Bohannan Huston

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Spatial Data
Advanced Technologies

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MEMORANDUM

DATE: July 12, 2017

TO: Jerry Lovato, PE, AMAFCA
Patrick Chavez, PE, AMAFCA

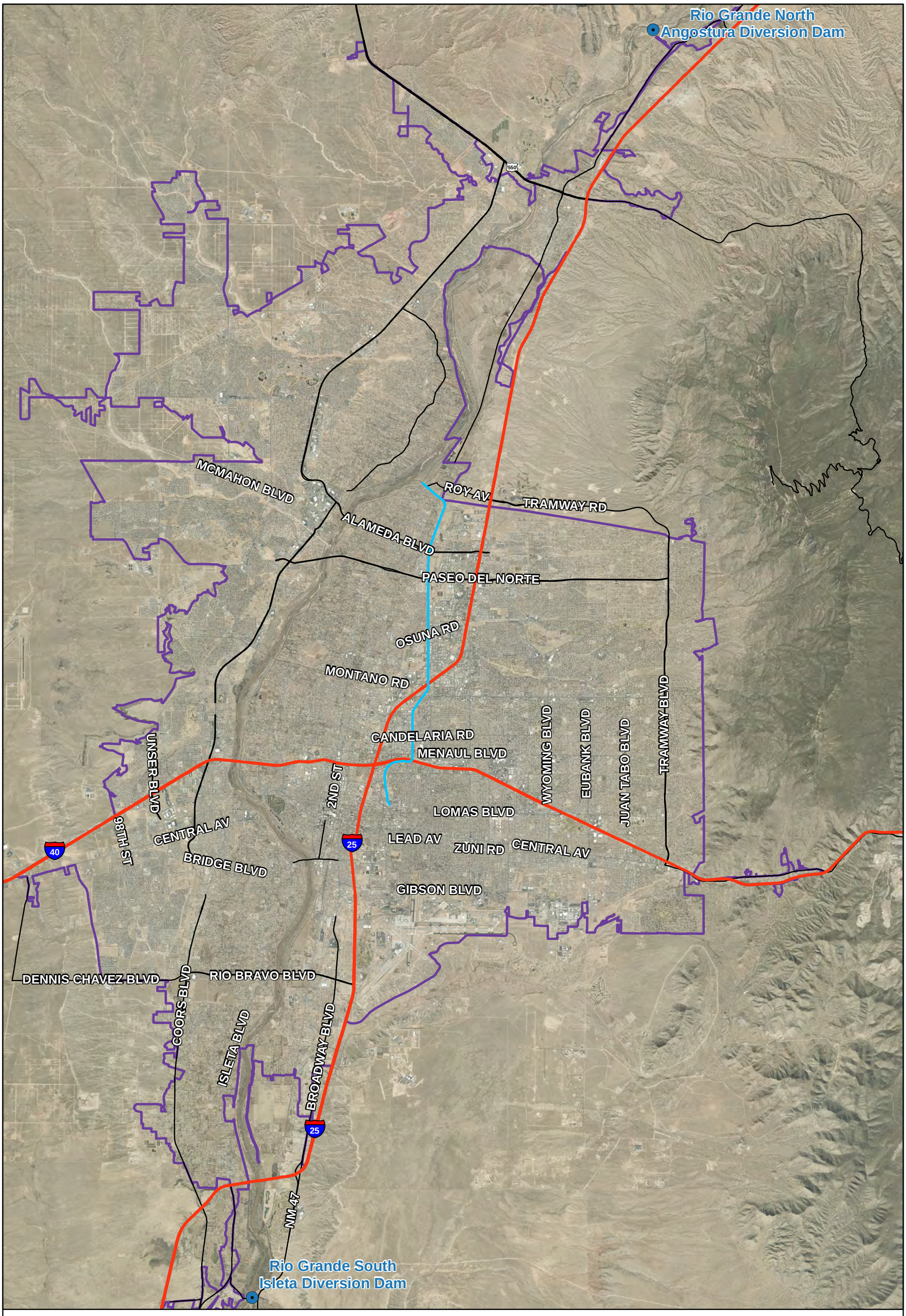
FROM: Craig Hoover, PE
Sarah Ganley, PE

SUBJECT: **CMC Dry Season, Wet Weather Stormwater Monitoring Data Verification, Analysis Results Database, and Reporting FY 2017 Dry Season (November 1, 2016, to June 30, 2017) Memo**

Overview of Stormwater Monitoring Activity

Bohannan Huston, Inc. (BHI) has been tasked to perform water quality services for the Compliance Monitoring Cooperative (CMC) Stormwater Data Verification, Database, and Reporting for the Wet Weather Stormwater Quality Monitoring Program for Fiscal Year (FY) 2017 (July 1, 2016, to June 30, 2017). The scope of work for this task includes data verification of the stormwater laboratory analysis results, compiling the analysis results into a database, and calculating the E. coli daily loading to compare with the Waste Load Allocation (WLA) for the qualifying storm events. The stormwater compliance monitoring is being conducted separately by Daniel B. Stephens & Associates, Inc. (DBS&A) and is not a part of this on-call task. This task is being conducted to assist the CMC members with their comprehensive monitoring and assessment program for compliance under the 2014 Middle Rio Grande Watershed Based Municipal Separate Storm Sewer System (MS4) Permit, NPDES Permit No. NMR04A000 ("WSB MS4 Permit").

As identified in the CMC Monitoring Plan, the WSB MS4 Permit requires that a minimum of seven (7) storm events be sampled at both the Rio Grande North and Rio Grande South locations (refer to Figure 1, page 2). During the 5-year WSB MS4 Permit term, at least three (3) events must be sampled in the wet season (between July 1 and October 31, 2016) and at least two (2) events in the dry season (between November and June). The remaining two (2) required events can be obtained during either the wet or dry seasons. During the FY 2017 dry season (November 2016 through June 2017) there was one (1) qualifying storm event where samples were collected for both the Rio Grande North and Rio Grande South locations.



AMAFCA

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Legend

- CMC Monitoring Locations
- North Diversion Channel
- Albuquerque Urbanized Area
- Interstate Highway
- U.S. Highway
- State Highway

N W E S

0 0.5 1 2
Miles

CMC Monitoring Locations

Figure 1

P:\20170386\WR\Reports\Preliminary & Draft\Figures\MXDs\Figure1-CMCMonitoringLocations.mxd
Author: gmaynard

July 2017

Summary of the CMC Sampling Plan

Sampling Parameters:

Samples from both the Rio Grande North and Rio Grande South monitoring locations were analyzed for the parameters defined in the EPA approved WSB MS4 CMC Monitoring Plan, May 5, 2016. The parameter list for both locations, which is intended to characterize stormwater discharges into the river, is as follows:

Total Suspended Solids (TSS)
Total Dissolved Solids (TDS)
Chemical Oxygen Demand (COD)
Biological Oxygen Demand – 5-day (BOD_5)
Dissolved Oxygen (DO)
Oil & grease (N-Hexane Extractable Material)
E. coli
pH
Total Kjeldahl Nitrogen (TKN)
Nitrate plus Nitrite
Dissolved Phosphorus
Ammonia plus Organic Nitrogen (Nitrogen, Ammonia and Nitrogen, Total)
Phosphorous (Total Phosphorous)
Polychlorinated Biphenyls (PCBs – Method 1668A)
Gross Alpha
Tetrahydrofuran
Benzo(a)pyrene
Benzo(b)fluoranthene (3, 4 Benzofluoranthene)
Benzo(k)fluoranthene
Chrysene
lndeno(1 ,2,3-cd)pyrene
Dieldrin
Pentachlorophenol
Benzidine
Benzo(a)anthracene
Dibenzofuran
Dibenzo(a, h)anthracene
Chromium VI (Hexavalent)
Copper – Dissolved
Lead – Dissolved
Bis(2-ethylhexyl)phthalate
Conductivity
Temperature
Hardness (as CaCO3) – added to allow dissolved metal results to be compared to the applicable water quality standards

DO, pH, conductivity, and temperature are required by the WSB MS4 Permit to be analyzed in the field during sample collection, which was conducted by DBS&A, within fifteen (15) minutes of sample collection. All E. coli samples were submitted to the laboratory within six (6) hours of collection in order to meet the specified hold time.

Sampling Locations:

The sampling locations are shown in Figure 1, page 2.

Rio Grande North – Instream sampling within the Rio Grande was performed upstream of the Angostura Diversion Dam at the north end of the watershed. The location is upstream of all inputs from the Urban Area (UA) to the river and provides the background water conditions.

Rio Grande South – Instream sampling within the Rio Grande was performed at the Isleta Bridge at the south end of the watershed. The location is downstream of all inputs from the UA to the river and provides the downstream water conditions.

These locations have been accepted by EPA and New Mexico Environment Department (NMED) to meet the WSB MS4 Permit requirements in Part III.A. These North and South instream sample locations capture all inputs to the Rio Grande within the UA.

Sample Collection:

As mentioned previously, sample collection for the CMC is being conducted by DBS&A through a separate on-call contract. Since BHI was not involved, this task and memo do not address the details of the methodologies regarding sampling, determining if an event was a qualifying storm event, or determining the timing of the hydrograph at the Rio Grande South location. After the November qualifying storm event sample was obtained, the CMC instructed DBS&A to stop sample collection during the remainder of the dry season.

DBS&A provided BHI with their field notes and field sample data (temperature, DO, specific conductivity, and pH) for the FY 2017 dry season sampling. AMAFCA provided BHI the completed laboratory analysis reports from Hall Environmental Analysis Laboratory (HEAL) for this monitoring season.

Quality Assurance Project Plan (QAPP):

AMAFCA provided BHI with the Draft Quality Assurance Project Plan (QAPP) for the CMC dated June 14, 2016. DBS&A followed this QAPP during sample collection. BHI used this QAPP and the included standard operating procedures (SOPs) for the data verification and validation.

Monitoring Activity & Lab Analysis Summary

The list below provides a chronological summary of the CMC comprehensive monitoring program activities completed by DBS&A for the FY 2017 dry season from November 2016 through June 2017. One (1) qualifying storm event was sampled and analyzed during the FY 2017 dry season.

- **November 3 – Only E. coli for Rio Grande North.** A sample was collected at the Rio Grande North location and sent to the laboratory for an E. coli only test. Based on review of the storm event by the CMC, it was determined this was not a qualifying storm event; therefore, full parameter testing did not occur for the sample collected at the Rio Grande North location.
- **November 21-22 – Qualifying Storm Event – Full Analysis of Samples**. A sample was collected at the Rio Grande North location beginning at 9:30 a.m. on November 21 and sent to the laboratory for an E. coli only test. The CMC determined that the storm event

beginning November 21 was a qualifying storm event. A Rio Grande South sample was collected beginning at 7:00 a.m. on November 22; the samples from the North (from November 21 collection) and South locations were taken to the laboratory for full parameter testing.

Stormwater Quality Database for CMC

As stated previously, there was one (1) qualifying storm event sampled during the FY 2017 dry season, wet weather monitoring which occurred November 21-22, 2016. DBS&A's field notes containing DO, pH, conductivity, and temperature measurements, as well as comments for the sampling done in November, have been received, and field results have been added to the database. Additionally, the HEAL reports for the corresponding time period have been received, added to the database, and are provided with this memo (Attachment 1). The laboratory reports attached to this memo have BHI added comments including the field parameter measurements and other relevant notes related to each laboratory report.

The HEAL analyses for the one (1) qualifying storm event contain the full parameter list for both the Rio Grande North and Rio Grande South sampling locations. There was one other precipitation event in November 2016 that did not evolve into qualifying storm events; however, an E. coli sample was still collected and field data was measured for the Rio Grande North location. The HEAL lab reports are provided with this memo (Attachment 1). Despite not being qualifying storm events, the field and E. coli data collected were added to the database as they provide additional background data for the CMC program.

Database Creation and Data Entry:

An Excel database of the FY 2017 wet weather monitoring data was created for this Task and provided with the March 6, 2017 FY 2017 Wet Season Memo. The November 2016 dry season monitoring data has been added to this database. The database contains sample locations (Rio Grande North and Rio Grande South), sample date, analyses conducted, methods used, applicable surface water quality standards (WQS), WSB MS4 Permit required Minimum Quantification Levels (MQL), and analysis results. Applicable surface WQS found in New Mexico Administrative Code (NMAC) 20.6.4, as well as the Pueblo of Isleta and Pueblo of Sandia WQS, are entered in the Excel database for comparison purposes with testing results. There is an indicator in the database to show if the monitoring results exceed the applicable surface WQS. An exceedance is not a violation of the WSB MS4 Permit, as the Permit does not have numeric discharge limitations. These ">WQ Standard" flags simply and quickly show the CMC members where the results of the lab data exceed the applicable surface WQS.

Upon receipt of the HEAL lab reports, water quality data was entered into the database. All data entered into the database is initially denoted with a "P" to indicate that it is provisional and has not been through the verification and validation process yet. Full parameter analyses of the qualifying storm event for both Rio Grande North and Rio Grande South locations were entered respectively into the database. In addition, the E. coli and field data only samples from the Rio Grande North location, obtained during one non-qualifying storm event, were also entered into the database.

Data Verification and Validation:

The HEAL laboratory analysis reports were provided to BHI by AMAFCA. The lab reports also contain the Chain of Custody for the submitted samples. Field data was requested by and

provided to BHI by DBS&A. Data verification and validation (V & V) was conducted by BHI on all field notes, lab reports, and Chain of Custody documents in accordance with the CMC Water Quality Standard Operating Procedure (SOP) #2, which is part of the existing CMC QAPP, Draft June 14, 2016. These procedures are based on EPA Guidance for Environmental Data Verification and Validation (U.S. EPA, 2008).

As stated in the QAPP, the V & V process was completed by a different person than the one who entered the data into the database. The V & V process included use of the *Data Verification and Validation Worksheet* (provided in the QAPP). For this task, field data was verified first, confirming that all field notes were complete. BHI handled field parameter questions directly with DBS&A. Chemical data verification began as soon as the lab reports were received, checking that all parameters were tested and looking for any obvious exceedances of surface WQS. Other steps listed on the *Data Verification and Validation Worksheet* were completed after all data from the laboratory was received and entered into the database. Sample blank results were reviewed to identify potential contamination during field processing or transport. Replica/duplicate samples were evaluated based on relative percent difference (as described in more detail in the QAPP) to determine the variability of the samples.

There were not any CMC FY 2017 dry season data that did not meet the appropriate QA/QC requirements. If there were any data that did not meet the appropriate QA/QC requirements, it would have been assigned an appropriate laboratory qualifier or validation code. A summary of validation codes is provided in the QAPP.

Once the V & V process was completed, the worksheets were signed. Copies of the V & V worksheets are provided with this memo (Attachment 2). In the database, data that was checked during the V & V process was then changed from being denoted with a “P” for provisional to a “V” for verified, and laboratory qualifiers were added as needed.

CMC FY 2017 Dry Season Assessment and Evaluation of Monitoring Results

The EPA approved WSB MS4 CMC Monitoring Plan, May 5, 2016, has thirty-four (34) parameters to monitor at the Rio Grande North and Rio Grande South monitoring locations. Of these thirty-four (34) parameters (which include four field parameters), over half of the parameters—eighteen (18) parameters—were not detected in the FY 2017 dry season samples at either the Rio Grande North or South locations. Refer to Table 1 for a list of the parameters that were not detected.

Table 1: Parameters Not Detected
CMC FY 2017 Dry Season Monitoring

Parameters Not Detected	
Oil and Grease (N-Hexane Extractable Material)	Pentachlorophenol
Ammonia (mg/L as N)	Benzidine
Tetrahydrofuran	Benzo(a)anthracene
Benzo(a)pyrene	Dibenzofuran
Benzo(b)fluoranthene (3, 4 Benzofluoranthene)	Dibenzo(a,h)anthracene
Benzo(k)fluoranthene	Chromium VI (Hexavalent)
Chrysene	Dissolved Copper
Indeno(1,2,3-cd)Pyrene	Dissolved Lead
Dieldren	Bis (2-ethyhexyl) Phthalate

The FY 2017 wet season also had eighteen (18) parameters that were not detected at either the Rio Grande North or South locations. The wet season non-detected parameters differed by two parameters as compared to the dry season; dissolved copper was detected in the wet season samples, and Total Kjedahl Nitrogen (TKN) was not detected in the wet season samples.

E. coli:

For the remaining sixteen (16) parameters on the CMC monitoring parameter list, only one parameter (E. coli) had exceedances of the applicable surface WQS found in New Mexico Administrative Code (NMAC) 20.6.4 and the Pueblo of Isleta and Pueblo of Sandia WQS during the FY 2017 dry season. At the Rio Grande North location (upstream of the Albuquerque UA, at the Angostura Diversion Dam), two (2) samples were collected and tested for E. coli, and neither of the samples had results that exceeded the primary contact-single sample Pueblo of Isleta and Pueblo of Sandia WQS (88 CFU/100 mL). At the Rio Grande South location (downstream of the MS4 UA), one (1) sample was collected and tested for E. coli, and this sample's result exceeded the primary contact-single sample NMAC WQS (410 CFU/100 ml) as well as the Pueblo of Isleta and Pueblo of Sandia WQS (88 CFU/100 mL). As a reminder, the E. coli units of MPN/100 mL and CFU/100 mL are considered to be interchangeable; the March 6, 2017 FY 2017 Wet Season Memo provides additional documentation regarding the E. coli units.

Dissolved Oxygen, PCB's and Temperature:

Three of the water quality parameters are specifically worth mentioning in this memo because they are listed in the WSB MS4 Permit, Part I.C.1 – Special Conditions: dissolved oxygen, PCBs, and temperature.

Dissolved oxygen is a water quality concern in the Rio Grande if it is below 5 mg/L. None of the samples taken from the Rio Grande during the FY 2017 CMC monitoring program had dissolved oxygen values below 5 mg/L. Refer to Figure 2 for dissolved oxygen results and comparison to applicable surface WQS.

