/L		101	90 - 110

Lab Sample ID: MRL 440-585315/9  
Matrix: Water  
Analysis Batch: 585315

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	0.200	0.1990	J,DX	mg/L		100	50 - 150

Lab Sample ID: 440-256372-A-1 MS  
Matrix: Water  
Analysis Batch: 585315

Client Sample ID: Matrix Spike  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	ND		5.00	5.410		mg/L		108	90 - 110

Lab Sample ID: 440-256372-A-1 MSD  
Matrix: Water  
Analysis Batch: 585315

Client Sample ID: Matrix Spike Duplicate  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ammonia (as N)	ND		5.00	5.440		mg/L		109	90 - 110	1	15

## Method: SM 5540C - Methylene Blue Active Substances (MBAS)

Lab Sample ID: MB 440-584147/3  
Matrix: Water  
Analysis Batch: 584147

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			12/05/19 20:17	1

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

## Method: SM 5540C - Methylene Blue Active Substances (MBAS) (Continued)

**Lab Sample ID: LCS 440-584147/4**  
**Matrix: Water**  
**Analysis Batch: 584147**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.250	0.262		mg/L		105	90 - 110

**Lab Sample ID: 440-256464-1 MS**  
**Matrix: Water**  
**Analysis Batch: 584147**

**Client Sample ID: Outfall002\_20191205\_Comp**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.12		0.250	0.378		mg/L		103	50 - 125

**Lab Sample ID: 440-256464-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 584147**

**Client Sample ID: Outfall002\_20191205\_Comp**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Blue Active Substances	0.12		0.250	0.360		mg/L		96	50 - 125	5	20

## Method: SM5210B - BOD, 5 Day

**Lab Sample ID: USB 440-584278/1**  
**Matrix: Water**  
**Analysis Batch: 584278**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	ND		2.0	0.50	mg/L			12/06/19 10:45	1

**Lab Sample ID: LCS 440-584278/5**  
**Matrix: Water**  
**Analysis Batch: 584278**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biochemical Oxygen Demand	199	223		mg/L		112	85 - 115

**Lab Sample ID: LCSD 440-584278/6**  
**Matrix: Water**  
**Analysis Batch: 584278**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Biochemical Oxygen Demand	199	224		mg/L		113	85 - 115	0	20

**Lab Sample ID: LCSD 440-584278/7**  
**Matrix: Water**  
**Analysis Batch: 584278**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Biochemical Oxygen Demand	199	221		mg/L		111	85 - 115	1	20

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

## Method: SM5210B - BOD, 5 Day (Continued)

Lab Sample ID: 440-256552-B-1 DU  
 Matrix: Water  
 Analysis Batch: 584278

Client Sample ID: Duplicate  
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Biochemical Oxygen Demand	4.8		4.75		mg/L		1	20

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

## GC/MS Semi VOA

### Prep Batch: 584297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	625	
MB 440-584297/1-A	Method Blank	Total/NA	Water	625	
LCS 440-584297/2-A	Lab Control Sample	Total/NA	Water	625	
440-256489-O-1-A MS	Matrix Spike	Total/NA	Water	625	
440-256489-O-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	625	

### Analysis Batch: 584602

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-584297/1-A	Method Blank	Total/NA	Water	625.1	584297
LCS 440-584297/2-A	Lab Control Sample	Total/NA	Water	625.1	584297
440-256489-O-1-A MS	Matrix Spike	Total/NA	Water	625.1	584297
440-256489-O-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	625.1	584297

### Analysis Batch: 585174

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	625.1	584297

## GC Semi VOA

### Prep Batch: 584166

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	608	
440-256464-3	Outfall002_20191205_Comp_F	Total/NA	Water	608	
MB 440-584166/1-A	Method Blank	Total/NA	Water	608	
LCS 440-584166/2-A	Lab Control Sample	Total/NA	Water	608	
LCS 440-584166/4-A	Lab Control Sample	Total/NA	Water	608	
LCSD 440-584166/3-A	Lab Control Sample Dup	Total/NA	Water	608	
440-256489-Q-1-A MS	Matrix Spike	Total/NA	Water	608	
440-256489-Q-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	608	

### Analysis Batch: 584266

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	608.3	584166
440-256464-3	Outfall002_20191205_Comp_F	Total/NA	Water	608.3	584166
MB 440-584166/1-A	Method Blank	Total/NA	Water	608.3	584166
LCS 440-584166/2-A	Lab Control Sample	Total/NA	Water	608.3	584166
LCSD 440-584166/3-A	Lab Control Sample Dup	Total/NA	Water	608.3	584166

### Analysis Batch: 584373

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 440-584166/4-A	Lab Control Sample	Total/NA	Water	608.3	584166
440-256489-Q-1-A MS	Matrix Spike	Total/NA	Water	608.3	584166
440-256489-Q-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	608.3	584166

### Analysis Batch: 584714

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-3	Outfall002_20191205_Comp_F	Total/NA	Water	608.3	584166
MB 440-584166/1-A	Method Blank	Total/NA	Water	608.3	584166

# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

## HPLC/IC

### Analysis Batch: 583996

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	300.0	
MB 440-583996/6	Method Blank	Total/NA	Water	300.0	
LCS 440-583996/7	Lab Control Sample	Total/NA	Water	300.0	
440-256222-A-4 MS	Matrix Spike	Total/NA	Water	300.0	
440-256222-A-4 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

### Analysis Batch: 583997

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	300.0	
MB 440-583997/6	Method Blank	Total/NA	Water	300.0	
LCS 440-583997/7	Lab Control Sample	Total/NA	Water	300.0	
440-256222-A-4 MS	Matrix Spike	Total/NA	Water	300.0	
440-256222-A-4 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

### Analysis Batch: 584890

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	314.0	
MB 440-584890/5	Method Blank	Total/NA	Water	314.0	
LCS 440-584890/6	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-584890/4	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-584890/8	Lab Control Sample	Total/NA	Water	314.0	
320-56783-D-2 MS	Matrix Spike	Total/NA	Water	314.0	
320-56783-D-2 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0	

### Analysis Batch: 585814

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	NO3NO2 Calc	

## Metals

### Analysis Batch: 583360

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total Recoverable	Water	SM 2340B	

### Prep Batch: 584107

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total Recoverable	Water	200.2	
MB 440-584107/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-584107/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-256457-A-1-B MS	Matrix Spike	Total Recoverable	Water	200.2	
440-256457-A-1-C MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

### Prep Batch: 584128

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total Recoverable	Water	200.2	
MB 440-584128/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-584128/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-256464-1 MS	Outfall002_20191205_Comp	Total Recoverable	Water	200.2	
440-256464-1 MSD	Outfall002_20191205_Comp	Total Recoverable	Water	200.2	



# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

## Metals

### Filtration Batch: 584365

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-3	Outfall002_20191205_Comp_F	Dissolved	Water	FILTRATION	
MB 440-584365/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-584365/1-D	Method Blank	Dissolved	Water	FILTRATION	
MB 440-584365/1-F	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-584365/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-584365/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-584365/2-F	Lab Control Sample	Dissolved	Water	FILTRATION	
440-256253-B-7-C MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-256253-B-7-D MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	
440-256464-3 MS	Outfall002_20191205_Comp_F	Dissolved	Water	FILTRATION	
440-256464-3 MSD	Outfall002_20191205_Comp_F	Dissolved	Water	FILTRATION	

### Prep Batch: 584391

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-3	Outfall002_20191205_Comp_F	Dissolved	Water	200.2	584365
MB 440-584365/1-B	Method Blank	Dissolved	Water	200.2	584365
LCS 440-584365/2-B	Lab Control Sample	Dissolved	Water	200.2	584365
440-256253-B-7-C MS	Matrix Spike	Dissolved	Water	200.2	584365
440-256253-B-7-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	584365

### Analysis Batch: 584509

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-3	Outfall002_20191205_Comp_F	Dissolved	Water	200.8	584391
MB 440-584365/1-B	Method Blank	Dissolved	Water	200.8	584391
LCS 440-584365/2-B	Lab Control Sample	Dissolved	Water	200.8	584391
440-256253-B-7-C MS	Matrix Spike	Dissolved	Water	200.8	584391
440-256253-B-7-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	584391

### Analysis Batch: 584511

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total Recoverable	Water	200.8	584107
MB 440-584107/1-A	Method Blank	Total Recoverable	Water	200.8	584107
LCS 440-584107/2-A	Lab Control Sample	Total Recoverable	Water	200.8	584107
440-256457-A-1-B MS	Matrix Spike	Total Recoverable	Water	200.8	584107
440-256457-A-1-C MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	584107

### Analysis Batch: 584550

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-3	Outfall002_20191205_Comp_F	Dissolved	Water	200.8	584391
MB 440-584365/1-B	Method Blank	Dissolved	Water	200.8	584391
LCS 440-584365/2-B	Lab Control Sample	Dissolved	Water	200.8	584391
440-256253-B-7-C MS	Matrix Spike	Dissolved	Water	200.8	584391
440-256253-B-7-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	584391

### Analysis Batch: 584599

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total Recoverable	Water	200.7 Rev 4.4	584128
MB 440-584128/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	584128
LCS 440-584128/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	584128
440-256464-1 MS	Outfall002_20191205_Comp	Total Recoverable	Water	200.7 Rev 4.4	584128
440-256464-1 MSD	Outfall002_20191205_Comp	Total Recoverable	Water	200.7 Rev 4.4	584128

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

## Metals

### Prep Batch: 584800

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-3	Outfall002_20191205_Comp_F	Dissolved	Water	245.1	584365
MB 440-584365/1-D	Method Blank	Dissolved	Water	245.1	584365
LCS 440-584365/2-D	Lab Control Sample	Dissolved	Water	245.1	584365
440-256464-3 MS	Outfall002_20191205_Comp_F	Dissolved	Water	245.1	584365
440-256464-3 MSD	Outfall002_20191205_Comp_F	Dissolved	Water	245.1	584365

### Prep Batch: 584987

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	245.1	
MB 440-584987/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-584987/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-256668-A-7-B MS	Matrix Spike	Total/NA	Water	245.1	
440-256668-A-7-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

### Analysis Batch: 585048

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-3	Outfall002_20191205_Comp_F	Dissolved	Water	245.1	584800
MB 440-584365/1-D	Method Blank	Dissolved	Water	245.1	584800
LCS 440-584365/2-D	Lab Control Sample	Dissolved	Water	245.1	584800
440-256464-3 MS	Outfall002_20191205_Comp_F	Dissolved	Water	245.1	584800
440-256464-3 MSD	Outfall002_20191205_Comp_F	Dissolved	Water	245.1	584800

### Analysis Batch: 585123

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	245.1	584987
MB 440-584987/1-A	Method Blank	Total/NA	Water	245.1	584987
LCS 440-584987/2-A	Lab Control Sample	Total/NA	Water	245.1	584987
440-256668-A-7-B MS	Matrix Spike	Total/NA	Water	245.1	584987
440-256668-A-7-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	584987

### Prep Batch: 588693

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-3	Outfall002_20191205_Comp_F	Dissolved	Water	200.2	584365
MB 440-584365/1-F	Method Blank	Dissolved	Water	200.2	584365
LCS 440-584365/2-F	Lab Control Sample	Dissolved	Water	200.2	584365
440-256464-3 MS	Outfall002_20191205_Comp_F	Dissolved	Water	200.2	584365
440-256464-3 MSD	Outfall002_20191205_Comp_F	Dissolved	Water	200.2	584365

### Analysis Batch: 588702

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-3	Outfall002_20191205_Comp_F	Dissolved	Water	SM 2340B	

### Analysis Batch: 588791

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-3	Outfall002_20191205_Comp_F	Dissolved	Water	200.7 Rev 4.4	588693
MB 440-584365/1-F	Method Blank	Dissolved	Water	200.7 Rev 4.4	588693
LCS 440-584365/2-F	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	588693
440-256464-3 MS	Outfall002_20191205_Comp_F	Dissolved	Water	200.7 Rev 4.4	588693
440-256464-3 MSD	Outfall002_20191205_Comp_F	Dissolved	Water	200.7 Rev 4.4	588693

# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

## General Chemistry

### Analysis Batch: 584132

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	180.1	
MB 440-584132/5	Method Blank	Total/NA	Water	180.1	
440-256466-A-12 DU	Duplicate	Total/NA	Water	180.1	

### Analysis Batch: 584147

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	SM 5540C	
MB 440-584147/3	Method Blank	Total/NA	Water	SM 5540C	
LCS 440-584147/4	Lab Control Sample	Total/NA	Water	SM 5540C	
440-256464-1 MS	Outfall002_20191205_Comp	Total/NA	Water	SM 5540C	
440-256464-1 MSD	Outfall002_20191205_Comp	Total/NA	Water	SM 5540C	

### Analysis Batch: 584278

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	SM5210B	
USB 440-584278/1	Method Blank	Total/NA	Water	SM5210B	
LCS 440-584278/5	Lab Control Sample	Total/NA	Water	SM5210B	
LCSD 440-584278/6	Lab Control Sample Dup	Total/NA	Water	SM5210B	
LCSD 440-584278/7	Lab Control Sample Dup	Total/NA	Water	SM5210B	
440-256552-B-1 DU	Duplicate	Total/NA	Water	SM5210B	

### Analysis Batch: 584312

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	SM 2540D	
MB 440-584312/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-584312/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-256390-A-1 DU	Duplicate	Total/NA	Water	SM 2540D	

### Analysis Batch: 585315

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-585315/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-585315/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-585315/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-256372-A-1 MS	Matrix Spike	Total/NA	Water	SM 4500 NH3 G	
440-256372-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 NH3 G	

### Prep Batch: 585328

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	Distill/CN	
MB 440-585328/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-585328/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
LCSD 440-585328/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
440-256718-D-2-A MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-256718-D-2-B MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

### Analysis Batch: 585486

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	SM 2540C	
MB 440-585486/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-585486/2	Lab Control Sample	Total/NA	Water	SM 2540C	

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

## General Chemistry (Continued)

### Analysis Batch: 585486 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1 DU	Outfall002_20191205_Comp	Total/NA	Water	SM 2540C	

### Analysis Batch: 585569

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	SM 4500 CN E	585328
MB 440-585328/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	585328
LCS 440-585328/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	585328
LCSD 440-585328/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	585328
440-256718-D-2-A MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	585328
440-256718-D-2-B MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	585328

# Definitions/Glossary

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

## Qualifiers

### GC/MS Semi VOA

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

### GC Semi VOA

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

### HPLC/IC

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

### Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
LM	MS and/or MSD above acceptance limits. See Blank Spike (LCS)

### General Chemistry

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

## Laboratory: Eurofins Calscience Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
California	State Program	CA ELAP 2706	06-30-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
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# CHAIN OF CUSTODY FORM

<b>Client Name/Address:</b> Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Unvashi Patel 17461 Darian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		<b>Project:</b> Boeing-SSFL NPDES Permit 2019 Quarterly Outfall [001, 002, 011, 018] Outfall 002 Comp		<b>Project Manager:</b> Katherine Miller 520.289.8606; 520.904.6944 (cell) <b>Field Manager:</b> Mark Dominick 978.234.5033; 818.599.0702 (cell)		<b>ANALYSIS REQUIRED</b>	
TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-19-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc <b>Sampler:</b> Neal Smith		Sample ID Outfall002_20191205_Comp		Sampling Date/Time 12/5/2019		Sample Matrix WM	
Container Type 500 mL Poly		# of Cont 1		Preservative HNO <sub>3</sub>		Bottle # 90	
Total Recoverable Metals: (E200.7) Fe, Mn X		Total Recoverable Metals: Mercury (E245.1) X		Total Recoverable Metals: (E200.7) Cu, Pb, Cd, Se X		TCDD (and all congeners) (E1613B) X	
Turbidity, TDS (SM2540C/E180.1) X		TSS (160.2 (SM2540D)) X		Ammonia-N (350.2) X		alpha-BHC (E608) X	
Chlorate (E300) X		Surfactants (MBAs) (SM540C/E425.1) X		BOD5 (20 degrees C) (E405.1) X		2,4,6-TCP, 2,4-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, PCP (SVOCs E625) X	
48 hours Holding Time NO <sub>3</sub> & NO <sub>2</sub> 48 hours Holding Time for Turbidity		48 hours Holding Time NO <sub>3</sub> & NO <sub>2</sub> 48 hours Holding Time for Turbidity		48 hours Holding Time NO <sub>3</sub> & NO <sub>2</sub> 48 hours Holding Time for Turbidity		48 hours Holding Time NO <sub>3</sub> & NO <sub>2</sub> 48 hours Holding Time for Turbidity	
Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: <input checked="" type="checkbox"/> X 48 Hour: _____ 5 Day: _____ Normal: _____		Sample Integrity: (Check) On Ice: _____ Store samples for 6 months: _____ Data Requirements: (Check) No Level IV: _____ All Level IV: <input checked="" type="checkbox"/> X		Received By: <i>Will Rivas</i> Date/Time: 12/5/19 1310 Received By: <i>[Signature]</i> Date/Time: 12/5/19 1637 Received By: _____ Date/Time: _____			

1.6/1.8; 0.8/1.0; 2.4/2.6; 1.9/2.1; 2.3/2.5 #89



# CHAIN OF CUSTODY FORM

Test America

**Client Name/Address**  
 Haley & Aldrich  
 5333 Mission Center Rd Suite 300  
 San Diego, CA 92108

**Test America Contact** Urvasi Patel  
 17451 Derilan Ave Suite #100  
 Irvine CA 92614  
 Tel 949-260-3289  
 Cell 949-333-9055

**Project:**  
 Boeing-SSFL NPDES  
 Permit 2019  
 Quarterly Outfall 001, 002, 011, 018  
 Outfall 002  
 Comp

**Project Manager:** Katherine Miller  
 520.289.8606, 520.904.6644 (cell)

**Field Manager:** Mark Dominick  
 978.234.5033, 818.599.0702 (cell)

**Test America's services under this CoC shall be performed in accordance with the TACs within Blanket Service Agreement 2015-18. Test America by and between Haley & Aldrich, Inc. its subsidiaries and affiliates, and Test America Laboratories, Inc.**

**Sampler:** Neal Smith

Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont	Preservative	Bottle #	MSMSD	(E200.7): Zn	(E200.8): Cu, Pb, Cd, Se	Cyanide (SM4500-CN-E / E335 2)	Gross Alpha(E900.0), Gross Beta(E900.0), Tritium (T-3) (E908.0), Sr-90 (E905.0), Total Combined Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1)	Chronic Toxicity - Selenium (EPA-821-R-02-013)	Total Dissolved Metals: Mercury (E245.1)	Priority Pollutants-Pesticides+PCBs (E608)	Total Recoverable Metals: (E200.7): Hardness as CaCO3	Total Dissolved Metals: (E200.7): Hardness as CaCO3	Comments			
Outfall 002	Outfall002_20191205_Comp_F	12/5/2019	WM	1 L Poly	1	None	190	No											Filter and preserve w/in 24hrs of receipt at lab at CP001,002,011, or 018		
				500 mL Poly	1	HNO <sub>3</sub>	80	No													at CP001,002,011, or 018
				1 L Poly	1	None	200	No													Filter and preserve w/in 24hrs of receipt at lab at CP001,002,011, or 018
Outfall002_20191205_Comp	Outfall002_20191205_Comp	12/5/2019	WM	1 L Glass Amber	2	None	250	No											Chlordane, DDD, DDE, DDT, dieldrin, PCBs, toxaphene at CP001,002,011, or 018		
				borosilicate vials	1	None	320	No												Sample receiving DO NOT OPEN BAG Bag to be opened in Mercury Prep using clean procedures	
				500 mL Poly	1	NaOH	220	No													Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MSMSD
Outfall002_20191205_Comp	Outfall002_20191205_Comp	12/5/2019	WM	2.5 Gal Cube	1	None	225	No											Only test if first or second rain events of the year.		
				1 L Glass Amber	1	None	230	No													
				1 Gal Cube	1	None	285	No													

**Relinquished By** Rachel Henn 12/05/19 H&A 13:10  
**Company** Haley & Aldrich

**Received By** Well River 12/15/19 13:10  
**Date/Time** 12/15/19 13:10

**Relinquished By** Well River 12/15/19 16:37  
**Company** Well River

**Received By** [Signature] 12/15/19 16:37  
**Date/Time** 12/15/19 16:37

**Turn-around time. (Check)**  
 24 Hour:  72 Hour:  10 Day:   
 48 Hour:  5 Day:  Normal:

**Sample Integrity (Check)**  
 intact:  On Ice:   
 Store samples for 6 months:   
 Data Requirements: (Check)  
 No Level IV:  All Level IV:





CHAIN OF CUSTODY FORM

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055			Project: Boeing-SSFL NPDES Permit 2019 Quarterly Outfall [001, 002, 011, 018] Outfall 002 Comp			ANALYSIS REQUIRED																		
TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement # 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc Sampler: Neal Smith			Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 978.234.5033, 818.599.0702 (cell)			Total Recoverable Metals: (E200.7); Zn (E200.8); Cu, Pb, Cd, Se TCDD (and all congeners) (E1613E) BOD5 (20 degrees C) (E405.1) (SM5210B_BODCalc) Surfactants (MBAS) (SM5540C/E425.1) Cl-, SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Perchlorate (E300) Turbidity, TDS (SM2540C/E180.1) TSS (160.2 (SM2540D)) Ammonia-N (350.2) alpha-BHC (E808) 2,4,6-TCP, 2,4-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, PCP (SVOCs E625) Total Recoverable Metals: Mercury (E245.1) Total Recoverable Metals: (E200.7) Fe, <del>Mn</del>																		
Comments JUL 12/5/19 Outfall 001 analyze for Fe and Mn Outfalls 002 and 011 analyze for Fe only 48 hours Holding Time NO3 & NO2 48 hours Holding Time for Turbidity Hold Hold Hold Hold Hold																								
Sample Description	Sample I D	Sampling Date/Time	Sample Matrix	Container Type	# of Cont	Preservative	Bottle #	MS/MSD	Total Recoverable Metals: (E200.7); Zn (E200.8); Cu, Pb, Cd, Se	TCDD (and all congeners) (E1613E)	BOD5 (20 degrees C) (E405.1) (SM5210B_BODCalc)	Surfactants (MBAS) (SM5540C/E425.1)	Cl-, SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Perchlorate (E300)	Turbidity, TDS (SM2540C/E180.1)	TSS (160.2 (SM2540D))	Ammonia-N (350.2)	alpha-BHC (E808)	2,4,6-TCP, 2,4-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, PCP (SVOCs E625)	Total Recoverable Metals: Mercury (E245.1)	Total Recoverable Metals: (E200.7) Fe, <del>Mn</del>				
Outfall 002	Outfall002_20191205_Comp	12/5/2019 6950	WM	500 mL Poly	1	HNO3	90	No	X											X	X			
			WM	1 L Glass Amber	2	None	110	No			X													
			WM	1L Poly	1	None	115	No				X												
			WM	500 mL Poly	2	None	120	No					X											
			WM	500 mL Poly	2	None	130	No						X										
			WM	500 mL Poly	1	None	150	No							X									
			WM	500 mL Poly	1	H2SO4	160	No								X								
			WM	1 L Glass Amber	2	None	170	No												X				
			WM	1 L Glass Amber	2	None	180	No																
			WM	1L Poly	1	None	185	No									X							
Outfall002_20191205_Comp_Extra		12/5/2019 6950	WM	1 L Glass Amber	2	None	110	No			H													
			WM	500 mL Poly	2	None	120	No					H											
			WM	500 mL Poly	2	None	130	No						H										
			WM	1 L Glass Amber	2	None	170	No											H					
			WM	1 L Glass Amber	2	None	180	No												H				



Relinquished By <i>Raciel Mohr</i>	Date/Time 12/05/19	Company HBA 1310	Received By <i>Will Rivoa</i>	Date/Time 12/5/19 1310	Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: <input checked="" type="checkbox"/> 48 Hour: _____ 5 Day: _____ Normal: _____
Relinquished By <i>Will Rivoa</i>	Date/Time 12/5/19	Company 1637	Received By <i>Will Rivoa</i>	Date/Time 12/5/19/16.37	Sample Integrity: (Check) Intact: _____ On Ice: _____
Relinquished By	Date/Time	Company	Received By	Date/Time	Store samples for 6 months Data Requirements: (Check) No Level IV: _____ All Level IV: <input checked="" type="checkbox"/>

1.6/1.8, 0.8/1.0, 2.4/2.6, 1.9/2.1, 2.3/2.5 #89

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CHAIN OF CUSTODY FORM

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108				Project: Boeing-SSFL NPDES Permit 2019 Quarterly Outfall [001, 002, 011, 018] Outfall 002 Comp				R	R	R	R	QRSW	QRSW	QRSW	ALY	Comments	
Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel: 949-260-3269 Cell: 949-333-9055				Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)				Total Dissolved Metals: (E200.7); Zn, Fe (E200.8); Cu, Pb, Cd, Se Cyanide (SM4500-CN-E / E335.2) Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (H-3) (E906.0), Sr-90 (E905.0), Total Combined Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1) Chronic Toxicity - Seleniastrum (EPA-821-R-02-013) Total Dissolved Metals: Mercury (E245.1) Priority Pollutants+Pesticides+PCBs (E608) Total Recoverable Metals: (E200.7); Hardness as CaCO3 Total Dissolved Metals: (E200.7); Hardness as CaCO3 Chlorpyrifos Diazinon (E525.2)									
Test America's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement # 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and Test America Laboratories Inc.				Field Manager: Mark Dominick 978.234.5033, 818.599.0702 (cell)													
Sampler: Neal Smith																	
Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont	Preservative	Bottle #	MS/MSD									
			WM	1 L Poly	1	None	190	No						X		Filter and preserve w/in 24hrs of receipt at lab at OF001,002,011, or 018	
			WM	500 mL Poly	1	HNO <sub>3</sub>	80	No						X		at OF001,002,011, or 018	
Outfall 002	Outfall002_20191205_Comp_F	12/5/2019	WM	1L Poly	1	None	200	No	X							Filter and preserve w/in 24hrs of receipt at lab at OF001,002,011, or 018	
			WM	1 L Glass Amber	2	None	250	No				X				Chlordane, DDD, DDE, DDT, dieldrin, PCBs, toxaphene at OF001,002,011, or 018	
			WM	borosilicate vials	1	None	320	No				X				Sample receiving DO NOT OPEN BAG Bag to be opened in Mercury Prep using clean procedures	
	Outfall002_20191205_Comp	12/5/2019	WM	500 mL Poly	1	NaOH	220	No		X							
			WM	2.5 Gal Cube	1	None	225	No					X			Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD	
			WM	1 L Glass Amber	1	None	230	No								Only test if first or second rain events of the year	
			WM	1 Gal Cube	1	None	235	No								* from non-preserved extra bottle	

Relinquished By: Rachel Hahn 12/05/19 H&A 13:10	Received By: [Signature] 12/5/19 13:10	Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: <input checked="" type="checkbox"/> _____ 48 Hour: _____ 5 Day: _____ Normal: _____
Relinquished By: [Signature] 12/5/19 1637	Received By: [Signature] 12/5/19 16:37	Sample Integrity: (Check) Intact: _____ On Ice: _____
Relinquished By: _____	Received By: _____	Store samples for 6 months. Data Requirements: (Check) No Level IV: _____ All Level IV: <input checked="" type="checkbox"/> _____



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# Chain of Custody Record



<b>Client Information (Sub Contract Lab)</b>		Sampler: Lab PM: Patel, Urvashi		Carrier Tracking No(s):	
Client Contact: Shipping/Receiving		Phone: E-Mail: urvashi.patel@testamericainc.com		COC No: 440-149598.1	
Company: TestAmerica Laboratories, Inc.		Address: 13715 Rider Trail North, Earth City, MO, 63045		Page: Page 1 of 1	
Phone: 314-298-8566(Tel) 314-298-8757(Fax)		Project Name: Boeing NRPDES SSFL outfalls		Job #: 440-256464-1	
Email:		Site:		Preservation Codes:	
Due Date Requested: 12/17/2019		Sample Date: 12/5/19		A - HCL	
TAT Requested (days):		Sample Time: 09:50 Pacific		B - NaOH	
PO #:		Sample Type (C=Comp, G=grab)		C - Zn Acetate	
WO #:		Matrix (W=water, S=solid, O=waste/oil, B=issue, A=air)		D - Nitric Acid	
Project #: 44009879		Preservation Code: Water		E - NaHSO4	
SSOW#:		Field Filtered Sample (Yes or No)		F - MeOH	
		Perform MS/MSD (Yes or No)		G - Amchlor	
		901.1_Cs/Fill_Geo_0_K-40 and Cesium-137		H - Ascorbic Acid	
		900.0/Evaporation Gross Alpha/Beta		I - Ice	
		903.0/PreSep_21 Radium-226		J - DI Water	
		904.0/PreSep_0 Radium-228		K - EDTA	
		905.5/90/PreSep_7 Strontium-90		L - EDA	
		906.0/RLSC_Dist_Susp Tritium		Other:	
		Total Number of Containers		Special Instructions/Note:	
		2		Boeing SSFL; DO NOT FILTER; use prep date from preservation	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

**Possible Hazard Identification**  
 Unconfirmed  
 Deliverable Requested: I, II, III, IV, Other (specify) \_\_\_\_\_ Primary Deliverable Rank: 2  
 Empty Kit Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_  
 Relinquished by: *A. Kenney* Date/Time: 12/6/19 1700 Company: IDP Company  
 Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
 Custody Seals Intact:  Yes  No Custody Seal No.: \_\_\_\_\_  
 Cooler Temperature(s) °C and Other Remarks: \_\_\_\_\_

**Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)**  
 Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Months  
 Special Instructions/QC Requirements: \_\_\_\_\_

Received by: *[Signature]* Date/Time: 12-7-19 08:50 Company: ETA STC  
 Received by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
 Received by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
 Cooler Temperature(s) °C and Other Remarks: \_\_\_\_\_



## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-256464-1

**Login Number: 256464**

**List Number: 1**

**Creator: Soderblom, Tim**

**List Source: Eurofins Irvine**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Nguyen, Jocelyn

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**From:** Patel, Urvashi  
**Sent:** Tuesday, December 10, 2019 12:12 PM  
**To:** Nguyen, Jocelyn  
**Subject:** FW: Updates - Sample Login 440-256464-1

Jocelyn

Please use the email below to update 256464

### Urvashi Patel

Phone: 949-333-9055

E-mail: [Urvashi.Patel@testamericainc.com](mailto:Urvashi.Patel@testamericainc.com)

---

**From:** Baluran, Dwayne [<mailto:DBaluran@haleyaldrich.com>]  
**Sent:** Tuesday, December 10, 2019 12:08 PM  
**To:** Patel, Urvashi  
**Subject:** Updates - Sample Login 440-256464-1

### -External Email-

---

Hi Urvashi,

Please make the following updates to the work order.

Sampling Event	Sample Delivery Group	Sample Date	Samples Included	Work Order or COC Corrections?
OF002 - Qtrly	440-256464-1	12/5/2019	Outfall002_20191205_Comp, Outfall002_20191205_Comp_F	~method 200.7 Dissolved Metals needs to add Fe (COC) ~Alpha-BHC has two methods on work order? (met and 608). It's listed on COC as method 608. ~PCB has method 608.3 listed but COC states 608 ~PP has two methods on work order? (608.3 and 6 listed on COC as method 608.
OF002 - Qtrly	440-256464-2	12/5/2019	Outfall002_20191205_Comp_Extra	~Alpha-BHC listed in work order as method 608.3. COC as method 608.

### Dwayne Baluran, EIT, QSP

Staff Engineer

### Haley & Aldrich, Inc.

5850 Canoga Avenue | Suite 400  
Woodland Hills, CA 91367

T: (978) 234.5022

C: (818) 224.0704

[www.haleyaldrich.com](http://www.haleyaldrich.com)

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## Nguyen, Jocelyn

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**From:** Patel, Urvashi  
**Sent:** Monday, December 09, 2019 12:22 PM  
**To:** 'Baluran, Dwayne'; Bondoc, Christian M.; Nguyen, Jocelyn  
**Cc:** Miller, Katherine  
**Subject:** RE: Updates - Sample Login 440-256464-1

Hi Dwayne  
We'll make the corrections listed below.

Thanks  
Urvashi

### Urvashi Patel

Phone: 949-333-9055

E-mail: [Urvashi.Patel@testamericainc.com](mailto:Urvashi.Patel@testamericainc.com)

---

**From:** Baluran, Dwayne [<mailto:DBaluran@haleyaldrich.com>]  
**Sent:** Monday, December 09, 2019 8:55 AM  
**To:** Patel, Urvashi  
**Cc:** Miller, Katherine  
**Subject:** Updates - Sample Login 440-256464-1

### -External Email-

---

Hi Urvashi,

I have proofed both the Outfall 002 grab and composite work orders. Please review the following comments.

Sampling Event	Sample Delivery Group	Sample Date	Samples Included	Work Order or COC Corrections?
OF002 - Qtrly	440-256464-1	12/5/2019	Outfall002_20191205_Comp, Outfall002_20191205_Comp_F	~method 200.7 Total Recoverable Metals needs to add Zn. In addition needs to add As and Mn (on COC) ~method 200.7 Dissolved Metals needs to add As and Mn (missing on COC) ~Alpha-BHC has two methods on work order? (method 608 and 608.3). It's listed on COC as method 608. ~PCB has method 608.3 listed but COC states 608 ~PP has two methods on work order? (608.3 and 608.3) listed on COC as method 608.
OF002 - Qtrly	440-256464-2	12/5/2019	Outfall002_20191205_Comp_Extra	~Alpha-BHC listed in work order as method 608.3. COC as method 608.



Thank you,  
**Dwayne Baluran, EIT, QSP**  
Staff Engineer

**Haley & Aldrich, Inc.**  
5850 Canoga Avenue | Suite 400  
Woodland Hills, CA 91367

T: (978) 234.5022  
C: (818) 224.0704

[www.haleyaldrich.com](http://www.haleyaldrich.com)

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## Nguyen, Jocelyn

---

**From:** Patel, Urvashi  
**Sent:** Thursday, December 05, 2019 3:12 PM  
**To:** Nguyen, Jocelyn  
**Subject:** FW: OF002 sample ID

See below. I gave the info to S/R.

### Urvashi Patel

Phone: 949-333-9055

E-mail: [Urvashi.Patel@testamericainc.com](mailto:Urvashi.Patel@testamericainc.com)

---

**From:** Miller, Katherine [<mailto:KMiller@haleyaldrich.com>]  
**Sent:** Thursday, December 05, 2019 2:07 PM  
**To:** Patel, Urvashi  
**Subject:** OF002 sample ID

### **-External Email-**

---

Urvashi,

There are two lines on the COC for OF002 that don't have a sample label. These should be Outfall002\_20191205\_Comp with a date/time of 12/5/19 at 0950.

**Katherine Miller**  
Project Manager

**Haley Aldrich, Inc.**  
600 South Meyer Ave. | Suite 100  
Tucson, AZ 85701

T: (520) 289.8606

C: (520) 904.6944

[www.haleyaldrich.com](http://www.haleyaldrich.com)

## Patel, Urvashi

---

**From:** Miller, Katherine <KMiller@haleyaldrich.com>  
**Sent:** Wednesday, December 11, 2019 2:44 PM  
**To:** Nguyen, Jocelyn; Barr, Anastasia; Hernandez, Elysse; Kim Schultz; Patel, Urvashi; Baluran, Dwayne  
**Subject:** RE: Eurofins TestAmerica revised sample confirmation files from 440-256464-1 Quaterly Outfall 002 Comp

### -External Email-

---

Urvashi,

Are dioxins and RAD going to be analyzed? These were on the original sample confirmation, but not this revision. Please delete As and Mn. Could you also add chloropyrifos and diazinon?

Katherine

Katherine Miller  
**HALEY & ALDRICH**  
Tel: 520.289.8606

---

**From:** Jocelyn Nguyen <[jocelyn.nguyen@testamericainc.com](mailto:jocelyn.nguyen@testamericainc.com)>  
**Sent:** Tuesday, December 10, 2019 5:36 PM  
**To:** Barr, Anastasia <[ABarr@haleyaldrich.com](mailto:ABarr@haleyaldrich.com)>; Hernandez, Elysse <[EHernandez@haleyaldrich.com](mailto:EHernandez@haleyaldrich.com)>; Kim Schultz <[kim.schultz@mecx.net](mailto:kim.schultz@mecx.net)>; Miller, Katherine <[KMiller@haleyaldrich.com](mailto:KMiller@haleyaldrich.com)>; Ms. Urvashi Patel <[urvashi.patel@testamericainc.com](mailto:urvashi.patel@testamericainc.com)>  
**Subject:** Eurofins TestAmerica revised sample confirmation files from 440-256464-1 Quaterly Outfall 002 Comp

### CAUTION: External Email

---

Hello,

Attached please find the sample confirmation files for job 440-256464-1; Quaterly Outfall 002 Comp

Please feel free to contact me or your PM Urvashi Patel if you have any questions.

Thank you.

**Jocelyn Nguyen**  
Project Manager Assistant

Eurofins TestAmerica, Irvine

E-mail: [jocelyn.nguyen@testamericainc.com](mailto:jocelyn.nguyen@testamericainc.com)  
[www.eurofinsus.com](http://www.eurofinsus.com) | [www.testamericainc.com](http://www.testamericainc.com)



Reference: [440-571461]  
Attachments: 3

Please let us know if we met your expectations by rating the service you received from Eurofins TestAmerica on this project by visiting our website at: [Project Feedback](#)

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## Patel, Urvashi

---

**From:** Baluran, Dwayne <DBaluran@haleyaldrich.com>  
**Sent:** Thursday, December 26, 2019 4:53 PM  
**To:** Patel, Urvashi; Miller, Katherine; Nguyen, Jocelyn; Barr, Anastasia; Hernandez, Elysse; Kim Schultz  
**Cc:** Bondoc, Christian M.  
**Subject:** RE: Eurofins TestAmerica revised sample confirmation files from 440-256464-1 Quaterly Outfall 002 Comp

### -External Email-

---

Hi Urvashi – on behalf of Katherine, As and Mn do not need to be included in this sample for Outfall 002 Quarterly. Other than the metals listed, please add Fe for both total and dissolved.

Thanks,  
Dwayne

---

**From:** Patel, Urvashi <Urvashi.Patel@testamericainc.com>  
**Sent:** Thursday, December 26, 2019 4:42 PM  
**To:** Miller, Katherine <KMiller@haleyaldrich.com>; Nguyen, Jocelyn <Jocelyn.Nguyen@testamericainc.com>; Barr, Anastasia <ABarr@haleyaldrich.com>; Hernandez, Elysse <EHernandez@haleyaldrich.com>; Kim Schultz <kim.schultz@mecx.net>; Baluran, Dwayne <DBaluran@haleyaldrich.com>  
**Cc:** Bondoc, Christian M. <Christian.Bondoc@testamericainc.com>  
**Subject:** RE: Eurofins TestAmerica revised sample confirmation files from 440-256464-1 Quaterly Outfall 002 Comp

### CAUTION: External Email

---

Hi Katherine  
On this job, am I adding As and Mn to both total and dissolved? Or just total?

#### Urvashi Patel

Phone: 949-333-9055

E-mail: [Urvashi.Patel@testamericainc.com](mailto:Urvashi.Patel@testamericainc.com)

---

**From:** Miller, Katherine [<mailto:KMiller@haleyaldrich.com>]  
**Sent:** Wednesday, December 11, 2019 2:44 PM  
**To:** Nguyen, Jocelyn; Barr, Anastasia; Hernandez, Elysse; Kim Schultz; Patel, Urvashi; Baluran, Dwayne  
**Subject:** RE: Eurofins TestAmerica revised sample confirmation files from 440-256464-1 Quaterly Outfall 002 Comp

### -External Email-

---

Urvashi,

Are dioxins and RAD going to be analyzed? These were on the original sample confirmation, but not this revision. Please delete As and Mn. Could you also add chloropyrifos and diazinon?

Katherine

Katherine Miller  
**HALEY & ALDRICH**  
Tel: 520.289.8606

---

**From:** Jocelyn Nguyen <[jocelyn.nguyen@testamericainc.com](mailto:jocelyn.nguyen@testamericainc.com)>

**Sent:** Tuesday, December 10, 2019 5:36 PM

**To:** Barr, Anastasia <[ABarr@haleyaldrich.com](mailto:ABarr@haleyaldrich.com)>; Hernandez, Elyse <[EHernandez@haleyaldrich.com](mailto:EHernandez@haleyaldrich.com)>; Kim Schultz <[kim.schultz@mecx.net](mailto:kim.schultz@mecx.net)>; Miller, Katherine <[KMiller@haleyaldrich.com](mailto:KMiller@haleyaldrich.com)>; Ms. Urvashi Patel <[urvashi.patel@testamericainc.com](mailto:urvashi.patel@testamericainc.com)>

**Subject:** Eurofins TestAmerica revised sample confirmation files from 440-256464-1 Quaterly Outfall 002 Comp

**CAUTION: External Email**

---

Hello,

Attached please find the sample confirmation files for job 440-256464-1; Quaterly Outfall 002 Comp

Please feel free to contact me or your PM Urvashi Patel if you have any questions.

Thank you.

**Jocelyn Nguyen**

Project Manager Assistant

Eurofins TestAmerica, Irvine

E-mail: [jocelyn.nguyen@testamericainc.com](mailto:jocelyn.nguyen@testamericainc.com)

[www.eurofinsus.com](http://www.eurofinsus.com) | [www.testamericainc.com](http://www.testamericainc.com)



Reference: [440-571461]

Attachments: 3

Please let us know if we met your expectations by rating the service you received from Eurofins TestAmerica on this project by visiting our website at: [Project Feedback](#)

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**DATA VALIDATION REPORT**

**Boeing SSFL NPDES**

**SAMPLE DELIVERY GROUP: 440-256464-2**

**Prepared for**

Haley & Aldrich, Inc.  
600 South Meyer Avenue, Suite 100  
Tucson, Arizona 85701

**09 January 2020**

**MEC<sup>x</sup>, Inc.**  
12269 East Vassar Drive  
Aurora, Colorado 80014

[www.mecx.net](http://www.mecx.net)





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**TABLES**

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference





## I. INTRODUCTION

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**Task Order Title:** Boeing SSFL NPDES

**Contract:** 40458-078 and 40458-083

**MEC<sup>x</sup> Project No.:** 1272.003D.01 002

**Sample Delivery Group:** 440-256464-2

**Project Manager:** Katherine Miller

**Matrix:** Water

**QC Level:** IV

**No. of Samples:** 1

**No. of Reanalyses/Dilutions:** 0

**Laboratory:** TestAmerica-Irvine

**TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
OUTFALL002_20191205_COMP	440-256464-1	NA	WM	12/5/19 9:50 AM	E1613B



## II. SAMPLE MANAGEMENT

---

According to the case narrative, Login Sample Receipt Checklist and the chains-of-custody (COCs) provided by the laboratories for sample delivery group (SDG) 440-256464-2:

- The laboratories received the sample in this SDG on ice and within the temperature limits of <6 degrees Celsius (°C) and >0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and/or laboratory personnel signed and dated the original and transfer COCs.
- According to the Login Sample Receipt Checklist, custody seals were absent on the coolers upon receipt at TA-Irvine. No evidence of tampering was noted. The Login Sample Receipt Checklist indicated a custody seal was present (but with no number) upon receipt at TA-Sacramento.
- The case narrative indicated that the site sample was received in wide-mouth amber glass bottles, and slightly less sample volume (967 milliliters) was available for extraction.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination ( $r^2$ ) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



### III. EPA METHOD 1613B — DIOXIN/FURANS

---

L. Calvin of MEC<sup>X</sup> reviewed the SDG on January 9, 2020

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC<sup>X</sup> *Data Validation Procedure for Dioxins and Furans* (DVP-19, Rev. 0), *USEPA Method 1613B* and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review* (2011).

#### III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

#### III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

##### III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as <25%.

##### III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power >10,000.

#### III.3. CALIBRATION

Initial Calibration: Calibration criteria were met. The initial calibration was acceptable with %RSDs ≤20% for the 15 native compounds (calibration by isotope dilution) and ≤35% for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

#### III.4. QUALITY CONTROL SAMPLES

##### III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit (RL) for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF and OCDD, and for totals TCDD, HpCDD and HpCDF. The sample results for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF detected below the RL in the sample were qualified as a nondetect (U) at the level of contamination. The method blank concentration of OCDD was not sufficient to qualify the sample concentration above the RL. The reviewer compared peaks comprising the method blank totals to those in the sample totals. The retention times of total HpCDD peaks in the sample matched those in the method blank, at similar concentrations; therefore, the result for total HpCDD was qualified as a



nondetect (U) at the level of contamination. Total HpCDF was qualified as estimated (J), as only a portion of the total was determined to be method blank contamination. Total TCDD was not detected in the sample.

#### **III.4.2. LABORATORY CONTROL SAMPLES**

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of  $\leq 50\%$ .

#### **III.5. FIELD QC SAMPLES**

MEC<sup>X</sup> evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC<sup>X</sup> used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

##### **III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS**

Field blank or equipment blank samples were not identified for this SDG.

##### **III.5.2. FIELD DUPLICATES**

Field duplicate samples were not identified in this SDG.

#### **III.6. INTERNAL STANDARDS PERFORMANCE**

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

#### **III.7. COMPOUND IDENTIFICATION**

Compound identification was verified. With the exception of estimated maximum possible concentrations (EMPCs), detected compounds met the ion abundance ratio, retention time window and signal-to-noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. Second-column confirmation analysis for isomer 2,3,7,8-TCDF was not performed, as 2,3,7,8-TCDF was not detected in the initial analysis of the sample.

#### **III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

As noted in the case narrative, RLs and EDLs were slightly elevated due to somewhat limited sample volume. Rather than approximately 1000 milliliters (ml), a 967 ml sample volume was available for extraction.

Isomer 1,2,3,4,6,7,8-HpCDF previously qualified as method blank contamination was not further qualified as an EMPC. As totals HpCDF and HxCDF each included one EMPC peak, both were qualified as estimated (J).

# Validated Sample Result Forms: 4402564642

*Analysis Method E1613B*

**Sample Name** OUTFALL002\_20191205\_COMP      **Matrix Type:** WM      **Result Type:** TRG

**Sample Date:** 12/5/2019 9:50:00 AM      **Validation Level:** 8

**Lab Sample Name:** 440-256464-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.000036	0.00010	0.0000023	ug/L	J,DX	J	DNQ
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.00037	0.00010	0.0000021	ug/L	MB		
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.0000095	0.000052	0.0000021	ug/L	J,DXqMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.000033	0.000052	0.0000015	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	ND	0.000052	0.0000026	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	ND	0.000052	0.0000013	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	ND	0.000052	0.0000015	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	ND	0.000052	0.0000013	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	ND	0.000052	0.0000016	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	ND	0.000052	0.0000010	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	ND	0.000052	0.0000013	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	ND	0.000052	0.0000015	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	ND	0.000052	0.0000018	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	ND	0.000052	0.00000096	ug/L	U	U	
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000052	0.0000016	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000010	0.00000090	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000010	0.0000013	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000025	0.000052	0.0000021	ug/L	J,DXqMB	J	B, DNQ, *III
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000064	0.000052	0.0000015	ug/L	MB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.0000039	0.000052	0.00000096	ug/L	J,DXq	J	DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	ND	0.000052	0.0000013	ug/L	U	U	
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	ND	0.000052	0.0000015	ug/L	U	U	



*Analysis Method*    *E1613B*

Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	ND	0.000052	0.0000018	ug/L	U	<b>U</b>
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	ND	0.000010	0.00000090	ug/L	U	<b>U</b>
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.000010	0.0000013	ug/L	U	<b>U</b>

## ANALYTICAL REPORT

Eurofins TestAmerica, Irvine  
17461 Derian Ave  
Suite 100  
Irvine, CA 92614-5817  
Tel: (949)261-1022

Laboratory Job ID: 440-256464-2

Client Project/Site: Quaterly Outfall 002 Comp

**For:**

Haley & Aldrich, Inc.  
400 E Van Buren St.  
Suite 545  
Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:  
12/27/2019 10:23:45 PM

Urvashi Patel, Manager of Project Management  
(949)260-3269

[urvashi.patel@testamericainc.com](mailto:urvashi.patel@testamericainc.com)

### LINKS

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results through  
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Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



---

Urvashi Patel  
Manager of Project Management  
12/27/2019 10:23:45 PM

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# Sample Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-2

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-256464-1	Outfall002_20191205_Comp	Water	12/05/19 09:50	12/05/19 16:37	

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# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-2

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**Job ID: 440-256464-2**

---

**Laboratory: Eurofins TestAmerica, Irvine**

## Narrative

**Job Narrative  
440-256464-2**

## Comments

No additional comments.

## Receipt

The samples were received on 12/5/2019 4:37 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 1.0° C, 1.8° C, 2.1° C, 2.5° C and 2.6° C.

## Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

## Dioxin Prep

Method 1613B: Elevated reporting limits are provided for the following sample due to insufficient sample provided for 1613B\_Sox\_Sep\_P / 1613B preparation/analysis: Samples Outfall002\_20191205\_Comp (440-256464-1) were received in wide-mouth amber glass bottles.

preparation batch 320-345993

Method: 1613B\_Sox\_Sep\_P / 1613B

Matrix: Aqueous

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-2

**Client Sample ID: Outfall002\_20191205\_Comp**

**Lab Sample ID: 440-256464-1**

Date Collected: 12/05/19 09:50

Matrix: Water

Date Received: 12/05/19 16:37

**Method: 1613B - Dioxins and Furans (HRGC/HRMS)**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000013	ug/L		12/17/19 09:23	12/21/19 03:33	1
2,3,7,8-TCDF	ND		0.000010	0.0000009	ug/L		12/17/19 09:23	12/21/19 03:33	1
1,2,3,7,8-PeCDD	ND		0.000052	0.0000018	ug/L		12/17/19 09:23	12/21/19 03:33	1
1,2,3,7,8-PeCDF	ND		0.000052	0.0000015	ug/L		12/17/19 09:23	12/21/19 03:33	1
2,3,4,7,8-PeCDF	ND		0.000052	0.0000016	ug/L		12/17/19 09:23	12/21/19 03:33	1
1,2,3,4,7,8-HxCDD	ND		0.000052	0.0000015	ug/L		12/17/19 09:23	12/21/19 03:33	1
1,2,3,6,7,8-HxCDD	ND		0.000052	0.0000016	ug/L		12/17/19 09:23	12/21/19 03:33	1
1,2,3,7,8,9-HxCDD	ND		0.000052	0.0000013	ug/L		12/17/19 09:23	12/21/19 03:33	1
1,2,3,4,7,8-HxCDF	ND		0.000052	0.0000013	ug/L		12/17/19 09:23	12/21/19 03:33	1
1,2,3,6,7,8-HxCDF	ND		0.000052	0.0000013	ug/L		12/17/19 09:23	12/21/19 03:33	1
1,2,3,7,8,9-HxCDF	ND		0.000052	0.0000010	ug/L		12/17/19 09:23	12/21/19 03:33	1
2,3,4,6,7,8-HxCDF	ND		0.000052	0.0000009	ug/L		12/17/19 09:23	12/21/19 03:33	1
<b>1,2,3,4,6,7,8-HpCDD</b>	<b>0.000033</b>	<b>J,DX MB</b>	0.000052	0.0000015	ug/L		12/17/19 09:23	12/21/19 03:33	1
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>0.0000095</b>	<b>J,DX q MB</b>	0.000052	0.0000021	ug/L		12/17/19 09:23	12/21/19 03:33	1
1,2,3,4,7,8,9-HpCDF	ND		0.000052	0.0000026	ug/L		12/17/19 09:23	12/21/19 03:33	1
<b>OCDD</b>	<b>0.00037</b>	<b>MB</b>	0.00010	0.0000021	ug/L		12/17/19 09:23	12/21/19 03:33	1
<b>OCDF</b>	<b>0.000036</b>	<b>J,DX</b>	0.00010	0.0000023	ug/L		12/17/19 09:23	12/21/19 03:33	1
Total TCDD	ND		0.000010	0.0000013	ug/L		12/17/19 09:23	12/21/19 03:33	1
Total TCDF	ND		0.000010	0.0000009	ug/L		12/17/19 09:23	12/21/19 03:33	1
Total PeCDD	ND		0.000052	0.0000018	ug/L		12/17/19 09:23	12/21/19 03:33	1
Total PeCDF	ND		0.000052	0.0000015	ug/L		12/17/19 09:23	12/21/19 03:33	1
Total HxCDD	ND		0.000052	0.0000013	ug/L		12/17/19 09:23	12/21/19 03:33	1
<b>Total HxCDF</b>	<b>0.0000039</b>	<b>J,DX q</b>	0.000052	0.0000009	ug/L		12/17/19 09:23	12/21/19 03:33	1
<b>Total HpCDD</b>	<b>0.000064</b>	<b>MB</b>	0.000052	0.0000015	ug/L		12/17/19 09:23	12/21/19 03:33	1
<b>Total HpCDF</b>	<b>0.000025</b>	<b>J,DX q MB</b>	0.000052	0.0000021	ug/L		12/17/19 09:23	12/21/19 03:33	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C-2,3,7,8-TCDD	53		25 - 164				12/17/19 09:23	12/21/19 03:33	1
13C-2,3,7,8-TCDF	53		24 - 169				12/17/19 09:23	12/21/19 03:33	1
13C-1,2,3,7,8-PeCDD	48		25 - 181				12/17/19 09:23	12/21/19 03:33	1
13C-1,2,3,7,8-PeCDF	48		24 - 185				12/17/19 09:23	12/21/19 03:33	1
13C-2,3,4,7,8-PeCDF	51		21 - 178				12/17/19 09:23	12/21/19 03:33	1
13C-1,2,3,4,7,8-HxCDD	54		32 - 141				12/17/19 09:23	12/21/19 03:33	1
13C-1,2,3,6,7,8-HxCDD	55		28 - 130				12/17/19 09:23	12/21/19 03:33	1
13C-1,2,3,4,7,8-HxCDF	54		26 - 152				12/17/19 09:23	12/21/19 03:33	1
13C-1,2,3,6,7,8-HxCDF	53		26 - 123				12/17/19 09:23	12/21/19 03:33	1
13C-1,2,3,7,8,9-HxCDF	51		29 - 147				12/17/19 09:23	12/21/19 03:33	1
13C-2,3,4,6,7,8-HxCDF	53		28 - 136				12/17/19 09:23	12/21/19 03:33	1
13C-1,2,3,4,6,7,8-HpCDD	50		23 - 140				12/17/19 09:23	12/21/19 03:33	1
13C-1,2,3,4,6,7,8-HpCDF	49		28 - 143				12/17/19 09:23	12/21/19 03:33	1
13C-1,2,3,4,7,8,9-HpCDF	52		26 - 138				12/17/19 09:23	12/21/19 03:33	1
13C-OCDD	52		17 - 157				12/17/19 09:23	12/21/19 03:33	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
37Cl4-2,3,7,8-TCDD	97		35 - 197				12/17/19 09:23	12/21/19 03:33	1

# Method Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-2

Method	Method Description	Protocol	Laboratory
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
1613B	Separatory Funnel (L/L) Extraction with Soxhlet Extraction of Dioxin and Furans	40CFR136A	TAL SAC

**Protocol References:**

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

**Laboratory References:**

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600





# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-2

**Client Sample ID: Outfall002\_20191205\_Comp**

**Lab Sample ID: 440-256464-1**

**Date Collected: 12/05/19 09:50**

**Matrix: Water**

**Date Received: 12/05/19 16:37**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			967.3 mL	20 uL	345993	12/17/19 09:23	RDR	TAL SAC
Total/NA	Analysis	1613B		1			346948	12/21/19 03:33	AS	TAL SAC

## Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-2

## Method: 1613B - Dioxins and Furans (HRGC/HRMS)

**Lab Sample ID: MB 320-345993/1-A**  
**Matrix: Water**  
**Analysis Batch: 346948**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 345993**

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000009	ug/L		12/17/19 09:23	12/20/19 23:35	1
2,3,7,8-TCDF	ND		0.000010	0.0000009	ug/L		12/17/19 09:23	12/20/19 23:35	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000020	ug/L		12/17/19 09:23	12/20/19 23:35	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000013	ug/L		12/17/19 09:23	12/20/19 23:35	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000014	ug/L		12/17/19 09:23	12/20/19 23:35	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000011	ug/L		12/17/19 09:23	12/20/19 23:35	1
1,2,3,6,7,8-HxCDD	ND		0.000050	0.0000011	ug/L		12/17/19 09:23	12/20/19 23:35	1
1,2,3,7,8,9-HxCDD	ND		0.000050	0.0000010	ug/L		12/17/19 09:23	12/20/19 23:35	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000010	ug/L		12/17/19 09:23	12/20/19 23:35	1
1,2,3,6,7,8-HxCDF	ND		0.000050	0.0000009	ug/L		12/17/19 09:23	12/20/19 23:35	1
1,2,3,7,8,9-HxCDF	ND		0.000050	0.0000008	ug/L		12/17/19 09:23	12/20/19 23:35	1
2,3,4,6,7,8-HxCDF	ND		0.000050	0.0000008	ug/L		12/17/19 09:23	12/20/19 23:35	1
1,2,3,4,6,7,8-HpCDD	0.00000252	J,DX q	0.000050	0.0000008	ug/L		12/17/19 09:23	12/20/19 23:35	1
1,2,3,4,6,7,8-HpCDF	0.00000258	J,DX	0.000050	0.0000015	ug/L		12/17/19 09:23	12/20/19 23:35	1
1,2,3,4,7,8,9-HpCDF	ND		0.000050	0.0000021	ug/L		12/17/19 09:23	12/20/19 23:35	1
OCDD	0.0000113	J,DX	0.00010	0.0000014	ug/L		12/17/19 09:23	12/20/19 23:35	1
OCDF	ND		0.00010	0.0000024	ug/L		12/17/19 09:23	12/20/19 23:35	1
Total TCDD	0.00000124	J,DX q	0.000010	0.0000009	ug/L		12/17/19 09:23	12/20/19 23:35	1
Total TCDF	ND		0.000010	0.0000009	ug/L		12/17/19 09:23	12/20/19 23:35	1
Total PeCDD	ND		0.000050	0.0000020	ug/L		12/17/19 09:23	12/20/19 23:35	1
Total PeCDF	ND		0.000050	0.0000013	ug/L		12/17/19 09:23	12/20/19 23:35	1
Total HxCDD	ND		0.000050	0.0000010	ug/L		12/17/19 09:23	12/20/19 23:35	1
Total HxCDF	ND		0.000050	0.0000008	ug/L		12/17/19 09:23	12/20/19 23:35	1
Total HpCDD	0.00000526	J,DX q	0.000050	0.0000008	ug/L		12/17/19 09:23	12/20/19 23:35	1
Total HpCDF	0.00000258	J,DX	0.000050	0.0000015	ug/L		12/17/19 09:23	12/20/19 23:35	1
		<b>MB MB</b>							
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C-2,3,7,8-TCDD	53		25 - 164				12/17/19 09:23	12/20/19 23:35	1
13C-2,3,7,8-TCDF	53		24 - 169				12/17/19 09:23	12/20/19 23:35	1
13C-1,2,3,7,8-PeCDD	52		25 - 181				12/17/19 09:23	12/20/19 23:35	1
13C-1,2,3,7,8-PeCDF	53		24 - 185				12/17/19 09:23	12/20/19 23:35	1
13C-2,3,4,7,8-PeCDF	55		21 - 178				12/17/19 09:23	12/20/19 23:35	1
13C-1,2,3,4,7,8-HxCDD	61		32 - 141				12/17/19 09:23	12/20/19 23:35	1
13C-1,2,3,6,7,8-HxCDD	62		28 - 130				12/17/19 09:23	12/20/19 23:35	1
13C-1,2,3,4,7,8-HxCDF	61		26 - 152				12/17/19 09:23	12/20/19 23:35	1
13C-1,2,3,6,7,8-HxCDF	62		26 - 123				12/17/19 09:23	12/20/19 23:35	1
13C-1,2,3,7,8,9-HxCDF	57		29 - 147				12/17/19 09:23	12/20/19 23:35	1
13C-2,3,4,6,7,8-HxCDF	58		28 - 136				12/17/19 09:23	12/20/19 23:35	1
13C-1,2,3,4,6,7,8-HpCDD	53		23 - 140				12/17/19 09:23	12/20/19 23:35	1
13C-1,2,3,4,6,7,8-HpCDF	54		28 - 143				12/17/19 09:23	12/20/19 23:35	1
13C-1,2,3,4,7,8,9-HpCDF	56		26 - 138				12/17/19 09:23	12/20/19 23:35	1

Eurofins TestAmerica, Irvine

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-2

## Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

**Lab Sample ID: MB 320-345993/1-A**  
**Matrix: Water**  
**Analysis Batch: 346948**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 345993**

<i>Isotope Dilution</i>	<i>MB</i>	<i>MB</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>%Recovery</i>	<i>Qualifier</i>				
13C-OCDD	51		17 - 157	12/17/19 09:23	12/20/19 23:35	1

<i>Surrogate</i>	<i>MB</i>	<i>MB</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>%Recovery</i>	<i>Qualifier</i>				
37Cl4-2,3,7,8-TCDD	96		35 - 197	12/17/19 09:23	12/20/19 23:35	1

**Lab Sample ID: LCS 320-345993/2-A**  
**Matrix: Water**  
**Analysis Batch: 346948**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 345993**

<i>Analyte</i>	<i>Spike</i>	<i>LCS</i>	<i>LCS</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>Limits</i>
	<i>Added</i>	<i>Result</i>	<i>Qualifier</i>				<i>%Rec.</i>
2,3,7,8-TCDD	0.000200	0.000217		ug/L		108	67 - 158
2,3,7,8-TCDF	0.000200	0.000236		ug/L		118	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00107		ug/L		107	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00113		ug/L		113	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.00107		ug/L		107	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.000979		ug/L		98	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00106		ug/L		106	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000964		ug/L		96	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.00102		ug/L		102	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.00107		ug/L		107	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.00109		ug/L		109	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00109		ug/L		109	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000942	MB	ug/L		94	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.00103	MB	ug/L		103	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000982		ug/L		98	78 - 138
OCDD	0.00200	0.00183	MB	ug/L		92	78 - 144
OCDF	0.00200	0.00195		ug/L		98	63 - 170

<i>Isotope Dilution</i>	<i>LCS</i>	<i>LCS</i>	<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C-2,3,7,8-TCDD	64		20 - 175
13C-2,3,7,8-TCDF	65		22 - 152
13C-1,2,3,7,8-PeCDD	61		21 - 227
13C-1,2,3,7,8-PeCDF	61		21 - 192
13C-2,3,4,7,8-PeCDF	65		13 - 328
13C-1,2,3,4,7,8-HxCDD	70		21 - 193
13C-1,2,3,6,7,8-HxCDD	70		25 - 163
13C-1,2,3,4,7,8-HxCDF	68		19 - 202
13C-1,2,3,6,7,8-HxCDF	68		21 - 159
13C-1,2,3,7,8,9-HxCDF	64		17 - 205
13C-2,3,4,6,7,8-HxCDF	67		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	62		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	60		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	65		20 - 186
13C-OCDD	60		13 - 199

<i>Surrogate</i>	<i>LCS</i>	<i>LCS</i>	<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
37Cl4-2,3,7,8-TCDD	110		31 - 191

# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-2

## Specialty Organics

### Prep Batch: 345993

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	1613B	
MB 320-345993/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-345993/2-A	Lab Control Sample	Total/NA	Water	1613B	

### Analysis Batch: 346948

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	1613B	345993
MB 320-345993/1-A	Method Blank	Total/NA	Water	1613B	345993
LCS 320-345993/2-A	Lab Control Sample	Total/NA	Water	1613B	345993

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# Definitions/Glossary

Client: Haley & Aldrich, Inc.  
Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-2

## Qualifiers

### Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.  
 Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-2

## Laboratory: Eurofins TestAmerica, Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State Program	CA ELAP 2706	06-30-20

## Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20
Hawaii	State	<cert No.>	01-29-20
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# CHAIN OF CUSTODY FORM

<b>Client Name/Address:</b> Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Unvashi Patel 17461 Darian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		<b>Project:</b> Boeing-SSFL NPDES Permit 2019 Quarterly Outfall [001, 002, 011, 018] Outfall 002 Comp		<b>Project Manager:</b> Katherine Miller 520.289.8606; 520.904.6944 (cell) <b>Field Manager:</b> Mark Dominick 978.234.5033; 818.599.0702 (cell)		ANALYSIS REQUIRED		Comments 3VL 12/5/19 Outfall 001 analyze for Fe and Mn Outfalls 002 and 011 analyze for Fe only												
<b>Sample Description</b>  Outfall 002	<b>Sample ID</b>  Outfall002_20191205_Comp	<b>Sampling Date/Time</b>  12/5/2019 / 6:50	<b>Sample Matrix</b>  WM	<b>Container Type</b>  500 mL Poly	<b># of Cont</b>  1	<b>Preservative</b>  HNO <sub>3</sub>	<b>Bottle #</b>  90	<b>M/S/MSD</b>  No	<b>Total Recoverable Metals (E200.7): Zn</b>  X	<b>TCDD (and all congeners) (E1613B)</b>  X	<b>BOD5 (20 degrees C) (E405.1)</b>  X	<b>Sulfonamides (MBA) (SM540C/E425.1)</b>  X	<b>Cl, SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Perchlorate (E300)</b>  X	<b>Turbidity, TDS (SM2540C/E180.1)</b>  X	<b>TSS (160.2) (SM2540D)</b>  X	<b>Ammonia-N (350.2)</b>  X	<b>alpha-BHC (E608)</b>  X	<b>2,4,6-TCP, 2,4-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, PCP (SVOCs E625)</b>  X	<b>Total Recoverable Metals: Mercury (E245.1)</b>  X	<b>Total Recoverable Metals: (E200.7) Fe, Mn</b>  X
<b>Requisitioned By</b> Rachel Klein		<b>Date/Time</b> 12/05/19 18:00		<b>Company</b> H&A 1310		<b>Received By</b> Willy Rivas		<b>Date/Time</b> 12/5/19 1310		<b>Turn-around time: (Check)</b> 24 Hour: <input type="checkbox"/> 72 Hour: <input type="checkbox"/> 10 Day: <input checked="" type="checkbox"/> X 48 Hour: <input type="checkbox"/> 5 Day: <input type="checkbox"/> Normal: <input type="checkbox"/>										
<b>Requisitioned By</b> Willy Rivas		<b>Date/Time</b> 12/5/19		<b>Company</b> 1637		<b>Received By</b> [Signature]		<b>Date/Time</b> 12/5/19		<b>Sample Integrity: (Check)</b> Store samples for 6 months: <input type="checkbox"/> Data Requirements: (Check) No Level IV: <input type="checkbox"/> All Level IV: <input checked="" type="checkbox"/> X										

1.6/1.8; 0.8/1.0; 2.4/2.6; 1.9/2.1; 2.3/2.5 #89



# CHAIN OF CUSTODY FORM

Test America

Client Name/Address Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Urvashi Patel 17451 DeJalen Ave Suite #100 Irvine CA 92614 Tel 949-260-3289 Cell 949-333-9055	Project: Boeing-SSFL NPDES Permit 2019 Quarterly Outfall 001, 002, 011, 018 Outfall 002 Comp	Project Manager: Katherine Miller 520.289.8606, 520.904.6644 (cell) Field Manager: Mark Dominick 978.234.5033, 818.599.0702 (cell)
--	---	---

Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont	Preservative	Bottle #	MSMSD	R		R		R		R		R		Comments	
									(E200 8): Cu, Pb, Cd, Se	Cyanide (SM4500-CN-E / E335 2)	Gross Alpha (E900 0), Gross Beta (E900 0), Tritium (T-3) (E908 0), Sr-90 (E905 0), Total Combined Radium 226 (E903 0 or E903 1) & Radium 228 (E904 0), Uranium (E908 0), K-40, CS-137 (E901 0 or E901 1)	Chronic Toxicity - Selenium (EPA-821-R-02-013)	Total Dissolved Metals: Mercury (E245 1)	Priority Pollutants-Pesticides+PCBs (E608)	Total Recoverable Metals: (E200 7): Hardness as CaCO3	Total Dissolved Metals: (E200 7): Hardness as CaCO3				
Outfall 002	Outfall002_20191205_Comp_F	12/5/2019 10:50	WM	1 L Poly	1	None	190	No											Filter and preserve w/in 24hrs of receipt at lab at CF001,002,011, or 018	
				500 mL Poly	1	HNO <sub>3</sub>	80	No												at CF001,002,011, or 018
				1 L Poly	1	None	200	No												Filter and preserve w/in 24hrs of receipt at lab at CF001,002,011, or 018
Outfall002_20191205_Comp	Outfall002_20191205_Comp	12/5/2019 10:50	WM	1 L Glass Amber	2	None	250	No											Chlordane, DDD, DDE, DDT, dieldrin, PCBs, toxaphene at CF001,002,011, or 018	
				borosilicate vials	1	None	320	No											Sample receiving DO NOT OPEN BAG Bag to be opened in Mercury Prep. using clean procedures	
				500 mL Poly	1	NaOH	220	No												Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MSMSD
Outfall002_20191205_Comp	Outfall002_20191205_Comp	12/5/2019 10:50	WM	2.5 Gal Cube	1	None	225	No											Only test if first or second rain events of the year.	
				1 L Glass Amber	1	None	230	No												
				1 Gal Cube	1	None	285	No												

Relinquished By <i>Rachael Hohn 12/05/19 HBA</i>	Date/Time 12/5/19 13:10	Received By <i>Will Rieva</i>	Date/Time 12/5/19 13:10
Relinquished By <i>Will Rieva</i>	Date/Time 12/5/19 16:37	Received By <i>[Signature]</i>	Date/Time 12/5/19 16:37
Relinquished By <i>Will Rieva</i>	Date/Time 12/5/19 16:37	Received By <i>[Signature]</i>	Date/Time 12/5/19 16:37

Turn-around time. (Check)  
 24 Hour: \_\_\_\_\_ 72 Hour: \_\_\_\_\_ 10 Day: \_\_\_\_\_ X  
 48 Hour: \_\_\_\_\_ 5 Day: \_\_\_\_\_ Normal: \_\_\_\_\_

Sample Integrity (Check)  
 intact: \_\_\_\_\_ On Ice: \_\_\_\_\_  
 Store samples for 6 months. Data Requirements. (Check)  
 No Level IV: \_\_\_\_\_ All Level IV: \_\_\_\_\_ X





CHAIN OF CUSTODY FORM

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055				Project: Boeing-SSFL NPDES Permit 2019 Quarterly Outfall [001, 002, 011, 018] Outfall 002 Comp				ANALYSIS REQUIRED																	
TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement # 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc Sampler: Neal Smith				Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 978.234.5033, 818.599.0702 (cell)				Total Recoverable Metals: (E200.7); Zn (E200.8); Cu, Pb, Cd, Se TCDD (and all congeners) (E1613E) BOD5 (20 degrees C) (E405.1) (SM5210B_BODCalc) Surfactants (MBAS) (SM5540C/E425.1) Cl-, SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Perchlorate (E300) Turbidity, TDS (SM2540C/E180.1) TSS (160.2 (SM2540D)) Ammonia-N (350.2) alpha-BHC (E808) 2,4,6-TCP, 2,4-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, PCP (SVOCs E625) Total Recoverable Metals: Mercury (E245.1) Total Recoverable Metals: (E200.7) Fe, <del>Mn</del>																	
Comments JUL 12/5/19 Outfall-001 analyze for Fe and Mn Outfalls 002 and 011 analyze for Fe only 48 hours Holding Time NO3 & NO2 48 hours Holding Time for Turbidity Hold Hold Hold Hold Hold																									
Sample Description	Sample I D	Sampling Date/Time	Sample Matrix	Container Type	# of Cont	Preservative	Bottle #	MS/MSD	Total Recoverable Metals: (E200.7); Zn (E200.8); Cu, Pb, Cd, Se	TCDD (and all congeners) (E1613E)	BOD5 (20 degrees C) (E405.1) (SM5210B_BODCalc)	Surfactants (MBAS) (SM5540C/E425.1)	Cl-, SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Perchlorate (E300)	Turbidity, TDS (SM2540C/E180.1)	TSS (160.2 (SM2540D))	Ammonia-N (350.2)	alpha-BHC (E808)	2,4,6-TCP, 2,4-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, PCP (SVOCs E625)	Total Recoverable Metals: Mercury (E245.1)	Total Recoverable Metals: (E200.7) Fe, <del>Mn</del>	Comments				
Outfall 002	Outfall002_20191205_Comp	12/5/2019 6950	WM	500 mL Poly	1	HNO3	90	No	X											X	X				
			WM	1 L Glass Amber	2	None	110	No			X														
			WM	1L Poly	1	None	115	No				X													
			WM	500 mL Poly	2	None	120	No					X												
			WM	500 mL Poly	2	None	130	No						X											
			WM	500 mL Poly	1	None	150	No							X										
			WM	500 mL Poly	1	H2SO4	160	No								X									
			WM	1 L Glass Amber	2	None	170	No												X					
			WM	1L Poly	1	None	185	No									X								
			Outfall002_20191205_Comp_Extra		12/5/2019 6950	WM	1 L Glass Amber	2	None	110	No			H											
WM	500 mL Poly	2				None	120	No					H											Hold	
WM	500 mL Poly	2				None	130	No						H											Hold
WM	1 L Glass Amber	2				None	170	No											H						Hold
WM	1 L Glass Amber	2				None	180	No												H					



Relinquished By <i>Raciel Mohn</i>	Date/Time 12/05/19	Company HBA 1310	Received By <i>Will Rivoa</i>	Date/Time 12/5/19 1310	Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: <input checked="" type="checkbox"/> 48 Hour: _____ 5 Day: _____ Normal: _____
Relinquished By <i>Will Rivoa</i>	Date/Time 12/5/19	Company 1637	Received By <i>Will Rivoa</i>	Date/Time 12/5/19/16.37	Sample Integrity: (Check) Intact: _____ On Ice: _____
Relinquished By	Date/Time	Company	Received By	Date/Time	Store samples for 6 months Data Requirements: (Check) No Level IV: _____ All Level IV: <input checked="" type="checkbox"/>

1.6/1.8, 0.8/1.0, 2.4/2.6, 1.9/2.1, 2.3/2.5 #89

AB

CHAIN OF CUSTODY FORM

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108				Project: Boeing-SSFL NPDES Permit 2019 Quarterly Outfall [001, 002, 011, 018] Outfall 002 Comp				R	R	R	R	QRSW	QRSW	QRSW	ALY	Comments	
Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel: 949-260-3269 Cell: 949-333-9055				Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 978.234.5033, 818.599.0702 (cell)				Total Dissolved Metals: (E200.7); Zn, Fe (E200.8); Cu, Pb, Cd, Se	Cyanide (SM4500-CN-E / E335.2)	Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (H-3) (E906.0), Sr-90 (E905.0), Total Combined Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1)	Chronic Toxicity - Seleniastrium (EPA-821-R-02-013)	Total Dissolved Metals: Mercury (E245.1)	Priority Pollutants+Pesticides+PCBs (E608)	Total Recoverable Metals: (E200.7); Hardness as CaCO3	Total Dissolved Metals: (E200.7); Hardness as CaCO3		
Test America's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement # 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and Test America Laboratories Inc.																	
Sampler: Neal Smith																	
Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont	Preservative	Bottle #	MS/MSD									
			WM	1 L Poly	1	None	190	No						X		Filter and preserve w/in 24hrs of receipt at lab at OF001,002,011, or 018	
			WM	500 mL Poly	1	HNO <sub>3</sub>	80	No					X		at OF001,002,011, or 018		
Outfall 002	Outfall002_20191205_Comp_F	12/5/2019	WM	1L Poly	1	None	200	No	X						Filter and preserve w/in 24hrs of receipt at lab at OF001,002,011, or 018		
			WM	1 L Glass Amber	2	None	250	No				X			Chlordane, DDD, DDE, DDT, dieldrin, PCBs, toxaphene at OF001,002,011, or 018		
			WM	borosilicate vials	1	None	320	No				X			Sample receiving DO NOT OPEN BAG Bag to be opened in Mercury Prep using clean procedures		
	Outfall002_20191205_Comp	12/5/2019	WM	500 mL Poly	1	NaOH	220	No		X							
			WM	2.5 Gal Cube	1	None	225	No					X		Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD		
			WM	1 L Glass Amber	1	None	230	No							Only test if first or second rain events of the year		
			WM	1 Gal Cube	1	None	235	No			X						
															* from non-preserved extra bottle		

Chlorpyrifos Diazinon  
(E-525.2)

16

# Chain of Custody Record



<b>Client Information (Sub Contract Lab)</b>		Lab Pkt: Patel, Urvasi	Carrier Tracking No(s):	COC No: 440-149597.1	
Shipping/Receiving		E-Mail: urvasi.patel@testamericainc.com	State of Origin: California	Page: Page 1 of 1	
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - California	Job #: 440-256464-1		
Address: 880 Riverside Parkway, West Sacramento, CA, 95605		Due Date Requested: 12/17/2019	<b>Analysis Requested</b>		
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:	TAT Requested (days):	1613B/1613B_Sox_Sep_P Standard List w/ Totals		
Email:	WO #:		Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/>		
Project Name: Boeing NPDES SSFL outfalls	Project #: 44009879		Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/>		
Site:	SSOW#:		Total Number of Containers: 2		
Sample Identification - Client ID (Lab ID): Outfall002_20191205_Comp (440-256464-1)		Sample Date: 12/15/19	Sample Time: 09:50 Pacific	Matrix: Water	Special Instructions/Note: See QAS, Boeing, w/it to zero, ug/L, Use Boeing glassware
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte &amp; accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to state compliance to TestAmerica Laboratories, Inc.</p>					
<b>Possible Hazard Identification</b>					
Unconfirmed					
Deliverable Requested: I, II, III, IV, Other (specify)		Primary Deliverable Rank: 2			
Empty Kit Relinquished by:		Time:			
Relinquished by: A. Kennedy		Date: 12/16/19 17:00	Company: TA IPR		
Relinquished by:		Date/Time:	Company:		
Relinquished by:		Date/Time:	Company:		
Custody Seals Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Custody Seal No.: Seal			
Cooler Temperature(s) °C and Other Remarks: OBS 1-3 Corr 1.7		Company: ETA-SAC			



## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-256464-2

**Login Number: 256464**

**List Source: Eurofins TestAmerica, Irvine**

**List Number: 1**

**Creator: Soderblom, Tim**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-256464-2

**Login Number: 256464**

**List Number: 3**

**Creator: Kintaudi, Pauline W**

**List Source: Eurofins TestAmerica, Sacramento**

**List Creation: 12/09/19 03:11 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	Seal present with no number.
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	Ob:1.3c Corr:1.7c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# Isotope Dilution Summary

Client: Haley & Aldrich, Inc.  
 Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-2

## Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF (24-185)	PeCF (21-178)	HxCDD (32-141)	HxDD (28-130)	HxCDF (26-152)
440-256464-1	Outfall002_20191205_Comp	53	53	48	48	51	54	55	54
MB 320-345993/1-A	Method Blank	53	53	52	53	55	61	62	61

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxDF (26-123)	HxCF (29-147)	13CHxCF (28-136)	HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	OCDD (17-157)
440-256464-1	Outfall002_20191205_Comp	53	51	53	50	49	52	52
MB 320-345993/1-A	Method Blank	62	57	58	53	54	56	51

#### Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD  
 TCDF = 13C-2,3,7,8-TCDF  
 PeCDD = 13C-1,2,3,7,8-PeCDD  
 PeCDF = 13C-1,2,3,7,8-PeCDF  
 PeCF = 13C-2,3,4,7,8-PeCDF  
 HxCDD = 13C-1,2,3,4,7,8-HxCDD  
 HxDD = 13C-1,2,3,6,7,8-HxCDD  
 HxCDF = 13C-1,2,3,4,7,8-HxCDF  
 HxDF = 13C-1,2,3,6,7,8-HxCDF  
 HxCF = 13C-1,2,3,7,8,9-HxCDF  
 13CHxCF = 13C-2,3,4,6,7,8-HxCDF  
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD  
 HpCDF = 13C-1,2,3,4,6,7,8-HpCDF  
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF  
 OCDD = 13C-OCDD

## Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF (21-192)	PeCF (13-328)	HxCDD (21-193)	HxDD (25-163)	HxCDF (19-202)
LCS 320-345993/2-A	Lab Control Sample	64	65	61	61	65	70	70	68

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxDF (21-159)	HxCF (17-205)	13CHxCF (22-176)	HpCDD (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-345993/2-A	Lab Control Sample	68	64	67	62	60	65	60

#### Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD  
 TCDF = 13C-2,3,7,8-TCDF  
 PeCDD = 13C-1,2,3,7,8-PeCDD  
 PeCDF = 13C-1,2,3,7,8-PeCDF  
 PeCF = 13C-2,3,4,7,8-PeCDF  
 HxCDD = 13C-1,2,3,4,7,8-HxCDD  
 HxDD = 13C-1,2,3,6,7,8-HxCDD  
 HxCDF = 13C-1,2,3,4,7,8-HxCDF  
 HxDF = 13C-1,2,3,6,7,8-HxCDF  
 HxCF = 13C-1,2,3,7,8,9-HxCDF  
 13CHxCF = 13C-2,3,4,6,7,8-HxCDF  
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD

Eurofins TestAmerica, Irvine

# Isotope Dilution Summary

Client: Haley & Aldrich, Inc.