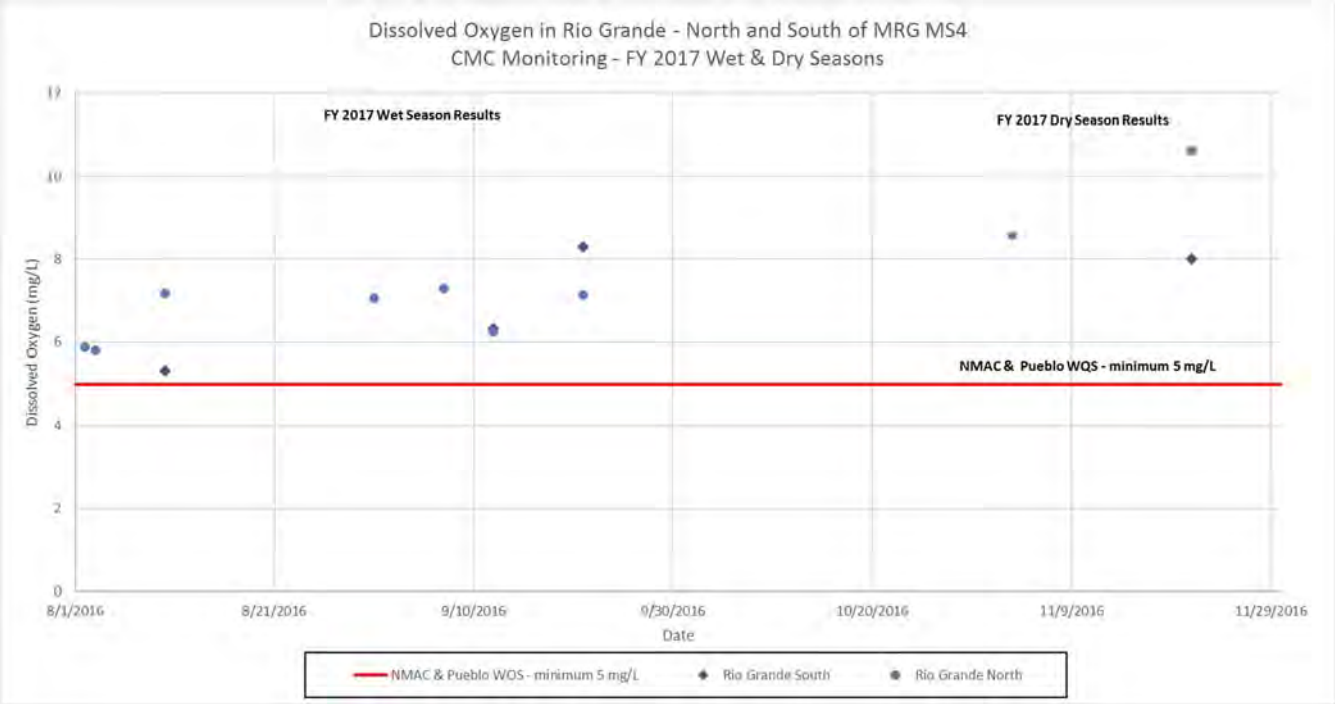


Figure 2: Dissolved Oxygen Results for Rio Grande
CMC Monitoring – FY 2017 Wet and Dry Seasons

For the CMC FY 2017 dry season sample, as well as for the three (3) FY 2017 wet season samples, there were no exceedances of WQS for PCBs.

Temperature is listed in the WSB MS4 Permit as a special condition (only applicable to the City of Albuquerque and AMAFCA). Past data submitted to EPA and NMED has proven that stormwater discharges into the Rio Grande are not impacting the Rio Grande temperature above the applicable WQS. The data collected during this FY 2017 dry season monitoring supports this conclusion. All of the temperature field readings taken in the Rio Grande during the CMC FY 2017 dry season were below 32.2°C (90 °F) – the WQS for the State of New Mexico and for the Isleta and Sandia Pueblos.

CMC FY 2017 Wet Season E. coli Loading Calculations and Waste Load Allocation (WLA)

Related to assessing the stormwater results, BHI has calculated the E. coli daily loading and compared it to the aggregate Total Maximum Daily Load (TMDL) Waste Load Allocation (WLA) for the CMC group. A TMDL is the maximum amount of a pollutant (E. coli in this case) that a water body (Rio Grande) can assimilate on a daily basis without violating applicable surface WQS. The total TMDL for a stream segment consists of the multiple WLA for point sources, non-point sources, and natural sources, plus a margin of safety. The CMC MS4 allotted WLA was determined in the US EPA Approved, Total Maximum Daily Load for the Middle Rio Grande Watershed, June 30, 2010, and subsequent communications with NMED. The WLA varies by flow condition in the Rio Grande and by stream segment.

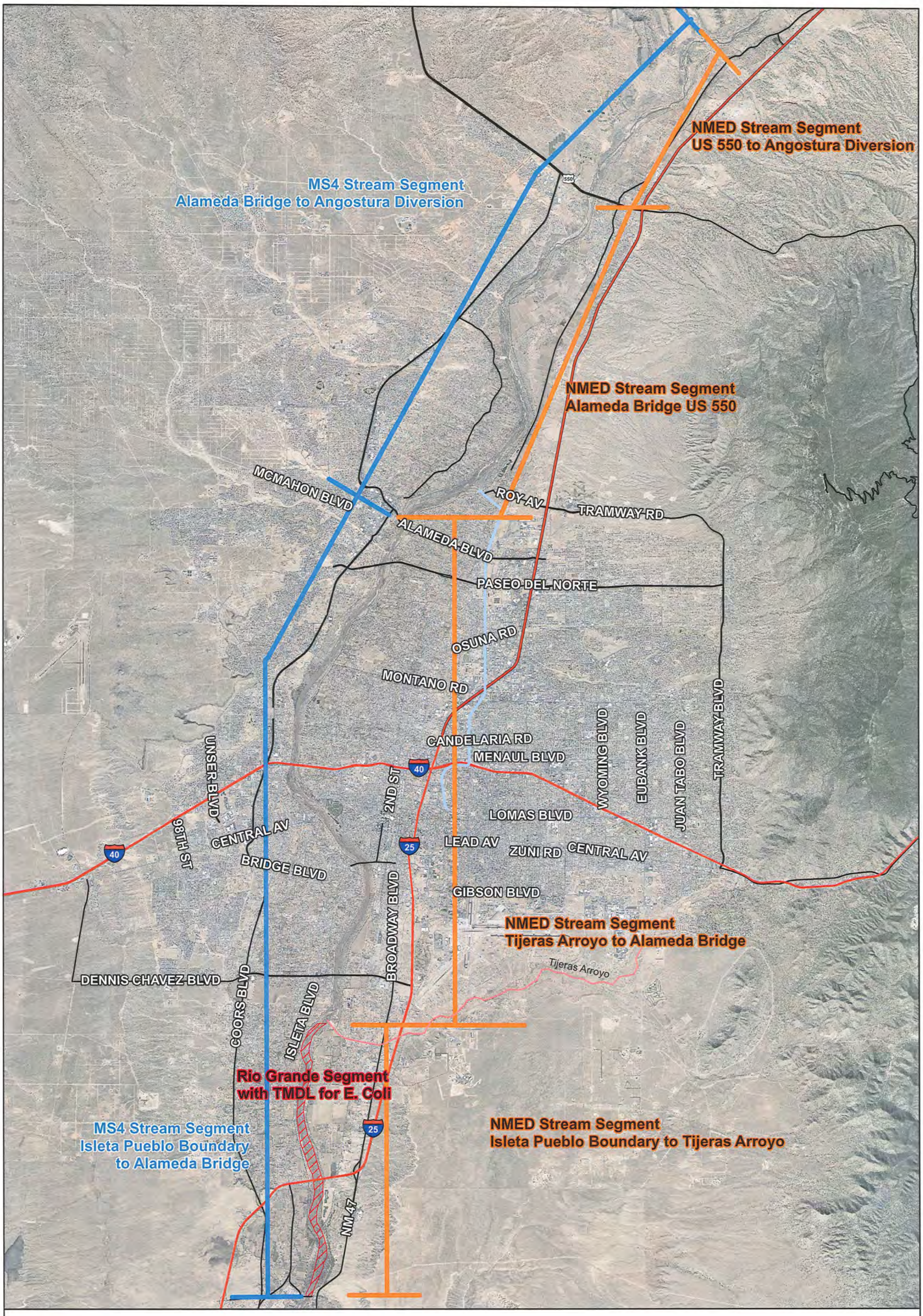
E. coli loading calculations and comparison to the WLA follows the WSB MS4 Permit requirements in “Discharges to Water Quality Impaired Water Bodies with an Approved TMDL,” Part I.C.2.b.(i).(c).B, Appendix B-Total Maximum Daily Loads (TMDLs) Tables of the WSB MS4 Permit, and the NMED guidance provided to the CMC.

Attached to this memo is the WLA Calculation spreadsheet which steps through the E. coli daily loading calculations and assumptions comparing the calculated E. coli loading to the CMC aggregate WLA defined by NMED. BHI provided the draft calculations spreadsheet for review to AMAFCA, who shared this with other CMC members, in both December 2016 and February 2017, related to the wet season monitoring results. The CMC members also met to discuss the E. coli loading calculations with NMED on February 1, 2017. BHI followed up with NMED on February 16, 2017, regarding specific calculation details. The current spreadsheet includes the improvements discussed at the NMED meeting and follow-up phone call.

There are two (2) stream segments defined in the WSB MS4 Permit (Appendix B) for the Middle Rio Grande: Isleta Pueblo Boundary to Alameda Street Bridge (Stream Segment 2105_50) and Non-Pueblo Alameda Bridge to Angostura Diversion (Stream Segment 2105.1_00). These stream segments differ from NMED’s current stream segments defined in “2016-2018 State of New Mexico Clean Water Act Section 303(d)/Section 305(b) Integrated Report,” September 23, 2016. NMED currently has four (4) stream segments instead of the two (2) WSB MS4 stream segments; of the four (4) segments, only one segment has an impairment for E. coli (2105_50 Isleta Pueblo Boundary to Tijeras Arroyo). These various stream segment designations are shown in Figure 3, page 10.

NMED provided clarification at the February 1, 2017, meeting regarding the various stream segment designations. The NMED 303(d)/305(b) 2016-2018 Integrated Report tables show the most recent assessment results, and currently there is only one segment of the Middle Rio Grande (Isleta to Tijeras) within the MS4 boundaries that was found to be impaired for E. coli. However, the TMDL for the other Middle Rio Grande stream segments do not go away even if they are no longer impaired—the TMDL remains in place as a protective measure. TMDLs remain in effect after impairments are removed as protective measures.

The E. coli daily loading associated with the CMC group and comparison to the NMED WLA was completed for the one (1) qualifying event storm event monitored in the FY 2017 dry season—November 21-22, 2016. Refer to Table 2 for a summary of the WLA comparison. A spreadsheet is attached to this memo that provides the detailed calculations for all of FY 2017.



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Legend

- MS4 Stream Segments
- NMED Stream Segments
- North Diversion Channel
- Rio Grande Segment w/ TMDL for E. Coli
- Interstate Highway
- U.S. Highway
- State Highway

N W E S

0 0.5 1 2

Miles

Figure 3
Rio Grande
NMED and MS4 Permit
Stream Segments

P:\20170386\WR\General Exhibits\TMDLStreamSegments.mxd
Author: sganley

July 2017

Table 2: Summary of CMC Daily E. Coli Loading Compared to WLA for the CMC

Date / Stream Segment	Daily Mean Flow (cfs)	Flow Conditions (cfs) *range defined by NMED*	CMC Daily E. coli Loading (CFU/day)	NMED WLA for CMC for Stream Segment and Flow Conditions	Loading Compared to WLA Potential Exceedance or Acceptable
November 21-22, 2016 – Rio Grande North E. coli concentration = 43.5 CFU/100 mL and Rio Grande South E. coli concentration = 7,270 CFU/100 mL					
Alameda to Angostura	710	Mid	—	No Value	WLA Acceptable
Isleta to Alameda	881	Mid	1.68E+12	4.22E+10	Potential Exceedance

As Table 2 illustrates, the E. coli loading for the dry season event potentially exceeded the CMC allocated WLA in the southern stream segment (Isleta to Alameda) of the Middle Rio Grande. This sampling and calculation approach is only an estimate of the CMC contribution to the E. coli loading which is why the term “potential exceedance” is used. NMED has not set a TMDL or associated WLA values for the Alameda to Angostura stream segment of the Middle Rio Grande for mid-flow conditions (647 to 992 cfs) because there were not observed E. coli exceedances during this flow regime in the data used to develop the TMDL. Therefore, when a qualifying storm event is monitored during mid-flow regime conditions, like the November 21-21, 2016 event, in the Alameda to Angostura stream segment, the CMC’s WLA will never be in exceedance since there is not set TMDL.

The WSB MS4 Permit implies that the WLA is a measurable goal for the MS4s related to E. coli. Based on extensive review of the US EPA Approved, Total Maximum Daily Load (TMDL) for the Middle Rio Grande Watershed, June 30, 2010, this seems to be an unattainable goal for MS4s. The 2010 TMDL Report states on page 40, “It is important to remember that the TMDL is a planning tool to be used to achieve water quality standards…Meeting the calculated TMDL may be a difficult objective.” The TMDL/WLA was calculated by NMED to meet the Pueblo (Sandia and Isleta) geometric mean maximum of 47 CFU/100 mL which was done to be “protective of downstream waters” and “to provide an implicit margin of safety (MOS).” A single grab sample E. coli result meeting this very low geometric mean WQS will be very difficult for the MS4s to obtain.

The CMC members discussed the difficulty of using the WLA as a measurable goal with NMED on February 1, 2017. NMED explained that exceeding the WLA does not trigger enforcement. However, NMED strongly encouraged the MS4s to document what they are doing once they realize the WLA is potentially exceeded. The February 1, 2017, meeting and the February 16, 2017, CMC discussion with NMED demonstrate that CMC members are working toward understanding the WLA. In addition, the CMC members and NMED discussed potential refinements to the sampling plan, demonstrating that the CMC is investigating the potential exceedances and improvements to monitor E. coli in the Rio Grande.

Data Entry for Discharge Monitoring Reports

As required in the WSB MS4 Permit, verified stormwater quality data must be submitted annually to the EPA using electronic Discharge Monitoring Report (DMR) forms. Data from the DMRs are uploaded to a comprehensive nation-wide database that contains discharge data for facilities and other point sources that discharge directly to receiving streams. Currently, the CMC members are working with the EPA regarding access and use of the NetDMR system. For this Task, BHI has not been tasked with any data entry related to the EPA DMRs for the FY 2017 wet or dry seasons.

Conclusions and Planning

In FY 2017 four (4) qualifying event samples were obtained. During the FY 2017 wet season (July 1 to October 31, 2016) three (3) qualifying stormwater samples were obtained by the CMC, and during the dry season (November 1, 2016 to June 30, 2017) one (1) qualifying stormwater sample was obtained by the CMC. Lab results have been received for these samples. This data has been entered into the project Excel database. The lab data entered is marked in the spreadsheet as “V” (verified), and data V & V has been completed.

To summarize, monitoring results and E. coli loading calculations for the CMC FY 2017 wet and dry seasons show that:

- Four (4) of the seven (7) required samples in the WSB MS4 Permit Wet Weather Monitoring section were obtained in FY 2017. Seven (7) samples are required during the 5-year Permit term, so this is significant progress for the CMC.
- The CMC has met the required Permit minimum of monitoring three (3) events during the wet season and has obtained one (1) of the two (2) events required in the dry season.
- Over half of the parameters tested were not detected in any of the Rio Grande samples.
- Only E. coli was in exceedance of applicable New Mexico and Pueblos of Sandia and Isleta WQS.
    - All dissolved oxygen results were greater than 5 mg/L (minimum WQS).
    - All temperature results were less than 32.2 °C (maximum WQS).
    - There were no PCB test results exceeding the applicable WQS.
- The calculated E. coli loading for the one (1) qualifying storm event in the dry season shows that the WLA for the CMC members is potentially exceeded for the southern stream segment (Isleta to Alameda). NMED has not set a TMDL for the Alameda to Angostura stream segment of the Middle Rio Grande for mid-flow conditions (647 to 992 cfs); therefore, the monitored dry season storm event did not exceed the WLA.
    - Sources for the E. coli loading measured in the river are not solely attributable to the CMC MS4 members; the E. coli loading calculations serve to provide a reasonable estimate of the CMC contribution to the measured E. coli loading.
    - This sampling and calculation approach is only an estimate of the CMC contribution to the E. coli loading which is why the term “potential exceedance” is used.
    - The in-stream data does not provide the concentration of E. coli contributed by only the CMC MS4s, or any of the other potential sources. By using this percentage calculation approach, if other contributors are in exceedance of the

WLA, then the CMC will likely also be in exceedance since this approach relies on a percentage of a total.

SG/le
Attachments:

Attachment 1 – Hall Environmental Analysis Laboratory Reports with BHI Notes for FY 2017 Dry Season

Attachment 2 – FY 2017 Dry Season Completed Data Verification and Validation Forms

Spreadsheets Included Separately:

E. coli Loading and Comparison to Waste Load Allocation (WLA) Excel Spreadsheet

Excel CMC Spreadsheet with FY 2017 Stormwater Quality Monitoring Results

ATTACHMENT 1

HALL ENVIRONMENTAL ANALYSIS LABORATORY REPORTS WITH BHI NOTES FOR FY 2017 DRY SEASON

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

November 08, 2016

Patrick Chavez
AMAFCA
2600 Prospect Ave NE
Albuquerque, NM 87107
TEL: (505) 884-2215
FAX

RE: CMC OrderNo.: 1611208

Dear Patrick Chavez:

Hall Environmental Analysis Laboratory received 1 sample(s) on 11/3/2016 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Field Data - Provided by DBS&A (field notebook & e-mails):
11/3/16 - Rio Grande North
DO = 8.57 mg/L, pH = 8.01, Conductivity = 320 umhos/cm, and Temperature = 14.6°C

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **1611208**
Date Reported: **11/8/2016**

CLIENT: AMAFCA
Client Sample ID: RGN110316
Project: CMC
Collection Date: 11/3/2016 2:10:00 PM
Lab ID: 1611208-001 **Matrix:** AQUEOUS **Received Date:** 11/3/2016 3:02:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **tnc**	
E. Coli	42.0	1.000		CFU/100ml	1	11/4/2016 4:52:00 PM	28465

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: AMAPCA Work Order Number: 1611208 RcptNo: 1

Received by/date: 11/03/16

Logged By: Ashley Gallegos 11/3/2016 3:02:00 PM

Completed By: Ashley Gallegos 11/3/2016 3:58:05 PM

Reviewed By: 11/03/16 @ 1600

Chain of Custody

1. Custody seals intact on sample bottles?	Yes	No	Not Present ✔
2. Is Chain of Custody complete?	Yes ✔	No	Not Present
3. How was the sample delivered?	Client		

Log In

4. Was an attempt made to cool the samples?	Yes ✔	No	NA
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes	No ✔	NA
Samples were collected the same day and chilled.			
6. Sample(s) in proper container(s)?	Yes ✔	No	
7. Sufficient sample volume for indicated test(s)?	Yes ✔	No	
8. Are samples (except VOA and ONG) properly preserved?	Yes ✔	No	
9. Was preservative added to bottles?	Yes	No ✔	NA
10. VOA vials have zero headspace?	Yes	No	No VOA Vials ✔
11. Were any sample containers received broken?	Yes	No ✔	# of preserved bottles checked for pH:
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ✔	No	(<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ✔	No	Adjusted?
14. Is it clear what analyses were requested?	Yes ✔	No	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ✔	No	Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes No NA ✔

Person Notified: Date

By Whom: Via: eMail Phone Fax In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	15.5	Good	Not Present			

Chain-of-Custody Record

Client: AMAFCA

Mailing Address:

Phone #:

Email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other ____________

☐ EDD (Type) ____________

Turn-Around Time:
☒ Standard ☐ **Rush** ____________

Project Name: CML

Project #:

Project Manager: Patrick Chavez

Sampler:

On Ice: ☐ Yes ☒ No

Sample Temperature: 15.5 C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1611208	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	E-coli (MPN)				Air Bubbles (Y or N)
11/3/16	1410	Water	RGN110316			-001												X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
11/3/16	1502	Alan Lavis	AM Caldwell	11/3/16	1502
11/3/16	1502				

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 02, 2016

Patrick Chavez
AMAFCA
2600 Prospect Ave NE
Albuquerque, NM 87107
TEL: (505) 884-2215
FAX

RE: CMC OrderNo.: 1611B12

Dear Patrick Chavez:

Hall Environmental Analysis Laboratory received 1 sample(s) on 11/21/2016 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Field Data - Provided by DBS&A (field notebook & e-mails):
11/21/16 - Rio Grande North
DO = 10.62 mg/L, pH = 8.4, Conductivity = 305 umhos/cm, and Temperature = 10.36°C

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **1611B12**
Date Reported: **12/2/2016**

CLIENT: AMAFCA
Client Sample ID: Rio Grande North 112116
Project: CMC
Collection Date: 11/21/2016 9:30:00 AM
Lab ID: 1611B12-001
Matrix: AQUEOUS
Received Date: 11/21/2016 11:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **tnc**	
E. Coli	43.5	1.000		CFU/100ml	1	11/22/2016 4:34:00 PM	28792

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: AMAFCA | Work Order Number: 1611B12 | RcptNo: 1

Received by/date: AG 11/21/16

Logged By: Ashley Gallegos 11/21/2016 11:20:00 AM AG

Completed By: Ashley Gallegos 11/21/2016 11:24:06 AM AG

Reviewed By: JC 11/21/16 @ 1230

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Client		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☐	No ☑	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑ (Not required)	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	9.7	Good	Not Present			

Chain-of-Custody Record

Client: AMAFCA

Mailing Address:

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: CMC

Project #: NM15.0156

Project Manager: Patrick Chavez ~~C. Johannesen~~

Sampler: E. Bastian

On Ice: ☒ Yes ☐ No

Sample Temperature: 9.7

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	E. Coli				Air Bubbles (Y or N)
11/21/16	9:30	SW	Rio Grande North 112116	1 - 125mL poly		1611B12-001												X				

Date: 11/21/16 Time: 11:20 Relinquished by: Elizabeth Bastian

Received by: Date 11/21/16 Time 1120

Date: Time: Relinquished by:

Received by: Date Time

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 23, 2016

Patrick Chavez
AMAFCA
2600 Prospect Ave NE
Albuquerque, NM 87107
TEL: (505) 884-2215
FAX

RE: CMC OrderNo.: 1611B75

Dear Patrick Chavez:

Hall Environmental Analysis Laboratory received 3 sample(s) on 11/22/2016 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Field Data - Provided by DBS&A (field notebook & e-mails):
11/21/16 - Rio Grande North
DO = 10.62 mg/L, pH = 8.4, Conductivity = 305 umhos/cm, and Temperature = 10.36°C
11/22/16 - Rio Grande South
DO = 8.01 mg/L, pH = 8.08, Conductivity = 367 umhos/cm, and Temperature = 9.3°C

Analytical Report
Lab Order: **1611B75**
Date Reported: **12/23/2016**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Project: CMC
Lab ID: 1611B75-001B

Client Sample ID: Rio Grande-North-112116
Collection Date: 11/21/2016 9:30:00 AM
Matrix: Aqueous

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM5210B: BOD						Analyst: **SMS**	
Biochemical Oxygen Demand	DO Depletion<2.0	2.0		mg/L	1	11/27/2016 11:09:00 AM	28809

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Project: CMC
Lab ID: 1611B75-001D

Client Sample ID: Rio Grande-North-112116
Collection Date: 11/21/2016 9:30:00 AM
Matrix: Aqueous

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	11/22/2016 10:29:21 PM	R38938
Nitrogen, Nitrate (As N)	ND	0.10		mg/L	1	11/22/2016 10:29:21 PM	R38938
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	213	20.0		mg/L	1	11/29/2016 7:42:00 PM	28867
SM 4500 NH3: AMMONIA						Analyst: **CJS**	
Nitrogen, Ammonia	ND	1.0		mg/L	1	12/9/2016 2:11:00 PM	R39298
TOTAL NITROGEN						Analyst: **SRM**	
Nitrogen, Total	ND	1.0		mg/L	1	12/15/2016 4:55:00 PM	R39426
SM4500-H+B: PH						Analyst: **JRR**	
pH	8.10	1.68	H	pH units	1	11/22/2016 4:33:22 PM	R38947
EPA METHOD 365.1: TOTAL PHOSPHOROUS						Analyst: **JRR**	
Phosphorus, Total (As P)	0.042	0.010		mg/L	1	12/2/2016 10:17:24 AM	28952
SM 4500 NORG C: TKN						Analyst: **CJS**	
Nitrogen, Kjeldahl, Total	ND	1.0		mg/L	1	12/13/2016 11:26:00 AM	29132
SM 2540D: TSS						Analyst: **KS**	
Suspended Solids	27	4.0		mg/L	1	11/28/2016 4:20:00 PM	28852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Project: CMC
Lab ID: 1611B75-001E

Client Sample ID: Rio Grande-North-112116
Collection Date: 11/21/2016 9:30:00 AM
Matrix: Aqueous

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 1664A						Analyst: **tnc**	
N-Hexane Extractable Material	ND	10.7		mg/L	1	11/28/2016 9:14:00 AM	28858

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Project: CMC
Lab ID: 1611B75-001F

Client Sample ID: Rio Grande-North-112116
Collection Date: 11/21/2016 9:30:00 AM
Matrix: Aqueous

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 200.8: DISSOLVED METALS						Analyst: **JLF**	
Copper	ND	0.0010		mg/L	1	12/2/2016 3:56:41 PM	B39114
Lead	ND	0.00050		mg/L	1	12/2/2016 3:56:41 PM	B39114
Uranium	0.0024	0.00050		mg/L	1	12/2/2016 3:56:41 PM	B39114
SM2340B: HARDNESS						Analyst: **MED**	
Hardness (As CaCO3)	130	6.6		mg/L	1	12/14/2016	R39376
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **MED**	
Calcium	40	1.0		mg/L	1	12/14/2016 9:47:40 AM	A39376
Magnesium	7.3	1.0		mg/L	1	12/14/2016 10:46:06 AM	A39376

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Project: CMC
Lab ID: 1611B75-001K

Client Sample ID: Rio Grande-North-112116
Collection Date: 11/21/2016 9:30:00 AM
Matrix: Aqueous

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 365.1: TOTAL PHOSPHOROUS						Analyst: **JRR**	
Phosphorus, Total (As P)	0.012	0.010		mg/L	1	12/2/2016 10:21:54 AM	28952

Dissolved Phosphorous

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Project: CMC
Lab ID: 1611B75-002A

Client Sample ID: Rio Grande-South-112216
Collection Date: 11/22/2016 7:00:00 AM
Matrix: Aqueous

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **tnc**	
E. Coli	7270	10.00		CFU/100ml	10	11/23/2016 2:54:00 PM	28825

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Client Sample ID: Rio Grande-South-112216
Project: CMC
Collection Date: 11/22/2016 7:00:00 AM
Lab ID: 1611B75-002B
Matrix: Aqueous

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM5210B: BOD						Analyst: **SMS**	
Biochemical Oxygen Demand	3.0	2.0		mg/L	1	11/27/2016 11:09:00 AM	28809

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Project: CMC
Lab ID: 1611B75-002D

Client Sample ID: Rio Grande-South-112216
Collection Date: 11/22/2016 7:00:00 AM
Matrix: Aqueous

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Nitrogen, Nitrite (As N)	ND	0.50		mg/L	5	11/22/2016 9:39:42 PM	R38938
Nitrogen, Nitrate (As N)	0.68	0.50		mg/L	5	11/22/2016 9:39:42 PM	R38938
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	248	40.0	D	mg/L	1	11/29/2016 7:42:00 PM	28867
SM 4500 NH3: AMMONIA						Analyst: **CJS**	
Nitrogen, Ammonia	ND	1.0		mg/L	1	12/9/2016 2:11:00 PM	R39298
TOTAL NITROGEN						Analyst: **SRM**	
Nitrogen, Total	2.9	1.0		mg/L	1	12/15/2016 4:55:00 PM	R39426
SM4500-H+B: PH						Analyst: **JRR**	
pH	8.09	1.68	H	pH units	1	11/22/2016 4:37:41 PM	R38947
EPA METHOD 365.1: TOTAL PHOSPHOROUS						Analyst: **JRR**	
Phosphorus, Total (As P)	0.55	0.010		mg/L	1	12/2/2016 10:23:24 AM	28952
SM 4500 NORG C: TKN						Analyst: **CJS**	
Nitrogen, Kjeldahl, Total	2.2	2.0	D	mg/L	1	12/13/2016 11:26:00 AM	29132
SM 2540D: TSS						Analyst: **KS**	
Suspended Solids	340	4.0		mg/L	1	11/28/2016 4:20:00 PM	28852

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Project: CMC
Lab ID: 1611B75-002E

Client Sample ID: Rio Grande-South-112216
Collection Date: 11/22/2016 7:00:00 AM
Matrix: Aqueous

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 1664A						Analyst: **tnc**	
N-Hexane Extractable Material	ND	10.2		mg/L	1	11/28/2016 9:14:00 AM	28858

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Project: CMC
Lab ID: 1611B75-002F

Client Sample ID: Rio Grande-South-112216
Collection Date: 11/22/2016 7:00:00 AM
Matrix: Aqueous

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 200.8: DISSOLVED METALS						Analyst: **JLF**	
Copper	ND	0.0010		mg/L	1	12/2/2016 3:59:45 PM	B39114
Lead	ND	0.00050		mg/L	1	12/2/2016 3:59:45 PM	B39114
Uranium	0.0020	0.00050		mg/L	1	12/2/2016 3:59:45 PM	B39114
SM2340B: HARDNESS						Analyst: **MED**	
Hardness (As CaCO3)	130	6.6		mg/L	1	12/14/2016	R39376
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **MED**	
Calcium	41	1.0		mg/L	1	12/14/2016 9:51:34 AM	A39376
Magnesium	7.3	1.0		mg/L	1	12/14/2016 10:48:04 AM	A39376

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Project: CMC
Lab ID: 1611B75-002L

Client Sample ID: Rio Grande-South-112216
Collection Date: 11/22/2016 7:00:00 AM
Matrix: Aqueous

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 365.1: TOTAL PHOSPHOROUS						Analyst: **JRR**	
Phosphorus, Total (As P)	0.30	0.010		mg/L	1	12/2/2016 10:29:24 AM	28952

Dissolved Phosphorous

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	161123012
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1611B75
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	161123012-001	**Sampling Date**	11/22/2016	**Date/Time Received**	11/23/2016 10:45 AM
Client Sample ID	1611B75-001C / RIO GRANDE-NORTH-112116			**Sampling Time**	9:30 AM
Matrix	Water				
Comments					

Parameter	Result	Units	MDL	PQL	Analysis Date	Analyst	Method	Qualifier
Tetrahydrofuran	ND	ug/L	0.5	0.5	12/2/2016	SAT	EPA 8260C	

Surrogate Data

Sample Number 161123012-001

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260C	97.6	70-130
4-Bromofluorobenzene	EPA 8260C	97.2	70-130
Toluene-d8	EPA 8260C	98.4	70-130

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 161123012
Project Name: 1611B75

Analytical Results Report

Sample Number 161123012-004 **Sampling Date** 11/22/2016 **Date/Time Received** 11/23/2016 10:45 AM
Client Sample ID 1611B75-002C / RIO GRANDE-SOUTH-112216 **Sampling Time** 7:00 AM
Matrix Water
Comments

Parameter	Result	Units	MDL	PQL	Analysis Date	Analyst	Method	Qualifier
Tetrahydrofuran	ND	ug/L	0.5	0.5	12/2/2016	SAT	EPA 8260C	

Surrogate Data

Sample Number 161123012-004

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260C	98.0	70-130
4-Bromofluorobenzene	EPA 8260C	97.6	70-130
Toluene-d8	EPA 8260C	97.2	70-130

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Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	161123012
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1611B75
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	161123012-007	**Sampling Date**	11/22/2016	**Date/Time Received**	11/23/2016 10:45 AM
Client Sample ID	1611B75-003A / TRIP BLANK			**Sampling Time**	
Matrix	Water				
Comments					

Parameter	Result	Units	MDL	PQL	Analysis Date	Analyst	Method	Qualifier
Tetrahydrofuran	ND	ug/L	0.5	0.5	12/2/2016	SAT	EPA 8260C	

Surrogate Data

Sample Number 161123012-007

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260C	96.8	70-130
4-Bromofluorobenzene	EPA 8260C	97.2	70-130
Toluene-d8	EPA 8260C	100.4	70-130

Authorized Signature

Todd Taruscio, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	161123012
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1611B75
Attn:	ANDY FREEMAN		

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Tetrahydrofuran	8.12	ug/L	10	81.2	70-130	12/2/2016	12/2/2016

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Tetrahydrofuran	ND	ug/L	0.5	12/2/2016	12/2/2016

AR	Acceptable Range
ND	Not Detected
PQL	Practical Quantitation Limit
RPD	Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 161123012
Project Name: 1611B75

Analytical Results Report

Sample Number	161123012-002	**Sampling Date**	11/22/2016	**Date/Time Received**	11/23/2016 10:45 AM
Client Sample ID	1611B75-001G / RIO GRANDE-NORTH-112116			**Extraction Date**	11/29/2016
Matrix	Water	**Sampling Time**	9:30 AM		
Comments					

Parameter	Result	Units	MDL	PQL	Analysis Date	Analyst	Method	Qualifier
Dieldrin	ND	ug/L	0.003	0.01	12/6/2016	MAH	EPA 608	
Benzidine	ND	ug/L	0.1	0.5	11/29/2016	HSW	EPA 625	
Benzo[a]anthracene	ND	ug/L	0.1	0.5	11/29/2016	HSW	EPA 625	
Benzo[a]pyrene	ND	ug/L	0.1	0.5	11/29/2016	HSW	EPA 625	
Benzo[b]fluoranthene	ND	ug/L	0.1	0.5	11/29/2016	HSW	EPA 625	
Benzo[k]fluoranthene	ND	ug/L	0.1	0.5	11/29/2016	HSW	EPA 625	
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.2	0.5	11/29/2016	HSW	EPA 625	
Chrysene	ND	ug/L	0.1	0.5	11/29/2016	HSW	EPA 625	
Dibenz[a,h]anthracene	ND	ug/L	0.1	0.5	11/29/2016	HSW	EPA 625	
Dibenzofuran	ND	ug/L	0.1	0.5	11/29/2016	HSW	EPA 625	
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.1	0.5	11/29/2016	HSW	EPA 625	
Pentachlorophenol	ND	ug/L	0.1	0.5	11/29/2016	HSW	EPA 625	

Surrogate Data

Sample Number 161123012-002

Surrogate Standard	Method	Percent Recovery	Control Limits
DCB	EPA 608	72.4	30-130
2,4,6-Tribromophenol	EPA 625	70.0	53-122
2-Fluorobiphenyl	EPA 625	58.4	12-116
2-Fluorophenol	EPA 625	43.0	10-139
Nitrobenzene-d5	EPA 625	62.4	49-118
Phenol-d5	EPA 625	49.6	28-154
Terphenyl-d14	EPA 625	62.0	20-137

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	161123012
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1611B75
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	161123012-005	**Sampling Date**	11/22/2016	**Date/Time Received**	11/23/2016 10:45 AM
Client Sample ID	1611B75-002G / RIO GRANDE-SOUTH-112216			**Extraction Date**	11/29/2016
Matrix	Water	**Sampling Time**	7:00 AM		
Comments					

Parameter	Result	Units	MDL	PQL	Analysis Date	Analyst	Method	Qualifier
Dieldrin	ND	ug/L	0.003	0.01	12/6/2016	MAH	EPA 608	
Benzidine	ND	ug/L	0.1	0.5	11/29/2016	HSW	EPA 625	
Benzo[a]anthracene	ND	ug/L	0.1	0.5	11/29/2016	HSW	EPA 625	
Benzo[a]pyrene	ND	ug/L	0.1	0.5	11/29/2016	HSW	EPA 625	
Benzo[b]fluoranthene	ND	ug/L	0.1	0.5	11/29/2016	HSW	EPA 625	
Benzo[k]fluoranthene	ND	ug/L	0.1	0.5	11/29/2016	HSW	EPA 625	
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.2	0.5	11/29/2016	HSW	EPA 625	
Chrysene	ND	ug/L	0.1	0.5	11/29/2016	HSW	EPA 625	
Dibenz[a,h]anthracene	ND	ug/L	0.1	0.5	11/29/2016	HSW	EPA 625	
Dibenzofuran	ND	ug/L	0.1	0.5	11/29/2016	HSW	EPA 625	
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.1	0.5	11/29/2016	HSW	EPA 625	
Pentachlorophenol	ND	ug/L	0.1	0.5	11/29/2016	HSW	EPA 625	