Project/Site: Quaterly Outfall 002 Comp

HpCDF = 13C-1,2,3,4,6,7,8-HpCDF

HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF

OCDD = 13C-OCDD

Job ID: 440-256464-2

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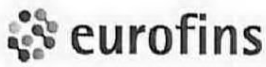
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Environment Testing  
TestAmerica

Sacramento  
Sample Receiving Notes



440-256464 Field Sheet

Tracking #: 1119-9741-8950

Job: \_\_\_\_\_

SO /  / FO / SAT / 2-Day / Ground / UPS / CDO / Courier  
GSO / OnTrac / Goldstreak / USPS / Other \_\_\_\_\_

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Notes: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	Therm. ID: <u>AK-11</u> Corr. Factor: ( $\phi$ / -) <u>0.4</u> °C																																																											
	Ice <input checked="" type="checkbox"/> Wet <input checked="" type="checkbox"/> Gel _____ Other _____																																																											
	Cooler Custody Seal: <u>Seal</u>																																																											
	Cooler ID: <u>X</u>																																																											
	Temp Observed: <u>1.3</u> °C Corrected: <u>1.7</u> °C																																																											
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\*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

WRIA



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**DATA VALIDATION REPORT**

**Boeing SSFL NPDES**

**SAMPLE DELIVERY GROUP: 440-256464-3**

**Prepared for**

Haley & Aldrich, Inc.  
600 South Meyer Avenue, Suite 100  
Tucson, Arizona 85701

**21 January 2020**

MEC<sup>x</sup>, Inc.  
8864 Interchange Drive  
Houston, Texas 77054

[www.mecx.net](http://www.mecx.net)





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**TABLES**

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



## I. INTRODUCTION

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**Task Order Title:** Boeing SSFL NPDES

**Contract:** 40458-078 and 40458-083

**MEC<sup>x</sup> Project No.:** 1272.003H.01

**Sample Delivery Group:** 440-256464-3

**Project Manager:** Katherine Miller

**Matrix:** Water

**QC Level:** IV

**No. of Samples:** 1

**No. of Reanalyses/Dilutions:** 0

**Laboratory:** TestAmerica-Irvine

**TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
OUTFALL002_20191205_COMP	440-256464-1	N/A	Water	12/5/2019 9:50:00 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod



## II. SAMPLE MANAGEMENT

---

According to the case narrative, sample condition upon receipt forms and the chains-of-custody (COCs) provided by the laboratories for sample delivery group (SDG) 440-256464-3:

- The laboratories received the sample in this SDG on ice and within the temperature limits of  $\leq 6$  degrees Celsius ( $^{\circ}\text{C}$ ) and  $> 0^{\circ}\text{C}$ .
- The laboratories received the sample containers intact.
- Field and laboratory personnel signed and dated the COCs.
- Some corrections to the original COCs were not dated. The cross-outs did not affect data quality.
- Sample containers were transferred to TestAmerica – St. Louis laboratory for all radionuclide analyses.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination ( $r^2$ ) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



### III. VARIOUS EPA METHODS — RADIONUCLIDES

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E. Wessling of MEC<sup>x</sup> reviewed the SDG on January 21, 202020

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the *EPA Methods 900, 901.1, 903.0, 904.0, 905.0, 906.0 and HASL-300 U Mod*, and the *National Functional Guidelines for Superfund Inorganic Method Data Review (2017)*.

#### III.1. HOLDING TIMES:

According to the case narrative, the sample was received properly preserved.

#### III.2. CALIBRATION:

The detector efficiencies for gross alpha and radium-226 were less than 20%; therefore, the detected result for gross alpha and radium-226 were qualified as estimated nondetects (UJ). All other detector efficiencies were greater than 20% and no further qualifications were required. Carrier/tracer recoveries were within the laboratory control limits. Calibration checks were verified as acceptable for all methods.

#### III.3. QUALITY CONTROL SAMPLES

##### III.3.1. METHOD BLANKS

Target isotopes were not detected in the method blanks above the MDC. A comparison of normalized absolute difference of the sample results and the method blank results indicated the method blank and the sample results were significantly different and no qualifications of the data was required.

##### III.3.2. LABORATORY CONTROL SAMPLES:

The recoveries and RPDs were within laboratory-established control limits. RERs, as applicable, were <1.

##### III.3.3. LABORATORY DUPLICATES:

Laboratory duplicates were performed on the sample from this SDG for cesium-137 and tritium. RERs were <1 and DERs were <2.13.

##### III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE:

Matrix spike (MS)/MSD analyses were not performed on the sample from this SDG.

#### III.4. SAMPLE RESULT VERIFICATION:

An EPA Level IV review was performed on the sample in this data package. Calculations were verified from the raw data and were determined to be accurate within a reasonable margin of error attributable to differences in significant figures. Reported nondetects are valid to the MDC.

#### III.5. FIELD QC SAMPLES:

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. The following are findings associated with field QC samples:

##### III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS:

This SDG had no identified field blank or equipment blank samples.





III.5.2. **FIELD DUPLICATES:**

There were no field duplicate samples identified for this SDG.

# Validated Sample Result Forms: 4402564643

## Analysis Method E900

Sample Name OUTFALL002\_20191205\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

Lab Sample Name: 440-256464-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	0.868	3.14	3.00	5.64	pCi/L	U G	UJ	*III
Gross Beta Analytes	GROSSBETA	4.77	1.50	4.00	1.85	pCi/L			

## Analysis Method E901.1

Sample Name OUTFALL002\_20191205\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

Lab Sample Name: 440-256464-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	3.02	7.82	20.0	9.83	pCi/L	U	U	
Potassium-40	13966-00-2	-12.2	85.5	157	157	pCi/L	U	U	

## Analysis Method E903.0

Sample Name OUTFALL002\_20191205\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

Lab Sample Name: 440-256464-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.129	0.116	1.00	0.177	pCi/L	U	UJ	*III

## Analysis Method E904.0

Sample Name OUTFALL002\_20191205\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

Lab Sample Name: 440-256464-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	-0.0217	0.305	1.00	0.546	pCi/L	U	U	

*Analysis Method E905.0*

**Sample Name** OUTFALL002\_20191205\_COMP **Matrix Type:** WM **Result Type:** TRG

**Sample Date:** 12/5/2019 9:50:00 AM **Validation Level:** 8

**Lab Sample Name:** 440-256464-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.463	0.493	3.00	0.804	pCi/L	U	U	

*Analysis Method E906.0*

**Sample Name** OUTFALL002\_20191205\_COMP **Matrix Type:** WM **Result Type:** TRG

**Sample Date:** 12/5/2019 9:50:00 AM **Validation Level:** 8

**Lab Sample Name:** 440-256464-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-207	171	500	338	pCi/L	U	U	

*Analysis Method HASL-300 U Mod*

**Sample Name** OUTFALL002\_20191205\_COMP **Matrix Type:** WM **Result Type:** TRG

**Sample Date:** 12/5/2019 9:50:00 AM **Validation Level:** 8

**Lab Sample Name:** 440-256464-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	1.55	0.516	1.00	0.303	pCi/L			

## ANALYTICAL REPORT

Eurofins Calscience Irvine  
17461 Derian Ave  
Suite 100  
Irvine, CA 92614-5817  
Tel: (949)261-1022

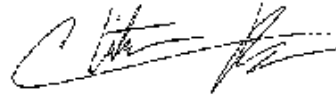
Laboratory Job ID: 440-256464-3

Client Project/Site: Quarterly Outfall 002 Comp

**For:**

Haley & Aldrich, Inc.  
400 E Van Buren St.  
Suite 545  
Phoenix, Arizona 85004

Attn: Katherine Miller



---

Authorized for release by:  
1/8/2020 11:21:55 AM

Christian Bondoc, Project Manager I  
(949)260-3218  
[christian.bondoc@testamericainc.com](mailto:christian.bondoc@testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



---

Christian Bondoc  
Project Manager I  
1/8/2020 11:21:55 AM



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# Sample Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-3

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-256464-1	Outfall002_20191205_Comp	Water	12/05/19 09:50	12/05/19 16:37	

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# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-3

## Job ID: 440-256464-3

### Laboratory: Eurofins Calscience Irvine

#### Narrative

#### Job Narrative 440-256464-3

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/5/2019 4:37 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 1.0° C, 1.8° C, 2.1° C, 2.5° C and 2.6° C.

#### RAD

Method 900.0: Gross Alpha Beta Prep Batch 160-453447

The matrix spike (MS) recoveries for 160-453447 were outside control limits. Sample matrix interference is suspected. The associated laboratory control sample (LCS) recovery was within acceptance limits. Samples were also reduced due to high residual mass.

Outfall002\_20191205\_Comp (440-256464-1), (LCS 160-453447/2-A), (LCSB 160-453447/3-A), (MB 160-453447/1-A), (400-180779-R-2-A), (400-180779-R-2-D DU), (400-180779-R-2-B MS) and (400-180779-R-2-C MSBT)

Method 900.0: Gross Alpha Beta Prep Batch 160-453447

The gross alpha detection goal was not met for the following samples due to a reduction of the sample size attributed to high residual mass: Outfall002\_20191205\_Comp (440-256464-1), (400-180779-R-2-A), (400-180779-R-2-D DU) and (400-180779-R-2-C MSBT). Analytical results are reported with the detection limit achieved.

Method 900.0: Gross Alpha Beta Prep Batch 160-453447

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall002\_20191205\_Comp (440-256464-1), (LCS 160-453447/2-A), (LCSB 160-453447/3-A), (MB 160-453447/1-A), (400-180779-R-2-A), (400-180779-R-2-D DU), (400-180779-R-2-B MS) and (400-180779-R-2-C MSBT)

Method 901.1: Gamma Prep Batch 160-453799

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such interference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred from	Reported to Analyte
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Pb-212	Po-216
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106



# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-3

## Job ID: 440-256464-3 (Continued)

### Laboratory: Eurofins Calscience Irvine (Continued)

Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-211
Th-227	Pb-211
Bi-214	Ra-226

Outfall002\_20191205\_Comp (440-256464-1), (LCS 160-453799/2-A), (MB 160-453799/1-A) and (440-256464-S-1-B DU)

Methods 903.0, 9315: Radium-226 Prep Batch 160-453438

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall002\_20191205\_Comp (440-256464-1), (LCS 160-453438/1-A), (MB 160-453438/18-A), (600-196984-A-9-A), (600-196984-B-9-A MS) and (600-196984-B-9-B MSD)

Methods 904.0, 9320: Ra-228 Prep Batch 160-453444

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall002\_20191205\_Comp (440-256464-1), (LCS 160-453444/1-A), (MB 160-453444/18-A), (600-196984-A-9-B), (600-196984-B-9-C MS) and (600-196984-B-9-D MSD)

Method 905: Strontium-90 Prep Batch 160-453482

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall002\_20191205\_Comp (440-256464-1), (LCS 160-453482/1-A), (LCSD 160-453482/2-A) and (MB 160-453482/4-A)

Method 906.0: LSC Tritium Prep Batch 160-455437

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall002\_20191205\_Comp (440-256464-1), (LCS 160-455437/2-A), (MB 160-455437/1-A), (440-256464-S-1-D DU), (440-257193-B-1-A) and (440-257193-B-1-B MS)

Method A-01-R: Isotopic Uranium Prep Batch 160-453442

The tracer resolution (FWHM= 100.7 keV) was greater than 100 keV. The analyte peaks were resolvable within the appropriate region(s) of interest, and no interferent peaks were seen. The laboratory does not believe this excursion adversely affects the data. (LCSD 160-453442/3-A)

Method A-01-R: Isotopic Uranium Prep Batch 160-453442

# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-3

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## Job ID: 440-256464-3 (Continued)

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### Laboratory: Eurofins Calscience Irvine (Continued)

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.  
Outfall002\_20191205\_Comp (440-256464-1), (LCS 160-453442/2-A), (LCSD 160-453442/3-A) and (MB 160-453442/1-A)

Method ExtChrom: Uranium Prep Batch 160-453442

The following samples were prepared at a reduced aliquot due to cloudy yellow discoloration: Outfall002\_20191205\_Comp (440-256464-1). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead of a sample duplicate (DUP) to demonstrate batch precision.

Method PrecSep\_0: Radium 228 Prep Batch 160-453444:

The following sample was prepared at a reduced aliquot due to brown discoloration: Outfall002\_20191205\_Comp (440-256464-1).

Method PrecSep-21: Radium 226 Prep Batch 160-453438:

The following sample was prepared at a reduced aliquot due to brown discoloration: Outfall002\_20191205\_Comp (440-256464-1).

Method PrecSep-7: Strontium 90 Prep Batch 160-453482:

The following sample was prepared at a reduced aliquot due to a yellow discoloration: Outfall002\_20191205\_Comp (440-256464-1). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead of a sample duplicate (DUP) to demonstrate batch precision.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-3

**Client Sample ID: Outfall002\_20191205\_Comp**

**Lab Sample ID: 440-256464-1**

Date Collected: 12/05/19 09:50

Matrix: Water

Date Received: 12/05/19 16:37

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	0.868	U G	3.14	3.14	3.00	5.64	pCi/L	12/09/19 08:33	12/14/19 11:12	1
<b>Gross Beta</b>	<b>4.77</b>		1.42	1.50	4.00	1.85	pCi/L	12/09/19 08:33	12/14/19 11:12	1

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Cesium-137	3.02	U	7.82	7.82	20.0	9.83	pCi/L	12/10/19 13:10	12/11/19 13:22	1
Potassium-40	-12.2	U	85.4	85.5		157	pCi/L	12/10/19 13:10	12/11/19 13:22	1

## Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	0.129	U	0.115	0.116	1.00	0.177	pCi/L	12/09/19 08:03	12/31/19 09:34	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	75.3		40 - 110					12/09/19 08:03	12/31/19 09:34	1

## Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-228	-0.0217	U	0.305	0.305	1.00	0.546	pCi/L	12/09/19 08:26	12/13/19 12:50	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	75.3		40 - 110					12/09/19 08:26	12/13/19 12:50	1
Y Carrier	86.3		40 - 110					12/09/19 08:26	12/13/19 12:50	1

## Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Strontium-90	0.463	U	0.491	0.493	3.00	0.804	pCi/L	12/09/19 12:50	12/17/19 11:27	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Sr Carrier	72.9		40 - 110					12/09/19 12:50	12/17/19 11:27	1
Y Carrier	93.1		40 - 110					12/09/19 12:50	12/17/19 11:27	1

## Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Tritium	-207	U	170	171	500	338	pCi/L	12/27/19 10:41	12/30/19 15:36	1

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
<b>Total Uranium</b>	<b>1.55</b>		0.509	0.516	1.00	0.303	pCi/L	12/09/19 08:16	12/10/19 22:25	1

Eurofins Calscience Irvine

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-3

**Client Sample ID: Outfall002\_20191205\_Comp**

**Lab Sample ID: 440-256464-1**

**Date Collected: 12/05/19 09:50**

**Matrix: Water**

**Date Received: 12/05/19 16:37**

<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Uranium-232	74.3		30 - 110	12/09/19 08:16	12/10/19 22:25	1

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# Method Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-3

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL
Evaporation	Preparation, Evaporation	None	TAL SL
ExtChrom	Preparation, Extraction Chromatography Resin Actinide Separation	None	TAL SL
Fill_Geo-0	Fill Geometry, No In-Growth	None	TAL SL
LSC_Dist_Susp	Distillation and Suspension (LSC)	None	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL
PrecSep-7	Preparation, Precipitate Separation (7-Day In-Growth)	None	TAL SL

#### Protocol References:

DOE = U.S. Department of Energy  
EPA = US Environmental Protection Agency  
None = None

#### Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# Lab Chronicle

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-3

**Client Sample ID: Outfall002\_20191205\_Comp**

**Lab Sample ID: 440-256464-1**

**Date Collected: 12/05/19 09:50**

**Matrix: Water**

**Date Received: 12/05/19 16:37**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			110.30 mL	1.0 g	453447	12/09/19 08:33	RJD	TAL SL
Total/NA	Analysis	900.0		1			454254	12/14/19 11:12	KLS	TAL SL
Total/NA	Prep	Fill_Geo-0			965.8 mL	1.0 g	453799	12/10/19 13:10	KRS	TAL SL
Total/NA	Analysis	901.1		1			453859	12/11/19 13:22	KLS	TAL SL
Total/NA	Prep	PrecSep-21			750.07 mL	1.0 g	453438	12/09/19 08:03	EJQ	TAL SL
Total/NA	Analysis	903.0		1			455755	12/31/19 09:34	KLS	TAL SL
Total/NA	Prep	PrecSep_0			999.13 mL	1.0 g	453444	12/09/19 08:26	MNH	TAL SL
Total/NA	Analysis	904.0		1			454214	12/13/19 12:50	CJQ	TAL SL
Total/NA	Prep	PrecSep-7			500.8 mL	1.0 g	453482	12/09/19 12:50	RBR	TAL SL
Total/NA	Analysis	905		1			454462	12/17/19 11:27	AJD	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.5 mL	1.0 g	455437	12/27/19 10:41	KNF	TAL SL
Total/NA	Analysis	906.0		1			455781	12/30/19 15:36	JS	TAL SL
Total/NA	Prep	ExtChrom			250.06 mL	1.0 mL	453442	12/09/19 08:16	KLH	TAL SL
Total/NA	Analysis	A-01-R		1			453883	12/10/19 22:25	KRR	TAL SL

**Laboratory References:**

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-3

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

**Lab Sample ID: MB 160-453447/1-A**  
**Matrix: Water**  
**Analysis Batch: 454254**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 453447**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	-0.1496	U	0.601	0.602	3.00	1.23	pCi/L	12/09/19 08:33	12/14/19 11:11	1
Gross Beta	-0.4123	U	0.507	0.509	4.00	0.974	pCi/L	12/09/19 08:33	12/14/19 11:11	1

**Lab Sample ID: LCS 160-453447/2-A**  
**Matrix: Water**  
**Analysis Batch: 454254**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 453447**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Alpha	49.6	55.92		8.67	3.00	3.09	pCi/L	113	75 - 125

**Lab Sample ID: LCSB 160-453447/3-A**  
**Matrix: Water**  
**Analysis Batch: 454254**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 453447**

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Beta	85.2	89.03		9.45	4.00	0.912	pCi/L	105	75 - 125

**Lab Sample ID: 400-180779-R-2-B MS**  
**Matrix: Water**  
**Analysis Batch: 454254**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 453447**

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	-1.20	U G	142	133.3	F1	21.4	3.00	8.26	pCi/L	-3	60 - 140

**Lab Sample ID: 400-180779-R-2-C MSBT**  
**Matrix: Water**  
**Analysis Batch: 454254**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 453447**

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Beta	8.54		243	249.6		26.5	4.00	2.64	pCi/L	99	60 - 140

**Lab Sample ID: 400-180779-R-2-D DU**  
**Matrix: Water**  
**Analysis Batch: 454254**

**Client Sample ID: Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 453447**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total	RL	MDC	Unit	RER	RER Limit
					Uncert. (2σ+/-)					
Gross Alpha	-1.20	U G	0.7830	U G	4.43	3.00	8.23	pCi/L	0.27	1
Gross Beta	8.54		5.328		2.35	4.00	3.35	pCi/L	0.68	1

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-3

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

**Lab Sample ID: MB 160-453799/1-A**  
**Matrix: Water**  
**Analysis Batch: 453859**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 453799**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Cesium-137	-0.9736	U	10.2	10.2	20.0	12.9	pCi/L	12/10/19 13:10	12/11/19 12:20	1
Potassium-40	54.81	U	93.7	93.9		152	pCi/L	12/10/19 13:10	12/11/19 12:20	1

**Lab Sample ID: LCS 160-453799/2-A**  
**Matrix: Water**  
**Analysis Batch: 453997**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 453799**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Americium-241	136000	132000		15200		420	pCi/L	97	90 - 111
Cesium-137	44100	43930		4410	20.0	110	pCi/L	100	90 - 111
Cobalt-60	27500	26810		2660		63.8	pCi/L	98	89 - 110

**Lab Sample ID: 440-256464-1 DU**  
**Matrix: Water**  
**Analysis Batch: 453858**

**Client Sample ID: Outfall002\_20191205\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 453799**

Analyte	Sample Sample		DU	DU	Total	RL	MDC	Unit	RER	RER Limit
	Result	Qual	Result	Qual	Uncert. (2σ+/-)					
Cesium-137	3.02	U	-2.158	U	10.6	20.0	11.8	pCi/L	0.28	1
Potassium-40	-12.2	U	-57.36	U	182		232	pCi/L	0.17	1

## Method: 903.0 - Radium-226 (GFPC)

**Lab Sample ID: MB 160-453438/18-A**  
**Matrix: Water**  
**Analysis Batch: 455755**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 453438**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	-0.02144	U	0.0381	0.0381	1.00	0.0893	pCi/L	12/09/19 08:03	12/31/19 11:25	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	105		40 - 110	12/09/19 08:03	12/31/19 11:25	1

**Lab Sample ID: LCS 160-453438/1-A**  
**Matrix: Water**  
**Analysis Batch: 455755**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 453438**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-226	11.3	10.21		1.04	1.00	0.0948	pCi/L	90	75 - 125

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	97.2		40 - 110



# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-3

## Method: 903.0 - Radium-226 (GFPC) (Continued)

**Lab Sample ID: 600-196984-B-9-A MS**  
**Matrix: Water**  
**Analysis Batch: 455755**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 453438**

Analyte	Sample	Sample	Spike	MS	MS	Total	RL	MDC	Unit	%Rec	%Rec.	Limits
	Result	Qual		Result	Qual							
Radium-226	0.142		11.4	11.18		1.15	1.00	0.105	pCi/L	97	75 - 138	
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>									
Ba Carrier	91.4		40 - 110									

**Lab Sample ID: 600-196984-B-9-B MSD**  
**Matrix: Water**  
**Analysis Batch: 455755**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 453438**

Analyte	Sample	Sample	Spike	MSD	MSD	Total	RL	MDC	Unit	%Rec	%Rec.	Limits	RER	Limit
	Result	Qual		Result	Qual									
Radium-226	0.142		11.3	11.92		1.21	1.00	0.111	pCi/L	104	75 - 138	0.31	1	
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>											
Ba Carrier	88.6		40 - 110											

## Method: 904.0 - Radium-228 (GFPC)

**Lab Sample ID: MB 160-453444/18-A**  
**Matrix: Water**  
**Analysis Batch: 454213**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 453444**

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier								
Radium-228	0.3185	U	0.252	0.254	1.00	0.402	pCi/L	12/09/19 08:26	12/13/19 12:46	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>							
Ba Carrier	105		40 - 110							
Y Carrier	88.7		40 - 110							

**Lab Sample ID: LCS 160-453444/1-A**  
**Matrix: Water**  
**Analysis Batch: 454214**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 453444**

Analyte	Spike	LCS	LCS	Total	RL	MDC	Unit	%Rec	%Rec.	Limits
		Result	Qual							
Radium-228	9.31	11.51		1.28	1.00	0.400	pCi/L	124	75 - 125	
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>							
Ba Carrier	97.2		40 - 110							
Y Carrier	88.7		40 - 110							

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-3

## Method: 904.0 - Radium-228 (GFPC) (Continued)

**Lab Sample ID: 600-196984-B-9-C MS**  
**Matrix: Water**  
**Analysis Batch: 454214**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 453444**

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
	Result	Qual		Result	Qual						
Radium-228	0.768		9.31	11.62		1.31	1.00	0.362	pCi/L	117	45 - 150
<b>MS MS</b>											
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>								
Ba Carrier	91.4		40 - 110								
Y Carrier	89.6		40 - 110								

**Lab Sample ID: 600-196984-B-9-D MSD**  
**Matrix: Water**  
**Analysis Batch: 454214**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 453444**

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
	Result	Qual		Result	Qual								
Radium-228	0.768		9.30	13.13		1.46	1.00	0.407	pCi/L	133	45 - 150	0.54	1
<b>MSD MSD</b>													
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>										
Ba Carrier	88.6		40 - 110										
Y Carrier	86.3		40 - 110										

## Method: 905 - Strontium-90 (GFPC)

**Lab Sample ID: MB 160-453482/4-A**  
**Matrix: Water**  
**Analysis Batch: 454462**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 453482**

Analyte	MB	MB	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier								
Strontium-90	-0.1907	U	0.218	0.218	3.00	0.409	pCi/L	12/09/19 12:50	12/17/19 11:28	1
<b>MB MB</b>										
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>	<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>				
Sr Carrier	80.9		40 - 110	12/09/19 12:50	12/17/19 11:28	1				
Y Carrier	92.0		40 - 110	12/09/19 12:50	12/17/19 11:28	1				

**Lab Sample ID: LCS 160-453482/1-A**  
**Matrix: Water**  
**Analysis Batch: 454462**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 453482**

Analyte	Spike Added	LCS	LCS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
		Result	Qual						
Strontium-90	7.95	8.150		0.887	3.00	0.393	pCi/L	103	75 - 125
<b>LCS LCS</b>									
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>						
Sr Carrier	77.7		40 - 110						
Y Carrier	96.1		40 - 110						

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-3

## Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: LCSD 160-453482/2-A  
Matrix: Water  
Analysis Batch: 454462

Client Sample ID: Lab Control Sample Dup  
Prep Type: Total/NA  
Prep Batch: 453482

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	RER Limit
									75 - 125	0.22	1	
Strontium-90	7.95	7.773		0.836	3.00	0.329	pCi/L	98	75 - 125	0.22		1
<b>Carrier</b>	<b>LCSD %Yield</b>	<b>LCSD Qualifier</b>	<b>Limits</b>									
Sr Carrier	82.8		40 - 110									
Y Carrier	96.4		40 - 110									

## Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-455437/1-A  
Matrix: Water  
Analysis Batch: 455781

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 455437

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac

Lab Sample ID: LCS 160-455437/2-A  
Matrix: Water  
Analysis Batch: 455781

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 455437

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
									75 - 114	
Tritium	2520	2401		407	500	342	pCi/L	95	75 - 114	

Lab Sample ID: 440-257193-B-1-B MS  
Matrix: Water  
Analysis Batch: 455781

Client Sample ID: Matrix Spike  
Prep Type: Total/NA  
Prep Batch: 455437

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
											67 - 130	
Tritium	-214	U	2510	2405		407	500	339	pCi/L	96	67 - 130	

Lab Sample ID: 440-256464-1 DU  
Matrix: Water  
Analysis Batch: 455781

Client Sample ID: Outfall002\_20191205\_Comp  
Prep Type: Total/NA  
Prep Batch: 455437

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
										0.30
Tritium	-207	U	-99.10	U	183	500	343	pCi/L		0.30

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-453442/1-A  
Matrix: Water  
Analysis Batch: 453880

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 453442

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-3

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

<i>Tracer</i>	<i>MB</i> <i>%Yield</i>	<i>MB</i> <i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Uranium-232	67.4		30 - 110	12/09/19 08:16	12/10/19 22:25	1

**Lab Sample ID: LCS 160-453442/2-A**  
**Matrix: Water**  
**Analysis Batch: 453881**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 453442**

<i>Analyte</i>	<i>Spike</i> <i>Added</i>	<i>LCS</i> <i>Result</i>	<i>LCS</i> <i>Qual</i>	<i>Total</i> <i>Uncert.</i> <i>(2σ+/-)</i>	<i>RL</i>	<i>MDC</i>	<i>Unit</i>	<i>%Rec</i>	<i>%Rec.</i> <i>Limits</i>
Uranium-234	25.5	26.47		3.17	1.00	0.378	pCi/L	104	75 - 125
Uranium-238	26.0	23.75		2.92	1.00	0.341	pCi/L	91	75 - 125

<i>Tracer</i>	<i>LCS</i> <i>%Yield</i>	<i>LCS</i> <i>Qualifier</i>	<i>Limits</i>
Uranium-232	56.7		30 - 110

**Lab Sample ID: LCSD 160-453442/3-A**  
**Matrix: Water**  
**Analysis Batch: 453882**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 453442**

<i>Analyte</i>	<i>Spike</i> <i>Added</i>	<i>LCSD</i> <i>Result</i>	<i>LCSD</i> <i>Qual</i>	<i>Total</i> <i>Uncert.</i> <i>(2σ+/-)</i>	<i>RL</i>	<i>MDC</i>	<i>Unit</i>	<i>%Rec</i>	<i>%Rec.</i> <i>Limits</i>	<i>RER</i>	<i>RER</i> <i>Limit</i>
Uranium-234	25.5	24.97		3.11	1.00	0.529	pCi/L	98	75 - 125	0.24	1
Uranium-238	26.0	26.55		3.24	1.00	0.391	pCi/L	102	75 - 125	0.45	1

<i>Tracer</i>	<i>LCSD</i> <i>%Yield</i>	<i>LCSD</i> <i>Qualifier</i>	<i>Limits</i>
Uranium-232	51.6		30 - 110

# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-3

## Rad

### Prep Batch: 453438

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	PrecSep-21	
MB 160-453438/18-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-453438/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
600-196984-B-9-A MS	Matrix Spike	Total/NA	Water	PrecSep-21	
600-196984-B-9-B MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	

### Prep Batch: 453442

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	ExtChrom	
MB 160-453442/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-453442/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
LCSD 160-453442/3-A	Lab Control Sample Dup	Total/NA	Water	ExtChrom	

### Prep Batch: 453444

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	PrecSep_0	
MB 160-453444/18-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-453444/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
600-196984-B-9-C MS	Matrix Spike	Total/NA	Water	PrecSep_0	
600-196984-B-9-D MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	

### Prep Batch: 453447

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	Evaporation	
MB 160-453447/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-453447/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-453447/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
400-180779-R-2-B MS	Matrix Spike	Total/NA	Water	Evaporation	
400-180779-R-2-C MSBT	Matrix Spike	Total/NA	Water	Evaporation	
400-180779-R-2-D DU	Duplicate	Total/NA	Water	Evaporation	

### Prep Batch: 453482

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	PrecSep-7	
MB 160-453482/4-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-453482/1-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
LCSD 160-453482/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-7	

### Prep Batch: 453799

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-453799/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-453799/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-256464-1 DU	Outfall002_20191205_Comp	Total/NA	Water	Fill_Geo-0	

### Prep Batch: 455437

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-455437/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-455437/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-257193-B-1-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-3

## Rad (Continued)

### Prep Batch: 455437 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1 DU	Outfall002_20191205_Comp	Total/NA	Water	LSC_Dist_Susp	

1

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# Definitions/Glossary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-3

## Qualifiers

### Rad

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-3

## Laboratory: Eurofins Calscience Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State Program	CA ELAP 2706	06-30-20

## Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-20
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Iowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-19
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-19
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
West Virginia DEP	State	381	10-31-20



# CHAIN OF CUSTODY FORM

<b>Client Name/Address:</b> Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Unvashi Patel 17461 Darian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		<b>Project:</b> Boeing-SSFL NPDES Permit 2019 Quarterly Outfall [001, 002, 011, 018] Outfall 002 Comp		<b>Project Manager:</b> Katherine Miller 520.289.8606; 520.904.6944 (cell) <b>Field Manager:</b> Mark Dominick 978.234.5033; 818.599.0702 (cell)		<b>ANALYSIS REQUIRED</b>	
Test America's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-19-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc <b>Sampler:</b> Neal Smith		Sample ID Outfall002_20191205_Comp		Sampling Date/Time 12/5/2019		Sample Matrix WM	
Container Type 500 mL Poly		# of Cont 1		Preservative HNO <sub>3</sub>		Bottle # 90	
Total Recoverable Metals: (E200.7) Fe, Mn X		Total Recoverable Metals: Mercury (E245.1) X		Turbidity, TDS (SM2540C/E180.1) X		TSS (160.2) (SM2540D) X	
Total Recoverable Metals: (E200.7) Cu, Pb, Cd, Se X		TCDD (and all congeners) (E1613B) X		BOD5 (20 degrees C) (E405.1) (SM2108, BODCalc) X		Surfactants (MBAS) (SM540C/E425.1) X	
Total Recoverable Metals: (E200.7) Zn X		Chlorate (E300) X		Ammonia-N (350.2) X		alpha-BHC (E608) X	
Total Recoverable Metals: (E200.7) Fe, Mn X		2,4,6-TCP, 2,4-DinitrotoLuene, Bis(2-ethylhexyl)phthalate, NDMA, PCP (SVOCs E625) X		48 hours Holding Time NO <sub>3</sub> & NO <sub>2</sub> X		48 hours Holding Time for Turbidity X	
Comments 3VL 12/5/19 Outfall 001 analyze for Fe and Mn. Outfalls 002 and 011 analyze for Fe only		Barcode: 440-256464 Chain of Custody		Turn-around time: (Check) 24 Hour: <input type="checkbox"/> 72 Hour: <input type="checkbox"/> 5 Day: <input type="checkbox"/> 10 Day: <input checked="" type="checkbox"/>		Sample Integrity: (Check) On Ice: <input type="checkbox"/>	
Requisitioned By Rachel Klein Date/Time 12/05/19 10:00 AM		Company 1310		Received By Wilfredo Rivera Date/Time 12/5/19 1310		Store samples for 6 months Data Requirements: (Check) No Level IV: <input type="checkbox"/> All Level IV: <input checked="" type="checkbox"/>	
Requisitioned By Wilfredo Rivera Date/Time 12/5/19		Company 1637		Received By [Signature] Date/Time 12/5/19		1.6/1.8; 0.8/1.0; 2.4/2.6; 1.9/2.1; 2.3/2.5 #89	



# CHAIN OF CUSTODY FORM

Test America

<p><b>Client Name/Address</b>                  Haley &amp; Aldrich                  5333 Mission Center Rd Suite 300                  San Diego, CA 92108  <b>Test America Contact</b> Urvasi Patel                  17451 DeJalen Ave Suite #100                  Irvine CA 92614                  Tel 949-260-3289                  Cell 949-333-9055</p> <p><small>Test America's services under this CoC shall be performed in accordance with the TACs within Blanket Service Agreement # 2015-18. Test America by and between Haley &amp; Aldrich, Inc. its subsidiaries and affiliates, and Test America Laboratories, Inc.</small></p> <p><b>Sampler:</b> Neal Smith</p>	<p><b>Project:</b>                  Boeing-SSFL NPDES                  Permit 2019                  Quarterly Outfall 001, 002, 011, 018                  Outfall 002                  Comp</p> <p><b>Project Manager:</b> Katherine Miller                  520.289.8606, 520.904.6644 (cell)</p> <p><b>Field Manager:</b> Mark Dominick                  978.234.5033, 818.599.0702 (cell)</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Sample Description</th> <th>Sample ID</th> <th>Sampling Date/Time</th> <th>Sample Matrix</th> <th>Container Type</th> <th># of Cont</th> <th>Preservative</th> <th>Bottle #</th> <th>MSMSD</th> <th>R</th> <th>R</th> <th>R</th> <th>R</th> <th>R</th> <th>R</th> <th>GRSW</th> <th>GRSW</th> <th>GRSW</th> <th>GRSW</th> <th>ALY</th> <th>Comments</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td>WM</td> <td>1 L Poly</td> <td>1</td> <td>None</td> <td>190</td> <td>No</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Filter and preserve w/in 24hrs of receipt at lab at CF001,002,011, or 018</td> </tr> <tr> <td></td> <td></td> <td></td> <td>WM</td> <td>500 mL Poly</td> <td>1</td> <td>HNO<sub>3</sub></td> <td>80</td> <td>No</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>at CF001,002,011, or 018</td> </tr> <tr> <td></td> <td></td> <td></td> <td>WM</td> <td>1L Poly</td> <td>1</td> <td>None</td> <td>200</td> <td>No</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Filter and preserve w/in 24hrs of receipt at lab at CF001,002,011, or 018</td> </tr> <tr> <td></td> <td>Outfall002_20191205_Comp_F</td> <td>12/5/2018</td> <td>WM</td> <td>1 L Glass Amber</td> <td>2</td> <td>None</td> <td>250</td> <td>No</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Chlordane, DDD, DDE, DDT, dieldrin, PCBs, toxaphene at CF001,002,011, or 018</td> </tr> <tr> <td></td> <td></td> <td></td> <td>WM</td> <td>borosilicate vials</td> <td>1</td> <td>None</td> <td>320</td> <td>No</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Sample receiving DO NOT OPEN BAG Bag to be opened in Mercury Prep. using clean procedures</td> </tr> <tr> <td></td> <td></td> <td></td> <td>WM</td> <td>500 mL Poly</td> <td>1</td> <td>NaOH</td> <td>220</td> <td>No</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Unfiltered and unpreserved analysis. 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Separate RAD onto another workorder. Analyze duplicate, not MSMSD				WM	2.5 Gal Cube	1	None	225	No												Only test if first or second rain events of the year.				WM	1 L Glass Amber	1	None	230	No																WM	1 Gal Cube	1	None	285	No																WM	1 Gal Cube	1	None	285	No												
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<p><b>Relinquished By:</b> Rachel Hohn 12/05/19 HBA 13:10                  Company: HBA</p>		<p><b>Received By:</b> Will Reiver 12/15/19 13:10                  Date/Time: 12/15/19 13:10</p>		<p><b>Turn-around time (Check):</b>                  24 Hour: _____ 72 Hour: _____ 10 Day: _____ X                  48 Hour: _____ 5 Day: _____ Normal: _____</p>																																																																																																																																																																																																																																					
<p><b>Relinquished By:</b> Will Reiver 12/15/19 1637                  Company: HBA</p>		<p><b>Received By:</b> Will Reiver 12/15/19 16:37                  Date/Time: 12/15/19 16:37</p>		<p><b>Sample Integrity (Check):</b>                  intact: _____ On Ice: _____</p>																																																																																																																																																																																																																																					
<p><b>Relinquished By:</b> _____                  Company: _____</p>		<p><b>Received By:</b> _____                  Date/Time: _____</p>		<p><b>Data Requirements (Check):</b>                  Store samples for 6 months: _____                  No Level IV: _____ All Level IV: _____ X</p>																																																																																																																																																																																																																																					



CHAIN OF CUSTODY FORM

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055			Project: Boeing-SSFL NPDES Permit 2019 Quarterly Outfall [001, 002, 011, 018] Outfall 002 Comp			ANALYSIS REQUIRED													
TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement # 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc Sampler: Neal Smith			Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 978.234.5033, 818.599.0702 (cell)			Total Recoverable Metals: (E200.7); Zn (E200.8); Cu, Pb, Cd, Se	TCDD (and all congeners) (E1613E)	BOD5 (20 degrees C) (E405.1 (SM5210B_BODCalc))	Surfactants (MBAS) (SM5540C/E425.1)	Cl-, SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Perchlorate (E300)	Turbidity, TDS (SM2540C/E180.1)	TSS (160.2 (SM2540D))	Ammonia-N (350.2)	alpha-BHC (E808)	2,4,6-TCP, 2,4-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, PCP (SVOCs E625)	Total Recoverable Metals: Mercury (E245.1)	Total Recoverable Metals: (E200.7) Fe, Mn	Comments	
Sample Description	Sample I D	Sampling Date/Time	Sample Matrix	Container Type	# of Cont	Preservative	Bottle #	MS/MSD											
Outfall 002	Outfall002_20191205_Comp	12/5/2019 6950	WM	500 mL Poly	1	HNO3	90	No	X										
			WM	1 L Glass Amber	2	None	110	No		X									
			WM	1L Poly	1	None	115	No			X								
			WM	500 mL Poly	2	None	120	No				X							
			WM	500 mL Poly	2	None	130	No					X						
			WM	500 mL Poly	1	None	150	No					X						
			WM	500 mL Poly	1	H2SO4	160	No						X					
			WM	1 L Glass Amber	2	None	170	No							X				
			WM	1 L Glass Amber	2	None	180	No								X			
			WM	1L Poly	1	None	185	No					X						
Outfall002_20191205_Comp_Extra		12/5/2019 6950	WM	1 L Glass Amber	2	None	110	No			H							Hold	
			WM	500 mL Poly	2	None	120	No					H					Hold	
			WM	500 mL Poly	2	None	130	No					H					Hold	
			WM	1 L Glass Amber	2	None	170	No							H			Hold	
			WM	1 L Glass Amber	2	None	180	No								H		Hold	



Relinquished By <i>Raciel Mohr</i>	Date/Time 12/05/19	Company HBA 1310	Received By <i>Will Rivoa</i>	Date/Time 12/5/19 1310	Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: <input checked="" type="checkbox"/> _____ 48 Hour: _____ 5 Day: _____ Normal: _____
Relinquished By <i>Will Rivoa</i>	Date/Time 12/5/19	Company 1637	Received By <i>[Signature]</i>	Date/Time 12/5/19/16.3	Sample Integrity: (Check) Intact: _____ On Ice: _____
Relinquished By	Date/Time	Company	Received By	Date/Time	Store samples for 6 months Data Requirements: (Check) No Level IV: _____ All Level IV: <input checked="" type="checkbox"/> _____

1.6/1.8, 0.8/1.0, 2.4/2.6, 1.9/2.1, 2.3/2.5 #89

AB

CHAIN OF CUSTODY FORM

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108				Project: Boeing-SSFL NPDES Permit 2019 Quarterly Outfall [001, 002, 011, 018] Outfall 002 Comp				R	R	R	R	QRSW	QRSW	QRSW	ALY	Comments	
Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel: 949-260-3269 Cell: 949-333-9055				Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)				Total Dissolved Metals: (E200.7); Zn, Fe (E200.8); Cu, Pb, Cd, Se Cyanide (SM4500-CN-E / E335.2) Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (H-3) (E906.0), Sr-90 (E905.0), Total Combined Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1) Chronic Toxicity - Seleniastrium (EPA-821-R-02-013) Total Dissolved Metals: Mercury (E245.1) Priority Pollutants+Pesticides+PCBs (E608) Total Recoverable Metals: (E200.7); Hardness as CaCO3 Total Dissolved Metals: (E200.7); Hardness as CaCO3 * Chlorpyrifos Diazinon (E525.2)									
Test America's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement # 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and Test America Laboratories Inc.				Field Manager: Mark Dominick 978.234.5033, 818.599.0702 (cell)													
Sampler: Neal Smith																	
Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont	Preservative	Bottle #	MS/MSD									
			WM	1 L Poly	1	None	190	No						X		Filter and preserve w/in 24hrs of receipt at lab at OF001,002,011, or 018	
			WM	500 mL Poly	1	HNO <sub>3</sub>	80	No						X		at OF001,002,011, or 018	
Outfall 002	Outfall002_20191205_Comp_F	12/5/2019	WM	1L Poly	1	None	200	No	X							Filter and preserve w/in 24hrs of receipt at lab at OF001,002,011, or 018	
			WM	1 L Glass Amber	2	None	250	No				X				Chlordane, DDD, DDE, DDT, dieldrin, PCBs, toxaphene at OF001,002,011, or 018	
			WM	borosilicate vials	1	None	320	No				X				Sample receiving DO NOT OPEN BAG Bag to be opened in Mercury Prep using clean procedures	
	Outfall002_20191205_Comp	12/5/2019	WM	500 mL Poly	1	NaOH	220	No		X							
			WM	2.5 Gal Cube	1	None	225	No					X			Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD	
			WM	1 L Glass Amber	1	None	230	No								Only test if first or second rain events of the year	
			WM	1 Gal Cube	1	None	235	No								* from non-preserved extra bottle	

Relinquished By: Rachel Hahn 12/05/19 H&A 13:10	Received By: Will Reiver 12/5/19 13:10	Turn-around time. (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: <input checked="" type="checkbox"/> _____ 48 Hour: _____ 5 Day: _____ Normal: _____
Relinquished By: Will Reiver 12/5/19 1637	Received By: [Signature] 12/15/19 16:3	Sample Integrity (Check) Intact: _____ On Ice: _____
Relinquished By:	Received By:	Store samples for 6 months. Data Requirements. (Check) No Level IV: _____ All Level IV: <input checked="" type="checkbox"/> _____



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## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-256464-3

**Login Number: 256464**

**List Number: 1**

**Creator: Soderblom, Tim**

**List Source: Eurofins Irvine**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-256464-3

**Login Number: 256464**

**List Number: 2**

**Creator: Harris, Lorin C**

**List Source: Eurofins TestAmerica, St. Louis**

**List Creation: 12/07/19 10:54 AM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-3

## Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

			Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)		
440-256464-1	Outfall002_20191205_Comp	75.3		
600-196984-B-9-A MS	Matrix Spike	91.4		
600-196984-B-9-B MSD	Matrix Spike Duplicate	88.6		
LCS 160-453438/1-A	Lab Control Sample	97.2		
MB 160-453438/18-A	Method Blank	105		
<b>Tracer/Carrier Legend</b>				
Ba Carrier = Ba Carrier				

## Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

				Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)		
440-256464-1	Outfall002_20191205_Comp	75.3	86.3		
600-196984-B-9-C MS	Matrix Spike	91.4	89.6		
600-196984-B-9-D MSD	Matrix Spike Duplicate	88.6	86.3		
LCS 160-453444/1-A	Lab Control Sample	97.2	88.7		
MB 160-453444/18-A	Method Blank	105	88.7		
<b>Tracer/Carrier Legend</b>					
Ba Carrier = Ba Carrier					
Y Carrier = Y Carrier					

## Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

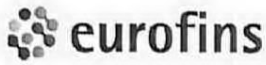
				Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Sr Carrier (40-110)	Y Carrier (40-110)		
440-256464-1	Outfall002_20191205_Comp	72.9	93.1		
LCS 160-453482/1-A	Lab Control Sample	77.7	96.1		
LCSD 160-453482/2-A	Lab Control Sample Dup	82.8	96.4		
MB 160-453482/4-A	Method Blank	80.9	92.0		
<b>Tracer/Carrier Legend</b>					
Sr Carrier = Sr Carrier					
Y Carrier = Y Carrier					

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

			Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	uranium-232 (30-110)		
440-256464-1	Outfall002_20191205_Comp	74.3		
LCS 160-453442/2-A	Lab Control Sample	56.7		
LCSD 160-453442/3-A	Lab Control Sample Dup	51.6		
MB 160-453442/1-A	Method Blank	67.4		
<b>Tracer/Carrier Legend</b>				
Uranium-232 = Uranium-232				



440-256464 Field Sheet

Tracking #: 1119-9741-8950

Job: \_\_\_\_\_

SO /  / FO / SAT / 2-Day / Ground / UPS / CDO / Courier  
GSO / OnTrac / Goldstreak / USPS / Other \_\_\_\_\_

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Notes: \_\_\_\_\_  
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Therm. ID: AK-11 Corr. Factor: (~~0~~-) 0.4 °C

Ice  Wet  Gel \_\_\_\_\_ Other \_\_\_\_\_

Cooler Custody Seal: Seal

Cooler ID: X

Temp Observed: 1.3 °C Corrected: 1.7 °C  
From: Temp Blank  Sample

During Initial Triage	Yes	No	NA
Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature is acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CoC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Initials: JG Date: 12/7/19

During Labeling	Yes	No	NA
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample custody seal?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample date/times are provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appropriate containers are used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample bottles are completely filled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zero headspace?*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Perchlorate has headspace? (Methods 314, 331, 6850)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Multiphasic samples are not present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NCM Filed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Initials: PK Date: 12/09/19

\*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

WRIA



## ANALYTICAL REPORT

Eurofins Irvine  
17461 Derian Ave  
Suite 100  
Irvine, CA 92614-5817  
Tel: (949)261-1022

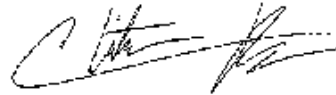
Laboratory Job ID: 440-256464-5

Client Project/Site: Quarterly Outfall 002 Comp

**For:**

Haley & Aldrich, Inc.  
400 E Van Buren St.  
Suite 545  
Phoenix, Arizona 85004

Attn: Katherine Miller



---

Authorized for release by:  
1/16/2020 10:01:16 AM

Christian Bondoc, Project Manager I  
(949)260-3218  
[christian.bondoc@testamericainc.com](mailto:christian.bondoc@testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



---

Christian Bondoc  
Project Manager I  
1/16/2020 10:01:16 AM



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# Sample Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-5

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-256464-1	Outfall002_20191205_Comp	Water	12/05/19 09:50	12/05/19 16:37	

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# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-5

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**Job ID: 440-256464-5**

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**Laboratory: Eurofins Irvine**

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**Narrative**

**Job Narrative  
440-256464-5**

**Comments**

No additional comments.

**Receipt**

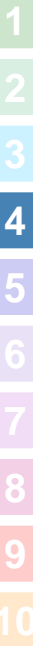
The samples were received on 12/5/2019 4:37 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 1.0° C, 1.8° C, 2.1° C, 2.5° C and 2.6° C.

**Subcontract non-Sister**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

**Subcontract Work**

Method Weck-525.2-Diazinon and Chlorpyrifos: This method was subcontracted to Weck Laboratories, Inc.. The subcontract laboratory certification is different from that of the facility issuing the final report.



# Method Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-5

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Method	Method Description	Protocol	Laboratory
Subcontract	Weck-525.2-Diazinon and Chlorpyrifos	None	Weck Lab

---

**Protocol References:**

None = None

**Laboratory References:**

Weck Lab = Weck Laboratories, Inc., 14859 East Clark Avenue, City of Industry, CA 917451396



# Definitions/Glossary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-5

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-5

## Laboratory: Eurofins Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State Program	CA ELAP 2706	06-30-20

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**Work Orders:** 9L17025

**Project:** 440-256464-5

**Attn:** TestAmerica, Irvine

**Client:** Eurofins Calscience - Irvine  
17461 Derian Ave, Suite 100  
Irvine, CA 92614

**Report Date:** 1/08/2020

**Received Date:** 12/17/2019

**Turnaround Time:** Normal

**Phones:** (949) 261-1022

**Fax:** (949) 260-3297

**P.O. #:**

**Billing Code:**

Dear TestAmerica, Irvine,

Enclosed are the results of analyses for samples received 12/17/19 with the Chain-of-Custody document. The samples were received in good condition, at 2.8 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

## Sample Results

Sample: Outfall002\_20191205\_Comp (440-256464-1)  
9L17025-01 (Water)

Sampled: 12/05/19 9:50 by Client

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Method:</b> EPA 525.2M							
<b>Batch ID:</b> W9L1134							
<b>Instr:</b> GCMS13							
<b>Prepared:</b> 12/19/19 10:13							
<b>Analyst:</b> EFC							
Chlorpyrifos	ND	6.9	10	ng/l	1	01/07/20	
Diazinon	ND	5.2	10	ng/l	1	01/07/20	
<i>Surrogate(s)</i>							
1,3-Dimethyl-2-nitrobenzene	112%		76-128	Conc: 558		01/07/20	
Triphenyl phosphate	203%		40-163	Conc: 1020		01/07/20	S-GC



WECK LABORATORIES, INC.

# Certificate of Analysis

FINAL REPORT

## Quality Control Results

### Semivolatile Organics - Low Level by Tandem GC/MS/MS

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Qualifier
<b>Blank (W9L1134-BLK1)</b>					Prepared: 12/19/19 Analyzed: 01/07/20						
Chlorpyrifos	ND	6.9	10	ng/l							
Diazinon	ND	5.2	10	ng/l							
<i>Surrogate(s)</i>											
1,3-Dimethyl-2-nitrobenzene	503			ng/l	500		101	76-128			
Triphenyl phosphate	779			ng/l	500		156	40-163			
<b>LCS (W9L1134-BS1)</b>					Prepared: 12/19/19 Analyzed: 01/07/20						
Chlorpyrifos	86.7	6.9	10	ng/l	50.0		173	37-169			Q-08
Diazinon	63.3	5.2	10	ng/l	50.0		127	43-152			
<i>Surrogate(s)</i>											
1,3-Dimethyl-2-nitrobenzene	549			ng/l	500		110	76-128			
Triphenyl phosphate	804			ng/l	500		161	40-163			
<b>LCS Dup (W9L1134-BSD1)</b>					Prepared: 12/19/19 Analyzed: 01/07/20						
Chlorpyrifos	86.8	6.9	10	ng/l	50.0		174	37-169	0.2	30	Q-08
Diazinon	65.7	5.2	10	ng/l	50.0		131	43-152	4	30	
<i>Surrogate(s)</i>											
1,3-Dimethyl-2-nitrobenzene	504			ng/l	500		101	76-128			
Triphenyl phosphate	785			ng/l	500		157	40-163			



WECK LABORATORIES, INC.

# Certificate of Analysis

FINAL REPORT

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## Notes and Definitions

Item	Definition
Q-08	High bias in the QC sample does not affect sample result since analyte was not detected or below the reporting limit.
S-GC	Surrogate recovery outside of control limits due to a possible matrix effect. The data was accepted based on valid recovery of the remaining surrogate.
% Rec	Percent Recovery
Dil	Dilution
dry	Sample results reported on a dry weight basis
MDA	Minimum Detectable Activity
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
NR	Not Reportable
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

### Reviewed by:



Regina Giancola  
Project Manager



ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO17025 ANAB #L2457.01 • LACSD #10143 •  
 NELAP-CA #04229CA • NELAP-OR #4047 • NJ-DEP #CA015 • NV-DEP #NAC 445A • SCAQMD #93LA1006

*This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.*

# CHAIN OF CUSTODY FORM

<b>Client Name/Address:</b> Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Unvashi Patel 17461 Darian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		<b>Project:</b> Boeing-SSFL NPDES Permit 2019 Quarterly Outfall [001, 002, 011, 018] Outfall 002 Comp		<b>Project Manager:</b> Katherine Miller 520.289.8606; 520.904.6944 (cell) <b>Field Manager:</b> Mark Dominick 978.234.5033; 818.599.0702 (cell)		<b>ANALYSIS REQUIRED</b>	
Test America's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-19-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc <b>Sampler:</b> Neal Smith		Sample ID Outfall002_20191205_Comp		Sampling Date/Time 12/5/2019		Sample Matrix WM	
Container Type 500 mL Poly		# of Cont 1		Preservative HNO <sub>3</sub>		Bottle # 90	
Total Recoverable Metals: (E200.7) Zn (E200.8) Cu, Pb, Cd, Se		X		Turbidity, TDS (SM2540C/E180.1)		X	
Total Recoverable Metals: Mercury (E245.1)		X		Chlorate (E300)		X	
Total Recoverable Metals: (E200.7) Fe, Mn		X		Surfactants (MBAs) (SM540C/E425.1)		X	
Total Recoverable Metals: (E200.7) Fe, Mn		X		BOD5 (20 degrees C) (E405.1)		X	
Total Recoverable Metals: (E200.7) Fe, Mn		X		TCDD (and all congeners) (E1613B)		X	
Total Recoverable Metals: (E200.7) Fe, Mn		X		Ammonia-N (350.2)		X	
Total Recoverable Metals: (E200.7) Fe, Mn		X		TSS (160.2) (SM2540D)		X	
Total Recoverable Metals: (E200.7) Fe, Mn		X		alpha-BHC (E608)		X	
Total Recoverable Metals: (E200.7) Fe, Mn		X		2,4,6-TCP, 2,4-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, PCP (SVOCs E625)		X	
Total Recoverable Metals: (E200.7) Fe, Mn		X		48 hours Holding Time NO <sub>3</sub> & NO <sub>2</sub>		X	
Total Recoverable Metals: (E200.7) Fe, Mn		X		48 hours Holding Time for Turbidity		X	
Total Recoverable Metals: (E200.7) Fe, Mn		X		Hold		Hold	
Total Recoverable Metals: (E200.7) Fe, Mn		X		Hold		Hold	
Total Recoverable Metals: (E200.7) Fe, Mn		X		Hold		Hold	
Total Recoverable Metals: (E200.7) Fe, Mn		X		Hold		Hold	
Total Recoverable Metals: (E200.7) Fe, Mn		X		Hold		Hold	

Relinquished By: Rachael Klein Date/Time: 12/05/19 10:00 AM Company: 1310  
 Relinquished By: Walter Rivera Date/Time: 12/5/19 Company: 1637  
 Relinquished By: Walter Rivera Date/Time: 12/5/19 12:10 Company: 1310  
 Relinquished By: Walter Rivera Date/Time: 12/5/19 12:10 Company: 1310

1.6/1.8; 0.8/1.0; 2.4/2.6; 1.9/2.1; 2.3/2.5 #89



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# CHAIN OF CUSTODY FORM

Test America

Client Name/Address  
 Haley & Aldrich  
 5333 Mission Center Rd Suite 300  
 San Diego, CA 92108

Test America Contact: Urvashi Patel  
 17451 DeJalen Ave Suite #100  
 Irvine CA 92614  
 Tel 949-260-3289  
 Cell 949-333-9055

Project:  
 Boeing-SSFL NPDES  
 Permit 2019  
 Quarterly Outfall 001, 002, 011, 018  
 Outfall 002  
 Comp

Project Manager: Katherine Miller  
 520.289.8606, 520.904.6644 (cell)  
 Field Manager: Mark Dominick  
 978.234.5033, 818.599.0702 (cell)

Test America's services under this CoC shall be performed in accordance with the TACs within Blanket Service Agreement 2015-18. Test America by and between Haley & Aldrich, Inc. its subsidiaries and affiliates, and Test America Laboratories, Inc.

Sampler: Neal Smith

Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont	Preservative	Bottle #	MS/MSD	Total Dissolved Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se	Cyanide (SM4500-CN-E / E335.2)	Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (T-3) (E908.0), Sr-90 (E905.0), Total Combined Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1)	Chronic Toxicity - Selenium (EPA-821-R-02-013)	Total Dissolved Metals: Mercury (E245.1)	Priority Pollutants-Pesticides+PCBs (E608)	Total Recoverable Metals: (E200.7): Hardness as CaCO3	Total Dissolved Metals: (E200.7): Hardness as CaCO3	Comments
Outfall 002	Outfall002_20191205_Comp_F	12/5/2019 10:50	WM	1 L Poly	1	None	190	No									Filter and preserve w/in 24hrs of receipt at lab at CF001,002,011, or 018
			WM	500 mL Poly	1	HNO <sub>3</sub>	80	No									at CF001,002,011, or 018
			WM	1L Poly	1	None	200	No	X								Filter and preserve w/in 24hrs of receipt at lab at CF001,002,011, or 018
			WM	1 L Glass Amber	2	None	250	No						X			Chlordane, DDD, DDE, DDT, dieldrin, PCBs, toxaphene at CF001,002,011, or 018
			WM	boreisicate vials	1	None	320	No									Sample receiving DO NOT OPEN BAG Bag to be opened in Mercury Prep using clean procedures
			WM	500 mL Poly	1	NaOH	220	No	X								Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD
			WM	2.5 Gal Cube	1	None	225	No			X						Only test if first or second rain events of the year.
			WM	1 L Glass Amber	1	None	230	No									
			WM	1 Gal Cube	1	None	285	No									

Relinquished By: Rachel Horn 12/05/19 HBA 13:10  
 Date/Time: 12/15/19 13:10  
 Company: HBA

Received By: Well River  
 Date/Time: 12/15/19 16:37  
 Company: Well River

Turn-around time: (Check)  
 24 Hour: \_\_\_\_\_ 72 Hour: \_\_\_\_\_ 10 Day: \_\_\_\_\_ X  
 48 Hour: \_\_\_\_\_ 5 Day: \_\_\_\_\_ Normal: \_\_\_\_\_

Sample Integrity (Check)  
 intact: \_\_\_\_\_ On Ice: \_\_\_\_\_  
 Store samples for 6 months: \_\_\_\_\_  
 Data Requirements: (Check)  
 No Level IV: \_\_\_\_\_ All Level IV: \_\_\_\_\_ X



CHAIN OF CUSTODY FORM

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055			Project: Boeing-SSFL NPDES Permit 2019 Quarterly Outfall [001, 002, 011, 018] Outfall 002 Comp			ANALYSIS REQUIRED																	
TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement # 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc Sampler: Neal Smith			Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 978.234.5033, 818.599.0702 (cell)			Total Recoverable Metals: (E200.7); Zn (E200.8); Cu, Pb, Cd, Se TCDD (and all congeners) (E1613E) BOD5 (20 degrees C) (E405.1) (SM5210B_BODCalc) Surfactants (MBAS) (SM5540C/E425.1) Cl-, SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Perchlorate (E300) Turbidity, TDS (SM2540C/E180.1) TSS (160.2 (SM2540D)) Ammonia-N (350.2) alpha-BHC (E808) 2,4,6-TCP, 2,4-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, PCP (SVOCs E625) Total Recoverable Metals: Mercury (E245.1) Total Recoverable Metals: (E200.7) Fe, <del>Mn</del>																	
Comments JUL 12/5/19 Outfall-004 analyze for Fe and Mn Outfalls 002 and 014 analyze for Fe only 48 hours Holding Time NO3 & NO2 48 hours Holding Time for Turbidity Hold Hold Hold Hold Hold																							
Sample Description	Sample I D	Sampling Date/Time	Sample Matrix	Container Type	# of Cont	Preservative	Bottle #	MS/MSD	Total Recoverable Metals: (E200.7); Zn (E200.8); Cu, Pb, Cd, Se	TCDD (and all congeners) (E1613E)	BOD5 (20 degrees C) (E405.1) (SM5210B_BODCalc)	Surfactants (MBAS) (SM5540C/E425.1)	Cl-, SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Perchlorate (E300)	Turbidity, TDS (SM2540C/E180.1)	TSS (160.2 (SM2540D))	Ammonia-N (350.2)	alpha-BHC (E808)	2,4,6-TCP, 2,4-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, PCP (SVOCs E625)	Total Recoverable Metals: Mercury (E245.1)	Total Recoverable Metals: (E200.7) Fe, <del>Mn</del>			
Outfall 002	Outfall002_20191205_Comp	12/5/2019 6950	WM	500 mL Poly	1	HNO3	90	No	X											X	X		
			WM	1 L Glass Amber	2	None	110	No			X												
			WM	1L Poly	1	None	115	No				X											
			WM	500 mL Poly	2	None	120	No					X										
			WM	500 mL Poly	2	None	130	No						X									
			WM	500 mL Poly	1	None	150	No							X								
			WM	500 mL Poly	1	H2SO4	160	No								X							
			WM	1 L Glass Amber	2	None	170	No											X				
			WM	1 L Glass Amber	2	None	180	No															
			WM	1L Poly	1	None	185	No									X						
Outfall002_20191205_Comp_Extra	12/5/2019 6950	WM	1 L Glass Amber	2	None	110	No			H													
		WM	500 mL Poly	2	None	120	No					H											
		WM	500 mL Poly	2	None	130	No						H										
		WM	1 L Glass Amber	2	None	170	No											H					
		WM	1 L Glass Amber	2	None	180	No												H				



Relinquished By <i>Raciel Mohr</i>	Date/Time 12/05/19	Company HBA 1310	Received By <i>Will Rivoa</i>	Date/Time 12/5/19 1310	Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: <input checked="" type="checkbox"/> 48 Hour: _____ 5 Day: _____ Normal: _____
Relinquished By <i>Will Rivoa</i>	Date/Time 12/5/19	Company 1637	Received By <i>Will Rivoa</i>	Date/Time 12/5/19/16.37	Sample Integrity: (Check) Intact: _____ On Ice: _____
Relinquished By	Date/Time	Company	Received By	Date/Time	Store samples for 6 months Data Requirements: (Check) No Level IV: _____ All Level IV: <input checked="" type="checkbox"/>

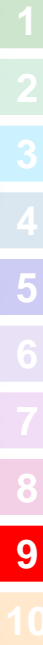
1.6/1.8, 0.8/1.0, 2.4/2.6, 1.9/2.1, 2.3/2.5 #89

AB

CHAIN OF CUSTODY FORM

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108				Project: Boeing-SSFL NPDES Permit 2019 Quarterly Outfall [001, 002, 011, 018] Outfall 002 Comp				R	R	R	R	QRSW	QRSW	QRSW	ALY	Comments	
Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel: 949-260-3269 Cell: 949-333-9055				Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)				Total Dissolved Metals: (E200.7); Zn, Fe (E200.8); Cu, Pb, Cd, Se Cyanide (SM4500-CN-E / E335.2) Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (H-3) (E906.0), Sr-90 (E905.0), Total Combined Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1) Chronic Toxicity - Seleniastrium (EPA-821-R-02-013) Total Dissolved Metals: Mercury (E245.1) Priority Pollutants+Pesticides+PCBs (E608) Total Recoverable Metals: (E200.7); Hardness as CaCO3 Total Dissolved Metals: (E200.7); Hardness as CaCO3 * Chlorpyrifos Diazinon (E525.2)									
Test America's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement # 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and Test America Laboratories Inc.				Field Manager: Mark Dominick 978.234.5033, 818.599.0702 (cell)													
Sampler: Neal Smith																	
Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont	Preservative	Bottle #	MS/MSD									
			WM	1 L Poly	1	None	190	No						X		Filter and preserve w/in 24hrs of receipt at lab at OF001,002,011, or 018	
			WM	500 mL Poly	1	HNO <sub>3</sub>	80	No						X		at OF001,002,011, or 018	
Outfall 002	Outfall002_20191205_Comp_F	12/5/2019 0950	WM	1L Poly	1	None	200	No	X							Filter and preserve w/in 24hrs of receipt at lab at OF001,002,011, or 018	
			WM	1 L Glass Amber	2	None	250	No				X				Chlordane, DDD, DDE, DDT, dieldrin, PCBs, toxaphene at OF001,002,011, or 018	
			WM	borosilicate vials	1	None	320	No				X				Sample receiving DO NOT OPEN BAG Bag to be opened in Mercury Prep using clean procedures	
	Outfall002_20191205_Comp	12/5/2019 0950	WM	500 mL Poly	1	NaOH	220	No		X							
			WM	2.5 Gal Cube	1	None	225	No					X			Unfiltered and unpreserved analysis Separate RAD onto another workorder Analyze duplicate, not MS/MSD	
			WM	1 L Glass Amber	1	None	230	No								Only test if first or second rain events of the year	
			WM	1 Gal Cube	1	None	235	No								* from non-preserved extra bottle	

Relinquished By: Rachel Hahn 12/05/19 H&A 13:10	Received By: [Signature] 12/5/19 13:10	Turn-around time. (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: <input checked="" type="checkbox"/> _____ 48 Hour: _____ 5 Day: _____ Normal: _____
Relinquished By: [Signature] 12/5/19 1637	Received By: [Signature] 12/5/19 16:37	Sample Integrity (Check) Intact: _____ On Ice: _____
Relinquished By: _____	Received By: _____	Store samples for 6 months. Data Requirements. (Check) No Level IV: _____ All Level IV: <input checked="" type="checkbox"/> _____



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## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-256464-5

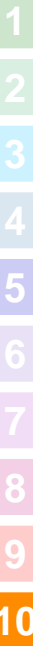
**Login Number: 256464**

**List Number: 1**

**Creator: Soderblom, Tim**

**List Source: Eurofins Irvine**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





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**DATA VALIDATION REPORT**

**Boeing SSFL NPDES**

**SAMPLE DELIVERY GROUP: 440-258020-1**

**Prepared for**

Haley & Aldrich, Inc.  
600 South Meyer Avenue, Suite 100  
Tucson, Arizona 85701

**16 January 2020**

**MEC<sup>x</sup>, Inc.**  
12269 East Vassar Drive  
Aurora, Colorado 80014

[www.mecx.net](http://www.mecx.net)





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- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



## I. INTRODUCTION

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**Task Order Title:** Boeing SSFL NPDES

**Contract:** 40458-078 and 40458-083

**MEC<sup>X</sup> Project No.:** 1272.003D.01 002

**Sample Delivery Group:** 440-258020-1

**Project Manager:** Katherine Miller

**Matrix:** Water

**QC Level:** IV

**No. of Samples:** 1

**No. of Reanalyses/Dilutions:** 0

**Laboratory:** TestAmerica-Irvine

**TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Matrix	Collection	Method
OUTFALL002_20191223_ GRAB	440-258020-3	WM	12/23/2019 9:30:00 AM	E120.1



## II. SAMPLE MANAGEMENT

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According to the case narrative, Login Sample Receipt Checklist, and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-258020-1:

- The laboratory received the sample in this SDG on ice and within the temperature limits of <6 degrees Celsius ( $^{\circ}\text{C}$ ) and  $>0^{\circ}\text{C}$ .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the Login Sample Receipt Checklist, custody seals were absent on the coolers; however, no evidence of tampering was noted.
- It should be noted that, although marked for validation, no data was submitted for field parameter dissolved oxygen. This parameter was not reviewed for validation.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination ( $r^2$ ) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



### III. METHOD EPA 120.1 — SPECIFIC CONDUCTANCE

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M. Hilchey of MEC<sup>X</sup> reviewed the SDG on January 16, 2020.

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC<sup>X</sup> Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 120.1* and the *National Functional Guidelines for Inorganic Superfund Method Data Review (2017)*.

#### III.1. HOLDING TIMES

The QAPP holding time, 28 days for specific conductance, was met.

#### III.2. CALIBRATION

Probe calibration data was not provided. The initial and continuing calibration verification recoveries met laboratory control limits.

#### III.3. QUALITY CONTROL SAMPLES

##### III.3.1. METHOD BLANKS

The method blank had no detection of specific conductivity.

##### III.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recovery met QAPP control limits.

##### III.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

##### III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses are not applicable to this method.

#### III.4. SAMPLE RESULT VERIFICATION

Raw data was not provided; therefore, sample results could not be verified against raw data. Reported nondetects are valid to the MDL.

#### III.5. FIELD QC SAMPLES

MEC<sup>X</sup> evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC<sup>X</sup> used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

##### III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

##### III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.



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# Validated Sample Result Forms: 4402580201

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*Analysis Method*    *E120.1*

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**Sample Name**    OUTFALL002\_20191223\_GRAB    **Matrix Type:**    WM    **Result Type:**    TRG

**Sample Date:**    12/23/2019 9:30:00 AM    **Validation Level:**    8

**Lab Sample Name:**    440-258020-3

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<b>Analyte</b>	<b>Fraction:</b>	<b>CAS No</b>	<b>Result Value</b>	<b>RL</b>	<b>MDL</b>	<b>Result Units</b>	<b>Lab Qualifier</b>	<b>Validation Qualifier</b>	<b>Validation Notes</b>
Specific Conductance	N	CONDSPEC	510	1.0	1.0	umhos/c			

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## ANALYTICAL REPORT

Eurofins TestAmerica, Irvine  
17461 Derian Ave  
Suite 100  
Irvine, CA 92614-5817  
Tel: (949)261-1022

Laboratory Job ID: 440-258020-1

Client Project/Site: Boeing-SSFL NPDES Permit 2019

**For:**

Haley & Aldrich, Inc.  
400 E Van Buren St.  
Suite 545  
Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:  
12/31/2019 4:52:02 PM

Christian Bondoc, Project Manager I  
(949)260-3218  
[christian.bondoc@testamericainc.com](mailto:christian.bondoc@testamericainc.com)

### LINKS

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*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



---

Christian Bondoc  
Project Manager I  
12/31/2019 4:52:02 PM



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# Sample Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Boeing-SSFL NPDES Permit 2019

Job ID: 440-258020-1

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-258020-3	Outfall002_20191223_Grab	Water	12/23/19 09:30	12/23/19 16:05	
440-258020-5	TB-20191223	Water	12/23/19 09:30	12/23/19 16:05	

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# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Boeing-SSFL NPDES Permit 2019

Job ID: 440-258020-1

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## Job ID: 440-258020-1

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Laboratory: Eurofins TestAmerica, Irvine

### Narrative

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#### Job Narrative 440-258020-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/23/2019 4:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 3.0° C and 3.7° C.

#### GC/MS VOA

Method 624.1: The laboratory control sample (LCS) for analytical batch 440-587719 recovered outside control limits for the following analytes: Carbon tetrachloride. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 624.1: The following volatile sample was analyzed with significant headspace in the sample container(s): TB-20191223 (440-258020-5). Significant headspace is defined as a bubble greater than 6 mm in diameter. Sample is received with headspace.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### General Chemistry

Method SM 2540F: Insufficient sample volume was available to perform a sample duplicate (DUP) associated with analytical batch 440-587847.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### Organic Prep

Methods 1664A, 1664B: Analysis for Silica Gel Treated - Hexane Extractable Material (SGT-HEM) was not performed for the following samples: (LCS 440-588629/2-A), (LCSD 440-588629/3-A) and (MB 440-588629/1-A). Since the HEM results for all samples requesting SGT were below the reporting limit (RL), the quality control samples did not undergo silica gel treatment. All HEM quality control criteria were met.

Methods 1664A, 1664B: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-588629 and analytical batch 440-588739. 1664 - The Laboratory Control Sample (LCS) was performed in duplicate to provide precision data for this batch

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

# Client Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Boeing-SSFL NPDES Permit 2019

Job ID: 440-258020-1

**Client Sample ID: Outfall002\_20191223\_Grab**

**Lab Sample ID: 440-258020-3**

**Date Collected: 12/23/19 09:30**

**Matrix: Water**

**Date Received: 12/23/19 16:05**

**Method: 624.1 - Volatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			12/24/19 10:40	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			12/24/19 10:40	1
Trichloroethene	ND		0.50	0.25	ug/L			12/24/19 10:40	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	108		60 - 140					12/24/19 10:40	1
Dibromofluoromethane (Surr)	113		60 - 140					12/24/19 10:40	1
Toluene-d8 (Surr)	107		60 - 140					12/24/19 10:40	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		4.8	1.3	mg/L		12/31/19 06:36	12/31/19 12:37	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Specific Conductance</b>	<b>510</b>		1.0	1.0	umhos/cm			12/27/19 08:39	1
<b>Settleable Solids</b>	<b>0.10</b>		0.10	0.10	mL/L/Hr			12/24/19 14:23	1

**Client Sample ID: TB-20191223**

**Lab Sample ID: 440-258020-5**

**Date Collected: 12/23/19 09:30**

**Matrix: Water**

**Date Received: 12/23/19 16:05**

**Method: 624.1 - Volatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			12/24/19 09:15	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			12/24/19 09:15	1
Trichloroethene	ND		0.50	0.25	ug/L			12/24/19 09:15	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		60 - 140					12/24/19 09:15	1
Dibromofluoromethane (Surr)	109		60 - 140					12/24/19 09:15	1
Toluene-d8 (Surr)	104		60 - 140					12/24/19 09:15	1

# Method Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Boeing-SSFL NPDES Permit 2019

Job ID: 440-258020-1

Method	Method Description	Protocol	Laboratory
624.1	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
120.1	Conductivity, Specific Conductance	MCAWW	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 2540F	Solids, Settleable	SM	TAL IRV
1664A	HEM and SGT-HEM (SPE)	1664A	TAL IRV

#### Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater"

#### Laboratory References:

TAL IRV = Eurofins TestAmerica, Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: Boeing-SSFL NPDES Permit 2019

Job ID: 440-258020-1

**Client Sample ID: Outfall002\_20191223\_Grab**

**Lab Sample ID: 440-258020-3**

**Date Collected: 12/23/19 09:30**

**Matrix: Water**

**Date Received: 12/23/19 16:05**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624.1		1	10 mL	10 mL	587719	12/24/19 10:40	AI	TAL IRV
Total/NA	Analysis	120.1		1			588120	12/27/19 08:39	XL	TAL IRV
Total/NA	Prep	1664A			1050 mL	1000 mL	588629	12/31/19 06:36	JC1	TAL IRV
Total/NA	Analysis	1664A		1			588739	12/31/19 12:37	JC1	TAL IRV
Total/NA	Analysis	SM 2540F		1	1000 mL	1 L	587847	12/24/19 14:23	ST	TAL IRV

**Client Sample ID: TB-20191223**

**Lab Sample ID: 440-258020-5**

**Date Collected: 12/23/19 09:30**

**Matrix: Water**

**Date Received: 12/23/19 16:05**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624.1		1	10 mL	10 mL	587719	12/24/19 09:15	AI	TAL IRV

**Laboratory References:**

TAL IRV = Eurofins TestAmerica, Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Boeing-SSFL NPDES Permit 2019

Job ID: 440-258020-1

## Method: 624.1 - Volatile Organic Compounds (GC/MS)

**Lab Sample ID: MB 440-587719/4**  
**Matrix: Water**  
**Analysis Batch: 587719**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			12/24/19 08:29	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			12/24/19 08:29	1
Trichloroethene	ND		0.50	0.25	ug/L			12/24/19 08:29	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		60 - 140		12/24/19 08:29	1
Dibromofluoromethane (Surr)	112		60 - 140		12/24/19 08:29	1
Toluene-d8 (Surr)	105		60 - 140		12/24/19 08:29	1

**Lab Sample ID: LCS 440-587719/1002**  
**Matrix: Water**  
**Analysis Batch: 587719**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	25.0	23.1		ug/L		92	19 - 212
1,2-Dichloroethane	25.0	27.1		ug/L		109	72 - 137
Trichloroethene	25.0	26.1		ug/L		105	75 - 138

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	103		60 - 140
Dibromofluoromethane (Surr)	105		60 - 140
Toluene-d8 (Surr)	99		60 - 140

**Lab Sample ID: 440-258020-3 MS**  
**Matrix: Water**  
**Analysis Batch: 587719**

**Client Sample ID: Outfall002\_20191223\_Grab**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	ND		10.0	10.6		ug/L		106	10 - 234
1,2-Dichloroethane	ND		10.0	10.7		ug/L		107	49 - 155
Trichloroethene	ND		10.0	11.5		ug/L		115	70 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	102		60 - 140
Dibromofluoromethane (Surr)	111		60 - 140
Toluene-d8 (Surr)	105		60 - 140

**Lab Sample ID: 440-258020-3 MSD**  
**Matrix: Water**  
**Analysis Batch: 587719**

**Client Sample ID: Outfall002\_20191223\_Grab**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	ND		10.0	10.6		ug/L		106	10 - 234	1	32
1,2-Dichloroethane	ND		10.0	10.9		ug/L		109	49 - 155	2	49
Trichloroethene	ND		10.0	11.3		ug/L		113	70 - 157	2	48

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Boeing-SSFL NPDES Permit 2019

Job ID: 440-258020-1

## Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-258020-3 MSD  
Matrix: Water  
Analysis Batch: 587719

Client Sample ID: Outfall002\_20191223\_Grab  
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	103		60 - 140
Dibromofluoromethane (Surr)	105		60 - 140
Toluene-d8 (Surr)	105		60 - 140

## Method: 120.1 - Conductivity, Specific Conductance

Lab Sample ID: MB 440-588120/3  
Matrix: Water  
Analysis Batch: 588120

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		1.0	1.0	umhos/cm			12/27/19 08:39	1

Lab Sample ID: LCS 440-588120/4  
Matrix: Water  
Analysis Batch: 588120

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Specific Conductance	1030	1000		umhos/cm		97	90 - 110

Lab Sample ID: 440-258161-D-1 DU  
Matrix: Water  
Analysis Batch: 588120

Client Sample ID: Duplicate  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Specific Conductance	1400		1440		umhos/cm		0	5

## Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-588629/1-A  
Matrix: Water  
Analysis Batch: 588739

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 588629

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		12/31/19 06:36	12/31/19 12:37	1

Lab Sample ID: LCS 440-588629/2-A  
Matrix: Water  
Analysis Batch: 588739

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 588629

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	34.0		mg/L		85	78 - 114

Lab Sample ID: LCSD 440-588629/3-A  
Matrix: Water  
Analysis Batch: 588739

Client Sample ID: Lab Control Sample Dup  
Prep Type: Total/NA  
Prep Batch: 588629

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HEM (Oil & Grease)	40.0	34.2		mg/L		86	78 - 114	1	11

Eurofins TestAmerica, Irvine

# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Boeing-SSFL NPDES Permit 2019

Job ID: 440-258020-1

## GC/MS VOA

### Analysis Batch: 587719

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258020-3	Outfall002_20191223_Grab	Total/NA	Water	624.1	
440-258020-5	TB-20191223	Total/NA	Water	624.1	
MB 440-587719/4	Method Blank	Total/NA	Water	624.1	
LCS 440-587719/1002	Lab Control Sample	Total/NA	Water	624.1	
440-258020-3 MS	Outfall002_20191223_Grab	Total/NA	Water	624.1	
440-258020-3 MSD	Outfall002_20191223_Grab	Total/NA	Water	624.1	

## General Chemistry

### Analysis Batch: 587847

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258020-3	Outfall002_20191223_Grab	Total/NA	Water	SM 2540F	

### Analysis Batch: 588120

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258020-3	Outfall002_20191223_Grab	Total/NA	Water	120.1	
MB 440-588120/3	Method Blank	Total/NA	Water	120.1	
LCS 440-588120/4	Lab Control Sample	Total/NA	Water	120.1	
440-258161-D-1 DU	Duplicate	Total/NA	Water	120.1	

### Prep Batch: 588629

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258020-3	Outfall002_20191223_Grab	Total/NA	Water	1664A	
MB 440-588629/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-588629/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-588629/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

### Analysis Batch: 588739

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258020-3	Outfall002_20191223_Grab	Total/NA	Water	1664A	588629
MB 440-588629/1-A	Method Blank	Total/NA	Water	1664A	588629
LCS 440-588629/2-A	Lab Control Sample	Total/NA	Water	1664A	588629
LCSD 440-588629/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	588629

# Definitions/Glossary

Client: Haley & Aldrich, Inc.  
Project/Site: Boeing-SSFL NPDES Permit 2019

Job ID: 440-258020-1

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Boeing-SSFL NPDES Permit 2019

Job ID: 440-258020-1

## Laboratory: Eurofins TestAmerica, Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State Program	CA ELAP 2706	06-30-20

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

# CHAIN OF CUSTODY FORM

Test America

<b>Client Name/Address:</b> Halley & Aldrich, Inc. 5333 Mission Center Rd Suite 300 San Diego, CA 92108  <b>Test America Contact:</b> Unvashi Patel 17461 Derran Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		<b>Project</b> Boeing-SSFL NPDES Permit 2019 Semiannual Outfall 003-007, 009, 010 Grab  <b>Project Manager:</b> Katherine Miller 520.289.8606, 520.904.6844 (cell)  <b>Field Manager:</b> Mark Dominick 978.234.5033, 818.589.0702 (cell)		<b>Field Readings</b> Field Readings (Include units) <b>TRAC FT9B</b> Time of Readings: <b>0926</b>  pH <b>7.40</b> pH unit Temp <b>49.6</b> (C/F)		Meter serial # Checked by: <i>[Signature]</i> Date/Time: <b>12-23-19/0926</b>  Comments				
<b>Sampler:</b> Dan Smith		Off & Crease (F164A-HEM)		ANALYSIS REQUIRED						
Sample Description Outfall 006 Outfall 009	Sample ID Outfall009_20191223_Grab Outfall009_20191223_Grab_Extra	Sampling Date/Time 12/23/2019/12:50 12/23/2019/10:05	Sample Matrix WM WM	Container Type 1 L Glass Amber 1 L Glass Amber	# of Cont. 2 2	Preservative HCl HCl	Bottle # 15 15	MSMSD No No	X H	Hold

Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quarterly, QRSW=Quarterly Receiving Water, S=Semi-Annual

Relinquished By: *[Signature]* Date/Time: 12-23-19/12:50  
 Company: HIA

Relinquished By: *[Signature]* Date/Time: 12/23/19 12:50  
 Company: [Signature]

Relinquished By: *[Signature]* Date/Time: 12/23/19 4:05  
 Company: DCS

Received By: *[Signature]* Date/Time: 12/23/19 12:50  
 Company: [Signature]

Received By: *[Signature]* Date/Time: 12/23/19 16:05  
 Company: TA (RV)

Turn-around time (Check): 24 Hour  72 Hour  10 Day   
 48 Hour  5 Day  Normal

Sample integrity (Check): intact  On ice   
 Store samples for 6 months   
 Data Requirements (Check): No Level IV  All Level IV

1243 2.7/3.0  
 34/3.7



440-258020 Chain of Custody



CHAIN OF CUSTODY FORM

Client Name/Address:		Project		Field Readings		Meter serial #							
Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project Boeing-SSFL NPDES Permit 2019 Routine Outfall [001, 002, 011, 018] Outfall 002 Grab		Field Readings: (Include units) <u>12 AC (T90)</u> Time of Readings: <u>0930</u>									
Test America Contact: Urveshi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project Manager: Katharine Miller 520 289-8606; 520.904.6944 (cell)		DO <u>7.17</u> mg/L pH <u>7.21</u> pH unit Temp <u>50.0</u> °C									
Test America's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2019-22. TestAmerica by and between Haley & Aldrich, Inc. Its subsidiaries and affiliates, and TestAmerica Laboratories Inc		Field Manager: Mark Dominick 978.234.5033, 818.599.0702 (cell)		Field readings QC Checked by: <u>W.D.</u> Date/Time: <u>0930/12-23-19</u>									
Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Botle #	MSMSD	Oil & Grease (E1664A-HEM)	VOCA - only 1,1-DCE, 1,2-DCA, TCE (E624)	Settleable Solids (E160.5 (M2540F))	Conductivity (SM2510B / E120.1)	Comments
Outfall002_20191223_Grab		12/23/2019 <u>12:50</u>	WM	1L Glass Amber	2	HCl	15	No	X				
Outfall002_20191223_Grab_Extra		12/23/2019 <u>12:50</u>	WM	40 mL VOA	3	HCl	30	No		X			
Trips Blanks TB-20191223		12/23/2019 <u>12:50</u>	WM	1L Poly	1	None	70	No			X		
			WM	500 mL Poly	1	None	75	No					
			WM	1L Glass Amber	2	HCl	15	No	H				Hold
			WM	40 mL VOA	3	HCl	30	No	H				Hold
			WM	500 mL Poly	1	None	75	No					Hold
			WQ	40 mL VOA	3	HCl	30	No	X				

Reinquisitioned By: <u>W.D.</u>	Date/Time: <u>12-23-19/12:50</u>	Company: <u>H&amp;A</u>	Turn-around time (Check): 24 Hour: <input type="checkbox"/> 72 Hour: <input type="checkbox"/> 10 Day: <input checked="" type="checkbox"/> 48 Hour: <input type="checkbox"/> 5 Day: <input type="checkbox"/> Normal: <input type="checkbox"/>
Reinquisitioned By: <u>Urveshi Patel</u>	Date/Time: <u>12/23/19</u>	Company: <u>TA</u>	Sample Integrity (Check): Intact: <input type="checkbox"/> On Ice: <input type="checkbox"/> Store samples for 6 months: <input type="checkbox"/> Data Requirements: (Check) No Level IV: <input type="checkbox"/> All Level IV: <input checked="" type="checkbox"/>





## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-258020-1

**Login Number: 258020**

**List Source: Eurofins TestAmerica, Irvine**

**List Number: 1**

**Creator: Soderblom, Tim**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## Patel, Urvashi

---

**From:** Baluran, Dwayne <DBaluran@haleyaldrich.com>  
**Sent:** Tuesday, December 24, 2019 11:54 AM  
**To:** Patel, Urvashi  
**Cc:** Miller, Katherine  
**Subject:** RE: Eurofins TestAmerica sample confirmation files from 440-258020-2 Boeing-SSFL NPDES Permit 2019

### -External Email-

---

Hi Urvashi,

Please see the following notes for 440-258020-2.

Sampling Event	Sample Delivery Group	Samples Included	Work Order or COC Corrections?
OF009 - Semiannual, OF002 - Routine	440-258020-2	Outfall009_20191223_Grab_Extra, Outfall002_20191223_Grab_Extra	Update sample name from "Outfall002_20191223_Grab_Etra" to "Extra". No Settleable solids hold per COC.

Thank you,  
**Dwayne Baluran, EIT, QSP**  
Staff Engineer

**Haley & Aldrich, Inc.**  
5850 Canoga Avenue | Suite 400  
Woodland Hills, CA 91367

T: (978) 234.5022  
C: (818) 224.0704

[www.haleyaldrich.com](http://www.haleyaldrich.com)

---

**From:** Miller, Katherine <[KMiller@haleyaldrich.com](mailto:KMiller@haleyaldrich.com)>  
**Sent:** Tuesday, December 24, 2019 10:20 AM  
**To:** Baluran, Dwayne <[DBaluran@haleyaldrich.com](mailto:DBaluran@haleyaldrich.com)>  
**Subject:** Fwd: Eurofins TestAmerica sample confirmation files from 440-258020-2 Boeing-SSFL NPDES Permit 2019

Please review today

Sent from my iPhone

Begin forwarded message:

**From:** Mark Christine <[mark.christine@testamericainc.com](mailto:mark.christine@testamericainc.com)>  
**Date:** December 24, 2019 at 10:41:08 AM MST

**To:** "Barr, Anastasia" <[ABarr@haleyaldrich.com](mailto:ABarr@haleyaldrich.com)>, "Hernandez, Elysse" <[EHernandez@haleyaldrich.com](mailto:EHernandez@haleyaldrich.com)>, Kim Schultz <[kim.schultz@mecx.net](mailto:kim.schultz@mecx.net)>, "Miller, Katherine" <[KMiller@haleyaldrich.com](mailto:KMiller@haleyaldrich.com)>, "Ms. Urvashi Patel" <[urvashi.patel@testamericainc.com](mailto:urvashi.patel@testamericainc.com)>  
**Subject:** Eurofins TestAmerica sample confirmation files from 440-258020-2 Boeing-SSFL NPDES Permit 2019

**CAUTION: External Email**

---

Hello,

Attached please find the sample confirmation files for job 440-258020-2; Boeing-SSFL NPDES Permit 2019

Please feel free to contact me or your PM Urvashi Patel if you have any questions.

Thank you.

**Mark B Christine**  
Project Manager Assistant

Eurofins TestAmerica, Irvine

E-mail: [mark.christine@testamericainc.com](mailto:mark.christine@testamericainc.com)  
[www.eurofinsus.com](http://www.eurofinsus.com) | [www.testamericainc.com](http://www.testamericainc.com)

## Patel, Urvashi

---

**From:** Baluran, Dwayne <DBaluran@haleyaldrich.com>  
**Sent:** Tuesday, December 24, 2019 10:59 AM  
**To:** Patel, Urvashi; Christine, Mark B.  
**Cc:** Miller, Katherine; Bondoc, Christian M.  
**Subject:** RE: Eurofins TestAmerica sample confirmation files from 440-258020-1 Boeing-SSFL NPDES Permit 2019

### -External Email-

---

Hey,

Sure, whatever you can do to split these sample locations separately to your fullest capability. I don't believe I've ever seen 2 outfalls in one SDG number. It'll make it easier for our tracking purposes and permit review if they are in different reports.

Thanks,  
Dwayne

---

**From:** Patel, Urvashi <[Urvashi.Patel@testamericainc.com](mailto:Urvashi.Patel@testamericainc.com)>  
**Sent:** Tuesday, December 24, 2019 10:52 AM  
**To:** Baluran, Dwayne <[DBaluran@haleyaldrich.com](mailto:DBaluran@haleyaldrich.com)>; Christine, Mark B. <[Mark.Christine@testamericainc.com](mailto:Mark.Christine@testamericainc.com)>  
**Cc:** Miller, Katherine <[KMiller@haleyaldrich.com](mailto:KMiller@haleyaldrich.com)>; Bondoc, Christian M. <[Christian.Bondoc@testamericainc.com](mailto:Christian.Bondoc@testamericainc.com)>  
**Subject:** RE: Eurofins TestAmerica sample confirmation files from 440-258020-1 Boeing-SSFL NPDES Permit 2019

### CAUTION: External Email

---

Hi Dwayne

The COC has 1 of 2 and 2 of 2 listed so they were logged in together. We have already logged in under one job so I can split the samples into job series -1 and -2 for the different sample locations. Will that work?

**Urvashi Patel**

Phone: 949-333-9055

E-mail: [Urvashi.Patel@testamericainc.com](mailto:Urvashi.Patel@testamericainc.com)

---

**From:** Baluran, Dwayne [<mailto:DBaluran@haleyaldrich.com>]  
**Sent:** Tuesday, December 24, 2019 10:46 AM  
**To:** Patel, Urvashi  
**Cc:** Miller, Katherine  
**Subject:** FW: Eurofins TestAmerica sample confirmation files from 440-258020-1 Boeing-SSFL NPDES Permit 2019

### -External Email-

---

Hi Urvashi,

Happy Holidays! I'm reviewing the sample receipts for 440-258020-1 and -2. I'm seeing OF002 and OF009 sample data being mixed with each other. I've never seen this before. Typically each outfall is their own SDG. Could this please be revised.

Thanks,

**Dwayne Baluran, EIT, QSP**  
Staff Engineer

**Haley & Aldrich, Inc.**  
5850 Canoga Avenue | Suite 400  
Woodland Hills, CA 91367

T: (978) 234.5022  
C: (818) 224.0704

[www.haleyaldrich.com](http://www.haleyaldrich.com)

---

**From:** Miller, Katherine <[KMiller@haleyaldrich.com](mailto:KMiller@haleyaldrich.com)>

**Sent:** Tuesday, December 24, 2019 10:20 AM

**To:** Baluran, Dwayne <[DBaluran@haleyaldrich.com](mailto:DBaluran@haleyaldrich.com)>

**Subject:** Fwd: Eurofins TestAmerica sample confirmation files from 440-258020-1 Boeing-SSFL NPDES Permit 2019

Please review today

Sent from my iPhone

Begin forwarded message:

**From:** Mark Christine <[mark.christine@testamericainc.com](mailto:mark.christine@testamericainc.com)>

**Date:** December 24, 2019 at 10:41:07 AM MST

**To:** "Barr, Anastasia" <[ABarr@haleyaldrich.com](mailto:ABarr@haleyaldrich.com)>, "Hernandez, Elyse" <[EHernandez@haleyaldrich.com](mailto:EHernandez@haleyaldrich.com)>, Kim Schultz <[kim.schultz@mecx.net](mailto:kim.schultz@mecx.net)>, "Miller, Katherine" <[KMiller@haleyaldrich.com](mailto:KMiller@haleyaldrich.com)>, "Ms. Urvashi Patel" <[urvashi.patel@testamericainc.com](mailto:urvashi.patel@testamericainc.com)>

**Subject:** Eurofins TestAmerica sample confirmation files from 440-258020-1 Boeing-SSFL NPDES Permit 2019

**CAUTION: External Email**

---

Hello,

Attached please find the sample confirmation files for job 440-258020-1; Boeing-SSFL NPDES Permit 2019

Please feel free to contact me or your PM Urvashi Patel if you have any questions.

Thank you.

**Mark B Christine**

Project Manager Assistant

Eurofins TestAmerica, Irvine

E-mail: [mark.christine@testamericainc.com](mailto:mark.christine@testamericainc.com)  
[www.eurofinsus.com](http://www.eurofinsus.com) | [www.testamericainc.com](http://www.testamericainc.com)



---

**DATA VALIDATION REPORT**

**Boeing SSFL NPDES**

**SAMPLE DELIVERY GROUP: 440-258085-1**

**Prepared for**

Haley & Aldrich, Inc.  
600 South Meyer Avenue, Suite 100  
Tucson, Arizona 85701

**23 January 2020**

**MEC<sup>x</sup>, Inc.**  
12269 East Vassar Drive  
Aurora, Colorado 80014

[www.mecx.net](http://www.mecx.net)





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- 1 – Sample Identification
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- 3 - Reason Code Reference



## I. INTRODUCTION

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**Task Order Title:** Boeing SSFL NPDES

**Contract:** 40458-078 and 40458-083

**MEC<sup>x</sup> Project No.:** 1272.003D.01 002

**Sample Delivery Group:** 440-258085-1

**Project Manager:** Katherine Miller

**Matrix:** Water

**QC Level:** IV

**No. of Samples:** 2

**No. of Reanalyses/Dilutions:** 0

**Laboratory:** TestAmerica-Irvine

**TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Matrix	Collection	Method
OUTFALL002_20191224_COMP	440-258085-1	Water	12/24/19 8:20 AM	E1613B, E200.7, E200.8, E625.1, SM2540D
OUTFALL002_20191224_COMP_F	440-258085-3	Water	12/24/19 8:20 AM	E200.7, E200.8



## II. SAMPLE MANAGEMENT

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According to the case narrative, Login Sample Receipt Checklists, and the chains-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-258085-1:

- The laboratories received the samples in this SDG on ice and within the temperature limits of <6 degrees Celsius (°C) and >0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and/or laboratory personnel signed and dated the appropriate original and transfer COCs.
- According to the Login Sample Receipt Checklists, custody seals were absent on the coolers upon receipt at TA-Irvine; however, no evidence of tampering was noted. A custody seal was present on the cooler received at TA-Sacramento.
- The case narrative indicated that the site sample for the 1613B analysis was received in a wide-mouth amber glass bottle, and less sample volume (864 milliliters) was available for extraction.
- It should be noted that, although the COC listed only zinc as a target analyte for Method 200.7, the laboratory analyzed and reported for iron by this method as well. The data was reviewed for both analytes.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination ( $r^2$ ) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



### III. EPA METHOD 1613B — DIOXIN/FURANS

---

L. Calvin of MEC<sup>x</sup> reviewed the SDG on January 23, 2020

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC<sup>x</sup> *Data Validation Procedure for Dioxins and Furans* (DVP-19, Rev. 0), *USEPA Method 1613B* and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review* (2011).

#### III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

#### III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

##### III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as <25%.

##### III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power >10,000.

#### III.3. CALIBRATION

Initial Calibration: Calibration criteria were met. The initial calibration was acceptable with %RSDs ≤20% for the 15 native compounds (calibration by isotope dilution) and ≤35% for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

#### III.4. QUALITY CONTROL SAMPLES

##### III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit (RL) for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8,9-HpCDF, 1,2,3,4,7,8-HxCDD, 1,2,3,6,7,8-HxCDD, OCDD, OCDF, and for totals HpCDD, HpCDF and HxCDD. The sample results for isomers detected below the RL in the sample were qualified as a nondetect (U) at the level of contamination. The method blank concentrations of 1,2,3,4,6,7,8-HpCDD and OCDD were not sufficient to qualify the sample concentrations above the RL. The reviewer compared peaks comprising the method blank totals to those in the sample totals. Totals HpCDD,





HpCDF and HxCDD were qualified as estimated (J), as only a portion of each total was determined to be method blank contamination.

#### III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of  $\leq 50\%$ .

#### III.5. FIELD QC SAMPLES

MEC<sup>X</sup> evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC<sup>X</sup> used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

##### III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

##### III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

#### III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

#### III.7. COMPOUND IDENTIFICATION

Compound identification was verified. Detected compounds met the ion abundance ratio, retention time window and signal-to-noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. Second-column confirmation analysis for isomer 2,3,7,8-TCDF was not performed, as 2,3,7,8-TCDF was not detected in the initial analysis of the sample.

#### III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

As noted in the case narrative, RLs and EDLs were slightly elevated due to somewhat limited sample volume. Rather than approximately 1000 milliliters (ml), an 864 ml sample volume was available for extraction.

As total HxCDF included one estimated maximum possible concentration (EMPC) peak, the result was qualified as estimated (J).

## IV. METHODS 200.7 AND 200.8 — METALS

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M. Hilchey of MEC<sup>X</sup> reviewed the SDG on January 24, 2020.

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC<sup>X</sup>

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*Data Validation Procedure for Metals (DVP-5, Rev. 2), EPA Methods 200.7 and 200.8 and the National Functional Guidelines for Inorganic Methods Data Review (2017).*

#### **IV.1. HOLDING TIMES**

The analytical holding time, six months for metals, was met. Sample Outfall002\_20191224\_Comp\_F was filtered and preserved approximately 47 hours after receipt. Typically, the COC comments section for this project states that the samples must be filtered for dissolved analysis within 24 hours of receipt at the laboratory. The comments on the COC for the dissolved sample are illegible; however, the reviewer assumed this requirement is in effect. All results for this sample were qualified as estimated (UJ for nondetects, J for detects).

#### **IV.2. CALIBRATION**

QAPP calibration criteria were met. A blank and two to four standards were used for calibration of ICP-AES and ICP-MS target analytes. The initial calibration  $r$  values were  $\geq 0.995$ . CRQL recoveries were within the laboratory control limits of 50-150%. Initial calibration verification recoveries were within QAPP control limits of 95-105% for ICP-AES and 90-110% for ICP-MS. Continuing calibration verification recoveries were within QAPP control limits of 90-110%.

#### **IV.3. QUALITY CONTROL SAMPLES**

##### **IV.3.1. METHOD BLANKS**

There were no target analyte detections in the method blanks or calibration blanks with the following exception. Selenium was detected (0.513  $\mu\text{g/L}$ ) in the method blank for dissolved metals. The dissolved selenium result was a detect below the reporting limit and was qualified as nondetect (U).

##### **IV.3.2. INTERFERENCE CHECK SAMPLES:**

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or  $\pm 2\times$  the reporting limit, whichever is greater. Interferents were not present in the samples at concentrations comparable to those in the ICSAs; therefore, interference was not suspected.

##### **IV.3.3. LABORATORY CONTROL SAMPLES**

Laboratory control samples recoveries (total and dissolved) were within the QAPP control limits of 85-115%.

##### **IV.3.4. LABORATORY DUPLICATES:**

Laboratory duplicate analyses were not performed on the sample in this SDG.

##### **IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

MS/MSD analyses were not performed on the sample in this SDG.

#### **IV.4. SERIAL DILUTION**

No serial dilution analyses were performed on the sample in this SDG.

#### **IV.5. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Calculations were verified, and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. Results reported below the



RL and above the MDL were qualified as estimated (J) and coded with a DNQ to comply with the NPDES permit reporting requirements. Nondetects are valid to the MDL.

#### **IV.6. FIELD QC SAMPLES**

MEC<sup>X</sup> evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC<sup>X</sup> used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

##### **IV.6.1. FIELD BLANKS AND EQUIPMENT BLANKS**

Field blank or equipment blank samples were not identified for this SDG.

##### **IV.6.2. FIELD DUPLICATES**

There were no field duplicate samples identified for this SDG.

## **V. EPA METHOD 625.1 — N-NITROSODIMETHYLAMINE**

---

L. Calvin of MEC<sup>X</sup> reviewed the SDG on January 23, 2020

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC<sup>X</sup> *Data Validation Procedure for Semivolatile Organics* (DVP-3, Rev. 1), *EPA Method 625.1* and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2017).

#### **V.1. HOLDING TIMES**

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

#### **V.2. GC/MS TUNING AND CALIBRATION**

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met. Initial calibration average relative response factors (RRFs) were within the method control limits, and the %RSDs were  $\leq 35\%$  or  $r^2$  values  $\geq 0.990$ . For applicable target compound n-nitrosodimethylamine, ICV and CCV RRFs were within the method control limits. ICV recoveries and CCV %Ds were within method control limits.

#### **V.3. QUALITY CONTROL SAMPLES**

##### **V.3.1. METHOD BLANKS**

The method blank had a detect above the RL for n-nitrosodimethylamine (6.1  $\mu\text{g/L}$ ). The sample result below the RL was qualified as a nondetect (U) at the RL.

##### **V.3.2. LABORATORY CONTROL SAMPLES**

LCS/LCSD recoveries and the RPD were within the laboratory control limits.



### V.3.3. **SURROGATE RECOVERY**

Surrogate recoveries were within laboratory control limits.

### V.3.4. **MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

MS/MSD analyses were not performed on the site sample in this SDG. MEC<sup>X</sup> evaluated method accuracy and precision based on the LCS/LCSD results.

### V.4. **FIELD QC SAMPLES**

MEC<sup>X</sup> evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC<sup>X</sup> used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

#### V.4.1. **FIELD BLANKS AND EQUIPMENT BLANKS:**

Field blank or equipment blank samples were not identified for this SDG.

#### V.4.2. **FIELD DUPLICATES:**

Field duplicate samples were not identified in this SDG.

### V.5. **INTERNAL STANDARDS PERFORMANCE**

The internal standard retention times and area counts were within the control limits established by the midpoint of the initial calibration standards:  $\pm 30$  seconds for retention times and  $-50\%/+100\%$  for internal standard areas.

### V.6. **COMPOUND IDENTIFICATION**

Compound identification was verified. The laboratory analyzed for n-nitrosodimethylamine by EPA Method 625.1. Review of the sample chromatogram, retention times, and spectra indicated no issues with target compound identification.

### V.7. **COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. The result reported below the RL was initially qualified as estimated (J) and coded with DNQ to comply with the NPDES permit reporting requirements; however, the result was subsequently qualified as a nondetect (see Method Blanks section). The nondetect is valid to the RL. The sample did not require dilution.

The laboratory's preparation bench sheet indicated the sample extract was light yellow and cloudy.

### V.8. **TENTATIVELY IDENTIFIED COMPOUNDS (TICs)**

The laboratory did not report TICs for this SDG.

### V.9. **SYSTEM PERFORMANCE**

Review of the raw data indicated no issues with system performance.



## VI. METHOD EPA SM2540D—TOTAL SUSPENDED SOLIDS (TSS)

---

M. Hilchey of MEC<sup>X</sup> reviewed the SDG on January 24, 2020.

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC<sup>X</sup> Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 2540D* and the *National Functional Guidelines for Inorganic Superfund Methods Data Review (2017)*.

### VI.1. HOLDING TIMES

The QAPP holding time, seven days for TSS, was met.

### VI.2. CALIBRATION

Analytical balance calibration logs were provided by the laboratory and found to be correctly calibrated and verified.

### VI.3. QUALITY CONTROL SAMPLES

#### VI.3.1. METHOD BLANKS

The method blanks had no detects.

#### VI.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recovery was within the QAPP control limits.

#### VI.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

#### VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses do not apply to this method.

### VI.4. SAMPLE RESULT VERIFICATION

Calculations were verified, and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted.

### VI.5. FIELD QC SAMPLES

MEC<sup>X</sup> evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC<sup>X</sup> used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

#### VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

#### VI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

# Validated Sample Result Forms: 4402580851

*Analysis Method E1613B*

**Sample Name** OUTFALL002\_20191224\_COMP      **Matrix Type:** WM      **Result Type:** TRG

**Sample Date:** 12/24/2019 8:20:00 AM      **Validation Level:** 8

**Lab Sample Name:** 440-258085-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.00011	0.00012	0.0000049	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.0013	0.00012	0.0000066	ug/L	MB		
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.000037	0.000058	0.0000016	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.000099	0.000058	0.0000025	ug/L	MB		
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	ND	0.000058	0.0000018	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	ND	0.000058	0.0000029	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.0000068	0.000058	0.0000024	ug/L	J,DXMB	U	B
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	ND	0.000058	0.0000030	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.0000065	0.000058	0.0000025	ug/L	J,DXMB	U	B
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	ND	0.000058	0.0000023	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	ND	0.000058	0.0000022	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	ND	0.000058	0.0000026	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	ND	0.000058	0.0000041	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	ND	0.000058	0.0000023	ug/L	U	U	
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000058	0.0000026	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000012	0.0000015	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000012	0.0000017	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000080	0.000058	0.0000016	ug/L	J,DXMB	J	B, DNQ
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.00020	0.000058	0.0000025	ug/L	MB	J	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.000011	0.000058	0.0000023	ug/L	J,DXq	J	DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.000020	0.000058	0.0000022	ug/L	J,DXMB	J	B, DNQ
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	ND	0.000058	0.0000026	ug/L	U	U	

**Analysis Method E1613B**

Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	ND	0.000058	0.0000041	ug/L	U	U
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	ND	0.000012	0.0000015	ug/L	U	U
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.000012	0.0000017	ug/L	U	U

**Analysis Method E200.7**

**Sample Name** OUTFALL002\_20191224\_COMP **Matrix Type:** WM **Result Type:** TRG

**Sample Date:** 12/24/2019 8:20:00 AM **Validation Level:** 8

**Lab Sample Name:** 440-258085-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Iron	T	7439-89-6	8700	100	50	ug/L			
Zinc	T	7440-66-6	31	20	12	ug/L			

**Sample Name** OUTFALL002\_20191224\_COMP\_F **Matrix Type:** WM **Result Type:** TRG

**Sample Date:** 12/24/2019 8:20:00 AM **Validation Level:** 8

**Lab Sample Name:** 440-258085-3

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Iron	D	7439-89-6	61	100	50	ug/L	J,DX	J	H, DNQ
Zinc	D	7440-66-6	27	20	12	ug/L		J	H

**Analysis Method E200.8**

**Sample Name** OUTFALL002\_20191224\_COMP **Matrix Type:** WM **Result Type:** TRG

**Sample Date:** 12/24/2019 8:20:00 AM **Validation Level:** 8

**Lab Sample Name:** 440-258085-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	6.6	2.0	0.50	ug/L			
Lead	T	7439-92-1	3.5	1.0	0.50	ug/L			
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	

**Sample Name** OUTFALL002\_20191224\_COMP\_F **Matrix Type:** WM **Result Type:** TRG

**Sample Date:** 12/24/2019 8:20:00 AM **Validation Level:** 8

**Lab Sample Name:** 440-258085-3

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	U	UJ	H
Copper	D	7440-50-8	1.9	2.0	0.50	ug/L	J,DX	J	H, DNQ
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	U	UJ	H
Selenium	D	7782-49-2	0.65	2.0	0.50	ug/L	J,DXMB	UJ	H, B

*Analysis Method E625.1*

**Sample Name** OUTFALL002\_20191224\_COMP      **Matrix Type:** WM      **Result Type:** TRG

**Sample Date:** 12/24/2019 8:20:00 AM      **Validation Level:** 8

**Lab Sample Name:** 440-258085-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
N-Nitrosodimethylamine	N	62-75-9	ND	5.1	0.31	ug/L	J,DXMB	U	B

*Analysis Method SM2540D*

**Sample Name** OUTFALL002\_20191224\_COMP      **Matrix Type:** WM      **Result Type:** TRG

**Sample Date:** 12/24/2019 8:20:00 AM      **Validation Level:** 8

**Lab Sample Name:** 440-258085-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	110	20	10	mg/L			



## ANALYTICAL REPORT

Eurofins Calscience Irvine  
17461 Derian Ave  
Suite 100  
Irvine, CA 92614-5817  
Tel: (949)261-1022

Laboratory Job ID: 440-258085-1

Client Project/Site: Routine Outfall 002 Comp

**For:**

Haley & Aldrich, Inc.  
400 E Van Buren St.  
Suite 545  
Phoenix, Arizona 85004

Attn: Katherine Miller



---

Authorized for release by:  
1/16/2020 9:54:03 AM

Christian Bondoc, Project Manager I  
(949)260-3218  
[christian.bondoc@testamericainc.com](mailto:christian.bondoc@testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



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Christian Bondoc  
Project Manager I  
1/16/2020 9:54:03 AM



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# Sample Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-258085-1	Outfall002_20191224_Comp	Water	12/24/19 08:20	12/24/19 12:30	
440-258085-3	Outfall002_20191224_Comp_F	Water	12/24/19 08:20	12/24/19 12:30	

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# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

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## Job ID: 440-258085-1

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### Laboratory: Eurofins Calscience Irvine

#### Narrative

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#### Job Narrative 440-258085-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/24/2019 12:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 1.0° C, 1.0° C, 1.0° C, 1.1° C, 1.2° C and 1.3° C.

#### GC/MS Semi VOA

Method 625.1: N-Nitrosodimethylamine was detected above the reporting limit (RL) in the method blank associated with preparation batch 440-588303 and analytical batch 440-588422. The affected samples have a concentration for N-Nitrosodimethylamine <RL and >MDL. Samples are reported possible high bias for N-Nitrosodimethylamine. Outfall002\_20191224\_Comp (440-258085-1) and (MB 440-588303/1-A).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### HPLC/IC

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Metals

Method 200.8: The method blank for preparation batch 440-587989 and 440-588020 and analytical batch 440-588414 contained Selenium above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Organic Prep

Methods 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-588303. LCS was performed in duplicate to provide precision of data.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### Dioxin Prep

Method 1613B: Elevated reporting limits are provided for the following sample due to insufficient sample provided for 1613B\_Sox\_Sep\_P preparation/analysis: Sample Outfall002\_20191224\_Comp (440-258085-1) was received in a wide-mouth amber glass bottle.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

**Client Sample ID: Outfall002\_20191224\_Comp**

**Lab Sample ID: 440-258085-1**

Date Collected: 12/24/19 08:20

Matrix: Water

Date Received: 12/24/19 12:30

## Method: 625.1 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.2	0.10	ug/L		12/28/19 11:45	12/30/19 13:11	1
Bis(2-ethylhexyl) phthalate	ND		5.1	2.1	ug/L		12/28/19 11:45	12/30/19 13:11	1
<b>N-Nitrosodimethylamine</b>	<b>1.0</b>	<b>J,DX MB</b>	5.1	0.31	ug/L		12/28/19 11:45	12/30/19 13:11	1
Pentachlorophenol	ND		5.1	1.0	ug/L		12/28/19 11:45	12/30/19 13:11	1
2,4-Dinitrotoluene	ND		5.1	2.1	ug/L		12/28/19 11:45	12/30/19 13:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	103		60 - 140	12/28/19 11:45	12/30/19 13:11	1
2-Fluorobiphenyl	87		60 - 140	12/28/19 11:45	12/30/19 13:11	1
2-Fluorophenol	83		60 - 140	12/28/19 11:45	12/30/19 13:11	1
Nitrobenzene-d5	87		15 - 314	12/28/19 11:45	12/30/19 13:11	1
Terphenyl-d14	63		60 - 140	12/28/19 11:45	12/30/19 13:11	1
Phenol-d5	75		8 - 424	12/28/19 11:45	12/30/19 13:11	1

## Method: 608.3 - Organochlorine Pesticides in Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.10	0.021	ug/L		12/26/19 05:32	12/26/19 14:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	46		10 - 104	12/26/19 05:32	12/26/19 14:23	1
DCB Decachlorobiphenyl (Surr)	68		18 - 134	12/26/19 05:32	12/26/19 14:23	1

## Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.63		0.11	0.055	mg/L			12/24/19 22:58	1
Nitrite as N	0.092	J,DX	0.15	0.025	mg/L			12/24/19 22:58	1

## Method: 300.0 - Anions, Ion Chromatography - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	18		2.5	1.3	mg/L			12/24/19 23:47	5
Sulfate	130		2.5	1.3	mg/L			12/24/19 23:47	5

## Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			12/30/19 15:37	1

## Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.72		0.15	0.055	mg/L			01/03/20 13:18	1

## Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000012	0.000017	ug/L		12/30/19 16:10	01/07/20 01:25	1
2,3,7,8-TCDF	ND		0.000012	0.000015	ug/L		12/30/19 16:10	01/07/20 01:25	1
1,2,3,7,8-PeCDD	ND		0.000058	0.000041	ug/L		12/30/19 16:10	01/07/20 01:25	1
1,2,3,7,8-PeCDF	ND		0.000058	0.000026	ug/L		12/30/19 16:10	01/07/20 01:25	1
2,3,4,7,8-PeCDF	ND		0.000058	0.000026	ug/L		12/30/19 16:10	01/07/20 01:25	1
<b>1,2,3,4,7,8-HxCDD</b>	<b>0.000068</b>	<b>J,DX MB</b>	0.000058	0.000024	ug/L		12/30/19 16:10	01/07/20 01:25	1
<b>1,2,3,6,7,8-HxCDD</b>	<b>0.000065</b>	<b>J,DX MB</b>	0.000058	0.000025	ug/L		12/30/19 16:10	01/07/20 01:25	1
1,2,3,7,8,9-HxCDD	ND		0.000058	0.000022	ug/L		12/30/19 16:10	01/07/20 01:25	1
1,2,3,4,7,8-HxCDF	ND		0.000058	0.000029	ug/L		12/30/19 16:10	01/07/20 01:25	1

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

**Client Sample ID: Outfall002\_20191224\_Comp**

**Lab Sample ID: 440-258085-1**

Date Collected: 12/24/19 08:20

Matrix: Water

Date Received: 12/24/19 12:30

**Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,6,7,8-HxCDF	ND		0.000058	0.0000030	ug/L		12/30/19 16:10	01/07/20 01:25	1
1,2,3,7,8,9-HxCDF	ND		0.000058	0.0000023	ug/L		12/30/19 16:10	01/07/20 01:25	1
2,3,4,6,7,8-HxCDF	ND		0.000058	0.0000023	ug/L		12/30/19 16:10	01/07/20 01:25	1
<b>1,2,3,4,6,7,8-HpCDD</b>	<b>0.000099</b>	<b>MB</b>	0.000058	0.0000025	ug/L		12/30/19 16:10	01/07/20 01:25	1
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>0.000037</b>	<b>J,DX MB</b>	0.000058	0.0000016	ug/L		12/30/19 16:10	01/07/20 01:25	1
1,2,3,4,7,8,9-HpCDF	ND		0.000058	0.0000018	ug/L		12/30/19 16:10	01/07/20 01:25	1
<b>OCDD</b>	<b>0.0013</b>	<b>MB</b>	0.00012	0.0000066	ug/L		12/30/19 16:10	01/07/20 01:25	1
<b>OCDF</b>	<b>0.00011</b>	<b>J,DX MB</b>	0.00012	0.0000049	ug/L		12/30/19 16:10	01/07/20 01:25	1
Total TCDD	ND		0.000012	0.0000017	ug/L		12/30/19 16:10	01/07/20 01:25	1
Total TCDF	ND		0.000012	0.0000015	ug/L		12/30/19 16:10	01/07/20 01:25	1
Total PeCDD	ND		0.000058	0.0000041	ug/L		12/30/19 16:10	01/07/20 01:25	1
Total PeCDF	ND		0.000058	0.0000026	ug/L		12/30/19 16:10	01/07/20 01:25	1
<b>Total HxCDD</b>	<b>0.000020</b>	<b>J,DX MB</b>	0.000058	0.0000022	ug/L		12/30/19 16:10	01/07/20 01:25	1
<b>Total HxCDF</b>	<b>0.000011</b>	<b>J,DX q</b>	0.000058	0.0000023	ug/L		12/30/19 16:10	01/07/20 01:25	1
<b>Total HpCDD</b>	<b>0.00020</b>	<b>MB</b>	0.000058	0.0000025	ug/L		12/30/19 16:10	01/07/20 01:25	1
<b>Total HpCDF</b>	<b>0.000080</b>	<b>J,DX MB</b>	0.000058	0.0000016	ug/L		12/30/19 16:10	01/07/20 01:25	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C-2,3,7,8-TCDD	59		25 - 164				12/30/19 16:10	01/07/20 01:25	1
13C-2,3,7,8-TCDF	55		24 - 169				12/30/19 16:10	01/07/20 01:25	1
13C-1,2,3,7,8-PeCDD	54		25 - 181				12/30/19 16:10	01/07/20 01:25	1
13C-1,2,3,7,8-PeCDF	52		24 - 185				12/30/19 16:10	01/07/20 01:25	1
13C-2,3,4,7,8-PeCDF	58		21 - 178				12/30/19 16:10	01/07/20 01:25	1
13C-1,2,3,4,7,8-HxCDD	55		32 - 141				12/30/19 16:10	01/07/20 01:25	1
13C-1,2,3,6,7,8-HxCDD	48		28 - 130				12/30/19 16:10	01/07/20 01:25	1
13C-1,2,3,4,7,8-HxCDF	52		26 - 152				12/30/19 16:10	01/07/20 01:25	1
13C-1,2,3,6,7,8-HxCDF	48		26 - 123				12/30/19 16:10	01/07/20 01:25	1
13C-1,2,3,7,8,9-HxCDF	49		29 - 147				12/30/19 16:10	01/07/20 01:25	1
13C-2,3,4,6,7,8-HxCDF	49		28 - 136				12/30/19 16:10	01/07/20 01:25	1
13C-1,2,3,4,6,7,8-HpCDD	59		23 - 140				12/30/19 16:10	01/07/20 01:25	1
13C-1,2,3,4,6,7,8-HpCDF	53		28 - 143				12/30/19 16:10	01/07/20 01:25	1
13C-1,2,3,4,7,8,9-HpCDF	60		26 - 138				12/30/19 16:10	01/07/20 01:25	1
13C-OCDD	58		17 - 157				12/30/19 16:10	01/07/20 01:25	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
37Cl4-2,3,7,8-TCDD	109		35 - 197				12/30/19 16:10	01/07/20 01:25	1

**Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Zinc</b>	<b>31</b>		20	12	ug/L		12/26/19 10:35	12/29/19 15:22	1
<b>Iron</b>	<b>8700</b>		100	50	ug/L		12/26/19 10:35	12/29/19 15:22	1

**Method: 200.8 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		12/26/19 10:42	12/30/19 13:38	1
<b>Copper</b>	<b>6.6</b>		2.0	0.50	ug/L		12/26/19 10:42	12/30/19 13:38	1
<b>Lead</b>	<b>3.5</b>		1.0	0.50	ug/L		12/26/19 10:42	12/30/19 13:38	1
Selenium	ND		2.0	0.50	ug/L		12/26/19 10:42	12/30/19 13:38	1

# Client Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

**Client Sample ID: Outfall002\_20191224\_Comp**

**Lab Sample ID: 440-258085-1**

Date Collected: 12/24/19 08:20

Matrix: Water

Date Received: 12/24/19 12:30

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		12/31/19 12:32	01/02/20 13:22	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	220		2.5	1.0	NTU			12/24/19 14:25	25
Total Dissolved Solids	360		10	5.0	mg/L			12/26/19 10:23	1
Total Suspended Solids	110		20	10	mg/L			12/26/19 15:23	1
Cyanide, Total	ND		5.0	2.5	ug/L		12/27/19 10:46	12/27/19 16:11	1
Ammonia (as N)	ND		0.200	0.100	mg/L			12/30/19 14:30	1
Methylene Blue Active Substances	0.055	J,DX	0.10	0.050	mg/L			12/24/19 15:39	1
Biochemical Oxygen Demand	3.6		2.0	0.50	mg/L			12/24/19 19:43	1

**Client Sample ID: Outfall002\_20191224\_Comp\_F**

**Lab Sample ID: 440-258085-3**

Date Collected: 12/24/19 08:20

Matrix: Water

Date Received: 12/24/19 12:30

**Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	27		20	12	ug/L		12/26/19 14:27	12/27/19 13:57	1
Iron	61	J,DX	100	50	ug/L		12/26/19 14:27	12/27/19 13:57	1

**Method: 200.8 - Metals (ICP/MS) - Dissolved**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		12/26/19 14:39	12/29/19 18:15	1
Copper	1.9	J,DX	2.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:15	1
Lead	ND		1.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:15	1
Selenium	0.65	J,DX MB	2.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:15	1

**Method: 245.1 - Mercury (CVAA) - Dissolved**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/03/20 08:28	01/06/20 21:16	1



# Method Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

Method	Method Description	Protocol	Laboratory
625.1	Semivolatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
608.3	Organochlorine Pesticides in Water	40CFR136A	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.7 Rev 4.4	Metals (ICP)	EPA	TAL IRV
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV
SM 5540C	Methylene Blue Active Substances (MBAS)	SM	TAL IRV
SM5210B	BOD, 5 Day	SM	TAL IRV
Subcontract	Weck- 525.2	None	Weck Lab
1613B	Separatory Funnel (L/L) Extraction with Soxhlet Extraction of Dioxin and Furans	40CFR136A	TAL SAC
200.2	Preparation, Total Recoverable Metals	EPA	TAL IRV
245.1	Preparation, Mercury	EPA	TAL IRV
608	Liquid-Liquid Extraction (Separatory Funnel)	40CFR136A	TAL IRV
625	Liquid-Liquid Extraction	40CFR136A	TAL IRV
Distill/CN	Distillation, Cyanide	None	TAL IRV
FILTRATION	Sample Filtration	None	TAL IRV

#### Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.  
EPA = US Environmental Protection Agency  
MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.  
None = None  
SM = "Standard Methods For The Examination Of Water And Wastewater"

#### Laboratory References:

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022  
TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600  
Weck Lab = Weck Laboratories, Inc., 14859 East Clark Avenue, City of Industry, CA 917451396

# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

**Client Sample ID: Outfall002\_20191224\_Comp**

**Lab Sample ID: 440-258085-1**

**Date Collected: 12/24/19 08:20**

**Matrix: Water**

**Date Received: 12/24/19 12:30**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	625			975 mL	2.0 mL	588303	12/28/19 11:45	FTD	TAL IRV
Total/NA	Analysis	625.1		1			588422	12/30/19 13:11	JS1	TAL IRV
Total/NA	Prep	608			975 mL	2 mL	587899	12/26/19 05:32	L1H	TAL IRV
Total/NA	Analysis	608.3		1			587976	12/26/19 14:23	D1D	TAL IRV
Total/NA	Analysis	300.0		1			587742	12/24/19 22:58	NN	TAL IRV
Total/NA	Analysis	300.0		1			587743	12/24/19 22:58	NN	TAL IRV
Total/NA	Analysis	300.0	DL	5			587742	12/24/19 23:47	NN	TAL IRV
Total/NA	Analysis	314.0		1			588445	12/30/19 15:37	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			589052	01/03/20 13:18	NN	TAL IRV
Total/NA	Prep	1613B			864.1 mL	20 uL	348645	12/30/19 16:10	NIR	TAL SAC
Total/NA	Analysis	1613B		1			349278	01/07/20 01:25	KSS	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	587971	12/26/19 10:35	EP	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1			588370	12/29/19 15:22	KE	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	587974	12/26/19 10:42	EP	TAL IRV
Total Recoverable	Analysis	200.8		1			588549	12/30/19 13:38	B1H	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	588737	12/31/19 12:32	MEM	TAL IRV
Total/NA	Analysis	245.1		1			588954	01/02/20 13:22	MEM	TAL IRV
Total/NA	Analysis	180.1		25			587848	12/24/19 14:25	ST	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	587964	12/26/19 10:23	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	50 mL	1000 mL	588034	12/26/19 15:23	KL	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	588165	12/27/19 10:46	KMY	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			588222	12/27/19 16:11	KMY	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8.0 mL	588582	12/30/19 14:30	KMY	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	587868	12/24/19 15:39	KMY	TAL IRV
Total/NA	Analysis	SM5210B		1	300 mL	300 mL	587888	12/24/19 19:43	KYP	TAL IRV

**Client Sample ID: Outfall002\_20191224\_Comp\_F**

**Lab Sample ID: 440-258085-3**

**Date Collected: 12/24/19 08:20**

**Matrix: Water**

**Date Received: 12/24/19 12:30**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	587989	12/26/19 11:45	EP	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	588019	12/26/19 14:27	EP	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1			588205	12/27/19 13:57	TQN	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	587989	12/26/19 11:45	EP	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	588020	12/26/19 14:39	EP	TAL IRV
Dissolved	Analysis	200.8		1			588414	12/29/19 18:15	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			100 mL	100 mL	588000	12/26/19 12:39	EP	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	588987	01/03/20 08:28	MEM	TAL IRV
Dissolved	Analysis	245.1		1			589374	01/06/20 21:16	MEM	TAL IRV

# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## Laboratory References:

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Weck Lab = Weck Laboratories, Inc., 14859 East Clark Avenue, City of Industry, CA 917451396

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## Method: 625.1 - Semivolatile Organic Compounds (GC/MS)

**Lab Sample ID: MB 440-588303/1-A**  
**Matrix: Water**  
**Analysis Batch: 588422**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 588303**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.0	0.10	ug/L		12/28/19 11:45	12/30/19 09:32	1
Bis(2-ethylhexyl) phthalate	ND		5.0	2.0	ug/L		12/28/19 11:45	12/30/19 09:32	1
N-Nitrosodimethylamine	6.10		5.0	0.30	ug/L		12/28/19 11:45	12/30/19 09:32	1
Pentachlorophenol	ND		5.0	1.0	ug/L		12/28/19 11:45	12/30/19 09:32	1
2,4-Dinitrotoluene	ND		5.0	2.0	ug/L		12/28/19 11:45	12/30/19 09:32	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	77		60 - 140	12/28/19 11:45	12/30/19 09:32	1
2-Fluorobiphenyl	85		60 - 140	12/28/19 11:45	12/30/19 09:32	1
2-Fluorophenol	80		60 - 140	12/28/19 11:45	12/30/19 09:32	1
Nitrobenzene-d5	77		15 - 314	12/28/19 11:45	12/30/19 09:32	1
Terphenyl-d14	95		60 - 140	12/28/19 11:45	12/30/19 09:32	1
Phenol-d5	80		8 - 424	12/28/19 11:45	12/30/19 09:32	1

**Lab Sample ID: LCS 440-588303/2-A**  
**Matrix: Water**  
**Analysis Batch: 588422**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 588303**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,4,6-Trichlorophenol	15.0	14.1		ug/L		94	52 - 129
Bis(2-ethylhexyl) phthalate	15.0	16.5		ug/L		110	29 - 137
N-Nitrosodimethylamine	15.0	19.0		ug/L		127	60 - 140
Pentachlorophenol	30.0	24.8		ug/L		83	38 - 152

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4,6-Tribromophenol	92		60 - 140
2-Fluorobiphenyl	81		60 - 140
2-Fluorophenol	78		60 - 140
Nitrobenzene-d5	81		15 - 314
Terphenyl-d14	92		60 - 140
Phenol-d5	76		8 - 424

**Lab Sample ID: LCSD 440-588303/3-A**  
**Matrix: Water**  
**Analysis Batch: 588422**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 588303**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2,4,6-Trichlorophenol	15.0	13.4		ug/L		89	52 - 129	6	35
Bis(2-ethylhexyl) phthalate	15.0	15.5		ug/L		103	29 - 137	6	35
N-Nitrosodimethylamine	15.0	17.3		ug/L		115	60 - 140	10	35
Pentachlorophenol	30.0	22.8		ug/L		76	38 - 152	8	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
2,4,6-Tribromophenol	87		60 - 140
2-Fluorobiphenyl	77		60 - 140
2-Fluorophenol	66		60 - 140
Nitrobenzene-d5	75		15 - 314

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## Method: 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: LCSD 440-588303/3-A**  
**Matrix: Water**  
**Analysis Batch: 588422**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 588303**

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
Terphenyl-d14	87		60 - 140
Phenol-d5	60		8 - 424

## Method: 608.3 - Organochlorine Pesticides in Water

**Lab Sample ID: MB 440-587899/1-A**  
**Matrix: Water**  
**Analysis Batch: 587976**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 587899**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.10	0.020	ug/L		12/26/19 05:32	12/26/19 12:42	1

Surrogate	MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Tetrachloro-m-xylene	57		10 - 104	12/26/19 05:32	12/26/19 12:42	1
DCB Decachlorobiphenyl (Surr)	74		18 - 134	12/26/19 05:32	12/26/19 12:42	1

**Lab Sample ID: LCS 440-587899/2-A**  
**Matrix: Water**  
**Analysis Batch: 587976**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 587899**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
alpha-BHC	0.400	0.301		ug/L		75	37 - 140

Surrogate	LCS		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	61		10 - 104
DCB Decachlorobiphenyl (Surr)	73		18 - 134

**Lab Sample ID: 440-258025-B-1-A MSD**  
**Matrix: Water**  
**Analysis Batch: 587976**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 587899**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
alpha-BHC	ND		0.430	0.332		ug/L		77	37 - 140	2	36

Surrogate	MSD		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	62		10 - 104
DCB Decachlorobiphenyl (Surr)	79		18 - 134

**Lab Sample ID: 440-258025-C-1-A MS**  
**Matrix: Water**  
**Analysis Batch: 587976**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 587899**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
alpha-BHC	ND		0.421	0.325		ug/L		77	37 - 140

Surrogate	MS		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	63		10 - 104

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## Method: 608.3 - Organochlorine Pesticides in Water (Continued)

Lab Sample ID: 440-258025-C-1-A MS  
Matrix: Water  
Analysis Batch: 587976

Client Sample ID: Matrix Spike  
Prep Type: Total/NA  
Prep Batch: 587899

Surrogate	%Recovery	MS MS Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	78		18 - 134

## Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-587742/15  
Matrix: Water  
Analysis Batch: 587742

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			12/24/19 15:00	1
Sulfate	ND		0.50	0.25	mg/L			12/24/19 15:00	1

Lab Sample ID: LCS 440-587742/14  
Matrix: Water  
Analysis Batch: 587742

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.80		mg/L		96	90 - 110
Sulfate	5.00	4.85		mg/L		97	90 - 110

Lab Sample ID: 440-258085-1 MS  
Matrix: Water  
Analysis Batch: 587742

Client Sample ID: Outfall002\_20191224\_Comp  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	21	EY	5.00	26.8	EY BB	mg/L		119	80 - 120
Sulfate	160	EY	5.00	166	EY BB	mg/L		146	80 - 120

Lab Sample ID: 440-258085-1 MSD  
Matrix: Water  
Analysis Batch: 587742

Client Sample ID: Outfall002\_20191224\_Comp  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	21	EY	5.00	26.6	EY BB	mg/L		116	80 - 120	1	20
Sulfate	160	EY	5.00	166	EY BB	mg/L		149	80 - 120	0	20

Lab Sample ID: MB 440-587743/15  
Matrix: Water  
Analysis Batch: 587743

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			12/24/19 15:00	1
Nitrite as N	ND		0.15	0.025	mg/L			12/24/19 15:00	1

Lab Sample ID: LCS 440-587743/14  
Matrix: Water  
Analysis Batch: 587743

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.13	1.09		mg/L		96	90 - 110

Eurofins Calscience Irvine

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## Method: 300.0 - Anions, Ion Chromatography (Continued)

**Lab Sample ID: LCS 440-587743/14**  
**Matrix: Water**  
**Analysis Batch: 587743**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrite as N	1.52	1.47		mg/L		97	90 - 110

**Lab Sample ID: 440-258085-1 MS**  
**Matrix: Water**  
**Analysis Batch: 587743**

**Client Sample ID: Outfall002\_20191224\_Comp**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.63		1.13	1.73		mg/L		97	80 - 120
Nitrite as N	0.092	J,DX	1.52	1.58		mg/L		98	80 - 120

**Lab Sample ID: 440-258085-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 587743**

**Client Sample ID: Outfall002\_20191224\_Comp**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Nitrate as N	0.63		1.13	1.68		mg/L		93	80 - 120	2	20
Nitrite as N	0.092	J,DX	1.52	1.53		mg/L		95	80 - 120	3	20

## Method: 314.0 - Perchlorate (IC)

**Lab Sample ID: MB 440-588445/6**  
**Matrix: Water**  
**Analysis Batch: 588445**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			12/30/19 10:57	1

**Lab Sample ID: LCS 440-588445/5**  
**Matrix: Water**  
**Analysis Batch: 588445**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	25.2		ug/L		101	85 - 115

**Lab Sample ID: MRL 440-588445/4**  
**Matrix: Water**  
**Analysis Batch: 588445**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	1.00	1.04	J,DX	ug/L		104	75 - 125

**Lab Sample ID: MRL 440-588445/8**  
**Matrix: Water**  
**Analysis Batch: 588445**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	3.96	J,DX	ug/L		99	75 - 125

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## Method: 314.0 - Perchlorate (IC) (Continued)

**Lab Sample ID: 440-258138-C-1 MS**  
**Matrix: Water**  
**Analysis Batch: 588445**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	3.3	J,DX	25.0	28.2		ug/L		100	80 - 120

**Lab Sample ID: 440-258138-C-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 588445**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	3.3	J,DX	25.0	27.6		ug/L		97	80 - 120	2	15

## Method: 1613B - Dioxins and Furans (HRGC/HRMS)

**Lab Sample ID: MB 320-348645/1-A**  
**Matrix: Water**  
**Analysis Batch: 349278**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 348645**

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.000024	ug/L		12/30/19 16:10	01/06/20 19:17	1
2,3,7,8-TCDF	ND		0.000010	0.000019	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,7,8-PeCDD	ND		0.000050	0.000029	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,7,8-PeCDF	ND		0.000050	0.000020	ug/L		12/30/19 16:10	01/06/20 19:17	1
2,3,4,7,8-PeCDF	ND		0.000050	0.000020	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,4,7,8-HxCDD	0.00000241	J,DX q	0.000050	0.000013	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,6,7,8-HxCDD	0.00000154	J,DX	0.000050	0.000013	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,7,8,9-HxCDD	ND		0.000050	0.000012	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.000022	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,6,7,8-HxCDF	ND		0.000050	0.000023	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,7,8,9-HxCDF	ND		0.000050	0.000017	ug/L		12/30/19 16:10	01/06/20 19:17	1
2,3,4,6,7,8-HxCDF	ND		0.000050	0.000018	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,4,6,7,8-HpCDD	0.00000304	J,DX	0.000050	0.000006	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,4,6,7,8-HpCDF	0.00000413	J,DX q	0.000050	0.000005	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,4,7,8,9-HpCDF	0.00000119	J,DX q	0.000050	0.000006	ug/L		12/30/19 16:10	01/06/20 19:17	1
OCDD	0.0000133	J,DX	0.00010	0.000025	ug/L		12/30/19 16:10	01/06/20 19:17	1
OCDF	0.00000511	J,DX	0.00010	0.000024	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total TCDD	ND		0.000010	0.000024	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total TCDF	ND		0.000010	0.000019	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total PeCDD	ND		0.000050	0.000029	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total PeCDF	ND		0.000050	0.000020	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total HxCDD	0.00000395	J,DX q	0.000050	0.000012	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total HxCDF	ND		0.000050	0.000017	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total HpCDD	0.00000495	J,DX	0.000050	0.000006	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total HpCDF	0.00000533	J,DX q	0.000050	0.000005	ug/L		12/30/19 16:10	01/06/20 19:17	1
Isotope Dilution	%Recovery	MB Qualifier	MB Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	62		25 - 164				12/30/19 16:10	01/06/20 19:17	1
13C-2,3,7,8-TCDF	61		24 - 169				12/30/19 16:10	01/06/20 19:17	1

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

**Lab Sample ID: MB 320-348645/1-A**  
**Matrix: Water**  
**Analysis Batch: 349278**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 348645**

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C-1,2,3,7,8-PeCDD	67		25 - 181	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,7,8-PeCDF	62		24 - 185	12/30/19 16:10	01/06/20 19:17	1
13C-2,3,4,7,8-PeCDF	69		21 - 178	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,4,7,8-HxCDD	70		32 - 141	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,6,7,8-HxCDD	58		28 - 130	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,4,7,8-HxCDF	62		26 - 152	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,6,7,8-HxCDF	56		26 - 123	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,7,8,9-HxCDF	60		29 - 147	12/30/19 16:10	01/06/20 19:17	1
13C-2,3,4,6,7,8-HxCDF	60		28 - 136	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,4,6,7,8-HpCDD	71		23 - 140	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,4,6,7,8-HpCDF	65		28 - 143	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,4,7,8,9-HpCDF	72		26 - 138	12/30/19 16:10	01/06/20 19:17	1
13C-OCDD	72		17 - 157	12/30/19 16:10	01/06/20 19:17	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
37Cl4-2,3,7,8-TCDD	112		35 - 197	12/30/19 16:10	01/06/20 19:17	1

**Lab Sample ID: LCS 320-348645/2-A**  
**Matrix: Water**  
**Analysis Batch: 349278**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 348645**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDF	0.000200	0.000215		ug/L		107	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00109		ug/L		109	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00107		ug/L		107	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000984		ug/L		98	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.00103	MB	ug/L		103	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00108	MB	ug/L		108	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.00107		ug/L		107	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000991		ug/L		99	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.00103		ug/L		103	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.00102		ug/L		102	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00101		ug/L		101	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.00108	MB	ug/L		108	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.00110	MB	ug/L		110	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.00102	MB	ug/L		102	78 - 138
OCDD	0.00200	0.00223	MB	ug/L		112	78 - 144
OCDF	0.00200	0.00221	MB	ug/L		111	63 - 170

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	66		20 - 175
13C-2,3,7,8-TCDF	61		22 - 152
13C-1,2,3,7,8-PeCDD	65		21 - 227
13C-1,2,3,7,8-PeCDF	61		21 - 192
13C-2,3,4,7,8-PeCDF	68		13 - 328
13C-1,2,3,4,7,8-HxCDD	63		21 - 193
13C-1,2,3,6,7,8-HxCDD	54		25 - 163

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

**Lab Sample ID: LCS 320-348645/2-A**  
**Matrix: Water**  
**Analysis Batch: 349278**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 348645**

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
13C-1,2,3,4,7,8-HxCDF	57		19 - 202
13C-1,2,3,6,7,8-HxCDF	53		21 - 159
13C-1,2,3,7,8,9-HxCDF	56		17 - 205
13C-2,3,4,6,7,8-HxCDF	57		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	62		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	57		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	64		20 - 186
13C-OCDD	63		13 - 199

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
37Cl4-2,3,7,8-TCDD	112		31 - 191

**Lab Sample ID: LCSD 320-348645/3-A**  
**Matrix: Water**  
**Analysis Batch: 349278**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 348645**

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>Limits</i>	<i>RPD</i>	<i>Limit</i>
2,3,7,8-TCDD	0.000200	0.000211		ug/L		105	67 - 158	3	50
2,3,7,8-TCDF	0.000200	0.000215		ug/L		107	75 - 158	0	50
1,2,3,7,8-PeCDD	0.00100	0.00112		ug/L		112	70 - 142	2	50
1,2,3,7,8-PeCDF	0.00100	0.00109		ug/L		109	80 - 134	2	50
2,3,4,7,8-PeCDF	0.00100	0.00102		ug/L		102	68 - 160	4	50
1,2,3,4,7,8-HxCDD	0.00100	0.00104	MB	ug/L		104	70 - 164	1	50
1,2,3,6,7,8-HxCDD	0.00100	0.00113	MB	ug/L		113	76 - 134	4	50
1,2,3,7,8,9-HxCDD	0.00100	0.00111		ug/L		111	64 - 162	4	50
1,2,3,4,7,8-HxCDF	0.00100	0.00103		ug/L		103	72 - 134	3	50
1,2,3,6,7,8-HxCDF	0.00100	0.00106		ug/L		106	84 - 130	3	50
1,2,3,7,8,9-HxCDF	0.00100	0.00106		ug/L		106	78 - 130	4	50
2,3,4,6,7,8-HxCDF	0.00100	0.00106		ug/L		106	70 - 156	4	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00109	MB	ug/L		109	70 - 140	1	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.00111	MB	ug/L		111	82 - 122	1	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.00104	MB	ug/L		104	78 - 138	2	50
OCDD	0.00200	0.00217	MB	ug/L		109	78 - 144	3	50
OCDF	0.00200	0.00216	MB	ug/L		108	63 - 170	2	50

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
13C-2,3,7,8-TCDD	65		20 - 175
13C-2,3,7,8-TCDF	61		22 - 152
13C-1,2,3,7,8-PeCDD	63		21 - 227
13C-1,2,3,7,8-PeCDF	60		21 - 192
13C-2,3,4,7,8-PeCDF	66		13 - 328
13C-1,2,3,4,7,8-HxCDD	61		21 - 193
13C-1,2,3,6,7,8-HxCDD	56		25 - 163
13C-1,2,3,4,7,8-HxCDF	57		19 - 202
13C-1,2,3,6,7,8-HxCDF	54		21 - 159
13C-1,2,3,7,8,9-HxCDF	56		17 - 205
13C-2,3,4,6,7,8-HxCDF	57		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	66		26 - 166

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

**Lab Sample ID: LCSD 320-348645/3-A**  
**Matrix: Water**  
**Analysis Batch: 349278**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 348645**

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C-1,2,3,4,6,7,8-HpCDF	59		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	68		20 - 186
13C-OCDD	69		13 - 199

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	107		31 - 191

## Method: 200.7 Rev 4.4 - Metals (ICP)

**Lab Sample ID: MB 440-587971/1-A**  
**Matrix: Water**  
**Analysis Batch: 588370**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 587971**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	12	ug/L		12/26/19 10:35	12/29/19 10:46	1
Iron	ND		100	50	ug/L		12/26/19 10:35	12/29/19 10:46	1

**Lab Sample ID: LCS 440-587971/2-A**  
**Matrix: Water**  
**Analysis Batch: 588370**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 587971**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Zinc	500	494		ug/L		99	85 - 115
Iron	500	456		ug/L		91	85 - 115

**Lab Sample ID: 440-258077-D-1-A MS**  
**Matrix: Water**  
**Analysis Batch: 588370**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total Recoverable**  
**Prep Batch: 587971**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Zinc	27		500	526		ug/L		100	70 - 130
Iron	570		500	1120		ug/L		110	70 - 130

**Lab Sample ID: 440-258077-D-1-B MSD**  
**Matrix: Water**  
**Analysis Batch: 588370**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total Recoverable**  
**Prep Batch: 587971**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Zinc	27		500	515		ug/L		98	70 - 130	2	20
Iron	570		500	1130		ug/L		111	70 - 130	1	20

**Lab Sample ID: MB 440-587989/1-B**  
**Matrix: Water**  
**Analysis Batch: 588205**

**Client Sample ID: Method Blank**  
**Prep Type: Dissolved**  
**Prep Batch: 588019**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	12	ug/L		12/26/19 14:27	12/27/19 13:29	1
Iron	ND		100	50	ug/L		12/26/19 14:27	12/27/19 13:29	1

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

**Lab Sample ID: LCS 440-587989/2-B**  
**Matrix: Water**  
**Analysis Batch: 588205**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Dissolved**  
**Prep Batch: 588019**  
**%Rec.**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Zinc	500	488		ug/L		98	85 - 115
Iron	500	463		ug/L		93	85 - 115

**Lab Sample ID: 440-258077-B-2-E MS**  
**Matrix: Water**  
**Analysis Batch: 588205**

**Client Sample ID: Matrix Spike**  
**Prep Type: Dissolved**  
**Prep Batch: 588019**  
**%Rec.**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Zinc	15	J,DX	500	499		ug/L		97	70 - 130
Iron	120		500	584		ug/L		93	70 - 130

**Lab Sample ID: 440-258077-B-2-F MSD**  
**Matrix: Water**  
**Analysis Batch: 588205**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Dissolved**  
**Prep Batch: 588019**  
**%Rec.**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Zinc	15	J,DX	500	511		ug/L		99	70 - 130	2	20
Iron	120		500	611		ug/L		98	70 - 130	5	20

## Method: 200.8 - Metals (ICP/MS)

**Lab Sample ID: MB 440-587974/1-A**  
**Matrix: Water**  
**Analysis Batch: 588549**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 587974**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		12/26/19 10:42	12/30/19 12:16	1
Copper	ND		2.0	0.50	ug/L		12/26/19 10:42	12/30/19 12:16	1
Lead	ND		1.0	0.50	ug/L		12/26/19 10:42	12/30/19 12:16	1
Selenium	ND		2.0	0.50	ug/L		12/26/19 10:42	12/30/19 12:16	1

**Lab Sample ID: LCS 440-587974/2-A**  
**Matrix: Water**  
**Analysis Batch: 588549**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 587974**  
**%Rec.**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	82.3		ug/L		103	85 - 115
Copper	80.0	80.5		ug/L		101	85 - 115
Lead	80.0	82.1		ug/L		103	85 - 115
Selenium	80.0	82.6		ug/L		103	85 - 115

**Lab Sample ID: 440-258054-H-10-C MS**  
**Matrix: Water**  
**Analysis Batch: 588549**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total Recoverable**  
**Prep Batch: 587974**  
**%Rec.**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cadmium	0.65	J,DX	80.0	82.8		ug/L		103	70 - 130
Copper	30		80.0	102		ug/L		90	70 - 130
Lead	6.6		80.0	85.4		ug/L		98	70 - 130
Selenium	0.95	J,DX	80.0	81.1		ug/L		100	70 - 130

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## Method: 200.8 - Metals (ICP/MS)

**Lab Sample ID: 440-258054-H-10-D MSD**  
**Matrix: Water**  
**Analysis Batch: 588549**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total Recoverable**  
**Prep Batch: 587974**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.		RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits	RPD		
Cadmium	0.65	J,DX	80.0	82.3		ug/L		102	70 - 130	1	20	
Copper	30		80.0	101		ug/L		89	70 - 130	1	20	
Lead	6.6		80.0	85.9		ug/L		99	70 - 130	1	20	
Selenium	0.95	J,DX	80.0	81.4		ug/L		101	70 - 130	0	20	

**Lab Sample ID: MB 440-587989/1-F**  
**Matrix: Water**  
**Analysis Batch: 588414**

**Client Sample ID: Method Blank**  
**Prep Type: Dissolved**  
**Prep Batch: 588020**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
	Result	Qualifier								
Cadmium	ND		1.0	0.25	ug/L		12/26/19 14:39	12/29/19 18:03		1
Copper	ND		2.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:03		1
Lead	ND		1.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:03		1
Selenium	0.513	J,DX	2.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:03		1

**Lab Sample ID: LCS 440-587989/2-F**  
**Matrix: Water**  
**Analysis Batch: 588414**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Dissolved**  
**Prep Batch: 588020**

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec.	
							Added	Result
Cadmium	80.0	79.9		ug/L		100	85 - 115	
Copper	80.0	81.3		ug/L		102	85 - 115	
Lead	80.0	80.2		ug/L		100	85 - 115	
Selenium	80.0	76.2		ug/L		95	85 - 115	

**Lab Sample ID: 440-258077-B-2-H MS**  
**Matrix: Water**  
**Analysis Batch: 588414**

**Client Sample ID: Matrix Spike**  
**Prep Type: Dissolved**  
**Prep Batch: 588020**

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	
	Result	Qualifier	Added	Result	Qualifier				Limits	RPD
Cadmium	ND		80.0	80.2		ug/L		100	70 - 130	
Copper	3.2		80.0	86.3		ug/L		104	70 - 130	
Lead	ND		80.0	81.7		ug/L		102	70 - 130	
Selenium	ND		80.0	77.1		ug/L		96	70 - 130	

**Lab Sample ID: 440-258077-B-2-I MSD**  
**Matrix: Water**  
**Analysis Batch: 588414**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Dissolved**  
**Prep Batch: 588020**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.		RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits	RPD		
Cadmium	ND		80.0	77.5		ug/L		97	70 - 130	3	20	
Copper	3.2		80.0	83.7		ug/L		101	70 - 130	3	20	
Lead	ND		80.0	80.4		ug/L		100	70 - 130	2	20	
Selenium	ND		80.0	74.6		ug/L		93	70 - 130	3	20	

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## Method: 245.1 - Mercury (CVAA)

**Lab Sample ID: MB 440-588737/1-A**  
**Matrix: Water**  
**Analysis Batch: 588954**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 588737**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		12/31/19 12:32	01/02/20 13:12	1

**Lab Sample ID: LCS 440-588737/2-A**  
**Matrix: Water**  
**Analysis Batch: 588954**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 588737**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	4.00	3.55		ug/L		89	85 - 115

**Lab Sample ID: 440-258077-D-1-H MS**  
**Matrix: Water**  
**Analysis Batch: 588954**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 588737**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		4.00	3.43		ug/L		86	75 - 125

**Lab Sample ID: 440-258077-D-1-I MSD**  
**Matrix: Water**  
**Analysis Batch: 588954**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 588737**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		4.00	3.55		ug/L		89	75 - 125	3	20

**Lab Sample ID: MB 440-588000/1-B**  
**Matrix: Water**  
**Analysis Batch: 589374**

**Client Sample ID: Method Blank**  
**Prep Type: Dissolved**  
**Prep Batch: 588987**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/03/20 08:28	01/06/20 21:05	1

**Lab Sample ID: LCS 440-588000/2-B**  
**Matrix: Water**  
**Analysis Batch: 589374**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Dissolved**  
**Prep Batch: 588987**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	4.00	4.06		ug/L		102	85 - 115

**Lab Sample ID: 440-258077-A-2-E MS**  
**Matrix: Water**  
**Analysis Batch: 589374**

**Client Sample ID: Matrix Spike**  
**Prep Type: Dissolved**  
**Prep Batch: 588987**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		4.00	4.00		ug/L		100	75 - 125

**Lab Sample ID: 440-258077-A-2-F MSD**  
**Matrix: Water**  
**Analysis Batch: 589374**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Dissolved**  
**Prep Batch: 588987**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		4.00	3.80		ug/L		95	75 - 125	5	20

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-587848/5  
 Matrix: Water  
 Analysis Batch: 587848

Client Sample ID: Method Blank  
 Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			12/24/19 14:25	1

Lab Sample ID: 440-258085-1 DU  
 Matrix: Water  
 Analysis Batch: 587848

Client Sample ID: Outfall002\_20191224\_Comp  
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Turbidity	220		248		NTU		11	20

## Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-587964/1  
 Matrix: Water  
 Analysis Batch: 587964

Client Sample ID: Method Blank  
 Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			12/26/19 10:23	1

Lab Sample ID: LCS 440-587964/2  
 Matrix: Water  
 Analysis Batch: 587964

Client Sample ID: Lab Control Sample  
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	990		mg/L		99	90 - 110

Lab Sample ID: 440-257932-H-5 DU  
 Matrix: Water  
 Analysis Batch: 587964

Client Sample ID: Duplicate  
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	4300		4300		mg/L		0.5	5

## Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-588034/1  
 Matrix: Water  
 Analysis Batch: 588034

Client Sample ID: Method Blank  
 Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			12/26/19 15:23	1

Lab Sample ID: LCS 440-588034/2  
 Matrix: Water  
 Analysis Batch: 588034

Client Sample ID: Lab Control Sample  
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	951		mg/L		95	85 - 115

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## Method: SM 2540D - Solids, Total Suspended (TSS) (Continued)

Lab Sample ID: 440-258147-A-1 DU  
 Matrix: Water  
 Analysis Batch: 588034

Client Sample ID: Duplicate  
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	13		13.3		mg/L		3	10

## Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-588165/1-A  
 Matrix: Water  
 Analysis Batch: 588222

Client Sample ID: Method Blank  
 Prep Type: Total/NA  
 Prep Batch: 588165

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		12/27/19 10:46	12/27/19 16:10	1

Lab Sample ID: LCS 440-588165/2-A  
 Matrix: Water  
 Analysis Batch: 588222

Client Sample ID: Lab Control Sample  
 Prep Type: Total/NA  
 Prep Batch: 588165  
 %Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	100	98.3		ug/L		98	80 - 120

Lab Sample ID: 440-258077-D-1-E MS  
 Matrix: Water  
 Analysis Batch: 588222

Client Sample ID: Matrix Spike  
 Prep Type: Total/NA  
 Prep Batch: 588165  
 %Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	ND		100	100		ug/L		100	75 - 125

Lab Sample ID: 440-258077-D-1-F MSD  
 Matrix: Water  
 Analysis Batch: 588222

Client Sample ID: Matrix Spike Duplicate  
 Prep Type: Total/NA  
 Prep Batch: 588165  
 %Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Cyanide, Total	ND		100	99.2		ug/L		99	75 - 125	1	20

## Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-588582/10  
 Matrix: Water  
 Analysis Batch: 588582

Client Sample ID: Method Blank  
 Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.200	0.100	mg/L			12/30/19 13:17	1

Lab Sample ID: LCS 440-588582/11  
 Matrix: Water  
 Analysis Batch: 588582

Client Sample ID: Lab Control Sample  
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Ammonia (as N)	5.00	5.080		mg/L		102	90 - 110



# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## Method: SM 4500 NH3 G - Ammonia (Continued)

**Lab Sample ID: MRL 440-588582/9**  
**Matrix: Water**  
**Analysis Batch: 588582**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	0.200	0.1740	J,DX	mg/L		87	50 - 150