Surrogate Data

Sample Number 161123012-005

Surrogate Standard	Method	Percent Recovery	Control Limits
DCB	EPA 608	75.2	30-130
2,4,6-Tribromophenol	EPA 625	115.8	53-122
2-Fluorobiphenyl	EPA 625	101.2	12-116
2-Fluorophenol	EPA 625	88.0	10-139
Nitrobenzene-d5	EPA 625	102.0	49-118
Phenol-d5	EPA 625	103.6	28-154
Terphenyl-d14	EPA 625	91.6	20-137

Authorized Signature

Todd Taruscio, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 161123012
Project Name: 1611B75

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Dieldrin	0.458	ug/L	0.5	91.6	30-130	11/29/2016	12/5/2016
Pentachlorophenol	6.25	ug/L	5	125.0	22-138	11/28/2016	11/30/2016
bis(2-Ethylhexyl)phthalate	5.14	ug/L	5	102.8	43-148	11/28/2016	11/30/2016

Lab Control Sample Duplicate

Parameter	LCSD Result	Units	LCSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Pentachlorophenol	5.88	ug/L	5	117.6	6.1	0-47	11/28/2016	11/30/2016
bis(2-Ethylhexyl)phthalate	5.51	ug/L	5	110.2	6.9	0-50	11/28/2016	11/30/2016

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
161123012-002	Pentachlorophenol	ND	6.27	ug/L	5	125.4	22-138	11/28/2016	11/30/2016
161123012-002	bis(2-Ethylhexyl)phthalate	ND	4.00	ug/L	5	80.0	43-142	11/28/2016	11/30/2016
161123012-005	Dieldrin	ND	0.505	ug/L	0.5	101.0	30-150	11/29/2016	12/5/2016

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Dieldrin	0.508	ug/L	0.5	101.6	0.6	0-30	11/29/2016	12/5/2016

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Benzidine	ND	ug/L	0.5	11/28/2016	11/30/2016
Benzo[a]anthracene	ND	ug/L	0.5	11/28/2016	11/30/2016
Benzo[a]pyrene	ND	ug/L	0.5	11/28/2016	11/30/2016
Benzo[b]fluoranthene	ND	ug/L	0.5	11/28/2016	11/30/2016
Benzo[k]fluoranthene	ND	ug/L	0.5	11/28/2016	11/30/2016
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	11/28/2016	11/30/2016
Chrysene	ND	ug/L	0.5	11/28/2016	11/30/2016
Dibenz[a,h]anthracene	ND	ug/L	0.5	11/28/2016	11/30/2016
Dibenzofuran	ND	ug/L	0.5	11/28/2016	11/30/2016

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
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Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	161123012
Address:	4901 HAWKINS NE SUITE D	**Project Name:**	1611B75
	ALBUQUERQUE, NM 87109		
Attn:	ANDY FREEMAN		

Analytical Results Report

Quality Control Data

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Dieldrin	ND	ug/L	0.01	11/29/2016	12/5/2016
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.5	11/28/2016	11/30/2016
Pentachlorophenol	ND	ug/L	0.5	11/28/2016	11/30/2016

AR	Acceptable Range
ND	Not Detected
PQL	Practical Quantitation Limit
RPD	Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
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Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	161123012
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1611B75
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	161123012-003	**Sampling Date**	11/22/2016	**Date/Time Received**	11/23/2016 10:45 AM
Client Sample ID	1611B75-001I / RIO GRANDE-NORTH-112116			**Sampling Time**	9:30 AM
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
COD	16.4	mg/L	5	12/7/2016 1:00:00 PM	JDB	EPA 410.4	

Sample Number	161123012-006	**Sampling Date**	11/22/2016	**Date/Time Received**	11/23/2016 10:45 AM
Client Sample ID	1611B75-002I / RIO GRANDE-SOUTH-112216			**Sampling Time**	7:00 AM
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
COD	23.1	mg/L	5	12/7/2016 1:00:00 PM	JDB	EPA 410.4	

Authorized Signature

Todd Taruscio, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 161123012
Project Name: 1611B75

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
COD	102	mg/L	100	102.0	90-110	12/7/2016	12/7/2016

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
161202010-002	COD	<5	109	mg/L	100	109.0	80-120	12/7/2016	12/7/2016

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
COD	104	mg/L	100	104.0	4.7	0-20	12/7/2016	12/7/2016

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
COD	<5	mg/L	5	12/7/2016	12/7/2016

Duplicate

Sample Number	Parameter	Sample Result	Duplicate Result	Units	%RPD	AR %RPD	Prep Date	Analysis Date
161202010-004	COD	15.9	18.0	mg/L	12.4	0-20	12/7/2016	12/7/2016

AR	Acceptable Range
ND	Not Detected
PQL	Practical Quantitation Limit
RPD	Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

Wet Chemistry by Method 3500Cr C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Hexavalent Chromium	ND		0.000500	1	11/26/2016 09:41	WG929321

Incorrectly labeled - 02 is for Rio Grande South

1611B75-002H RIO GRANDE-NORTH-112116

Collected date/time: 11/21/16 07:00

SAMPLE RESULTS - 02

L874519

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 3500Cr C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Hexavalent Chromium	ND		0.000500	1	11/26/2016 09:52	WG929321

Method Blank (MB)

(MB) R3180621-1 11/26/16 07:41

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Hexavalent Chromium	U		0.000150	0.000500

L874168-02 Original Sample (OS) • Duplicate (DUP)

(OS) L874168-02 11/26/16 08:24 • (DUP) R3180621-4 11/26/16 08:35

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Hexavalent Chromium	ND	ND	1	0.000		20

L874355-01 Original Sample (OS) • Duplicate (DUP)

(OS) L874355-01 11/26/16 10:41 • (DUP) R3180621-7 11/26/16 10:49

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Hexavalent Chromium	ND	ND	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3180621-2 11/26/16 07:49 • (LCSD) R3180621-3 11/26/16 07:57

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Hexavalent Chromium	0.00200	0.00205	0.00205	102	103	90.0-110			0.000	20

L874357-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L874357-01 11/26/16 08:43 • (MS) R3180621-5 11/26/16 08:51 • (MSD) R3180621-6 11/26/16 09:00

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Hexavalent Chromium	0.0500	ND	0.0521	0.0505	104	101	1	90.0-110			3.00	20

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1611B75
Pace Project No.: 30203584

Sample: 1611B75-001J Rio Grande-North- **Lab ID: 30203584001** Collected: 11/21/16 09:30 Received: 11/23/16 11:00 Matrix: Water

PWS: Site ID: Sample Type:

Comments: • The sampler's name and signature were not listed on the COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**3.11 ± 0.884 (0.826) C:NA T:NA**	pCi/L	12/07/16 20:06	12587-46-1	

Sample: 1611B75-002J Rio Grande-South- **Lab ID: 30203584002** Collected: 11/22/16 07:00 Received: 11/23/16 11:00 Matrix: Water

PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**7.26 ± 1.94 (1.74) C:NA T:NA**	pCi/L	12/07/16 20:06	12587-46-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1611B75
Pace Project No.: 30203584

QC Batch: 242010
QC Batch Method: EPA 900.0
Analysis Method: EPA 900.0
Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 30203584001, 30203584002

METHOD BLANK: 1189267
Matrix: Water
Associated Lab Samples: 30203584001, 30203584002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	-0.349 ± 0.368 (1.13) C:NA T:NA	pCi/L	12/07/16 19:54	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical®
www.pacelabs.com

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1611B75
Pace Project No.: 30203584

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

CFA | Cape Fear Analytical LLC
an affiliate of **The GEL Group** INC

3306 Kitty Hawk Road, Suite 120 Wilmington, NC 28405
P 910.795.0421

www.capefearanalytical.com

December 21, 2016

Mr. Andy Freeman
Hall Environmental
4901 Hawkins NE
Suite D
Albuquerque, New Mexico 87109

Re: 1668A Water
Work Order: 10146
SDG: 1611B75

Dear Mr. Freeman:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on November 29, 2016 and November 30, 2016. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,

Cynde Larkins

Cynde Larkins
Project Manager

Enclosures

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

CHAIN OF CUSTODY RECORD

SUB CONTRATOR: Cape Fear Analytical	COMPANY: Cape Fear Analytical	PHONE: (910) 795-0421	FAX:
ADDRESS: 3306 Kitty Hawk Rd Ste 120		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Wilmington, NC 28405			

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	1611B75-001L	Rio Grande-North-112116	1LAmber	Aqueous	11/21/2016 9:30:00 AM	1	PCB Congeners
2	1611B75-002M	Rio Grande-South-112216	1LAmber	Aqueous	11/22/2016 7:00:00 AM	1	PCB Congeners broken in transit

CFA WO #10146

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date: 11/22/2016	Time: 10:11 AM	Received By:	Date: 22Nov2016	Time: 10:25
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☐ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples 3.0 °C Attempt to Cool ? _____
Comments: _____

1 of 2 broken

SAMPLE RECEIPT CHECKLIST

Cape Fear Analytical

Client: HALL	Work Order: 10146
Shipping Company: Fed Ex	Date/Time Received: 29 Nov 2016 10:25

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			✓
Samples identified as Foreign Soil?			✓

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?			
Samples < 2x background?			✓

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			✓

Air Witness: _____

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: seals broken damaged container leaking container other(describe)
2	Chain of Custody documents included with shipment?	✓			
3	Samples requiring cold preservation within 0-6°C?	✓			Preservation Method: ice bags blue ice dry ice none other (describe) 3.0°C
4	Aqueous samples found to have visible solids?	✓			Sample IDs, containers affected: <1% solids
5	Samples requiring chemical preservation at proper pH?			✓	Sample IDs, containers affected and pH observed: pH=7 If preservative added, Lot#:
6	Samples requiring preservation have no residual chlorine?	✓			Sample IDs, containers affected: If preservative added, Lot#:
7	Samples received within holding time?	✓			Sample IDs, tests affected:
8	Sample IDs on COC match IDs on containers?	✓			Sample IDs, containers affected:
9	Date & time of COC match date & time on containers?	✓			Sample IDs, containers affected:
10	Number of containers received match number indicated on COC?			✓	List type and number of containers / Sample IDs, containers affected: Sample -002M broken in transit 1-1L WMA for -001L
11	COC form is properly signed in relinquished/received sections?	✓			

Comments:

Checklist performed by: Initials: MJD Date: 29 Nov 2016

CF-UD-F-7

SAMPLE RECEIPT CHECKLIST

Cape Fear Analytical

Client: HALL	Work Order: 10146
Shipping Company: Fed Ex	Date/Time Received: 30Nov2016 10:45

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			✓
Samples identified as Foreign Soil?			✓

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?		✓	
Samples < 2x background?		✓	

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			✓

Air Witness: _____

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: seals broken damaged container leaking container other(describe)
2	Chain of Custody documents included with shipment?	✓		✓	No COC sent with replacement sample. Original COC was used for verification.
3	Samples requiring cold preservation within 0-6°C?	✓			Preservation method: Ice bags blue ice dry ice none other (describe) 4.2+0.1=4.3°C
4	Aqueous samples found to have visible solids?	✓			Sample IDs, containers affected: N/A
5	Samples requiring chemical preservation at proper pH?		✓		Sample IDs, containers affected and pH observed: pH=7 If preservative added, Lot#:
6	Samples requiring preservation have no residual chlorine?	✓			Sample IDs, containers affected: If preservative added, Lot#:
7	Samples received within holding time?	✓			Sample IDs, tests affected:
8	Sample IDs on COC match IDs on containers?	✓			Sample IDs, containers affected:
9	Date & time of COC match date & time on containers?	✓			Sample IDs, containers affected:
10	Number of containers received match number indicated on COC?	✓			List type and number of containers / Sample IDs, containers affected: 1-1L WMA
11	COC form is properly signed in relinquished/received sections?	✓			

Comments: *Replacement Sample for broken original received 29Nov16.

Checklist performed by: Initials: MJO Date: 30Nov2016

CF-UD-F-7

Anne Thorne

From: Cynde Larkins <cynde.larkins@cfanalytical.com>
Sent: Tuesday, November 29, 2016 1:30 PM
To: Anne Thorne
Cc: Melissa O'Dorisio
Subject: 1611B75

Anne,

One of the sample containers we received today at CFA was broken in transit: 1611B75-002M Rio Grande-South-112216. Do you have a replacement sample you could send us?

Thanks,

WO# 10146

--
Cynde Larkins
Project Manager
Cape Fear Analytical, LLC
3306 Kitty Hawk Road Suite 120
Wilmington, NC 28405
(910) 795-0421

Cape Fear Analytical will be closed for Christmas on Monday, December 26, 2016 and New Year's on Monday, January 2, 2017. For sample receiving hours during the holidays please contact the lab.

5, pH: 7
4.2 10.1=
4.3°C

PCB Congeners Analysis

Case Narrative

PCBC Case Narrative
Hall Environmental Analysis Laboratory (HALL)
SDG 1611B75
Work Order 10146

Method/Analysis Information

Product:	**PCB Congeners by EPA Method 1668A in Liquids**
Analytical Method:	EPA Method 1668A
Extraction Method:	SW846 3520C
Analytical Batch Number:	33561
Clean Up Batch Number:	33560
Extraction Batch Number:	33559

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1668A:

Sample ID	Client ID
10146001	1611B75-001L Rio Grande-North-112116
10146002	1611B75-002L Rio Grande-South-112116
12017564	Method Blank (MB)
12017565	Laboratory Control Sample (LCS)
12017566	Laboratory Control Sample Duplicate (LCSD)

The samples in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-003 REV# 6.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (ICV or CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement
The test results presented in this document are certified to meet all requirements of the 2009 TNI Standard.

Method Blank (MB) Statement
The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries
All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery
The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery
The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement
The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation
A matrix spike and matrix spike duplicate analysis was not required for this SDG.

Technical Information

Holding Time Specifications
CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification
All procedures were performed as stated in the SOP.

Sample Dilutions
The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis
Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation
A NCR was not required for this SDG.

Manual Integrations
Manual integrations were required for data files in this SDG. Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction.

System Configuration
This analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description
HRP791_1	PCB Analysis	PCB Analysis	SPB-Octyl	30m x 0.25mm, 0.25um

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC
3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report
for

HALL001 Hall Environmental Analysis Laboratory

Client SDG: 1611B75 CFA Work Order: 10146

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria
** Analyte is a surrogate compound
B The target analyte was detected in the associated blank.
C Congener has coeluters. When Cxxx, refer to congener number xxx for data
J Value is estimated
U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature:  **Name: Heather Patterson**

Date: 21 DEC 2016 **Title: Group Leader**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Project:**	**HALL00114**
Lab Sample ID:	**10146001**	**Date Collected:**	**11/21/2016 09:30**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**11/29/2016 10:25**		
Client ID:	**1611B75-001L Rio Grande-North-11**			**Prep Basis:**	**As Received**
Batch ID:	**33561**	**Method:**	**EPA Method 1668A**		
Run Date:	**12/16/2016 17:07**	**Analyst:**	**MJC**	**Instrument:**	**HRP791**
Data File:	**c16dec16a-8**			**Dilution:**	**1**
Prep Batch:	**33559**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**13-DEC-16**	**Prep Aliquot:**	**917 mL**		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL
2051-60-7	1-MoCB	U	ND	pg/L	7.37	21.8
2051-61-8	2-MoCB	U	ND	pg/L	7.26	21.8
2051-62-9	3-MoCB	U	ND	pg/L	7.26	21.8
13029-08-8	4-DiCB	U	ND	pg/L	7.33	21.8
16605-91-7	5-DiCB	U	ND	pg/L	8.38	21.8
25569-80-6	6-DiCB	U	ND	pg/L	7.90	21.8
33284-50-3	7-DiCB	U	ND	pg/L	7.26	21.8
34883-43-7	8-DiCB	U	ND	pg/L	7.74	21.8
34883-39-1	9-DiCB	U	ND	pg/L	7.26	21.8
33146-45-1	10-DiCB	U	ND	pg/L	7.26	21.8
2050-67-1	11-DiCB	J	41.8	pg/L	12.5	109
2974-92-7	12-DiCB	CU	ND	pg/L	14.5	43.6
2974-90-5	13-DiCB	C12				
34883-41-5	14-DiCB	U	ND	pg/L	7.26	21.8
2050-68-2	15-DiCB	J	12.0	pg/L	7.26	21.8
38444-78-9	16-TrCB	U	ND	pg/L	8.79	21.8
37680-66-3	17-TrCB	U	ND	pg/L	7.26	21.8
37680-65-2	18-TrCB	CU	ND	pg/L	14.5	43.6
38444-73-4	19-TrCB	U	ND	pg/L	7.26	21.8
38444-84-7	20-TrCB	CU	ND	pg/L	14.5	43.6
55702-46-0	21-TrCB	CU	ND	pg/L	14.5	43.6
38444-85-8	22-TrCB	U	ND	pg/L	7.26	21.8
55720-44-0	23-TrCB	U	ND	pg/L	7.26	21.8
55702-45-9	24-TrCB	U	ND	pg/L	7.26	21.8
55712-37-3	25-TrCB	U	ND	pg/L	7.26	21.8
38444-81-4	26-TrCB	CU	ND	pg/L	14.5	43.6
38444-76-7	27-TrCB	U	ND	pg/L	7.26	21.8
7012-37-5	28-TrCB	C20				
15862-07-4	29-TrCB	C26				
35693-92-6	30-TrCB	C18				
16606-02-3	31-TrCB	U	ND	pg/L	7.26	21.8
38444-77-8	32-TrCB	U	ND	pg/L	7.26	21.8

Comments:

B The target analyte was detected in the associated blank.
C Congener has coeluters. When Cxxx, refer to congener number xxx for data
J Value is estimated
U Analyte was analyzed for, but not detected above the specified detection limit.