**Lab Sample ID: 440-258185-K-1 MS**  
**Matrix: Water**  
**Analysis Batch: 588582**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	ND		5.00	5.040		mg/L		101	90 - 110

**Lab Sample ID: 440-258185-K-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 588582**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ammonia (as N)	ND		5.00	4.890		mg/L		98	90 - 110	3	15

## Method: SM 5540C - Methylene Blue Active Substances (MBAS)

**Lab Sample ID: MB 440-587868/4**  
**Matrix: Water**  
**Analysis Batch: 587868**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			12/24/19 15:37	1

**Lab Sample ID: LCS 440-587868/5**  
**Matrix: Water**  
**Analysis Batch: 587868**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.250	0.250		mg/L		100	90 - 110

**Lab Sample ID: LCSD 440-587868/6**  
**Matrix: Water**  
**Analysis Batch: 587868**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Blue Active Substances	0.250	0.257		mg/L		103	90 - 110	2	20

**Lab Sample ID: MRL 440-587868/3**  
**Matrix: Water**  
**Analysis Batch: 587868**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.100	0.107		mg/L		107	50 - 150

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## Method: SM 5540C - Methylene Blue Active Substances (MBAS) (Continued)

**Lab Sample ID: 320-57305-A-1 MS ^2**  
**Matrix: Water**  
**Analysis Batch: 587868**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.68		0.250	0.916		mg/L		95	50 - 125

**Lab Sample ID: 320-57305-A-1 MSD ^2**  
**Matrix: Water**  
**Analysis Batch: 587868**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Blue Active Substances	0.68		0.250	0.966		mg/L		115	50 - 125	5	20

## Method: SM5210B - BOD, 5 Day

**Lab Sample ID: USB 440-587888/1**  
**Matrix: Water**  
**Analysis Batch: 587888**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	ND		2.0	0.50	mg/L			12/24/19 19:43	1

**Lab Sample ID: LCS 440-587888/5**  
**Matrix: Water**  
**Analysis Batch: 587888**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biochemical Oxygen Demand	199	195		mg/L		98	85 - 115

**Lab Sample ID: LCSD 440-587888/6**  
**Matrix: Water**  
**Analysis Batch: 587888**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Biochemical Oxygen Demand	199	194		mg/L		98	85 - 115	1	20

**Lab Sample ID: LCSD 440-587888/7**  
**Matrix: Water**  
**Analysis Batch: 587888**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Biochemical Oxygen Demand	199	197		mg/L		99	85 - 115	1	20

**Lab Sample ID: 440-258098-A-1 DU**  
**Matrix: Water**  
**Analysis Batch: 587888**

**Client Sample ID: Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Biochemical Oxygen Demand	3.0		2.94		mg/L		0.3	20

# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## GC/MS Semi VOA

### Prep Batch: 588303

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	625	
MB 440-588303/1-A	Method Blank	Total/NA	Water	625	
LCS 440-588303/2-A	Lab Control Sample	Total/NA	Water	625	
LCSD 440-588303/3-A	Lab Control Sample Dup	Total/NA	Water	625	

### Analysis Batch: 588422

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	625.1	588303
MB 440-588303/1-A	Method Blank	Total/NA	Water	625.1	588303
LCS 440-588303/2-A	Lab Control Sample	Total/NA	Water	625.1	588303
LCSD 440-588303/3-A	Lab Control Sample Dup	Total/NA	Water	625.1	588303

## GC Semi VOA

### Prep Batch: 587899

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	608	
MB 440-587899/1-A	Method Blank	Total/NA	Water	608	
LCS 440-587899/2-A	Lab Control Sample	Total/NA	Water	608	
440-258025-B-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608	
440-258025-C-1-A MS	Matrix Spike	Total/NA	Water	608	

### Analysis Batch: 587976

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	608.3	587899
MB 440-587899/1-A	Method Blank	Total/NA	Water	608.3	587899
LCS 440-587899/2-A	Lab Control Sample	Total/NA	Water	608.3	587899
440-258025-B-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608.3	587899
440-258025-C-1-A MS	Matrix Spike	Total/NA	Water	608.3	587899

## HPLC/IC

### Analysis Batch: 587742

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	300.0	
440-258085-1 - DL	Outfall002_20191224_Comp	Total/NA	Water	300.0	
MB 440-587742/15	Method Blank	Total/NA	Water	300.0	
LCS 440-587742/14	Lab Control Sample	Total/NA	Water	300.0	
440-258085-1 MS	Outfall002_20191224_Comp	Total/NA	Water	300.0	
440-258085-1 MSD	Outfall002_20191224_Comp	Total/NA	Water	300.0	

### Analysis Batch: 587743

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	300.0	
MB 440-587743/15	Method Blank	Total/NA	Water	300.0	
LCS 440-587743/14	Lab Control Sample	Total/NA	Water	300.0	
440-258085-1 MS	Outfall002_20191224_Comp	Total/NA	Water	300.0	
440-258085-1 MSD	Outfall002_20191224_Comp	Total/NA	Water	300.0	

### Analysis Batch: 588445

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	314.0	

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## HPLC/IC (Continued)

### Analysis Batch: 588445 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-588445/6	Method Blank	Total/NA	Water	314.0	
LCS 440-588445/5	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-588445/4	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-588445/8	Lab Control Sample	Total/NA	Water	314.0	
440-258138-C-1 MS	Matrix Spike	Total/NA	Water	314.0	
440-258138-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0	

### Analysis Batch: 589052

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	NO3NO2 Calc	

## Specialty Organics

### Prep Batch: 348645

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	1613B	
MB 320-348645/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-348645/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-348645/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

### Analysis Batch: 349278

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	1613B	348645
MB 320-348645/1-A	Method Blank	Total/NA	Water	1613B	348645
LCS 320-348645/2-A	Lab Control Sample	Total/NA	Water	1613B	348645
LCSD 320-348645/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	348645

## Metals

### Prep Batch: 587971

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total Recoverable	Water	200.2	
MB 440-587971/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-587971/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-258077-D-1-A MS	Matrix Spike	Total Recoverable	Water	200.2	
440-258077-D-1-B MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

### Prep Batch: 587974

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total Recoverable	Water	200.2	
MB 440-587974/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-587974/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-258054-H-10-C MS	Matrix Spike	Total Recoverable	Water	200.2	
440-258054-H-10-D MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

### Filtration Batch: 587989

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-3	Outfall002_20191224_Comp_F	Dissolved	Water	FILTRATION	
MB 440-587989/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-587989/1-F	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-587989/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-587989/2-F	Lab Control Sample	Dissolved	Water	FILTRATION	

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## Metals (Continued)

### Filtration Batch: 587989 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-B-2-E MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-258077-B-2-F MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	
440-258077-B-2-H MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-258077-B-2-I MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

### Filtration Batch: 588000

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-3	Outfall002_20191224_Comp_F	Dissolved	Water	FILTRATION	
MB 440-588000/1-B	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-588000/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
440-258077-A-2-E MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-258077-A-2-F MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

### Prep Batch: 588019

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-3	Outfall002_20191224_Comp_F	Dissolved	Water	200.2	587989
MB 440-587989/1-B	Method Blank	Dissolved	Water	200.2	587989
LCS 440-587989/2-B	Lab Control Sample	Dissolved	Water	200.2	587989
440-258077-B-2-E MS	Matrix Spike	Dissolved	Water	200.2	587989
440-258077-B-2-F MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	587989

### Prep Batch: 588020

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-3	Outfall002_20191224_Comp_F	Dissolved	Water	200.2	587989
MB 440-587989/1-F	Method Blank	Dissolved	Water	200.2	587989
LCS 440-587989/2-F	Lab Control Sample	Dissolved	Water	200.2	587989
440-258077-B-2-H MS	Matrix Spike	Dissolved	Water	200.2	587989
440-258077-B-2-I MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	587989

### Analysis Batch: 588205

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-3	Outfall002_20191224_Comp_F	Dissolved	Water	200.7 Rev 4.4	588019
MB 440-587989/1-B	Method Blank	Dissolved	Water	200.7 Rev 4.4	588019
LCS 440-587989/2-B	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	588019
440-258077-B-2-E MS	Matrix Spike	Dissolved	Water	200.7 Rev 4.4	588019
440-258077-B-2-F MSD	Matrix Spike Duplicate	Dissolved	Water	200.7 Rev 4.4	588019

### Analysis Batch: 588370

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total Recoverable	Water	200.7 Rev 4.4	587971
MB 440-587971/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	587971
LCS 440-587971/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	587971
440-258077-D-1-A MS	Matrix Spike	Total Recoverable	Water	200.7 Rev 4.4	587971
440-258077-D-1-B MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.7 Rev 4.4	587971

### Analysis Batch: 588414

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-3	Outfall002_20191224_Comp_F	Dissolved	Water	200.8	588020
MB 440-587989/1-F	Method Blank	Dissolved	Water	200.8	588020
LCS 440-587989/2-F	Lab Control Sample	Dissolved	Water	200.8	588020
440-258077-B-2-H MS	Matrix Spike	Dissolved	Water	200.8	588020

Eurofins Calscience Irvine

# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## Metals (Continued)

### Analysis Batch: 588414 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-B-2-I MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	588020

### Analysis Batch: 588549

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total Recoverable	Water	200.8	587974
MB 440-587974/1-A	Method Blank	Total Recoverable	Water	200.8	587974
LCS 440-587974/2-A	Lab Control Sample	Total Recoverable	Water	200.8	587974
440-258054-H-10-C MS	Matrix Spike	Total Recoverable	Water	200.8	587974
440-258054-H-10-D MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	587974

### Prep Batch: 588737

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	245.1	
MB 440-588737/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-588737/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-258077-D-1-H MS	Matrix Spike	Total/NA	Water	245.1	
440-258077-D-1-I MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

### Analysis Batch: 588954

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	245.1	588737
MB 440-588737/1-A	Method Blank	Total/NA	Water	245.1	588737
LCS 440-588737/2-A	Lab Control Sample	Total/NA	Water	245.1	588737
440-258077-D-1-H MS	Matrix Spike	Total/NA	Water	245.1	588737
440-258077-D-1-I MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	588737

### Prep Batch: 588987

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-3	Outfall002_20191224_Comp_F	Dissolved	Water	245.1	588000
MB 440-588000/1-B	Method Blank	Dissolved	Water	245.1	588000
LCS 440-588000/2-B	Lab Control Sample	Dissolved	Water	245.1	588000
440-258077-A-2-E MS	Matrix Spike	Dissolved	Water	245.1	588000
440-258077-A-2-F MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	588000

### Analysis Batch: 589374

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-3	Outfall002_20191224_Comp_F	Dissolved	Water	245.1	588987
MB 440-588000/1-B	Method Blank	Dissolved	Water	245.1	588987
LCS 440-588000/2-B	Lab Control Sample	Dissolved	Water	245.1	588987
440-258077-A-2-E MS	Matrix Spike	Dissolved	Water	245.1	588987
440-258077-A-2-F MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	588987

## General Chemistry

### Analysis Batch: 587848

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	180.1	
MB 440-587848/5	Method Blank	Total/NA	Water	180.1	
440-258085-1 DU	Outfall002_20191224_Comp	Total/NA	Water	180.1	

# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## General Chemistry

### Analysis Batch: 587868

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	SM 5540C	
MB 440-587868/4	Method Blank	Total/NA	Water	SM 5540C	
LCS 440-587868/5	Lab Control Sample	Total/NA	Water	SM 5540C	
LCSD 440-587868/6	Lab Control Sample Dup	Total/NA	Water	SM 5540C	
MRL 440-587868/3	Lab Control Sample	Total/NA	Water	SM 5540C	
320-57305-A-1 MS ^2	Matrix Spike	Total/NA	Water	SM 5540C	
320-57305-A-1 MSD ^2	Matrix Spike Duplicate	Total/NA	Water	SM 5540C	

### Analysis Batch: 587888

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	SM5210B	
USB 440-587888/1	Method Blank	Total/NA	Water	SM5210B	
LCS 440-587888/5	Lab Control Sample	Total/NA	Water	SM5210B	
LCSD 440-587888/6	Lab Control Sample Dup	Total/NA	Water	SM5210B	
LCSD 440-587888/7	Lab Control Sample Dup	Total/NA	Water	SM5210B	
440-258098-A-1 DU	Duplicate	Total/NA	Water	SM5210B	

### Analysis Batch: 587964

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	SM 2540C	
MB 440-587964/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-587964/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-257932-H-5 DU	Duplicate	Total/NA	Water	SM 2540C	

### Analysis Batch: 588034

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	SM 2540D	
MB 440-588034/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-588034/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-258147-A-1 DU	Duplicate	Total/NA	Water	SM 2540D	

### Prep Batch: 588165

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	Distill/CN	
MB 440-588165/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-588165/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
440-258077-D-1-E MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-258077-D-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

### Analysis Batch: 588222

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	SM 4500 CN E	588165
MB 440-588165/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	588165
LCS 440-588165/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	588165
440-258077-D-1-E MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	588165
440-258077-D-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	588165

### Analysis Batch: 588582

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-588582/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## General Chemistry (Continued)

### Analysis Batch: 588582 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 440-588582/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-588582/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-258185-K-1 MS	Matrix Spike	Total/NA	Water	SM 4500 NH3 G	
440-258185-K-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 NH3 G	

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# Definitions/Glossary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## Qualifiers

### GC/MS Semi VOA

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank

### HPLC/IC

Qualifier	Qualifier Description
BB	Sample > 4X spike concentration
EY	Result exceeds normal dynamic range; reported as a min. est.
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

### Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

### Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank

### General Chemistry

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.  
 Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## Laboratory: Eurofins Calscience Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
California	State Program	CA ELAP 2706	06-30-20
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte

## Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20 *
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20 *
Hawaii	State	<cert No.>	01-29-20 *
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20 *
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20 *
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19 *
Wyoming	State Program	8TMS-L	01-28-19 *

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

**Work Orders:** 9L24044

**Project:** Routine Outfall(001, 002, 011, 018)

**Attn:** TestAmerica, Irvine

**Client:** Eurofins Calscience - Irvine  
17461 Derian Ave, Suite 100  
Irvine, CA 92614

**Report Date:** 1/13/2020  
**Received Date:** 12/24/2019  
**Turnaround Time:** 1 workday  
**Phones:** (949) 261-1022  
**Fax:** (949) 260-3297  
**P.O. #:**  
**Billing Code:**

Dear TestAmerica, Irvine,

Enclosed are the results of analyses for samples received 12/24/19 with the Chain-of-Custody document. The samples were received in good condition, at 4.4 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

## Sample Results

Sample: Outfall 002\_20191224\_Comp 9L24044-01 (Water) Sampled: 12/24/19 8:20 by Client

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Method:</b> EPA 525.2M		<b>Batch ID:</b> W9L1504		<b>Instr:</b> GCMS13		<b>Prepared:</b> 12/27/19 11:09	
						<b>Analyst:</b> EFC	
Chlorpyrifos	ND	34	50	ng/l	1	01/08/20	M-02
Diazinon	ND	26	50	ng/l	1	01/08/20	M-02
<i>Surrogate(s)</i>							
1,3-Dimethyl-2-nitrobenzene	112%		76-128	Conc: 2790		01/08/20	M-02
Triphenyl phosphate	147%		40-163	Conc: 3670		01/08/20	M-02



WECK LABORATORIES, INC.

# Certificate of Analysis

FINAL REPORT

## Quality Control Results

### Semivolatile Organics - Low Level by Tandem GC/MS/MS

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Qualifier
<b>Blank (W9L1504-BLK1)</b>					<b>Prepared: 12/27/19 Analyzed: 01/08/20</b>						
Chlorpyrifos	ND	6.9	10	ng/l							
Diazinon	ND	5.2	10	ng/l							
<i>Surrogate(s)</i>											
1,3-Dimethyl-2-nitrobenzene	533			ng/l	500		107	76-128			
Triphenyl phosphate	513			ng/l	500		103	40-163			
<b>LCS (W9L1504-BS1)</b>					<b>Prepared: 12/27/19 Analyzed: 01/08/20</b>						
Chlorpyrifos	69.4	6.9	10	ng/l	50.0		139	37-169			
Diazinon	53.0	5.2	10	ng/l	50.0		106	43-152			
<i>Surrogate(s)</i>											
1,3-Dimethyl-2-nitrobenzene	551			ng/l	500		110	76-128			
Triphenyl phosphate	500			ng/l	500		100	40-163			
<b>Matrix Spike (W9L1504-MS1)</b>					<b>Source: 9L23123-01 Prepared: 12/27/19 Analyzed: 01/08/20</b>						
Chlorpyrifos	452	34	50	ng/l	250	ND	181	37-168			M-02, MS-05, M-02
Diazinon	315	26	50	ng/l	250	ND	126	36-153			M-02
<i>Surrogate(s)</i>											
1,3-Dimethyl-2-nitrobenzene	2750			ng/l	2500		110	76-128			M-02
Triphenyl phosphate	2710			ng/l	2500		109	40-163			M-02
<b>Matrix Spike Dup (W9L1504-MSD1)</b>					<b>Source: 9L23123-01 Prepared: 12/27/19 Analyzed: 01/08/20</b>						
Chlorpyrifos	365	34	50	ng/l	250	ND	146	37-168	21	30	M-02
Diazinon	268	26	50	ng/l	250	ND	107	36-153	16	30	M-02
<i>Surrogate(s)</i>											
1,3-Dimethyl-2-nitrobenzene	2730			ng/l	2500		109	76-128			M-02
Triphenyl phosphate	2700			ng/l	2500		108	40-163			M-02

## Notes and Definitions

Item	Definition
M-02	Due to the nature of matrix interferences, sample was diluted prior to preparation. The MDL and MRL were raised due to the dilution.
MS-05	The spike recovery and/or RPD were outside acceptance limits for the MS and/or MSD due to possible matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
% Rec	Percent Recovery
Dil	Dilution
dry	Sample results reported on a dry weight basis
MDA	Minimum Detectable Activity
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
NR	Not Reportable
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

**Reviewed by:**

Regina Giancola  
Project Manager



ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-CA #04229CA • NELAP-OR #4047 • NJ-DEP #CA015 • NV-DEP #NAC 445A • SCAQMD #93LA1006

*This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.*

CHAIN OF CUSTODY FORM

Test America

<p>Client Name/Address:                  Haley &amp; Aldrich                  5333 Mission Center Rd Suite 300                  San Diego, CA 92108</p>		<p>Project:                  Boeing-SSFL NPDES                  Permit 2019                  Routine Outfall #001, 002, 011, 018                  Outfall 002                  Comp</p>		ANALYSIS REQUIRED										<p>Comments</p>	
<p>Test America Contact: Unrashi Patel                  17461 Denan Ave Suite #100                  Irvine CA 92614                  Tel 949-260-3269                  Cell 949-333-9055</p>		<p>Project Manager: Katherine Miller                  520 289 8606, 520.904.6944 (cell)                  Field Manager: Mark Dominick                  978.234.5033, 818.598.0702 (cell)</p>		Total Recoverable Metals (E200 7) Cu, Pb, Cd, Se	TCCD (and all congeners) (E1613B)	BOD5 (20 degrees C) (E405) (SM5210B_BODCalc)	Surfactants (MBS) (SM5540C/E425 1)	Cl-, SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Perchlorate (E300)	Turbidity, TDS (SM2540C/E180 1)	TSS (160 2) (SM2540D)	Ammonia-N (350 2)	alpha-BHC (E808)	2,4,6 TCP, 2,4 Dinitrochlorene, Bis(2-ethylhexyl)phthalate, NDM, PCP (SVOCs E825)		Total Recoverable Metals Mercury (E245 1)
Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont	Preservative	Bottle #	MIMS/D	ANALYSIS REQUIRED						<p>48 hours Holding Time NO<sub>2</sub> &amp; NO<sub>3</sub>                  48 hour holding time for turbidity</p>
Outfall 002	Outfall002_20191224_Comp	12/24/2019 10:30	WM	500 mL Poly	1	HNO <sub>3</sub>	90	No	X				X		
			WM	1 L Glass Amber	2	None	110	No							
			WM	1 L Poly	1	None	115	No							
			WM	500 mL Poly	2	None	120	No							
			WM	500 mL Poly	2	None	130	No		X					
			WM	500 mL Poly	1	None	150	No							
			WM	500 mL Poly	1	H <sub>2</sub> SO <sub>4</sub>	160	No			X				
			WM	1 L Glass Amber	2	None	170	No				X			
			WM	1 L Glass Amber	2	None	180	No					X		
			WM	1 L Poly	1	None	185	No							
			WM	1 L Glass Amber	2	None	110	No						Hold	
			WM	500 mL Poly	2	None	120	No						Hold	
			WM	500 mL Poly	2	None	130	No		H				Hold	
			WM	1 L Glass Amber	2	None	170	No						Hold	
			WM	1 L Glass Amber	2	None	180	No						Hold	

Relinquished By: *Mark Dominick* Date/Time: 12-24-19/10:15  
 Company: *TRV*

Relinquished By: *TRV* Date/Time: 12/24/19  
 Company: *TRV*

Relinquished By: *TRV* Date/Time: 12/24/19  
 Company: *TRV*

Turn-around time (Check)  
 24 Hour \_\_\_ 72 Hour \_\_\_ 10 Day \_\_\_ X  
 48 Hour \_\_\_ 5 Day \_\_\_ Normal \_\_\_

Sample Integrity (Check)  
 Intact \_\_\_ On Ice \_\_\_

Store samples for 6 months  
 Data Requirements (Check)  
 No Level IV \_\_\_ All Level IV \_\_\_ X



1.5/1.3 1.2/1.0  
 1.2/1.0 1.3/1.1 1.2/0.9  
 1.4/1.2 1.2/1.0

12/24/19

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CHAIN OF CUSTODY FORM

Test America

Client Name/Address:		Project:		ANALYSIS REQUIRED										Comments									
Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108  Test America Contact: Unvashi Patel 17461 Deiran Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-8055		Boeing-SSFL NPDES Permit 2019 Routine Outfall [001, 002, 011, 018] Outfall 002 Comp		Total Dissolved Metals (E200 7) Zn (E200 8) Cu, Pb, Cd, Se	Cyanide (SM4500-CNE / E335 2)	Gross Alpha (E900 0), Gross Beta (E900 0), Tritium (H-3) (E906 0), Sr-90 (E905 0), Total Radium 228 (E904 0), Uranium (E908 0), K-40, CS-137 (E901 0 or E901 1)	Chronic Toxicity - Selenium (EPA-821-R-02-013)	Total Dissolved Metals Mercury (E245 1)	Turn-around time (Check)	Sample Integrity (Check)	Store samples for 6 months	Data Requirements (Check)											
Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD															
Outfall 002	Outfall002_20191224_Comp_F	12/24/2019 10:30	WM	1L Poly	1	None	200	No	X														
	Outfall002_20191224_Comp	12/24/2019 09:30	WM	borosilicate vials	1	None	320	No		X													
	Outfall002_20191224_Comp	12/24/2019 09:30	WM	500 mL Poly	1	NaOH	220	No															
	Outfall002_20191224_Comp	12/24/2019 09:30	WM	2.5 Gal Cube	1	None	225	No			X												
	Outfall002_20191224_Comp	12/24/2019 09:30	WM	1L Glass Amber	1	None	230	No															
	Outfall002_20191224_Comp	12/24/2019 09:30	WM	1 Gal Cube	6	None	235	No															
	Outfall002_20191224_Comp	12/24/2019 09:30	WM	1L Glass Amber	2	HCl	275	No															
	Outfall002_20191224_Comp	12/24/2019 09:30	WM	1L Glass Amber	2	HCl	275	No															

Legend: A=Annual, C=Conditional, EP=Expert Panel, ReRoutine, Q=Quarterly, QRSW=Quarterly Receiving Water, S=Semi-Annual

Relinquished By: *Mark Dominick* Date/Time: 12/24/19/10:15 Company: TAIRB

Relinquished By: *TAIRB* Date/Time: 12/24/19 Company: TAIRB

Relinquished By: *TAIRB* Date/Time: 12/24/19 Company: TAIRB



**Chain of Custody Record**



<b>Client Information (Sub Contract Lab)</b>		Lab PM: Patel, Urvashi		Carrier Tracking Note(s):	
Client Contact: Shipping/Receiving		E-Mail: urvashi.patel@testamericainc.com		State of Origin: California	
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - California		COC No: 440-150583.1	
Address: 880 Riverside Parkway, West Sacramento, CA, 95605		Due Date Requested: 1/7/2020		Page: 1 of 1	
City: West Sacramento		TAT Requested (days):		Job #: 440-258085-1	
State, Zip: CA, 95605		PO #:		Preservation Codes:	
Phone: 916-373-5600 (Tel) 916-372-1059 (Fax)		WO #:		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	
Email:		Project #: 44009879		Other:	
Project Name: Boeing NPDES SSFL outfalls		SSOW#:			
Site:		Sample Date: 12/24/19		Sample Time: 08:20 Pacific	
Sample Identification - Client ID (Lab ID): Outfall002_20191224_Comp (440-258085-1)		Sample Type (C=Comp, G=grab) BT=TISSUE, A=Air		Matrix (W=water, S=solid, O=wastewat, BT=TISSUE, A=Air)	
Sample Date: 12/24/19		Sample Time: 08:20 Pacific		Preservation Code: Water	
Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		Total Number of Containers	
X		X		2	
Special Instructions/Note:		See OAS, Boeing_w/u to zero, ug/L, Use Boeing glassware.			

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/testing/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

<b>Possible Hazard Identification</b>		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Unconfirmed		Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
Deliverable Requested: I, II, III, IV, Other (specify)		Special Instructions/OC Requirements:	
Primary Deliverable Rank: 2		Time: _____	
Empty Kit Relinquished by: _____		Date: _____	
Relinquished by: _____		Date/Time: 12/26/19 17:00	
Relinquished by: _____		Date/Time: _____	
Relinquished by: _____		Date/Time: _____	
Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.: 5041	
Cooler Temperature(s) °C and Other Remarks: 1.0 car 0-8		Company: _____	
		Date/Time: 12/27/19 9:46	
		Date/Time: _____	
		Date/Time: _____	
		Company: _____	
		Date/Time: _____	





## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-258085-1

SDG Number:

**Login Number: 258085**

**List Number: 1**

**Creator: Soderblom, Tim**

**List Source: Eurofins Irvine**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-258085-1

SDG Number:

**Login Number: 258085**

**List Number: 3**

**Creator: Thompson, Sarah W**

**List Source: Eurofins TestAmerica, Sacramento**

**List Creation: 12/27/19 11:33 AM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	Seal present with no number.
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	Ob:1.0c Corr:0.8c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# Isotope Dilution Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

## Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF (24-185)	PeCF (21-178)	HxCDD (32-141)	HxDD (28-130)	HxCDF (26-152)
440-258085-1	Outfall002_20191224_Comp	59	55	54	52	58	55	48	52
MB 320-348645/1-A	Method Blank	62	61	67	62	69	70	58	62

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxDF (26-123)	HxCF (29-147)	13CHxCF (28-136)	HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	OCDD (17-157)
440-258085-1	Outfall002_20191224_Comp	48	49	49	59	53	60	58
MB 320-348645/1-A	Method Blank	56	60	60	71	65	72	72

#### Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD  
 TCDF = 13C-2,3,7,8-TCDF  
 PeCDD = 13C-1,2,3,7,8-PeCDD  
 PeCDF = 13C-1,2,3,7,8-PeCDF  
 PeCF = 13C-2,3,4,7,8-PeCDF  
 HxCDD = 13C-1,2,3,4,7,8-HxCDD  
 HxDD = 13C-1,2,3,6,7,8-HxCDD  
 HxCDF = 13C-1,2,3,4,7,8-HxCDF  
 HxDF = 13C-1,2,3,6,7,8-HxCDF  
 HxCF = 13C-1,2,3,7,8,9-HxCDF  
 13CHxCF = 13C-2,3,4,6,7,8-HxCDF  
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD  
 HpCDF = 13C-1,2,3,4,6,7,8-HpCDF  
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF  
 OCDD = 13C-OCDD

## Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF (21-192)	PeCF (13-328)	HxCDD (21-193)	HxDD (25-163)	HxCDF (19-202)
LCS 320-348645/2-A	Lab Control Sample	66	61	65	61	68	63	54	57
LCSD 320-348645/3-A	Lab Control Sample Dup	65	61	63	60	66	61	56	57

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxDF (21-159)	HxCF (17-205)	13CHxCF (22-176)	HpCDD (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-348645/2-A	Lab Control Sample	53	56	57	62	57	64	63
LCSD 320-348645/3-A	Lab Control Sample Dup	54	56	57	66	59	68	69

#### Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD  
 TCDF = 13C-2,3,7,8-TCDF  
 PeCDD = 13C-1,2,3,7,8-PeCDD  
 PeCDF = 13C-1,2,3,7,8-PeCDF  
 PeCF = 13C-2,3,4,7,8-PeCDF  
 HxCDD = 13C-1,2,3,4,7,8-HxCDD  
 HxDD = 13C-1,2,3,6,7,8-HxCDD  
 HxCDF = 13C-1,2,3,4,7,8-HxCDF  
 HxDF = 13C-1,2,3,6,7,8-HxCDF  
 HxCF = 13C-1,2,3,7,8,9-HxCDF

# Isotope Dilution Summary

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 002 Comp

$^{13}\text{CH}_x\text{CF} = ^{13}\text{C-2,3,4,6,7,8-HxCDF}$

HpCDD =  $^{13}\text{C-1,2,3,4,6,7,8-HpCDD}$

HpCDF =  $^{13}\text{C-1,2,3,4,6,7,8-HpCDF}$

HpCDF2 =  $^{13}\text{C-1,2,3,4,7,8,9-HpCDF}$

OCDD =  $^{13}\text{C-OCDD}$

Job ID: 440-258085-1

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Environment Testing  
TestAmerica

Sacramento  
Sample Receiving Notes



440-258085 Field Sheet

Tracking #: 111a 4742 9500

SO  PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier  
GSO / OnTrac / Goldstreak / USPS / Other \_\_\_\_\_

Job: \_\_\_\_\_

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.  
File in the job folder with the COC.

Notes: \_\_\_\_\_  
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Therm. ID: MCS Corr. Factor: (+ 0.2) °C  
Ice  Wet  Gel \_\_\_\_\_ Other \_\_\_\_\_  
Cooler Custody Seal: Seal  
Cooler ID: \_\_\_\_\_  
Temp Observed: 1.0 °C Corrected: 0.8 °C  
From: Temp Blank  Sample

During Initial Triage	Yes	No	NA
Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature is acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CoC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Initials: SZ Date: 12/27/19

During Labeling	Yes	No	NA
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample custody seal?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample date/times are provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appropriate containers are used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample bottles are completely filled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zero headspace?*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Perchlorate has headspace? (Methods 314, 331, 6850)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Multiphasic samples are not present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NCM Filed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Initials: PK Date: 12/27/19

\*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

## ANALYTICAL REPORT

Eurofins Calscience Irvine  
17461 Derian Ave  
Suite 100  
Irvine, CA 92614-5817  
Tel: (949)261-1022

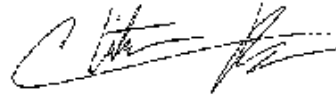
Laboratory Job ID: 440-258085-3

Client Project/Site: Routine Outfall 002 Comp

**For:**

Haley & Aldrich, Inc.  
400 E Van Buren St.  
Suite 545  
Phoenix, Arizona 85004

Attn: Katherine Miller



---

Authorized for release by:  
1/24/2020 5:21:20 PM

Christian Bondoc, Project Manager I  
(949)260-3218  
[christian.bondoc@testamericainc.com](mailto:christian.bondoc@testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



---

Christian Bondoc  
Project Manager I  
1/24/2020 5:21:20 PM



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# Sample Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-258085-1	Outfall002_20191224_Comp	Water	12/24/19 08:20	12/24/19 12:30	

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# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

## Job ID: 440-258085-3

### Laboratory: Eurofins Calscience Irvine

#### Narrative

#### Job Narrative 440-258085-3

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/24/2019 12:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 1.0° C, 1.0° C, 1.0° C, 1.1° C, 1.2° C and 1.3° C.

#### Receipt Exceptions

The reference method requires samples to be preserved to a pH of <2. The sample was received with insufficient preservation at a pH of 7. The sample was preserved to the appropriate pH in the laboratory, by adding approx. 24mL of HNO3 to each 2.5Gal cubic container. For a final pH of <2.

Requested Method: RAD

pH strip: HC902937

HNO3 lot: 1848535

Preserved on 12/27/2019 at 13:00

#### RAD

Method 900.0: Gross Alpha Beta Prep Batch 160-455777

The detection goal was not met for the following sample due to a reduction of the sample size attributed to high residual mass: Outfall002\_20191224\_Comp (440-258085-1). Analytical results are reported with the detection limit achieved.

Method 900.0: Gross Alpha Beta Prep Batch 160-455777

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall002\_20191224\_Comp (440-258085-1), (LCS 160-455777/2-A), (LCSB 160-455777/3-A), (MB 160-455777/1-A), (440-258077-J-1-F), (440-258077-J-1-G MS), (440-258077-J-1-I MSBT), (440-258077-J-1-J MSBTD) and (440-258077-J-1-H MSD)

Method 901.1: Gamma Prep Batch 160-455492

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred from      Reported to Analyte

Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Pb-212	Po-216
Xe-131m	Xe-131
Sb-125	Te-125m

# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

## Job ID: 440-258085-3 (Continued)

### Laboratory: Eurofins Calscience Irvine (Continued)

Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-211
Th-227	Pb-211
Bi-214	Ra-226

Outfall002\_20191224\_Comp (440-258085-1), (LCS 160-455492/2-A), (MB 160-455492/1-A), (440-258077-J-1-A) and (440-258077-J-1-B DU)

Methods 903.0, 9315: Radium-226 Prep Batch 160-455637

The following sample (240-124138-F-1-C) has a high carrier recovery, outside the upper control limit of 110% (676%), due to high concentrations of that analyte. The data have been reported with this narrative.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall002\_20191224\_Comp (440-258085-1), (LCS 160-455637/1-A), (MB 160-455637/21-A), (400-181761-A-1-A), (400-181761-B-1-A DU), (440-258077-J-1-C), (440-258077-F-1-A MS) and (440-258077-F-1-B MSD)

Methods 904.0, 9320: Radium-228 Prep Batch 160-455646

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall002\_20191224\_Comp (440-258085-1), (LCS 160-455646/1-A), (MB 160-455646/21-A), (400-181761-A-1-B), (400-181761-B-1-B DU), (440-258077-J-1-D), (440-258077-F-1-C MS) and (440-258077-F-1-D MSD)

Method 905: Strontium-90 Prep Batch 160-455843

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall002\_20191224\_Comp (440-258085-1), (LCS 160-455843/1-A), (MB 160-455843/10-A), (440-258077-J-1-K), (440-258077-F-1-G MS) and (440-258077-F-1-H MSD)

Method 906.0: LSC Tritium Prep Batch 160-455651

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall002\_20191224\_Comp (440-258085-1), (LCS 160-455651/2-A), (MB 160-455651/1-A), (440-258077-I-1-A), (440-258077-I-1-B MS) and (440-258077-I-1-C MSD)

# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

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## Job ID: 440-258085-3 (Continued)

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### Laboratory: Eurofins Calscience Irvine (Continued)

Method A-01-R: Isotopic Uranium Prep Batch 160-455686

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall002\_20191224\_Comp (440-258085-1), (LCS 160-455686/2-A), (MB 160-455686/1-A), (440-258077-J-1-E), (440-258077-F-1-E MS) and (440-258077-F-1-F MSD)

Method ExtChrom: Uranium Prep Batch 160-455686

The following samples were prepared at a reduced aliquot due to a yellow discoloration. Outfall002\_20191224\_Comp (440-258085-1). Samples 440-258085-1 and 440-258219-1 was a darker yellow than the other samples and had suspended solids. Sample 440-258227-1 also had suspended solids present.

Method PrecSep\_0: Radium 228 Prep Batch 160-455646:

The following samples were prepared at a reduced aliquot due to discoloration and cloudy appearance: Outfall002\_20191224\_Comp (440-258085-1). Samples 240-124138-1 and 280-132306-1 both have a cloudy appearance. Samples 440-258077-1, 440-258077-1MS, 440-258077-1MSD and 440-258085-1 all have a yellow discoloration.

Method PrecSep-21: Radium 226 Prep Batch 160-455637:

The following samples were prepared at a reduced aliquot due to discoloration and cloudy appearance: Outfall002\_20191224\_Comp (440-258085-1). Samples 240-124138-1 and 280-132306-1 both have a cloudy appearance. Samples 440-258077-1, 440-258077-1MS, 440-258077-1MSD and 440-258085-1 all have a yellow discoloration.

Method PrecSep-7: Strontium 90 Prep Batch 160-445843:

Sample 258227-1 and samples 258077-1, 1MS, and 1MSD were reduced due to yellow discoloration. Samples 258085-1 and 258219-1 were reduced due to brown discoloration and a cloudy appearance: Outfall002\_20191224\_Comp (440-258085-1).

1/8/2020- Samples 440-258077-1, 440-258077-1MS, 440-258077-1MSD, 110-258227-1, 440-258085-1 all had 1-2x smaller pellets than the QC samples at the end of the into-ingrowth process. While decanting the presence of matrix interference was seen in the amount of sediment at the bottom of the beaker.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

**Client Sample ID: Outfall002\_20191224\_Comp**

**Lab Sample ID: 440-258085-1**

Date Collected: 12/24/19 08:20

Matrix: Water

Date Received: 12/24/19 12:30

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	3.41	G	2.29	2.32	3.00	3.29	pCi/L	01/06/20 07:22	01/12/20 17:32	1
Gross Beta	5.02		1.03	1.14	4.00	1.14	pCi/L	01/06/20 07:22	01/12/20 17:32	1

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Cesium-137	0.725	U	8.27	8.27	20.0	14.8	pCi/L	12/27/19 17:33	12/30/19 16:59	1
Potassium-40	-19.5	U	165	165		214	pCi/L	12/27/19 17:33	12/30/19 16:59	1

## Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	0.302	U	0.211	0.213	1.00	0.303	pCi/L	12/30/19 12:05	01/21/20 13:51	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	82.7		40 - 110					12/30/19 12:05	01/21/20 13:51	1

## Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-228	1.48		0.626	0.641	1.00	0.882	pCi/L	12/30/19 13:15	01/14/20 16:56	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	82.7		40 - 110					12/30/19 13:15	01/14/20 16:56	1
Y Carrier	88.7		40 - 110					12/30/19 13:15	01/14/20 16:56	1

## Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Strontium-90	0.0221	U	0.345	0.345	3.00	0.618	pCi/L	01/07/20 06:20	01/15/20 10:01	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Sr Carrier	75.0		40 - 110					01/07/20 06:20	01/15/20 10:01	1
Y Carrier	94.2		40 - 110					01/07/20 06:20	01/15/20 10:01	1

## Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Tritium	34.7	U	159	159	500	281	pCi/L	12/30/19 13:27	12/31/19 11:11	1

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Total Uranium	1.31		0.500	0.507	1.00	0.395	pCi/L	12/30/19 16:10	01/16/20 09:32	1

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# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

**Client Sample ID: Outfall002\_20191224\_Comp**

**Lab Sample ID: 440-258085-1**

**Date Collected: 12/24/19 08:20**

**Matrix: Water**

**Date Received: 12/24/19 12:30**

<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Uranium-232	96.1		30 - 110	12/30/19 16:10	01/16/20 09:32	1

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# Method Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL
Evaporation	Preparation, Evaporation	None	TAL SL
ExtChrom	Preparation, Extraction Chromatography Resin Actinide Separation	None	TAL SL
Fill_Geo-0	Fill Geometry, No In-Growth	None	TAL SL
LSC_Dist_Susp	Distillation and Suspension (LSC)	None	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL
PrecSep-7	Preparation, Precipitate Separation (7-Day In-Growth)	None	TAL SL

#### Protocol References:

DOE = U.S. Department of Energy  
EPA = US Environmental Protection Agency  
None = None

#### Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

**Client Sample ID: Outfall002\_20191224\_Comp**

**Lab Sample ID: 440-258085-1**

**Date Collected: 12/24/19 08:20**

**Matrix: Water**

**Date Received: 12/24/19 12:30**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			178.67 mL	1.0 g	455777	01/06/20 07:22	RJD	TAL SL
Total/NA	Analysis	900.0		1	1.0 mL	1.0 mL	456563	01/12/20 17:32	AJD	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	455492	12/27/19 17:33	KLH	TAL SL
Total/NA	Analysis	901.1		1			455612	12/30/19 16:59	KLS	TAL SL
Total/NA	Prep	PrecSep-21			500.85 mL	1.0 g	455637	12/30/19 12:05	RBR	TAL SL
Total/NA	Analysis	903.0		1			457426	01/21/20 13:51	KLS	TAL SL
Total/NA	Prep	PrecSep_0			500.85 mL	1.0 g	455646	12/30/19 13:15	RBR	TAL SL
Total/NA	Analysis	904.0		1			456741	01/14/20 16:56	AJD	TAL SL
Total/NA	Prep	PrecSep-7			500.6 mL	1.0 g	455843	01/07/20 06:20	MNH	TAL SL
Total/NA	Analysis	905		1			456913	01/15/20 10:01	AJD	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.0 mL	1.0 g	455651	12/30/19 13:27	KNF	TAL SL
Total/NA	Analysis	906.0		1			456022	12/31/19 11:11	JS	TAL SL
Total/NA	Prep	ExtChrom			250.00 mL	1.0 mL	455686	12/30/19 16:10	KLH	TAL SL
Total/NA	Analysis	A-01-R		1			457044	01/16/20 09:32	KRR	TAL SL

**Laboratory References:**

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

**Lab Sample ID: MB 160-455777/1-A**  
**Matrix: Water**  
**Analysis Batch: 456563**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	0.01239	U	0.607	0.607	3.00	1.18	pCi/L	01/06/20 07:19	01/12/20 12:20	1
Gross Beta	-0.2482	U	0.440	0.440	4.00	0.843	pCi/L	01/06/20 07:19	01/12/20 12:20	1

**Lab Sample ID: LCS 160-455777/2-A**  
**Matrix: Water**  
**Analysis Batch: 456563**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Alpha	49.6	48.74		7.33	3.00	1.85	pCi/L	98	75 - 125

**Lab Sample ID: LCSB 160-455777/3-A**  
**Matrix: Water**  
**Analysis Batch: 456567**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Beta	85.0	79.96		8.53	4.00	0.814	pCi/L	94	75 - 125

**Lab Sample ID: 440-258077-J-1-G MS**  
**Matrix: Water**  
**Analysis Batch: 456567**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Alpha	1.38		49.6	41.94		6.03	3.00	1.42	pCi/L	82	60 - 140

**Lab Sample ID: 440-258077-J-1-H MSD**  
**Matrix: Water**  
**Analysis Batch: 456563**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec.	RER	RER Limit
						Uncert. (2σ+/-)					Limits	0.42	1
Gross Alpha	1.38		49.6	47.24		6.58	3.00	1.16	pCi/L	93	60 - 140	0.42	1

**Lab Sample ID: 440-258077-J-1-I MSBT**  
**Matrix: Water**  
**Analysis Batch: 456563**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Beta	1.56		85.0	84.01		8.91	4.00	0.935	pCi/L	97	60 - 140

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

**Lab Sample ID: 440-258077-J-1-J MSBTD**  
**Matrix: Water**  
**Analysis Batch: 456563**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 45777**

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER
											RER	Limit	
Gross Beta	1.56		84.9	82.77		8.79	4.00	0.852	pCi/L	96	60 - 140	0.07	1

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

**Lab Sample ID: MB 160-455492/1-A**  
**Matrix: Water**  
**Analysis Batch: 455513**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 455492**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared		Analyzed		Dil Fac
								Prepared	Analyzed	Prepared	Analyzed	
Cesium-137	-1.425	U	8.05	8.05	20.0	15.0	pCi/L	12/27/19 17:33	12/28/19 11:08	12/28/19 11:08	12/28/19 11:08	1
Potassium-40	-28.97	U	114	114		177	pCi/L	12/27/19 17:33	12/28/19 11:08	12/28/19 11:08	12/28/19 11:08	1

**Lab Sample ID: LCS 160-455492/2-A**  
**Matrix: Water**  
**Analysis Batch: 455514**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455492**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
									RER	Limit
Americium-241	136000	128000		14800		429	pCi/L	94	90 - 111	
Cesium-137	44000	43390		4350	20.0	114	pCi/L	99	90 - 111	
Cobalt-60	27300	26900		2670		72.8	pCi/L	99	89 - 110	

**Lab Sample ID: 440-258077-J-1-B DU**  
**Matrix: Water**  
**Analysis Batch: 455510**

**Client Sample ID: Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 455492**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER
										RER	Limit	
Cesium-137	-5.64	U	-7.121	U G	13.5	20.0	22.8	pCi/L			0.06	1
Potassium-40	-1.92	U	-13.29	U	122		173	pCi/L			0.05	1

## Method: 903.0 - Radium-226 (GFPC)

**Lab Sample ID: MB 160-455637/21-A**  
**Matrix: Water**  
**Analysis Batch: 457426**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 455637**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared		Analyzed		Dil Fac
								Prepared	Analyzed	Prepared	Analyzed	
Radium-226	-0.03724	U	0.0515	0.0516	1.00	0.124	pCi/L	12/30/19 12:05	01/21/20 15:47	01/21/20 15:47	01/21/20 15:47	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	97.0		40 - 110					12/30/19 12:05	01/21/20 15:47	12/30/19 12:05	01/21/20 15:47	1

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

## Method: 903.0 - Radium-226 (GFPC) (Continued)

**Lab Sample ID: LCS 160-455637/1-A**  
**Matrix: Water**  
**Analysis Batch: 457426**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455637**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.3	10.03		1.05	1.00	0.112	pCi/L	88	75 - 125	
<b>Carrier</b>	<b>LCS %Yield</b>	<b>LCS Qualifier</b>	<b>Limits</b>							
Ba Carrier	99.7		40 - 110							

**Lab Sample ID: 440-258077-F-1-A MS**  
**Matrix: Water**  
**Analysis Batch: 457426**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 455637**

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.0339	U	15.1	13.95		1.50	1.00	0.219	pCi/L	92	75 - 138
<b>Carrier</b>	<b>MS %Yield</b>	<b>MS Qualifier</b>	<b>Limits</b>								
Ba Carrier	79.1		40 - 110								

**Lab Sample ID: 440-258077-F-1-B MSD**  
**Matrix: Water**  
**Analysis Batch: 457426**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 455637**

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.0339	U	15.1	14.42		1.54	1.00	0.160	pCi/L	95	75 - 138	0.15	1
<b>Carrier</b>	<b>MSD %Yield</b>	<b>MSD Qualifier</b>	<b>Limits</b>										
Ba Carrier	87.0		40 - 110										

**Lab Sample ID: 400-181761-B-1-A DU**  
**Matrix: Water**  
**Analysis Batch: 457426**

**Client Sample ID: Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 455637**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit	
Radium-226	0.854		0.9704		0.228	1.00	0.160	pCi/L	0.26	1	
<b>Carrier</b>	<b>DU %Yield</b>	<b>DU Qualifier</b>	<b>Limits</b>								
Ba Carrier	102		40 - 110								

## Method: 904.0 - Radium-228 (GFPC)

**Lab Sample ID: MB 160-455646/21-A**  
**Matrix: Water**  
**Analysis Batch: 456741**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 455646**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.04520	U	0.223	0.223	1.00	0.394	pCi/L	12/30/19 13:15	01/14/20 16:58	1

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

## Method: 904.0 - Radium-228 (GFPC) (Continued)

Carrier	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Yield	Qualifier				
Ba Carrier	97.0		40 - 110	12/30/19 13:15	01/14/20 16:58	1
Y Carrier	87.8		40 - 110	12/30/19 13:15	01/14/20 16:58	1

Lab Sample ID: LCS 160-455646/1-A  
Matrix: Water  
Analysis Batch: 456749

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 455646

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits

Carrier	LCS LCS		Limits
	%Yield	Qualifier	
Ba Carrier	99.7		40 - 110
Y Carrier	89.3		40 - 110

Lab Sample ID: 440-258077-F-1-C MS  
Matrix: Water  
Analysis Batch: 456749

Client Sample ID: Matrix Spike  
Prep Type: Total/NA  
Prep Batch: 455646

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits

Carrier	MS MS		Limits
	%Yield	Qualifier	
Ba Carrier	79.1		40 - 110
Y Carrier	87.5		40 - 110

Lab Sample ID: 440-258077-F-1-D MSD  
Matrix: Water  
Analysis Batch: 456749

Client Sample ID: Matrix Spike Duplicate  
Prep Type: Total/NA  
Prep Batch: 455646

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit

Carrier	MSD MSD		Limits
	%Yield	Qualifier	
Ba Carrier	87.0		40 - 110
Y Carrier	87.5		40 - 110

Lab Sample ID: 400-181761-B-1-B DU  
Matrix: Water  
Analysis Batch: 456749

Client Sample ID: Duplicate  
Prep Type: Total/NA  
Prep Batch: 455646

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit

Carrier	DU DU		Limits
	%Yield	Qualifier	
Ba Carrier	102		40 - 110
Y Carrier	88.7		40 - 110

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

## Method: 905 - Strontium-90 (GFPC)

**Lab Sample ID: MB 160-455843/10-A**  
**Matrix: Water**  
**Analysis Batch: 456913**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 455843**

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Strontium-90	-0.05834	U	0.268	0.268	3.00	0.482	pCi/L	01/07/20 06:20	01/15/20 10:02	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Sr Carrier	85.9		40 - 110		01/07/20 06:20	01/15/20 10:02	1			
Y Carrier	91.2		40 - 110		01/07/20 06:20	01/15/20 10:02	1			

**Lab Sample ID: LCS 160-455843/1-A**  
**Matrix: Water**  
**Analysis Batch: 456913**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455843**

Analyte	Spike Added	LCS	LCS	Total	RL	MDC	Unit	%Rec	%Rec. Limits
		Result	Qual	Uncert. (2σ+/-)					
Strontium-90	10.6	8.906		0.945	3.00	0.327	pCi/L	84	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Sr Carrier	96.9		40 - 110						
Y Carrier	96.8		40 - 110						

**Lab Sample ID: 440-258077-F-1-G MS**  
**Matrix: Water**  
**Analysis Batch: 456913**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 455843**

Analyte	Sample	Sample	Spike	MS	MS	Total	RL	MDC	Unit	%Rec	%Rec. Limits
	Result	Qual	Added	Result	Qual	Uncert. (2σ+/-)					
Strontium-90	0.147	U	10.6	10.38		1.21	3.00	0.501	pCi/L	97	19 - 150
Carrier	MS %Yield	MS Qualifier	Limits								
Sr Carrier	59.4		40 - 110								
Y Carrier	92.3		40 - 110								

**Lab Sample ID: 440-258077-F-1-H MSD**  
**Matrix: Water**  
**Analysis Batch: 456913**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 455843**

Analyte	Sample	Sample	Spike	MSD	MSD	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	Limit
	Result	Qual	Added	Result	Qual	Uncert. (2σ+/-)							
Strontium-90	0.147	U	10.6	10.34		1.15	3.00	0.477	pCi/L	96	19 - 150	0.02	1
Carrier	MSD %Yield	MSD Qualifier	Limits										
Sr Carrier	70.6		40 - 110										
Y Carrier	95.3		40 - 110										

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

## Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-455651/1-A  
Matrix: Water  
Analysis Batch: 456022

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 455651

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-49.55	U	149	149	500	280	pCi/L	12/30/19 13:27	12/31/19 09:18	1

Lab Sample ID: LCS 160-455651/2-A  
Matrix: Water  
Analysis Batch: 456022

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 455651

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2510	2646		413	500	286	pCi/L	105	75 - 114

Lab Sample ID: 440-258077-I-1-B MS  
Matrix: Water  
Analysis Batch: 456022

Client Sample ID: Matrix Spike  
Prep Type: Total/NA  
Prep Batch: 455651

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	40.5	U	2510	2556		410	500	294	pCi/L	100	67 - 130

Lab Sample ID: 440-258077-I-1-C MSD  
Matrix: Water  
Analysis Batch: 456022

Client Sample ID: Matrix Spike Duplicate  
Prep Type: Total/NA  
Prep Batch: 455651

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	40.5	U	2500	2430		391	500	279	pCi/L	95	67 - 130	0.16	1

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-455686/1-A  
Matrix: Water  
Analysis Batch: 457035

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 455686

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.2103		0.180	0.181	1.00	0.182	pCi/L	12/30/19 16:10	01/16/20 09:32	1

Tracer	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	83.2		30 - 110	12/30/19 16:10	01/16/20 09:32	1

Lab Sample ID: LCS 160-455686/2-A  
Matrix: Water  
Analysis Batch: 457036

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 455686

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	25.5	24.59		2.97	1.00	0.329	pCi/L	97	75 - 125
Uranium-238	26.0	25.84		3.08	1.00	0.309	pCi/L	99	75 - 125

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

**Lab Sample ID: LCS 160-455686/2-A**  
**Matrix: Water**  
**Analysis Batch: 457036**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455686**

<i>Tracer</i>	<i>LCS LCS</i>		<i>Limits</i>
	<i>%Yield</i>	<i>Qualifier</i>	
<i>Uranium-232</i>	60.6		30 - 110

**Lab Sample ID: 440-258077-F-1-E MS**  
**Matrix: Water**  
**Analysis Batch: 457038**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 455686**

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qual</i>	<i>Spike Added</i>	<i>MS Result</i>	<i>MS Qual</i>	<i>Total Uncert. (2σ+/-)</i>	<i>RL</i>	<i>MDC</i>	<i>Unit</i>	<i>%Rec</i>	<i>%Rec. Limits</i>	
Uranium-234	0.128	U	25.5	23.28		2.86	1.00	0.424	pCi/L	91	65 - 146	
Uranium-238	0.0960	U	26.0	25.85		3.09	1.00	0.349	pCi/L	99	68 - 143	

<i>Tracer</i>	<i>MS MS</i>		<i>Limits</i>
	<i>%Yield</i>	<i>Qualifier</i>	
<i>Uranium-232</i>	61.7		30 - 110

**Lab Sample ID: 440-258077-F-1-F MSD**  
**Matrix: Water**  
**Analysis Batch: 457042**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 455686**

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qual</i>	<i>Spike Added</i>	<i>MSD Result</i>	<i>MSD Qual</i>	<i>Total Uncert. (2σ+/-)</i>	<i>RL</i>	<i>MDC</i>	<i>Unit</i>	<i>%Rec</i>	<i>%Rec. Limits</i>		<i>RER</i>	<i>RER Limit</i>
Uranium-234	0.128	U	25.5	23.64		2.93	1.00	0.446	pCi/L	92	65 - 146	0.06	1	
Uranium-238	0.0960	U	26.0	24.68		3.02	1.00	0.367	pCi/L	94	68 - 143	0.19	1	

<i>Tracer</i>	<i>MSD MSD</i>		<i>Limits</i>
	<i>%Yield</i>	<i>Qualifier</i>	
<i>Uranium-232</i>	68.1		30 - 110

# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

## Rad

### Prep Batch: 455492

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-455492/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-455492/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-258077-J-1-B DU	Duplicate	Total/NA	Water	Fill_Geo-0	

### Prep Batch: 455637

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	PrecSep-21	
MB 160-455637/21-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-455637/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-258077-F-1-A MS	Matrix Spike	Total/NA	Water	PrecSep-21	
440-258077-F-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	
400-181761-B-1-A DU	Duplicate	Total/NA	Water	PrecSep-21	

### Prep Batch: 455646

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	PrecSep_0	
MB 160-455646/21-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-455646/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-258077-F-1-C MS	Matrix Spike	Total/NA	Water	PrecSep_0	
440-258077-F-1-D MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	
400-181761-B-1-B DU	Duplicate	Total/NA	Water	PrecSep_0	

### Prep Batch: 455651

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-455651/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-455651/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-258077-I-1-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-258077-I-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

### Prep Batch: 455686

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	ExtChrom	
MB 160-455686/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-455686/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-258077-F-1-E MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-258077-F-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

### Prep Batch: 455777

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	Evaporation	
MB 160-455777/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-455777/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-455777/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-258077-J-1-G MS	Matrix Spike	Total/NA	Water	Evaporation	
440-258077-J-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-258077-J-1-I MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-258077-J-1-J MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	



# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

## Rad

### Prep Batch: 455843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	PrecSep-7	
MB 160-455843/10-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-455843/1-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-258077-F-1-G MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-258077-F-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

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# Definitions/Glossary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

## Qualifiers

### Rad

Qualifier	Qualifier Description
G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.  
 Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

## Laboratory: Eurofins Calscience Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State Program	CA ELAP 2706	06-30-20

## Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-20
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Illinois	NELAP	004553	11-30-19 *
Iowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-20
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-20
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
West Virginia DEP	State	381	10-31-20

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

CHAIN OF CUSTODY FORM

Test America

<p>Client Name/Address:                  Haley &amp; Aldrich                  5333 Mission Center Rd Suite 300                  San Diego, CA 92108</p>		<p>Project:                  Boeing-SSFL NPDES                  Permit 2019                  Routine Outfall #001, 002, 011, 018                  Outfall 002                  Comp</p>		ANALYSIS REQUIRED										<p>Comments</p>
<p>Test America Contact: Unrashi Patel                  17461 Denan Ave Suite #100                  Irvine CA 92614                  Tel 949-260-3269                  Cell 949-333-9055</p>		<p>Project Manager: Katherine Miller                  520 289 8606, 520.904.6944 (cell)                  Field Manager: Mark Dominick                  978.234.5033, 818.598.0702 (cell)</p>		Total Recoverable Metals (E200 7) Cu, Pb, Cd, Se	TCCD (and all congeners) (E1613B)	BOD5 (20 degrees C) (E405) (SM5210B_BODCalc)	Surfactants (MBS) (SM5540C/E425 1)	Cl-, SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Perchlorate (E300)	Turbidity, TDS (SM2540C/E180 1)	TSS (160 2) (SM2540D)	Ammonia-N (350 2)	alpha-BHC (E808)	2,4,6 TCP, 2,4 Dinitrochlorene, Bis(2-ethylhexyl)phthalate, NDM, PCP (SVOCs E825)	
Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont	Preservative	Bottle #	MIMS/D	ANALYSIS REQUIRED					<p>48 hours Holding Time NO<sub>2</sub> &amp; NO<sub>3</sub>                  48 hour holding time for turbidity</p>
Outfall 002	Outfall002_20191224_Comp	12/24/2019 10:30	WM	500 mL Poly	1	HNO <sub>3</sub>	90	No	X				X	
			WM	1 L Glass Amber	2	None	110	No						
			WM	1 L Poly	1	None	115	No						
			WM	500 mL Poly	2	None	120	No						
			WM	500 mL Poly	2	None	130	No						
			WM	500 mL Poly	1	None	150	No						
			WM	500 mL Poly	1	H <sub>2</sub> SO <sub>4</sub>	160	No			X			
			WM	1 L Glass Amber	2	None	170	No			X			
			WM	1 L Glass Amber	2	None	180	No				X		
			WM	1 L Poly	1	None	185	No						
			WM	1 L Glass Amber	2	None	110	No						
			WM	500 mL Poly	2	None	120	No						
			WM	500 mL Poly	2	None	130	No						
			WM	1 L Glass Amber	2	None	170	No						
			WM	1 L Glass Amber	2	None	180	No						

Relinquished By: *MT Dominick* Date/Time: 12-24-19/10:15  
 Company: *TRV*

Relinquished By: *TRV* Date/Time: 12/24/19  
 Company: *TRV*

Relinquished By: *TRV* Date/Time: 12/24/19  
 Company: *TRV*

Received By: *TRV* Date/Time: 12/24/19 12:30  
 Company: *TRV*

Received By: *TRV* Date/Time: 12/24/19 10:15  
 Company: *TRV*

Received By: *TRV* Date/Time: 12/24/19 12:30  
 Company: *TRV*

Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quarterly, QRSW=Quarterly Receiving Water, S=Semi-Annual



440-256085 Chain of Custody

1.5/1.3 1.2/1.0  
 1.2/1.0 1.3/1.1 1.2/0.9  
 1.4/1.2 1.2/1.0



12/24/19

CHAIN OF CUSTODY FORM

Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	ANALYSIS REQUIRED										Comments						
									Total Dissolved Metals (E200 7) Zn (E200 8) Cu, Pb, Cd, Se	Cyanide (SM4500-CNE / E335 2)	Gross Alpha (E900 0), Gross Beta (E900 0), Tritium (H-3) (E906 0), Sr-90 (E905 0), Total Radium 226 (E903 0) or (E903 1) & Radium 228 (E904 0), Uranium (E908 0), K-40, CS-137 (E901 0 or E901 1)	Chronic Toxicity - Selenium (EPA-821-R-02-013)	Total Dissolved Metals Mercury (E245 1)	Turn-around time (Check)	Sample Integrity (Check)	Store samples for 6 months	Data Requirements (Check)								
Outfall 002	Outfall002_20191224_Comp_F	12/24/2019 10:30	WM	1L Poly	1	None	200	No	X																
				borosilicate vials	1	None	320	No																	
Outfall 002	Outfall002_20191224_Comp	12/24/2019 09:30	WM	500 mL Poly	1	NaOH	220	No																	
				2.5 Gal Cube	1	None	225	No																	
				1L Glass Amber	1	None	230	No																	
	Outfall002_20191224_Comp	12/24/2019 09:30	WM	1 Gal Cube	6	None	235	No	X																
	Outfall002_20191224_Comp	12/24/2019 09:30	WM	1 Gal Amber	2	HCl	275	NO																	

Relinquished By	Date/Time	Company	Received By	Date/Time	Company
Mark Dornier	12-24-19/10:15	Company	[Signature]	12/24/19 10:15	Company
Relinquished By	Date/Time	Company	Received By	Date/Time	Company
[Signature]	12/24/19	Company	[Signature]	12/24/19	Company
Relinquished By	Date/Time	Company	Received By	Date/Time	Company
[Signature]	12/24/19	Company	[Signature]	12/24/19	Company

Legend: A=Annual, C=Conditional, EP=Expert Panel, ReRoutine, Q=Quarterly, QRSW=Quarterly Receiving Water, S=Semi-Annual

Turn-around time (Check): 24 Hour  72 Hour  48 Hour  5 Day  10 Day  Normal

Sample Integrity (Check): Intact  On Ice

Store samples for 6 months:

Data Requirements (Check): No Level IV  All Level IV





## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-258085-3

SDG Number:

**Login Number: 258085**

**List Number: 1**

**Creator: Soderblom, Tim**

**List Source: Eurofins Irvine**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-258085-3

SDG Number:

**Login Number: 258085**

**List Number: 2**

**Creator: Hellm, Michael**

**List Source: Eurofins TestAmerica, St. Louis**

**List Creation: 12/27/19 12:57 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.1
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

## Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits)	
		Ba Carrier (40-110)	
400-181761-B-1-A DU	Duplicate	102	
440-258077-F-1-A MS	Matrix Spike	79.1	
440-258077-F-1-B MSD	Matrix Spike Duplicate	87.0	
440-258085-1	Outfall002_20191224_Comp	82.7	
LCS 160-455637/1-A	Lab Control Sample	99.7	
MB 160-455637/21-A	Method Blank	97.0	

**Tracer/Carrier Legend**  
Ba Carrier = Ba Carrier

## Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits)	
		Ba Carrier (40-110)	Y Carrier (40-110)
400-181761-B-1-B DU	Duplicate	102	88.7
440-258077-F-1-C MS	Matrix Spike	79.1	87.5
440-258077-F-1-D MSD	Matrix Spike Duplicate	87.0	87.5
440-258085-1	Outfall002_20191224_Comp	82.7	88.7
LCS 160-455646/1-A	Lab Control Sample	99.7	89.3
MB 160-455646/21-A	Method Blank	97.0	87.8

**Tracer/Carrier Legend**  
Ba Carrier = Ba Carrier  
Y Carrier = Y Carrier

## Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits)	
		Sr Carrier (40-110)	Y Carrier (40-110)
440-258077-F-1-G MS	Matrix Spike	59.4	92.3
440-258077-F-1-H MSD	Matrix Spike Duplicate	70.6	95.3
440-258085-1	Outfall002_20191224_Comp	75.0	94.2
LCS 160-455843/1-A	Lab Control Sample	96.9	96.8
MB 160-455843/10-A	Method Blank	85.9	91.2

**Tracer/Carrier Legend**  
Sr Carrier = Sr Carrier  
Y Carrier = Y Carrier

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits)	
		uranium-235 (30-110)	
440-258077-F-1-E MS	Matrix Spike	61.7	
440-258077-F-1-F MSD	Matrix Spike Duplicate	68.1	
440-258085-1	Outfall002_20191224_Comp	96.1	

# Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

**Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)**

**Matrix: Water**

**Prep Type: Total/NA**

## Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	uranium-23 (30-110)
LCS 160-455686/2-A	Lab Control Sample	60.6
MB 160-455686/1-A	Method Blank	83.2

### Tracer/Carrier Legend

Uranium-232 = Uranium-232

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Environment Testing  
TestAmerica

Sacramento  
Sample Receiving Notes



440-258085 Field Sheet

Tracking #: 111a 4742 9500

SO  PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier  
GSO / OnTrac / Goldstreak / USPS / Other \_\_\_\_\_

Job: \_\_\_\_\_

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.  
File in the job folder with the COC.

Notes: \_\_\_\_\_  
\_\_\_\_\_  
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Therm. ID: MCS Corr. Factor: (+ 0.2) °C  
Ice  Wet  Gel \_\_\_\_\_ Other \_\_\_\_\_  
Cooler Custody Seal: Seal  
Cooler ID: \_\_\_\_\_  
Temp Observed: 1.0 °C Corrected: 0.8 °C  
From: Temp Blank  Sample

During Initial Triage	Yes	No	NA
Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature is acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CoC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Initials: SZ Date: 12/27/19

During Labeling	Yes	No	NA
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample custody seal?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample date/times are provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appropriate containers are used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample bottles are completely filled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zero headspace?*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Perchlorate has headspace? (Methods 314, 331, 6850)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Multiphasic samples are not present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NCM Filed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Initials: PK Date: 12/27/19

\*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

## ANALYTICAL REPORT

Eurofins Calscience Irvine  
17461 Derian Ave  
Suite 100  
Irvine, CA 92614-5817  
Tel: (949)261-1022

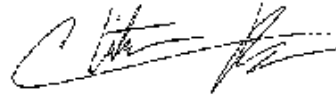
Laboratory Job ID: 440-258164-1

Client Project/Site: Routine Outfall 008 Grab

**For:**

Haley & Aldrich, Inc.  
400 E Van Buren St.  
Suite 545  
Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:  
1/10/2020 10:07:29 AM

Christian Bondoc, Project Manager I  
(949)260-3218  
[christian.bondoc@testamericainc.com](mailto:christian.bondoc@testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



---

Christian Bondoc  
Project Manager I  
1/10/2020 10:07:29 AM



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# Sample Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Grab

Job ID: 440-258164-1

---

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-258164-1	Outfall008_20191226_Grab	Water	12/26/19 08:10	12/26/19 11:45	

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# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Grab

Job ID: 440-258164-1

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**Job ID: 440-258164-1**

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**Laboratory: Eurofins Calscience Irvine**

## Narrative

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**Job Narrative  
440-258164-1**

## Comments

No additional comments.

## Receipt

The samples were received on 12/26/2019 11:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.6° C.

## Organic Prep

Methods 1664A: Lowered reporting limits are provided for the following samples due to excess sample provided for preparation/analysis: (440-258344-A-4-A) and (440-258344-A-4-B MS). Note that these samples are composites: there were 2 full liters for each composite. Method 1664A.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.





# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Grab

Job ID: 440-258164-1

**Client Sample ID: Outfall008\_20191226\_Grab**

**Lab Sample ID: 440-258164-1**

**Date Collected: 12/26/19 08:10**

**Matrix: Water**

**Date Received: 12/26/19 11:45**

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		4.9	1.4	mg/L		01/03/20 15:57	01/03/20 18:27	1

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# Method Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Grab

Job ID: 440-258164-1

Method	Method Description	Protocol	Laboratory
1664A	HEM and SGT-HEM	1664A	TAL IRV
1664A	HEM and SGT-HEM (SPE)	1664A	TAL IRV

**Protocol References:**

1664A = EPA-821-98-002

**Laboratory References:**

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Grab

Job ID: 440-258164-1

**Client Sample ID: Outfall008\_20191226\_Grab**

**Lab Sample ID: 440-258164-1**

**Date Collected: 12/26/19 08:10**

**Matrix: Water**

**Date Received: 12/26/19 11:45**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1664A			1030 mL	1000 mL	589086	01/03/20 15:57	AJH	TAL IRV
Total/NA	Analysis	1664A		1			589113	01/03/20 18:27	AJH	TAL IRV

### Laboratory References:

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Routine Outfall 008 Grab

Job ID: 440-258164-1

## Method: 1664A - HEM and SGT-HEM

**Lab Sample ID: MB 440-589086/1-A**  
**Matrix: Water**  
**Analysis Batch: 589113**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 589086**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		01/03/20 15:57	01/03/20 18:27	1

**Lab Sample ID: LCS 440-589086/2-A**  
**Matrix: Water**  
**Analysis Batch: 589113**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 589086**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	40.0	38.3		mg/L		96	78 - 114

**Lab Sample ID: LCSD 440-589086/3-A**  
**Matrix: Water**  
**Analysis Batch: 589113**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 589086**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HEM (Oil & Grease)	40.0	37.2		mg/L		93	78 - 114	3	11

**Lab Sample ID: 440-258344-A-4-B MS**  
**Matrix: Water**  
**Analysis Batch: 589113**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 589086**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	6.3		20.5	26.0		mg/L		96	78 - 114

# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Grab

Job ID: 440-258164-1

## General Chemistry

### Prep Batch: 589086

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258164-1	Outfall008_20191226_Grab	Total/NA	Water	1664A	
MB 440-589086/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-589086/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-589086/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	
440-258344-A-4-B MS	Matrix Spike	Total/NA	Water	1664A	

### Analysis Batch: 589113

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258164-1	Outfall008_20191226_Grab	Total/NA	Water	1664A	589086
MB 440-589086/1-A	Method Blank	Total/NA	Water	1664A	589086
LCS 440-589086/2-A	Lab Control Sample	Total/NA	Water	1664A	589086
LCSD 440-589086/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	589086
440-258344-A-4-B MS	Matrix Spike	Total/NA	Water	1664A	589086

# Definitions/Glossary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Grab

Job ID: 440-258164-1

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Grab

Job ID: 440-258164-1

## Laboratory: Eurofins Calscience Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State Program	CA ELAP 2706	06-30-20

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CHAIN OF CUSTODY FORM

*Handwritten initials/signature*

<p>Client Name/Address                  Haley &amp; Aldrich                  5333 Mission Center Rd Suite 300                  San Diego, CA 92108</p>		<p>Project:                  Boeing-SSFL NPDES                  Permit 2019                  Routine Outfall (008)                  Outfall 008                  Grab</p>		<p>Field Readings (Include units) <b>TRAFT93</b>                  Time of Readings: <b>0905</b>                  pH <b>7.45</b> pH unit                  Temp <b>55.9</b> °C</p>		<p>Meter serial #                  Meter serial #</p>															
<p>Test America Contact: Unrashi Patel                  17461 Denian Ave Suite #100                  Irvine CA 92614                  Tel 949-260-3269                  Cell 949-333-9065</p>		<p>Project Manager: Katherine Miller                  520.289.8606, 520.904.6844 (cell)                  Field Manager: Mark Dominick                  978.234.5033, 618.599.0702 (cell)</p>		<p>Field readings QC                  Checked by: <i>Mark Dominick</i>                  Date/Time: <b>12-26-19/0810</b></p>		<p>ANALYSIS REQUIRED</p>															
<p>Test America's services under this CoC shall be performed in accordance with the TCOs within Blanket Service Agreement #2018-22, TestAmerica by and between Haley &amp; Aldrich, Inc. its subsidiaries and affiliates, and TestAmerica Laboratories Inc.</p>		<p>Sample Description</p>		<p>Sample ID</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>Preservative</p>		<p>Bottle #</p>		<p>MS/MSD</p>		<p>Oil &amp; Grease (E1664A-HEM)</p>	
<p>Outfall 008</p>		<p>Outfall008_20191226_Grab</p>		<p>12/26/2019 <b>10:50</b></p>		<p>WM</p>		<p>1 L Glass Amber</p>		<p>2</p>		<p>HCl</p>		<p>15</p>		<p>No</p>		<p>X</p>			
<p>Outfall 008</p>		<p>Outfall008_20191226_Grab_Extra</p>		<p>12/26/2019 <b>10:40</b></p>		<p>WM</p>		<p>1 L Glass Amber</p>		<p>2</p>		<p>HCl</p>		<p>15</p>		<p>No</p>		<p>H</p>			
<p>440-258164 Chain of Custody</p>																					
<p>12/26/19 LD</p>																					
<p>Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quarterly, QRSW=Quarterly Receiving Water, S=Semi-Annual</p>																					
<p>Relinquished By <i>Mark Dominick</i></p>		<p>Date/Time 12-26-19/1010</p>		<p>Company H&amp;A</p>		<p>Received By Robaire Gelyos</p>		<p>Date/Time 12/26/19 10:10</p>		<p>Company TRAIRV</p>		<p>Turn-around time (Check)                  24 Hour _____ 72 Hour _____ 10 Day _____ X                  48 Hour _____ 5 Day _____ Normal _____</p>		<p>Sample Integrity (Check)                  Intact _____ On ice _____                  Store samples for 6 months _____                  Data Requirements (Check)                  No Level IV _____ All Level IV _____ X</p>							
<p>2.8/2.6 1R89</p>																					





## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-258164-1

**Login Number: 258164**

**List Number: 1**

**Creator: Soderblom, Tim**

**List Source: Eurofins Irvine**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

---

**DATA VALIDATION REPORT**

**Boeing SSFL NPDES**

**SAMPLE DELIVERY GROUP: 440-258227-1**

**Prepared for**

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

**24 January 2020**

**MEC<sup>x</sup>, Inc.**  
12269 East Vassar Drive  
Aurora, Colorado 80014

[www.mecx.net](http://www.mecx.net)





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## I. INTRODUCTION

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**Task Order Title:** Boeing SSFL NPDES

**Contract:** 40458-078 and 40458-083

**MEC<sup>X</sup> Project No.:** 1272.003D.01 002

**Sample Delivery Group:** 440-258227-1

**Project Manager:** Katherine Miller

**Matrix:** Water

**QC Level:** IV

**No. of Samples:** 2

**No. of Reanalyses/Dilutions:** 0

**Laboratory:** TestAmerica-Irvine

**TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Matrix	Collection	Method
OUTFALL008_20191227_COMP	440-258227-1	Water	12/27/19 8:25 AM	E1613B, E200.7, E200.8, SM4500-NH3G
OUTFALL008_20191227_COMP_F	440-258227-2	Water	12/27/19 8:25 AM	E200.7, E200.8



## II. SAMPLE MANAGEMENT

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According to the case narrative, Login Sample Receipt Checklist, and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-258227-1:

- The laboratory received the samples in this SDG on ice and within the temperature limits of <6 degrees Celsius ( $^{\circ}\text{C}$ ) and  $>0^{\circ}\text{C}$ .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and/or laboratory personnel signed and dated the appropriate original and transfer COCs.
- According to the Login Sample Receipt Checklists, custody seals were absent on the coolers upon receipt at TA-Irvine; however, no evidence of tampering was noted. A custody seal was present on the cooler received at TA-Sacramento.
- The case narrative indicated that the site sample for the 1613B analysis was received in a narrow-mouth amber glass bottle, and slightly less sample volume (974 milliliters) was available for extraction.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

**TABLE 3 - REASON CODE REFERENCE**

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination ( $r^2$ ) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.





Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



### III. EPA METHOD 1613B — DIOXIN/FURANS

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L. Calvin of MEC<sup>X</sup> reviewed the SDG on January 24, 2020

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC<sup>X</sup> *Data Validation Procedure for Dioxins and Furans* (DVP-19, Rev. 0), *USEPA Method 1613B* and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review* (2011).

#### III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

#### III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

##### III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as <25%.

##### III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power >10,000.

#### III.3. CALIBRATION

Initial Calibration: Calibration criteria were met. The initial calibration was acceptable with %RSDs ≤20% for the 15 native compounds (calibration by isotope dilution) and ≤35% for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

#### III.4. QUALITY CONTROL SAMPLES

##### III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit (RL) for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8-HxCDD, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 1,2,3,7,8,9-HxCDF, 2,3,4,6,7,8-HxCDF, 2,3,7,8-TCDF, OCDD and OCDF, and for totals HpCDD, HpCDF HxCDD, HxCDF and total TCDF. The sample results for isomers detected below the RL in the sample were qualified as nondetects (U) at the level of contamination. The sum of HxCDD isomers qualified as method blank contamination matched the total result; therefore total HxCDD was also qualified as a nondetect (U). The reviewer compared peaks comprising the method blank totals to those in the sample totals. The total HpCDD, HpCDF and TCDF results



in the sample were the same peaks at similar concentrations to the blank and were therefore qualified as nondetects (U) at the level of contamination. Total HxCDF was qualified as estimated (J), as only a portion of the total was determined to be method blank contamination.

#### III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B.

#### III.5. FIELD QC SAMPLES

MEC<sup>X</sup> evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC<sup>X</sup> used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

##### III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

##### III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

#### III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

#### III.7. COMPOUND IDENTIFICATION

Compound identification was verified. With the exception of estimated maximum possible concentrations (EMPCs), detected compounds met the ion abundance ratio, retention time window and signal-to-noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B.

Second-column confirmation analysis was performed for isomer 2,3,7,8-TCDF detected in the initial analyses of the sample and its method blank. Neither result was confirmed. Both initial and confirmation results were reported for the sample. As the confirmation column is more specific for the detection of 2,3,7,8-TCDF, the nondetect confirmation result was retained and the initial result rejected (R) as duplicate data.

#### III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

As noted in the case narrative, RLs and EDLs were slightly elevated due to somewhat limited sample volume. Rather than approximately 1000 milliliters (ml), a 974 ml sample volume was available for extraction.

Isomers and totals previously qualified as method blank contamination nondetects were not further qualified as EMPCs. Isomer results reported as EMPCs were qualified as estimated nondetects (UJ). The concentration of total PeCDD matched the associated isomer result qualified as an EMPC and was therefore also qualified as an estimated nondetect (UJ).



#### IV. METHODS 200.7 AND 200.8 — METALS

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M. Hilchey of MEC<sup>X</sup> reviewed the SDG on January 27, 2020.

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC<sup>X</sup> *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, EPA Methods 200.7 and 200.8 and the *National Functional Guidelines for Inorganic Methods Data Review (2017)*.

##### IV.1. HOLDING TIMES

The analytical holding time, six months for metals, was met. Sample Outfall008\_20191227\_Comp\_F was filtered and preserved within 24 hours after receipt.

##### IV.2. CALIBRATION

QAPP calibration criteria were met. A blank and two to four standards were used for calibration of ICP-AES and ICP-MS target analytes. The initial calibration *r* values were  $\geq 0.995$ . CRQL recoveries were within the laboratory control limits of 50-150%. Initial calibration verification recoveries were within QAPP control limits of 95-105% for ICP-AES and 90-110% for ICP-MS. Continuing calibration verification recoveries were within QAPP control limits of 90-110%.

##### IV.3. QUALITY CONTROL SAMPLES

###### IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks or calibration blanks of sufficient concentration to warrant qualification of associated site sample results with the following exception. Selenium was detected (0.940  $\mu\text{g/L}$ ) in a calibration blank bracketing sample OUTFALL008\_20191227\_COMP. The selenium result for this sample was a detect below the reporting limit and was qualified as nondetect (U).

###### IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or  $\pm 2\times$  the reporting limit, whichever is greater. Interferents were not present in the samples at concentrations comparable to those in the ICSAs; therefore, interference was not suspected.

###### IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries (total and dissolved) were within the QAPP control limits of 85-115%.

###### IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

###### IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample OUTFALL008\_20191227\_COMP-F for Method 200.8. Results were not assessed when the parent sample concentration exceeded the spike amount by  $4\times$ . Recoveries and RPDs were within the QAPP control limits of 70-130% and  $\leq 20\%$ .

The laboratory did not perform post-digestion spike analyses as there were no MS/MSD outliers.



#### IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

#### IV.5. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified, and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. Results reported below the RL and above the MDL were qualified as estimated (J) and coded with a DNQ to comply with the NPDES permit reporting requirements. Nondetects are valid to the MDL.

#### IV.6. FIELD QC SAMPLES

MEC<sup>X</sup> evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC<sup>X</sup> used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

##### IV.6.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

##### IV.6.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

### V. METHOD SM4500-NH3G—AMMONIA

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M. Hilchey of MEC<sup>X</sup> reviewed the SDG on January 27, 2020.

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC<sup>X</sup> Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 4500-NH3G* and the *National Functional Guidelines for Inorganic Superfund Methods Data Review (2017)*.

#### V.1. HOLDING TIMES

The QAPP holding time, 28 days for ammonia, was met.

#### V.2. CALIBRATION

Calibration criteria were met. The initial calibration  $r^2$  value was  $\geq 0.995$  and the initial calibration verification recovery met QAPP requirements. All continuing calibration verification recoveries were within 90-110%.

#### V.3. QUALITY CONTROL SAMPLES

##### V.3.1. METHOD BLANKS

The method blank and calibration blanks had no detects.

**V.3.2. LABORATORY CONTROL SAMPLES**

Laboratory control sample recovery was within the QAPP control limits.

The laboratory performed an MRL QC sample, which met laboratory recovery control limits.

**V.3.3. LABORATORY DUPLICATES**

Laboratory duplicate analyses were not performed on the sample in this SDG.

**V.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

MS/MSD analyses were performed on the sample in this SDG. QAPP recovery control limits of 90-110% were not met. The MSD recovery was 88%; therefore, the sample result was qualified as estimated with potential low bias (J-).

**V.4. SAMPLE RESULT VERIFICATION**

Calculations were verified, and the sample result reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL. Results reported between the MDL and RL are qualified as estimated (J) and coded with a DNQ to comply with the NPDES permit reporting requirements.

**V.5. FIELD QC SAMPLES**

MEC<sup>X</sup> evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC<sup>X</sup> used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

**V.5.1. FIELD BLANKS AND EQUIPMENT BLANKS**

Field blank or equipment blank samples were not identified for this SDG.

**V.5.2. FIELD DUPLICATES**

Field duplicate samples were not identified in this SDG.

# Validated Sample Result Forms: 4402582271

*Analysis Method E1613B*

**Sample Name** OUTFALL008\_20191227\_COMP **Matrix Type:** WM **Result Type:** TRG

**Sample Date:** 12/27/2019 8:25:00 AM **Validation Level:** 8

**Lab Sample Name:** 440-258227-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.0000094	0.00010	0.00000061	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.000034	0.00010	0.00000072	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.0000034	0.000051	0.00000048	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.0000050	0.000051	0.00000042	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.0000012	0.000051	0.00000057	ug/L	J,DXq	UJ	*III
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.0000093	0.000051	0.00000055	ug/L	J,DX	J	DNQ
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.0000021	0.000051	0.00000047	ug/L	J,DXMB	U	B
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.0000093	0.000051	0.00000057	ug/L	J,DX	J	DNQ
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.0000011	0.000051	0.00000051	ug/L	J,DXMB	U	B
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.0000012	0.000051	0.00000040	ug/L	J,DXMB	U	B
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.0000010	0.000051	0.00000044	ug/L	J,DXMBq	U	B
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.0000089	0.000051	0.00000048	ug/L	J,DX	J	DNQ
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	0.0000082	0.000051	0.00000064	ug/L	J,DXq	UJ	*III
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.0000081	0.000051	0.00000041	ug/L	J,DXMB	U	B
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	0.0000084	0.000051	0.00000048	ug/L	J,DX	J	DNQ
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.0000052	0.000010	0.00000025	ug/L	J,DXMBq	R	D
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000010	0.00000076	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000010	0.00000046	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.0000060	0.000051	0.00000048	ug/L	J,DXMBq	U	B
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.0000088	0.000051	0.00000042	ug/L	J,DXMBq	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.0000038	0.000051	0.00000040	ug/L	J,DXMB	J	B, DNQ
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.0000043	0.000051	0.00000044	ug/L	J,DXMBq	U	B

**Analysis Method E1613B**

Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.0000017	0.000051	0.00000048	ug/L	J,DX	J	DNQ
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.00000082	0.000051	0.00000064	ug/L	J,DXq	UJ	*III
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.0000011	0.000010	0.00000025	ug/L	J,DXMBq	U	B
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.000010	0.00000046	ug/L	U	U	

**Analysis Method E200.7**

Sample Name OUTFALL008\_20191227\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 8:25:00 AM Validation Level: 8

Lab Sample Name: 440-258227-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Nickel	T	7440-02-0	ND	10	5.0	ug/L	U	U	
Zinc	T	7440-66-6	12	20	12	ug/L	J,DX	J	DNQ

Sample Name OUTFALL008\_20191227\_COMP\_F Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 8:25:00 AM Validation Level: 8

Lab Sample Name: 440-258227-2

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Nickel	D	7440-02-0	ND	10	5.0	ug/L	U	U	
Zinc	D	7440-66-6	ND	20	12	ug/L	U	U	

**Analysis Method E200.8**

Sample Name OUTFALL008\_20191227\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 8:25:00 AM Validation Level: 8

Lab Sample Name: 440-258227-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	ND	2.0	0.50	ug/L	U	U	
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	3.0	2.0	0.50	ug/L			
Lead	T	7439-92-1	0.77	1.0	0.50	ug/L	J,DX	J	DNQ
Selenium	T	7782-49-2	1.2	2.0	0.50	ug/L	J,DX	U	B
Silver	T	7440-22-4	ND	1.0	0.50	ug/L	ULQ	U	
Thallium	T	7440-28-0	ND	1.0	0.20	ug/L	U	U	

Sample Name OUTFALL008\_20191227\_COMP\_F Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 8:25:00 AM Validation Level: 8

Lab Sample Name: 440-258227-2

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	ND	2.0	0.50	ug/L	U	U	
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	U	U	



*Analysis Method*    *E200.8*

Copper	D	7440-50-8	5.0	2.0	0.50	ug/L		
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	U	U
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	U	U
Silver	D	7440-22-4	ND	1.0	0.50	ug/L	U	U
Thallium	D	7440-28-0	ND	1.0	0.20	ug/L	U	U

*Analysis Method*    *SM4500-NH3G*

**Sample Name**    OUTFALL008\_20191227\_COMP    **Matrix Type:**    WM    **Result Type:**    TRG

**Sample Date:**    12/27/2019 8:25:00 AM    **Validation Level:**    8

**Lab Sample Name:**    440-258227-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	0.183	0.200	0.100	mg/L	J,DX	J-	Q, DNQ

## ANALYTICAL REPORT

Eurofins Calscience Irvine  
17461 Derian Ave  
Suite 100  
Irvine, CA 92614-5817  
Tel: (949)261-1022

Laboratory Job ID: 440-258227-1

Client Project/Site: Routine Outfall 008 Comp

**For:**

Haley & Aldrich, Inc.  
400 E Van Buren St.  
Suite 545  
Phoenix, Arizona 85004

Attn: Katherine Miller



---

Authorized for release by:  
1/20/2020 4:58:25 PM

Christian Bondoc, Project Manager I  
(949)260-3218  
[christian.bondoc@testamericainc.com](mailto:christian.bondoc@testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



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Christian Bondoc  
Project Manager I  
*1/20/2020 4:58:25 PM*



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# Sample Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-258227-1	Outfall008_20191227_Comp	Water	12/27/19 08:25	12/27/19 11:20	
440-258227-2	Outfall008_20191227_Comp_F	Water	12/27/19 08:25	12/27/19 11:20	

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# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

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## Job ID: 440-258227-1

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### Laboratory: Eurofins Calscience Irvine

#### Narrative

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#### Job Narrative 440-258227-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/27/2019 11:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.1° C and 1.2° C.

#### HPLC/IC

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Metals

Method 200.8: The laboratory control sample (LCS) for preparation batch 440-588198 and analytical batch 440-588597 recovered outside control limits for the following analytes: Silver. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Dioxin Prep

Method 1613B: Elevated reporting limits are provided for the following sample due to insufficient sample provided for 1613B\_Sox\_Sep\_P preparation/analysis: Sample Outfall008\_20191227\_Comp (440-258227-1) was received in a narrow-mouth amber glass bottle.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

**Client Sample ID: Outfall008\_20191227\_Comp**

**Lab Sample ID: 440-258227-1**

Date Collected: 12/27/19 08:25

Matrix: Water

Date Received: 12/27/19 11:20

**Method: 300.0 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.1		0.50	0.25	mg/L			12/27/19 15:40	1
Nitrate as N	2.8		0.11	0.055	mg/L			12/27/19 15:40	1
Nitrite as N	0.049	J,DX	0.15	0.025	mg/L			12/27/19 15:40	1
Sulfate	4.9		0.50	0.25	mg/L			12/27/19 15:40	1

**Method: 314.0 - Perchlorate (IC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			12/30/19 16:17	1

**Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	2.8		0.15	0.055	mg/L			01/09/20 13:03	1

**Method: 1613B - Dioxins and Furans (HRGC/HRMS)**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	1
1,2,3,7,8-PeCDD	0.00000082	J,DX q	0.000051	0.0000006	ug/L		01/08/20 11:27	01/13/20 21:46	1
1,2,3,7,8-PeCDF	0.00000089	J,DX	0.000051	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	1
2,3,4,7,8-PeCDF	0.00000084	J,DX	0.000051	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	1
1,2,3,4,7,8-HxCDD	0.00000021	J,DX MB	0.000051	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	1
1,2,3,6,7,8-HxCDD	0.00000011	J,DX MB	0.000051	0.0000005	ug/L		01/08/20 11:27	01/13/20 21:46	1
1,2,3,7,8,9-HxCDD	0.00000010	J,DX MB q	0.000051	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	1
1,2,3,4,7,8-HxCDF	0.00000093	J,DX	0.000051	0.0000005	ug/L		01/08/20 11:27	01/13/20 21:46	1
1,2,3,6,7,8-HxCDF	0.00000093	J,DX	0.000051	0.0000005	ug/L		01/08/20 11:27	01/13/20 21:46	1
1,2,3,7,8,9-HxCDF	0.00000012	J,DX MB	0.000051	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	1
2,3,4,6,7,8-HxCDF	0.00000081	J,DX MB	0.000051	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	1
1,2,3,4,6,7,8-HpCDD	0.00000050	J,DX MB	0.000051	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	1
1,2,3,4,6,7,8-HpCDF	0.00000034	J,DX MB	0.000051	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	1
1,2,3,4,7,8,9-HpCDF	0.00000012	J,DX q	0.000051	0.0000005	ug/L		01/08/20 11:27	01/13/20 21:46	1
OCDD	0.00000034	J,DX MB	0.00010	0.0000007	ug/L		01/08/20 11:27	01/13/20 21:46	1
OCDF	0.00000094	J,DX MB	0.00010	0.0000006	ug/L		01/08/20 11:27	01/13/20 21:46	1
Total TCDD	ND		0.000010	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	1
Total TCDF	0.00000011	J,DX MB q	0.000010	0.0000002	ug/L		01/08/20 11:27	01/13/20 21:46	1
Total PeCDD	0.00000082	J,DX q	0.000051	0.0000006	ug/L		01/08/20 11:27	01/13/20 21:46	1
Total PeCDF	0.00000017	J,DX	0.000051	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	1

Eurofins Calscience Irvine

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

**Client Sample ID: Outfall008\_20191227\_Comp**

**Lab Sample ID: 440-258227-1**

Date Collected: 12/27/19 08:25

Matrix: Water

Date Received: 12/27/19 11:20

**Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total HxCDD	0.0000043	J,DX MB q	0.000051	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	1
				4					
Total HxCDF	0.0000038	J,DX MB	0.000051	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	1
				0					
Total HpCDD	0.0000088	J,DX MB q	0.000051	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	1
				2					
Total HpCDF	0.0000060	J,DX MB q	0.000051	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	1
				8					
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	56		25 - 164				01/08/20 11:27	01/13/20 21:46	1
13C-2,3,7,8-TCDF	58		24 - 169				01/08/20 11:27	01/13/20 21:46	1
13C-1,2,3,7,8-PeCDD	57		25 - 181				01/08/20 11:27	01/13/20 21:46	1
13C-1,2,3,7,8-PeCDF	58		24 - 185				01/08/20 11:27	01/13/20 21:46	1
13C-2,3,4,7,8-PeCDF	63		21 - 178				01/08/20 11:27	01/13/20 21:46	1
13C-1,2,3,4,7,8-HxCDD	62		32 - 141				01/08/20 11:27	01/13/20 21:46	1
13C-1,2,3,6,7,8-HxCDD	52		28 - 130				01/08/20 11:27	01/13/20 21:46	1
13C-1,2,3,4,7,8-HxCDF	59		26 - 152				01/08/20 11:27	01/13/20 21:46	1
13C-1,2,3,6,7,8-HxCDF	51		26 - 123				01/08/20 11:27	01/13/20 21:46	1
13C-1,2,3,7,8,9-HxCDF	54		29 - 147				01/08/20 11:27	01/13/20 21:46	1
13C-2,3,4,6,7,8-HxCDF	54		28 - 136				01/08/20 11:27	01/13/20 21:46	1
13C-1,2,3,4,6,7,8-HpCDD	53		23 - 140				01/08/20 11:27	01/13/20 21:46	1
13C-1,2,3,4,6,7,8-HpCDF	54		28 - 143				01/08/20 11:27	01/13/20 21:46	1
13C-1,2,3,4,7,8,9-HpCDF	59		26 - 138				01/08/20 11:27	01/13/20 21:46	1
13C-OCDD	51		17 - 157				01/08/20 11:27	01/13/20 21:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	96		35 - 197				01/08/20 11:27	01/13/20 21:46	1

**Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.000010	0.0000007	ug/L		01/08/20 11:27	01/16/20 17:09	1
				6					
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	62		24 - 169				01/08/20 11:27	01/16/20 17:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97		35 - 197				01/08/20 11:27	01/16/20 17:09	1

**Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		12/30/19 08:35	12/30/19 17:57	1
Zinc	12	J,DX	20	12	ug/L		12/30/19 08:35	12/30/19 17:57	1

**Method: 200.8 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND	LQ	1.0	0.50	ug/L		12/28/19 09:46	12/30/19 18:32	1
Cadmium	ND		1.0	0.25	ug/L		12/28/19 09:46	12/30/19 18:32	1
Copper	3.0		2.0	0.50	ug/L		12/28/19 09:46	12/30/19 18:32	1
Lead	0.77	J,DX	1.0	0.50	ug/L		12/28/19 09:46	12/30/19 18:32	1
Antimony	ND		2.0	0.50	ug/L		12/28/19 09:46	12/30/19 18:32	1
Selenium	1.2	J,DX	2.0	0.50	ug/L		12/28/19 09:46	12/30/19 18:32	1

Eurofins Calscience Irvine



# Client Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

**Client Sample ID: Outfall008\_20191227\_Comp**

**Lab Sample ID: 440-258227-1**

Date Collected: 12/27/19 08:25

Matrix: Water

Date Received: 12/27/19 11:20

**Method: 200.8 - Metals (ICP/MS) - Total Recoverable (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thallium	ND		1.0	0.20	ug/L		12/28/19 09:46	12/30/19 18:32	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		12/31/19 12:32	01/02/20 13:30	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Dissolved Solids</b>	<b>130</b>		10	5.0	mg/L			12/30/19 08:49	1
<b>Total Suspended Solids</b>	<b>12</b>		4.4	2.2	mg/L			12/27/19 16:12	1
Cyanide, Total	ND		5.0	2.5	ug/L		01/02/20 10:20	01/02/20 12:53	1
<b>Ammonia (as N)</b>	<b>0.183</b>	<b>J,DX</b>	0.200	0.100	mg/L			12/31/19 11:29	1

**Client Sample ID: Outfall008\_20191227\_Comp\_F**

**Lab Sample ID: 440-258227-2**

Date Collected: 12/27/19 08:25

Matrix: Water

Date Received: 12/27/19 11:20

**Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		12/28/19 11:55	01/02/20 18:36	1
Zinc	ND		20	12	ug/L		12/28/19 11:55	01/02/20 18:36	1

**Method: 200.8 - Metals (ICP/MS) - Dissolved**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:17	1
Cadmium	ND		1.0	0.25	ug/L		12/30/19 11:16	12/30/19 20:17	1
<b>Copper</b>	<b>5.0</b>		2.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:17	1
Lead	ND		1.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:17	1
Antimony	ND		2.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:17	1
Selenium	ND		2.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:17	1
Thallium	ND		1.0	0.20	ug/L		12/30/19 11:16	12/30/19 20:17	1

**Method: 245.1 - Mercury (CVAA) - Dissolved**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/15/20 11:35	01/16/20 11:14	1

# Method Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.7 Rev 4.4	Metals (ICP)	EPA	TAL IRV
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV
1613B	Separatory Funnel (L/L) Extraction with Soxhlet Extraction of Dioxin and Furans	40CFR136A	TAL SAC
200.2	Preparation, Total Recoverable Metals	EPA	TAL IRV
245.1	Preparation, Mercury	EPA	TAL IRV
Distill/CN	Distillation, Cyanide	None	TAL IRV
FILTRATION	Sample Filtration	None	TAL IRV

#### Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

#### Laboratory References:

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

**Client Sample ID: Outfall008\_20191227\_Comp**

**Lab Sample ID: 440-258227-1**

**Date Collected: 12/27/19 08:25**

**Matrix: Water**

**Date Received: 12/27/19 11:20**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			588133	12/27/19 15:40	NTN	TAL IRV
Total/NA	Analysis	300.0		1			588134	12/27/19 15:40	NTN	TAL IRV
Total/NA	Analysis	314.0		1			588445	12/30/19 16:17	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			589802	01/09/20 13:03	TLN	TAL IRV
Total/NA	Prep	1613B			973.9 mL	20 uL	349535	01/08/20 11:27	NIR	TAL SAC
Total/NA	Analysis	1613B		1			350522	01/13/20 21:46	ALM	TAL SAC
Total/NA	Prep	1613B	RA		973.9 mL	20 uL	349535	01/08/20 11:27	NIR	TAL SAC
Total/NA	Analysis	1613B	RA	1			351318	01/16/20 17:09	ALM	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	588241	12/30/19 08:35	EP	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1			588599	12/30/19 17:57	TQN	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	588198	12/28/19 09:46	M1G	TAL IRV
Total Recoverable	Analysis	200.8		1			588597	12/30/19 18:32	B1H	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	588737	12/31/19 12:32	MEM	TAL IRV
Total/NA	Analysis	245.1		1			588954	01/02/20 13:30	MEM	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	588438	12/30/19 08:49	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	225 mL	1000 mL	588223	12/27/19 16:12	KL	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	588874	01/02/20 10:20	CKL	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			588897	01/02/20 12:53	CKL	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8.0 mL	588750	12/31/19 11:29	KMY	TAL IRV

**Client Sample ID: Outfall008\_20191227\_Comp\_F**

**Lab Sample ID: 440-258227-2**

**Date Collected: 12/27/19 08:25**

**Matrix: Water**

**Date Received: 12/27/19 11:20**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	588288	12/28/19 09:35	EP	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	588307	12/28/19 11:55	EP	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1			588962	01/02/20 18:36	KE	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	588288	12/28/19 09:35	EP	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	588503	12/30/19 11:16	EP	TAL IRV
Dissolved	Analysis	200.8		1			588634	12/30/19 20:17	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			100 mL	100 mL	589977	01/10/20 11:30	EP	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	590663	01/15/20 11:35	MEM	TAL IRV
Dissolved	Analysis	245.1		1			590948	01/16/20 11:14	MEM	TAL IRV

**Laboratory References:**

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

## Method: 300.0 - Anions, Ion Chromatography

**Lab Sample ID: MB 440-588133/6**  
**Matrix: Water**  
**Analysis Batch: 588133**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			12/27/19 12:01	1
Nitrite as N	ND		0.15	0.025	mg/L			12/27/19 12:01	1

**Lab Sample ID: LCS 440-588133/5**  
**Matrix: Water**  
**Analysis Batch: 588133**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.13	1.10		mg/L		97	90 - 110
Nitrite as N	1.52	1.51		mg/L		99	90 - 110

**Lab Sample ID: 440-258197-G-1 MS**  
**Matrix: Water**  
**Analysis Batch: 588133**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.60		1.13	1.70		mg/L		98	80 - 120
Nitrite as N	0.094	J,DX	1.52	1.53		mg/L		94	80 - 120

**Lab Sample ID: 440-258197-G-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 588133**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	0.60		1.13	1.74		mg/L		101	80 - 120	2	20
Nitrite as N	0.094	J,DX	1.52	1.55		mg/L		96	80 - 120	1	20

**Lab Sample ID: MB 440-588134/6**  
**Matrix: Water**  
**Analysis Batch: 588134**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			12/27/19 12:01	1
Sulfate	ND		0.50	0.25	mg/L			12/27/19 12:01	1

**Lab Sample ID: LCS 440-588134/5**  
**Matrix: Water**  
**Analysis Batch: 588134**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.85		mg/L		97	90 - 110
Sulfate	5.00	5.04		mg/L		101	90 - 110

**Lab Sample ID: 440-258197-G-1 MS**  
**Matrix: Water**  
**Analysis Batch: 588134**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.3		5.00	10.4		mg/L		102	80 - 120
Sulfate	700	EY	5.00	702	EY BB	mg/L		44	80 - 120

Eurofins Calscience Irvine

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

## Method: 300.0 - Anions, Ion Chromatography

**Lab Sample ID: 440-258197-G-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 588134**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	5.3		5.00	10.5		mg/L		104	80 - 120	1	20
Sulfate	700	EY	5.00	702	EY BB	mg/L		51	80 - 120	0	20

## Method: 314.0 - Perchlorate (IC)

**Lab Sample ID: MB 440-588445/6**  
**Matrix: Water**  
**Analysis Batch: 588445**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			12/30/19 10:57	1

**Lab Sample ID: LCS 440-588445/5**  
**Matrix: Water**  
**Analysis Batch: 588445**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	25.2		ug/L		101	85 - 115

**Lab Sample ID: MRL 440-588445/4**  
**Matrix: Water**  
**Analysis Batch: 588445**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	1.00	1.04	J,DX	ug/L		104	75 - 125

**Lab Sample ID: MRL 440-588445/8**  
**Matrix: Water**  
**Analysis Batch: 588445**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	3.96	J,DX	ug/L		99	75 - 125

**Lab Sample ID: 440-258138-C-1 MS**  
**Matrix: Water**  
**Analysis Batch: 588445**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	3.3	J,DX	25.0	28.2		ug/L		100	80 - 120

**Lab Sample ID: 440-258138-C-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 588445**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	3.3	J,DX	25.0	27.6		ug/L		97	80 - 120	2	15



# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

## Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

**Lab Sample ID: MB 320-349535/1-A**  
**Matrix: Water**  
**Analysis Batch: 350522**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 349535**

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C-2,3,4,7,8-PeCDF	74		21 - 178	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,4,7,8-HxCDD	75		32 - 141	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,6,7,8-HxCDD	64		28 - 130	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,4,7,8-HxCDF	73		26 - 152	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,6,7,8-HxCDF	62		26 - 123	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,7,8,9-HxCDF	67		29 - 147	01/08/20 11:27	01/13/20 14:52	1
13C-2,3,4,6,7,8-HxCDF	66		28 - 136	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,4,6,7,8-HpCDD	64		23 - 140	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,4,6,7,8-HpCDF	64		28 - 143	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,4,7,8,9-HpCDF	71		26 - 138	01/08/20 11:27	01/13/20 14:52	1
13C-OCDD	63		17 - 157	01/08/20 11:27	01/13/20 14:52	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
37Cl4-2,3,7,8-TCDD	96		35 - 197	01/08/20 11:27	01/13/20 14:52	1

**Lab Sample ID: LCS 320-349535/2-A**  
**Matrix: Water**  
**Analysis Batch: 350522**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 349535**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000194		ug/L		97	67 - 158
2,3,7,8-TCDF	0.000200	0.000184	MB	ug/L		92	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.000970		ug/L		97	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.000964		ug/L		96	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000876		ug/L		88	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.000883	MB	ug/L		88	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.000966	MB	ug/L		97	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000917	MB	ug/L		92	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000860		ug/L		86	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000900		ug/L		90	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.000917	MB	ug/L		92	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.000914	MB	ug/L		91	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000990	MB	ug/L		99	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000972	MB	ug/L		97	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000900		ug/L		90	78 - 138
OCDD	0.00200	0.00194	MB	ug/L		97	78 - 144
OCDF	0.00200	0.00199	MB	ug/L		99	63 - 170

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	64		20 - 175
13C-2,3,7,8-TCDF	65		22 - 152
13C-1,2,3,7,8-PeCDD	69		21 - 227
13C-1,2,3,7,8-PeCDF	66		21 - 192
13C-2,3,4,7,8-PeCDF	73		13 - 328
13C-1,2,3,4,7,8-HxCDD	74		21 - 193
13C-1,2,3,6,7,8-HxCDD	60		25 - 163
13C-1,2,3,4,7,8-HxCDF	69		19 - 202
13C-1,2,3,6,7,8-HxCDF	61		21 - 159

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

## Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

**Lab Sample ID: LCS 320-349535/2-A**  
**Matrix: Water**  
**Analysis Batch: 350522**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 349535**

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C-1,2,3,7,8,9-HxCDF	65		17 - 205
13C-2,3,4,6,7,8-HxCDF	64		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	62		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	63		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	71		20 - 186
13C-OCDD	62		13 - 199

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	97		31 - 191

## Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

**Lab Sample ID: MB 320-349535/1-A**  
**Matrix: Water**  
**Analysis Batch: 351071**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 349535**

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF - RA	ND		0.000010	0.0000005	ug/L		01/08/20 11:27	01/15/20 15:46	1

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C-2,3,7,8-TCDF - RA	70		24 - 169	01/08/20 11:27	01/15/20 15:46	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
37Cl4-2,3,7,8-TCDD - RA	96		35 - 197	01/08/20 11:27	01/15/20 15:46	1

## Method: 200.7 Rev 4.4 - Metals (ICP)

**Lab Sample ID: MB 440-588241/1-A**  
**Matrix: Water**  
**Analysis Batch: 588599**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 588241**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		12/30/19 08:35	12/30/19 17:25	1
Zinc	ND		20	12	ug/L		12/30/19 08:35	12/30/19 17:25	1

**Lab Sample ID: LCS 440-588241/2-A**  
**Matrix: Water**  
**Analysis Batch: 588599**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 588241**

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
Nickel	500	506		ug/L		101	85 - 115
Zinc	500	504		ug/L		101	85 - 115



# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

## Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

**Lab Sample ID: 440-257890-E-6-C MS**  
**Matrix: Water**  
**Analysis Batch: 588599**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total Recoverable**  
**Prep Batch: 588241**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Nickel	ND		500	503		ug/L		101	70 - 130
Zinc	ND		500	516		ug/L		103	70 - 130

**Lab Sample ID: 440-257890-E-6-D MSD**  
**Matrix: Water**  
**Analysis Batch: 588599**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total Recoverable**  
**Prep Batch: 588241**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Nickel	ND		500	489		ug/L		98	70 - 130	3	20
Zinc	ND		500	501		ug/L		100	70 - 130	3	20

**Lab Sample ID: MB 440-588288/1-C**  
**Matrix: Water**  
**Analysis Batch: 588962**

**Client Sample ID: Method Blank**  
**Prep Type: Dissolved**  
**Prep Batch: 588307**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		12/28/19 11:55	01/02/20 18:11	1
Zinc	ND		20	12	ug/L		12/28/19 11:55	01/02/20 18:11	1

**Lab Sample ID: LCS 440-588288/2-C**  
**Matrix: Water**  
**Analysis Batch: 588962**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Dissolved**  
**Prep Batch: 588307**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Nickel	500	465		ug/L		93	85 - 115
Zinc	500	459		ug/L		92	85 - 115

**Lab Sample ID: 440-258219-A-3-D MS**  
**Matrix: Water**  
**Analysis Batch: 588962**

**Client Sample ID: Matrix Spike**  
**Prep Type: Dissolved**  
**Prep Batch: 588307**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Nickel	ND		500	458		ug/L		92	70 - 130
Zinc	ND		500	458		ug/L		92	70 - 130

**Lab Sample ID: 440-258219-A-3-E MSD**  
**Matrix: Water**  
**Analysis Batch: 588962**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Dissolved**  
**Prep Batch: 588307**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Nickel	ND		500	461		ug/L		92	70 - 130	1	20
Zinc	ND		500	460		ug/L		92	70 - 130	0	20

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

## Method: 200.8 - Metals (ICP/MS)

**Lab Sample ID: MB 440-588198/1-A**  
**Matrix: Water**  
**Analysis Batch: 588597**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 588198**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		12/28/19 09:46	12/30/19 17:42	1
Cadmium	ND		1.0	0.25	ug/L		12/28/19 09:46	12/30/19 17:42	1
Copper	ND		2.0	0.50	ug/L		12/28/19 09:46	12/30/19 17:42	1
Lead	ND		1.0	0.50	ug/L		12/28/19 09:46	12/30/19 17:42	1
Antimony	ND		2.0	0.50	ug/L		12/28/19 09:46	12/30/19 17:42	1
Selenium	ND		2.0	0.50	ug/L		12/28/19 09:46	12/30/19 17:42	1
Thallium	ND		1.0	0.20	ug/L		12/28/19 09:46	12/30/19 17:42	1

**Lab Sample ID: LCS 440-588198/2-A**  
**Matrix: Water**  
**Analysis Batch: 588597**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 588198**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Silver	80.0	92.9	LQ	ug/L		116	85 - 115
Cadmium	80.0	85.7		ug/L		107	85 - 115
Copper	80.0	88.0		ug/L		110	85 - 115
Lead	80.0	83.1		ug/L		104	85 - 115
Antimony	80.0	92.4		ug/L		115	85 - 115
Selenium	80.0	84.9		ug/L		106	85 - 115
Thallium	80.0	85.1		ug/L		106	85 - 115

**Lab Sample ID: 440-258216-B-4-B MS**  
**Matrix: Water**  
**Analysis Batch: 588597**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total Recoverable**  
**Prep Batch: 588198**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Silver	ND	LQ	80.0	83.7		ug/L		105	70 - 130
Cadmium	ND		80.0	79.1		ug/L		99	70 - 130
Copper	1.4	J,DX	80.0	77.5		ug/L		95	70 - 130
Lead	ND		80.0	77.3		ug/L		97	70 - 130
Antimony	ND		80.0	85.5		ug/L		107	70 - 130
Selenium	0.80	J,DX	80.0	83.6		ug/L		103	70 - 130
Thallium	ND		80.0	78.5		ug/L		98	70 - 130

**Lab Sample ID: 440-258216-B-4-C MSD**  
**Matrix: Water**  
**Analysis Batch: 588597**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total Recoverable**  
**Prep Batch: 588198**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Silver	ND	LQ	80.0	83.7		ug/L		105	70 - 130	0	20
Cadmium	ND		80.0	79.2		ug/L		99	70 - 130	0	20
Copper	1.4	J,DX	80.0	78.8		ug/L		97	70 - 130	2	20
Lead	ND		80.0	76.9		ug/L		96	70 - 130	1	20
Antimony	ND		80.0	84.8		ug/L		106	70 - 130	1	20
Selenium	0.80	J,DX	80.0	81.5		ug/L		101	70 - 130	3	20
Thallium	ND		80.0	77.9		ug/L		97	70 - 130	1	20

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

## Method: 200.8 - Metals (ICP/MS) (Continued)

**Lab Sample ID: MB 440-588288/1-D**  
**Matrix: Water**  
**Analysis Batch: 588634**

**Client Sample ID: Method Blank**  
**Prep Type: Dissolved**  
**Prep Batch: 588503**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:12	1
Cadmium	ND		1.0	0.25	ug/L		12/30/19 11:16	12/30/19 20:12	1
Copper	ND		2.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:12	1
Lead	ND		1.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:12	1
Antimony	ND		2.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:12	1
Selenium	ND		2.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:12	1
Thallium	ND		1.0	0.20	ug/L		12/30/19 11:16	12/30/19 20:12	1

**Lab Sample ID: LCS 440-588288/2-D**  
**Matrix: Water**  
**Analysis Batch: 588634**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Dissolved**  
**Prep Batch: 588503**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Silver	80.0	81.5		ug/L		102	85 - 115
Cadmium	80.0	79.6		ug/L		100	85 - 115
Copper	80.0	77.1		ug/L		96	85 - 115
Lead	80.0	79.5		ug/L		99	85 - 115
Antimony	80.0	89.1		ug/L		111	85 - 115
Selenium	80.0	80.7		ug/L		101	85 - 115
Thallium	80.0	80.9		ug/L		101	85 - 115

**Lab Sample ID: 440-258227-2 MS**  
**Matrix: Water**  
**Analysis Batch: 588634**

**Client Sample ID: Outfall008\_20191227\_Comp\_F**  
**Prep Type: Dissolved**  
**Prep Batch: 588503**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Silver	ND		80.0	80.6		ug/L		101	70 - 130
Cadmium	ND		80.0	78.9		ug/L		99	70 - 130
Copper	5.0		80.0	80.9		ug/L		95	70 - 130
Lead	ND		80.0	79.3		ug/L		99	70 - 130
Antimony	ND		80.0	88.7		ug/L		111	70 - 130
Selenium	ND		80.0	80.8		ug/L		101	70 - 130
Thallium	ND		80.0	80.3		ug/L		100	70 - 130

**Lab Sample ID: 440-258227-2 MSD**  
**Matrix: Water**  
**Analysis Batch: 588634**

**Client Sample ID: Outfall008\_20191227\_Comp\_F**  
**Prep Type: Dissolved**  
**Prep Batch: 588503**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Silver	ND		80.0	82.6		ug/L		103	70 - 130	2	20
Cadmium	ND		80.0	80.6		ug/L		101	70 - 130	2	20
Copper	5.0		80.0	81.4		ug/L		96	70 - 130	1	20
Lead	ND		80.0	81.1		ug/L		101	70 - 130	2	20
Antimony	ND		80.0	90.2		ug/L		113	70 - 130	2	20
Selenium	ND		80.0	81.2		ug/L		102	70 - 130	0	20
Thallium	ND		80.0	81.3		ug/L		102	70 - 130	1	20

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

## Method: 245.1 - Mercury (CVAA)

**Lab Sample ID: MB 440-588737/1-A**  
**Matrix: Water**  
**Analysis Batch: 588954**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 588737**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		12/31/19 12:32	01/02/20 13:12	1

**Lab Sample ID: LCS 440-588737/2-A**  
**Matrix: Water**  
**Analysis Batch: 588954**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 588737**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	4.00	3.55		ug/L		89	85 - 115

**Lab Sample ID: 440-258077-D-1-H MS**  
**Matrix: Water**  
**Analysis Batch: 588954**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 588737**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		4.00	3.43		ug/L		86	75 - 125

**Lab Sample ID: 440-258077-D-1-I MSD**  
**Matrix: Water**  
**Analysis Batch: 588954**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 588737**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		4.00	3.55		ug/L		89	75 - 125	3	20

**Lab Sample ID: MB 440-589977/1-C**  
**Matrix: Water**  
**Analysis Batch: 590948**

**Client Sample ID: Method Blank**  
**Prep Type: Dissolved**  
**Prep Batch: 590663**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/15/20 11:35	01/16/20 11:00	1

**Lab Sample ID: LCS 440-589977/2-C**  
**Matrix: Water**  
**Analysis Batch: 590948**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Dissolved**  
**Prep Batch: 590663**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	4.00	3.98		ug/L		99	85 - 115

**Lab Sample ID: 440-258718-A-2-H MS**  
**Matrix: Water**  
**Analysis Batch: 590948**

**Client Sample ID: Matrix Spike**  
**Prep Type: Dissolved**  
**Prep Batch: 590663**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		4.00	4.11		ug/L		103	75 - 125

**Lab Sample ID: 440-258718-A-2-I MSD**  
**Matrix: Water**  
**Analysis Batch: 590948**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Dissolved**  
**Prep Batch: 590663**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		4.00	3.97		ug/L		99	75 - 125	3	20

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

## Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-588438/1  
Matrix: Water  
Analysis Batch: 588438

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L	-		12/30/19 08:49	1

Lab Sample ID: LCS 440-588438/2  
Matrix: Water  
Analysis Batch: 588438

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	996		mg/L	-	100	90 - 110

Lab Sample ID: 440-258195-E-2 DU  
Matrix: Water  
Analysis Batch: 588438

Client Sample ID: Duplicate  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	8600		8370		mg/L	-	3	5

## Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-588223/1  
Matrix: Water  
Analysis Batch: 588223

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L	-		12/27/19 16:12	1

Lab Sample ID: LCS 440-588223/2  
Matrix: Water  
Analysis Batch: 588223

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	969		mg/L	-	97	85 - 115

Lab Sample ID: 440-258219-D-1 DU  
Matrix: Water  
Analysis Batch: 588223

Client Sample ID: Duplicate  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	190		184		mg/L	-	4	10

## Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-588874/1-A  
Matrix: Water  
Analysis Batch: 588897

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 588874

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L	-	01/02/20 10:20	01/02/20 12:52	1

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

## Method: SM 4500 CN E - Cyanide, Total (Low Level) (Continued)

**Lab Sample ID: LCS 440-588874/2-A**  
**Matrix: Water**  
**Analysis Batch: 588897**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 588874**  
**%Rec.**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	100	95.1		ug/L		95	80 - 120

**Lab Sample ID: 440-258219-P-1-A MS**  
**Matrix: Water**  
**Analysis Batch: 588897**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 588874**  
**%Rec.**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	ND		100	96.8		ug/L		97	75 - 125

**Lab Sample ID: 440-258219-P-1-B MSD**  
**Matrix: Water**  
**Analysis Batch: 588897**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 588874**  
**%Rec.**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	ND		100	95.3		ug/L		95	75 - 125	2	20

## Method: SM 4500 NH3 G - Ammonia

**Lab Sample ID: MB 440-588750/10**  
**Matrix: Water**  
**Analysis Batch: 588750**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.200	0.100	mg/L			12/31/19 11:19	1

**Lab Sample ID: LCS 440-588750/11**  
**Matrix: Water**  
**Analysis Batch: 588750**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Ammonia (as N)	5.00	4.750		mg/L		95	90 - 110

**Lab Sample ID: MRL 440-588750/9**  
**Matrix: Water**  
**Analysis Batch: 588750**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	Limits
Ammonia (as N)	0.200	0.2030		mg/L		102	50 - 150

**Lab Sample ID: 440-258227-1 MS**  
**Matrix: Water**  
**Analysis Batch: 588750**

**Client Sample ID: Outfall008\_20191227\_Comp**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Ammonia (as N)	0.183	J,DX	5.00	4.830		mg/L		93	90 - 110

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

## Method: SM 4500 NH3 G - Ammonia (Continued)

Lab Sample ID: 440-258227-1 MSD

Matrix: Water

Analysis Batch: 588750

Client Sample ID: Outfall008\_20191227\_Comp

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ammonia (as N)	0.183	J,DX	5.00	4.560	LN	mg/L		88	90 - 110	6	15

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

## HPLC/IC

### Analysis Batch: 588133

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	300.0	
MB 440-588133/6	Method Blank	Total/NA	Water	300.0	
LCS 440-588133/5	Lab Control Sample	Total/NA	Water	300.0	
440-258197-G-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-258197-G-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

### Analysis Batch: 588134

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	300.0	
MB 440-588134/6	Method Blank	Total/NA	Water	300.0	
LCS 440-588134/5	Lab Control Sample	Total/NA	Water	300.0	
440-258197-G-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-258197-G-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

### Analysis Batch: 588445

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	314.0	
MB 440-588445/6	Method Blank	Total/NA	Water	314.0	
LCS 440-588445/5	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-588445/4	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-588445/8	Lab Control Sample	Total/NA	Water	314.0	
440-258138-C-1 MS	Matrix Spike	Total/NA	Water	314.0	
440-258138-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0	

### Analysis Batch: 589802

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	NO3NO2 Calc	

## Specialty Organics

### Prep Batch: 349535

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	1613B	
440-258227-1 - RA	Outfall008_20191227_Comp	Total/NA	Water	1613B	
MB 320-349535/1-A	Method Blank	Total/NA	Water	1613B	
MB 320-349535/1-A - RA	Method Blank	Total/NA	Water	1613B	
LCS 320-349535/2-A	Lab Control Sample	Total/NA	Water	1613B	

### Analysis Batch: 350522

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	1613B	349535
MB 320-349535/1-A	Method Blank	Total/NA	Water	1613B	349535
LCS 320-349535/2-A	Lab Control Sample	Total/NA	Water	1613B	349535

### Analysis Batch: 351071

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-349535/1-A - RA	Method Blank	Total/NA	Water	1613B	349535

### Analysis Batch: 351318

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1 - RA	Outfall008_20191227_Comp	Total/NA	Water	1613B	349535

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

## Metals

### Prep Batch: 588198

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total Recoverable	Water	200.2	
MB 440-588198/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-588198/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-258216-B-4-B MS	Matrix Spike	Total Recoverable	Water	200.2	
440-258216-B-4-C MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

### Prep Batch: 588241

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total Recoverable	Water	200.2	
MB 440-588241/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-588241/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-257890-E-6-C MS	Matrix Spike	Total Recoverable	Water	200.2	
440-257890-E-6-D MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

### Filtration Batch: 588288

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-2	Outfall008_20191227_Comp_F	Dissolved	Water	FILTRATION	
MB 440-588288/1-C	Method Blank	Dissolved	Water	FILTRATION	
MB 440-588288/1-D	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-588288/2-C	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-588288/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
440-258219-A-3-D MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-258219-A-3-E MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	
440-258227-2 MS	Outfall008_20191227_Comp_F	Dissolved	Water	FILTRATION	
440-258227-2 MSD	Outfall008_20191227_Comp_F	Dissolved	Water	FILTRATION	

### Prep Batch: 588307

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-2	Outfall008_20191227_Comp_F	Dissolved	Water	200.2	588288
MB 440-588288/1-C	Method Blank	Dissolved	Water	200.2	588288
LCS 440-588288/2-C	Lab Control Sample	Dissolved	Water	200.2	588288
440-258219-A-3-D MS	Matrix Spike	Dissolved	Water	200.2	588288
440-258219-A-3-E MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	588288

### Prep Batch: 588503

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-2	Outfall008_20191227_Comp_F	Dissolved	Water	200.2	588288
MB 440-588288/1-D	Method Blank	Dissolved	Water	200.2	588288
LCS 440-588288/2-D	Lab Control Sample	Dissolved	Water	200.2	588288
440-258227-2 MS	Outfall008_20191227_Comp_F	Dissolved	Water	200.2	588288
440-258227-2 MSD	Outfall008_20191227_Comp_F	Dissolved	Water	200.2	588288

### Analysis Batch: 588597

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total Recoverable	Water	200.8	588198
MB 440-588198/1-A	Method Blank	Total Recoverable	Water	200.8	588198
LCS 440-588198/2-A	Lab Control Sample	Total Recoverable	Water	200.8	588198
440-258216-B-4-B MS	Matrix Spike	Total Recoverable	Water	200.8	588198
440-258216-B-4-C MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	588198

# QC Association Summary

Client: Haley & Aldrich, Inc.  
 Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

## Metals

### Analysis Batch: 588599

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total Recoverable	Water	200.7 Rev 4.4	588241
MB 440-588241/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	588241
LCS 440-588241/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	588241
440-257890-E-6-C MS	Matrix Spike	Total Recoverable	Water	200.7 Rev 4.4	588241
440-257890-E-6-D MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.7 Rev 4.4	588241

### Analysis Batch: 588634

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-2	Outfall008_20191227_Comp_F	Dissolved	Water	200.8	588503
MB 440-588288/1-D	Method Blank	Dissolved	Water	200.8	588503
LCS 440-588288/2-D	Lab Control Sample	Dissolved	Water	200.8	588503
440-258227-2 MS	Outfall008_20191227_Comp_F	Dissolved	Water	200.8	588503
440-258227-2 MSD	Outfall008_20191227_Comp_F	Dissolved	Water	200.8	588503

### Prep Batch: 588737

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	245.1	
MB 440-588737/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-588737/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-258077-D-1-H MS	Matrix Spike	Total/NA	Water	245.1	
440-258077-D-1-I MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

### Analysis Batch: 588954

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	245.1	588737
MB 440-588737/1-A	Method Blank	Total/NA	Water	245.1	588737
LCS 440-588737/2-A	Lab Control Sample	Total/NA	Water	245.1	588737
440-258077-D-1-H MS	Matrix Spike	Total/NA	Water	245.1	588737
440-258077-D-1-I MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	588737

### Analysis Batch: 588962

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-2	Outfall008_20191227_Comp_F	Dissolved	Water	200.7 Rev 4.4	588307
MB 440-588288/1-C	Method Blank	Dissolved	Water	200.7 Rev 4.4	588307
LCS 440-588288/2-C	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	588307
440-258219-A-3-D MS	Matrix Spike	Dissolved	Water	200.7 Rev 4.4	588307
440-258219-A-3-E MSD	Matrix Spike Duplicate	Dissolved	Water	200.7 Rev 4.4	588307

### Filtration Batch: 589977

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-2	Outfall008_20191227_Comp_F	Dissolved	Water	FILTRATION	
MB 440-589977/1-C	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-589977/2-C	Lab Control Sample	Dissolved	Water	FILTRATION	
440-258718-A-2-H MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-258718-A-2-I MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

### Prep Batch: 590663

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-2	Outfall008_20191227_Comp_F	Dissolved	Water	245.1	589977
MB 440-589977/1-C	Method Blank	Dissolved	Water	245.1	589977
LCS 440-589977/2-C	Lab Control Sample	Dissolved	Water	245.1	589977

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

## Metals (Continued)

### Prep Batch: 590663 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258718-A-2-H MS	Matrix Spike	Dissolved	Water	245.1	589977
440-258718-A-2-I MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	589977

### Analysis Batch: 590948

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-2	Outfall008_20191227_Comp_F	Dissolved	Water	245.1	590663
MB 440-589977/1-C	Method Blank	Dissolved	Water	245.1	590663
LCS 440-589977/2-C	Lab Control Sample	Dissolved	Water	245.1	590663
440-258718-A-2-H MS	Matrix Spike	Dissolved	Water	245.1	590663
440-258718-A-2-I MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	590663

## General Chemistry

### Analysis Batch: 588223

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	SM 2540D	
MB 440-588223/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-588223/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-258219-D-1 DU	Duplicate	Total/NA	Water	SM 2540D	

### Analysis Batch: 588438

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	SM 2540C	
MB 440-588438/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-588438/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-258195-E-2 DU	Duplicate	Total/NA	Water	SM 2540C	

### Analysis Batch: 588750

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-588750/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-588750/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-588750/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-258227-1 MS	Outfall008_20191227_Comp	Total/NA	Water	SM 4500 NH3 G	
440-258227-1 MSD	Outfall008_20191227_Comp	Total/NA	Water	SM 4500 NH3 G	

### Prep Batch: 588874

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	Distill/CN	
MB 440-588874/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-588874/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
440-258219-P-1-A MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-258219-P-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

### Analysis Batch: 588897

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	SM 4500 CN E	588874
MB 440-588874/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	588874
LCS 440-588874/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	588874
440-258219-P-1-A MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	588874
440-258219-P-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	588874

Eurofins Calscience Irvine

# Definitions/Glossary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

## Qualifiers

### HPLC/IC

Qualifier	Qualifier Description
BB	Sample > 4X spike concentration
EY	Result exceeds normal dynamic range; reported as a min. est.
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

### Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

### Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
LQ	LCS/LCSD recovery above method control limits

### General Chemistry

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
LN	MS and/or MSD below acceptance limits. See Blank Spike (LCS)

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.  
 Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

## Laboratory: Eurofins Calscience Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
California	State Program	CA ELAP 2706	06-30-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
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## Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20 *
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20 *
Hawaii	State	<cert No.>	01-29-20 *
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20 *
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20 *
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19 *
Wyoming	State Program	8TMS-L	01-28-19 *

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

CHAIN OF CUSTODY FORM

Test America

<p><b>Client Name/Address:</b>                  Haley &amp; Aldrich                  5333 Mission Center Rd Suite 300                  San Diego, CA 92108</p> <p><b>Test America Contact:</b> Uneshi Patel                  17461 Denian Ave Suite #100                  Irvine CA 92614                  Tel 949-260-3269                  Cell 949-333-9055</p>		<p><b>Project:</b>                  Boeing-SSF LMPDES                  Permit 2019                  Routine Outfall #008                  Outfall 008                  Comp</p>		<p><b>Project Manager:</b> Katherine Miller                  520.289.8606, 520.904.6944 (cell)  <b>Field Manager:</b> Mark Dominick                  975.234.5033, 818.599.0702 (cell)</p>		<p><b>ANALYSIS REQUIRED</b></p> <p>add</p> <p>TSS (160.2 (SM2540D))</p> <p>Total Dissolved Metals: Mercury (E245.1)</p> <p>Total Recoverable Metals: Mercury (E245.1)</p> <p>Cyanide (SM4500-CN-E / E335.2)</p> <p>Ammonia-N (350.2)</p> <p>Chromium Toxicity - Hexavalent (EPA-811-R-02-013)</p> <p>APC Labs in Ventura, CA</p> <p>CS-137 (E901.0 or E901.1)</p> <p>Radium 228 (E904.0) Uranium (E908.0) &amp; Combined Radium 226 (E903.0 or E903.1) &amp; Thorium (E903.2) (E906.0) Sr-90 (E905.0) Tc-99m (E905.1) (E905.2) Gross Beta (E900.0)</p> <p>Total Dissolved Metals: (E200.7) Ni, Zn (E200.8) Ag, Cd, Cu, Pb, Sb, Se, Tl</p> <p>TDS (SM2540C/E160.1)</p> <p>CF, SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Perchlorate (300)</p> <p>TCDD (and all congeners) (E1913B)</p> <p>Total Recoverable Metals: (E200.7) Ni, Zn (E200.8) Ag, Cd, Cu, Pb, Sb, Se, Tl</p>		<p><b>Field Readings</b></p> <p>Comments</p> <p>48 hours Holding Time NO<sub>3</sub> &amp; NO<sub>2</sub></p> <p>Unfiltered and reprocessed analysis. Separate RAD into another worksheet. Analyze duplicate, not MSMSD.</p> <p>Only test if flag or record pair events in 30 year. Deliver to ABC Labs in Ventura, CA</p> <p>Filter and preserve within 24hrs of receipt at lab</p> <p>Sample receiving DO NOT OPEN until ready to be opened in Mercury Prep using clean hold</p> <p>hold</p>						
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MSMSD	Total Dissolved Metals: (E200.7) Ni, Zn (E200.8) Ag, Cd, Cu, Pb, Sb, Se, Tl	TDS (SM2540C/E160.1)	CF, SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Perchlorate (300)	TCDD (and all congeners) (E1913B)	Total Recoverable Metals: (E200.7) Ni, Zn (E200.8) Ag, Cd, Cu, Pb, Sb, Se, Tl	Gross Alpha (E900.0), Gross Beta (E900.0), Radium 228 (E904.0) Uranium (E908.0) & Combined Radium 226 (E903.0 or E903.1) & Thorium (E903.2) (E906.0) Sr-90 (E905.0) Tc-99m (E905.1) (E905.2)
Outfall 008	Outfall008_20191227_Comp	12/27/2019	WM	500 mL Poly	1	HNO <sub>3</sub>	95	No	X					
			WM	1 L Glass Amber	2	None	110	No						
			WM	500 mL Poly	2	None	130	No		X				
			WM	500 mL Poly	1	None	155	No						
			WM	500 mL Poly	1	H <sub>2</sub> SO <sub>4</sub>	160	No						
			WM	500 mL Poly	1	NaOH	220	No						
			WM	2.5 Gal Cube	1	None	225	No	X					
			WM	1 L Glass Amber	1	None	230	No						
			WM	1 Gal Cube	6	None	285	No						
			WM	1 L Poly	1	None	185	No						
			WM	1 L Poly	1	None	205	No	X					
			WM	borosilicate vials	1	None	320	No						
			WM	1 L Glass Amber	2	None	110	No						
			WM	500 mL Poly	2	None	130	No						

**Legend:** A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quarterly, ORS=Quarterly Receiving Water, S=Semi-Annual

Received By: *[Signature]* Date/Time: 12/27/19 0945 TAJRN  
 Company: HALEY & ALDRICH

Received By: *[Signature]* Date/Time: 12/27/19 1120  
 Company: TAJRN

Received By: *[Signature]* Date/Time: 12/27/19 1120  
 Company: TAJRN

Turn-around time (Check):  
 24 Hour:  72 Hour:  10 Day:   
 48 Hour:  5 Day:  Normal:

Sample integrity (Check):  
 Intact:  On ice:   
 Store samples for 6 months:   
 Data Requirements (Check):  
 No Level IV:  All Level IV:

1.4/1.1 1.5/1.2

12/27/19 LD

440-258227 Chain of Custody









## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-258227-1

**Login Number: 258227**

**List Number: 1**

**Creator: Dolidze, Lado**

**List Source: Eurofins Irvine**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-258227-1

**Login Number: 258227**

**List Number: 3**

**Creator: Guzman, Juan**

**List Source: Eurofins TestAmerica, Sacramento**

**List Creation: 12/28/19 11:10 AM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	Seal present with no number.
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.3c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# Isotope Dilution Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

## Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF (24-185)	PeCF (21-178)	HxCDD (32-141)	HxDD (28-130)	HxCDF (26-152)
440-258227-1	Outfall008_20191227_Comp	56	58	57	58	63	62	52	59
440-258227-1 - RA	Outfall008_20191227_Comp		62						
MB 320-349535/1-A	Method Blank	63	65	69	68	74	75	64	73
MB 320-349535/1-A - RA	Method Blank		70						

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxDF (26-123)	HxCF (29-147)	13CHxCF (28-136)	HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	OCDD (17-157)
440-258227-1	Outfall008_20191227_Comp	51	54	54	53	54	59	51
440-258227-1 - RA	Outfall008_20191227_Comp							
MB 320-349535/1-A	Method Blank	62	67	66	64	64	71	63
MB 320-349535/1-A - RA	Method Blank							

#### Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD  
 TCDF = 13C-2,3,7,8-TCDF  
 PeCDD = 13C-1,2,3,7,8-PeCDD  
 PeCDF = 13C-1,2,3,7,8-PeCDF  
 PeCF = 13C-2,3,4,7,8-PeCDF  
 HxCDD = 13C-1,2,3,4,7,8-HxCDD  
 HxDD = 13C-1,2,3,6,7,8-HxCDD  
 HxCDF = 13C-1,2,3,4,7,8-HxCDF  
 HxDF = 13C-1,2,3,6,7,8-HxCDF  
 HxCF = 13C-1,2,3,7,8,9-HxCDF  
 13CHxCF = 13C-2,3,4,6,7,8-HxCDF  
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD  
 HpCDF = 13C-1,2,3,4,6,7,8-HpCDF  
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF  
 OCDD = 13C-OCDD

## Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF (21-192)	PeCF (13-328)	HxCDD (21-193)	HxDD (25-163)	HxCDF (19-202)
LCS 320-349535/2-A	Lab Control Sample	64	65	69	66	73	74	60	69

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxDF (21-159)	HxCF (17-205)	13CHxCF (22-176)	HpCDD (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-349535/2-A	Lab Control Sample	61	65	64	62	63	71	62

#### Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD  
 TCDF = 13C-2,3,7,8-TCDF  
 PeCDD = 13C-1,2,3,7,8-PeCDD  
 PeCDF = 13C-1,2,3,7,8-PeCDF  
 PeCF = 13C-2,3,4,7,8-PeCDF  
 HxCDD = 13C-1,2,3,4,7,8-HxCDD  
 HxDD = 13C-1,2,3,6,7,8-HxCDD  
 HxCDF = 13C-1,2,3,4,7,8-HxCDF

# Isotope Dilution Summary

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 008 Comp

HxDF = 13C-1,2,3,6,7,8-HxCDF

HxCF = 13C-1,2,3,7,8,9-HxCDF

13CHxCF = 13C-2,3,4,6,7,8-HxCDF

HpCDD = 13C-1,2,3,4,6,7,8-HpCDD

HpCDF = 13C-1,2,3,4,6,7,8-HpCDF

HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF

OCDD = 13C-OCDD

Job ID: 440-258227-1

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Environment Testing  
TestAmerica

Sacramento  
Sample Receiving Notes



440-258227 Field Sheet

Tracking #: 1119-9742-5322

SO /  / FO / SAT / 2-Day / Ground / UPS / CDO / Courier  
GSO / OnTrac / Goldstreak / USPS / Other \_\_\_\_\_

Job: \_\_\_\_\_

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the GOC.

Notes: \_\_\_\_\_  
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Therm. ID: AK-12 Corr. Factor: (+/-) 0 °C

Ice  Wet  Gel \_\_\_\_\_ Other \_\_\_\_\_

Cooler Custody Seal: Seal

Cooler ID: 2012

Temp Observed: 1.3 °C Corrected: 1.3 °C

From: Temp Blank  Sample

**During Initial Triage**

	Yes	No	NA
Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature is acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CoC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Initials: JU Date: 12/28/19

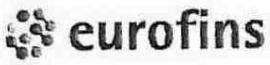
**During Labeling**

	Yes	No	NA
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample custody seal?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample date/times are provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appropriate containers are used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample bottles are completely filled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zero headspace?*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Perchlorate has headspace? (Methods 314, 331, 6850)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Multiphasic samples are not present?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NCM Filed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Initials: JU Date: 12/28/19

\*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

W18-A



Environment Testing  
TestAmerica

Sacramento  
Sample Receiving Notes

Place Field Sheet Label Here

Tracking #: 1119 9742 5311

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier  
GSO / OnTrac / Goldstreak / USPS / Other \_\_\_\_\_

Job: \_\_\_\_\_

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.  
File in the job folder with the COC.

Notes: \_\_\_\_\_  
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Therm. ID: AD5 Corr. Factor: (+1.0)0.2 °C  
Ice \_\_\_\_\_ Wet  Gel \_\_\_\_\_ Other \_\_\_\_\_

Cooler Custody Seal: SEA 1

Cooler ID: 1022

Temp Observed: 0.2 °C Corrected: 0.0 °C  
From: Temp Blank  Sample

	Yes	No	NA
During Initial Triage			
Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature is acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CoC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Initials: ST Date: 12/28/19

	Yes	No	NA
During Labeling			
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample custody seal?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample date/times are provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appropriate containers are used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample bottles are completely filled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zero headspace?*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Perchlorate has headspace? (Methods 314, 331, 6850)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Multiphasic samples are not present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NCM Filed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Initials: JG Date: 12/28/19

\*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

W18-A

## ANALYTICAL REPORT

Eurofins Calscience Irvine  
17461 Derian Ave  
Suite 100  
Irvine, CA 92614-5817  
Tel: (949)261-1022

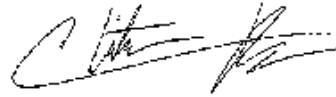
Laboratory Job ID: 440-258227-2

Client Project/Site: Routine Outfall 008 Comp

**For:**

Haley & Aldrich, Inc.  
400 E Van Buren St.  
Suite 545  
Phoenix, Arizona 85004

Attn: Katherine Miller



---

Authorized for release by:  
1/28/2020 9:46:25 AM

Christian Bondoc, Project Manager I  
(949)260-3218  
[christian.bondoc@testamericainc.com](mailto:christian.bondoc@testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



---

Christian Bondoc  
Project Manager I  
1/28/2020 9:46:25 AM



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# Sample Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-258227-1	Outfall008_20191227_Comp	Water	12/27/19 08:25	12/27/19 11:20	

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# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

## Job ID: 440-258227-2

### Laboratory: Eurofins Calscience Irvine

#### Narrative

#### Job Narrative 440-258227-2

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/27/2019 11:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.1° C and 1.2° C.

#### RAD

Method 900.0: Gross Alpha Beta Prep Batch 160-455777

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall008\_20191227\_Comp (440-258227-1), (LCS 160-455777/2-A), (LCSB 160-455777/3-A), (MB 160-455777/1-A), (440-258077-J-1-F), (440-258077-J-1-G MS), (440-258077-J-1-I MSBT), (440-258077-J-1-J MSBTD) and (440-258077-J-1-H MSD)

Method 901.1: Gamma Prep Batch: 160-455659

The cesium-137 MDC (20.8 pCi/L) for the method blank (MB) is above the requested limit of 20 pCi/L. Cesium-137 activity was not observed in the MB above the MDC or RL. The MDC for the associated samples is less than the requested limit. The data have been reported with the MDC achieved. Outfall008\_20191227\_Comp (440-258227-1), (LCS 160-455659/2-A), (MB 160-455659/1-A), (440-258219-Q-1-A) and (440-258219-Q-1-B DU).

Method 901.1: Gamma Prep Batch 160-455659

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred from    Reported to Analyte

Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Pb-212	Po-216
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-211
Th-227	Pb-211

# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

## Job ID: 440-258227-2 (Continued)

### Laboratory: Eurofins Calscience Irvine (Continued)

Bi-214 Ra-226

Outfall008\_20191227\_Comp (440-258227-1), (LCS 160-455659/2-A), (MB 160-455659/1-A), (440-258219-Q-1-A) and (440-258219-Q-1-B DU)

Methods 903.0, 9315: Radium-226 Prep Batch 160-455705

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall008\_20191227\_Comp (440-258227-1), (LCS 160-455705/1-A), (MB 160-455705/22-B), (160-36828-B-23-A) and (160-36828-B-23-B DU)

Methods 904.0, 9320: Radium-228 Prep Batch 160-455727

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall008\_20191227\_Comp (440-258227-1), (LCS 160-455727/1-A), (MB 160-455727/22-A), (160-36828-B-23-C) and (160-36828-B-23-D DU)

Method 905: Strontium-90 Prep Batch 160-455843

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall008\_20191227\_Comp (440-258227-1), (LCS 160-455843/1-A), (MB 160-455843/10-A), (440-258077-J-1-K), (440-258077-F-1-G MS) and (440-258077-F-1-H MSD)

Method 906.0: LSC Tritium Prep Batch 160-455651

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall008\_20191227\_Comp (440-258227-1), (LCS 160-455651/2-A), (MB 160-455651/1-A), (440-258077-I-1-A), (440-258077-I-1-B MS) and (440-258077-I-1-C MSD)

Method A-01-R: Isotopic Uranium Prep Batch 160-455686

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall008\_20191227\_Comp (440-258227-1), (LCS 160-455686/2-A), (MB 160-455686/1-A), (440-258077-J-1-E), (440-258077-F-1-E MS) and (440-258077-F-1-F MSD)

Method ExtChrom: Uranium Prep Batch 160-455686

The following samples were prepared at a reduced aliquot due to a yellow discoloration. Outfall008\_20191227\_Comp (440-258227-1). Samples 440-258085-1 and 440-258219-1 was a darker yellow than the other samples and had suspended solids. Sample 440-258227-1 also had suspended solids present.

Method PrecSep\_0: Radium 228 Prep Batch 160-455727:

# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

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## Job ID: 440-258227-2 (Continued)

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### Laboratory: Eurofins Calscience Irvine (Continued)

The following sample was prepared at a reduced aliquot due to possible matrix interference: Outfall008\_20191227\_Comp (440-258227-1). Sample 440-258219-1 was reduced due to brown discoloration and heavy sediment levels. Sample 440-258227-1 was reduced due to yellow discoloration. Sample 280-132316-9 was reduced due to sample containing white floating particulates.

Method PrecSep-21: Radium 226 Prep Batch 160-455705:

The following sample was prepared at a reduced aliquot due to possible matrix interference: Outfall008\_20191227\_Comp (440-258227-1). Sample 440-258219-1 was reduced due to brown discoloration and heavy sediment levels. Sample 440-258227-1 was reduced due to yellow discoloration. Sample 280-132316-9 was reduced due to sample containing white floating particulates.

Method PrecSep-7: Strontium 90 Prep Batch 160-445843:

Sample 258227-1 and samples 258077-1, 1MS, and 1MSD were reduced due to yellow discoloration. Samples 258085-1 and 258219-1 were reduced due to brown discoloration and a cloudy appearance: Outfall008\_20191227\_Comp (440-258227-1).

1/8/2020- Samples 440-258077-1, 440-258077-1MS, 440-258077-1MSD, 110-258227-1, 440-258085-1 all had 1-2x smaller pellets than the QC samples at the end of the into-ingrowth process. While decanting the presence of matrix interference was seen in the amount of sediment at the bottom of the beaker.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

**Client Sample ID: Outfall008\_20191227\_Comp**

**Lab Sample ID: 440-258227-1**

Date Collected: 12/27/19 08:25

Matrix: Water

Date Received: 12/27/19 11:20

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	1.62	U	1.16	1.18	3.00	1.71	pCi/L	01/06/20 07:19	01/12/20 12:25	1
<b>Gross Beta</b>	<b>2.78</b>		0.772	0.820	4.00	0.968	pCi/L	01/06/20 07:19	01/12/20 12:25	1

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Cesium-137	2.85	U	6.80	6.80	20.0	11.7	pCi/L	12/30/19 13:52	12/30/19 20:13	1
Potassium-40	-82.1	U	191	191		238	pCi/L	12/30/19 13:52	12/30/19 20:13	1

## Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	-0.0363	U	0.0714	0.0715	1.00	0.160	pCi/L	12/31/19 09:06	01/27/20 11:12	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	93.3		40 - 110					12/31/19 09:06	01/27/20 11:12	1

## Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-228	0.228	U	0.361	0.362	1.00	0.609	pCi/L	12/31/19 11:01	01/14/20 17:00	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	93.3		40 - 110					12/31/19 11:01	01/14/20 17:00	1
Y Carrier	87.2		40 - 110					12/31/19 11:01	01/14/20 17:00	1

## Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Strontium-90	0.0203	U	0.325	0.325	3.00	0.582	pCi/L	01/07/20 06:20	01/15/20 10:01	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Sr Carrier	55.6		40 - 110					01/07/20 06:20	01/15/20 10:01	1
Y Carrier	92.0		40 - 110					01/07/20 06:20	01/15/20 10:01	1

## Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Tritium	32.9	U	156	156	500	276	pCi/L	12/30/19 13:27	12/31/19 11:56	1

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
<b>Total Uranium</b>	<b>0.465</b>		0.268	0.270	1.00	0.222	pCi/L	12/30/19 16:10	01/17/20 09:05	1

Eurofins Calscience Irvine

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

**Client Sample ID: Outfall008\_20191227\_Comp**

**Lab Sample ID: 440-258227-1**

**Date Collected: 12/27/19 08:25**

**Matrix: Water**

**Date Received: 12/27/19 11:20**

<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Uranium-232	47.8		30 - 110	12/30/19 16:10	01/17/20 09:05	1

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# Method Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL
Evaporation	Preparation, Evaporation	None	TAL SL
ExtChrom	Preparation, Extraction Chromatography Resin Actinide Separation	None	TAL SL
Fill_Geo-0	Fill Geometry, No In-Growth	None	TAL SL
LSC_Dist_Susp	Distillation and Suspension (LSC)	None	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL
PrecSep-7	Preparation, Precipitate Separation (7-Day In-Growth)	None	TAL SL

#### Protocol References:

DOE = U.S. Department of Energy  
EPA = US Environmental Protection Agency  
None = None

#### Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



# Lab Chronicle

Client: Haley & Aldrich, Inc.  
 Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

**Client Sample ID: Outfall008\_20191227\_Comp**

**Lab Sample ID: 440-258227-1**

**Date Collected: 12/27/19 08:25**

**Matrix: Water**

**Date Received: 12/27/19 11:20**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200.14 mL	1.0 g	455777	01/06/20 07:19	RJD	TAL SL
Total/NA	Analysis	900.0		1	1.0 mL	1.0 mL	456563	01/12/20 12:25	AJD	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	455659	12/30/19 13:52	SCB	TAL SL
Total/NA	Analysis	901.1		1			455611	12/30/19 20:13	KLS	TAL SL
Total/NA	Prep	PrecSep-21			750.49 mL	1.0 g	455705	12/31/19 09:06	JLC	TAL SL
Total/NA	Analysis	903.0		1			458192	01/27/20 11:12	AJD	TAL SL
Total/NA	Prep	PrecSep_0			750.49 mL	1.0 g	455727	12/31/19 11:01	JLC	TAL SL
Total/NA	Analysis	904.0		1			456741	01/14/20 17:00	AJD	TAL SL
Total/NA	Prep	PrecSep-7			750.6 mL	1.0 g	455843	01/07/20 06:20	MNH	TAL SL
Total/NA	Analysis	905		1			456913	01/15/20 10:01	AJD	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.2 mL	1.0 g	455651	12/30/19 13:27	KNF	TAL SL
Total/NA	Analysis	906.0		1			456022	12/31/19 11:56	JS	TAL SL
Total/NA	Prep	ExtChrom			250.02 mL	1.0 mL	455686	12/30/19 16:10	KLH	TAL SL
Total/NA	Analysis	A-01-R		1			457129	01/17/20 09:05	KRR	TAL SL

**Laboratory References:**

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

**Lab Sample ID: MB 160-455777/1-A**  
**Matrix: Water**  
**Analysis Batch: 456563**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	0.01239	U	0.607	0.607	3.00	1.18	pCi/L	01/06/20 07:19	01/12/20 12:20	1
Gross Beta	-0.2482	U	0.440	0.440	4.00	0.843	pCi/L	01/06/20 07:19	01/12/20 12:20	1

**Lab Sample ID: LCS 160-455777/2-A**  
**Matrix: Water**  
**Analysis Batch: 456563**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Alpha	49.6	48.74		7.33	3.00	1.85	pCi/L	98	75 - 125

**Lab Sample ID: LCSB 160-455777/3-A**  
**Matrix: Water**  
**Analysis Batch: 456567**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Beta	85.0	79.96		8.53	4.00	0.814	pCi/L	94	75 - 125

**Lab Sample ID: 440-258077-J-1-G MS**  
**Matrix: Water**  
**Analysis Batch: 456567**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Alpha	1.38		49.6	41.94		6.03	3.00	1.42	pCi/L	82	60 - 140

**Lab Sample ID: 440-258077-J-1-H MSD**  
**Matrix: Water**  
**Analysis Batch: 456563**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec.	RER	RER Limit
						Uncert. (2σ+/-)					Limits		
Gross Alpha	1.38		49.6	47.24		6.58	3.00	1.16	pCi/L	93	60 - 140	0.42	1

**Lab Sample ID: 440-258077-J-1-I MSBT**  
**Matrix: Water**  
**Analysis Batch: 456563**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Beta	1.56		85.0	84.01		8.91	4.00	0.935	pCi/L	97	60 - 140

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-258077-J-1-J MSBTD  
Matrix: Water  
Analysis Batch: 456563

Client Sample ID: Matrix Spike Duplicate  
Prep Type: Total/NA  
Prep Batch: 455777

Analyte	Sample	Sample	Spike Added	MSBTD	MSBTD	Total	RL	MDC	Unit	%Rec	%Rec.	RER	RER
	Result	Qual		Result	Qual	Uncert. (2σ+/-)					Limits		Limit
Gross Beta	1.56		84.9	82.77		8.79	4.00	0.852	pCi/L	96	60 - 140	0.07	1

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-455659/1-A  
Matrix: Water  
Analysis Batch: 455610

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 455659

Analyte	MB	MB	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier								
Cesium-137	0.0000	U G	5.31	5.31	20.0	20.8	pCi/L	12/30/19 13:52	12/30/19 18:47	1
Potassium-40	-41.44	U	118	118		173	pCi/L	12/30/19 13:52	12/30/19 18:47	1

Lab Sample ID: LCS 160-455659/2-A  
Matrix: Water  
Analysis Batch: 455611

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 455659

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.
									Limits
Americium-241	136000	129800		15000		400	pCi/L	96	90 - 111
Cesium-137	44000	43660		4380	20.0	99.2	pCi/L	99	90 - 111
Cobalt-60	27300	26580		2630		64.0	pCi/L	97	89 - 110

Lab Sample ID: 440-258219-Q-1-B DU  
Matrix: Water  
Analysis Batch: 455610

Client Sample ID: Duplicate  
Prep Type: Total/NA  
Prep Batch: 455659

Analyte	Sample	Sample	DU	DU	Total	RL	MDC	Unit	%Rec	%Rec.	RER	RER
	Result	Qual		Result	Qual					Uncert. (2σ+/-)		Limits
Cesium-137	5.01	U	3.919	U	8.21	20.0	14.2	pCi/L			0.06	1
Potassium-40	32.7	U	-100.9	U	92.3		234	pCi/L			0.73	1

## Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-455705/22-B  
Matrix: Water  
Analysis Batch: 458192

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 455705

Analyte	MB	MB	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier								
Radium-226	0.3893		0.114	0.119	1.00	0.109	pCi/L	12/31/19 09:06	01/27/20 13:04	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	105		40 - 110					12/31/19 09:06	01/27/20 13:04	1

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

## Method: 903.0 - Radium-226 (GFPC) (Continued)

**Lab Sample ID: LCS 160-455705/1-A**  
**Matrix: Water**  
**Analysis Batch: 458192**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455705**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.3	9.173		0.960	1.00	0.0876	pCi/L	81	75 - 125	
<b>Carrier</b>	<b>LCS %Yield</b>	<b>LCS Qualifier</b>	<b>Limits</b>							
Ba Carrier	105		40 - 110							

**Lab Sample ID: 160-36828-B-23-B DU**  
**Matrix: Water**  
**Analysis Batch: 458192**

**Client Sample ID: Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 455705**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-226	0.620		0.4687		0.127	1.00	0.102	pCi/L	0.56	1
<b>Carrier</b>	<b>DU %Yield</b>	<b>DU Qualifier</b>	<b>Limits</b>							
Ba Carrier	108		40 - 110							

## Method: 904.0 - Radium-228 (GFPC)

**Lab Sample ID: MB 160-455727/22-A**  
**Matrix: Water**  
**Analysis Batch: 456742**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 455727**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.09351	U	0.211	0.211	1.00	0.362	pCi/L	12/31/19 11:01	01/14/20 16:49	1
<b>Carrier</b>	<b>MB %Yield</b>	<b>MB Qualifier</b>	<b>Limits</b>							
Ba Carrier	105		40 - 110							
Y Carrier	88.7		40 - 110							
								<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
								12/31/19 11:01	01/14/20 16:49	1
								12/31/19 11:01	01/14/20 16:49	1

**Lab Sample ID: LCS 160-455727/1-A**  
**Matrix: Water**  
**Analysis Batch: 456741**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455727**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	9.20	9.320		1.08	1.00	0.346	pCi/L	101	75 - 125
<b>Carrier</b>	<b>LCS %Yield</b>	<b>LCS Qualifier</b>	<b>Limits</b>						
Ba Carrier	105		40 - 110						
Y Carrier	86.6		40 - 110						

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

## Method: 904.0 - Radium-228 (GFPC) (Continued)

**Lab Sample ID: 160-36828-B-23-D DU**  
**Matrix: Water**  
**Analysis Batch: 456742**

**Client Sample ID: Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 455727**

Analyte	Sample	Sample	DU		Total	RL	MDC	Unit	RER	RER	
	Result	Qual	Result	Qual	Uncert. (2σ+/-)						Limit
Radium-228	1.14		0.7430		0.265	1.00	0.340	pCi/L		0.64	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>								
Ba Carrier	108		40 - 110								
Y Carrier	85.7		40 - 110								

## Method: 905 - Strontium-90 (GFPC)

**Lab Sample ID: MB 160-455843/10-A**  
**Matrix: Water**  
**Analysis Batch: 456913**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 455843**

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Strontium-90	-0.05834	U	0.268	0.268	3.00	0.482	pCi/L	01/07/20 06:20	01/15/20 10:02	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Sr Carrier	85.9		40 - 110					01/07/20 06:20	01/15/20 10:02	1
Y Carrier	91.2		40 - 110					01/07/20 06:20	01/15/20 10:02	1

**Lab Sample ID: LCS 160-455843/1-A**  
**Matrix: Water**  
**Analysis Batch: 456913**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455843**

Analyte	Spike Added	LCS	LCS	Total	RL	MDC	Unit	%Rec	%Rec. Limits
		Result	Qual	Uncert. (2σ+/-)					
Strontium-90	10.6	8.906		0.945	3.00	0.327	pCi/L	84	75 - 125
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>						
Sr Carrier	96.9		40 - 110						
Y Carrier	96.8		40 - 110						

**Lab Sample ID: 440-258077-F-1-G MS**  
**Matrix: Water**  
**Analysis Batch: 456913**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 455843**

Analyte	Sample	Sample	Spike	MS	MS	Total	RL	MDC	Unit	%Rec	%Rec. Limits
	Result	Qual	Added	Result	Qual	Uncert. (2σ+/-)					
Strontium-90	0.147	U	10.6	10.38		1.21	3.00	0.501	pCi/L	97	19 - 150
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>								
Sr Carrier	59.4		40 - 110								
Y Carrier	92.3		40 - 110								

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

## Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: 440-258077-F-1-H MSD  
Matrix: Water  
Analysis Batch: 456913

Client Sample ID: Matrix Spike Duplicate  
Prep Type: Total/NA  
Prep Batch: 455843