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Project:**	**HALL00114**
Lab Sample ID:	**10146001**	**Date Collected:**	**11/21/2016 09:30**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**11/29/2016 10:25**		
Client ID:	**1611B75-001L Rio Grande-North-11**			**Prep Basis:**	**As Received**
Batch ID:	**33561**	**Method:**	**EPA Method 1668A**		
Run Date:	**12/16/2016 17:07**	**Analyst:**	**MJC**	**Instrument:**	**HRP791**
Data File:	**c16dec16a-8**			**Dilution:**	**1**
Prep Batch:	**33559**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**13-DEC-16**	**Prep Aliquot:**	**917 mL**		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL
38444-86-9	33-TrCB	C21				
37680-68-5	34-TrCB	U	ND	pg/L	7.26	21.8
37680-69-6	35-TrCB	U	ND	pg/L	7.26	21.8
38444-87-0	36-TrCB	U	ND	pg/L	7.26	21.8
38444-90-5	37-TrCB	U	ND	pg/L	7.26	21.8
53555-66-1	38-TrCB	U	ND	pg/L	7.26	21.8
38444-88-1	39-TrCB	U	ND	pg/L	7.26	21.8
38444-93-8	40-TeCB	CU	ND	pg/L	14.5	43.6
52663-59-9	41-TeCB	U	ND	pg/L	7.26	21.8
36559-22-5	42-TeCB	U	ND	pg/L	7.26	21.8
70362-46-8	43-TeCB	U	ND	pg/L	7.26	21.8
41464-39-5	44-TeCB	CU	ND	pg/L	21.8	65.4
70362-45-7	45-TeCB	CU	ND	pg/L	14.5	43.6
41464-47-5	46-TeCB	U	ND	pg/L	7.26	21.8
2437-79-8	47-TeCB	C44				
70362-47-9	48-TeCB	U	ND	pg/L	7.26	21.8
41464-40-8	49-TeCB	CU	ND	pg/L	14.5	43.6
62796-65-0	50-TeCB	CU	ND	pg/L	14.5	43.6
68194-04-7	51-TeCB	C45				
35693-99-3	52-TeCB	J	7.33	pg/L	7.26	21.8
41464-41-9	53-TeCB	C50				
15968-05-5	54-TeCB	U	ND	pg/L	7.26	21.8
74338-24-2	55-TeCB	U	ND	pg/L	7.26	21.8
41464-43-1	56-TeCB	U	ND	pg/L	7.26	21.8
70424-67-8	57-TeCB	U	ND	pg/L	7.26	21.8
41464-49-7	58-TeCB	U	ND	pg/L	7.26	21.8
74472-33-6	59-TeCB	CU	ND	pg/L	21.8	65.4
33025-41-1	60-TeCB	U	ND	pg/L	7.26	21.8
33284-53-6	61-TeCB	CU	ND	pg/L	29.0	87.2
54230-22-7	62-TeCB	C59				
74472-34-7	63-TeCB	U	ND	pg/L	7.26	21.8
52663-58-8	64-TeCB	U	ND	pg/L	7.26	21.8

Comments:

B The target analyte was detected in the associated blank.
C Congener has coeluters. When Cxxx, refer to congener number xxx for data
J Value is estimated
U Analyte was analyzed for, but not detected above the specified detection limit.

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Project:**	**HALL00114**
Lab Sample ID:	**10146001**	**Date Collected:**	**11/21/2016 09:30**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**11/29/2016 10:25**		
Client ID:	**1611B75-001L Rio Grande-North-11**			**Prep Basis:**	**As Received**
Batch ID:	**33561**	**Method:**	**EPA Method 1668A**		
Run Date:	**12/16/2016 17:07**	**Analyst:**	**MJC**	**Instrument:**	**HRP791**
Data File:	**c16dec16a-8**			**Dilution:**	**1**
Prep Batch:	**33559**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**13-DEC-16**	**Prep Aliquot:**	**917 mL**		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL
33284-54-7	65-TeCB	C44				
32598-10-0	66-TeCB	U	ND	pg/L	7.26	21.8
73575-53-8	67-TeCB	U	ND	pg/L	7.26	21.8
73575-52-7	68-TeCB	U	ND	pg/L	7.26	21.8
60233-24-1	69-TeCB	C49				
32598-11-1	70-TeCB	C61				
41464-46-4	71-TeCB	C40				
41464-42-0	72-TeCB	U	ND	pg/L	7.26	21.8
74338-23-1	73-TeCB	U	ND	pg/L	7.26	21.8
32690-93-0	74-TeCB	C61				
32598-12-2	75-TeCB	C59				
70362-48-0	76-TeCB	C61				
32598-13-3	77-TeCB	U	ND	pg/L	7.26	21.8
70362-49-1	78-TeCB	U	ND	pg/L	7.26	21.8
41464-48-6	79-TeCB	U	ND	pg/L	7.26	21.8
33284-52-5	80-TeCB	U	ND	pg/L	7.26	21.8
70362-50-4	81-TeCB	U	ND	pg/L	7.26	21.8
52663-62-4	82-PeCB	U	ND	pg/L	7.26	21.8
60145-20-2	83-PeCB	U	ND	pg/L	7.26	21.8
52663-60-2	84-PeCB	U	ND	pg/L	7.26	21.8
65510-45-4	85-PeCB	CU	ND	pg/L	21.8	65.4
55312-69-1	86-PeCB	CU	ND	pg/L	43.6	131
38380-02-8	87-PeCB	C86				
55215-17-3	88-PeCB	CU	ND	pg/L	14.5	43.6
73575-57-2	89-PeCB	U	ND	pg/L	7.26	21.8
68194-07-0	90-PeCB	CU	ND	pg/L	21.8	65.4
68194-05-8	91-PeCB	C88				
52663-61-3	92-PeCB	U	ND	pg/L	7.26	21.8
73575-56-1	93-PeCB	CU	ND	pg/L	14.5	43.6
73575-55-0	94-PeCB	U	ND	pg/L	7.26	21.8
38379-99-6	95-PeCB	U	ND	pg/L	7.26	21.8
73575-54-9	96-PeCB	U	ND	pg/L	7.26	21.8

Comments:

B The target analyte was detected in the associated blank.
C Congener has coeluters. When Cxxx, refer to congener number xxx for data
J Value is estimated
U Analyte was analyzed for, but not detected above the specified detection limit.

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Project:**	**HALL00114**
Lab Sample ID:	**10146001**	**Date Collected:**	**11/21/2016 09:30**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**11/29/2016 10:25**		
Client ID:	**1611B75-001L Rio Grande-North-11**			**Prep Basis:**	**As Received**
Batch ID:	**33561**	**Method:**	**EPA Method 1668A**		
Run Date:	**12/16/2016 17:07**	**Analyst:**	**MJC**	**Instrument:**	**HRP791**
Data File:	**c16dec16a-8**			**Dilution:**	**1**
Prep Batch:	**33559**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**13-DEC-16**	**Prep Aliquot:**	**917 mL**		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL
41464-51-1	97-PeCB	C86				
60233-25-2	98-PeCB	CU	ND	pg/L	14.5	43.6
38380-01-7	99-PeCB	U	ND	pg/L	7.26	21.8
39485-83-1	100-PeCB	C93				
37680-73-2	101-PeCB	C90				
68194-06-9	102-PeCB	C98				
60145-21-3	103-PeCB	U	ND	pg/L	7.26	21.8
56558-16-8	104-PeCB	U	ND	pg/L	7.26	21.8
32598-14-4	105-PeCB	U	ND	pg/L	7.26	21.8
70424-69-0	106-PeCB	U	ND	pg/L	7.26	21.8
70424-68-9	107-PeCB	U	ND	pg/L	7.26	21.8
70362-41-3	108-PeCB	CU	ND	pg/L	14.5	43.6
74472-35-8	109-PeCB	C86				
38380-03-9	110-PeCB	CU	ND	pg/L	14.5	43.6
39635-32-0	111-PeCB	U	ND	pg/L	7.26	21.8
74472-36-9	112-PeCB	U	ND	pg/L	7.26	21.8
68194-10-5	113-PeCB	C90				
74472-37-0	114-PeCB	U	ND	pg/L	7.26	21.8
74472-38-1	115-PeCB	C110				
18259-05-7	116-PeCB	C85				
68194-11-6	117-PeCB	C85				
31508-00-6	118-PeCB	U	ND	pg/L	7.26	21.8
56558-17-9	119-PeCB	C86				
68194-12-7	120-PeCB	U	ND	pg/L	7.26	21.8
56558-18-0	121-PeCB	U	ND	pg/L	7.26	21.8
76842-07-4	122-PeCB	U	ND	pg/L	7.26	21.8
65510-44-3	123-PeCB	U	ND	pg/L	7.26	21.8
70424-70-3	124-PeCB	C108				
74472-39-2	125-PeCB	C86				
57465-28-8	126-PeCB	U	ND	pg/L	7.26	21.8
39635-33-1	127-PeCB	U	ND	pg/L	7.26	21.8
38380-07-3	128-HxCB	CU	ND	pg/L	14.5	43.6

Comments:

B The target analyte was detected in the associated blank.
C Congener has coeluters. When Cxxx, refer to congener number xxx for data
J Value is estimated
U Analyte was analyzed for, but not detected above the specified detection limit.

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Project:**	**HALL00114**
Lab Sample ID:	**10146001**	**Date Collected:**	**11/21/2016 09:30**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**11/29/2016 10:25**		
Client ID:	**1611B75-001L Rio Grande-North-11**			**Prep Basis:**	**As Received**
Batch ID:	**33561**	**Method:**	**EPA Method 1668A**		
Run Date:	**12/16/2016 17:07**	**Analyst:**	**MJC**	**Instrument:**	**HRP791**
Data File:	**c16dec16a-8**			**Dilution:**	**1**
Prep Batch:	**33559**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**13-DEC-16**	**Prep Aliquot:**	**917 mL**		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL
55215-18-4	129-HxCB	CU	ND	pg/L	21.8	65.4
52663-66-8	130-HxCB	U	ND	pg/L	7.26	21.8
61798-70-7	131-HxCB	U	ND	pg/L	7.26	21.8
38380-05-1	132-HxCB	U	ND	pg/L	13.9	21.8
35694-04-3	133-HxCB	U	ND	pg/L	7.26	21.8
52704-70-8	134-HxCB	U	ND	pg/L	7.33	21.8
52744-13-5	135-HxCB	CU	ND	pg/L	14.5	43.6
38411-22-2	136-HxCB	U	ND	pg/L	7.26	21.8
35694-06-5	137-HxCB	U	ND	pg/L	7.26	21.8
35065-28-2	138-HxCB	C129				
56030-56-9	139-HxCB	CU	ND	pg/L	14.5	43.6
59291-64-4	140-HxCB	C139				
52712-04-6	141-HxCB	U	ND	pg/L	7.26	21.8
41411-61-4	142-HxCB	U	ND	pg/L	7.26	21.8
68194-15-0	143-HxCB	U	ND	pg/L	7.26	21.8
68194-14-9	144-HxCB	U	ND	pg/L	7.26	21.8
74472-40-5	145-HxCB	U	ND	pg/L	7.26	21.8
51908-16-8	146-HxCB	U	ND	pg/L	7.26	21.8
68194-13-8	147-HxCB	CU	ND	pg/L	14.5	43.6
74472-41-6	148-HxCB	U	ND	pg/L	7.26	21.8
38380-04-0	149-HxCB	C147				
68194-08-1	150-HxCB	U	ND	pg/L	7.26	21.8
52663-63-5	151-HxCB	C135				
68194-09-2	152-HxCB	U	ND	pg/L	7.26	21.8
35065-27-1	153-HxCB	CU	ND	pg/L	14.5	43.6
60145-22-4	154-HxCB	U	ND	pg/L	7.26	21.8
33979-03-2	155-HxCB	U	ND	pg/L	7.26	21.8
38380-08-4	156-HxCB	CU	ND	pg/L	14.5	43.6
69782-90-7	157-HxCB	C156				
74472-42-7	158-HxCB	U	ND	pg/L	7.26	21.8
39635-35-3	159-HxCB	U	ND	pg/L	7.26	21.8
41411-62-5	160-HxCB	U	ND	pg/L	7.26	21.8

Comments:

B The target analyte was detected in the associated blank.
C Congener has coeluters. When Cxxx, refer to congener number xxx for data
J Value is estimated
U Analyte was analyzed for, but not detected above the specified detection limit.

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Project:**	**HALL00114**
Lab Sample ID:	**10146001**	**Date Collected:**	**11/21/2016 09:30**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**11/29/2016 10:25**		
Client ID:	**1611B75-001L Rio Grande-North-11**			**Prep Basis:**	**As Received**
Batch ID:	**33561**	**Method:**	**EPA Method 1668A**		
Run Date:	**12/16/2016 17:07**	**Analyst:**	**MJC**	**Instrument:**	**HRP791**
Data File:	**c16dec16a-8**			**Dilution:**	**1**
Prep Batch:	**33559**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**13-DEC-16**	**Prep Aliquot:**	**917 mL**		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL
74472-43-8	161-HxCB	U	ND	pg/L	7.26	21.8
39635-34-2	162-HxCB	U	ND	pg/L	7.26	21.8
74472-44-9	163-HxCB	C129				
74472-45-0	164-HxCB	U	ND	pg/L	7.26	21.8
74472-46-1	165-HxCB	U	ND	pg/L	7.26	21.8
41411-63-6	166-HxCB	C128				
52663-72-6	167-HxCB	U	ND	pg/L	7.26	21.8
59291-65-5	168-HxCB	C153				
32774-16-6	169-HxCB	U	ND	pg/L	7.26	21.8
35065-30-6	170-HpCB	U	ND	pg/L	7.26	21.8
52663-71-5	171-HpCB	CU	ND	pg/L	14.5	43.6
52663-74-8	172-HpCB	U	ND	pg/L	7.26	21.8
68194-16-1	173-HpCB	C171				
38411-25-5	174-HpCB	U	ND	pg/L	7.26	21.8
40186-70-7	175-HpCB	U	ND	pg/L	7.26	21.8
52663-65-7	176-HpCB	U	ND	pg/L	7.26	21.8
52663-70-4	177-HpCB	U	ND	pg/L	7.26	21.8
52663-67-9	178-HpCB	U	ND	pg/L	7.26	21.8
52663-64-6	179-HpCB	U	ND	pg/L	7.26	21.8
35065-29-3	180-HpCB	CU	ND	pg/L	14.5	43.6
74472-47-2	181-HpCB	U	ND	pg/L	7.26	21.8
60145-23-5	182-HpCB	U	ND	pg/L	7.26	21.8
52663-69-1	183-HpCB	CU	ND	pg/L	14.5	43.6
74472-48-3	184-HpCB	U	ND	pg/L	7.26	21.8
52712-05-7	185-HpCB	C183				
74472-49-4	186-HpCB	U	ND	pg/L	7.26	21.8
52663-68-0	187-HpCB	U	ND	pg/L	7.26	21.8
74487-85-7	188-HpCB	U	ND	pg/L	7.26	21.8
39635-31-9	189-HpCB	U	ND	pg/L	7.26	21.8
41411-64-7	190-HpCB	U	ND	pg/L	7.26	21.8
74472-50-7	191-HpCB	U	ND	pg/L	7.26	21.8
74472-51-8	192-HpCB	U	ND	pg/L	7.26	21.8

Comments:

B **The target analyte was detected in the associated blank.**

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Project:**	**HALL00114**
Lab Sample ID:	**10146001**	**Date Collected:**	**11/21/2016 09:30**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**11/29/2016 10:25**		
Client ID:	**1611B75-001L Rio Grande-North-11**			**Prep Basis:**	**As Received**
Batch ID:	**33561**	**Method:**	**EPA Method 1668A**		
Run Date:	**12/16/2016 17:07**	**Analyst:**	**MJC**	**Instrument:**	**HRP791**
Data File:	**c16dec16a-8**			**Dilution:**	**1**
Prep Batch:	**33559**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**13-DEC-16**	**Prep Aliquot:**	**917 mL**		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL
69782-91-8	193-HpCB	C180				
35694-08-7	194-OcCB	U	ND	pg/L	7.26	21.8
52663-78-2	195-OcCB	U	ND	pg/L	7.26	21.8
42740-50-1	196-OcCB	U	ND	pg/L	7.26	21.8
33091-17-7	197-OcCB	CU	ND	pg/L	14.5	43.6
68194-17-2	198-OcCB	CU	ND	pg/L	14.5	43.6
52663-75-9	199-OcCB	C198				
52663-73-7	200-OcCB	C197				
40186-71-8	201-OcCB	U	ND	pg/L	7.26	21.8
2136-99-4	202-OcCB	U	ND	pg/L	7.26	21.8
52663-76-0	203-OcCB	U	ND	pg/L	7.26	21.8
74472-52-9	204-OcCB	U	ND	pg/L	7.26	21.8
74472-53-0	205-OcCB	U	ND	pg/L	7.26	21.8
40186-72-9	206-NoCB	U	ND	pg/L	7.26	21.8
52663-79-3	207-NoCB	U	ND	pg/L	7.26	21.8
52663-77-1	208-NoCB	U	ND	pg/L	7.26	21.8
2051-24-3	209-DeCB	U	ND	pg/L	7.26	21.8
1336-36-3	Total PCB Congeners	B	61.1	pg/L	7.26	21.8

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1-MoCB		952	2180	pg/L	43.6	(15%-150%)
13C-3-MoCB		1120	2180	pg/L	51.5	(15%-150%)
13C-4-DiCB		1090	2180	pg/L	49.9	(25%-150%)
13C-15-DiCB		2100	2180	pg/L	96.5	(25%-150%)
13C-19-TrCB		1520	2180	pg/L	69.9	(25%-150%)
13C-37-TrCB		1750	2180	pg/L	80.1	(25%-150%)
13C-54-TeCB		1360	2180	pg/L	62.5	(25%-150%)
13C-77-TeCB		2010	2180	pg/L	92.0	(25%-150%)
13C-81-TeCB		2020	2180	pg/L	92.8	(25%-150%)
13C-104-PeCB		1530	2180	pg/L	70.2	(25%-150%)
13C-105-PeCB		1820	2180	pg/L	83.4	(25%-150%)
13C-114-PeCB		1800	2180	pg/L	82.3	(25%-150%)
13C-118-PeCB		1870	2180	pg/L	85.8	(25%-150%)
13C-123-PeCB		1910	2180	pg/L	87.6	(25%-150%)
13C-126-PeCB		1780	2180	pg/L	81.7	(25%-150%)
13C-155-HxCB		1620	2180	pg/L	74.4	(25%-150%)
13C-156-HxCB	C	3230	4360	pg/L	74.1	(25%-150%)
13C-157-HxCB	C156L					
13C-167-HxCB		1700	2180	pg/L	78.1	(25%-150%)
13C-169-HxCB		1570	2180	pg/L	71.9	(25%-150%)
13C-188-HpCB		2050	2180	pg/L	93.8	(25%-150%)
13C-189-HpCB		1800	2180	pg/L	82.7	(25%-150%)

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	1611B75	**Client:**	HALL001	**Project:**	HALL00114
Lab Sample ID:	10146001	**Date Collected:**	11/21/2016 09:30	**Matrix:**	WATER
Client Sample:	1668A Water	**Date Received:**	11/29/2016 10:25		
Client ID:	1611B75-001L Rio Grande-North-11			**Prep Basis:**	As Received
Batch ID:	33561	**Method:**	EPA Method 1668A		
Run Date:	12/16/2016 17:07	**Analyst:**	MJC	**Instrument:**	HRP791
Data File:	c16dec16a-8			**Dilution:**	1
Prep Batch:	33559	**Prep Method:**	SW846 3520C	**Prep SOP Ref:**	CF-OA-E-001
Prep Date:	13-DEC-16	**Prep Aliquot:**	917 mL		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-202-OcCB		2110	2180	pg/L	96.9	(25%-150%)
13C-205-OcCB		1980	2180	pg/L	90.8	(25%-150%)
13C-206-NoCB		1950	2180	pg/L	89.2	(25%-150%)
13C-208-NoCB		1990	2180	pg/L	91.2	(25%-150%)
13C-209-DeCB		2160	2180	pg/L	99.1	(25%-150%)
13C-28-TrCB		1540	2180	pg/L	70.7	(30%-135%)
13C-111-PeCB		1910	2180	pg/L	87.4	(30%-135%)
13C-178-HpCB		2050	2180	pg/L	94.0	(30%-135%)

Comments:

B The target analyte was detected in the associated blank.
C Congener has coeluters. When Cxxx, refer to congener number xxx for data
J Value is estimated
U Analyte was analyzed for, but not detected above the specified detection limit.