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total	RL	MDC	Unit	%Rec	%Rec.	RER	RER
	Result	Qual		Result	Qual	Uncert. (2σ+/-)					Limits		Limit
Strontium-90	0.147	U	10.6	10.34		1.15	3.00	0.477	pCi/L	96	19 - 150	0.02	1
<b>MSD MSD</b>													
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>										
Sr Carrier	70.6		40 - 110										
Y Carrier	95.3		40 - 110										

## Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-455651/1-A  
Matrix: Water  
Analysis Batch: 456022

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 455651

Analyte	MB	MB	Count Uncert. (2σ+/-)	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier		Uncert. (2σ+/-)						
Tritium	-49.55	U	149	149	500	280	pCi/L	12/30/19 13:27	12/31/19 09:18	1

Lab Sample ID: LCS 160-455651/2-A  
Matrix: Water  
Analysis Batch: 456022

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 455651

Analyte	Spike Added	LCS	LCS	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Tritium	2510	2646		413	500	286	pCi/L	105	75 - 114

Lab Sample ID: 440-258077-I-1-B MS  
Matrix: Water  
Analysis Batch: 456022

Client Sample ID: Matrix Spike  
Prep Type: Total/NA  
Prep Batch: 455651

Analyte	Sample	Sample	Spike Added	MS	MS	Total	RL	MDC	Unit	%Rec	%Rec.
	Result	Qual		Result	Qual	Uncert. (2σ+/-)					Limits
Tritium	40.5	U	2510	2556		410	500	294	pCi/L	100	67 - 130

Lab Sample ID: 440-258077-I-1-C MSD  
Matrix: Water  
Analysis Batch: 456022

Client Sample ID: Matrix Spike Duplicate  
Prep Type: Total/NA  
Prep Batch: 455651

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total	RL	MDC	Unit	%Rec	%Rec.	RER	RER
	Result	Qual		Result	Qual	Uncert. (2σ+/-)					Limits	Limit	
Tritium	40.5	U	2500	2430		391	500	279	pCi/L	95	67 - 130	0.16	1

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-455686/1-A  
Matrix: Water  
Analysis Batch: 457035

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 455686

Analyte	MB	MB	Count Uncert. (2σ+/-)	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier		Uncert. (2σ+/-)						
Total Uranium	0.2103		0.180	0.181	1.00	0.182	pCi/L	12/30/19 16:10	01/16/20 09:32	1

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

<i>Tracer</i>	<i>MB</i> <i>%Yield</i>	<i>MB</i> <i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Uranium-232	83.2		30 - 110	12/30/19 16:10	01/16/20 09:32	1

**Lab Sample ID: LCS 160-455686/2-A**  
**Matrix: Water**  
**Analysis Batch: 457036**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455686**

<i>Analyte</i>	<i>Spike</i> <i>Added</i>	<i>LCS</i> <i>Result</i>	<i>LCS</i> <i>Qual</i>	<i>Total</i> <i>Uncert.</i> <i>(2σ+/-)</i>	<i>RL</i>	<i>MDC</i>	<i>Unit</i>	<i>%Rec</i>	<i>%Rec.</i> <i>Limits</i>
Uranium-234	25.5	24.59		2.97	1.00	0.329	pCi/L	97	75 - 125
Uranium-238	26.0	25.84		3.08	1.00	0.309	pCi/L	99	75 - 125

<i>Tracer</i>	<i>LCS</i> <i>%Yield</i>	<i>LCS</i> <i>Qualifier</i>	<i>Limits</i>
Uranium-232	60.6		30 - 110

**Lab Sample ID: 440-258077-F-1-E MS**  
**Matrix: Water**  
**Analysis Batch: 457038**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 455686**

<i>Analyte</i>	<i>Sample</i> <i>Result</i>	<i>Sample</i> <i>Qual</i>	<i>Spike</i> <i>Added</i>	<i>MS</i> <i>Result</i>	<i>MS</i> <i>Qual</i>	<i>Total</i> <i>Uncert.</i> <i>(2σ+/-)</i>	<i>RL</i>	<i>MDC</i>	<i>Unit</i>	<i>%Rec</i>	<i>%Rec.</i> <i>Limits</i>
Uranium-234	0.128	U	25.5	23.28		2.86	1.00	0.424	pCi/L	91	65 - 146
Uranium-238	0.0960	U	26.0	25.85		3.09	1.00	0.349	pCi/L	99	68 - 143

<i>Tracer</i>	<i>MS</i> <i>%Yield</i>	<i>MS</i> <i>Qualifier</i>	<i>Limits</i>
Uranium-232	61.7		30 - 110

**Lab Sample ID: 440-258077-F-1-F MSD**  
**Matrix: Water**  
**Analysis Batch: 457042**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 455686**

<i>Analyte</i>	<i>Sample</i> <i>Result</i>	<i>Sample</i> <i>Qual</i>	<i>Spike</i> <i>Added</i>	<i>MSD</i> <i>Result</i>	<i>MSD</i> <i>Qual</i>	<i>Total</i> <i>Uncert.</i> <i>(2σ+/-)</i>	<i>RL</i>	<i>MDC</i>	<i>Unit</i>	<i>%Rec</i>	<i>%Rec.</i> <i>Limits</i>	<i>RER</i>	<i>RER</i> <i>Limit</i>
Uranium-234	0.128	U	25.5	23.64		2.93	1.00	0.446	pCi/L	92	65 - 146	0.06	1
Uranium-238	0.0960	U	26.0	24.68		3.02	1.00	0.367	pCi/L	94	68 - 143	0.19	1

<i>Tracer</i>	<i>MSD</i> <i>%Yield</i>	<i>MSD</i> <i>Qualifier</i>	<i>Limits</i>
Uranium-232	68.1		30 - 110

# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

## Rad

### Prep Batch: 455651

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-455651/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-455651/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-258077-I-1-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-258077-I-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

### Prep Batch: 455659

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-455659/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-455659/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-258219-Q-1-B DU	Duplicate	Total/NA	Water	Fill_Geo-0	

### Prep Batch: 455686

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	ExtChrom	
MB 160-455686/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-455686/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-258077-F-1-E MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-258077-F-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

### Prep Batch: 455705

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	PrecSep-21	
MB 160-455705/22-B	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-455705/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
160-36828-B-23-B DU	Duplicate	Total/NA	Water	PrecSep-21	

### Prep Batch: 455727

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	PrecSep_0	
MB 160-455727/22-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-455727/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
160-36828-B-23-D DU	Duplicate	Total/NA	Water	PrecSep_0	

### Prep Batch: 455777

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	Evaporation	
MB 160-455777/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-455777/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-455777/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-258077-J-1-G MS	Matrix Spike	Total/NA	Water	Evaporation	
440-258077-J-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-258077-J-1-I MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-258077-J-1-J MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

### Prep Batch: 455843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	PrecSep-7	
MB 160-455843/10-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-455843/1-A	Lab Control Sample	Total/NA	Water	PrecSep-7	

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

## Rad (Continued)

### Prep Batch: 455843 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-F-1-G MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-258077-F-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

# Definitions/Glossary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

## Qualifiers

### Rad

Qualifier	Qualifier Description
G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.  
 Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

## Laboratory: Eurofins Calscience Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State Program	CA ELAP 2706	06-30-20

## Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-20
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Illinois	NELAP	004553	11-30-19 *
Iowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-20
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-20
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
West Virginia DEP	State	381	10-31-20

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

CHAIN OF CUSTODY FORM

Test America

<p><b>Client Name/Address:</b>                  Haley &amp; Aldrich                  5333 Mission Center Rd Suite 300                  San Diego, CA 92108</p> <p><b>Test America Contact:</b> Uneshi Patel                  17461 Denian Ave Suite #100                  Irvine CA 92614                  Tel 949-260-3269                  Cell 949-333-9055</p>		<p><b>Project:</b>                  Boeing-SSF LMPDES                  Permit 2019                  Routine Outfall #008                  Outfall 008                  Comp</p>		<p><b>Project Manager:</b> Katherine Miller                  520.289.8606, 520.904.6944 (cell)  <b>Field Manager:</b> Mark Dominick                  975.234.5033, 818.599.0702 (cell)</p>		<p><b>ANALYSIS REQUIRED</b></p> <p>add</p> <p>TSS (160.2 (SM2540D))</p> <p>Total Dissolved Metals: Mercury (E245.1)</p> <p>Total Recoverable Metals: Mercury (E245.1)</p> <p>Cyanide (SM4500-CN-E / E335.2)</p> <p>Ammonia-N (350.2)</p> <p>Chromate Toxicity - Selenium (EPA-811-R-02-013)                  APC Labs in Ventura, CA</p> <p>CS-137 (E901.0 or E901.1)                  Radium 228 (E904.0)                  Radium 226 (E903.0 or E903.1) &amp;                  Thorium (E906.0) Sr-90 (E905.0) Tc-99m (E907.0) Gross Beta (E908.0)</p> <p>Total Dissolved Metals:                  (E200.7) Ni, Zn                  (E200.8) Ag, Cd, Cu, Pb, Sb, Se, Ti</p> <p>TDS (SM2540C/E160.1)</p> <p>CF, SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Perchlorate (300)</p> <p>TCDD (and all congeners) (E1913B)</p> <p>Total Recoverable Metals:                  (E200.7) Ni, Zn                  (E200.8) Ag, Cd, Cu, Pb, Sb, Se, Ti</p>		<p><b>Field Readings</b></p> <p>Comments</p> <p>48 hours Holding Time NO<sub>3</sub> &amp; NO<sub>2</sub></p> <p>Unfiltered and repressed analysis. Separate RAD into another workorder. Analyze duplicate, not MSMSD.</p> <p>Only test if flag or record pair events in 30 year. Deliver to ABC Labs in Ventura, CA</p> <p>Filter and preserve within 24hrs of receipt at lab</p> <p>Sample receiving DO NOT OPEN until flag to be opened in Mercury Prep using clean hold</p> <p>hold</p> <p>hold</p>			
<p><b>Sample Description</b></p> <p>Outfall 008</p>	<p><b>Sample I.D.</b></p> <p>Outfall008_20191227_Comp</p>	<p><b>Sampling Date/Time</b></p> <p>12/27/2019 11:37 AM</p>	<p><b>Sample Matrix</b></p> <p>WM</p>	<p><b>Container Type</b></p> <p>500 mL Poly</p>	<p><b># of Cont.</b></p> <p>1</p>	<p><b>Preservative</b></p> <p>HNO<sub>3</sub></p>	<p><b>Bottle #</b></p> <p>95</p>	<p><b>MSMSD</b></p> <p>No</p>	<p><b>Total Recoverable Metals:</b>                  (E200.7) Ni, Zn                  (E200.8) Ag, Cd, Cu, Pb, Sb, Se, Ti</p>	<p><b>Total Dissolved Metals:</b>                  (E200.7) Ni, Zn                  (E200.8) Ag, Cd, Cu, Pb, Sb, Se, Ti</p>	<p><b>Turn-around time (Check)</b></p> <p>24 Hour _____ 72 Hour _____ 10 Day _____ X                  48 Hour _____ 5 Day _____ Normal _____</p>
<p><b>Received By:</b></p> <p>Haley &amp; Aldrich</p>	<p><b>Date/Time:</b></p> <p>12/27/19 09:10</p>	<p><b>Company:</b></p> <p>Haley &amp; Aldrich</p>	<p><b>Received By:</b></p> <p>JARRV</p>	<p><b>Date/Time:</b></p> <p>12/27/19</p>	<p><b>Company:</b></p> <p>JARRV</p>	<p><b>Received By:</b></p> <p>TA DVN</p>	<p><b>Date/Time:</b></p> <p>12/27/19 11:20</p>	<p><b>Company:</b></p> <p>JARRV</p>	<p><b>Sample Integrity (Check)</b></p> <p>On Ice _____                  Intact _____                  Store samples for 6 months. Data Requirements (Check)                  No Level IV _____ All Level IV _____ X</p>		



440-258227 Chain of Custody

1.4/1.1 1.5/1.2

12/27/19 LD



## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-258227-2

**Login Number: 258227**

**List Number: 1**

**Creator: Dolidze, Lado**

**List Source: Eurofins Irvine**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-258227-2

**Login Number: 258227**

**List Number: 2**

**Creator: Harris, Lorin C**

**List Source: Eurofins TestAmerica, St. Louis**

**List Creation: 12/28/19 12:04 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

## Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	
160-36828-B-23-B DU	Duplicate	108	
440-258227-1	Outfall008_20191227_Comp	93.3	
LCS 160-455705/1-A	Lab Control Sample	105	
MB 160-455705/22-B	Method Blank	105	
<b>Tracer/Carrier Legend</b>			
Ba Carrier = Ba Carrier			

## Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
160-36828-B-23-D DU	Duplicate	108	85.7
440-258227-1	Outfall008_20191227_Comp	93.3	87.2
LCS 160-455727/1-A	Lab Control Sample	105	86.6
MB 160-455727/22-A	Method Blank	105	88.7
<b>Tracer/Carrier Legend</b>			
Ba Carrier = Ba Carrier			
Y Carrier = Y Carrier			

## Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Sr Carrier (40-110)	Y Carrier (40-110)
440-258077-F-1-G MS	Matrix Spike	59.4	92.3
440-258077-F-1-H MSD	Matrix Spike Duplicate	70.6	95.3
440-258227-1	Outfall008_20191227_Comp	55.6	92.0
LCS 160-455843/1-A	Lab Control Sample	96.9	96.8
MB 160-455843/10-A	Method Blank	85.9	91.2
<b>Tracer/Carrier Legend</b>			
Sr Carrier = Sr Carrier			
Y Carrier = Y Carrier			

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	uranium-232 (30-110)	
440-258077-F-1-E MS	Matrix Spike	61.7	
440-258077-F-1-F MSD	Matrix Spike Duplicate	68.1	
440-258227-1	Outfall008_20191227_Comp	47.8	
LCS 160-455686/2-A	Lab Control Sample	60.6	
MB 160-455686/1-A	Method Blank	83.2	
<b>Tracer/Carrier Legend</b>			
Uranium-232 = Uranium-232			

## ANALYTICAL REPORT

Eurofins Calscience Irvine  
17461 Derian Ave  
Suite 100  
Irvine, CA 92614-5817  
Tel: (949)261-1022

Laboratory Job ID: 440-258020-3

Client Project/Site: Semiannual Outfall 009 Grab

**For:**

Haley & Aldrich, Inc.  
400 E Van Buren St.  
Suite 545  
Phoenix, Arizona 85004

Attn: Katherine Miller



---

Authorized for release by:  
1/8/2020 11:26:43 AM

Christian Bondoc, Project Manager I  
(949)260-3218  
[christian.bondoc@testamericainc.com](mailto:christian.bondoc@testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



---

Christian Bondoc  
Project Manager I  
1/8/2020 11:26:43 AM



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# Sample Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Grab

Job ID: 440-258020-3

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-258020-1	Outfall009_20191223_Grab	Water	12/23/19 09:00	12/23/19 16:05	

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# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Grab

Job ID: 440-258020-3

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**Job ID: 440-258020-3**

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**Laboratory: Eurofins Calscience Irvine**

## Narrative

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**Job Narrative**  
**440-258020-3**

## Comments

No additional comments.

## Receipt

The samples were received on 12/23/2019 4:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 3.0° C and 3.7° C.

## Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Grab

Job ID: 440-258020-3

**Client Sample ID: Outfall009\_20191223\_Grab**

**Lab Sample ID: 440-258020-1**

**Date Collected: 12/23/19 09:00**

**Matrix: Water**

**Date Received: 12/23/19 16:05**

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.3	1.5	mg/L		01/02/20 16:35	01/02/20 19:08	1

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# Method Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Grab

Job ID: 440-258020-3

Method	Method Description	Protocol	Laboratory
1664A	HEM and SGT-HEM	1664A	TAL IRV
1664A	HEM and SGT-HEM (SPE)	1664A	TAL IRV

**Protocol References:**

1664A = EPA-821-98-002

**Laboratory References:**

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Grab

Job ID: 440-258020-3

**Client Sample ID: Outfall009\_20191223\_Grab**

**Lab Sample ID: 440-258020-1**

**Date Collected: 12/23/19 09:00**

**Matrix: Water**

**Date Received: 12/23/19 16:05**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1664A			945 mL	1000 mL	588932	01/02/20 16:35	AJH	TAL IRV
Total/NA	Analysis	1664A		1			588958	01/02/20 19:08	AJH	TAL IRV

### Laboratory References:

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Semiannual Outfall 009 Grab

Job ID: 440-258020-3

## Method: 1664A - HEM and SGT-HEM

**Lab Sample ID: MB 440-588932/1-A**  
**Matrix: Water**  
**Analysis Batch: 588958**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 588932**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		01/02/20 16:35	01/02/20 19:08	1

**Lab Sample ID: LCS 440-588932/2-A**  
**Matrix: Water**  
**Analysis Batch: 588958**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 588932**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	40.0	34.3		mg/L		86	78 - 114

**Lab Sample ID: LCSD 440-588932/3-A**  
**Matrix: Water**  
**Analysis Batch: 588958**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 588932**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HEM (Oil & Grease)	40.0	34.6		mg/L		87	78 - 114	1	11

**Lab Sample ID: 440-258396-B-1-B MS**  
**Matrix: Water**  
**Analysis Batch: 588958**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 588932**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	ND		42.8	37.0		mg/L		86	78 - 114



# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Grab

Job ID: 440-258020-3

## General Chemistry

### Prep Batch: 588932

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258020-1	Outfall009_20191223_Grab	Total/NA	Water	1664A	
MB 440-588932/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-588932/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-588932/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	
440-258396-B-1-B MS	Matrix Spike	Total/NA	Water	1664A	

### Analysis Batch: 588958

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258020-1	Outfall009_20191223_Grab	Total/NA	Water	1664A	588932
MB 440-588932/1-A	Method Blank	Total/NA	Water	1664A	588932
LCS 440-588932/2-A	Lab Control Sample	Total/NA	Water	1664A	588932
LCSD 440-588932/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	588932
440-258396-B-1-B MS	Matrix Spike	Total/NA	Water	1664A	588932

# Definitions/Glossary

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Grab

Job ID: 440-258020-3

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Grab

Job ID: 440-258020-3

## Laboratory: Eurofins Calscience Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State Program	CA ELAP 2706	06-30-20

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# CHAIN OF CUSTODY FORM

Test America

<b>Client Name/Address:</b> Halley & Aldrich, Inc. 5333 Mission Center Rd Suite 300 San Diego, CA 92108  <b>Test America Contact:</b> Unvashi Patel 17461 Derran Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		<b>Project</b> Boeing-SSFL NPDES Permit 2019 Semiannual Outfall 003-007, 009, 010] Outfall 009 Grab		<b>Field Readings</b> Field Readings (Include units) <b>TRAC FT93</b> Time of Readings: <b>0926</b>  pH <b>7.40</b> pH unit Temp <b>49.6</b> (C/F)		<b>Meter serial #</b> TRAC FT93	
<b>Project Manager:</b> Katherine Miller 520.289.8606, 520.904.6844 (cell)		<b>Field readings QC</b> Checked by: <i>[Signature]</i> Date/Time: <b>2.23.19/0926</b>		<b>ANALYSIS REQUIRED</b>			
<b>Field Manager:</b> Mark Dominick 978.234.5033, 818.589.0702 (cell)		Off & Crease (F164A-HEM)		Turn-around time (Check) 24 Hour _____ 72 Hour _____ 10 Day _____ X 48 Hour _____ 5 Day _____ Normal _____			
<b>Sample Description</b> Outfall 006 Outfall 009		<b>Sample Matrix</b> WM WM		<b>Container Type</b> 1 L Glass Amber 1 L Glass Amber		<b>Preservative</b> HCl HCl	
<b>Sample ID</b> Outfall009_20191223_Grab Outfall009_20191223_Grab_Extra		<b>Sampling Date/Time</b> 12/23/2019 12:50 12/23/2019 16:05		<b># of Cont.</b> 2 2		<b>MSMSD</b> No No	
<b>Sampler:</b> Dan Smith		Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quarterly, QRSW=Quarterly Receiving Water, S=Semi-Annual		Received By: <i>[Signature]</i> Date/Time: 12/23/19 12:50 Relinquished By: <i>[Signature]</i> Date/Time: 12/23/19 16:05 Sample integrity (Check) intact _____ On ice _____ Store samples for 6 months Data Requirements (Check) No Level IV _____ All Level IV _____ X			



440-258020 Chain of Custody

12/19/2020 Rainy Season

Version 1



1243 2.7/3.0  
34/3.7

CHAIN OF CUSTODY FORM

Client Name/Address:		Project		Field Readings		Meter serial #							
Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project Boeing-SSFL NPDES Permit 2019 Routine Outfall [001, 002, 011, 018] Outfall 002 Grab		Field Readings: (Include units) <u>12.46 (T90)</u> Time of Readings: <u>0930</u>									
Test America Contact: Urveshi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project Manager: Katharine Miller 520 289-8606; 520.904.6944 (cell)		DO <u>7.17</u> mg/L pH <u>7.21</u> pH unit Temp <u>50.0</u> °C									
Test America's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2019-22. TestAmerica by and between Haley & Aldrich, Inc. Its subsidiaries and affiliates, and TestAmerica Laboratories Inc		Field Manager: Mark Dominick 978.234.5033, 818.599.0702 (cell)		Field readings QC Checked by: <u>W.D.</u> Date/Time: <u>0930/12-23-19</u>									
Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Botle #	MSMSD	Oil & Grease (E1664A-HEM)	VOCA - only 1,1-DCE, 1,2-DCA, TCE (E624)	Settleable Solids (E160.5 (M2540F))	Conductivity (SM2510B / E120.1)	Comments
Outfall002_20191223_Grab		12/23/2019 <u>12:50</u>	WM	1L Glass Amber	2	HCl	15	No	X				
Outfall002_20191223_Grab_Extra		12/23/2019 <u>12:50</u>	WM	40 mL VOA	3	HCl	30	No		X			
Trips Blanks TB-20191223		12/23/2019 <u>12:50</u>	WM	1L Poly	1	None	70	No			X		
			WM	500 mL Poly	1	None	75	No					
			WM	1L Glass Amber	2	HCl	15	No	H				Hold
			WM	40 mL VOA	3	HCl	30	No		H			Hold
			WM	500 mL Poly	1	None	75	No					Hold
			WQ	40 mL VOA	3	HCl	30	No	X				

Reinquisitioned By: <u>W.D.</u>	Date/Time: <u>12-23-19/12:50</u>	Company: <u>H&amp;A</u>	Turn-around time (Check): 24 Hour: <input type="checkbox"/> 72 Hour: <input type="checkbox"/> 10 Day: <input checked="" type="checkbox"/> 48 Hour: <input type="checkbox"/> 5 Day: <input type="checkbox"/> Normal: <input type="checkbox"/>
Reinquisitioned By: <u>Urveshi Patel</u>	Date/Time: <u>12/23/19</u>	Company: <u>TA</u>	Sample Integrity (Check): Intact: <input type="checkbox"/> On Ice: <input type="checkbox"/> Store samples for 6 months: <input type="checkbox"/> Data Requirements: (Check) No Level IV: <input type="checkbox"/> All Level IV: <input checked="" type="checkbox"/>



## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-258020-3

**Login Number: 258020**

**List Number: 1**

**Creator: Soderblom, Tim**

**List Source: Eurofins Irvine**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## Patel, Urvashi

---

**From:** Baluran, Dwayne <DBaluran@haleyaldrich.com>  
**Sent:** Tuesday, December 24, 2019 10:59 AM  
**To:** Patel, Urvashi; Christine, Mark B.  
**Cc:** Miller, Katherine; Bondoc, Christian M.  
**Subject:** RE: Eurofins TestAmerica sample confirmation files from 440-258020-1 Boeing-SSFL NPDES Permit 2019

### -External Email-

---

Hey,

Sure, whatever you can do to split these sample locations separately to your fullest capability. I don't believe I've ever seen 2 outfalls in one SDG number. It'll make it easier for our tracking purposes and permit review if they are in different reports.

Thanks,  
Dwayne

---

**From:** Patel, Urvashi <[Urvashi.Patel@testamericainc.com](mailto:Urvashi.Patel@testamericainc.com)>  
**Sent:** Tuesday, December 24, 2019 10:52 AM  
**To:** Baluran, Dwayne <[DBaluran@haleyaldrich.com](mailto:DBaluran@haleyaldrich.com)>; Christine, Mark B. <[Mark.Christine@testamericainc.com](mailto:Mark.Christine@testamericainc.com)>  
**Cc:** Miller, Katherine <[KMiller@haleyaldrich.com](mailto:KMiller@haleyaldrich.com)>; Bondoc, Christian M. <[Christian.Bondoc@testamericainc.com](mailto:Christian.Bondoc@testamericainc.com)>  
**Subject:** RE: Eurofins TestAmerica sample confirmation files from 440-258020-1 Boeing-SSFL NPDES Permit 2019

### CAUTION: External Email

---

Hi Dwayne

The COC has 1 of 2 and 2 of 2 listed so they were logged in together. We have already logged in under one job so I can split the samples into job series -1 and -2 for the different sample locations. Will that work?

### Urvashi Patel

Phone: 949-333-9055

E-mail: [Urvashi.Patel@testamericainc.com](mailto:Urvashi.Patel@testamericainc.com)

---

**From:** Baluran, Dwayne [<mailto:DBaluran@haleyaldrich.com>]  
**Sent:** Tuesday, December 24, 2019 10:46 AM  
**To:** Patel, Urvashi  
**Cc:** Miller, Katherine  
**Subject:** FW: Eurofins TestAmerica sample confirmation files from 440-258020-1 Boeing-SSFL NPDES Permit 2019

### -External Email-

---

Hi Urvashi,

Happy Holidays! I'm reviewing the sample receipts for 440-258020-1 and -2. I'm seeing OF002 and OF009 sample data being mixed with each other. I've never seen this before. Typically each outfall is their own SDG. Could this please be revised.

Thanks,

**Dwayne Baluran, EIT, QSP**  
Staff Engineer

**Haley & Aldrich, Inc.**

5850 Canoga Avenue | Suite 400  
Woodland Hills, CA 91367

T: (978) 234.5022

C: (818) 224.0704

[www.haleyaldrich.com](http://www.haleyaldrich.com)

---

**From:** Miller, Katherine <[KMiller@haleyaldrich.com](mailto:KMiller@haleyaldrich.com)>

**Sent:** Tuesday, December 24, 2019 10:20 AM

**To:** Baluran, Dwayne <[DBaluran@haleyaldrich.com](mailto:DBaluran@haleyaldrich.com)>

**Subject:** Fwd: Eurofins TestAmerica sample confirmation files from 440-258020-1 Boeing-SSFL NPDES Permit 2019

Please review today

Sent from my iPhone

Begin forwarded message:

**From:** Mark Christine <[mark.christine@testamericainc.com](mailto:mark.christine@testamericainc.com)>

**Date:** December 24, 2019 at 10:41:07 AM MST

**To:** "Barr, Anastasia" <[ABarr@haleyaldrich.com](mailto:ABarr@haleyaldrich.com)>, "Hernandez, Elyse" <[EHernandez@haleyaldrich.com](mailto:EHernandez@haleyaldrich.com)>, Kim Schultz <[kim.schultz@mecx.net](mailto:kim.schultz@mecx.net)>, "Miller, Katherine" <[KMiller@haleyaldrich.com](mailto:KMiller@haleyaldrich.com)>, "Ms. Urvashi Patel" <[urvashi.patel@testamericainc.com](mailto:urvashi.patel@testamericainc.com)>

**Subject:** Eurofins TestAmerica sample confirmation files from 440-258020-1 Boeing-SSFL NPDES Permit 2019

**CAUTION: External Email**

---

Hello,

Attached please find the sample confirmation files for job 440-258020-1; Boeing-SSFL NPDES Permit 2019

Please feel free to contact me or your PM Urvashi Patel if you have any questions.

Thank you.



**Mark B Christine**

Project Manager Assistant

Eurofins TestAmerica, Irvine

E-mail: [mark.christine@testamericainc.com](mailto:mark.christine@testamericainc.com)  
[www.eurofinsus.com](http://www.eurofinsus.com) | [www.testamericainc.com](http://www.testamericainc.com)



---

**DATA VALIDATION REPORT**

**Boeing SSFL NPDES**

**SAMPLE DELIVERY GROUP: 440-258077-1**

**Prepared for**

Haley & Aldrich, Inc.  
600 South Meyer Avenue, Suite 100  
Tucson, Arizona 85701

**15 January 2020**

**MEC<sup>x</sup>, Inc.**  
12269 East Vassar Drive  
Aurora, Colorado 80014

[www.mecx.net](http://www.mecx.net)





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- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



## I. INTRODUCTION

---

**Task Order Title:** Boeing SSFL NPDES

**Contract:** 40458-078 and 40458-083

**MEC<sup>x</sup> Project No.:** 1272.003D.01 002

**Sample Delivery Group:** 440-258077-1

**Project Manager:** Katherine Miller

**Matrix:** Water

**QC Level:** IV

**No. of Samples:** 2

**No. of Reanalyses/Dilutions:** 0

**Laboratory:** TestAmerica-Irvine

**TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Matrix	Collection	Method
OUTFALL009_20191224_COMP	440-258077-1	WM	12/24/2019 7:35:00 AM	E1613B, E200.7, E200.8, E300, SM2540D
OUTFALL009_20191224_COMP_F	440-258077-2	WM	12/24/2019 7:35:00 AM	E200.7, E200.8



## II. SAMPLE MANAGEMENT

---

According to the case narrative, Login Sample Receipt Checklist, and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-258077-1:

- The laboratory received the samples in this SDG on ice and within the temperature limits of <6 degrees Celsius (°C) and >0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the Login Sample Receipt Checklist, custody seals were absent on the coolers; however, no evidence of tampering was noted.
- The case narrative indicated that the site sample was received in a wide-mouth amber glass bottle, and slightly less sample volume (932 milliliters) was available for extraction.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination ( $r^2$ ) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.





Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



### III. EPA METHOD 1613B — DIOXIN/FURANS

---

L. Calvin of MEC<sup>x</sup> reviewed the SDG on January 15, 2020

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC<sup>x</sup> *Data Validation Procedure for Dioxins and Furans* (DVP-19, Rev. 0), *USEPA Method 1613B* and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review* (2011).

#### III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

#### III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

##### III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as <25%.

##### III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power >10,000.

#### III.3. CALIBRATION

Initial Calibration: Calibration criteria were met. The initial calibration was acceptable with %RSDs ≤20% for the 15 native compounds (calibration by isotope dilution) and ≤35% for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

#### III.4. QUALITY CONTROL SAMPLES

##### III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit (RL) for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8,9-HpCDF, 1,2,3,4,7,8-HxCDD, 1,2,3,6,7,8-HxCDD, OCDD, OCDF, and for totals HpCDD, HpCDF and HxCDD. The sample results for isomers detected below the RL in the sample were qualified as a nondetect (U) at the level of contamination. The method blank concentration of OCDD was not sufficient to qualify the sample concentration above the RL. The reviewer compared peaks comprising the method blank totals to those in the sample totals. Totals HpCDD, HpCDF and HxCDD were



qualified as estimated (J), as only a portion of each total was determined to be method blank contamination.

#### III.4.2. **LABORATORY CONTROL SAMPLES**

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of  $\leq 50\%$ .

#### III.5. **FIELD QC SAMPLES**

MEC<sup>X</sup> evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC<sup>X</sup> used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

##### III.5.1. **FIELD BLANKS AND EQUIPMENT BLANKS**

Field blank or equipment blank samples were not identified for this SDG.

##### III.5.2. **FIELD DUPLICATES**

Field duplicate samples were not identified in this SDG.

#### III.6. **INTERNAL STANDARDS PERFORMANCE**

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

#### III.7. **COMPOUND IDENTIFICATION**

Compound identification was verified. With the exception of estimated maximum possible concentrations (EMPCs), detected compounds met the ion abundance ratio, retention time window and signal-to-noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. Second-column confirmation analysis for isomer 2,3,7,8-TCDF was not performed, as 2,3,7,8-TCDF was not detected in the initial analysis of the sample.

#### III.8. **COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

As noted in the case narrative, RLs and EDLs were slightly elevated due to somewhat limited sample volume. Rather than approximately 1000 milliliters (ml), a 932 ml sample volume was available for extraction.

Isomers previously qualified as method blank contamination were not further qualified as EMPCs. The isomer 2,3,7,8-TCDD and total TCDD EMPC concentrations were the same; therefore, both were qualified as estimated nondetects (UJ). As totals HpCDF and HxCDD included one or more EMPC peaks, both were qualified as estimated (J).



#### IV. METHODS 200.7 AND 200.8 — METALS

---

M. Hilchey of MEC<sup>X</sup> reviewed the SDG on January 15, 2020.

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC<sup>X</sup> *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, EPA Methods 200.7 and 200.8 and the *National Functional Guidelines for Inorganic Methods Data Review (2017)*.

##### IV.1. HOLDING TIMES

The analytical holding time, six months for metals, was met. Sample Outfall006\_20190215\_Comp\_F was filtered and preserved approximately 48 hours after receipt, exceeding the requirement listed on the COC of filtration and preservation within 24 hours of receipt. All results for this sample were qualified as estimated (UJ for nondetects, J for detects).

##### IV.2. CALIBRATION

QAPP calibration criteria were met. A blank and two to four standards were used for calibration of ICP-AES and ICP-MS target analytes. The initial calibration *r* values were  $\geq 0.995$ . CRQL recoveries were within the laboratory control limits of 50-150%. Initial calibration verification recoveries were within QAPP control limits of 95-105% for ICP-AES and 90-110% for ICP-MS. Continuing calibration verification recoveries were within QAPP control limits of 90-110%.

##### IV.3. QUALITY CONTROL SAMPLES

###### IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks or calibration blanks of sufficient concentration to warrant qualification of associated site sample results with the following exception. Antimony was detected (0.860  $\mu\text{g/L}$ ) in a calibration blank bracketing sample OUTFALL009\_20191224\_COMP. The antimony result for this sample was a detect below the reporting limit and was qualified as nondetect (U).

###### IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or  $\pm 2\times$  the reporting limit, whichever is greater. No non-spiked target analytes were detected in the ICSAs; therefore, interference was not evaluated.

###### IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries (total and dissolved) were within the QAPP control limits of 85-115%. It should be noted that the LCS for ICP-MS (dissolved) was not filtered prior to analysis.

###### IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

###### IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on samples OUTFALL009\_20191224\_COMP and OUTFALL009\_20191224\_COMP-F for both methods. Results were not assessed when the parent sample



concentration exceeded the spike amount by 4×. Recoveries and RPDs were within the QAPP control limits of 70-130% and ≤20%.

The laboratory did not perform post-digestion spike analyses as there were no MS/MSD outliers.

#### **IV.4. SERIAL DILUTION**

No serial dilution analyses were performed on a sample in this SDG.

#### **IV.5. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Calculations were verified, and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. Results reported below the RL and above the MDL were qualified as estimated (J) and coded with a DNQ to comply with the NPDES permit reporting requirements. Nondetects are valid to the MDL.

#### **IV.6. FIELD QC SAMPLES**

MEC<sup>X</sup> evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC<sup>X</sup> used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

##### **IV.6.1. FIELD BLANKS AND EQUIPMENT BLANKS**

Field blank or equipment blank samples were not identified for this SDG.

##### **IV.6.2. FIELD DUPLICATES**

There were no field duplicate samples identified for this SDG.

## **V. METHODS EPA 300.0 AND SM2540C— ANIONS AND TOTAL SUSPENDED SOLIDS (TSS)**

---

M. Hilchey of MEC<sup>X</sup> reviewed the SDG on January 15, 2020.

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the *MEC<sup>X</sup> Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 300.0, Standard Methods for the Examination of Water and Wastewater 2540D* and the *National Functional Guidelines for Inorganic Superfund Methods Data Review (2017)*.

#### **V.1. HOLDING TIMES**

The QAPP holding times, 28 days for chloride and sulfate, 48 hours for nitrate as N and nitrite as N and seven (7) days for TSS were met.

#### **V.2. CALIBRATION**

Calibration criteria were met. The Method 300.0 initial calibration  $r^2$  values were ≥0.995 and all initial calibration verification recoveries met QAPP requirements. All TOC continuing calibration verification recoveries were within 90-110%. Analytical balance calibration logs were provided by the laboratory and found to be correctly calibrated and verified.



### **V.3. QUALITY CONTROL SAMPLES**

#### **V.3.1. METHOD BLANKS**

The method blanks and calibration blanks had no detects.

#### **V.3.2. LABORATORY CONTROL SAMPLES**

Laboratory control sample recoveries were within the QAPP control limits.

#### **V.3.3. LABORATORY DUPLICATES**

Laboratory duplicate analyses were not performed on the sample in this SDG.

#### **V.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

MS/MSD analyses were performed on sample OUTFALL009\_20191224\_COMP for Method 300.0. QAPP control limits for recovery and RPD were met.

### **V.4. SAMPLE RESULT VERIFICATION**

Calculations were verified, and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

The laboratory analyzed the sample by Method 300.0 undiluted and at a 5× dilution and reported both sets of data. All QC for both sets of data were acceptable, the diluted and undiluted results were comparable, and the laboratory offered no explanation for the dilution. The results for the diluted analysis were rejected (qualified R) and the undiluted results were accepted for review.

### **V.5. FIELD QC SAMPLES**

MEC<sup>X</sup> evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC<sup>X</sup> used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

#### **V.5.1. FIELD BLANKS AND EQUIPMENT BLANKS**

Field blank or equipment blank samples were not identified for this SDG.

#### **V.5.2. FIELD DUPLICATES**

Field duplicate samples were not identified in this SDG.

# Validated Sample Result Forms: 4402580771

*Analysis Method E1613B*

**Sample Name** OUTFALL009\_20191224\_COMP **Matrix Type:** WM **Result Type:** TRG

**Sample Date:** 12/24/2019 7:35:00 AM **Validation Level:** 8

**Lab Sample Name:** 440-258077-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.000013	0.00011	0.0000026	ug/L	J,DXMBq	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.00020	0.00011	0.0000033	ug/L	MB		
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.0000052	0.000054	0.0000015	ug/L	J,DXMBq	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.000018	0.000054	0.0000017	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.0000018	0.000054	0.0000017	ug/L	J,DXMB	U	B
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	ND	0.000054	0.0000027	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.0000024	0.000054	0.0000014	ug/L	J,DXMBq	U	B
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	ND	0.000054	0.0000028	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	ND	0.000054	0.0000015	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	ND	0.000054	0.0000022	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	ND	0.000054	0.0000013	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	ND	0.000054	0.0000017	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	ND	0.000054	0.0000022	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	ND	0.000054	0.0000021	ug/L	U	U	
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000054	0.0000016	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000011	0.0000020	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	0.0000033	0.000011	0.0000022	ug/L	J,DXq	UJ	*III
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000012	0.000054	0.0000015	ug/L	J,DXMBq	J	B, DNQ, *III
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000037	0.000054	0.0000017	ug/L	J,DXMB	J	B, DNQ
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	ND	0.000054	0.0000021	ug/L	U	U	
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.0000055	0.000054	0.0000013	ug/L	J,DXMBq	J	B, DNQ, *III
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	ND	0.000054	0.0000016	ug/L	U	U	

**Analysis Method E1613B**

Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	ND	0.000054	0.0000022	ug/L	U	U	
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	ND	0.000011	0.0000020	ug/L	U	U	
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	0.0000033	0.000011	0.0000022	ug/L	J,DXq	UJ	*III

**Analysis Method E200.7**

Sample Name OUTFALL009\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

Lab Sample Name: 440-258077-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Nickel	T	7440-02-0	ND	10	5.0	ug/L	U	U	
Zinc	T	7440-66-6	27	20	12	ug/L			

Sample Name OUTFALL009\_20191224\_COMP\_F Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

Lab Sample Name: 440-258077-2

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Nickel	D	7440-02-0	ND	10	5.0	ug/L	U	UJ	H
Zinc	D	7440-66-6	15	20	12	ug/L	J,DX	J	H, DNQ

**Analysis Method E200.8**

Sample Name OUTFALL009\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

Lab Sample Name: 440-258077-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	0.78	2.0	0.50	ug/L	J,DX	U	B
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	3.7	2.0	0.50	ug/L			
Lead	T	7439-92-1	1.3	1.0	0.50	ug/L			
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	
Silver	T	7440-22-4	ND	1.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0	ND	1.0	0.20	ug/L	U	U	

Sample Name OUTFALL009\_20191224\_COMP\_F Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

Lab Sample Name: 440-258077-2

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	0.62	2.0	0.50	ug/L	J,DX	J	H, DNQ
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	U	UJ	H
Copper	D	7440-50-8	3.2	2.0	0.50	ug/L		J	H



**Analysis Method** E200.8

Lead	D	7439-92-1	ND	1.0	0.50	ug/L	U	UJ	H
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	U	UJ	H
Silver	D	7440-22-4	ND	1.0	0.50	ug/L	U	UJ	H
Thallium	D	7440-28-0	ND	1.0	0.20	ug/L	U	UJ	H

**Analysis Method** E300

**Sample Name** OUTFALL009\_20191224\_COMP      **Matrix Type:** WM      **Result Type:** TRG

**Sample Date:** 12/24/2019 7:35:00 AM      **Validation Level:** 8

**Lab Sample Name:** 440-258077-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	3.2	0.50	0.25	mg/L			
Chloride	N	16887-00-6	3.1	2.5	1.3	mg/L		R	D
Nitrate (as N)	N	14797-55-8	1.1	0.55	0.28	mg/L		R	D
Nitrate (as N)	N	14797-55-8	1.1	0.11	0.055	mg/L			
Nitrite (as N)	N	14797-65-0	ND	0.15	0.025	mg/L	U	U	
Nitrite (as N)	N	14797-65-0	ND	0.75	0.13	mg/L	U	R	D
Nitrite/Nitrate	N	NO2NO3	1.1	0.15	0.055	mg/L			
Sulfate	N	14808-79-8	3.0	0.50	0.25	mg/L			
Sulfate	N	14808-79-8	2.9	2.5	1.3	mg/L		R	D

**Analysis Method** SM2540D

**Sample Name** OUTFALL009\_20191224\_COMP      **Matrix Type:** WM      **Result Type:** TRG

**Sample Date:** 12/24/2019 7:35:00 AM      **Validation Level:** 8

**Lab Sample Name:** 440-258077-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	11	4.0	2.0	mg/L			

## ANALYTICAL REPORT

Eurofins Calscience Irvine  
17461 Derian Ave  
Suite 100  
Irvine, CA 92614-5817  
Tel: (949)261-1022

Laboratory Job ID: 440-258077-1

Client Project/Site: Semiannual Outfall 009 Comp  
Revision: 1

**For:**

Haley & Aldrich, Inc.  
400 E Van Buren St.  
Suite 545  
Phoenix, Arizona 85004

Attn: Katherine Miller



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Authorized for release by:  
1/30/2020 4:13:55 PM

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*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



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Lena Davidkova  
Project Manager II  
1/30/2020 4:13:55 PM



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# Sample Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-258077-1	Outfall009_20191224_Comp	Water	12/24/19 07:35	12/24/19 12:30	
440-258077-2	Outfall009_20191224_Comp_F	Water	12/24/19 07:35	12/24/19 12:30	

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# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

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## Job ID: 440-258077-1

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### Laboratory: Eurofins Calscience Irvine

#### Narrative

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#### Job Narrative 440-258077-1

#### Comments

This report was revised to exclude results for individual analytes Nitrate-N and Nitrite-N and report only Nitrate Nitrite as N

#### Receipt

The samples were received on 12/24/2019 12:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 1.0° C, 1.0° C, 1.0° C, 1.1° C, 1.2° C and 1.3° C.

#### HPLC/IC

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Metals

Method FILTRATION: The following samples requested dissolved metals and were not filtered in the field: Outfall009\_20191224\_Comp\_F (440-258077-2), Outfall009\_20191224\_Comp\_F (440-258077-2[MS]) and Outfall009\_20191224\_Comp\_F (440-258077-2[MSD]). These samples were filtered and preserved upon receipt to the laboratory.

12/26/19

150mL of sample

2.5mL of HNO3 lot: 0000234822

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Dioxin Prep

Method 1613B: Elevated reporting limits are provided for the following sample due to insufficient sample provided for 1613B\_Sox\_Sep\_P preparation/analysis: Sample Outfall009\_20191224\_Comp (440-258077-1) was received in a wide-mouth amber glass bottle.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

**Client Sample ID: Outfall009\_20191224\_Comp**

**Lab Sample ID: 440-258077-1**

Date Collected: 12/24/19 07:35

Matrix: Water

Date Received: 12/24/19 12:30

**Method: 300.0 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3.2		0.50	0.25	mg/L			12/24/19 19:43	1
Sulfate	3.0		0.50	0.25	mg/L			12/24/19 19:43	1

**Method: 314.0 - Perchlorate (IC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			12/26/19 11:35	1

**Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	1.1		0.15	0.055	mg/L			01/03/20 13:10	1

**Method: 1613B - Dioxins and Furans (HRGC/HRMS)**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.000033	J,DX q	0.000011	0.000022	ug/L		12/30/19 16:10	01/07/20 00:39	1
2,3,7,8-TCDF	ND		0.000011	0.000020	ug/L		12/30/19 16:10	01/07/20 00:39	1
1,2,3,7,8-PeCDD	ND		0.000054	0.000022	ug/L		12/30/19 16:10	01/07/20 00:39	1
1,2,3,7,8-PeCDF	ND		0.000054	0.000017	ug/L		12/30/19 16:10	01/07/20 00:39	1
2,3,4,7,8-PeCDF	ND		0.000054	0.000016	ug/L		12/30/19 16:10	01/07/20 00:39	1
1,2,3,4,7,8-HxCDD	0.000024	J,DX MB q	0.000054	0.000014	ug/L		12/30/19 16:10	01/07/20 00:39	1
1,2,3,6,7,8-HxCDD	ND		0.000054	0.000015	ug/L		12/30/19 16:10	01/07/20 00:39	1
1,2,3,7,8,9-HxCDD	ND		0.000054	0.000013	ug/L		12/30/19 16:10	01/07/20 00:39	1
1,2,3,4,7,8-HxCDF	ND		0.000054	0.000027	ug/L		12/30/19 16:10	01/07/20 00:39	1
1,2,3,6,7,8-HxCDF	ND		0.000054	0.000028	ug/L		12/30/19 16:10	01/07/20 00:39	1
1,2,3,7,8,9-HxCDF	ND		0.000054	0.000022	ug/L		12/30/19 16:10	01/07/20 00:39	1
2,3,4,6,7,8-HxCDF	ND		0.000054	0.000021	ug/L		12/30/19 16:10	01/07/20 00:39	1
1,2,3,4,6,7,8-HpCDD	0.000018	J,DX MB	0.000054	0.000017	ug/L		12/30/19 16:10	01/07/20 00:39	1
1,2,3,4,6,7,8-HpCDF	0.000052	J,DX MB q	0.000054	0.000015	ug/L		12/30/19 16:10	01/07/20 00:39	1
1,2,3,4,7,8,9-HpCDF	0.000018	J,DX MB	0.000054	0.000017	ug/L		12/30/19 16:10	01/07/20 00:39	1
OCDD	0.00020	MB	0.00011	0.000033	ug/L		12/30/19 16:10	01/07/20 00:39	1
OCDF	0.000013	J,DX MB q	0.00011	0.000026	ug/L		12/30/19 16:10	01/07/20 00:39	1
Total TCDD	0.000033	J,DX q	0.000011	0.000022	ug/L		12/30/19 16:10	01/07/20 00:39	1
Total TCDF	ND		0.000011	0.000020	ug/L		12/30/19 16:10	01/07/20 00:39	1
Total PeCDD	ND		0.000054	0.000022	ug/L		12/30/19 16:10	01/07/20 00:39	1
Total PeCDF	ND		0.000054	0.000016	ug/L		12/30/19 16:10	01/07/20 00:39	1
Total HxCDD	0.000055	J,DX MB q	0.000054	0.000013	ug/L		12/30/19 16:10	01/07/20 00:39	1
Total HxCDF	ND		0.000054	0.000021	ug/L		12/30/19 16:10	01/07/20 00:39	1
Total HpCDD	0.000037	J,DX MB	0.000054	0.000017	ug/L		12/30/19 16:10	01/07/20 00:39	1
Total HpCDF	0.000012	J,DX MB q	0.000054	0.000015	ug/L		12/30/19 16:10	01/07/20 00:39	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	55		25 - 164				12/30/19 16:10	01/07/20 00:39	1
13C-2,3,7,8-TCDF	52		24 - 169				12/30/19 16:10	01/07/20 00:39	1
13C-1,2,3,7,8-PeCDD	54		25 - 181				12/30/19 16:10	01/07/20 00:39	1
13C-1,2,3,7,8-PeCDF	52		24 - 185				12/30/19 16:10	01/07/20 00:39	1
13C-2,3,4,7,8-PeCDF	55		21 - 178				12/30/19 16:10	01/07/20 00:39	1
13C-1,2,3,4,7,8-HxCDD	53		32 - 141				12/30/19 16:10	01/07/20 00:39	1
13C-1,2,3,6,7,8-HxCDD	48		28 - 130				12/30/19 16:10	01/07/20 00:39	1
13C-1,2,3,4,7,8-HxCDF	51		26 - 152				12/30/19 16:10	01/07/20 00:39	1
13C-1,2,3,6,7,8-HxCDF	46		26 - 123				12/30/19 16:10	01/07/20 00:39	1
13C-1,2,3,7,8,9-HxCDF	48		29 - 147				12/30/19 16:10	01/07/20 00:39	1
13C-2,3,4,6,7,8-HxCDF	48		28 - 136				12/30/19 16:10	01/07/20 00:39	1

Eurofins Calscience Irvine

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

**Client Sample ID: Outfall009\_20191224\_Comp**

**Lab Sample ID: 440-258077-1**

Date Collected: 12/24/19 07:35

Matrix: Water

Date Received: 12/24/19 12:30

**Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	57		23 - 140	12/30/19 16:10	01/07/20 00:39	1
13C-1,2,3,4,6,7,8-HpCDF	52		28 - 143	12/30/19 16:10	01/07/20 00:39	1
13C-1,2,3,4,7,8,9-HpCDF	58		26 - 138	12/30/19 16:10	01/07/20 00:39	1
13C-OCDD	56		17 - 157	12/30/19 16:10	01/07/20 00:39	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	111		35 - 197	12/30/19 16:10	01/07/20 00:39	1

**Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		12/26/19 10:35	12/29/19 11:24	1
Zinc	27		20	12	ug/L		12/26/19 10:35	12/29/19 11:24	1

**Method: 200.8 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		12/26/19 10:42	12/30/19 12:21	1
Cadmium	ND		1.0	0.25	ug/L		12/26/19 10:42	12/30/19 12:21	1
Copper	3.7		2.0	0.50	ug/L		12/26/19 10:42	12/30/19 12:21	1
Lead	1.3		1.0	0.50	ug/L		12/26/19 10:42	12/30/19 12:21	1
Antimony	0.78	J,DX	2.0	0.50	ug/L		12/26/19 10:42	12/30/19 12:21	1
Selenium	ND		2.0	0.50	ug/L		12/26/19 10:42	12/30/19 12:21	1
Thallium	ND		1.0	0.20	ug/L		12/26/19 10:42	12/30/19 12:21	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		12/31/19 12:32	01/02/20 13:16	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	62		10	5.0	mg/L			12/26/19 10:23	1
Total Suspended Solids	11		4.0	2.0	mg/L			12/26/19 15:23	1
Cyanide, Total	ND		5.0	2.5	ug/L		12/27/19 10:46	12/27/19 16:11	1

**Client Sample ID: Outfall009\_20191224\_Comp\_F**

**Lab Sample ID: 440-258077-2**

Date Collected: 12/24/19 07:35

Matrix: Water

Date Received: 12/24/19 12:30

**Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		12/26/19 14:27	12/27/19 13:33	1
Zinc	15	J,DX	20	12	ug/L		12/26/19 14:27	12/27/19 13:33	1

**Method: 200.8 - Metals (ICP/MS) - Dissolved**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:08	1
Cadmium	ND		1.0	0.25	ug/L		12/26/19 14:39	12/29/19 18:08	1
Copper	3.2		2.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:08	1
Lead	ND		1.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:08	1
Antimony	0.62	J,DX	2.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:08	1
Selenium	ND		2.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:08	1
Thallium	ND		1.0	0.20	ug/L		12/26/19 14:39	12/29/19 18:08	1

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# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

**Client Sample ID: Outfall009\_20191224\_Comp\_F**

**Lab Sample ID: 440-258077-2**

Date Collected: 12/24/19 07:35

Matrix: Water

Date Received: 12/24/19 12:30

**Method: 245.1 - Mercury (CVAA) - Dissolved**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/03/20 08:28	01/06/20 21:09	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Method Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.7 Rev 4.4	Metals (ICP)	EPA	TAL IRV
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
1613B	Separatory Funnel (L/L) Extraction with Soxhlet Extraction of Dioxin and Furans	40CFR136A	TAL SAC
200.2	Preparation, Total Recoverable Metals	EPA	TAL IRV
245.1	Preparation, Mercury	EPA	TAL IRV
Distill/CN	Distillation, Cyanide	None	TAL IRV
FILTRATION	Sample Filtration	None	TAL IRV

#### Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

#### Laboratory References:

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Lab Chronicle

Client: Haley & Aldrich, Inc.  
 Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

**Client Sample ID: Outfall009\_20191224\_Comp**

**Lab Sample ID: 440-258077-1**

**Date Collected: 12/24/19 07:35**

**Matrix: Water**

**Date Received: 12/24/19 12:30**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			587735	12/24/19 19:43	NTN	TAL IRV
Total/NA	Analysis	300.0	DL	5			587735	12/24/19 20:00	NTN	TAL IRV
Total/NA	Analysis	314.0		1			587948	12/26/19 11:35	PS	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			589051	01/03/20 13:10	NN	TAL IRV
Total/NA	Prep	1613B			931.9 mL	20 uL	348645	12/30/19 16:10	NIR	TAL SAC
Total/NA	Analysis	1613B		1			349278	01/07/20 00:39	KSS	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	587971	12/26/19 10:35	EP	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1			588370	12/29/19 11:24	KE	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	587974	12/26/19 10:42	EP	TAL IRV
Total Recoverable	Analysis	200.8		1			588549	12/30/19 12:21	B1H	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	588737	12/31/19 12:32	MEM	TAL IRV
Total/NA	Analysis	245.1		1			588954	01/02/20 13:16	MEM	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	587964	12/26/19 10:23	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	250 mL	1000 mL	588034	12/26/19 15:23	KL	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	588165	12/27/19 10:46	KMY	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			588222	12/27/19 16:11	KMY	TAL IRV

**Client Sample ID: Outfall009\_20191224\_Comp\_F**

**Lab Sample ID: 440-258077-2**

**Date Collected: 12/24/19 07:35**

**Matrix: Water**

**Date Received: 12/24/19 12:30**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	587989	12/26/19 11:45	EP	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	588019	12/26/19 14:27	EP	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1			588205	12/27/19 13:33	TQN	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	587989	12/26/19 11:45	EP	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	588020	12/26/19 14:39	EP	TAL IRV
Dissolved	Analysis	200.8		1			588414	12/29/19 18:08	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			100 mL	100 mL	588000	12/26/19 12:39	EP	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	588987	01/03/20 08:28	MEM	TAL IRV
Dissolved	Analysis	245.1		1			589374	01/06/20 21:09	MEM	TAL IRV

**Laboratory References:**

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

## Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-587735/6  
 Matrix: Water  
 Analysis Batch: 587735

Client Sample ID: Method Blank  
 Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			12/24/19 11:14	1
Sulfate	ND		0.50	0.25	mg/L			12/24/19 11:14	1

Lab Sample ID: LCS 440-587735/7  
 Matrix: Water  
 Analysis Batch: 587735

Client Sample ID: Lab Control Sample  
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.62		mg/L		92	90 - 110
Sulfate	5.00	4.87		mg/L		97	90 - 110

## Method: 300.0 - Anions, Ion Chromatography - DL

Lab Sample ID: 440-258077-1 MS  
 Matrix: Water  
 Analysis Batch: 587735

Client Sample ID: Outfall009\_20191224\_Comp  
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride - DL	3.1		25.0	27.0		mg/L		96	80 - 120
Sulfate - DL	2.9		25.0	28.2		mg/L		101	80 - 120

Lab Sample ID: 440-258077-1 MSD  
 Matrix: Water  
 Analysis Batch: 587735

Client Sample ID: Outfall009\_20191224\_Comp  
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride - DL	3.1		25.0	26.2		mg/L		92	80 - 120	3	20
Sulfate - DL	2.9		25.0	27.2		mg/L		97	80 - 120	4	20

## Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-587948/6  
 Matrix: Water  
 Analysis Batch: 587948

Client Sample ID: Method Blank  
 Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			12/26/19 10:14	1

Lab Sample ID: LCS 440-587948/5  
 Matrix: Water  
 Analysis Batch: 587948

Client Sample ID: Lab Control Sample  
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	23.2		ug/L		93	85 - 115

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

## Method: 314.0 - Perchlorate (IC) (Continued)

**Lab Sample ID: MRL 440-587948/8**  
**Matrix: Water**  
**Analysis Batch: 587948**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	3.52	J,DX	ug/L		88	75 - 125

**Lab Sample ID: 440-258077-1 MS**  
**Matrix: Water**  
**Analysis Batch: 587948**

**Client Sample ID: Outfall009\_20191224\_Comp**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		25.0	24.4		ug/L		98	80 - 120

**Lab Sample ID: 440-258077-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 587948**

**Client Sample ID: Outfall009\_20191224\_Comp**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	ND		25.0	24.3		ug/L		97	80 - 120	0	15

## Method: 1613B - Dioxins and Furans (HRGC/HRMS)

**Lab Sample ID: MB 320-348645/1-A**  
**Matrix: Water**  
**Analysis Batch: 349278**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 348645**

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.000024	ug/L		12/30/19 16:10	01/06/20 19:17	1
2,3,7,8-TCDF	ND		0.000010	0.000019	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,7,8-PeCDD	ND		0.000050	0.000029	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,7,8-PeCDF	ND		0.000050	0.000020	ug/L		12/30/19 16:10	01/06/20 19:17	1
2,3,4,7,8-PeCDF	ND		0.000050	0.000020	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,4,7,8-HxCDD	0.00000241	J,DX q	0.000050	0.000013	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,6,7,8-HxCDD	0.00000154	J,DX	0.000050	0.000013	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,7,8,9-HxCDD	ND		0.000050	0.000012	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.000022	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,6,7,8-HxCDF	ND		0.000050	0.000023	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,7,8,9-HxCDF	ND		0.000050	0.000017	ug/L		12/30/19 16:10	01/06/20 19:17	1
2,3,4,6,7,8-HxCDF	ND		0.000050	0.000018	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,4,6,7,8-HpCDD	0.00000304	J,DX	0.000050	0.000006	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,4,6,7,8-HpCDF	0.00000413	J,DX q	0.000050	0.000005	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,4,7,8,9-HpCDF	0.00000119	J,DX q	0.000050	0.000006	ug/L		12/30/19 16:10	01/06/20 19:17	1
OCDD	0.0000133	J,DX	0.00010	0.000025	ug/L		12/30/19 16:10	01/06/20 19:17	1
OCDF	0.00000511	J,DX	0.00010	0.000024	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total TCDD	ND		0.000010	0.000024	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total TCDF	ND		0.000010	0.000019	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total PeCDD	ND		0.000050	0.000029	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total PeCDF	ND		0.000050	0.000020	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total HxCDD	0.00000395	J,DX q	0.000050	0.000012	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total HxCDF	ND		0.000050	0.000017	ug/L		12/30/19 16:10	01/06/20 19:17	1

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

## Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

**Lab Sample ID: MB 320-348645/1-A**  
**Matrix: Water**  
**Analysis Batch: 349278**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 348645**

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total HpCDD	0.00000495	J,DX	0.000050	0.0000006	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total HpCDF	0.00000533	J,DX q	0.000050	0.0000005	ug/L		12/30/19 16:10	01/06/20 19:17	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	62		25 - 164	12/30/19 16:10	01/06/20 19:17	1
13C-2,3,7,8-TCDF	61		24 - 169	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,7,8-PeCDD	67		25 - 181	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,7,8-PeCDF	62		24 - 185	12/30/19 16:10	01/06/20 19:17	1
13C-2,3,4,7,8-PeCDF	69		21 - 178	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,4,7,8-HxCDD	70		32 - 141	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,6,7,8-HxCDD	58		28 - 130	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,4,7,8-HxCDF	62		26 - 152	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,6,7,8-HxCDF	56		26 - 123	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,7,8,9-HxCDF	60		29 - 147	12/30/19 16:10	01/06/20 19:17	1
13C-2,3,4,6,7,8-HxCDF	60		28 - 136	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,4,6,7,8-HpCDD	71		23 - 140	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,4,6,7,8-HpCDF	65		28 - 143	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,4,7,8,9-HpCDF	72		26 - 138	12/30/19 16:10	01/06/20 19:17	1
13C-OCDD	72		17 - 157	12/30/19 16:10	01/06/20 19:17	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	112		35 - 197	12/30/19 16:10	01/06/20 19:17	1

**Lab Sample ID: LCS 320-348645/2-A**  
**Matrix: Water**  
**Analysis Batch: 349278**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 348645**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000205		ug/L		102	67 - 158
2,3,7,8-TCDF	0.000200	0.000215		ug/L		107	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00109		ug/L		109	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00107		ug/L		107	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000984		ug/L		98	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.00103	MB	ug/L		103	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00108	MB	ug/L		108	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.00107		ug/L		107	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000991		ug/L		99	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.00103		ug/L		103	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.00102		ug/L		102	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00101		ug/L		101	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.00108	MB	ug/L		108	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.00110	MB	ug/L		110	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.00102	MB	ug/L		102	78 - 138
OCDD	0.00200	0.00223	MB	ug/L		112	78 - 144
OCDF	0.00200	0.00221	MB	ug/L		111	63 - 170

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

## Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	66		20 - 175
13C-2,3,7,8-TCDF	61		22 - 152
13C-1,2,3,7,8-PeCDD	65		21 - 227
13C-1,2,3,7,8-PeCDF	61		21 - 192
13C-2,3,4,7,8-PeCDF	68		13 - 328
13C-1,2,3,4,7,8-HxCDD	63		21 - 193
13C-1,2,3,6,7,8-HxCDD	54		25 - 163
13C-1,2,3,4,7,8-HxCDF	57		19 - 202
13C-1,2,3,6,7,8-HxCDF	53		21 - 159
13C-1,2,3,7,8,9-HxCDF	56		17 - 205
13C-2,3,4,6,7,8-HxCDF	57		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	62		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	57		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	64		20 - 186
13C-OCDD	63		13 - 199

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	112		31 - 191

Lab Sample ID: LCSD 320-348645/3-A  
Matrix: Water  
Analysis Batch: 349278

Client Sample ID: Lab Control Sample Dup  
Prep Type: Total/NA  
Prep Batch: 348645

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,3,7,8-TCDD	0.000200	0.000211		ug/L		105	67 - 158	3	50
2,3,7,8-TCDF	0.000200	0.000215		ug/L		107	75 - 158	0	50
1,2,3,7,8-PeCDD	0.00100	0.00112		ug/L		112	70 - 142	2	50
1,2,3,7,8-PeCDF	0.00100	0.00109		ug/L		109	80 - 134	2	50
2,3,4,7,8-PeCDF	0.00100	0.00102		ug/L		102	68 - 160	4	50
1,2,3,4,7,8-HxCDD	0.00100	0.00104	MB	ug/L		104	70 - 164	1	50
1,2,3,6,7,8-HxCDD	0.00100	0.00113	MB	ug/L		113	76 - 134	4	50
1,2,3,7,8,9-HxCDD	0.00100	0.00111		ug/L		111	64 - 162	4	50
1,2,3,4,7,8-HxCDF	0.00100	0.00103		ug/L		103	72 - 134	3	50
1,2,3,6,7,8-HxCDF	0.00100	0.00106		ug/L		106	84 - 130	3	50
1,2,3,7,8,9-HxCDF	0.00100	0.00106		ug/L		106	78 - 130	4	50
2,3,4,6,7,8-HxCDF	0.00100	0.00106		ug/L		106	70 - 156	4	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00109	MB	ug/L		109	70 - 140	1	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.00111	MB	ug/L		111	82 - 122	1	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.00104	MB	ug/L		104	78 - 138	2	50
OCDD	0.00200	0.00217	MB	ug/L		109	78 - 144	3	50
OCDF	0.00200	0.00216	MB	ug/L		108	63 - 170	2	50

Isotope Dilution	LCSD LCSD		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	65		20 - 175
13C-2,3,7,8-TCDF	61		22 - 152
13C-1,2,3,7,8-PeCDD	63		21 - 227
13C-1,2,3,7,8-PeCDF	60		21 - 192
13C-2,3,4,7,8-PeCDF	66		13 - 328
13C-1,2,3,4,7,8-HxCDD	61		21 - 193
13C-1,2,3,6,7,8-HxCDD	56		25 - 163
13C-1,2,3,4,7,8-HxCDF	57		19 - 202

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

## Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

**Lab Sample ID: LCSD 320-348645/3-A**  
**Matrix: Water**  
**Analysis Batch: 349278**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 348645**

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C-1,2,3,6,7,8-HxCDF	54		21 - 159
13C-1,2,3,7,8,9-HxCDF	56		17 - 205
13C-2,3,4,6,7,8-HxCDF	57		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	66		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	59		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	68		20 - 186
13C-OCDD	69		13 - 199

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	107		31 - 191

## Method: 200.7 Rev 4.4 - Metals (ICP)

**Lab Sample ID: MB 440-587971/1-A**  
**Matrix: Water**  
**Analysis Batch: 588370**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 587971**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		12/26/19 10:35	12/29/19 10:46	1
Zinc	ND		20	12	ug/L		12/26/19 10:35	12/29/19 10:46	1

**Lab Sample ID: LCS 440-587971/2-A**  
**Matrix: Water**  
**Analysis Batch: 588370**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 587971**

Analyte	Spike Added	LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
Nickel	500	499		ug/L		100	85 - 115
Zinc	500	494		ug/L		99	85 - 115

**Lab Sample ID: 440-258077-1 MS**  
**Matrix: Water**  
**Analysis Batch: 588370**

**Client Sample ID: Outfall009\_20191224\_Comp**  
**Prep Type: Total Recoverable**  
**Prep Batch: 587971**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS		Unit	D	%Rec	Limits
				Result	Qualifier				
Nickel	ND		500	522		ug/L		104	70 - 130
Zinc	27		500	526		ug/L		100	70 - 130

**Lab Sample ID: 440-258077-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 588370**

**Client Sample ID: Outfall009\_20191224\_Comp**  
**Prep Type: Total Recoverable**  
**Prep Batch: 587971**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD		Unit	D	%Rec	Limits	RPD	
				Result	Qualifier					RPD	Limit
Nickel	ND		500	512		ug/L		102	70 - 130	2	20
Zinc	27		500	515		ug/L		98	70 - 130	2	20



# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

## Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

**Lab Sample ID: MB 440-587989/1-B**  
**Matrix: Water**  
**Analysis Batch: 588205**

**Client Sample ID: Method Blank**  
**Prep Type: Dissolved**  
**Prep Batch: 588019**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		12/26/19 14:27	12/27/19 13:29	1
Zinc	ND		20	12	ug/L		12/26/19 14:27	12/27/19 13:29	1

**Lab Sample ID: LCS 440-587989/2-B**  
**Matrix: Water**  
**Analysis Batch: 588205**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Dissolved**  
**Prep Batch: 588019**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nickel	500	498		ug/L		100	85 - 115
Zinc	500	488		ug/L		98	85 - 115

**Lab Sample ID: 440-258077-2 MS**  
**Matrix: Water**  
**Analysis Batch: 588205**

**Client Sample ID: Outfall009\_20191224\_Comp\_F**  
**Prep Type: Dissolved**  
**Prep Batch: 588019**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nickel	ND		500	501		ug/L		100	70 - 130
Zinc	15	J,DX	500	499		ug/L		97	70 - 130

**Lab Sample ID: 440-258077-2 MSD**  
**Matrix: Water**  
**Analysis Batch: 588205**

**Client Sample ID: Outfall009\_20191224\_Comp\_F**  
**Prep Type: Dissolved**  
**Prep Batch: 588019**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Nickel	ND		500	512		ug/L		102	70 - 130	2	20
Zinc	15	J,DX	500	511		ug/L		99	70 - 130	2	20

## Method: 200.8 - Metals (ICP/MS)

**Lab Sample ID: MB 440-587974/1-A**  
**Matrix: Water**  
**Analysis Batch: 588549**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 587974**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		12/26/19 10:42	12/30/19 12:16	1
Cadmium	ND		1.0	0.25	ug/L		12/26/19 10:42	12/30/19 12:16	1
Copper	ND		2.0	0.50	ug/L		12/26/19 10:42	12/30/19 12:16	1
Lead	ND		1.0	0.50	ug/L		12/26/19 10:42	12/30/19 12:16	1
Antimony	ND		2.0	0.50	ug/L		12/26/19 10:42	12/30/19 12:16	1
Selenium	ND		2.0	0.50	ug/L		12/26/19 10:42	12/30/19 12:16	1
Thallium	ND		1.0	0.20	ug/L		12/26/19 10:42	12/30/19 12:16	1

**Lab Sample ID: LCS 440-587974/2-A**  
**Matrix: Water**  
**Analysis Batch: 588549**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 587974**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Silver	80.0	87.1		ug/L		109	85 - 115
Cadmium	80.0	82.3		ug/L		103	85 - 115
Copper	80.0	80.5		ug/L		101	85 - 115

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

## Method: 200.8 - Metals (ICP/MS) (Continued)

**Lab Sample ID: LCS 440-587974/2-A**  
**Matrix: Water**  
**Analysis Batch: 588549**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 587974**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	80.0	82.1		ug/L		103	85 - 115
Antimony	80.0	92.3		ug/L		115	85 - 115
Selenium	80.0	82.6		ug/L		103	85 - 115
Thallium	80.0	82.3		ug/L		103	85 - 115

**Lab Sample ID: 440-258077-1 MS**  
**Matrix: Water**  
**Analysis Batch: 588549**

**Client Sample ID: Outfall009\_20191224\_Comp**  
**Prep Type: Total Recoverable**  
**Prep Batch: 587974**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Silver	ND		80.0	88.0		ug/L		110	70 - 130
Cadmium	ND		80.0	83.4		ug/L		104	70 - 130
Copper	3.7		80.0	84.7		ug/L		101	70 - 130
Lead	1.3		80.0	85.1		ug/L		105	70 - 130
Antimony	0.78	J,DX	80.0	92.7		ug/L		115	70 - 130
Selenium	ND		80.0	85.1		ug/L		106	70 - 130
Thallium	ND		80.0	64.3		ug/L		80	70 - 130

**Lab Sample ID: 440-258077-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 588549**

**Client Sample ID: Outfall009\_20191224\_Comp**  
**Prep Type: Total Recoverable**  
**Prep Batch: 587974**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Silver	ND		80.0	89.6		ug/L		112	70 - 130	2	20
Cadmium	ND		80.0	85.3		ug/L		107	70 - 130	2	20
Copper	3.7		80.0	86.7		ug/L		104	70 - 130	2	20
Lead	1.3		80.0	86.5		ug/L		106	70 - 130	2	20
Antimony	0.78	J,DX	80.0	94.3		ug/L		117	70 - 130	2	20
Selenium	ND		80.0	85.5		ug/L		107	70 - 130	0	20
Thallium	ND		80.0	71.5		ug/L		89	70 - 130	11	20

**Lab Sample ID: MB 440-587989/1-F**  
**Matrix: Water**  
**Analysis Batch: 588414**

**Client Sample ID: Method Blank**  
**Prep Type: Dissolved**  
**Prep Batch: 588020**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:03	1
Cadmium	ND		1.0	0.25	ug/L		12/26/19 14:39	12/29/19 18:03	1
Copper	ND		2.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:03	1
Lead	ND		1.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:03	1
Antimony	ND		2.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:03	1
Selenium	0.513	J,DX	2.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:03	1
Thallium	ND		1.0	0.20	ug/L		12/26/19 14:39	12/29/19 18:03	1

**Lab Sample ID: LCS 440-587989/2-F**  
**Matrix: Water**  
**Analysis Batch: 588414**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Dissolved**  
**Prep Batch: 588020**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Silver	80.0	84.8		ug/L		106	85 - 115

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

## Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 440-587989/2-F  
Matrix: Water  
Analysis Batch: 588414

Client Sample ID: Lab Control Sample  
Prep Type: Dissolved  
Prep Batch: 588020

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	79.9		ug/L		100	85 - 115
Copper	80.0	81.3		ug/L		102	85 - 115
Lead	80.0	80.2		ug/L		100	85 - 115
Antimony	80.0	90.2		ug/L		113	85 - 115
Selenium	80.0	76.2		ug/L		95	85 - 115
Thallium	80.0	79.6		ug/L		100	85 - 115

Lab Sample ID: 440-258077-2 MS  
Matrix: Water  
Analysis Batch: 588414

Client Sample ID: Outfall009\_20191224\_Comp\_F  
Prep Type: Dissolved  
Prep Batch: 588020

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Silver	ND		80.0	85.6		ug/L		107	70 - 130
Cadmium	ND		80.0	80.2		ug/L		100	70 - 130
Copper	3.2		80.0	86.3		ug/L		104	70 - 130
Lead	ND		80.0	81.7		ug/L		102	70 - 130
Antimony	0.62	J,DX	80.0	91.7		ug/L		114	70 - 130
Selenium	ND		80.0	77.1		ug/L		96	70 - 130
Thallium	ND		80.0	80.2		ug/L		100	70 - 130

Lab Sample ID: 440-258077-2 MSD  
Matrix: Water  
Analysis Batch: 588414

Client Sample ID: Outfall009\_20191224\_Comp\_F  
Prep Type: Dissolved  
Prep Batch: 588020

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Silver	ND		80.0	83.0		ug/L		104	70 - 130	3	20
Cadmium	ND		80.0	77.5		ug/L		97	70 - 130	3	20
Copper	3.2		80.0	83.7		ug/L		101	70 - 130	3	20
Lead	ND		80.0	80.4		ug/L		100	70 - 130	2	20
Antimony	0.62	J,DX	80.0	89.2		ug/L		111	70 - 130	3	20
Selenium	ND		80.0	74.6		ug/L		93	70 - 130	3	20
Thallium	ND		80.0	79.0		ug/L		99	70 - 130	1	20

## Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-588737/1-A  
Matrix: Water  
Analysis Batch: 588954

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 588737

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		12/31/19 12:32	01/02/20 13:12	1

Lab Sample ID: LCS 440-588737/2-A  
Matrix: Water  
Analysis Batch: 588954

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 588737

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	4.00	3.55		ug/L		89	85 - 115

Eurofins Calscience Irvine

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

## Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: 440-258077-1 MS  
Matrix: Water  
Analysis Batch: 588954

Client Sample ID: Outfall009\_20191224\_Comp  
Prep Type: Total/NA  
Prep Batch: 588737  
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		4.00	3.43		ug/L		86	75 - 125

Lab Sample ID: 440-258077-1 MSD  
Matrix: Water  
Analysis Batch: 588954

Client Sample ID: Outfall009\_20191224\_Comp  
Prep Type: Total/NA  
Prep Batch: 588737  
%Rec. RPD

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		4.00	3.55		ug/L		89	75 - 125	3	20

Lab Sample ID: MB 440-588000/1-B  
Matrix: Water  
Analysis Batch: 589374

Client Sample ID: Method Blank  
Prep Type: Dissolved  
Prep Batch: 588987

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/03/20 08:28	01/06/20 21:05	1

Lab Sample ID: LCS 440-588000/2-B  
Matrix: Water  
Analysis Batch: 589374

Client Sample ID: Lab Control Sample  
Prep Type: Dissolved  
Prep Batch: 588987  
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	4.00	4.06		ug/L		102	85 - 115

Lab Sample ID: 440-258077-2 MS  
Matrix: Water  
Analysis Batch: 589374

Client Sample ID: Outfall009\_20191224\_Comp\_F  
Prep Type: Dissolved  
Prep Batch: 588987  
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		4.00	4.00		ug/L		100	75 - 125

Lab Sample ID: 440-258077-2 MSD  
Matrix: Water  
Analysis Batch: 589374

Client Sample ID: Outfall009\_20191224\_Comp\_F  
Prep Type: Dissolved  
Prep Batch: 588987  
%Rec. RPD

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		4.00	3.80		ug/L		95	75 - 125	5	20

## Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-587964/1  
Matrix: Water  
Analysis Batch: 587964

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			12/26/19 10:23	1

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

## Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: LCS 440-587964/2  
Matrix: Water  
Analysis Batch: 587964

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	990		mg/L		99	90 - 110

Lab Sample ID: 440-257932-H-5 DU  
Matrix: Water  
Analysis Batch: 587964

Client Sample ID: Duplicate  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	4300		4300		mg/L		0.5	5

## Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-588034/1  
Matrix: Water  
Analysis Batch: 588034

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			12/26/19 15:23	1

Lab Sample ID: LCS 440-588034/2  
Matrix: Water  
Analysis Batch: 588034

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	951		mg/L		95	85 - 115

Lab Sample ID: 440-258147-A-1 DU  
Matrix: Water  
Analysis Batch: 588034

Client Sample ID: Duplicate  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	13		13.3		mg/L		3	10

## Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-588165/1-A  
Matrix: Water  
Analysis Batch: 588222

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 588165

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		12/27/19 10:46	12/27/19 16:10	1

Lab Sample ID: LCS 440-588165/2-A  
Matrix: Water  
Analysis Batch: 588222

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 588165

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	98.3		ug/L		98	80 - 120

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

## Method: SM 4500 CN E - Cyanide, Total (Low Level) (Continued)

**Lab Sample ID: 440-258077-1 MS**  
**Matrix: Water**  
**Analysis Batch: 588222**

**Client Sample ID: Outfall009\_20191224\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 588165**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	ND		100	100		ug/L		100	75 - 125

**Lab Sample ID: 440-258077-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 588222**

**Client Sample ID: Outfall009\_20191224\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 588165**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	ND		100	99.2		ug/L		99	75 - 125	1	20

# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

## HPLC/IC

### Analysis Batch: 587735

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	300.0	
440-258077-1 - DL	Outfall009_20191224_Comp	Total/NA	Water	300.0	
MB 440-587735/6	Method Blank	Total/NA	Water	300.0	
LCS 440-587735/7	Lab Control Sample	Total/NA	Water	300.0	
440-258077-1 MS - DL	Outfall009_20191224_Comp	Total/NA	Water	300.0	
440-258077-1 MSD - DL	Outfall009_20191224_Comp	Total/NA	Water	300.0	

### Analysis Batch: 587948

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	314.0	
MB 440-587948/6	Method Blank	Total/NA	Water	314.0	
LCS 440-587948/5	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-587948/8	Lab Control Sample	Total/NA	Water	314.0	
440-258077-1 MS	Outfall009_20191224_Comp	Total/NA	Water	314.0	
440-258077-1 MSD	Outfall009_20191224_Comp	Total/NA	Water	314.0	

### Analysis Batch: 589051

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	NO3NO2 Calc	

## Specialty Organics

### Prep Batch: 348645

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	1613B	
MB 320-348645/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-348645/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-348645/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

### Analysis Batch: 349278

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	1613B	348645
MB 320-348645/1-A	Method Blank	Total/NA	Water	1613B	348645
LCS 320-348645/2-A	Lab Control Sample	Total/NA	Water	1613B	348645
LCSD 320-348645/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	348645

## Metals

### Prep Batch: 587971

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total Recoverable	Water	200.2	
MB 440-587971/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-587971/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-258077-1 MS	Outfall009_20191224_Comp	Total Recoverable	Water	200.2	
440-258077-1 MSD	Outfall009_20191224_Comp	Total Recoverable	Water	200.2	

### Prep Batch: 587974

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total Recoverable	Water	200.2	
MB 440-587974/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-587974/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-258077-1 MS	Outfall009_20191224_Comp	Total Recoverable	Water	200.2	

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

## Metals (Continued)

### Prep Batch: 587974 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1 MSD	Outfall009_20191224_Comp	Total Recoverable	Water	200.2	

### Filtration Batch: 587989

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-2	Outfall009_20191224_Comp_F	Dissolved	Water	FILTRATION	
MB 440-587989/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-587989/1-F	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-587989/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-587989/2-F	Lab Control Sample	Dissolved	Water	FILTRATION	
440-258077-2 MS	Outfall009_20191224_Comp_F	Dissolved	Water	FILTRATION	
440-258077-2 MSD	Outfall009_20191224_Comp_F	Dissolved	Water	FILTRATION	

### Filtration Batch: 588000

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-2	Outfall009_20191224_Comp_F	Dissolved	Water	FILTRATION	
MB 440-588000/1-B	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-588000/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
440-258077-2 MS	Outfall009_20191224_Comp_F	Dissolved	Water	FILTRATION	
440-258077-2 MSD	Outfall009_20191224_Comp_F	Dissolved	Water	FILTRATION	

### Prep Batch: 588019

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-2	Outfall009_20191224_Comp_F	Dissolved	Water	200.2	587989
MB 440-587989/1-B	Method Blank	Dissolved	Water	200.2	587989
LCS 440-587989/2-B	Lab Control Sample	Dissolved	Water	200.2	587989
440-258077-2 MS	Outfall009_20191224_Comp_F	Dissolved	Water	200.2	587989
440-258077-2 MSD	Outfall009_20191224_Comp_F	Dissolved	Water	200.2	587989

### Prep Batch: 588020

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-2	Outfall009_20191224_Comp_F	Dissolved	Water	200.2	587989
MB 440-587989/1-F	Method Blank	Dissolved	Water	200.2	587989
LCS 440-587989/2-F	Lab Control Sample	Dissolved	Water	200.2	587989
440-258077-2 MS	Outfall009_20191224_Comp_F	Dissolved	Water	200.2	587989
440-258077-2 MSD	Outfall009_20191224_Comp_F	Dissolved	Water	200.2	587989

### Analysis Batch: 588205

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-2	Outfall009_20191224_Comp_F	Dissolved	Water	200.7 Rev 4.4	588019
MB 440-587989/1-B	Method Blank	Dissolved	Water	200.7 Rev 4.4	588019
LCS 440-587989/2-B	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	588019
440-258077-2 MS	Outfall009_20191224_Comp_F	Dissolved	Water	200.7 Rev 4.4	588019
440-258077-2 MSD	Outfall009_20191224_Comp_F	Dissolved	Water	200.7 Rev 4.4	588019

### Analysis Batch: 588370

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total Recoverable	Water	200.7 Rev 4.4	587971
MB 440-587971/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	587971
LCS 440-587971/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	587971
440-258077-1 MS	Outfall009_20191224_Comp	Total Recoverable	Water	200.7 Rev 4.4	587971
440-258077-1 MSD	Outfall009_20191224_Comp	Total Recoverable	Water	200.7 Rev 4.4	587971

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

## Metals

### Analysis Batch: 588414

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-2	Outfall009_20191224_Comp_F	Dissolved	Water	200.8	588020
MB 440-587989/1-F	Method Blank	Dissolved	Water	200.8	588020
LCS 440-587989/2-F	Lab Control Sample	Dissolved	Water	200.8	588020
440-258077-2 MS	Outfall009_20191224_Comp_F	Dissolved	Water	200.8	588020
440-258077-2 MSD	Outfall009_20191224_Comp_F	Dissolved	Water	200.8	588020

### Analysis Batch: 588549

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total Recoverable	Water	200.8	587974
MB 440-587974/1-A	Method Blank	Total Recoverable	Water	200.8	587974
LCS 440-587974/2-A	Lab Control Sample	Total Recoverable	Water	200.8	587974
440-258077-1 MS	Outfall009_20191224_Comp	Total Recoverable	Water	200.8	587974
440-258077-1 MSD	Outfall009_20191224_Comp	Total Recoverable	Water	200.8	587974

### Prep Batch: 588737

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	245.1	
MB 440-588737/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-588737/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-258077-1 MS	Outfall009_20191224_Comp	Total/NA	Water	245.1	
440-258077-1 MSD	Outfall009_20191224_Comp	Total/NA	Water	245.1	

### Analysis Batch: 588954

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	245.1	588737
MB 440-588737/1-A	Method Blank	Total/NA	Water	245.1	588737
LCS 440-588737/2-A	Lab Control Sample	Total/NA	Water	245.1	588737
440-258077-1 MS	Outfall009_20191224_Comp	Total/NA	Water	245.1	588737
440-258077-1 MSD	Outfall009_20191224_Comp	Total/NA	Water	245.1	588737

### Prep Batch: 588987

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-2	Outfall009_20191224_Comp_F	Dissolved	Water	245.1	588000
MB 440-588000/1-B	Method Blank	Dissolved	Water	245.1	588000
LCS 440-588000/2-B	Lab Control Sample	Dissolved	Water	245.1	588000
440-258077-2 MS	Outfall009_20191224_Comp_F	Dissolved	Water	245.1	588000
440-258077-2 MSD	Outfall009_20191224_Comp_F	Dissolved	Water	245.1	588000

### Analysis Batch: 589374

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-2	Outfall009_20191224_Comp_F	Dissolved	Water	245.1	588987
MB 440-588000/1-B	Method Blank	Dissolved	Water	245.1	588987
LCS 440-588000/2-B	Lab Control Sample	Dissolved	Water	245.1	588987
440-258077-2 MS	Outfall009_20191224_Comp_F	Dissolved	Water	245.1	588987
440-258077-2 MSD	Outfall009_20191224_Comp_F	Dissolved	Water	245.1	588987

## General Chemistry

### Analysis Batch: 587964

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	SM 2540C	

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
 Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

## General Chemistry (Continued)

### Analysis Batch: 587964 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-587964/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-587964/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-257932-H-5 DU	Duplicate	Total/NA	Water	SM 2540C	

### Analysis Batch: 588034

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	SM 2540D	
MB 440-588034/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-588034/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-258147-A-1 DU	Duplicate	Total/NA	Water	SM 2540D	

### Prep Batch: 588165

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	Distill/CN	
MB 440-588165/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-588165/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
440-258077-1 MS	Outfall009_20191224_Comp	Total/NA	Water	Distill/CN	
440-258077-1 MSD	Outfall009_20191224_Comp	Total/NA	Water	Distill/CN	

### Analysis Batch: 588222

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	SM 4500 CN E	588165
MB 440-588165/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	588165
LCS 440-588165/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	588165
440-258077-1 MS	Outfall009_20191224_Comp	Total/NA	Water	SM 4500 CN E	588165
440-258077-1 MSD	Outfall009_20191224_Comp	Total/NA	Water	SM 4500 CN E	588165

# Definitions/Glossary

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

## Qualifiers

### HPLC/IC

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

### Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

### Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.  
 Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

## Laboratory: Eurofins Calscience Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
California	State Program	CA ELAP 2706	06-30-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
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## Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20 *
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Hawaii	State	<cert No.>	01-29-20 *
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20 *
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19 *
West Virginia (DW)	State	9930C	12-31-20
Wyoming	State Program	8TMS-L	01-28-19 *

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.





## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-258077-1

SDG Number:

**Login Number: 258077**

**List Number: 1**

**Creator: Soderblom, Tim**

**List Source: Eurofins Irvine**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-258077-1

SDG Number:

**Login Number: 258077**

**List Number: 4**

**Creator: Thompson, Sarah W**

**List Source: Eurofins TestAmerica, Sacramento**

**List Creation: 12/27/19 11:33 AM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	Seal present with no number.
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	Ob:1.0c Corr:0.8c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# Isotope Dilution Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

## Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF (24-185)	PeCF (21-178)	HxCDD (32-141)	HxDD (28-130)	HxCDF (26-152)
440-258077-1	Outfall009_20191224_Comp	55	52	54	52	55	53	48	51
MB 320-348645/1-A	Method Blank	62	61	67	62	69	70	58	62

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxDF (26-123)	HxCF (29-147)	13CHxCF (28-136)	HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	OCDD (17-157)
440-258077-1	Outfall009_20191224_Comp	46	48	48	57	52	58	56
MB 320-348645/1-A	Method Blank	56	60	60	71	65	72	72

#### Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD  
 TCDF = 13C-2,3,7,8-TCDF  
 PeCDD = 13C-1,2,3,7,8-PeCDD  
 PeCDF = 13C-1,2,3,7,8-PeCDF  
 PeCF = 13C-2,3,4,7,8-PeCDF  
 HxCDD = 13C-1,2,3,4,7,8-HxCDD  
 HxDD = 13C-1,2,3,6,7,8-HxCDD  
 HxCDF = 13C-1,2,3,4,7,8-HxCDF  
 HxDF = 13C-1,2,3,6,7,8-HxCDF  
 HxCF = 13C-1,2,3,7,8,9-HxCDF  
 13CHxCF = 13C-2,3,4,6,7,8-HxCDF  
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD  
 HpCDF = 13C-1,2,3,4,6,7,8-HpCDF  
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF  
 OCDD = 13C-OCDD

## Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF (21-192)	PeCF (13-328)	HxCDD (21-193)	HxDD (25-163)	HxCDF (19-202)
LCS 320-348645/2-A	Lab Control Sample	66	61	65	61	68	63	54	57
LCSD 320-348645/3-A	Lab Control Sample Dup	65	61	63	60	66	61	56	57

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxDF (21-159)	HxCF (17-205)	13CHxCF (22-176)	HpCDD (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-348645/2-A	Lab Control Sample	53	56	57	62	57	64	63
LCSD 320-348645/3-A	Lab Control Sample Dup	54	56	57	66	59	68	69

#### Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD  
 TCDF = 13C-2,3,7,8-TCDF  
 PeCDD = 13C-1,2,3,7,8-PeCDD  
 PeCDF = 13C-1,2,3,7,8-PeCDF  
 PeCF = 13C-2,3,4,7,8-PeCDF  
 HxCDD = 13C-1,2,3,4,7,8-HxCDD  
 HxDD = 13C-1,2,3,6,7,8-HxCDD  
 HxCDF = 13C-1,2,3,4,7,8-HxCDF  
 HxDF = 13C-1,2,3,6,7,8-HxCDF  
 HxCF = 13C-1,2,3,7,8,9-HxCDF

# Isotope Dilution Summary

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

$^{13}\text{CH}_x\text{CF} = ^{13}\text{C-2,3,4,6,7,8-HxCDF}$

HpCDD =  $^{13}\text{C-1,2,3,4,6,7,8-HpCDD}$

HpCDF =  $^{13}\text{C-1,2,3,4,6,7,8-HpCDF}$

HpCDF2 =  $^{13}\text{C-1,2,3,4,7,8,9-HpCDF}$

OCDD =  $^{13}\text{C-OCDD}$

Job ID: 440-258077-1

1

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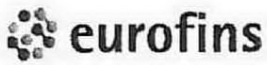
11

12

13

14

15



Environment Testing  
TestAmerica

Sacramento  
Sample Receiving Notes



440-258077 Field Sheet

Tracking #: 111a 4742 4508

SO (PO) / FO / SAT / 2-Day / Ground / UPS / CDO / Courier  
GSO / OnTrac / Goldstreak / USPS / Other \_\_\_\_\_

Job: \_\_\_\_\_

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Notes: _____	Therm. ID: <u>MCS</u> Corr. Factor: (+) <u>0.2</u> °C																																																																
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	Cooler Custody Seal: <u>Seal</u>																																																																
	Cooler ID: _____																																																																
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\*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

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**DATA VALIDATION REPORT**

**Boeing SSFL NPDES**

**SAMPLE DELIVERY GROUP: 440-258077-3, 440-258085-3, and 440-258227-2**

**Prepared for**

Haley & Aldrich, Inc.  
600 South Meyer Avenue, Suite 100  
Tucson, Arizona 85701

**31 January 2020**

MEC<sup>x</sup>, Inc.  
8864 Interchange Drive  
Houston, Texas 77054

[www.mecx.net](http://www.mecx.net)





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**TABLES**

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



**I. INTRODUCTION**

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**Task Order Title:** Boeing SSFL NPDES

**Contract:** 40458-078 and 40458-083

**MECX Project No.:** 1272.003H.01

**Sample Delivery Group:** 440-258077-3, 440-258085-3, 440-258227-2

**Project Manager:** Katherine Miller

**Matrix:** Water

**QC Level:** IV

**No. of Samples:** 3

**No. of Reanalyses/Dilutions:** 0

**Laboratory:** TestAmerica-Irvine

**TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
OUTFALL002_201912 24_COMP	440-258085-1	N/A	Water	12/24/19 8:20 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod
OUTFALL008_201912 27_COMP	440-258227-1	N/A	Water	12/27/19 8:25 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod
OUTFALL009_201912 24_COMP	440-258077-1	N/A	Water	12/24/19 7:35 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod



## II. SAMPLE MANAGEMENT

---

According to the case narrative, sample condition upon receipt forms and the chains-of-custody (COCs) provided by the laboratories for sample delivery groups (SDGs) 440-258077-3, 440-258085-3 and 440-258227-2:

- The laboratories received the sample in this SDG on ice and within the temperature limits of  $\leq 6$  degrees Celsius ( $^{\circ}\text{C}$ ) and  $> 0^{\circ}\text{C}$ .
- The laboratories received the sample containers intact.
- Field and laboratory personnel signed and dated the COCs.
- Some corrections to the original COCs were initialed but not dated. The cross-outs did not affect data quality.
- Sample containers were transferred to TestAmerica – St. Louis laboratory for all radionuclide analyses. Sample condition upon receipt information was taken from the case narrative.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.





TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination ( $r^2$ ) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



### III. VARIOUS EPA METHODS —RADIONUCLIDES

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E. Wessling of MEC<sup>x</sup> reviewed these SDGs on January 31, 2020

The samples listed in Table 1 for these analyses was validated based on the guidelines outlined in the *EPA Methods 900, 901.1, 903.0, 904.0, 905.0, 906.0 and HASL-300 U Mod* and the *National Functional Guidelines for Inorganic Data Review (2017)*.

#### III.1. HOLDING TIMES:

The samples were received with proper preservation according the laboratory case narrative.

#### III.2. CALIBRATION:

The daily calibrations were acceptable with the following exceptions. The daily calibration for gross alpha was noted with a warning for alpha emitters; therefore, gross alpha in sample OUTFALL009\_20191224\_COMP was qualified as an estimated nondetect (UJ). The daily calibration for Ra-226 was noted with a DOEF for alpha emitters; therefore, Ra-226 in sample OUTFALL002\_20191224\_COMP was qualified as an estimated nondetect (UJ). The daily calibration for gross alpha and Ra-226 were noted with a warning for alpha emitters; therefore, results for gross alpha and Ra-226 in sample OUTFALL008\_20191227\_COMP were qualified as an estimated nondetects (UJ). The detector efficiencies for gross alpha (7.018%) and radium-226 (19.214%) were <20%; therefore, the results for gross alpha and radium-226 were qualified as estimated with a potential negative bias (UJ) in sample OUTFALL002\_20191224\_COMP. The detector efficiency for gross alpha (15.466) was <20%; therefore, the result for gross alpha was qualified as estimated with a potential negative bias (UJ) in sample OUTFALL009\_20191224\_COMP. The detector efficiencies for gross alpha (12.393%) and radium-226 (18.625%) were <20%; therefore, the results for gross alpha and radium-226 were qualified as estimated with a potential negative bias (UJ) in sample OUTFALL002\_20191224\_COMP. All other detector efficiencies were >20% and no further qualifications were required. Carrier/tracer recoveries were within the laboratory control limits.

#### III.3. QUALITY CONTROL SAMPLES

##### III.3.1. METHOD BLANKS

Target isotopes were not detected in the method blanks above the MDA; however, a comparison normalized absolute difference of the sample results and the method blank results indicated the method blank and the sample results were not significantly different at the 1% level of confidence for gross alpha in samples OUTFALL002\_20191224\_COMP and OUTFALL009\_20191224\_COMP. and total uranium in sample OUTFALL008\_20191227\_COMP. The detected sample results for gross alpha, Ra-226 and total uranium were qualified as nondetects (U). A comparison normalized absolute difference of the sample results and the method blank results indicated the method blank and the sample results were not significantly different at the 5% level of confidence for Ra-228 in sample OUTFALL002\_20191224\_COMP, total uranium in sample OUTFALL002\_20191224\_COMP and gross beta in sample OUTFALL009\_20191224\_COMP. The detected sample results for Ra-228 and total uranium were qualified as estimated (J+) in sample OUTFALL002\_20191224\_COMP. The detect for gross beta in sample OUTFALL009\_20191224 was qualified as an estimated detect with a potential negative bias (J-) due to the method blank negative result. No further qualifications were required.

**III.3.2. LABORATORY CONTROL SAMPLES:**

The recoveries were within laboratory-established control limits.

**III.3.3. LABORATORY DUPLICATES:**

Laboratory duplicates were performed on sample OUTFALL009\_20191224\_COMP from this SDG for potassium-40 and cesium-137. The DER was <1 and therefore acceptable.

**III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE:**

Matrix spike (MS)/MSD analyses were performed on sample OUTFALL009\_20191224\_COMP from this SDG for gross alpha, gross beta, Ra-226, Ra-228, strontium-90, tritium and total uranium. All recoveries and DER were acceptable.

**III.4. SAMPLE RESULT VERIFICATION:**

An EPA Level IV review was performed on the sample in this data package. Detected sample results were verified. Reported nondetects are valid to the MDC.

**III.5. FIELD QC SAMPLES:**

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. The following are findings associated with field QC samples:

**III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS:**

This SDG had no identified field blank or equipment blank samples.

**III.5.2. FIELD DUPLICATES:**

There were no field duplicate samples identified for this SDG.

# Validated Sample Result Forms: 4402580773

## Analysis Method E900

Sample Name OUTFALL009\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

Lab Sample Name: 440-258077-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	1.38	0.871	3.00	1.16	pCi/L		U	B, *III, C
Gross Beta Analytes	GROSSBETA	1.56	0.741	4.00	1.04	pCi/L		J-	B

## Analysis Method E901.1

Sample Name OUTFALL009\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

Lab Sample Name: 440-258077-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	-5.64	10.7	20.0	18.1	pCi/L	U	U	
Potassium-40	13966-00-2	-1.92	118	176	176	pCi/L	U	U	

## Analysis Method E903.0

Sample Name OUTFALL009\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

Lab Sample Name: 440-258077-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.0339	0.0881	1.00	0.163	pCi/L	U	U	

## Analysis Method E904.0

Sample Name OUTFALL009\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

Lab Sample Name: 440-258077-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.0271	0.294	1.00	0.529	pCi/L	U	U	

*Analysis Method E905.0*

Sample Name OUTFALL009\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

Lab Sample Name: 440-258077-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.147	0.251	3.00	0.426	pCi/L	U	U	

*Analysis Method E906.0*

Sample Name OUTFALL009\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

Lab Sample Name: 440-258077-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	40.5	157	500	276	pCi/L	U	U	

*Analysis Method HASL-300 U Mod*

Sample Name OUTFALL009\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

Lab Sample Name: 440-258077-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.158	0.322	1.00	0.432	pCi/L	U	U	

*Analysis Method RADIUM*

Sample Name OUTFALL009\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

Lab Sample Name: 440-258077-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226 & 228	13982-63-3	0.529	0.307	1.00	0.163	pCi/L	U	U	

# Validated Sample Result Forms: 4402580853

## Analysis Method E900

Sample Name OUTFALL002\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 8:20:00 AM Validation Level: 8

Lab Sample Name: 440-258085-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	3.41	2.32	3.00	3.29	pCi/L	G	UJ	B, *III
Gross Beta Analytes	GROSSBETA	5.02	1.14	4.00	1.14	pCi/L			

## Analysis Method E901.1

Sample Name OUTFALL002\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 8:20:00 AM Validation Level: 8

Lab Sample Name: 440-258085-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	0.725	8.27	20.0	14.8	pCi/L	U	U	
Potassium-40	13966-00-2	-19.5	165	214	214	pCi/L	U	U	

## Analysis Method E903.0

Sample Name OUTFALL002\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 8:20:00 AM Validation Level: 8

Lab Sample Name: 440-258085-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.302	0.213	1.00	0.303	pCi/L	U	UJ	*III, C

## Analysis Method E904.0

Sample Name OUTFALL002\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 8:20:00 AM Validation Level: 8

Lab Sample Name: 440-258085-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	1.48	0.641	1.00	0.882	pCi/L		J+	B

*Analysis Method E905.0*

Sample Name OUTFALL002\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 8:20:00 AM Validation Level: 8

Lab Sample Name: 440-258085-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.0221	0.345	3.00	0.618	pCi/L	U	U	

*Analysis Method E906.0*

Sample Name OUTFALL002\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 8:20:00 AM Validation Level: 8

Lab Sample Name: 440-258085-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	34.7	159	500	281	pCi/L	U	U	

*Analysis Method HASL-300 U Mod*

Sample Name OUTFALL002\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 8:20:00 AM Validation Level: 8

Lab Sample Name: 440-258085-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	1.31	0.507	1.00	0.395	pCi/L		J+	B

*Analysis Method RADIUM*

Sample Name OUTFALL002\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 8:20:00 AM Validation Level: 8

Lab Sample Name: 440-258085-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226 & 228	13982-63-3	1.48	0.661	1.00	0.303	pCi/L	U	U	



# Validated Sample Result Forms: 4402582272

## Analysis Method E900

Sample Name OUTFALL008\_20191227\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 8:25:00 AM Validation Level: 8

Lab Sample Name: 440-258227-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	1.62	1.18	3.00	1.71	pCi/L	U	UJ	*III, C
Gross Beta Analytes	GROSSBETA	2.78	0.820	4.00	0.968	pCi/L			

## Analysis Method E901.1

Sample Name OUTFALL008\_20191227\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 8:25:00 AM Validation Level: 8

Lab Sample Name: 440-258227-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	2.85	6.80	20.0	11.7	pCi/L	U	U	
Potassium-40	13966-00-2	-82.1	191	238	238	pCi/L	U	U	

## Analysis Method E903.0

Sample Name OUTFALL008\_20191227\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 8:25:00 AM Validation Level: 8

Lab Sample Name: 440-258227-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	-0.0363	0.0715	1.00	0.160	pCi/L	U	UJ	*III, C

## Analysis Method E904.0

Sample Name OUTFALL008\_20191227\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 8:25:00 AM Validation Level: 8

Lab Sample Name: 440-258227-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.228	0.362	1.00	0.609	pCi/L	U	U	

*Analysis Method E905.0*

**Sample Name** OUTFALL008\_20191227\_COMP **Matrix Type:** WM **Result Type:** TRG

**Sample Date:** 12/27/2019 8:25:00 AM **Validation Level:** 8

**Lab Sample Name:** 440-258227-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.0203	0.325	3.00	0.582	pCi/L	U	U	

*Analysis Method E906.0*

**Sample Name** OUTFALL008\_20191227\_COMP **Matrix Type:** WM **Result Type:** TRG

**Sample Date:** 12/27/2019 8:25:00 AM **Validation Level:** 8

**Lab Sample Name:** 440-258227-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	32.9	156	500	276	pCi/L	U	U	

*Analysis Method HASL-300 U Mod*

**Sample Name** OUTFALL008\_20191227\_COMP **Matrix Type:** WM **Result Type:** TRG

**Sample Date:** 12/27/2019 8:25:00 AM **Validation Level:** 8

**Lab Sample Name:** 440-258227-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.465	0.270	1.00	0.222	pCi/L		U	B

*Analysis Method RADIUM*

**Sample Name** OUTFALL008\_20191227\_COMP **Matrix Type:** WM **Result Type:** TRG

**Sample Date:** 12/27/2019 8:25:00 AM **Validation Level:** 8

**Lab Sample Name:** 440-258227-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226 & 228	13982-63-3	0.609	0.368	1.00	0.160	pCi/L	U	U	

## ANALYTICAL REPORT

Eurofins Calscience Irvine  
17461 Derian Ave  
Suite 100  
Irvine, CA 92614-5817  
Tel: (949)261-1022

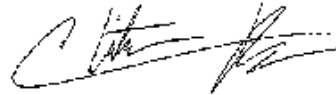
Laboratory Job ID: 440-258077-3

Client Project/Site: Semiannual Outfall 009 Comp

**For:**

Haley & Aldrich, Inc.  
400 E Van Buren St.  
Suite 545  
Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:  
1/23/2020 4:54:57 PM

Christian Bondoc, Project Manager I  
(949)260-3218  
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*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



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Christian Bondoc  
Project Manager I  
1/23/2020 4:54:57 PM



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# Sample Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-258077-1	Outfall009_20191224_Comp	Water	12/24/19 07:35	12/24/19 12:30	

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# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

## Job ID: 440-258077-3

### Laboratory: Eurofins Calscience Irvine

#### Narrative

#### Job Narrative 440-258077-3

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/24/2019 12:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 1.0° C, 1.0° C, 1.0° C, 1.1° C, 1.2° C and 1.3° C.

#### Receipt Exceptions

The reference method requires samples to be preserved to a pH of <2. The following sample(s) was received with insufficient preservation at a pH of 7. The sample(s) was preserved to the appropriate pH in the laboratory, by adding approx. 24mL of HNO3 to each 2.5Gal cubicontainer. For a final pH of <2.

Requested Method: RAD

pH strip: HC902937

HNO3 lot: 1848535

Preserved on 12/27/2019 at 13:00

#### RAD

Method 900.0: Gross Alpha Beta Prep Batch 160-455777

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall009\_20191224\_Comp (440-258077-1), Outfall009\_20191224\_Comp (440-258077-1[MS]), Outfall009\_20191224\_Comp (440-258077-1[MSD]), (LCS 160-455777/2-A), (LCSB 160-455777/3-A), (MB 160-455777/1-A), (440-258077-J-1-I MSBT) and (440-258077-J-1-J MSBTD)

Method 901.1: Gamma Prep Batch 160-455492

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred from    Reported to Analyte

Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Pb-212	Po-216
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224

# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

## Job ID: 440-258077-3 (Continued)

### Laboratory: Eurofins Calscience Irvine (Continued)

U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-211
Th-227	Pb-211
Bi-214	Ra-226

Outfall009\_20191224\_Comp (440-258077-1), (LCS 160-455492/2-A), (MB 160-455492/1-A) and (440-258077-J-1-B DU)

Methods 903.0, 9315: Radium-226 Prep Batch 160-455637

The following sample (240-124138-F-1-C) has a high carrier recovery, outside the upper control limit of 110% (676%), due to high concentrations of that analyte. The data have been reported with this narrative.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall009\_20191224\_Comp (440-258077-1), Outfall009\_20191224\_Comp (440-258077-1[MS]), Outfall009\_20191224\_Comp (440-258077-1[MSD]), (LCS 160-455637/1-A), (MB 160-455637/21-A), (400-181761-A-1-A) and (400-181761-B-1-A DU)

Methods 904.0, 9320: Radium-228 Prep Batch 160-455646

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall009\_20191224\_Comp (440-258077-1), Outfall009\_20191224\_Comp (440-258077-1[MS]), Outfall009\_20191224\_Comp (440-258077-1[MSD]), (LCS 160-455646/1-A), (MB 160-455646/21-A), (400-181761-A-1-B) and (400-181761-B-1-B DU)

Method 905: Strontium-90 Prep Batch 160-455843

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall009\_20191224\_Comp (440-258077-1), Outfall009\_20191224\_Comp (440-258077-1[MS]), Outfall009\_20191224\_Comp (440-258077-1[MSD]), (LCS 160-455843/1-A) and (MB 160-455843/10-A)

Method 906.0: LSC Tritium Prep Batch 160-455651

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall009\_20191224\_Comp (440-258077-1), Outfall009\_20191224\_Comp (440-258077-1[MS]), Outfall009\_20191224\_Comp (440-258077-1[MSD]), (LCS 160-455651/2-A) and (MB 160-455651/1-A)

Method A-01-R: Isotopic Uranium Prep Batch 160-455686

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.



# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

## Job ID: 440-258077-3 (Continued)

### Laboratory: Eurofins Calscience Irvine (Continued)

Outfall009\_20191224\_Comp (440-258077-1), Outfall009\_20191224\_Comp (440-258077-1[MS]), Outfall009\_20191224\_Comp (440-258077-1[MSD]), (LCS 160-455686/2-A) and (MB 160-455686/1-A)

Method ExtChrom: Uranium Prep Batch 160-455686

The following samples were prepared at a reduced aliquot due to a yellow discoloration. Outfall009\_20191224\_Comp (440-258077-1), Outfall009\_20191224\_Comp (440-258077-1[MS]) and Outfall009\_20191224\_Comp (440-258077-1[MSD]). Samples 440-258085-1 and 440-258219-1 was a darker yellow than the other samples and had suspended solids. Sample 440-258227-1 also had suspended solids present.

Method PrecSep\_0: Radium 228 Prep Batch 160-455646:

The following samples were prepared at a reduced aliquot due to discoloration and cloudy appearance: Outfall009\_20191224\_Comp (440-258077-1), Outfall009\_20191224\_Comp (440-258077-1[MS]) and Outfall009\_20191224\_Comp (440-258077-1[MSD]). Samples 240-124138-1 and 280-132306-1 both have a cloudy appearance. Samples 440-258077-1, 440-258077-1MS, 440-258077-1MSD and 440-258085-1 all have a yellow discoloration.

Method PrecSep-21: Radium 226 Prep Batch 160-455637:

The following samples were prepared at a reduced aliquot due to discoloration and cloudy appearance: Outfall009\_20191224\_Comp (440-258077-1), Outfall009\_20191224\_Comp (440-258077-1[MS]) and Outfall009\_20191224\_Comp (440-258077-1[MSD]). Samples 240-124138-1 and 280-132306-1 both have a cloudy appearance. Samples 440-258077-1, 440-258077-1MS, 440-258077-1MSD and 440-258085-1 all have a yellow discoloration.

Method PrecSep-7: Strontium 90 Prep Batch 160-445843:

Sample 258227-1 and samples 258077-1, 1MS, and 1MSD were reduced due to yellow discoloration. Samples 258085-1 and 258219-1 were reduced due to brown discoloration and a cloudy appearance: Outfall009\_20191224\_Comp (440-258077-1), Outfall009\_20191224\_Comp (440-258077-1[MS]) and Outfall009\_20191224\_Comp (440-258077-1[MSD]).

1/8/2020- Samples 440-258077-1, 440-258077-1MS, 440-258077-1MSD, 110-258227-1, 440-258085-1 all had 1-2x smaller pellets than the QC samples at the end of the into-ingrowth process. While decanting the presence of matrix interference was seen in the amount of sediment at the bottom of the beaker.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

**Client Sample ID: Outfall009\_20191224\_Comp**

**Lab Sample ID: 440-258077-1**

Date Collected: 12/24/19 07:35

Matrix: Water

Date Received: 12/24/19 12:30

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	1.38		0.857	0.871	3.00	1.16	pCi/L	01/06/20 07:19	01/12/20 12:23	1
Gross Beta	1.56		0.724	0.741	4.00	1.04	pCi/L	01/06/20 07:19	01/12/20 12:23	1

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Cesium-137	-5.64	U	10.7	10.7	20.0	18.1	pCi/L	12/27/19 17:33	12/28/19 12:36	1
Potassium-40	-1.92	U	118	118		176	pCi/L	12/27/19 17:33	12/28/19 12:36	1

## Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	0.0339	U	0.0881	0.0881	1.00	0.163	pCi/L	12/30/19 12:05	01/21/20 13:51	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	86.4		40 - 110					12/30/19 12:05	01/21/20 13:51	1

## Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-228	0.0271	U	0.294	0.294	1.00	0.529	pCi/L	12/30/19 13:15	01/14/20 16:54	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	86.4		40 - 110					12/30/19 13:15	01/14/20 16:54	1
Y Carrier	90.8		40 - 110					12/30/19 13:15	01/14/20 16:54	1

## Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Strontium-90	0.147	U	0.251	0.251	3.00	0.426	pCi/L	01/07/20 06:20	01/15/20 10:01	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Sr Carrier	66.7		40 - 110					01/07/20 06:20	01/15/20 10:01	1
Y Carrier	95.0		40 - 110					01/07/20 06:20	01/15/20 10:01	1

## Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Tritium	40.5	U	157	157	500	276	pCi/L	12/30/19 13:27	12/31/19 10:03	1

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Total Uranium	0.158	U	0.322	0.322	1.00	0.432	pCi/L	12/30/19 16:10	01/16/20 09:32	1

Eurofins Calscience Irvine

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

**Client Sample ID: Outfall009\_20191224\_Comp**

**Lab Sample ID: 440-258077-1**

**Date Collected: 12/24/19 07:35**

**Matrix: Water**

**Date Received: 12/24/19 12:30**

<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Uranium-232	69.4		30 - 110	12/30/19 16:10	01/16/20 09:32	1

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# Method Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL
Evaporation	Preparation, Evaporation	None	TAL SL
ExtChrom	Preparation, Extraction Chromatography Resin Actinide Separation	None	TAL SL
Fill_Geo-0	Fill Geometry, No In-Growth	None	TAL SL
LSC_Dist_Susp	Distillation and Suspension (LSC)	None	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL
PrecSep-7	Preparation, Precipitate Separation (7-Day In-Growth)	None	TAL SL

#### Protocol References:

DOE = U.S. Department of Energy  
EPA = US Environmental Protection Agency  
None = None

#### Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# Lab Chronicle

Client: Haley & Aldrich, Inc.  
 Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

**Client Sample ID: Outfall009\_20191224\_Comp**

**Lab Sample ID: 440-258077-1**

**Date Collected: 12/24/19 07:35**

**Matrix: Water**

**Date Received: 12/24/19 12:30**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			199.94 mL	1.0 g	455777	01/06/20 07:19	RJD	TAL SL
Total/NA	Analysis	900.0		1	1.0 mL	1.0 mL	456563	01/12/20 12:23	AJD	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	455492	12/27/19 17:33	KLH	TAL SL
Total/NA	Analysis	901.1		1			455514	12/28/19 12:36	KLS	TAL SL
Total/NA	Prep	PrecSep-21			750.37 mL	1.0 g	455637	12/30/19 12:05	RBR	TAL SL
Total/NA	Analysis	903.0		1			457426	01/21/20 13:51	KLS	TAL SL
Total/NA	Prep	PrecSep_0			750.37 mL	1.0 g	455646	12/30/19 13:15	RBR	TAL SL
Total/NA	Analysis	904.0		1			456749	01/14/20 16:54	CJQ	TAL SL
Total/NA	Prep	PrecSep-7			749.7 mL	1.0 g	455843	01/07/20 06:20	MNH	TAL SL
Total/NA	Analysis	905		1			456913	01/15/20 10:01	AJD	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.5 mL	1.0 g	455651	12/30/19 13:27	KNF	TAL SL
Total/NA	Analysis	906.0		1			456022	12/31/19 10:03	JS	TAL SL
Total/NA	Prep	ExtChrom			250.04 mL	1.0 mL	455686	12/30/19 16:10	KLH	TAL SL
Total/NA	Analysis	A-01-R		1			457037	01/16/20 09:32	KRR	TAL SL

**Laboratory References:**

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

**Lab Sample ID: MB 160-455777/1-A**  
**Matrix: Water**  
**Analysis Batch: 456563**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	0.01239	U	0.607	0.607	3.00	1.18	pCi/L	01/06/20 07:19	01/12/20 12:20	1
Gross Beta	-0.2482	U	0.440	0.440	4.00	0.843	pCi/L	01/06/20 07:19	01/12/20 12:20	1

**Lab Sample ID: LCS 160-455777/2-A**  
**Matrix: Water**  
**Analysis Batch: 456563**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Alpha	49.6	48.74		7.33	3.00	1.85	pCi/L	98	75 - 125

**Lab Sample ID: LCSB 160-455777/3-A**  
**Matrix: Water**  
**Analysis Batch: 456567**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Beta	85.0	79.96		8.53	4.00	0.814	pCi/L	94	75 - 125

**Lab Sample ID: 440-258077-1 MS**  
**Matrix: Water**  
**Analysis Batch: 456567**

**Client Sample ID: Outfall009\_20191224\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Alpha	1.38		49.6	41.94		6.03	3.00	1.42	pCi/L	82	60 - 140

**Lab Sample ID: 440-258077-1 MSBT**  
**Matrix: Water**  
**Analysis Batch: 456563**

**Client Sample ID: Outfall009\_20191224\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Beta	1.56		85.0	84.01		8.91	4.00	0.935	pCi/L	97	60 - 140

**Lab Sample ID: 440-258077-1 MSBTD**  
**Matrix: Water**  
**Analysis Batch: 456563**

**Client Sample ID: Outfall009\_20191224\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total	RL	MDC	Unit	%Rec	%Rec.	RER	RER Limit
						Uncert. (2σ+/-)					Limits	0.07	1
Gross Beta	1.56		84.9	82.77		8.79	4.00	0.852	pCi/L	96	60 - 140	0.07	1

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

**Lab Sample ID: 440-258077-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 456563**

**Client Sample ID: Outfall009\_20191224\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 455777**

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER
											RER	Limit	
Gross Alpha	1.38		49.6	47.24		6.58	3.00	1.16	pCi/L	93	60 - 140	0.42	1

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

**Lab Sample ID: MB 160-455492/1-A**  
**Matrix: Water**  
**Analysis Batch: 455513**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 455492**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared		Analyzed		Dil Fac
								Prepared	Analyzed	Prepared	Analyzed	
Cesium-137	-1.425	U	8.05	8.05	20.0	15.0	pCi/L	12/27/19 17:33	12/28/19 11:08			1
Potassium-40	-28.97	U	114	114		177	pCi/L	12/27/19 17:33	12/28/19 11:08			1

**Lab Sample ID: LCS 160-455492/2-A**  
**Matrix: Water**  
**Analysis Batch: 455514**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455492**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
									RER	Limit
Americium-241	136000	128000		14800		429	pCi/L	94	90 - 111	
Cesium-137	44000	43390		4350	20.0	114	pCi/L	99	90 - 111	
Cobalt-60	27300	26900		2670		72.8	pCi/L	99	89 - 110	

**Lab Sample ID: 440-258077-1 DU**  
**Matrix: Water**  
**Analysis Batch: 455510**

**Client Sample ID: Outfall009\_20191224\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 455492**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
										RER	Limit
Cesium-137	-5.64	U	-7.121	U G	13.5	20.0	22.8	pCi/L		0.06	1
Potassium-40	-1.92	U	-13.29	U	122		173	pCi/L		0.05	1

## Method: 903.0 - Radium-226 (GFPC)

**Lab Sample ID: MB 160-455637/21-A**  
**Matrix: Water**  
**Analysis Batch: 457426**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 455637**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared		Analyzed		Dil Fac
								Prepared	Analyzed	Prepared	Analyzed	
Radium-226	-0.03724	U	0.0515	0.0516	1.00	0.124	pCi/L	12/30/19 12:05	01/21/20 15:47			1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>		
Ba Carrier	97.0		40 - 110					12/30/19 12:05	01/21/20 15:47	1		

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

## Method: 903.0 - Radium-226 (GFPC) (Continued)

**Lab Sample ID: LCS 160-455637/1-A**  
**Matrix: Water**  
**Analysis Batch: 457426**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455637**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.3	10.03		1.05	1.00	0.112	pCi/L	88	75 - 125	
<b>Carrier</b>	<b>LCS %Yield</b>	<b>LCS Qualifier</b>	<b>Limits</b>							
Ba Carrier	99.7		40 - 110							

**Lab Sample ID: 440-258077-1 MS**  
**Matrix: Water**  
**Analysis Batch: 457426**

**Client Sample ID: Outfall009\_20191224\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 455637**

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.0339	U	15.1	13.95		1.50	1.00	0.219	pCi/L	92	75 - 138
<b>Carrier</b>	<b>MS %Yield</b>	<b>MS Qualifier</b>	<b>Limits</b>								
Ba Carrier	79.1		40 - 110								

**Lab Sample ID: 440-258077-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 457426**

**Client Sample ID: Outfall009\_20191224\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 455637**

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.0339	U	15.1	14.42		1.54	1.00	0.160	pCi/L	95	75 - 138	0.15	1
<b>Carrier</b>	<b>MSD %Yield</b>	<b>MSD Qualifier</b>	<b>Limits</b>										
Ba Carrier	87.0		40 - 110										

**Lab Sample ID: 400-181761-B-1-A DU**  
**Matrix: Water**  
**Analysis Batch: 457426**

**Client Sample ID: Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 455637**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-226	0.854		0.9704		0.228	1.00	0.160	pCi/L	0.26	1
<b>Carrier</b>	<b>DU %Yield</b>	<b>DU Qualifier</b>	<b>Limits</b>							
Ba Carrier	102		40 - 110							

## Method: 904.0 - Radium-228 (GFPC)

**Lab Sample ID: MB 160-455646/21-A**  
**Matrix: Water**  
**Analysis Batch: 456741**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 455646**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.04520	U	0.223	0.223	1.00	0.394	pCi/L	12/30/19 13:15	01/14/20 16:58	1

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

## Method: 904.0 - Radium-228 (GFPC) (Continued)

Carrier	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Yield	Qualifier				
Ba Carrier	97.0		40 - 110	12/30/19 13:15	01/14/20 16:58	1
Y Carrier	87.8		40 - 110	12/30/19 13:15	01/14/20 16:58	1

**Lab Sample ID: LCS 160-455646/1-A**  
**Matrix: Water**  
**Analysis Batch: 456749**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455646**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits

Carrier	LCS LCS		Limits
	%Yield	Qualifier	
Ba Carrier	99.7		40 - 110
Y Carrier	89.3		40 - 110

**Lab Sample ID: 440-258077-1 MS**  
**Matrix: Water**  
**Analysis Batch: 456749**

**Client Sample ID: Outfall009\_20191224\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 455646**

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits

Carrier	MS MS		Limits
	%Yield	Qualifier	
Ba Carrier	79.1		40 - 110
Y Carrier	87.5		40 - 110

**Lab Sample ID: 440-258077-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 456749**

**Client Sample ID: Outfall009\_20191224\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 455646**

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit

Carrier	MSD MSD		Limits
	%Yield	Qualifier	
Ba Carrier	87.0		40 - 110
Y Carrier	87.5		40 - 110

**Lab Sample ID: 400-181761-B-1-B DU**  
**Matrix: Water**  
**Analysis Batch: 456749**

**Client Sample ID: Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 455646**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit

Carrier	DU DU		Limits
	%Yield	Qualifier	
Ba Carrier	102		40 - 110
Y Carrier	88.7		40 - 110

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

## Method: 905 - Strontium-90 (GFPC)

**Lab Sample ID: MB 160-455843/10-A**  
**Matrix: Water**  
**Analysis Batch: 456913**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 455843**

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Strontium-90	-0.05834	U	0.268	0.268	3.00	0.482	pCi/L	01/07/20 06:20	01/15/20 10:02	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Sr Carrier	85.9		40 - 110		01/07/20 06:20	01/15/20 10:02	1			
Y Carrier	91.2		40 - 110		01/07/20 06:20	01/15/20 10:02	1			

**Lab Sample ID: LCS 160-455843/1-A**  
**Matrix: Water**  
**Analysis Batch: 456913**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455843**

Analyte	Spike Added	LCS	LCS	Total	RL	MDC	Unit	%Rec	%Rec. Limits
		Result	Qual	Uncert. (2σ+/-)					
Strontium-90	10.6	8.906		0.945	3.00	0.327	pCi/L	84	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Sr Carrier	96.9		40 - 110						
Y Carrier	96.8		40 - 110						

**Lab Sample ID: 440-258077-1 MS**  
**Matrix: Water**  
**Analysis Batch: 456913**

**Client Sample ID: Outfall009\_20191224\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 455843**

Analyte	Sample	Sample	Spike	MS	MS	Total	RL	MDC	Unit	%Rec	%Rec. Limits
	Result	Qual	Added	Result	Qual	Uncert. (2σ+/-)					
Strontium-90	0.147	U	10.6	10.38		1.21	3.00	0.501	pCi/L	97	19 - 150
Carrier	MS %Yield	MS Qualifier	Limits								
Sr Carrier	59.4		40 - 110								
Y Carrier	92.3		40 - 110								

**Lab Sample ID: 440-258077-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 456913**

**Client Sample ID: Outfall009\_20191224\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 455843**

Analyte	Sample	Sample	Spike	MSD	MSD	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
	Result	Qual	Added	Result	Qual	Uncert. (2σ+/-)							
Strontium-90	0.147	U	10.6	10.34		1.15	3.00	0.477	pCi/L	96	19 - 150	0.02	1
Carrier	MSD %Yield	MSD Qualifier	Limits										
Sr Carrier	70.6		40 - 110										
Y Carrier	95.3		40 - 110										

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

## Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-455651/1-A  
Matrix: Water  
Analysis Batch: 456022

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 455651

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-49.55	U	149	149	500	280	pCi/L	12/30/19 13:27	12/31/19 09:18	1

Lab Sample ID: LCS 160-455651/2-A  
Matrix: Water  
Analysis Batch: 456022

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 455651

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2510	2646		413	500	286	pCi/L	105	75 - 114

Lab Sample ID: 440-258077-1 MS  
Matrix: Water  
Analysis Batch: 456022

Client Sample ID: Outfall009\_20191224\_Comp  
Prep Type: Total/NA  
Prep Batch: 455651

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	40.5	U	2510	2556		410	500	294	pCi/L	100	67 - 130

Lab Sample ID: 440-258077-1 MSD  
Matrix: Water  
Analysis Batch: 456022

Client Sample ID: Outfall009\_20191224\_Comp  
Prep Type: Total/NA  
Prep Batch: 455651

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	40.5	U	2500	2430		391	500	279	pCi/L	95	67 - 130	0.16	1

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-455686/1-A  
Matrix: Water  
Analysis Batch: 457035

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 455686

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.2103		0.180	0.181	1.00	0.182	pCi/L	12/30/19 16:10	01/16/20 09:32	1

Tracer	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	83.2		30 - 110	12/30/19 16:10	01/16/20 09:32	1

Lab Sample ID: LCS 160-455686/2-A  
Matrix: Water  
Analysis Batch: 457036

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 455686

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	25.5	24.59		2.97	1.00	0.329	pCi/L	97	75 - 125
Uranium-238	26.0	25.84		3.08	1.00	0.309	pCi/L	99	75 - 125

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

**Lab Sample ID: LCS 160-455686/2-A**  
**Matrix: Water**  
**Analysis Batch: 457036**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455686**

<i>Tracer</i>	<i>LCS LCS</i>		<i>Limits</i>
	<i>%Yield</i>	<i>Qualifier</i>	
<i>Uranium-232</i>	60.6		30 - 110

**Lab Sample ID: 440-258077-1 MS**  
**Matrix: Water**  
**Analysis Batch: 457038**

**Client Sample ID: Outfall009\_20191224\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 455686**

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qual</i>	<i>Spike Added</i>	<i>MS Result</i>	<i>MS Qual</i>	<i>Total Uncert. (2σ+/-)</i>	<i>RL</i>	<i>MDC</i>	<i>Unit</i>	<i>%Rec</i>	<i>%Rec. Limits</i>	
Uranium-234	0.128	U	25.5	23.28		2.86	1.00	0.424	pCi/L	91	65 - 146	
Uranium-238	0.0960	U	26.0	25.85		3.09	1.00	0.349	pCi/L	99	68 - 143	

<i>Tracer</i>	<i>MS MS</i>		<i>Limits</i>
	<i>%Yield</i>	<i>Qualifier</i>	
<i>Uranium-232</i>	61.7		30 - 110

**Lab Sample ID: 440-258077-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 457042**

**Client Sample ID: Outfall009\_20191224\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 455686**

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qual</i>	<i>Spike Added</i>	<i>MSD Result</i>	<i>MSD Qual</i>	<i>Total Uncert. (2σ+/-)</i>	<i>RL</i>	<i>MDC</i>	<i>Unit</i>	<i>%Rec</i>	<i>%Rec. Limits</i>		<i>RER</i>	<i>RER Limit</i>
Uranium-234	0.128	U	25.5	23.64		2.93	1.00	0.446	pCi/L	92	65 - 146	0.06	1	
Uranium-238	0.0960	U	26.0	24.68		3.02	1.00	0.367	pCi/L	94	68 - 143	0.19	1	

<i>Tracer</i>	<i>MSD MSD</i>		<i>Limits</i>
	<i>%Yield</i>	<i>Qualifier</i>	
<i>Uranium-232</i>	68.1		30 - 110

# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

## Rad

### Prep Batch: 455492

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-455492/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-455492/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-258077-1 DU	Outfall009_20191224_Comp	Total/NA	Water	Fill_Geo-0	

### Prep Batch: 455637

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	PrecSep-21	
MB 160-455637/21-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-455637/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-258077-1 MS	Outfall009_20191224_Comp	Total/NA	Water	PrecSep-21	
440-258077-1 MSD	Outfall009_20191224_Comp	Total/NA	Water	PrecSep-21	
400-181761-B-1-A DU	Duplicate	Total/NA	Water	PrecSep-21	

### Prep Batch: 455646

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	PrecSep_0	
MB 160-455646/21-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-455646/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-258077-1 MS	Outfall009_20191224_Comp	Total/NA	Water	PrecSep_0	
440-258077-1 MSD	Outfall009_20191224_Comp	Total/NA	Water	PrecSep_0	
400-181761-B-1-B DU	Duplicate	Total/NA	Water	PrecSep_0	

### Prep Batch: 455651

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-455651/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-455651/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-258077-1 MS	Outfall009_20191224_Comp	Total/NA	Water	LSC_Dist_Susp	
440-258077-1 MSD	Outfall009_20191224_Comp	Total/NA	Water	LSC_Dist_Susp	

### Prep Batch: 455686

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	ExtChrom	
MB 160-455686/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-455686/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-258077-1 MS	Outfall009_20191224_Comp	Total/NA	Water	ExtChrom	
440-258077-1 MSD	Outfall009_20191224_Comp	Total/NA	Water	ExtChrom	

### Prep Batch: 455777

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	Evaporation	
MB 160-455777/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-455777/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-455777/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-258077-1 MS	Outfall009_20191224_Comp	Total/NA	Water	Evaporation	
440-258077-1 MSBT	Outfall009_20191224_Comp	Total/NA	Water	Evaporation	
440-258077-1 MSBTD	Outfall009_20191224_Comp	Total/NA	Water	Evaporation	
440-258077-1 MSD	Outfall009_20191224_Comp	Total/NA	Water	Evaporation	

# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

## Rad

### Prep Batch: 455843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	PrecSep-7	
MB 160-455843/10-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-455843/1-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-258077-1 MS	Outfall009_20191224_Comp	Total/NA	Water	PrecSep-7	
440-258077-1 MSD	Outfall009_20191224_Comp	Total/NA	Water	PrecSep-7	

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# Definitions/Glossary

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

## Qualifiers

### Rad

Qualifier	Qualifier Description
G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.  
 Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

## Laboratory: Eurofins Calscience Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State Program	CA ELAP 2706	06-30-20

## Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-20
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Illinois	NELAP	004553	11-30-19 *
Iowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-20
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-20
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
West Virginia DEP	State	381	10-31-20

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.



CHAIN OF CUSTODY FORM

Test America

<p>Client Name/Address: Haley &amp; Aldrich, Inc. 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Unvashi Patel Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9056</p>		<p>Project: Boeing-SSFL NPDES Permit 2019 Semiannual Outfall 003-007, 008, 010 Outfall 009 Comp</p>		<p>ANALYSIS REQUIRED</p>										<p>Comments</p>				
<p>Project Manager: Katherine Miller 520 289 8606; 520 904 6944 (cell)</p>		<p>Field Manager: Mark Dominick 978.234.6033; 818.598.0702 (cell)</p>		<p>Total Recoverable Metals (E200) Ag, Cd, Cu, Pb, Sb, Se, Tl</p>	<p>TDS (SM2540C/160 1)</p>	<p>Total Dissolved Metals (E200) Ni, Zn</p>	<p>Gross Alpha (E300), Gross Beta (E300), Tritium (E300), Sr-90 (E905), Total Combined Radium 226 (E903 or E903 1) &amp; Radium 228 (E904), Uranium (E908), K-40, Cs-137 (E901 or E901 1)</p>	<p>Cyanide (SMA500-CNE / E335 2)</p>	<p>Chronic Toxicity - Selenium (EPA 821-R-02-013)</p>	<p>Total Dissolved Metals Mercury (E245 1)</p>	<p>TSS (160 2 (SM2540D))</p>	<p>48 hours Holding Time NO<sub>3</sub> &amp; NO<sub>2</sub></p>	<p>Unfiltered and unprecipitated analysis. Separate RAD onto another work order. Analyze duplicate, not MSMSD</p>	<p>Filter and preserve within 24hrs of receipt at lab Samples receiving DO NOT OPEN BIAS BAG TO BE OPENED in Mercury Prep using clean procedures</p>				
Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont	Preservative	Bottle #	MSMSD	Total Recoverable Metals (E200) Ag, Cd, Cu, Pb, Sb, Se, Tl	TDS (SM2540C/160 1)	Total Dissolved Metals (E200) Ni, Zn	Gross Alpha (E300), Gross Beta (E300), Tritium (E300), Sr-90 (E905), Total Combined Radium 226 (E903 or E903 1) & Radium 228 (E904), Uranium (E908), K-40, Cs-137 (E901 or E901 1)	Cyanide (SMA500-CNE / E335 2)	Chronic Toxicity - Selenium (EPA 821-R-02-013)	Total Dissolved Metals Mercury (E245 1)	TSS (160 2 (SM2540D))	Comments	
Outfall009_20191224_Comp		12/24/2019 16:35	WM	500 mL Poly	3	HNO <sub>3</sub>	85	Yes	X						X			
Outfall009_20191224_Comp_F		12/24/2019 16:35	WM	1.1 Glass Amber	2	None	110	No	X									
Outfall009_20191224_Comp_Extra		12/24/2019 16:35	WM	500 mL Poly	6	None	140	Yes										
			WM	500 mL Poly	1	None	165	No		X								
			WM	500 mL Poly	3	NaOH	220	Yes					X					
			WM	2.5 Gal Cube	3	None	225	Yes										
			WM	1.1 Glass Amber	3	None	230	Yes										
			WM	1 Gal Cube	6	None	235	No										
			WM	1.1 Poly	1	None	165	No										
			WM	1.1 Poly	3	None	205	Yes			X							
			WM	borealcate vial	3	None	320	Yes										
			WM	1.1 Glass Amber	2	None	110	No										
			WM	500 mL Poly	2	None	145	No										

Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quarterly, QRSW=Quarterly Receiving Water, S=Semi-Annual

Relinquished By: *[Signature]* Date/Time: 12-24-19/16:15 Company: TARRU  
 Relinquished By: *[Signature]* Date/Time: 12/24/19 Company: TARRU  
 Relinquished By: *[Signature]* Date/Time: 12/24/19 Company: TARRU

Received By: *[Signature]* Date/Time: 12/24/19 10:15  
 Received By: *[Signature]* Date/Time: 12/24/19 12:30  
 Received By: *[Signature]* Date/Time: 12/24/19 12:30

Turn-around time (Check): 24 Hour  72 Hour  10 Day   
 48 Hour  5 Day  Normal

Sample Integrity (Check): Intact  On Ice   
 Store samples for 6 months Data Requirements (Check): No Level IV  All Level IV



440-258077 Chain of Custody

12/24/19

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# Chain of Custody Record



Environment Testing  
 TestAmerica



<b>Client Information (Sub Contract Lab)</b>		Lab PM: Patel, Urvashti		Carrier Tracking No(s): 440-150575.1										
Client Contact: Shipping/Receiving		E-Mail: urvashti.patel@testamericainc.com		Page: 1 of 1										
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - California		Job #: 440-258077-1										
Address: 13715 Rider Trail North, Earth City, MO, 63045		Due Date Requested: 1/7/2020		Preservation Codes:										
Phone: 314-298-8566(Tel) 314-298-8757(Fax)		TAT Requested (days):		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:										
Project Name: Boeing NPDES SSFL outfalls		Project #: 44009879		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acelone V - MCAA W - pH 4-5 Z - other (specify)										
Site:		SSOW#:		Total Number of containers										
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=organic, I=Inorganic)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	A01R_U/ExtChrom_Actin Total Uranium	900.0/Evaporation Gross Alpha/Beta	903.0/PreSep_21 Radium-226	904.0/PreSep_0 Radium-228	905.5/PreSep_7 Strontium-90	906.0/LSC_Dist_Susp Tritium	Special Instructions/Note:
Outfall009_20191224_Comp (440-258077-1)		12/24/19	07:35 Pacific	Water	Water	X	X	X	X	X	X	X	X	Boeing SSFL; DO NOT FILTER; use prep date from preservation
Outfall009_20191224_Comp (440-258077-1MS)		12/24/19	07:35 Pacific	MS	Water	X	X	X	X	X	X	X	X	Boeing SSFL; DO NOT FILTER; use prep date from preservation
Outfall009_20191224_Comp (440-258077-1MSD)		12/24/19	07:35 Pacific	MSD	Water	X	X	X	X	X	X	X	X	Boeing SSFL; DO NOT FILTER; use prep date from preservation
<p>Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte &amp; accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.</p>														
<p><b>Possible Hazard Identification</b>                  Unconfirmed                  Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2                  Empty Kit Relinquished by: _____ Date: _____ Time: _____                  Relinquished by: _____ Date/Time: 12/24/19 17:00 Company: FARV                  Relinquished by: _____ Date/Time: _____ Company: _____                  Relinquished by: _____ Date/Time: _____ Company: _____                  Custody Seals Intact: _____ Custody Seal No.: _____                  Δ Yes Δ No Cooler Temperature(s) °C and Other Remarks:</p>														



## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-258077-3

SDG Number:

**Login Number: 258077**

**List Number: 1**

**Creator: Soderblom, Tim**

**List Source: Eurofins Irvine**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-258077-3

SDG Number:

**Login Number: 258077**

**List Number: 2**

**Creator: Hellm, Michael**

**List Source: Eurofins TestAmerica, St. Louis**

**List Creation: 12/27/19 12:57 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.1
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-258077-3

SDG Number:

**Login Number: 258077**

**List Number: 3**

**Creator: Hellm, Michael**

**List Source: Eurofins TestAmerica, St. Louis**

**List Creation: 12/27/19 01:02 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.1
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

## Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	
400-181761-B-1-A DU	Duplicate	102	
440-258077-1	Outfall009_20191224_Comp	86.4	
440-258077-1 MS	Outfall009_20191224_Comp	79.1	
440-258077-1 MSD	Outfall009_20191224_Comp	87.0	
LCS 160-455637/1-A	Lab Control Sample	99.7	
MB 160-455637/21-A	Method Blank	97.0	

### Tracer/Carrier Legend

Ba Carrier = Ba Carrier

## Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
400-181761-B-1-B DU	Duplicate	102	88.7
440-258077-1	Outfall009_20191224_Comp	86.4	90.8
440-258077-1 MS	Outfall009_20191224_Comp	79.1	87.5
440-258077-1 MSD	Outfall009_20191224_Comp	87.0	87.5
LCS 160-455646/1-A	Lab Control Sample	99.7	89.3
MB 160-455646/21-A	Method Blank	97.0	87.8

### Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Y Carrier = Y Carrier

## Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Sr Carrier (40-110)	Y Carrier (40-110)
440-258077-1	Outfall009_20191224_Comp	66.7	95.0
440-258077-1 MS	Outfall009_20191224_Comp	59.4	92.3
440-258077-1 MSD	Outfall009_20191224_Comp	70.6	95.3
LCS 160-455843/1-A	Lab Control Sample	96.9	96.8
MB 160-455843/10-A	Method Blank	85.9	91.2

### Tracer/Carrier Legend

Sr Carrier = Sr Carrier

Y Carrier = Y Carrier

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	uranium-23 (30-110)	
440-258077-1	Outfall009_20191224_Comp	69.4	
440-258077-1 MS	Outfall009_20191224_Comp	61.7	
440-258077-1 MSD	Outfall009_20191224_Comp	68.1	

# Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

**Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)**

**Matrix: Water**

**Prep Type: Total/NA**

## Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Uranium-232 (30-110)
LCS 160-455686/2-A	Lab Control Sample	60.6
MB 160-455686/1-A	Method Blank	83.2

### Tracer/Carrier Legend

Uranium-232 = Uranium-232

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## ANALYTICAL REPORT

Eurofins Calscience Irvine  
17461 Derian Ave  
Suite 100  
Irvine, CA 92614-5817  
Tel: (949)261-1022

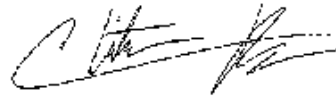
Laboratory Job ID: 440-258025-1

Client Project/Site: Quarterly Arroyo Simi-Frontier Park Dry  
Revision: 3

**For:**

Haley & Aldrich, Inc.  
400 E Van Buren St.  
Suite 545  
Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:  
1/29/2020 12:19:11 PM

Christian Bondoc, Project Manager I  
(949)260-3218  
[christian.bondoc@testamericainc.com](mailto:christian.bondoc@testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



---

Christian Bondoc  
Project Manager I  
1/29/2020 12:19:11 PM



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# Sample Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Arroyo Simi-Frontier Park Dry

Job ID: 440-258025-1

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-258025-1	Arroyo_Simi_20191223_Grab	Water	12/23/19 08:00	12/23/19 16:05	

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# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Arroyo Simi-Frontier Park Dry

Job ID: 440-258025-1

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## Job ID: 440-258025-1

---

### Laboratory: Eurofins Calscience Irvine

#### Narrative

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#### Job Narrative 440-258025-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/23/2019 4:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 3.8° C and 4.1° C.

#### GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Subcontract Work

Method 608\_LL-PCB- Lancaster Labs: This method was subcontracted to Eurofins Lancaster Laboratories Env LLC. The subcontract laboratory certification is different from that of the facility issuing the final report.

Method Weck- 525.2: This method was subcontracted to Weck Laboratories, Inc.. The subcontract laboratory certification is different from that of the facility issuing the final report.

# Client Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Arroyo Simi-Frontier Park Dry

Job ID: 440-258025-1

**Client Sample ID: Arroyo\_Simi\_20191223\_Grab**

**Lab Sample ID: 440-258025-1**

**Date Collected: 12/23/19 08:00**

**Matrix: Water**

**Date Received: 12/23/19 16:05**

**Method: 608.3 - Organochlorine Pesticides in Water**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	ND		0.11	0.089	ug/L		12/26/19 05:32	12/26/19 13:50	1
4,4'-DDD	ND		0.0056	0.0044	ug/L		12/26/19 05:32	12/26/19 13:50	1
4,4'-DDE	ND		0.0056	0.0033	ug/L		12/26/19 05:32	12/26/19 13:50	1
4,4'-DDT	ND		0.011	0.0044	ug/L		12/26/19 05:32	12/26/19 13:50	1
Dieldrin	ND		0.0056	0.0022	ug/L		12/26/19 05:32	12/26/19 13:50	1
Toxaphene	ND		0.56	0.27	ug/L		12/26/19 05:32	12/26/19 13:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	56		10 - 104	12/26/19 05:32	12/26/19 13:50	1

**Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	100		0.33	0.17	mg/L			01/06/20 11:28	1

# Method Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Arroyo Simi-Frontier Park Dry

Job ID: 440-258025-1

Method	Method Description	Protocol	Laboratory
608.3	Organochlorine Pesticides in Water	40CFR136A	TAL IRV
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL IRV
Subcontract	608_LL-PCB- Lancaster Labs	None	SC0103
Subcontract	Weck- 525.2	None	Weck Lab
608	Liquid-Liquid Extraction (Separatory Funnel)	40CFR136A	TAL IRV

#### Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

#### Laboratory References:

SC0103 = Eurofins Lancaster Laboratories Env LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Weck Lab = Weck Laboratories, Inc., 14859 East Clark Avenue, City of Industry, CA 917451396

# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Arroyo Simi-Frontier Park Dry

Job ID: 440-258025-1

**Client Sample ID: Arroyo\_Simi\_20191223\_Grab**

**Lab Sample ID: 440-258025-1**

**Date Collected: 12/23/19 08:00**

**Matrix: Water**

**Date Received: 12/23/19 16:05**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	608			900 mL	2 mL	587899	12/26/19 05:32	L1H	TAL IRV
Total/NA	Analysis	608.3		1			587976	12/26/19 13:50	D1D	TAL IRV
Total Recoverable	Analysis	SM 2340B		1			587445	01/06/20 11:28	P1R	TAL IRV

## Laboratory References:

SC0103 = Eurofins Lancaster Laboratories Env LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Weck Lab = Weck Laboratories, Inc., 14859 East Clark Avenue, City of Industry, CA 917451396



# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Quarterly Arroyo Simi-Frontier Park Dry

Job ID: 440-258025-1

## Method: 608.3 - Organochlorine Pesticides in Water

**Lab Sample ID: MB 440-587899/1-A**  
**Matrix: Water**  
**Analysis Batch: 587976**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 587899**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	ND		0.10	0.080	ug/L		12/26/19 05:32	12/26/19 12:42	1
4,4'-DDD	ND		0.0050	0.0040	ug/L		12/26/19 05:32	12/26/19 12:42	1
4,4'-DDE	ND		0.0050	0.0030	ug/L		12/26/19 05:32	12/26/19 12:42	1
4,4'-DDT	ND		0.010	0.0040	ug/L		12/26/19 05:32	12/26/19 12:42	1
Dieldrin	ND		0.0050	0.0020	ug/L		12/26/19 05:32	12/26/19 12:42	1
Toxaphene	ND		0.50	0.24	ug/L		12/26/19 05:32	12/26/19 12:42	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	57		10 - 104	12/26/19 05:32	12/26/19 12:42	1

**Lab Sample ID: LCS 440-587899/2-A**  
**Matrix: Water**  
**Analysis Batch: 587976**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 587899**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
4,4'-DDD	0.400	0.348		ug/L		87	31 - 141
4,4'-DDE	0.400	0.300		ug/L		75	30 - 145
4,4'-DDT	0.400	0.314		ug/L		79	25 - 160
Dieldrin	0.400	0.320		ug/L		80	36 - 146

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Tetrachloro-m-xylene	61		10 - 104

**Lab Sample ID: 440-258025-1 MS**  
**Matrix: Water**  
**Analysis Batch: 587976**

**Client Sample ID: Arroyo\_Simi\_20191223\_Grab**  
**Prep Type: Total/NA**  
**Prep Batch: 587899**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
4,4'-DDD	ND		0.421	0.370		ug/L		88	31 - 141
4,4'-DDE	ND		0.421	0.330		ug/L		78	30 - 145
4,4'-DDT	ND		0.421	0.363		ug/L		86	25 - 160
Dieldrin	ND		0.421	0.364		ug/L		86	36 - 146

Surrogate	MS %Recovery	MS Qualifier	Limits
Tetrachloro-m-xylene	63		10 - 104

**Lab Sample ID: 440-258025-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 587976**

**Client Sample ID: Arroyo\_Simi\_20191223\_Grab**  
**Prep Type: Total/NA**  
**Prep Batch: 587899**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
4,4'-DDD	ND		0.430	0.381		ug/L		89	31 - 141	8	39
4,4'-DDE	ND		0.430	0.336		ug/L		78	30 - 145	2	35
4,4'-DDT	ND		0.430	0.378		ug/L		88	25 - 160	4	42
Dieldrin	ND		0.430	0.372		ug/L		87	36 - 146	2	49

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Arroyo Simi-Frontier Park Dry

Job ID: 440-258025-1

## Method: 608.3 - Organochlorine Pesticides in Water (Continued)

Lab Sample ID: 440-258025-1 MSD  
Matrix: Water  
Analysis Batch: 587976

Client Sample ID: Arroyo\_Simi\_20191223\_Grab  
Prep Type: Total/NA  
Prep Batch: 587899

<i>Surrogate</i>	<i>MSD</i>	<i>MSD</i>	<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
<i>Tetrachloro-m-xylene</i>	62		10 - 104

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Arroyo Simi-Frontier Park Dry

Job ID: 440-258025-1

## GC Semi VOA

### Prep Batch: 587899

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258025-1	Arroyo_Simi_20191223_Grab	Total/NA	Water	608	
MB 440-587899/1-A	Method Blank	Total/NA	Water	608	
LCS 440-587899/2-A	Lab Control Sample	Total/NA	Water	608	
440-258025-1 MS	Arroyo_Simi_20191223_Grab	Total/NA	Water	608	
440-258025-1 MSD	Arroyo_Simi_20191223_Grab	Total/NA	Water	608	

### Analysis Batch: 587976

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258025-1	Arroyo_Simi_20191223_Grab	Total/NA	Water	608.3	587899
MB 440-587899/1-A	Method Blank	Total/NA	Water	608.3	587899
LCS 440-587899/2-A	Lab Control Sample	Total/NA	Water	608.3	587899
440-258025-1 MS	Arroyo_Simi_20191223_Grab	Total/NA	Water	608.3	587899
440-258025-1 MSD	Arroyo_Simi_20191223_Grab	Total/NA	Water	608.3	587899

## Metals

### Analysis Batch: 587445

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258025-1	Arroyo_Simi_20191223_Grab	Total Recoverable	Water	SM 2340B	

# Definitions/Glossary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Arroyo Simi-Frontier Park Dry

Job ID: 440-258025-1

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Quarterly Arroyo Simi-Frontier Park Dry

Job ID: 440-258025-1

## Laboratory: Eurofins Calscience Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State Program	CA ELAP 2706	06-30-20

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**Work Orders:** 9L23123

**Project:** Quarterly Arroyo Simi-Fronter Park Dry Weather

**Attn:** TestAmerica, Irvine

**Client:** Eurofins Calscience - Irvine  
17461 Derian Ave, Suite 100  
Irvine, CA 92614

**Report Date:** 1/13/2020  
**Received Date:** 12/23/2019  
**Turnaround Time:** 1 workday  
**Phones:** (949) 261-1022  
**Fax:** (949) 260-3297  
**P.O. #:**  
**Billing Code:**

Dear TestAmerica, Irvine,

Enclosed are the results of analyses for samples received 12/23/19 with the Chain-of-Custody document. The samples were received in good condition, at 5.1 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

## Sample Results

Sample: Arroyo\_Simi\_20191223\_Grab 9L23123-01 (Water) Sampled: 12/23/19 8:00 by Client

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Method:</b> EPA 525.2M	<b>Batch ID:</b> W9L1504	<b>Instr:</b> GCMS13	<b>Prepared:</b> 12/27/19 11:09			<b>Analyst:</b> EFC	
Chlorpyrifos	ND	34	50	ng/l	1	01/08/20	M-02
Diazinon	ND	26	50	ng/l	1	01/08/20	M-02
<i>Surrogate(s)</i>							
1,3-Dimethyl-2-nitrobenzene	8%		76-128	Conc: 209		01/08/20	M-02, S-GC
Triphenyl phosphate	112%		40-163	Conc: 2790		01/08/20	M-02



WECK LABORATORIES, INC.

# Certificate of Analysis

FINAL REPORT

## Quality Control Results

Semivolatile Organics - Low Level by Tandem GC/MS/MS

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Qualifier
<b>Blank (W9L1504-BLK1)</b>					Prepared: 12/27/19 Analyzed: 01/08/20						
Chlorpyrifos	ND	6.9	10	ng/l							
Diazinon	ND	5.2	10	ng/l							
<i>Surrogate(s)</i>											
1,3-Dimethyl-2-nitrobenzene	533			ng/l	500		107	76-128			
Triphenyl phosphate	513			ng/l	500		103	40-163			
<b>LCS (W9L1504-BS1)</b>					Prepared: 12/27/19 Analyzed: 01/08/20						
Chlorpyrifos	69.4	6.9	10	ng/l	50.0		139	37-169			
Diazinon	53.0	5.2	10	ng/l	50.0		106	43-152			
<i>Surrogate(s)</i>											
1,3-Dimethyl-2-nitrobenzene	551			ng/l	500		110	76-128			
Triphenyl phosphate	500			ng/l	500		100	40-163			
<b>Matrix Spike (W9L1504-MS1)</b>					Source: 9L23123-01 Prepared: 12/27/19 Analyzed: 01/08/20						
Chlorpyrifos	452	34	50	ng/l	250	ND	181	37-168			M-02, MS-05
Diazinon	315	26	50	ng/l	250	ND	126	36-153			M-02
<i>Surrogate(s)</i>											
1,3-Dimethyl-2-nitrobenzene	2750			ng/l	2500		110	76-128			M-02
Triphenyl phosphate	2710			ng/l	2500		109	40-163			M-02
<b>Matrix Spike Dup (W9L1504-MSD1)</b>					Source: 9L23123-01 Prepared: 12/27/19 Analyzed: 01/08/20						
Chlorpyrifos	365	34	50	ng/l	250	ND	146	37-168	21	30	M-02
Diazinon	268	26	50	ng/l	250	ND	107	36-153	16	30	M-02
<i>Surrogate(s)</i>											
1,3-Dimethyl-2-nitrobenzene	2730			ng/l	2500		109	76-128			M-02
Triphenyl phosphate	2700			ng/l	2500		108	40-163			M-02



WECK LABORATORIES, INC.

# Certificate of Analysis

FINAL REPORT

## Notes and Definitions

Item	Definition
M-02	Due to the nature of matrix interferences, sample was diluted prior to preparation. The MDL and MRL were raised due to the dilution.
MS-05	The spike recovery and/or RPD were outside acceptance limits for the MS and/or MSD due to possible matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
S-GC	Surrogate recovery outside of control limits due to a possible matrix effect. The data was accepted based on valid recovery of the remaining surrogate.
% Rec	Percent Recovery
Dil	Dilution
dry	Sample results reported on a dry weight basis
MDA	Minimum Detectable Activity
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
NR	Not Reportable
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

### Reviewed by:

Regina Giancola  
Project Manager



ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO17025 ANAB #L2457.01 • LACSD #10143 •  
NELAP-CA #04229CA • NELAP-OR #4047 • NJ-DEP #CA015 • NV-DEP #NAC 445A • SCAQMD #93LA1006

*This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.*





## ANALYSIS REPORT

Prepared by:

Eurofins Lancaster Laboratories Environmental  
2425 New Holland Pike  
Lancaster, PA 17601

Prepared for:

Test America  
17461 Derian Ave  
Suite #100  
Irvine CA 92614

Report Date: January 06, 2020 21:19

**Project: Boeing-SSFL NPDES Permit 2015**

Account #: 41440  
Group Number: 2080938  
SDG: SSF16  
PO Number: 44009879  
State of Sample Origin: CA

Electronic Copy To Test America

Attn: Urvashi Patel

Respectfully Submitted,



Kay Hower

(717) 556-7364

To view our laboratory's current scopes of accreditation please go to <https://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/certifications-and-accreditations-eurofins-lancaster-laboratories-environmental/> . Historical copies may be requested through your project manager.