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Project:**	**HALL00114**
Lab Sample ID:	**10146002**	**Date Collected:**	**11/22/2016 07:00**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**11/30/2016 10:45**		
Client ID:	**1611B75-002L Rio Grande-South-11**			**Prep Basis:**	**As Received**
Batch ID:	**33561**	**Method:**	**EPA Method 1668A**		
Run Date:	**12/16/2016 18:13**	**Analyst:**	**MJC**	**Instrument:**	**HRP791**
Data File:	**c16dec16a-9**			**Dilution:**	**1**
Prep Batch:	**33559**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**13-DEC-16**	**Prep Aliquot:**	**903.4 mL**		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL
2051-60-7	1-MoCB	U	ND	pg/L	7.48	22.1
2051-61-8	2-MoCB	U	ND	pg/L	7.37	22.1
2051-62-9	3-MoCB	U	ND	pg/L	7.37	22.1
13029-08-8	4-DiCB	U	ND	pg/L	7.44	22.1
16605-91-7	5-DiCB	U	ND	pg/L	8.50	22.1
25569-80-6	6-DiCB	U	ND	pg/L	8.01	22.1
33284-50-3	7-DiCB	U	ND	pg/L	7.37	22.1
34883-43-7	8-DiCB	U	ND	pg/L	7.86	22.1
34883-39-1	9-DiCB	U	ND	pg/L	7.37	22.1
33146-45-1	10-DiCB	U	ND	pg/L	7.37	22.1
2050-67-1	11-DiCB	J	78.4	pg/L	12.7	111
2974-92-7	12-DiCB	CU	ND	pg/L	14.7	44.3
2974-90-5	13-DiCB	C12				
34883-41-5	14-DiCB	U	ND	pg/L	7.37	22.1
2050-68-2	15-DiCB	J	13.0	pg/L	7.37	22.1
38444-78-9	16-TrCB	U	ND	pg/L	8.92	22.1
37680-66-3	17-TrCB	U	ND	pg/L	7.37	22.1
37680-65-2	18-TrCB	CU	ND	pg/L	14.7	44.3
38444-73-4	19-TrCB	U	ND	pg/L	7.37	22.1
38444-84-7	20-TrCB	CJ	20.2	pg/L	14.7	44.3
55702-46-0	21-TrCB	CU	ND	pg/L	14.7	44.3
38444-85-8	22-TrCB	U	ND	pg/L	7.37	22.1
55720-44-0	23-TrCB	U	ND	pg/L	7.37	22.1
55702-45-9	24-TrCB	U	ND	pg/L	7.37	22.1
55712-37-3	25-TrCB	U	ND	pg/L	7.37	22.1
38444-81-4	26-TrCB	CU	ND	pg/L	14.7	44.3
38444-76-7	27-TrCB	U	ND	pg/L	7.37	22.1
7012-37-5	28-TrCB	C20				
15862-07-4	29-TrCB	C26				
35693-92-6	30-TrCB	C18				
16606-02-3	31-TrCB	J	13.4	pg/L	7.37	22.1
38444-77-8	32-TrCB	U	ND	pg/L	7.37	22.1

Comments:

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Project:**	**HALL00114**
Lab Sample ID:	**10146002**	**Date Collected:**	**11/22/2016 07:00**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**11/30/2016 10:45**		
Client ID:	**1611B75-002L Rio Grande-South-11**			**Prep Basis:**	**As Received**
Batch ID:	**33561**	**Method:**	**EPA Method 1668A**		
Run Date:	**12/16/2016 18:13**	**Analyst:**	**MJC**	**Instrument:**	**HRP791**
Data File:	**c16dec16a-9**			**Dilution:**	**1**
Prep Batch:	**33559**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**13-DEC-16**	**Prep Aliquot:**	**903.4 mL**		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL
38444-86-9	33-TrCB	C21				
37680-68-5	34-TrCB	U	ND	pg/L	7.37	22.1
37680-69-6	35-TrCB	U	ND	pg/L	7.37	22.1
38444-87-0	36-TrCB	U	ND	pg/L	7.37	22.1
38444-90-5	37-TrCB	J	9.05	pg/L	7.37	22.1
53555-66-1	38-TrCB	U	ND	pg/L	7.37	22.1
38444-88-1	39-TrCB	U	ND	pg/L	7.37	22.1
38444-93-8	40-TeCB	CU	ND	pg/L	14.7	44.3
52663-59-9	41-TeCB	U	ND	pg/L	7.37	22.1
36559-22-5	42-TeCB	U	ND	pg/L	7.37	22.1
70362-46-8	43-TeCB	U	ND	pg/L	7.37	22.1
41464-39-5	44-TeCB	CJ	27.1	pg/L	22.1	66.4
70362-45-7	45-TeCB	CU	ND	pg/L	14.7	44.3
41464-47-5	46-TeCB	U	ND	pg/L	7.37	22.1
2437-79-8	47-TeCB	C44				
70362-47-9	48-TeCB	U	ND	pg/L	7.37	22.1
41464-40-8	49-TeCB	CU	ND	pg/L	14.7	44.3
62796-65-0	50-TeCB	CU	ND	pg/L	14.7	44.3
68194-04-7	51-TeCB	C45				
35693-99-3	52-TeCB		37.5	pg/L	7.37	22.1
41464-41-9	53-TeCB	C50				
15968-05-5	54-TeCB	U	ND	pg/L	7.37	22.1
74338-24-2	55-TeCB	U	ND	pg/L	7.37	22.1
41464-43-1	56-TeCB	J	11.2	pg/L	7.37	22.1
70424-67-8	57-TeCB	U	ND	pg/L	7.37	22.1
41464-49-7	58-TeCB	U	ND	pg/L	7.37	22.1
74472-33-6	59-TeCB	CU	ND	pg/L	22.1	66.4
33025-41-1	60-TeCB	U	ND	pg/L	7.37	22.1
33284-53-6	61-TeCB	CJ	45.1	pg/L	29.4	88.6
54230-22-7	62-TeCB	C59				
74472-34-7	63-TeCB	U	ND	pg/L	7.37	22.1
52663-58-8	64-TeCB	J	9.32	pg/L	7.37	22.1

Comments:

C Congener has coeluters. When Cxxx, refer to congener number xxx for data

J Value is estimated

U Analyte was analyzed for, but not detected above the specified detection limit.

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Project:**	**HALL00114**
Lab Sample ID:	**10146002**	**Date Collected:**	**11/22/2016 07:00**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**11/30/2016 10:45**		
Client ID:	**1611B75-002L Rio Grande-South-11**			**Prep Basis:**	**As Received**
Batch ID:	**33561**	**Method:**	**EPA Method 1668A**		
Run Date:	**12/16/2016 18:13**	**Analyst:**	**MJC**	**Instrument:**	**HRP791**
Data File:	**c16dec16a-9**			**Dilution:**	**1**
Prep Batch:	**33559**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**13-DEC-16**	**Prep Aliquot:**	**903.4 mL**		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL
33284-54-7	65-TeCB	C44				
32598-10-0	66-TeCB	J	17.4	pg/L	7.37	22.1
73575-53-8	67-TeCB	U	ND	pg/L	7.37	22.1
73575-52-7	68-TeCB	U	ND	pg/L	7.37	22.1
60233-24-1	69-TeCB	C49				
32598-11-1	70-TeCB	C61				
41464-46-4	71-TeCB	C40				
41464-42-0	72-TeCB	U	ND	pg/L	7.37	22.1
74338-23-1	73-TeCB	U	ND	pg/L	7.37	22.1
32690-93-0	74-TeCB	C61				
32598-12-2	75-TeCB	C59				
70362-48-0	76-TeCB	C61				
32598-13-3	77-TeCB	U	ND	pg/L	7.37	22.1
70362-49-1	78-TeCB	U	ND	pg/L	7.37	22.1
41464-48-6	79-TeCB	U	ND	pg/L	7.37	22.1
33284-52-5	80-TeCB	U	ND	pg/L	7.37	22.1
70362-50-4	81-TeCB	U	ND	pg/L	7.37	22.1
52663-62-4	82-PeCB	J	7.68	pg/L	7.37	22.1
60145-20-2	83-PeCB	U	ND	pg/L	7.37	22.1
52663-60-2	84-PeCB	J	14.1	pg/L	7.37	22.1
65510-45-4	85-PeCB	CU	ND	pg/L	22.1	66.4
55312-69-1	86-PeCB	CJ	46.6	pg/L	44.3	133
38380-02-8	87-PeCB	C86				
55215-17-3	88-PeCB	CU	ND	pg/L	14.7	44.3
73575-57-2	89-PeCB	U	ND	pg/L	7.37	22.1
68194-07-0	90-PeCB	CJ	65.4	pg/L	22.1	66.4
68194-05-8	91-PeCB	C88				
52663-61-3	92-PeCB	J	11.8	pg/L	7.37	22.1
73575-56-1	93-PeCB	CU	ND	pg/L	14.7	44.3
73575-55-0	94-PeCB	U	ND	pg/L	7.37	22.1
38379-99-6	95-PeCB		43.8	pg/L	7.37	22.1
73575-54-9	96-PeCB	U	ND	pg/L	7.37	22.1

Comments:

C Congener has coeluters. When Cxxx, refer to congener number xxx for data

J Value is estimated

U Analyte was analyzed for, but not detected above the specified detection limit.

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Project:**	**HALL00114**
Lab Sample ID:	**10146002**	**Date Collected:**	**11/22/2016 07:00**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**11/30/2016 10:45**		
Client ID:	**1611B75-002L Rio Grande-South-11**			**Prep Basis:**	**As Received**
Batch ID:	**33561**	**Method:**	**EPA Method 1668A**		
Run Date:	**12/16/2016 18:13**	**Analyst:**	**MJC**	**Instrument:**	**HRP791**
Data File:	**c16dec16a-9**			**Dilution:**	**1**
Prep Batch:	**33559**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**13-DEC-16**	**Prep Aliquot:**	**903.4 mL**		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL
41464-51-1	97-PeCB	C86				
60233-25-2	98-PeCB	CU	ND	pg/L	14.7	44.3
38380-01-7	99-PeCB		26.8	pg/L	7.37	22.1
39485-83-1	100-PeCB	C93				
37680-73-2	101-PeCB	C90				
68194-06-9	102-PeCB	C98				
60145-21-3	103-PeCB	U	ND	pg/L	7.37	22.1
56558-16-8	104-PeCB	U	ND	pg/L	7.37	22.1
32598-14-4	105-PeCB		33.8	pg/L	7.37	22.1
70424-69-0	106-PeCB	U	ND	pg/L	7.37	22.1
70424-68-9	107-PeCB	U	ND	pg/L	7.37	22.1
70362-41-3	108-PeCB	CU	ND	pg/L	14.7	44.3
74472-35-8	109-PeCB	C86				
38380-03-9	110-PeCB	C	92.3	pg/L	14.7	44.3
39635-32-0	111-PeCB	U	ND	pg/L	7.37	22.1
74472-36-9	112-PeCB	U	ND	pg/L	7.37	22.1
68194-10-5	113-PeCB	C90				
74472-37-0	114-PeCB	U	ND	pg/L	7.37	22.1
74472-38-1	115-PeCB	C110				
18259-05-7	116-PeCB	C85				
68194-11-6	117-PeCB	C85				
31508-00-6	118-PeCB		68.0	pg/L	7.37	22.1
56558-17-9	119-PeCB	C86				
68194-12-7	120-PeCB	U	ND	pg/L	7.37	22.1
56558-18-0	121-PeCB	U	ND	pg/L	7.37	22.1
76842-07-4	122-PeCB	U	ND	pg/L	7.37	22.1
65510-44-3	123-PeCB	U	ND	pg/L	7.37	22.1
70424-70-3	124-PeCB	C108				
74472-39-2	125-PeCB	C86				
57465-28-8	126-PeCB	U	ND	pg/L	7.37	22.1
39635-33-1	127-PeCB	U	ND	pg/L	7.37	22.1
38380-07-3	128-HxCB	CJ	19.9	pg/L	14.7	44.3

Comments:

C Congener has coeluters. When Cxxx, refer to congener number xxx for data

J Value is estimated

U Analyte was analyzed for, but not detected above the specified detection limit.

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Project:**	**HALL00114**
Lab Sample ID:	**10146002**	**Date Collected:**	**11/22/2016 07:00**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**11/30/2016 10:45**		
Client ID:	**1611B75-002L Rio Grande-South-11**			**Prep Basis:**	**As Received**
Batch ID:	**33561**	**Method:**	**EPA Method 1668A**		
Run Date:	**12/16/2016 18:13**	**Analyst:**	**MJC**	**Instrument:**	**HRP791**
Data File:	**c16dec16a-9**			**Dilution:**	**1**
Prep Batch:	**33559**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**13-DEC-16**	**Prep Aliquot:**	**903.4 mL**		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL
55215-18-4	129-HxCB	C	160	pg/L	22.1	66.4
52663-66-8	130-HxCB	J	8.66	pg/L	7.37	22.1
61798-70-7	131-HxCB	U	ND	pg/L	7.37	22.1
38380-05-1	132-HxCB		43.1	pg/L	14.1	22.1
35694-04-3	133-HxCB	U	ND	pg/L	7.37	22.1
52704-70-8	134-HxCB	U	ND	pg/L	7.44	22.1
52744-13-5	135-HxCB	CJ	39.2	pg/L	14.7	44.3
38411-22-2	136-HxCB	J	12.4	pg/L	7.37	22.1
35694-06-5	137-HxCB	U	ND	pg/L	7.37	22.1
35065-28-2	138-HxCB	C129				
56030-56-9	139-HxCB	CU	ND	pg/L	14.7	44.3
59291-64-4	140-HxCB	C139				
52712-04-6	141-HxCB		24.0	pg/L	7.37	22.1
41411-61-4	142-HxCB	U	ND	pg/L	7.37	22.1
68194-15-0	143-HxCB	U	ND	pg/L	7.37	22.1
68194-14-9	144-HxCB	U	ND	pg/L	7.37	22.1
74472-40-5	145-HxCB	U	ND	pg/L	7.37	22.1
51908-16-8	146-HxCB	J	17.0	pg/L	7.37	22.1
68194-13-8	147-HxCB	C	95.3	pg/L	14.7	44.3
74472-41-6	148-HxCB	U	ND	pg/L	7.37	22.1
38380-04-0	149-HxCB	C147				
68194-08-1	150-HxCB	U	ND	pg/L	7.37	22.1
52663-63-5	151-HxCB	C135				
68194-09-2	152-HxCB	U	ND	pg/L	7.37	22.1
35065-27-1	153-HxCB	C	116	pg/L	14.7	44.3
60145-22-4	154-HxCB	U	ND	pg/L	7.37	22.1
33979-03-2	155-HxCB	U	ND	pg/L	7.37	22.1
38380-08-4	156-HxCB	CJ	16.8	pg/L	14.7	44.3
69782-90-7	157-HxCB	C156				
74472-42-7	158-HxCB	J	14.4	pg/L	7.37	22.1
39635-35-3	159-HxCB	U	ND	pg/L	7.37	22.1
41411-62-5	160-HxCB	U	ND	pg/L	7.37	22.1

Comments:

C Congener has coeluters. When Cxxx, refer to congener number xxx for data

J Value is estimated

U Analyte was analyzed for, but not detected above the specified detection limit.

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	1611B75	**Client:**	HALL001	**Project:**	HALL00114
Lab Sample ID:	10146002	**Date Collected:**	11/22/2016 07:00	**Matrix:**	WATER
Client Sample:	1668A Water	**Date Received:**	11/30/2016 10:45		
Client ID:	1611B75-002L Rio Grande-South-11			**Prep Basis:**	As Received
Batch ID:	33561	**Method:**	EPA Method 1668A		
Run Date:	12/16/2016 18:13	**Analyst:**	MJC	**Instrument:**	HRP791
Data File:	c16dec16a-9			**Dilution:**	1
Prep Batch:	33559	**Prep Method:**	SW846 3520C	**Prep SOP Ref:**	CF-OA-E-001
Prep Date:	13-DEC-16	**Prep Aliquot:**	903.4 mL		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL
74472-43-8	161-HxCB	U	ND	pg/L	7.37	22.1
39635-34-2	162-HxCB	U	ND	pg/L	7.37	22.1
74472-44-9	163-HxCB	C129				
74472-45-0	164-HxCB	J	10.2	pg/L	7.37	22.1
74472-46-1	165-HxCB	U	ND	pg/L	7.37	22.1
41411-63-6	166-HxCB	C128				
52663-72-6	167-HxCB	U	ND	pg/L	7.37	22.1
59291-65-5	168-HxCB	C153				
32774-16-6	169-HxCB	U	ND	pg/L	7.37	22.1
35065-30-6	170-HpCB		44.1	pg/L	7.37	22.1
52663-71-5	171-HpCB	CU	ND	pg/L	14.7	44.3
52663-74-8	172-HpCB	J	8.55	pg/L	7.37	22.1
68194-16-1	173-HpCB	C171				
38411-25-5	174-HpCB		43.2	pg/L	7.37	22.1
40186-70-7	175-HpCB	U	ND	pg/L	7.37	22.1
52663-65-7	176-HpCB	U	ND	pg/L	7.37	22.1
52663-70-4	177-HpCB		26.6	pg/L	7.37	22.1
52663-67-9	178-HpCB	J	9.25	pg/L	7.37	22.1
52663-64-6	179-HpCB	J	15.5	pg/L	7.37	22.1
35065-29-3	180-HpCB	C	99.8	pg/L	14.7	44.3
74472-47-2	181-HpCB	U	ND	pg/L	7.37	22.1
60145-23-5	182-HpCB	U	ND	pg/L	7.37	22.1
52663-69-1	183-HpCB	CJ	29.5	pg/L	14.7	44.3
74472-48-3	184-HpCB	U	ND	pg/L	7.37	22.1
52712-05-7	185-HpCB	C183				
74472-49-4	186-HpCB	U	ND	pg/L	7.37	22.1
52663-68-0	187-HpCB		55.3	pg/L	7.37	22.1
74487-85-7	188-HpCB	U	ND	pg/L	7.37	22.1
39635-31-9	189-HpCB	U	ND	pg/L	7.37	22.1
41411-64-7	190-HpCB	J	8.55	pg/L	7.37	22.1
74472-50-7	191-HpCB	U	ND	pg/L	7.37	22.1
74472-51-8	192-HpCB	U	ND	pg/L	7.37	22.1

Comments:

C Congener has coeluters. When Cxxx, refer to congener number xxx for data

J Value is estimated

U Analyte was analyzed for, but not detected above the specified detection limit.

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Project:**	**HALL00114**
Lab Sample ID:	**10146002**	**Date Collected:**	**11/22/2016 07:00**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**11/30/2016 10:45**		
Client ID:	**1611B75-002L Rio Grande-South-11**			**Prep Basis:**	**As Received**
Batch ID:	**33561**	**Method:**	**EPA Method 1668A**		
Run Date:	**12/16/2016 18:13**	**Analyst:**	**MJC**	**Instrument:**	**HRP791**
Data File:	**c16dec16a-9**			**Dilution:**	**1**
Prep Batch:	**33559**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**13-DEC-16**	**Prep Aliquot:**	**903.4 mL**		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL
69782-91-8	193-HpCB	C180				
35694-08-7	194-OcCB	J	21.1	pg/L	7.37	22.1
52663-78-2	195-OcCB	J	8.15	pg/L	7.37	22.1
42740-50-1	196-OcCB	J	10.8	pg/L	7.37	22.1
33091-17-7	197-OcCB	CU	ND	pg/L	14.7	44.3
68194-17-2	198-OcCB	CJ	25.9	pg/L	14.7	44.3
52663-75-9	199-OcCB	C198				
52663-73-7	200-OcCB	C197				
40186-71-8	201-OcCB	U	ND	pg/L	7.37	22.1
2136-99-4	202-OcCB	U	ND	pg/L	7.37	22.1
52663-76-0	203-OcCB	J	17.3	pg/L	7.37	22.1
74472-52-9	204-OcCB	U	ND	pg/L	7.37	22.1
74472-53-0	205-OcCB	U	ND	pg/L	7.37	22.1
40186-72-9	206-NoCB	J	13.6	pg/L	7.37	22.1
52663-79-3	207-NoCB	U	ND	pg/L	7.37	22.1
52663-77-1	208-NoCB	U	ND	pg/L	7.37	22.1
2051-24-3	209-DeCB	J	12.2	pg/L	7.37	22.1
1336-36-3	Total PCB Congeners		1720	pg/L	7.37	22.1

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1-MoCB		1240	2210	pg/L	56.0	(15%-150%)
13C-3-MoCB		1410	2210	pg/L	63.6	(15%-150%)
13C-4-DiCB		1360	2210	pg/L	61.6	(25%-150%)
13C-15-DiCB		2580	2210	pg/L	117	(25%-150%)
13C-19-TrCB		1850	2210	pg/L	83.6	(25%-150%)
13C-37-TrCB		2010	2210	pg/L	90.9	(25%-150%)
13C-54-TeCB		1510	2210	pg/L	68.3	(25%-150%)
13C-77-TeCB		2290	2210	pg/L	103	(25%-150%)
13C-81-TeCB		2320	2210	pg/L	105	(25%-150%)
13C-104-PeCB		1680	2210	pg/L	75.7	(25%-150%)
13C-105-PeCB		2010	2210	pg/L	90.7	(25%-150%)
13C-114-PeCB		1980	2210	pg/L	89.3	(25%-150%)
13C-118-PeCB		2040	2210	pg/L	92.0	(25%-150%)
13C-123-PeCB		2060	2210	pg/L	93.0	(25%-150%)
13C-126-PeCB		2020	2210	pg/L	91.2	(25%-150%)
13C-155-HxCB		1780	2210	pg/L	80.3	(25%-150%)
13C-156-HxCB	C	3640	4430	pg/L	82.1	(25%-150%)
13C-157-HxCB	C156L					
13C-167-HxCB		1920	2210	pg/L	86.6	(25%-150%)
13C-169-HxCB		1780	2210	pg/L	80.6	(25%-150%)
13C-188-HpCB		2130	2210	pg/L	96.3	(25%-150%)
13C-189-HpCB		1990	2210	pg/L	90.0	(25%-150%)

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	1611B75	**Client:**	HALL001	**Project:**	HALL00114
Lab Sample ID:	10146002	**Date Collected:**	11/22/2016 07:00	**Matrix:**	WATER
Client Sample:	1668A Water	**Date Received:**	11/30/2016 10:45		
Client ID:	1611B75-002L Rio Grande-South-11			**Prep Basis:**	As Received
Batch ID:	33561	**Method:**	EPA Method 1668A		
Run Date:	12/16/2016 18:13	**Analyst:**	MJC	**Instrument:**	HRP791
Data File:	c16dec16a-9			**Dilution:**	1
Prep Batch:	33559	**Prep Method:**	SW846 3520C	**Prep SOP Ref:**	CF-OA-E-001
Prep Date:	13-DEC-16	**Prep Aliquot:**	903.4 mL		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-202-OcCB		2270	2210	pg/L	103	(25%-150%)
13C-205-OcCB		2140	2210	pg/L	96.5	(25%-150%)
13C-206-NoCB		2100	2210	pg/L	94.7	(25%-150%)
13C-208-NoCB		2150	2210	pg/L	96.9	(25%-150%)
13C-209-DeCB		2320	2210	pg/L	105	(25%-150%)
13C-28-TrCB		1630	2210	pg/L	73.6	(30%-135%)
13C-111-PeCB		2030	2210	pg/L	91.5	(30%-135%)
13C-178-HpCB		2190	2210	pg/L	99.0	(30%-135%)

Comments:

C Congener has coeluters. When Cxxx, refer to congener number xxx for data

J Value is estimated

U Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

PCB Congeners

Surrogate Recovery Report

SDG Number: 1611B75

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12017565	LCS for batch 33559	13C-1-MoCB		46.8	(15%-140%)
		13C-3-MoCB		52.3	(15%-140%)
		13C-4-DiCB		54.2	(30%-140%)
		13C-15-DiCB		89.2	(30%-140%)
		13C-19-TrCB		72.1	(30%-140%)
		13C-37-TrCB		77.9	(30%-140%)
		13C-54-TeCB		68.5	(30%-140%)
		13C-77-TeCB		88.4	(30%-140%)
		13C-81-TeCB		90.4	(30%-140%)
		13C-104-PeCB		73.7	(30%-140%)
		13C-105-PeCB		82.4	(30%-140%)
		13C-114-PeCB		81.6	(30%-140%)
		13C-118-PeCB		83.9	(30%-140%)
		13C-123-PeCB		84.9	(30%-140%)
		13C-126-PeCB		78.7	(30%-140%)
		13C-155-HxCB		79.9	(30%-140%)
		13C-156-HxCB	C	75.5	(30%-140%)
		13C-157-HxCB	C156L		
		13C-167-HxCB		79.4	(30%-140%)
		13C-169-HxCB		72.2	(30%-140%)
		13C-188-HpCB		104	(30%-140%)
		13C-189-HpCB		85.8	(30%-140%)
		13C-202-OcCB		106	(30%-140%)
		13C-205-OcCB		93.5	(30%-140%)
		13C-206-NoCB		94.5	(30%-140%)
		13C-208-NoCB		97.6	(30%-140%)
		13C-209-DeCB		107	(30%-140%)
		13C-28-TrCB		74.6	(40%-125%)
		13C-111-PeCB		88.8	(40%-125%)
		13C-178-HpCB		101	(40%-125%)
12017566	LCSD for batch 33559	13C-1-MoCB		43.9	(15%-140%)
		13C-3-MoCB		51.9	(15%-140%)
		13C-4-DiCB		50.1	(30%-140%)
		13C-15-DiCB		90.3	(30%-140%)
		13C-19-TrCB		69.3	(30%-140%)
		13C-37-TrCB		72.0	(30%-140%)
		13C-54-TeCB		58.8	(30%-140%)
		13C-77-TeCB		79.7	(30%-140%)
		13C-81-TeCB		81.5	(30%-140%)
		13C-104-PeCB		65.8	(30%-140%)
		13C-105-PeCB		74.2	(30%-140%)
		13C-114-PeCB		72.7	(30%-140%)
		13C-118-PeCB		75.3	(30%-140%)
		13C-123-PeCB		76.0	(30%-140%)
		13C-126-PeCB		71.6	(30%-140%)
		13C-155-HxCB		69.7	(30%-140%)
		13C-156-HxCB	C	67.1	(30%-140%)
		13C-157-HxCB	C156L		
		13C-167-HxCB		71.1	(30%-140%)
		13C-169-HxCB		64.2	(30%-140%)
		13C-188-HpCB		91.6	(30%-140%)
		13C-189-HpCB		76.7	(30%-140%)

PCB Congeners
Surrogate Recovery Report

SDG Number: 1611B75

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12017566	LCSD for batch 33559	13C-202-OcCB		93.2	(30%-140%)
		13C-205-OcCB		83.4	(30%-140%)
		13C-206-NoCB		83.3	(30%-140%)
		13C-208-NoCB		85.8	(30%-140%)
		13C-209-DeCB		94.5	(30%-140%)
		13C-28-TrCB		71.9	(40%-125%)
		13C-111-PeCB		88.7	(40%-125%)
		13C-178-HpCB		98.6	(40%-125%)
12017564	MB for batch 33559	13C-1-MoCB		54.3	(15%-150%)
		13C-3-MoCB		57.6	(15%-150%)
		13C-4-DiCB		57.4	(25%-150%)
		13C-15-DiCB		109	(25%-150%)
		13C-19-TrCB		80.5	(25%-150%)
		13C-37-TrCB		90.8	(25%-150%)
		13C-54-TeCB		67.3	(25%-150%)
		13C-77-TeCB		103	(25%-150%)
		13C-81-TeCB		105	(25%-150%)
		13C-104-PeCB		72.9	(25%-150%)
		13C-105-PeCB		86.7	(25%-150%)
		13C-114-PeCB		85.3	(25%-150%)
		13C-118-PeCB		87.2	(25%-150%)
		13C-123-PeCB		88.4	(25%-150%)
		13C-126-PeCB		84.9	(25%-150%)
		13C-155-HxCB		82.0	(25%-150%)
		13C-156-HxCB	C	78.6	(25%-150%)
		13C-157-HxCB	C156L		
		13C-167-HxCB		83.7	(25%-150%)
		13C-169-HxCB		74.8	(25%-150%)
		13C-188-HpCB		106	(25%-150%)
		13C-189-HpCB		88.4	(25%-150%)
		13C-202-OcCB		108	(25%-150%)
		13C-205-OcCB		95.1	(25%-150%)
		13C-206-NoCB		95.2	(25%-150%)
		13C-208-NoCB		100	(25%-150%)
		13C-209-DeCB		108	(25%-150%)
		13C-28-TrCB		74.3	(30%-135%)
		13C-111-PeCB		93.9	(30%-135%)
		13C-178-HpCB		106	(30%-135%)
10146001	1611B75-001L Rio Grande-North-112116	13C-1-MoCB		43.6	(15%-150%)
		13C-3-MoCB		51.5	(15%-150%)
		13C-4-DiCB		49.9	(25%-150%)
		13C-15-DiCB		96.5	(25%-150%)
		13C-19-TrCB		69.9	(25%-150%)
		13C-37-TrCB		80.1	(25%-150%)
		13C-54-TeCB		62.5	(25%-150%)
		13C-77-TeCB		92.0	(25%-150%)
		13C-81-TeCB		92.8	(25%-150%)
		13C-104-PeCB		70.2	(25%-150%)
		13C-105-PeCB		83.4	(25%-150%)
		13C-114-PeCB		82.3	(25%-150%)
		13C-118-PeCB		85.8	(25%-150%)

PCB Congeners
Surrogate Recovery Report

SDG Number: 1611B75

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
10146001	1611B75-001L Rio Grande-North-112116	13C-123-PeCB		87.6	(25%-150%)
		13C-126-PeCB		81.7	(25%-150%)
		13C-155-HxCB		74.4	(25%-150%)
		13C-156-HxCB	C	74.1	(25%-150%)
		13C-157-HxCB	C156L		
		13C-167-HxCB		78.1	(25%-150%)
		13C-169-HxCB		71.9	(25%-150%)
		13C-188-HpCB		93.8	(25%-150%)
		13C-189-HpCB		82.7	(25%-150%)
		13C-202-OcCB		96.9	(25%-150%)
		13C-205-OcCB		90.8	(25%-150%)
		13C-206-NoCB		89.2	(25%-150%)
		13C-208-NoCB		91.2	(25%-150%)
		13C-209-DeCB		99.1	(25%-150%)
		13C-28-TrCB		70.7	(30%-135%)
		13C-111-PeCB		87.4	(30%-135%)
		13C-178-HpCB		94.0	(30%-135%)
10146002	1611B75-002L Rio Grande-South-112116	13C-1-MoCB		56.0	(15%-150%)
		13C-3-MoCB		63.6	(15%-150%)
		13C-4-DiCB		61.6	(25%-150%)
		13C-15-DiCB		117	(25%-150%)
		13C-19-TrCB		83.6	(25%-150%)
		13C-37-TrCB		90.9	(25%-150%)
		13C-54-TeCB		68.3	(25%-150%)
		13C-77-TeCB		103	(25%-150%)
		13C-81-TeCB		105	(25%-150%)
		13C-104-PeCB		75.7	(25%-150%)
		13C-105-PeCB		90.7	(25%-150%)
		13C-114-PeCB		89.3	(25%-150%)
		13C-118-PeCB		92.0	(25%-150%)
		13C-123-PeCB		93.0	(25%-150%)
		13C-126-PeCB		91.2	(25%-150%)
		13C-155-HxCB		80.3	(25%-150%)
		13C-156-HxCB	C	82.1	(25%-150%)
		13C-157-HxCB	C156L		
		13C-167-HxCB		86.6	(25%-150%)
		13C-169-HxCB		80.6	(25%-150%)
		13C-188-HpCB		96.3	(25%-150%)
		13C-189-HpCB		90.0	(25%-150%)
		13C-202-OcCB		103	(25%-150%)
		13C-205-OcCB		96.5	(25%-150%)
		13C-206-NoCB		94.7	(25%-150%)
		13C-208-NoCB		96.9	(25%-150%)
		13C-209-DeCB		105	(25%-150%)
		13C-28-TrCB		73.6	(30%-135%)
		13C-111-PeCB		91.5	(30%-135%)
		13C-178-HpCB		99.0	(30%-135%)

* Recovery outside Acceptance Limits
# Column to be used to flag recovery values
D Sample Diluted

PCB Congeners

Quality Control Summary
Spike Recovery Report

SDG Number: 1611B75 **Sample Type:** Laboratory Control Sample

Client ID: LCS for batch 33559 **Matrix:** WATER

Lab Sample ID: 12017565

Instrument: HRP791 **Analysis Date:** 12/16/2016 10:30 **Dilution:** 1

Analyst: MJC **Prep Batch ID:** 33559

Batch ID: 33561

CAS No.		Parmname	Amount Added pg/L		Spike Conc. pg/L	Recovery %	Acceptance Limits
2051-60-7	LCS	1-MoCB	500		547	109	50-150
2051-62-9	LCS	3-MoCB	500		600	120	50-150
13029-08-8	LCS	4-DiCB	500		471	94.1	50-150
2050-68-2	LCS	15-DiCB	500		584	117	50-150
38444-73-4	LCS	19-TrCB	500		502	100	50-150
38444-90-5	LCS	37-TrCB	500		512	102	50-150
15968-05-5	LCS	54-TeCB	1000		977	97.7	50-150
32598-13-3	LCS	77-TeCB	1000		1000	100	50-150
70362-50-4	LCS	81-TeCB	1000		1140	114	50-150
56558-16-8	LCS	104-PeCB	1000		1070	107	50-150
32598-14-4	LCS	105-PeCB	1000		1260	126	50-150
74472-37-0	LCS	114-PeCB	1000		1140	114	50-150
31508-00-6	LCS	118-PeCB	1000		1070	107	50-150
65510-44-3	LCS	123-PeCB	1000		1050	105	50-150
57465-28-8	LCS	126-PeCB	1000		1180	118	50-150
33979-03-2	LCS	155-HxCB	1000		1000	100	50-150
38380-08-4	LCS	156-HxCB	2000	C	2380	119	50-150
69782-90-7	LCS	157-HxCB		C156			
52663-72-6	LCS	167-HxCB	1000		1240	124	50-150
32774-16-6	LCS	169-HxCB	1000		1110	111	50-150
74487-85-7	LCS	188-HpCB	1000		1020	102	50-150
39635-31-9	LCS	189-HpCB	1000		1100	110	50-150
2136-99-4	LCS	202-OcCB	1500		1490	99.1	50-150
74472-53-0	LCS	205-OcCB	1500		1440	95.9	50-150
40186-72-9	LCS	206-NoCB	1500		1470	98.3	50-150
52663-77-1	LCS	208-NoCB	1500		1580	106	50-150
2051-24-3	LCS	209-DeCB	1500		1440	95.9	50-150