### SAMPLE INFORMATION

<u>Client Sample Description</u>	<u>Sample Collection Date/Time</u>	<u>ELLE#</u>
Arroyo_Simi_20191223_Grab (440-258025-1) Grab	12/23/2019 08:00	1231035
Arroyo_Simi_20191223_Grab (440-258025-1MS) Grab	12/23/2019 08:00	1231036
Arroyo_Simi_20191223_Grab (440-258025-1MSD) Grab	12/23/2019 08:00	1231037

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

**Sample Description:** Arroyo\_Simi\_20191223\_Grab (440-258025-1) Grab  
Water  
Boeing-SSFL NPDES Permit 2015

Test America  
ELLE Sample #: WW 1231035  
ELLE Group #: 2080938  
Matrix: Water

**Project Name:** Boeing-SSFL NPDES Permit 2015

Submittal Date/Time: 12/27/2019 09:58  
Collection Date/Time: 12/23/2019 08:00  
SDG#: SSF16-01BKG

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
<b>PCBs</b>		<b>EPA 608</b>	<b>ug/l</b>	<b>ug/l</b>	<b>ug/l</b>	
06030	PCB-1016	12674-11-2	N.D. D1	0.10	0.50	1
06030	PCB-1221	11104-28-2	N.D. D1	0.10	0.50	1
06030	PCB-1232	11141-16-5	N.D. D1	0.10	0.50	1
06030	PCB-1242	53469-21-9	N.D. D1	0.10	0.50	1
06030	PCB-1248	12672-29-6	N.D. D1	0.10	0.50	1
06030	PCB-1254	11097-69-1	N.D. D1	0.10	0.50	1
06030	PCB-1260	11096-82-5	N.D. D1	0.15	0.50	1
06030	Total PCBs	1336-36-3	N.D.	0.10	0.50	1

### Sample Comments

CA ELAP Lab Certification No. 2792

### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06030	PCBs in Water by 608	EPA 608	1	193640006A	01/02/2020 17:44	Jessica L Miller	1
11960	Method 608 PCB Water Ext.	EPA 608	1	193640006A	12/30/2019 16:52	Osvaldo R Sanchez	1

\*=This limit was used in the evaluation of the final result

**Sample Description:** Arroyo\_Simi\_20191223\_Grab (440-258025-1MS) Grab  
Water  
Boeing-SSFL NPDES Permit 2015

**Test America**  
**ELLE Sample #:** WW 1231036  
**ELLE Group #:** 2080938  
**Matrix:** Water

**Project Name:** Boeing-SSFL NPDES Permit 2015

**Submittal Date/Time:** 12/27/2019 09:58  
**Collection Date/Time:** 12/23/2019 08:00  
**SDG#:** SSF16-01MS

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
<b>PCBs</b>		<b>EPA 608</b>	<b>ug/l</b>	<b>ug/l</b>	<b>ug/l</b>	
06030	PCB-1016	12674-11-2	4.6 D2	0.10	0.50	1
06030	PCB-1221	11104-28-2	N.D. D1	0.10	0.50	1
06030	PCB-1232	11141-16-5	N.D. D1	0.10	0.50	1
06030	PCB-1242	53469-21-9	N.D. D1	0.10	0.50	1
06030	PCB-1248	12672-29-6	N.D. D1	0.10	0.50	1
06030	PCB-1254	11097-69-1	N.D. D1	0.10	0.50	1
06030	PCB-1260	11096-82-5	3.7 D1	0.15	0.50	1
06030	Total PCBs	1336-36-3	8.3	0.10	0.50	1

### Sample Comments

CA ELAP Lab Certification No. 2792

### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06030	PCBs in Water by 608	EPA 608	1	193640006A	01/02/2020 17:55	Jessica L Miller	1
11960	Method 608 PCB Water Ext.	EPA 608	1	193640006A	12/30/2019 16:52	Osvaldo R Sanchez	1

\*=This limit was used in the evaluation of the final result

**Sample Description:** Arroyo\_Simi\_20191223\_Grab (440-258025-1MSD) Grab  
Water  
Boeing-SSFL NPDES Permit 2015

**Test America**  
**ELLE Sample #:** WW 1231037  
**ELLE Group #:** 2080938  
**Matrix:** Water

**Project Name:** Boeing-SSFL NPDES Permit 2015

**Submittal Date/Time:** 12/27/2019 09:58  
**Collection Date/Time:** 12/23/2019 08:00  
**SDG#:** SSF16-01MSD

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
<b>PCBs</b>		<b>EPA 608</b>	<b>ug/l</b>	<b>ug/l</b>	<b>ug/l</b>	
06030	PCB-1016	12674-11-2	4.4 D2	0.10	0.50	1
06030	PCB-1221	11104-28-2	N.D. D1	0.10	0.50	1
06030	PCB-1232	11141-16-5	N.D. D1	0.10	0.50	1
06030	PCB-1242	53469-21-9	N.D. D1	0.10	0.50	1
06030	PCB-1248	12672-29-6	N.D. D1	0.10	0.50	1
06030	PCB-1254	11097-69-1	N.D. D1	0.10	0.50	1
06030	PCB-1260	11096-82-5	3.4 D1	0.15	0.50	1
06030	Total PCBs	1336-36-3	7.8	0.10	0.50	1

### Sample Comments

CA ELAP Lab Certification No. 2792

### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06030	PCBs in Water by 608	EPA 608	1	193640006A	01/02/2020 18:05	Jessica L Miller	1
11960	Method 608 PCB Water Ext.	EPA 608	1	193640006A	12/30/2019 16:52	Osvaldo R Sanchez	1

\*=This limit was used in the evaluation of the final result

## Quality Control Summary

Client Name: Test America  
Reported: 01/06/2020 21:19

Group Number: 2080938

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

### Method Blank

Analysis Name	Result ug/l	MDL** ug/l	LOQ ug/l
Batch number: 193640006A	Sample number(s): 1231035-1231037		
PCB-1016	N.D.	0.10	0.50
PCB-1221	N.D.	0.10	0.50
PCB-1232	N.D.	0.10	0.50
PCB-1242	N.D.	0.10	0.50
PCB-1248	N.D.	0.10	0.50
PCB-1254	N.D.	0.10	0.50
PCB-1260	N.D.	0.15	0.50
Total PCBs	N.D.	0.10	0.50

### LCS/LCSD

Analysis Name	LCS Spike Added ug/l	LCS Conc ug/l	LCSD Spike Added ug/l	LCSD Conc ug/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 193640006A	Sample number(s): 1231035-1231037								
PCB-1016	5.02	4.30			86		60-117		
PCB-1260	5.05	4.11			81		57-134		

### MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/l	MS Spike Added ug/l	MS Conc ug/l	MSD Spike Added ug/l	MSD Conc ug/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 193640006A	Sample number(s): 1231035-1231037 UNSPK: 1231035									
PCB-1016	N.D.	5.02	4.59	5.02	4.43	91	88	60-117	4	30
PCB-1260	N.D.	5.05	3.66	5.05	3.39	73	67	57-134	8	30

\*- Outside of specification

\*\* - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

## Quality Control Summary

Client Name: Test America  
Reported: 01/06/2020 21:19

Group Number: 2080938

### Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: PCBs in Water by 608  
Batch number: 193640006A

	Tetrachloro-m-xylene-D1	Decachlorobiphenyl-D1	Tetrachloro-m-xylene-D2	Decachlorobiphenyl-D2
1231035	71	49	69	51
1231036	76	50	72	51
1231037	69	47	69	47
Blank	56	56	55	58
LCS	69	39	67	43
MS	76	50	72	51
MSD	69	47	69	47
Limits:	18-115	10-127	18-115	10-127

\*- Outside of specification

\*\* - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.









Client: EUROFINS TESTAMERICA

**Delivery and Receipt Information**

Delivery Method:	<u>Fed Ex</u>	Arrival Date:	<u>12/27/2019</u>
Number of Packages:	<u>1</u>	Number of Projects:	<u>1</u>
State/Province of Origin:	<u>California</u>		

**Arrival Condition Summary**

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	Total Trip Blank Qty:	0
Samples Chilled:	Yes	Air Quality Samples Present:	No
Paperwork Enclosed:	Yes		
Samples Intact:	Yes		
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

*Unpacked by Julissa Rivera-Santa*

**Samples Chilled Details**

*Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.*

<u>Cooler #</u>	<u>Thermometer ID</u>	<u>Corrected Temp</u>	<u>Therm. Type</u>	<u>Ice Type</u>	<u>Ice Present?</u>	<u>Ice Container</u>	<u>Elevated Temp?</u>
1	192050133	2.1	IR	Wet	Y	Loose	N



The following defines common symbols and abbreviations used in reporting technical data:

<b>BMQL</b>	Below Minimum Quantitation Level	<b>mL</b>	milliliter(s)
<b>C</b>	degrees Celsius	<b>MPN</b>	Most Probable Number
<b>cfu</b>	colony forming units	<b>N.D.</b>	non-detect
<b>CP Units</b>	cobalt-chloroplatinate units	<b>ng</b>	nanogram(s)
<b>F</b>	degrees Fahrenheit	<b>NTU</b>	nephelometric turbidity units
<b>g</b>	gram(s)	<b>pg/L</b>	picogram/liter
<b>IU</b>	International Units	<b>RL</b>	Reporting Limit
<b>kg</b>	kilogram(s)	<b>TNTC</b>	Too Numerous To Count
<b>L</b>	liter(s)	<b>µg</b>	microgram(s)
<b>lb.</b>	pound(s)	<b>µL</b>	microliter(s)
<b>m<sup>3</sup></b>	cubic meter(s)	<b>umhos/cm</b>	micromhos/cm
<b>meq</b>	milliequivalents	<b>MCL</b>	Maximum Contamination Limit
<b>mg</b>	milligram(s)		
<b>&lt;</b>	less than		
<b>&gt;</b>	greater than		
<b>ppm</b>	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
<b>ppb</b>	parts per billion		
<b>Dry weight basis</b>	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

**Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.**

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

**WARRANTY AND LIMITS OF LIABILITY** - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

# Data Qualifiers

Qualifier	Definition
C	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value $\geq$ the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
P	Concentration difference between the primary and confirmation column $>40\%$ . The lower result is reported.
P^	Concentration difference between the primary and confirmation column $>40\%$ . The higher result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column $>100\%$ . The reporting limit is raised due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.



## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-258025-1

SDG Number:

**Login Number: 258025**

**List Number: 1**

**Creator: Soderblom, Tim**

**List Source: Eurofins Irvine**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## Patel, Urvashi

---

**From:** Baluran, Dwayne <DBaluran@haleyaldrich.com>  
**Sent:** Tuesday, December 24, 2019 1:00 PM  
**To:** Patel, Urvashi  
**Cc:** Miller, Katherine  
**Subject:** FW: Eurofins TestAmerica sample confirmation files from 440-258025-1 Boeing-SSFL NPDES Permit 2015  
**Attachments:** mime-attachment.jpg; ATT00001.htm; mime-attachment.jpg; ATT00002.htm; SmpLoginAckLimits\_440-258025-1 [Std\_Tal\_Login\_Limits].pdf; ATT00003.htm; COC 440-258025 (201912231929).pdf; ATT00004.htm; SampleLoginAck\_440-258025-1 [Std\_Tal\_Login\_Ack].pdf; ATT00005.htm

### -External Email-

---

Hi Urvashi,

Please see the following notes for 440-258025-1.

Sampling Event	Sample Delivery Group	Samples Included	Work Order or COC Corrections?
Arroyo Simi - Qtrly	440-258025-1	Arroyo_Simi_20191223_Grab	Work order is missing "Pesticides: Chlordane, 4,4-DDD, 4,4-DDE, 4,4-DDT, Dieldrin, Toxaphene, + PCBs only (E608)". Both regular sample and MS/MSD

Thanks,  
**Dwayne Baluran, EIT, QSP**  
Staff Engineer

**Haley & Aldrich, Inc.**  
5850 Canoga Avenue | Suite 400  
Woodland Hills, CA 91367

T: (978) 234.5022  
C: (818) 224.0704

[www.haleyaldrich.com](http://www.haleyaldrich.com)

---

**From:** Miller, Katherine <KMiller@haleyaldrich.com>  
**Sent:** Tuesday, December 24, 2019 11:33 AM  
**To:** Baluran, Dwayne <DBaluran@haleyaldrich.com>  
**Subject:** Fwd: Eurofins TestAmerica sample confirmation files from 440-258025-1 Boeing-SSFL NPDES Permit 2015

Sent from my iPhone

Begin forwarded message:

**From:** Mark Christine <[mark.christine@testamericainc.com](mailto:mark.christine@testamericainc.com)>  
**Date:** December 24, 2019 at 12:21:49 PM MST  
**To:** "Barr, Anastasia" <[ABarr@haleyaldrich.com](mailto:ABarr@haleyaldrich.com)>, "Hernandez, Elysse" <[EHernandez@haleyaldrich.com](mailto:EHernandez@haleyaldrich.com)>, Kim Schultz <[kim.schultz@mecx.net](mailto:kim.schultz@mecx.net)>, "Miller, Katherine" <[KMiller@haleyaldrich.com](mailto:KMiller@haleyaldrich.com)>, "Ms. Urvashi Patel" <[urvashi.patel@testamericainc.com](mailto:urvashi.patel@testamericainc.com)>  
**Subject:** Eurofins TestAmerica sample confirmation files from 440-258025-1 Boeing-SSFL NPDES Permit 2015

**CAUTION: External Email**

---

Hello,

Attached please find the sample confirmation files for job 440-258025-1; Boeing-SSFL NPDES Permit 2015

Please feel free to contact me or your PM Urvashi Patel if you have any questions.

Thank you.

**Mark B Christine**  
Project Manager Assistant

Eurofins TestAmerica, Irvine

E-mail: [mark.christine@testamericainc.com](mailto:mark.christine@testamericainc.com)  
[www.eurofinsus.com](http://www.eurofinsus.com) | [www.testamericainc.com](http://www.testamericainc.com)

**APPENDIX F**

**Fourth Quarter 2019 Reasonable Potential Analysis Tables**



## **APPENDIX F**

### **TABLE OF CONTENTS**

Reasonable Potential Analysis Summary notes

Table F1 – Reasonable Potential Analysis – Priority Pollutants  
(Outfalls 001, 002, 011 and 018)

Table F2 – Reasonable Potential Analysis – Priority Pollutants  
(Outfalls 003-007, 009, and 010)

Table F3 – Reasonable Potential Analysis – Non-priority Pollutants  
(Outfalls 003-007, 009, and 010)

Table F4 – Reasonable Potential Analysis – Priority Pollutants  
(Outfall 008)

Table F5 – Reasonable Potential Analysis – Non-priority Pollutants  
(Outfall 008)

**REASONABLE POTENTIAL ANALYSIS SUMMARY NOTES  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**Notes:**

1. The following Reasonable Potential Analysis (RPA) provides the analytical results as performed by the procedures outlined in *Reasonable Potential Analysis Methodology Technical Memo* (MWH and Flow Science, 2006).
2. The monitoring data set utilized to conduct the RPA consists of all applicable and relevant data from the present reporting quarter.
3. As directed by the CTR and the Regional Water Control Board 2,3,7,8-TCDD (Dioxin) values are to be expressed in NPDES permitting and this RPA as TCDD Total Equivalence units (TEQs). A TCDD TEQ is determined by multiplying each of the seventeen dioxin and furan congeners by their respective toxicity equivalency factor (TEF) and bioaccumulation equivalency factor (BEF) then summing the results of those products. For the purposes of this RPA, the resulting TCDD TEQ does not include those congener concentrations that are reported as DNQ, as specified on Page 26, of the NPDES Permit Effective April 1, 2015 (Water Board, 2015).
4. Data reported with qualifiers (e.g., J [DNQ] or R) are considered estimated or rejected and are not used in this RPA.
5. All of the following abbreviations and/or notes may not occur on every table.
6. Based on ORDER NO. R4-2015-0033, page E-2, Section I.C, only pollutants which do not have a final effluent limitation in the NPDES permit are included in this RPA analysis.

Definition of Acronyms, Abbreviations, and Terminology Used

>=	Greater than or equal to
*	Freshwater aquatic life criteria for metals are expressed as a function of total hardness (mg/L) in the water body. The equations are provided in the CTR, (US EPA, 2011). Values displayed correspond to a total hardness of 100 mg/l.
‡	Available data are below detection limits; detection limit is assigned for maximum effluent concentration (MEC) and is not applicable to compare against lowest water quality criteria concentration (C)
µg/L	Concentration units, micrograms per liter
All Data Qualified	All available monitoring data are qualified and no statistical analysis is performed.
Annual	The 2015 NPDES Permit requires annual monitoring.
ANR	Analysis not required; e.g., constituent or outfall was not required by the NPDES permit to be sampled and analyzed.
Available Data < DL	All available monitoring data that are not qualified are below detection limits.
B	Background
C	Concentration
CCC	Criterion Continuous Concentration
CMC	Criterion Maximum Concentration
CTR	California Toxics Rule
CV	Coefficient of Variation
DL	Detection Limit
EPA TSD	EPA's Technical Support Document for Water Quality Based Toxics Control, (see references).

**REASONABLE POTENTIAL ANALYSIS SUMMARY NOTES  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

Definition of Acronyms, Abbreviations, and Terminology Used (Continued)

Fibers/L	Units for asbestos concentration, fibers per liter
HH O	Human Health criteria for consumption of Organisms only
HH W&OMEC	Maximum Observed Effluent Concentration
mg/L	Concentration units, milligrams per liter
Min	Minimum
MPN/100ml	Most probable number per 100 milliliters
NA	Not Applicable
Narrative	Water quality criteria are expressed as a narrative objective rather than a numeric objective, and therefore are not part of the statistical RPA calculations.
None	No available CTR or Basin Plan criteria.
pH Dependent	CTR Criteria are based on pH.
Discharge	The 2015 NPDES Permit requires monitoring once per discharge event.
Qualified Data	Data qualifier definitions are: (a) J- The reported result is an estimate. The value is less than the minimum calibration level but greater than the estimated detection limit (EDL), (b) UJ- The analyte was not detected in the sample at the detection limit /estimated detection limit (EDL), (c) Nondetect U with blank qualifier(B, F, T) - Analyte found in sample and associated blank, and (d) DNQ- Detected Not Quantified (sample results less than the RL, but great than or equal to the laboratory's MDL)
Reserved	EPA has reserved the CTR criteria.
RPA	Reasonable Potential Analysis
SIP	The State Water Resources Control Board "Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California," (see references).
Tot	Total

Priority Pollutant RPA Column Explanation

OUTFALL	Outfall (or group of outfalls) with sampling data used in RPA.
CTR	Provides CTR constituent reference number.
Constituent	Provides CTR constituent common name.
Units	Provides the data set's concentration units as referenced by 2015 NPDES Permit.
MEC	Provides the outfall monitoring group's maximum value from the applicable data set.
CV	Equal to the standard deviation divided by the average of the applicable data set. If the number of samples is less than 10, the CV is assumed to be 0.6.
<i>Step 1 identifies all applicable water quality criteria.</i>	
CTR Criteria	Concentration criteria as listed in the CTR.
CMC = Acute	The Freshwater CMC is listed as the acute concentration criterion.
CCC = Chronic	The Freshwater CCC is listed as the chronic concentration criterion.
HH W&O (Not App)	The HH W&O is deemed not applicable based on past Regional Board RPAs.
HH O = HH	The HH O is listed as the CTR human health concentration criterion.

**REASONABLE POTENTIAL ANALYSIS SUMMARY NOTES  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

Priority Pollutant RPA Column Explanation (Continued)

Basin Plan Criteria	Applicable Basin Plan Criteria are listed for the Los Angeles River and/or Calleguas Creek watersheds.
C = Lowest Criteria	The comparison concentration (C) is equal to the lowest criterion for a constituent based on the CMC, CCC, HH O, and Basin Plan Criteria listed.
<i>Step 2 defines the applicable data set.</i>	
Is Effluent Data Available	If all data is qualified, then NO. If not, then YES.
<i>Step 3 determines the maximum observed effluent concentration.</i>	
Was Constituent Detected in Effluent Data	If the constituent was detected, then YES. If all monitoring data are non-detect or qualified then NO.
Are all Detection Limits >C	If constituent was detected in effluent data then not applicable (NA). If constituent was not detected and all analysis detection limits are greater than the comparison concentration, then YES, if not then NO.
If DL > C, MEC = Min (DL)	If the previous cell answer was yes, then the MEC is equal to the minimum detection limit. If not, then NA.
<i>Step 4 compares the MEC to the lowest applicable water quality criteria.</i>	
MEC >= C	If the MEC is greater than or equal to the comparison concentration then YES, if not then NO.

Note: Steps 5 and 6 of the Priority Pollutant RPA do not apply to the Santa Susana Site because the Regional Board gives no consideration for receiving water background constituent concentrations. Furthermore, Boeing defers the application of best professional judgment in Step 7 and final determination of reasonable potential in Step 8 to the Regional Board Staff.

Non-priority Pollutant RPA Column Explanation

Constituent	Provides the Non-Priority Pollutant constituent common name
Monitoring	Provides the 2015 NPDES Permit directed monitoring frequency
Units	Provides the data set's concentration units
Number of Samples	Provides the number of available samples that are not qualified
MEC	Provides the outfall monitoring group's maximum value from the applicable data set
CV	Equal to the standard deviation divided by the average of the applicable data set. If the number of samples is less than 10, the CV is assumed to be 0.6.
Multiplier	Utilizes the EPA's TSD calculation to determine multiplier for which the maximum effluent concentration is calculated. (MWH and Flow Science, 2006, or EPA TSD, 1991)
Projected Maximum Effluent Concentration	Utilizes the product of the multiplier and the MEC as an estimate for the projected maximum effluent concentration.
99/99	Statistical technique used in the Environmental Protection Agency's Technical Support Document RPA to compute the upper 99th confidence range of the 99th % value of the log normal distribution of monitoring data.
Dilution Ratio	The Regional Board allocates no dilution ratio to the Santa Susana Site (NA).
Background Concentration	The Regional Board allocates no background concentration to the Santa Susana Site (NA).
Projected Maximum Receiving Water Concentration	The Regional Board estimates the projected maximum receiving water concentration as equal to the projected maximum effluent concentration.

**REASONABLE POTENTIAL ANALYSIS SUMMARY NOTES  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

Non-priority Pollutant RPA Column Explanation (Continued)

Step 1, Determine Water Quality Objectives	The water quality objective is based on appropriate Basin Plan criteria as noted in the Reasonable Potential Analysis Methodology Technical Memo.
BU – Beneficial Use Protection, NC – Human Non-carcinogen, AP- Aquatic Life Protection, TMDL – Total Maximum Daily Load	This is the Regional Board’s Basis for determining if reasonable potential should be evaluated for a non-priority pollutant.

Note: Boeing has completed appropriate statistical calculations but defers the application of best professional judgment and the final determination of reasonable potential to the Regional Board Staff.

**REASONABLE POTENTIAL ANALYSIS SUMMARY NOTES  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

References:

1. Los Angeles Regional Water Quality Control Board, "Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, (Basin Plan)." June 13, 1994.
2. MWH and Flow Science, "Reasonable Potential Analysis Methodology Technical Memo- Version 1, Final, Santa Susan Field Laboratory, Ventura County, California." April 28, 2006.
3. State Water Resources Control Board, "Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California, (SIP)" Resolution No. 2005-0019, February 24, 2005.
4. US EPA, *40CFR part 131, Water Quality Standards; Establishment of numeric Criteria for Priority Toxic Pollutants for the State of California*, (CTR) Federal Registry, 2011, pp. 496 - 507.
5. US EPA, "Technical Support Document for Water Quality-based Toxics Control." EPA/505/2-90-001, PB-91-127415, March 1991.

**TABLE F-1**  
**REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 001, 002, 011, AND 018)**

**FIRST QUARTER 2019**  
**THE BOEING COMPANY**  
**SANTA SUSANA FIELD LABORATORY**  
**NPDES PERMIT CA0001309**

Outfall	CTR	Constituent	Units	MEC	CV	Step 1: Water Quality Criteria, Determine C				Basin Plan	C = Lowest Criteria	Step 2 Is Effluent Data Available	Step 3 Was Constituent Detected in Effluent Data	Step 3 Are all Detection Limits > C	Step 3 If DL > C, MEC = Min (DL)	Step 4 MEC >= C
						CTR CRITERIA										
						Freshwater		Human Health								
CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH													
1, 2, 11, 18	15	Asbestos	Fibers/L	Not Analyzed	0.6	NONE	NONE	7,000,000	NONE	7,000,000	7,000,000	No	NA	NA	NA	NA
1, 2, 11, 18	17	Acrolein	µg/L	Annual	0.6	NONE	NONE	320	780	NONE	780	No	NA	NA	NA	NA
1, 2, 11, 18	18	Acrylonitrile	µg/L	Annual	0.6	NONE	NONE	0.059	0.66	NONE	0.66	No	NA	NA	NA	NA
1, 2, 11, 18	19	Benzene	µg/L	Available Data <DL	0.6	NONE	NONE	1.2	71	1	1	Yes	No	No	NA	No
1, 2, 11, 18	20	Bromoform	µg/L	Available Data <DL	0.6	NONE	NONE	4.3	360	NONE	360	Yes	No	No	NA	No
1, 2, 11, 18	21	Carbon Tetrachloride	µg/L	Available Data <DL	0.6	NONE	NONE	0.25	4.4	0.5	0.5	Yes	No	No	NA	No
1, 2, 11, 18	22	Chlorobenzene	µg/L	Available Data <DL	0.6	NONE	NONE	680	21,000	70	70	Yes	No	No	NA	No
1, 2, 11, 18	23	Dibromochloromethane	µg/L	Available Data <DL	0.6	NONE	NONE	0.401	34	NONE	34	Yes	No	No	NA	No
1, 2, 11, 18	24	Chloroethane	µg/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	25	2-Chloroethyl vinyl ether	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	26	Chloroform (Trichloromethane)	µg/L	Available Data <DL	0.6	NONE	NONE	Reserved	Reserved	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	27	Chlorodibromomethane	µg/L	Available Data <DL	0.6	NONE	NONE	0.56	46	NONE	46	Yes	No	No	NA	No
1, 2, 11, 18	28	1,1-Dichloroethane	µg/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	5	5	Yes	No	No	NA	No
1, 2, 11, 18	31	1,2-Dichloropropane	µg/L	Available Data <DL	0.6	NONE	NONE	0.52	39	5	5	Yes	No	No	NA	No
1, 2, 11, 18	32	cis-1,3-Dichloropropene	µg/L	Available Data <DL	0.6	NONE	NONE	10	1,700	0.5	0.5	Yes	No	No	NA	No
1, 2, 11, 18	32a	trans-1,3-Dichloropropene	µg/L	Available Data <DL	0.6	NONE	NONE	10	1,700	0.5	0.5	Yes	No	No	NA	No
1, 2, 11, 18	33	Ethylbenzene	µg/L	Available Data <DL	0.6	NONE	NONE	3,100	29,000	700	700	Yes	No	No	NA	No
1, 2, 11, 18	34	Bromomethane	µg/L	Available Data <DL	0.6	NONE	NONE	48	4,000	NONE	4,000	Yes	No	No	NA	No
1, 2, 11, 18	35	Chloromethane (Methyl Chloride)	µg/L	Available Data <DL	0.6	NONE	NONE	Narrative	Narrative	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	36	Methylene chloride	µg/L	Available Data <DL	0.6	NONE	NONE	4.7	1,600	NONE	1,600	Yes	No	No	NA	No
1, 2, 11, 18	37	1,1,2,2-Tetrachloroethane	µg/L	Available Data <DL	0.6	NONE	NONE	0.17	11	1	1	Yes	No	No	NA	No
1, 2, 11, 18	38	Tetrachloroethene	µg/L	Available Data <DL	0.6	NONE	NONE	0.8	8.85	5	5	Yes	No	No	NA	No
1, 2, 11, 18	39	Toluene	µg/L	Available Data <DL	0.6	NONE	NONE	6,800	200,000	150	150	Yes	No	No	NA	No
1, 2, 11, 18	40	trans-1,2-Dichloroethene	µg/L	Available Data <DL	0.6	NONE	NONE	700	140,000	10	10	Yes	No	No	NA	No
1, 2, 11, 18	41	1,1,1-Trichloroethane	µg/L	Available Data <DL	0.6	NONE	NONE	Narrative	Narrative	200	200	Yes	No	No	NA	No
1, 2, 11, 18	42	1,1,2-Trichloroethane	µg/L	Available Data <DL	0.6	NONE	NONE	0.60	42	5	5	Yes	No	No	NA	No
1, 2, 11, 18	44	Vinyl chloride	µg/L	Available Data <DL	0.6	NONE	NONE	2	525	0.5	0.5	Yes	No	No	NA	No
1, 2, 11, 18	45	2-Chlorophenol	µg/L	Annual	0.6	NONE	NONE	120	400	NONE	400	No	NA	NA	NA	NA
1, 2, 11, 18	46	2,4-Dichlorophenol	µg/L	Annual	0.6	NONE	NONE	93	790	NONE	790	No	NA	NA	NA	NA
1, 2, 11, 18	47	2,4-Dimethylphenol	µg/L	Annual	0.6	NONE	NONE	540	2,300	NONE	2,300	No	NA	NA	NA	NA
1, 2, 11, 18	48	2-Methyl-4,6-dinitrophenol	µg/L	Annual	0.6	NONE	NONE	13.4	765	NONE	765	No	NA	NA	NA	NA
1, 2, 11, 18	49	2,4-Dinitrophenol	µg/L	Annual	0.6	NONE	NONE	70	14,000	NONE	14,000	No	NA	NA	NA	NA
1, 2, 11, 18	50	2-Nitrophenol	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	51	4-Nitrophenol	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	52	4-Chloro-3-methylphenol	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	54	Phenol	µg/L	Annual	0.6	NONE	NONE	21,000	4,600,000	NONE	4,600,000	No	NA	NA	NA	NA
1, 2, 11, 18	56	Acenaphthene	µg/L	Annual	0.6	NONE	NONE	1,200	2,700	NONE	2,700	No	NA	NA	NA	NA
1, 2, 11, 18	57	Acenaphthylene	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	58	Anthracene	µg/L	Annual	0.6	NONE	NONE	9,600	110,000	NONE	110,000	No	NA	NA	NA	NA
1, 2, 11, 18	59	Benidine	µg/L	Annual	0.6	NONE	NONE	0.00012	0.00054	NONE	0.00054	No	NA	NA	NA	NA
1, 2, 11, 18	60	Benzo(a)Anthracene	µg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
1, 2, 11, 18	61	Benzo(a)Pyrene	µg/L	Annual	0.6	NONE	NONE	0.0044	0.049	0.2	0.049	No	NA	NA	NA	NA
1, 2, 11, 18	62	Benzo(b)Fluoranthene	µg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
1, 2, 11, 18	63	Benzo(g,h,i)Perylene	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	64	Benzo(k)Fluoranthene	µg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
1, 2, 11, 18	65	Bis (2-Chloroethoxy) methane	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	66	Bis (2-Chloroethyl) ether	µg/L	Annual	0.6	NONE	NONE	0.0310	1.4	NONE	1.4	No	NA	NA	NA	NA
1, 2, 11, 18	67	Bis (2-Chloroisopropyl) Ether	µg/L	Annual	0.6	NONE	NONE	1,400	170,000	NONE	170,000	No	NA	NA	NA	NA
1, 2, 11, 18	69	4-Bromophenyl phenyl ether	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	70	Butyl benzylphthalate	µg/L	Annual	0.6	NONE	NONE	3,000	5,200	NONE	5,200	No	NA	NA	NA	NA
1, 2, 11, 18	71	2-Chloronaphthalene	µg/L	Annual	0.6	NONE	NONE	1,700	4,300	NONE	4,300	No	NA	NA	NA	NA
1, 2, 11, 18	72	4-Chlorophenyl phenyl ether	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	73	Chrysene	µg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
1, 2, 11, 18	74	Dibenz(a,h)anthracene	µg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA

**TABLE F-1**  
**REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 001, 002, 011, AND 018)**

**FIRST QUARTER 2019**  
**THE BOEING COMPANY**  
**SANTA SUSANA FIELD LABORATORY**  
**NPDES PERMIT CA0001309**

Outfall	CTR	Constituent	Units	MEC	CV	Step 1: Water Quality Criteria, Determine C				Basin Plan	C = Lowest Criteria	Step 2 Is Effluent Data Available	Step 3 Was Constituent Detected in Effluent Data	Step 3 Are all Detection Limits > C	Step 3 If DL > C, MEC = Min (DL)	Step 4 MEC >= C
						CTR CRITERIA										
						Freshwater		Human Health								
						CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH							
1, 2, 11, 18	75	1,2-Dichlorobenzene	µg/L	Available Data <DL	0.6	NONE	NONE	2,700	17,000	600	600	Yes	No	No	NA	No
1, 2, 11, 18	76	1,3-Dichlorobenzene	µg/L	Available Data <DL	0.6	NONE	NONE	400	2,600	NONE	2,600	Yes	No	No	NA	No
1, 2, 11, 18	77	1,4-Dichlorobenzene	µg/L	Available Data <DL	0.6	NONE	NONE	400	2,600	5	5	Yes	No	No	NA	No
1, 2, 11, 18	78	3,3'-Dichlorobenzidine	µg/L	Annual	0.6	NONE	NONE	0.04	0.077	NONE	0.077	No	NA	NA	NA	NA
1, 2, 11, 18	79	Diethyl phthalate	µg/L	Annual	0.6	NONE	NONE	23,000	120,000	NONE	120,000	No	NA	NA	NA	NA
1, 2, 11, 18	80	Dimethyl phthalate	µg/L	Annual	0.6	NONE	NONE	313,000	2,900,000	NONE	2,900,000	No	NA	NA	NA	NA
1, 2, 11, 18	81	Di-n-butyl phthalate	µg/L	Annual	0.6	NONE	NONE	2,700	12,000	NONE	12,000	No	NA	NA	NA	NA
1, 2, 11, 18	83	2,6-Dinitrotoluene	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	84	Di-n-octyl phthalate	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	85	1,2-Diphenylhydrazine/Azobenzene	µg/L	Annual	0.6	NONE	NONE	0.040	0.54	NONE	0.54	No	NA	NA	NA	NA
1, 2, 11, 18	86	Fluoranthene	µg/L	Annual	0.6	NONE	NONE	300	370	NONE	370	No	NA	NA	NA	NA
1, 2, 11, 18	87	Fluorene	µg/L	Annual	0.6	NONE	NONE	1,300	14,000	NONE	14,000	No	NA	NA	NA	NA
1, 2, 11, 18	88	Hexachlorobenzene	µg/L	Annual	0.6	NONE	NONE	0.00075	0.00077	1	0.00077	No	NA	NA	NA	NA
1, 2, 11, 18	89	Hexachlorobutadiene	µg/L	Annual	0.6	NONE	NONE	0.44	50	NONE	50	No	NA	NA	NA	NA
1, 2, 11, 18	90	Hexachlorocyclopentadiene	µg/L	Annual	0.6	NONE	NONE	240	17,000	50	50	No	NA	NA	NA	NA
1, 2, 11, 18	91	Hexachloroethane	µg/L	Annual	0.6	NONE	NONE	1.9	8.9	NONE	8.9	No	NA	NA	NA	NA
1, 2, 11, 18	92	Indeno(1,2,3-cd)Pyrene	µg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
1, 2, 11, 18	93	Isophorone	µg/L	Annual	0.6	NONE	NONE	8.4	600	NONE	600	No	NA	NA	NA	NA
1, 2, 11, 18	94	Naphthalene	µg/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	95	Nitrobenzene	µg/L	Annual	0.6	NONE	NONE	17	1,900	NONE	1,900	No	NA	NA	NA	NA
1, 2, 11, 18	97	n-Nitroso-di-n-propylamine	µg/L	Annual	0.6	NONE	NONE	0.005	1.4	NONE	1.4	No	NA	NA	NA	NA
1, 2, 11, 18	98	N-Nitrosodiphenylamine	µg/L	Annual	0.6	NONE	NONE	5.0	16	NONE	16	No	NA	NA	NA	NA
1, 2, 11, 18	99	Phenanthrene	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	100	Pyrene	µg/L	Annual	0.6	NONE	NONE	960	11,000	NONE	11,000	No	NA	NA	NA	NA
1, 2, 11, 18	101	1,2,4-Trichlorobenzene	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	70	70	No	NA	NA	NA	NA
1, 2, 11, 18	102	Aldrin	µg/L	Available Data <DL	0.6	3	NONE	0.00013	0.00014	NONE	0.00014	Yes	No	Yes	0.00014	NA <sup>‡</sup>
1, 2, 11, 18	104	beta-BHC	µg/L	Available Data <DL	0.6	NONE	NONE	0.014	0.046	NONE	0.046	Yes	No	No	NA	No
1, 2, 11, 18	105	gamma-BHC (Lindane)	µg/L	Available Data <DL	0.6	0.95	NONE	0.019	0.063	0.2	0.063	Yes	No	No	NA	No
1, 2, 11, 18	106	delta-BHC	µg/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	107	Chlordane	µg/L	Available Data <DL	0.6	2.4	0.0043	0.00057	0.00059	0.1	0.00059	Yes	No	Yes	0.00059	NA <sup>‡</sup>
1, 2, 11, 18	108	4,4'-DDT	µg/L	Available Data <DL	0.6	1.1	0.001	0.00059	0.00059	NONE	0.00059	Yes	No	Yes	0.00059	NA <sup>‡</sup>
1, 2, 11, 18	109	4,4'-DDE	µg/L	Available Data <DL	0.6	NONE	NONE	0.00059	0.00059	NONE	0.00059	Yes	No	Yes	0.00059	NA <sup>‡</sup>
1, 2, 11, 18	110	4,4'-DDD	µg/L	Available Data <DL	0.6	NONE	NONE	0.00083	0.00084	NONE	0.00084	Yes	No	Yes	0.00084	NA <sup>‡</sup>
1, 2, 11, 18	111	Dieldrin	µg/L	Available Data <DL	0.6	0.24	0.056	0.00014	0.00014	NONE	0.00014	Yes	No	Yes	0.00014	NA <sup>‡</sup>
1, 2, 11, 18	112	alpha-Endosulfan	µg/L	Annual	0.6	0.22	0.056	110	240	NONE	0.056	No	NA	NA	NA	NA
1, 2, 11, 18	113	beta-Endosulfan	µg/L	Annual	0.6	0.22	0.056	110	240	NONE	0.056	No	NA	NA	NA	NA
1, 2, 11, 18	114	Endosulfan Sulfate	µg/L	Available Data <DL	0.6	NONE	NONE	110	240	NONE	240	Yes	No	No	NA	No
1, 2, 11, 18	115	Endrin	µg/L	Available Data <DL	0.6	0.086	0.036	0.76	0.81	2	0.036	Yes	No	No	NA	No
1, 2, 11, 18	116	Endrin Aldehyde	µg/L	Available Data <DL	0.6	NONE	NONE	0.76	0.81	NONE	0.81	Yes	No	No	NA	No
1, 2, 11, 18	117	Heptachlor	µg/L	Available Data <DL	0.6	0.52	0.0038	0.00021	0.00021	0.01	0.00021	Yes	No	No	NA	No
1, 2, 11, 18	118	Heptachlor Epoxide	µg/L	Available Data <DL	0.6	0.52	0.0038	0.00010	0.00011	0.01	0.00011	Yes	No	Yes	0.00011	NA <sup>‡</sup>
1, 2, 11, 18	119	Aroclor 1016	µg/L	Available Data <DL	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	NA <sup>‡</sup>
1, 2, 11, 18	120	Aroclor 1221	µg/L	Available Data <DL	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	NA <sup>‡</sup>
1, 2, 11, 18	121	Aroclor 1232	µg/L	Available Data <DL	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	NA <sup>‡</sup>
1, 2, 11, 18	122	Aroclor 1242	µg/L	Available Data <DL	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	NA <sup>‡</sup>
1, 2, 11, 18	123	Aroclor 1248	µg/L	Available Data <DL	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	NA <sup>‡</sup>
1, 2, 11, 18	124	Aroclor 1254	µg/L	Available Data <DL	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	NA <sup>‡</sup>
1, 2, 11, 18	125	Aroclor 1260	µg/L	Available Data <DL	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	NA <sup>‡</sup>
1, 2, 11, 18	126	Toxaphene	µg/L	Available Data <DL	0.6	0.73	0.0002	0.00073	0.00075	3	0.0002	Yes	No	Yes	0.0002	NA <sup>‡</sup>
1, 2, 11, 18	127	E. Coli	MPN/100ml	Annual	0.6	NA	NA	NA	NA	235	235	No	NA	NA	NA	NA



**TABLE F-2**  
**REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 003-007, 009, AND 010)**

**FIRST QUARTER 2019**  
**THE BOEING COMPANY**  
**SANTA SUSANA FIELD LABORATORY**  
**NPDES PERMIT CA0001309**

Outfall	CTR	Constituent	Units	MEC	CV	Step 1: Water Quality Criteria, Determine C				Basin Plan	C = Lowest Criteria	Step 2 Is Effluent Data Available	Step 3 Was Constituent Detected in Effluent Data	Step 3 Are all Detection Limits > C	Step 3 If DL > C, MEC = Min (DL)	Step 4 MEC >= C
						CTR CRITERIA										
						Freshwater		Human Health								
						CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH							
3-7, 9, 10	2	Arsenic	µg/L	Annual	0.6	340	150	NONE	NONE	50	50	No	NA	NA	NA	NA
3-7, 9, 10	3	Beryllium	µg/L	Annual	0.6	NONE	NONE	Narrative	Narrative	4	4	No	NA	NA	NA	NA
3-7, 9, 10	5a	Chromium	µg/L	Annual	0.6	550	180	Narrative	Narrative	50	50	No	NA	NA	NA	NA
3-7, 9, 10	5b	Chromium VI (Hexavalent)	µg/L	Annual	0.6	16	11	Narrative	Narrative	NONE	11	No	NA	NA	NA	NA
3-7, 9, 10	10	Selenium	µg/L	Available Data <DL	0.6	Reserved	5	Narrative	Narrative	50	5	Yes	No	No	NA	No
3-7, 9, 10	11	Silver	µg/L	Available Data <DL	0.6	3.4	NONE	NONE	NONE	NONE	3.4	Yes	No	No	NA	No
3-7, 9, 10	15	Asbestos	Fibers/L	Annual	0.6	NONE	NONE	7,000,000	NONE	7,000,000	7,000,000	No	NA	NA	NA	NA
3-7, 9, 10	17	Acrolein	µg/L	Annual	0.6	NONE	NONE	320	780	NONE	780	No	NA	NA	NA	NA
3-7, 9, 10	18	Acrylonitrile	µg/L	Annual	0.6	NONE	NONE	0.059	0.66	NONE	0.66	No	NA	NA	NA	NA
3-7, 9, 10	19	Benzene	µg/L	Annual	0.6	NONE	NONE	1.2	71	1	1	No	NA	NA	NA	NA
3-7, 9, 10	20	Bromoform	µg/L	Annual	0.6	NONE	NONE	4.3	360	NONE	360	No	NA	NA	NA	NA
3-7, 9, 10	21	Carbon Tetrachloride	µg/L	Annual	0.6	NONE	NONE	0.25	4.4	0.5	0.5	No	NA	NA	NA	NA
3-7, 9, 10	22	Chlorobenzene	µg/L	Annual	0.6	NONE	NONE	680	21,000	70	70	No	NA	NA	NA	NA
3-7, 9, 10	23	Dibromochloromethane	µg/L	Annual	0.6	NONE	NONE	0.401	34	NONE	34	No	NA	NA	NA	NA
3-7, 9, 10	24	Chloroethane	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	25	2-Chloroethyl vinyl ether	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	26	Chloroform	µg/L	Annual	0.6	NONE	NONE	Reserved	Reserved	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	27	Chlorodibromomethane	µg/L	Annual	0.6	NONE	NONE	0.56	46	NONE	46	No	NA	NA	NA	NA
3-7, 9, 10	28	1,1-Dichloroethane	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	5	5	No	NA	NA	NA	NA
3-7, 9, 10	29	1,2-Dichloroethane	µg/L	Annual	0.6	NONE	NONE	0.38	99	0.5	0.5	No	NA	NA	NA	NA
3-7, 9, 10	30	1,1-Dichloroethene	µg/L	Annual	0.6	NONE	NONE	0.057	3.2	6	3.2	No	NA	NA	NA	NA
3-7, 9, 10	31	1,2-Dichloropropane	µg/L	Annual	0.6	NONE	NONE	0.52	39	5	5	No	NA	NA	NA	NA
3-7, 9, 10	32	cis-1,3-Dichloropropene	µg/L	Annual	0.6	NONE	NONE	10	1,700	0.5	0.5	No	NA	NA	NA	NA
3-7, 9, 10	32a	trans-1,3-Dichloropropene	µg/L	Annual	0.6	NONE	NONE	10	1,700	0.5	0.5	No	NA	NA	NA	NA
3-7, 9, 10	33	Ethylbenzene	µg/L	Annual	0.6	NONE	NONE	3,100	29,000	700	700	No	NA	NA	NA	NA
3-7, 9, 10	34	Bromomethane	µg/L	Annual	0.6	NONE	NONE	48	4,000	NONE	4,000	No	NA	NA	NA	NA
3-7, 9, 10	35	Chloromethane (Methyl Chloride)	µg/L	Annual	0.6	NONE	NONE	Narrative	Narrative	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	36	Methylene chloride	µg/L	Annual	0.6	NONE	NONE	4.7	1,600	NONE	1,600	No	NA	NA	NA	NA
3-7, 9, 10	37	1,1,2,2-Tetrachloroethane	µg/L	Annual	0.6	NONE	NONE	0.17	11	1	1	No	NA	NA	NA	NA
3-7, 9, 10	38	Tetrachloroethene	µg/L	Annual	0.6	NONE	NONE	0.8	8.85	5	5	No	NA	NA	NA	NA
3-7, 9, 10	39	Toluene	µg/L	Annual	0.6	NONE	NONE	6,800	200,000	150	150	No	NA	NA	NA	NA
3-7, 9, 10	40	trans-1,2-Dichloroethene	µg/L	Annual	0.6	NONE	NONE	700	140,000	10	10	No	NA	NA	NA	NA
3-7, 9, 10	41	1,1,1-Trichloroethane	µg/L	Annual	0.6	NONE	NONE	Narrative	Narrative	200	200	No	NA	NA	NA	NA
3-7, 9, 10	42	1,1,2-Trichloroethane	µg/L	Annual	0.6	NONE	NONE	0.6	42	5	5	No	NA	NA	NA	NA
3-7, 9, 10	43	Trichloroethene	µg/L	Annual	0.6	NONE	NONE	2.7	81	5	5	No	NA	NA	NA	NA
3-7, 9, 10	44	Vinyl chloride	µg/L	Annual	0.6	NONE	NONE	2	525	0.5	0.5	No	NA	NA	NA	NA
3-7, 9, 10	45	2-Chlorophenol	µg/L	Annual	0.6	NONE	NONE	120	400	NONE	400	No	NA	NA	NA	NA
3-7, 9, 10	46	2,4-Dichlorophenol	µg/L	Annual	0.6	NONE	NONE	93	790	NONE	790	No	NA	NA	NA	NA
3-7, 9, 10	47	2,4-Dimethylphenol	µg/L	Annual	0.6	NONE	NONE	540	2,300	NONE	2,300	No	NA	NA	NA	NA
3-7, 9, 10	48	2-Methyl-4,6-dinitrophenol	µg/L	Annual	0.6	NONE	NONE	13.4	765	NONE	765	No	NA	NA	NA	NA
3-7, 9, 10	49	2,4-Dinitrophenol	µg/L	Annual	0.6	NONE	NONE	70	14,000	NONE	14,000	No	NA	NA	NA	NA
3-7, 9, 10	50	2-Nitrophenol	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	51	4-Nitrophenol	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	52	4-Chloro-3-methylphenol	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	53	Pentachlorophenol	µg/L	Annual	0.6	pH dependent	pH dependent	0.28	8.2	1	1	No	NA	NA	NA	NA
3-7, 9, 10	54	Phenol	µg/L	Annual	0.6	NONE	NONE	21,000	4,600,000	NONE	4,600,000	No	NA	NA	NA	NA
3-7, 9, 10	55	2,4,6-Trichlorophenol	µg/L	Annual	0.6	NONE	NONE	2.1	6.5	NONE	6.5	No	NA	NA	NA	NA
3-7, 9, 10	56	Acenaphthene	µg/L	Annual	0.6	NONE	NONE	1,200	2,700	NONE	2,700	No	NA	NA	NA	NA
3-7, 9, 10	57	Acenaphthylene	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	58	Anthracene	µg/L	Annual	0.6	NONE	NONE	9,600	110,000	NONE	110,000	No	NA	NA	NA	NA
3-7, 9, 10	59	Benzidine	µg/L	Annual	0.6	NONE	NONE	0.00012	0.00054	NONE	0.00054	No	NA	NA	NA	NA
3-7, 9, 10	60	Benzo(a)Anthracene	µg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
3-7, 9, 10	61	Benzo(a)Pyrene	µg/L	Annual	0.6	NONE	NONE	0.0044	0.049	0.2	0.049	No	NA	NA	NA	NA
3-7, 9, 10	62	Benzo(b)Fluoranthene	µg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA

**TABLE F-2**  
**REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 003-007, 009, AND 010)**

**FIRST QUARTER 2019**  
**THE BOEING COMPANY**  
**SANTA SUSANA FIELD LABORATORY**  
**NPDES PERMIT CA0001309**

Outfall	CTR	Constituent	Units	MEC	CV	Step 1: Water Quality Criteria, Determine C				Basin Plan	C = Lowest Criteria	Step 2 Is Effluent Data Available	Step 3 Was Constituent Detected in Effluent Data	Step 3 Are all Detection Limits > C	Step 3 If DL > C, MEC = Min (DL)	Step 4 MEC >= C
						CTR CRITERIA										
						Freshwater		Human Health								
						CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH							
3-7, 9, 10	63	Benzo(g,h,i)Perylene	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA	NA
3-7, 9, 10	64	Benzo(k)Fluoranthene	µg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
3-7, 9, 10	65	Bis (2-Chloroethoxy) methane	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	66	Bis (2-Chloroethyl) ether	µg/L	Annual	0.6	NONE	NONE	0.031	1.4	NONE	1.4	No	NA	NA	NA	NA
3-7, 9, 10	67	Bis (2-Chloroisopropyl) Ether	µg/L	Annual	0.6	NONE	NONE	1,400	170,000	NONE	170,000	No	NA	NA	NA	NA
3-7, 9, 10	68	Bis (2-ethylhexyl) Phthalate	µg/L	Annual	0.6	NONE	NONE	1.8	5.9	4	4	No	NA	NA	NA	NA
3-7, 9, 10	69	4-Bromophenyl phenyl ether	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	70	Butyl benzylphthalate	µg/L	Annual	0.6	NONE	NONE	3,000	5,200	NONE	5,200	No	NA	NA	NA	NA
3-7, 9, 10	71	2-Chloronaphthalene	µg/L	Annual	0.6	NONE	NONE	1,700	4,300	NONE	4,300	No	NA	NA	NA	NA
3-7, 9, 10	72	4-Chlorophenyl phenyl ether	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	73	Chrysene	µg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
3-7, 9, 10	74	Dibenz(a,h)anthracene	µg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
3-7, 9, 10	75	1,2-Dichlorobenzene	µg/L	Annual	0.6	NONE	NONE	2,700	17,000	600	600	No	NA	NA	NA	NA
3-7, 9, 10	76	1,3-Dichlorobenzene	µg/L	Annual	0.6	NONE	NONE	400	2,600	NONE	2,600	No	NA	NA	NA	NA
3-7, 9, 10	77	1,4-Dichlorobenzene	µg/L	Annual	0.6	NONE	NONE	400	2,600	5	5	No	NA	NA	NA	NA
3-7, 9, 10	78	3,3'-Dichlorobenzidine	µg/L	Annual	0.6	NONE	NONE	0.04	0.077	NONE	0.077	No	NA	NA	NA	NA
3-7, 9, 10	79	Diethyl phthalate	µg/L	Annual	0.6	NONE	NONE	23,000	120,000	NONE	120,000	No	NA	NA	NA	NA
3-7, 9, 10	80	Dimethyl phthalate	µg/L	Annual	0.6	NONE	NONE	313,000	2,900,000	NONE	2,900,000	No	NA	NA	NA	NA
3-7, 9, 10	81	Di-n-butyl phthalate	µg/L	Annual	0.6	NONE	NONE	2,700	12,000	NONE	12,000	No	NA	NA	NA	NA
3-7, 9, 10	82	2,4-Dinitrotoluene	µg/L	Annual	0.6	NONE	NONE	0.11	9.1	NONE	9.1	No	NA	NA	NA	NA
3-7, 9, 10	83	2,6-Dinitrotoluene	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	84	Di-n-octyl phthalate	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	85	1,2-Diphenylhydrazine/Azobenzene	µg/L	Annual	0.6	NONE	NONE	0.04	0.54	NONE	0.54	No	NA	NA	NA	NA
3-7, 9, 10	86	Fluoranthene	µg/L	Annual	0.6	NONE	NONE	300	370	NONE	370	No	NA	NA	NA	NA
3-7, 9, 10	87	Fluorene	µg/L	Annual	0.6	NONE	NONE	1,300	14,000	NONE	14,000	No	NA	NA	NA	NA
3-7, 9, 10	88	Hexachlorobenzene	µg/L	Annual	0.6	NONE	NONE	0.00075	0.00077	1	0.00077	No	NA	NA	NA	NA
3-7, 9, 10	89	Hexachlorobutadiene	µg/L	Annual	0.6	NONE	NONE	0.44	50	NONE	50	No	NA	NA	NA	NA
3-7, 9, 10	90	Hexachlorocyclopentadiene	µg/L	Annual	0.6	NONE	NONE	240	17,000	50	50	No	NA	NA	NA	NA
3-7, 9, 10	91	Hexachloroethane	µg/L	Annual	0.6	NONE	NONE	1.9	8.9	NONE	8.9	No	NA	NA	NA	NA
3-7, 9, 10	92	Indeno(1,2,3-cd)Pyrene	µg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
3-7, 9, 10	93	Isophorone	µg/L	Annual	0.6	NONE	NONE	8.4	600	NONE	600	No	NA	NA	NA	NA
3-7, 9, 10	94	Naphthalene	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	95	Nitrobenzene	µg/L	Annual	0.6	NONE	NONE	17	1,900	NONE	1,900	No	NA	NA	NA	NA
3-7, 9, 10	96	N-Nitrosodimethylamine	µg/L	Annual	0.6	NONE	NONE	0.00069	8.1	NONE	8.1	No	NA	NA	NA	NA
3-7, 9, 10	97	n-Nitroso-di-n-propylamine	µg/L	Annual	0.6	NONE	NONE	0.005	1.4	NONE	1.4	No	NA	NA	NA	NA
3-7, 9, 10	98	N-Nitrosodiphenylamine	µg/L	Annual	0.6	NONE	NONE	5	16	NONE	16	No	NA	NA	NA	NA
3-7, 9, 10	99	Phenanthrene	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	100	Pyrene	µg/L	Annual	0.6	NONE	NONE	960	11,000	NONE	11,000	No	NA	NA	NA	NA
3-7, 9, 10	101	1,2,4-Trichlorobenzene	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	70	70	No	NA	NA	NA	NA
3-7, 9, 10	102	Aldrin	µg/L	Annual	0.6	3	NONE	0.00013	0.00014	NONE	0.00014	No	NA	NA	NA	NA
3-7, 9, 10	103	alpha-BHC	µg/L	Annual	0.6	NONE	NONE	0.0039	0.013	NONE	0.013	No	NA	NA	NA	NA
3-7, 9, 10	104	beta-BHC	µg/L	Annual	0.6	NONE	NONE	0.014	0.046	NONE	0.046	No	NA	NA	NA	NA
3-7, 9, 10	105	gamma-BHC (Lindane)	µg/L	Annual	0.6	0.95	NONE	0.019	0.063	0.2	0.063	No	NA	NA	NA	NA
3-7, 9, 10	106	delta-BHC	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	107	Chlordane	µg/L	Annual	0.6	2.4	0.0043	0.00057	0.00059	0.1	0.00059	No	NA	NA	NA	NA
3-7, 9, 10	108	4,4'-DDT	µg/L	Annual	0.6	1.1	0.001	0.00059	0.00059	NONE	0.00059	No	NA	NA	NA	NA
3-7, 9, 10	109	4,4'-DDE	µg/L	Annual	0.6	NONE	NONE	0.00059	0.00059	NONE	0.00059	No	NA	NA	NA	NA
3-7, 9, 10	110	4,4'-DDD	µg/L	Annual	0.6	NONE	NONE	0.00083	0.00084	NONE	0.00084	No	NA	NA	NA	NA
3-7, 9, 10	111	Dieldrin	µg/L	Annual	0.6	0.24	0.056	0.00014	0.00014	NONE	0.00014	No	NA	NA	NA	NA
3-7, 9, 10	112	alpha-Endosulfan	µg/L	Annual	0.6	0.22	0.056	110	240	NONE	0.056	No	NA	NA	NA	NA
3-7, 9, 10	113	beta-Endosulfan	µg/L	Annual	0.6	0.22	0.056	110	240	NONE	0.056	No	NA	NA	NA	NA
3-7, 9, 10	114	Endosulfan Sulfate	µg/L	Annual	0.6	NONE	NONE	110	240	NONE	240	No	NA	NA	NA	NA
3-7, 9, 10	115	Endrin	µg/L	Annual	0.6	0.086	0.036	0.76	0.81	2	0.036	No	NA	NA	NA	NA
3-7, 9, 10	116	Endrin Aldehyde	µg/L	Annual	0.6	NONE	NONE	0.76	0.81	NONE	0.81	No	NA	NA	NA	NA

**TABLE F-2  
REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 003-007, 009, AND 010)**

**FIRST QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

Outfall	CTR	Constituent	Units	MEC	CV	Step 1: Water Quality Criteria, Determine C				Basin Plan	C = Lowest Criteria	Step 2 Is Effluent Data Available	Step 3			Step 4 MEC >= C
						CTR CRITERIA							Was Constituent Detected in Effluent Data	Are all Detection Limits > C	If DL > C, MEC = Min (DL)	
						Freshwater		Human Health								
						CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH							
3-7, 9, 10	117	Heptachlor	µg/L	Annual	0.6	0.52	0.0038	0.00021	0.00021	0.01	0.00021	No	NA	NA	NA	NA
3-7, 9, 10	118	Heptachlor Epoxide	µg/L	Annual	0.6	0.52	0.0038	0.0001	0.00011	0.01	0.00011	No	NA	NA	NA	NA
3-7, 9, 10	119	Aroclor 1016	µg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
3-7, 9, 10	120	Aroclor 1221	µg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
3-7, 9, 10	121	Aroclor 1232	µg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
3-7, 9, 10	122	Aroclor 1242	µg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
3-7, 9, 10	123	Aroclor 1248	µg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
3-7, 9, 10	124	Aroclor 1254	µg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
3-7, 9, 10	125	Aroclor 1260	µg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
3-7, 9, 10	126	Toxaphene	µg/L	Annual	0.6	0.73	0.0002	0.00073	0.00075	3	0.0002	No	NA	NA	NA	NA
3-7, 9, 10	127	E. Coli	MPN/100ml	Annual	0.6	NA	NA	NA	NA	235	235	No	NA	NA	NA	NA

**TABLE F-3  
REASONABLE POTENTIAL ANALYSIS - NONPRIORITY POLLUTANTS (OUTFALLS 003-007,009, AND 010)**

**FIRST QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

<b>Outfall</b>	<b>Constituent</b>	<b>Monitoring</b>	<b>Units</b>	<b>Number of Samples</b>	<b>MEC</b>	<b>CV</b>	<b>Multiplier</b>	<b>Projected Maximum Effluent Concentration (99/99)</b>	<b>Dilution Ratio</b>	<b>Background Concentration</b>	<b>Projected Maximum Receiving Water Concentration</b>	<b>Step 1, Determine Water Quality Objectives</b>	<b>BU - Beneficial use protection NC - Human noncarcinogen AP - Aquatic life protection TMDL - Total Maximum Daily Load</b>
3-7, 9, 10	Total Suspended Solids	Discharge	mg/L	1	11.0	0.6	13.20	145.17	NA	NA	145.17	45	BU

**TABLE F-4  
REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALL 008)**

**FIRST QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

Outfall	CTR	Constituent	Units	MEC	CV	Step 1: Water Quality Criteria, Determine C				Basin Plan Title 22 GWR	C = Lowest Criteria	Step 2 Is Effluent Data Available	Step 3 Was Constituent Detected in Effluent Data	Step 3 Are all Detection Limits > C	Step 3 If DL > C, MEC = Min (DL)	Step 4 MEC >= C	
						CTR CRITERIA		Human Health	HH W&O (Not App)								HH O = HH
						Freshwater	Human Health										
						CMC = Acute	CCC = Chronic										
8	002	Arsenic	µg/L	Annual	0.6	340	150	NONE	NONE	50	50	No	NA	NA	NA	NA	
8	003	Beryllium	µg/L	Annual	0.6	NONE	NONE	Narrative	Narrative	4	4	No	NA	NA	NA	NA	
8	005a	Chromium	µg/L	Annual	0.6	550	180	Narrative	Narrative	50	50	No	NA	NA	NA	NA	
8	005b	Chromium VI	µg/L	Annual	0.6	16	11	Narrative	Narrative	NONE	11	No	NA	NA	NA	NA	
8	011	Silver	µg/L	Available Data <DL	0.6	3.4	NONE	NONE	NONE	NONE	3.4	Yes	No	No	NA	No	
8	015	Asbestos	Fibers/L	Annual	0.6	NONE	NONE	7,000,000	NONE	7,000,000	7,000,000	No	NA	NA	NA	NA	
8	017	Acrolein	µg/L	Annual	0.6	NONE	NONE	320	780	NONE	780	No	NA	NA	NA	NA	
8	018	Acrylonitrile	µg/L	Annual	0.6	NONE	NONE	0.059	0.66	NONE	0.66	No	NA	NA	NA	NA	
8	019	Benzene	µg/L	Annual	0.6	NONE	NONE	1.2	71	1	1	No	NA	NA	NA	NA	
8	020	Bromoform	µg/L	Annual	0.6	NONE	NONE	4.3	360	NONE	360	No	NA	NA	NA	NA	
8	021	Carbon Tetrachloride	µg/L	Annual	0.6	NONE	NONE	0.25	4.4	0.5	0.5	No	NA	NA	NA	NA	
8	022	Chlorobenzene	µg/L	Annual	0.6	NONE	NONE	680	21,000	70	70	No	NA	NA	NA	NA	
8	023	Dibromochloromethane	µg/L	Annual	0.6	NONE	NONE	0.401	34	NONE	34	No	NA	NA	NA	NA	
8	024	Chloroethane	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA	
8	025	2-Chloroethylvinylether	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA	
8	026	Chloroform	µg/L	Annual	0.6	NONE	NONE	Reserved	Reserved	NONE	NONE	No	NA	NA	NA	NA	
8	027	Bromodichloromethane	µg/L	Annual	0.6	NONE	NONE	0.56	46	NONE	46	No	NA	NA	NA	NA	
8	028	1,1-Dichloroethane	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	5	5	No	NA	NA	NA	NA	
8	029	1,2-Dichloroethane	µg/L	Annual	0.6	NONE	NONE	0.38	99	0.5	0.5	No	NA	NA	NA	NA	
8	030	1,1-Dichloroethene	µg/L	Annual	0.6	NONE	NONE	0.057	3.2	6	3.2	No	NA	NA	NA	NA	
8	031	1,2-Dichloropropane	µg/L	Annual	0.6	NONE	NONE	0.52	39	5	5	No	NA	NA	NA	NA	
8	032	cis-1,3-Dichloropropene	µg/L	Annual	0.6	NONE	NONE	10	1,700	0.5	0.5	No	NA	NA	NA	NA	
8	032a	trans-1,3-Dichloropropene	µg/L	Annual	0.6	NONE	NONE	10	1,700	0.5	0.5	No	NA	NA	NA	NA	
8	033	Ethylbenzene	µg/L	Annual	0.6	NONE	NONE	3,100	29,000	700	700	No	NA	NA	NA	NA	
8	034	Bromomethane	µg/L	Annual	0.6	NONE	NONE	48	4,000	NONE	4,000	No	NA	NA	NA	NA	
8	035	Chloromethane	µg/L	Annual	0.6	NONE	NONE	Narrative	Narrative	NONE	NONE	No	NA	NA	NA	NA	
8	036	Methylene chloride	µg/L	Annual	0.6	NONE	NONE	4.7	1,600	NONE	1,600	No	NA	NA	NA	NA	
8	037	1,1,2,2-Tetrachloroethane	µg/L	Annual	0.6	NONE	NONE	0.17	11	1	1	No	NA	NA	NA	NA	
8	038	Tetrachloroethene	µg/L	Annual	0.6	NONE	NONE	0.8	8.85	5	5	No	NA	NA	NA	NA	
8	039	Toluene	µg/L	Annual	0.6	NONE	NONE	6,800	200,000	150	150	No	NA	NA	NA	NA	
8	040	trans-1,2-Dichloroethene	µg/L	Annual	0.6	NONE	NONE	700	140,000	10	10	No	NA	NA	NA	NA	
8	041	1,1,1-Trichloroethane	µg/L	Annual	0.6	NONE	NONE	Narrative	Narrative	200	200	No	NA	NA	NA	NA	
8	042	1,1,2-trichloroethane	µg/L	Annual	0.6	NONE	NONE	0.6	42	5	5	No	NA	NA	NA	NA	
8	043	Trichloroethene	µg/L	Annual	0.6	NONE	NONE	2.7	81	5	5	No	NA	NA	NA	NA	
8	044	Vinyl chloride	µg/L	Annual	0.6	NONE	NONE	2	525	0.5	0.5	No	NA	NA	NA	NA	
8	045	2-chlorophenol	µg/L	Annual	0.6	NONE	NONE	120	400	NONE	400	No	NA	NA	NA	NA	
8	046	2,4-Dichlorophenol	µg/L	Annual	0.6	NONE	NONE	93	790	NONE	790	No	NA	NA	NA	NA	
8	047	2,4-dimethylphenol	µg/L	Annual	0.6	NONE	NONE	540	2,300	NONE	2,300	No	NA	NA	NA	NA	
8	048	2-Methyl-4,6-dinitrophenol	µg/L	Annual	0.6	NONE	NONE	13.4	765	NONE	765	No	NA	NA	NA	NA	
8	049	2,4-dinitrophenol	µg/L	Annual	0.6	NONE	NONE	70	14,000	NONE	14,000	No	NA	NA	NA	NA	
8	050	2-nitrophenol	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA	
8	051	4-nitrophenol	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA	
8	052	4-Chloro-3-methylphenol	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA	
8	053	Pentachlorophenol	µg/L	Annual	0.6	pH dependent	pH dependent	0.28	8.2	1	1	No	NA	NA	NA	NA	
8	054	Phenol	µg/L	Annual	0.6	NONE	NONE	21,000	4,600,000	NONE	4,600,000	No	NA	NA	NA	NA	
8	055	2,4,6-Trichlorophenol	µg/L	Annual	0.6	NONE	NONE	2.1	6.5	NONE	6.5	No	NA	NA	NA	NA	
8	056	Acenaphthene	µg/L	Annual	0.6	NONE	NONE	1,200	2,700	NONE	2,700	No	NA	NA	NA	NA	
8	057	Acenaphthylene	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA	
8	058	Anthracene	µg/L	Annual	0.6	NONE	NONE	9,600	110,000	NONE	110,000	No	NA	NA	NA	NA	
8	059	Benzidine	µg/L	Annual	0.6	NONE	NONE	0.00012	0.00054	NONE	0.00054	No	NA	NA	NA	NA	
8	060	Benzo(a)Anthracene	µg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA	
8	061	Benzo(a)Pyrene	µg/L	Annual	0.6	NONE	NONE	0.0044	0.049	0.2	0.049	No	NA	NA	NA	NA	
8	062	Benzo(b)Fluoranthene	µg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA	
8	063	Benzo(g,h,i)Perylene	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA	

**TABLE F-4  
REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALL 008)**

**FIRST QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

Outfall	CTR	Constituent	Units	MEC	CV	Step 1: Water Quality Criteria, Determine C				Basin Plan Title 22 GWR	C = Lowest Criteria	Step 2 Is Effluent Data Available	Step 3 Was Constituent Detected in Effluent Data	Step 3 Are all Detection Limits > C	Step 3 If DL > C, MEC = Min (DL)	Step 4 MEC >= C
						CTR CRITERIA		HH W&O (Not App)	HH O = HH							
						Freshwater	Human Health									
						CMC = Acute	CCC = Chronic									
8	064	Benzo(k)Fluoranthene	µg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
8	065	Bis(2-Chloroethoxy) methane	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
8	066	bis (2-Chloroethyl) ether	µg/L	Annual	0.6	NONE	NONE	0.031	1.4	NONE	1.4	No	NA	NA	NA	NA
8	067	Bis(2-Chloroisopropyl) Ether	µg/L	Annual	0.6	NONE	NONE	1,400	170,000	NONE	170,000	No	NA	NA	NA	NA
8	068	bis (2-ethylhexyl) Phthalate	µg/L	Annual	0.6	NONE	NONE	1.8	5.9	4	4	No	NA	NA	NA	NA
8	069	4-Bromophenylphenylether	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
8	070	Butylbenzylphthalate	µg/L	Annual	0.6	NONE	NONE	3,000	5,200	NONE	5,200	No	NA	NA	NA	NA
8	071	2-Chloronaphthalene	µg/L	Annual	0.6	NONE	NONE	1,700	4,300	NONE	4,300	No	NA	NA	NA	NA
8	072	4-Chlorophenylphenylether	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
8	073	Chrysene	µg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
8	074	Dibenzo(a,h)Anthracene	µg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
8	075	1,2-Dichlorobenzene	µg/L	Annual	0.6	NONE	NONE	2,700	17,000	600	600	No	NA	NA	NA	NA
8	076	1,3-Dichlorobenzene	µg/L	Annual	0.6	NONE	NONE	400	2,600	NONE	2,600	No	NA	NA	NA	NA
8	077	1,4-Dichlorobenzene	µg/L	Annual	0.6	NONE	NONE	400	2,600	5	5	No	NA	NA	NA	NA
8	078	3,3'-Dichlorobenzidine	µg/L	Annual	0.6	NONE	NONE	0.04	0.077	NONE	0.077	No	NA	NA	NA	NA
8	079	Diethylphthalate	µg/L	Annual	0.6	NONE	NONE	23,000	120,000	NONE	120,000	No	NA	NA	NA	NA
8	080	Dimethylphthalate	µg/L	Annual	0.6	NONE	NONE	313,000	2,900,000	NONE	2,900,000	No	NA	NA	NA	NA
8	081	Di-n-butylphthalate	µg/L	Annual	0.6	NONE	NONE	2,700	12,000	NONE	12,000	No	NA	NA	NA	NA
8	082	2,4-Dinitrotoluene	µg/L	Annual	0.6	NONE	NONE	0.11	9.1	NONE	9.1	No	NA	NA	NA	NA
8	083	2,6-Dinitrotoluene	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
8	084	Di-n-octylphthalate	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
8	085	1,2-Diphenylhydrazine	µg/L	Annual	0.6	NONE	NONE	0.04	0.54	NONE	0.54	No	NA	NA	NA	NA
8	086	Fluoranthene	µg/L	Annual	0.6	NONE	NONE	300	370	NONE	370	No	NA	NA	NA	NA
8	087	Fluorene	µg/L	Annual	0.6	NONE	NONE	1,300	14,000	NONE	14,000	No	NA	NA	NA	NA
8	088	Hexachlorobenzene	µg/L	Annual	0.6	NONE	NONE	0.00075	0.00077	1	0.00077	No	NA	NA	NA	NA
8	089	Hexachlorobutadiene	µg/L	Annual	0.6	NONE	NONE	0.44	50	NONE	50	No	NA	NA	NA	NA
8	090	Hexachlorocyclopentadiene	µg/L	Annual	0.6	NONE	NONE	240	17,000	50	50	No	NA	NA	NA	NA
8	091	Hexachloroethane	µg/L	Annual	0.6	NONE	NONE	1.9	8.9	NONE	8.9	No	NA	NA	NA	NA
8	092	Indeno(1,2,3-cd)Pyrene	µg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
8	093	Isophorone	µg/L	Annual	0.6	NONE	NONE	8.4	600	NONE	600	No	NA	NA	NA	NA
8	094	Naphthalene	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
8	095	Nitrobenzene	µg/L	Annual	0.6	NONE	NONE	17	1,900	NONE	1,900	No	NA	NA	NA	NA
8	096	N-Nitrosodimethylamine	µg/L	Annual	0.6	NONE	NONE	0.00069	8.1	NONE	8.1	No	NA	NA	NA	NA
8	097	n-Nitroso-di-n-propylamine	µg/L	Annual	0.6	NONE	NONE	0.005	1.4	NONE	1.4	No	NA	NA	NA	NA
8	098	N-Nitrosodiphenylamine	µg/L	Annual	0.6	NONE	NONE	5	16	NONE	16	No	NA	NA	NA	NA
8	099	Phenanthrene	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
8	100	Pyrene	µg/L	Annual	0.6	NONE	NONE	960	11,000	NONE	11,000	No	NA	NA	NA	NA
8	101	1,2,4-Trichlorobenzene	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	70	70	No	NA	NA	NA	NA
8	102	Aldrin	µg/L	Annual	0.6	3	NONE	0.00013	0.00014	NONE	0.00014	No	NA	NA	NA	NA
8	103	alpha-BHC	µg/L	Annual	0.6	NONE	NONE	0.0039	0.013	NONE	0.013	No	NA	NA	NA	NA
8	104	beta-BHC	µg/L	Annual	0.6	NONE	NONE	0.014	0.046	NONE	0.046	No	NA	NA	NA	NA
8	105	Lindane (gamma-BHC)	µg/L	Annual	0.6	0.95	NONE	0.019	0.063	0.2	0.063	No	NA	NA	NA	NA
8	106	delta-BHC	µg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
8	107	Chlordane	µg/L	Annual	0.6	2.4	0.0043	0.00057	0.00059	0.1	0.00059	No	NA	NA	NA	NA
8	108	4,4'-DDT	µg/L	Annual	0.6	1.1	0.001	0.00059	0.00059	NONE	0.00059	No	NA	NA	NA	NA
8	109	4,4'-DDE	µg/L	Annual	0.6	NONE	NONE	0.00059	0.00059	NONE	0.00059	No	NA	NA	NA	NA
8	110	4,4'-DDD	µg/L	Annual	0.6	NONE	NONE	0.00083	0.00084	NONE	0.00084	No	NA	NA	NA	NA
8	111	Dieldrin	µg/L	Annual	0.6	0.24	0.056	0.00014	0.00014	NONE	0.00014	No	NA	NA	NA	NA
8	112	Endosulfan I	µg/L	Annual	0.6	0.22	0.056	110	240	NONE	0.056	No	NA	NA	NA	NA
8	113	Endosulfan II	µg/L	Annual	0.6	0.22	0.056	110	240	NONE	0.056	No	NA	NA	NA	NA
8	114	Endosulfan Sulfate	µg/L	Annual	0.6	NONE	NONE	110	240	NONE	240	No	NA	NA	NA	NA
8	115	Endrin	µg/L	Annual	0.6	0.086	0.036	0.76	0.81	2	0.036	No	NA	NA	NA	NA
8	116	Endrin Aldehyde	µg/L	Annual	0.6	NONE	NONE	0.76	0.81	NONE	0.81	No	NA	NA	NA	NA
8	117	Heptachlor	µg/L	Annual	0.6	0.52	0.0038	0.00021	0.00021	0.01	0.00021	No	NA	NA	NA	NA

**TABLE F-4  
REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALL 008)**

**FIRST QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

Outfall	CTR	Constituent	Units	MEC	CV	Step 1: Water Quality Criteria, Determine C				C = Lowest Criteria	Step 2 Is Effluent Data Available	Step 3		Step 4 MEC >= C		
						CTR CRITERIA						Basin Plan Title 22 GWR	Was Constituent Detected in Effluent Data		Are all Detection Limits > C	If DL > C, MEC = Min (DL)
						Freshwater		Human Health								
						CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH							
8	118	Heptachlor Epoxide	µg/L	Annual	0.6	0.52	0.0038	0.0001	0.00011	0.01	0.00011	No	NA	NA	NA	NA
8	119	Aroclor-1016	µg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
8	120	Aroclor-1221	µg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
8	121	Aroclor-1232	µg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
8	122	Aroclor-1242	µg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
8	123	Aroclor-1248	µg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
8	124	Aroclor-1254	µg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
8	125	Aroclor-1260	µg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
8	126	Toxaphene	µg/L	Annual	0.6	0.73	0.0002	0.00073	0.00075	3	0.0002	No	NA	NA	NA	NA
8	127	E. Coli	MPN/100ml	Annual	0.6	NA	NA	NA	NA	235	235	No	NA	NA	NA	NA

**TABLE F-5  
REASONABLE POTENTIAL ANALYSIS - NONPRIORITY POLLUTANTS (OUTFALL 008)**

**FIRST QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

<b>Outfall</b>	<b>Constituent</b>	<b>Monitoring</b>	<b>Units</b>	<b>Number of Samples</b>	<b>MEC</b>	<b>CV</b>	<b>Multiplier</b>	<b>Projected Maximum Effluent Concentration (99/99)</b>	<b>Dilution Ratio</b>	<b>Background Concentration</b>	<b>Projected Maximum Receiving Water Concentration</b>	<b>Step 1, Determine Water Quality Objectives</b>	<b>BU - Beneficial use protection NC - Human noncarcinogen AP - Aquatic life protection</b>
8	Total Suspended Solids	Discharge	mg/L	1	12	0.60	13.20	158.36	0	0	158.36	45	BU



**APPENDIX G**

**Fourth Quarter 2019 Receiving Water Surveys**

**APPENDIX G**  
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Table G - Receiving Water Surveys

**TABLE G  
RECEIVING WATER SURVEYS**

**FOURTH QUARTER 2019  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**October 1 through December 31, 2019**

**Observation Requirements:** Observations are only made during discharge on a monthly basis when Outfall 002 (Bell Creek), Outfall 008 (Dayton Creek), and Outfall 009 (Arroyo Simi) are flowing. Outfalls 002, 008, and 009 discharged in December during the Fourth Quarter 2019.

<b>FOURTH QUARTER 2019 ARROYO SIMI OBSERVATIONS at Arroyo Simi</b>			
<b>ARROYO SIMI OBSERVATIONS</b>	<b>OCTOBER</b>	<b>NOVEMBER</b>	<b>DECEMBER</b>
Date and time of inspection	N/A	N/A	12/23/2019, 07:55
Weather conditions	N/A	N/A	Partly cloudy, cool, 54°F
Color of water	N/A	N/A	Brown
Appearance of oil films or grease, or floatable materials	N/A	N/A	Leaves, foam, bubbles
Extent of visible turbidity or color patches	N/A	N/A	Uniform, opaque
Description of odor, if any	N/A	N/A	None
Presence or activity of California Least Tern or California Brown Pelican	N/A	N/A	No
Upstream Surface Water Temperature*	N/A	N/A	50.8°C/F
Upstream Surface Water pH*	N/A	N/A	7.09 pH Units

**Notes:**

N/A = not applicable. Since Outfall 009 did not flow during the months of October and November, no monthly inspection was required at Arroyo Simi.

\* = These data were collected to assist in determining compliance with receiving water limitations during the quarterly. Upstream data were compared to the pH and temperature measured at Arroyo Simi sample location RSW-002 (Appendix C) and were within 0.5 unit and 5°F of the upstream field readings; therefore, compliance was demonstrated.

<b>FOURTH QUARTER 2019 BELL CREEK OBSERVATIONS at Outfall 002</b>			
<b>BELL CREEK OBSERVATIONS</b>	<b>OCTOBER</b>	<b>NOVEMBER</b>	<b>DECEMBER</b>
Date and time of inspection	N/A	N/A	12/4/2019, 13:30
Weather conditions	N/A	N/A	Partly cloudy, cool, wet, ground surface
Color of water	N/A	N/A	Brown
Appearance of oil films or grease, or floatable materials	N/A	N/A	None
Extent of visible turbidity or color patches	N/A	N/A	Uniform, opaque
Description of odor, if any	N/A	N/A	None
Presence or activity of California Least Tern or California Brown Pelican	N/A	N/A	No

**Notes:**

N/A = not applicable. Since Outfall 002 did not flow during the months of October and November, no monthly inspection was required at Outfall 002.

<b>FOURTH QUARTER 2019 DAYTON CANYON CREEK OBSERVATIONS at Outfall 008</b>			
<b>DAYTON CANYON CREEK OBSERVATIONS</b>	<b>OCTOBER</b>	<b>NOVEMBER</b>	<b>DECEMBER</b>
Date and time of inspection	N/A	N/A	12/26/2019, 08:10
Weather conditions	N/A	N/A	Drizzling, cold, slight breeze
Color of water	N/A	N/A	Pale brown
Appearance of oil films or grease, or floatable materials	N/A	N/A	None
Extent of visible turbidity or color patches	N/A	N/A	Uniform translucent
Description of odor, if any	N/A	N/A	None
Presence or activity of California Least Tern or California Brown Pelican	N/A	N/A	No

**Notes:**

NA = not applicable. Since Outfall 008 did not flow during the months of October and November, no monthly inspection was required at Outfall 008.