PCB Congeners

Quality Control Summary

Spike Recovery Report

SDG Number: 1611B75 **Sample Type:** Laboratory Control Sample Duplicate

Client ID: LCSD for batch 33559 **Matrix:** WATER

Lab Sample ID: 12017566

Instrument: HRP791 **Analysis Date:** 12/16/2016 11:36 **Dilution:** 1

Analyst: MJC **Prep Batch ID:** 33559

Batch ID: 33561

CAS No.		Parmname	Amount Added pg/L		Spike Conc. pg/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
2051-60-7	LCSD	1-MoCB	500		539	108	50-150	1.48	0-20
2051-62-9	LCSD	3-MoCB	500		582	116	50-150	2.95	0-20
13029-08-8	LCSD	4-DiCB	500		472	94.3	50-150	0.225	0-20
2050-68-2	LCSD	15-DiCB	500		577	115	50-150	1.26	0-20
38444-73-4	LCSD	19-TrCB	500		508	102	50-150	1.19	0-20
38444-90-5	LCSD	37-TrCB	500		520	104	50-150	1.42	0-20
15968-05-5	LCSD	54-TeCB	1000		967	96.7	50-150	1.05	0-20
32598-13-3	LCSD	77-TeCB	1000		1010	101	50-150	0.951	0-20
70362-50-4	LCSD	81-TeCB	1000		1140	114	50-150	0.263	0-20
56558-16-8	LCSD	104-PeCB	1000		1080	108	50-150	0.775	0-20
32598-14-4	LCSD	105-PeCB	1000		1280	128	50-150	1.14	0-20
74472-37-0	LCSD	114-PeCB	1000		1150	115	50-150	1.09	0-20
31508-00-6	LCSD	118-PeCB	1000		1050	105	50-150	1.52	0-20
65510-44-3	LCSD	123-PeCB	1000		1040	104	50-150	1.06	0-20
57465-28-8	LCSD	126-PeCB	1000		1190	119	50-150	1.07	0-20
33979-03-2	LCSD	155-HxCB	1000		992	99.2	50-150	1.08	0-20
38380-08-4	LCSD	156-HxCB	2000	C	2390	120	50-150	0.627	0-20
69782-90-7	LCSD	157-HxCB		C156					
52663-72-6	LCSD	167-HxCB	1000		1230	123	50-150	0.497	0-20
32774-16-6	LCSD	169-HxCB	1000		1120	112	50-150	0.674	0-20
74487-85-7	LCSD	188-HpCB	1000		1010	101	50-150	0.458	0-20
39635-31-9	LCSD	189-HpCB	1000		1080	108	50-150	1.46	0-20
2136-99-4	LCSD	202-OcCB	1500		1470	98.3	50-150	0.805	0-20
74472-53-0	LCSD	205-OcCB	1500		1430	95.1	50-150	0.842	0-20
40186-72-9	LCSD	206-NoCB	1500		1480	98.5	50-150	0.186	0-20
52663-77-1	LCSD	208-NoCB	1500		1570	105	50-150	0.500	0-20
2051-24-3	LCSD	209-DeCB	1500		1430	95.2	50-150	0.680	0-20

Method Blank Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Matrix:**	**WATER**
Client ID:	**MB for batch 33559**	**Instrument ID:**	**HRP791**	**Data File:**	**c16dec16a-4**
Lab Sample ID:	**12017564**	**Prep Date:**	**13-DEC-16**	**Analyzed:**	**12/16/16 12:42**
Column:					

This method blank applies to the following samples and quality control samples:

	Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01	LCS for batch 33559	12017565	c16dec16a-2	12/16/16	1030
02	LCSD for batch 33559	12017566	c16dec16a-3	12/16/16	1136
03	1611B75-001L Rio Grande-North-112116	10146001	c16dec16a-8	12/16/16	1707
04	1611B75-002L Rio Grande-South-112116	10146002	c16dec16a-9	12/16/16	1813

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Project:**	**HALL00114**
Lab Sample ID:	**12017564**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 33559**				
Client ID:	**MB for batch 33559**			**Prep Basis:**	**As Received**
Batch ID:	**33561**	**Method:**	**EPA Method 1668A**		
Run Date:	**12/16/2016 12:42**	**Analyst:**	**MJC**	**Instrument:**	**HRP791**
Data File:	**c16dec16a-4**			**Dilution:**	**1**
Prep Batch:	**33559**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**13-DEC-16**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL
2051-60-7	1-MoCB	U	ND	pg/L	6.76	20.0
2051-61-8	2-MoCB	U	ND	pg/L	6.66	20.0
2051-62-9	3-MoCB	U	ND	pg/L	6.66	20.0
13029-08-8	4-DiCB	U	ND	pg/L	6.72	20.0
16605-91-7	5-DiCB	U	ND	pg/L	7.68	20.0
25569-80-6	6-DiCB	U	ND	pg/L	7.24	20.0
33284-50-3	7-DiCB	U	ND	pg/L	6.66	20.0
34883-43-7	8-DiCB	U	ND	pg/L	7.10	20.0
34883-39-1	9-DiCB	U	ND	pg/L	6.66	20.0
33146-45-1	10-DiCB	U	ND	pg/L	6.66	20.0
2050-67-1	11-DiCB	J	35.2	pg/L	11.5	100
2974-92-7	12-DiCB	CU	ND	pg/L	13.3	40.0
2974-90-5	13-DiCB	C12				
34883-41-5	14-DiCB	U	ND	pg/L	6.66	20.0
2050-68-2	15-DiCB	U	ND	pg/L	6.66	20.0
38444-78-9	16-TrCB	U	ND	pg/L	8.06	20.0
37680-66-3	17-TrCB	U	ND	pg/L	6.66	20.0
37680-65-2	18-TrCB	CU	ND	pg/L	13.3	40.0
38444-73-4	19-TrCB	U	ND	pg/L	6.66	20.0
38444-84-7	20-TrCB	CU	ND	pg/L	13.3	40.0
55702-46-0	21-TrCB	CU	ND	pg/L	13.3	40.0
38444-85-8	22-TrCB	U	ND	pg/L	6.66	20.0
55720-44-0	23-TrCB	U	ND	pg/L	6.66	20.0
55702-45-9	24-TrCB	U	ND	pg/L	6.66	20.0
55712-37-3	25-TrCB	U	ND	pg/L	6.66	20.0
38444-81-4	26-TrCB	CU	ND	pg/L	13.3	40.0
38444-76-7	27-TrCB	U	ND	pg/L	6.66	20.0
7012-37-5	28-TrCB	C20				
15862-07-4	29-TrCB	C26				
35693-92-6	30-TrCB	C18				
16606-02-3	31-TrCB	U	ND	pg/L	6.66	20.0
38444-77-8	32-TrCB	U	ND	pg/L	6.66	20.0

Comments:

C Congener has coeluters. When Cxxx, refer to congener number xxx for data

J Value is estimated

U Analyte was analyzed for, but not detected above the specified detection limit.

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Project:**	**HALL00114**
Lab Sample ID:	**12017564**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 33559**				
Client ID:	**MB for batch 33559**			**Prep Basis:**	**As Received**
Batch ID:	**33561**	**Method:**	**EPA Method 1668A**		
Run Date:	**12/16/2016 12:42**	**Analyst:**	**MJC**	**Instrument:**	**HRP791**
Data File:	**c16dec16a-4**			**Dilution:**	**1**
Prep Batch:	**33559**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**13-DEC-16**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL
38444-86-9	33-TrCB	C21				
37680-68-5	34-TrCB	U	ND	pg/L	6.66	20.0
37680-69-6	35-TrCB	U	ND	pg/L	6.66	20.0
38444-87-0	36-TrCB	U	ND	pg/L	6.66	20.0
38444-90-5	37-TrCB	U	ND	pg/L	6.66	20.0
53555-66-1	38-TrCB	U	ND	pg/L	6.66	20.0
38444-88-1	39-TrCB	U	ND	pg/L	6.66	20.0
38444-93-8	40-TeCB	CU	ND	pg/L	13.3	40.0
52663-59-9	41-TeCB	U	ND	pg/L	6.66	20.0
36559-22-5	42-TeCB	U	ND	pg/L	6.66	20.0
70362-46-8	43-TeCB	U	ND	pg/L	6.66	20.0
41464-39-5	44-TeCB	CU	ND	pg/L	20.0	60.0
70362-45-7	45-TeCB	CU	ND	pg/L	13.3	40.0
41464-47-5	46-TeCB	U	ND	pg/L	6.66	20.0
2437-79-8	47-TeCB	C44				
70362-47-9	48-TeCB	U	ND	pg/L	6.66	20.0
41464-40-8	49-TeCB	CU	ND	pg/L	13.3	40.0
62796-65-0	50-TeCB	CU	ND	pg/L	13.3	40.0
68194-04-7	51-TeCB	C45				
35693-99-3	52-TeCB	U	ND	pg/L	6.66	20.0
41464-41-9	53-TeCB	C50				
15968-05-5	54-TeCB	U	ND	pg/L	6.66	20.0
74338-24-2	55-TeCB	U	ND	pg/L	6.66	20.0
41464-43-1	56-TeCB	U	ND	pg/L	6.66	20.0
70424-67-8	57-TeCB	U	ND	pg/L	6.66	20.0
41464-49-7	58-TeCB	U	ND	pg/L	6.66	20.0
74472-33-6	59-TeCB	CU	ND	pg/L	20.0	60.0
33025-41-1	60-TeCB	U	ND	pg/L	6.66	20.0
33284-53-6	61-TeCB	CU	ND	pg/L	26.6	80.0
54230-22-7	62-TeCB	C59				
74472-34-7	63-TeCB	U	ND	pg/L	6.66	20.0
52663-58-8	64-TeCB	U	ND	pg/L	6.66	20.0

Comments:

C Congener has coeluters. When Cxxx, refer to congener number xxx for data

J Value is estimated

U Analyte was analyzed for, but not detected above the specified detection limit.

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	1611B75	**Client:**	HALL001	**Project:**	HALL00114
Lab Sample ID:	12017564			**Matrix:**	WATER
Client Sample:	QC for batch 33559				
Client ID:	MB for batch 33559			**Prep Basis:**	As Received
Batch ID:	33561	**Method:**	EPA Method 1668A		
Run Date:	12/16/2016 12:42	**Analyst:**	MJC	**Instrument:**	HRP791
Data File:	c16dec16a-4			**Dilution:**	1
Prep Batch:	33559	**Prep Method:**	SW846 3520C	**Prep SOP Ref:**	CF-OA-E-001
Prep Date:	13-DEC-16	**Prep Aliquot:**	1000 mL		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL
33284-54-7	65-TeCB	C44				
32598-10-0	66-TeCB	U	ND	pg/L	6.66	20.0
73575-53-8	67-TeCB	U	ND	pg/L	6.66	20.0
73575-52-7	68-TeCB	U	ND	pg/L	6.66	20.0
60233-24-1	69-TeCB	C49				
32598-11-1	70-TeCB	C61				
41464-46-4	71-TeCB	C40				
41464-42-0	72-TeCB	U	ND	pg/L	6.66	20.0
74338-23-1	73-TeCB	U	ND	pg/L	6.66	20.0
32690-93-0	74-TeCB	C61				
32598-12-2	75-TeCB	C59				
70362-48-0	76-TeCB	C61				
32598-13-3	77-TeCB	U	ND	pg/L	6.66	20.0
70362-49-1	78-TeCB	U	ND	pg/L	6.66	20.0
41464-48-6	79-TeCB	U	ND	pg/L	6.66	20.0
33284-52-5	80-TeCB	U	ND	pg/L	6.66	20.0
70362-50-4	81-TeCB	U	ND	pg/L	6.66	20.0
52663-62-4	82-PeCB	U	ND	pg/L	6.66	20.0
60145-20-2	83-PeCB	U	ND	pg/L	6.66	20.0
52663-60-2	84-PeCB	U	ND	pg/L	6.66	20.0
65510-45-4	85-PeCB	CU	ND	pg/L	20.0	60.0
55312-69-1	86-PeCB	CU	ND	pg/L	40.0	120
38380-02-8	87-PeCB	C86				
55215-17-3	88-PeCB	CU	ND	pg/L	13.3	40.0
73575-57-2	89-PeCB	U	ND	pg/L	6.66	20.0
68194-07-0	90-PeCB	CU	ND	pg/L	20.0	60.0
68194-05-8	91-PeCB	C88				
52663-61-3	92-PeCB	U	ND	pg/L	6.66	20.0
73575-56-1	93-PeCB	CU	ND	pg/L	13.3	40.0
73575-55-0	94-PeCB	U	ND	pg/L	6.66	20.0
38379-99-6	95-PeCB	U	ND	pg/L	6.66	20.0
73575-54-9	96-PeCB	U	ND	pg/L	6.66	20.0

Comments:

C Congener has coeluters. When Cxxx, refer to congener number xxx for data

J Value is estimated

U Analyte was analyzed for, but not detected above the specified detection limit.

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Project:**	**HALL00114**
Lab Sample ID:	**12017564**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 33559**				
Client ID:	**MB for batch 33559**			**Prep Basis:**	**As Received**
Batch ID:	**33561**	**Method:**	**EPA Method 1668A**		
Run Date:	**12/16/2016 12:42**	**Analyst:**	**MJC**	**Instrument:**	**HRP791**
Data File:	**c16dec16a-4**			**Dilution:**	**1**
Prep Batch:	**33559**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**13-DEC-16**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL
41464-51-1	97-PeCB	C86				
60233-25-2	98-PeCB	CU	ND	pg/L	13.3	40.0
38380-01-7	99-PeCB	U	ND	pg/L	6.66	20.0
39485-83-1	100-PeCB	C93				
37680-73-2	101-PeCB	C90				
68194-06-9	102-PeCB	C98				
60145-21-3	103-PeCB	U	ND	pg/L	6.66	20.0
56558-16-8	104-PeCB	U	ND	pg/L	6.66	20.0
32598-14-4	105-PeCB	U	ND	pg/L	6.66	20.0
70424-69-0	106-PeCB	U	ND	pg/L	6.66	20.0
70424-68-9	107-PeCB	U	ND	pg/L	6.66	20.0
70362-41-3	108-PeCB	CU	ND	pg/L	13.3	40.0
74472-35-8	109-PeCB	C86				
38380-03-9	110-PeCB	CU	ND	pg/L	13.3	40.0
39635-32-0	111-PeCB	U	ND	pg/L	6.66	20.0
74472-36-9	112-PeCB	U	ND	pg/L	6.66	20.0
68194-10-5	113-PeCB	C90				
74472-37-0	114-PeCB	U	ND	pg/L	6.66	20.0
74472-38-1	115-PeCB	C110				
18259-05-7	116-PeCB	C85				
68194-11-6	117-PeCB	C85				
31508-00-6	118-PeCB	U	ND	pg/L	6.66	20.0
56558-17-9	119-PeCB	C86				
68194-12-7	120-PeCB	U	ND	pg/L	6.66	20.0
56558-18-0	121-PeCB	U	ND	pg/L	6.66	20.0
76842-07-4	122-PeCB	U	ND	pg/L	6.66	20.0
65510-44-3	123-PeCB	U	ND	pg/L	6.66	20.0
70424-70-3	124-PeCB	C108				
74472-39-2	125-PeCB	C86				
57465-28-8	126-PeCB	U	ND	pg/L	6.66	20.0
39635-33-1	127-PeCB	U	ND	pg/L	6.66	20.0
38380-07-3	128-HxCB	CU	ND	pg/L	13.3	40.0

Comments:

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Project:**	**HALL00114**
Lab Sample ID:	**12017564**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 33559**				
Client ID:	**MB for batch 33559**			**Prep Basis:**	**As Received**
Batch ID:	**33561**	**Method:**	**EPA Method 1668A**		
Run Date:	**12/16/2016 12:42**	**Analyst:**	**MJC**	**Instrument:**	**HRP791**
Data File:	**c16dec16a-4**			**Dilution:**	**1**
Prep Batch:	**33559**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**13-DEC-16**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL
55215-18-4	129-HxCB	CU	ND	pg/L	20.0	60.0
52663-66-8	130-HxCB	U	ND	pg/L	6.66	20.0
61798-70-7	131-HxCB	U	ND	pg/L	6.66	20.0
38380-05-1	132-HxCB	U	ND	pg/L	12.7	20.0
35694-04-3	133-HxCB	U	ND	pg/L	6.66	20.0
52704-70-8	134-HxCB	U	ND	pg/L	6.72	20.0
52744-13-5	135-HxCB	CU	ND	pg/L	13.3	40.0
38411-22-2	136-HxCB	U	ND	pg/L	6.66	20.0
35694-06-5	137-HxCB	U	ND	pg/L	6.66	20.0
35065-28-2	138-HxCB	C129				
56030-56-9	139-HxCB	CU	ND	pg/L	13.3	40.0
59291-64-4	140-HxCB	C139				
52712-04-6	141-HxCB	U	ND	pg/L	6.66	20.0
41411-61-4	142-HxCB	U	ND	pg/L	6.66	20.0
68194-15-0	143-HxCB	U	ND	pg/L	6.66	20.0
68194-14-9	144-HxCB	U	ND	pg/L	6.66	20.0
74472-40-5	145-HxCB	U	ND	pg/L	6.66	20.0
51908-16-8	146-HxCB	U	ND	pg/L	6.66	20.0
68194-13-8	147-HxCB	CU	ND	pg/L	13.3	40.0
74472-41-6	148-HxCB	U	ND	pg/L	6.66	20.0
38380-04-0	149-HxCB	C147				
68194-08-1	150-HxCB	U	ND	pg/L	6.66	20.0
52663-63-5	151-HxCB	C135				
68194-09-2	152-HxCB	U	ND	pg/L	6.66	20.0
35065-27-1	153-HxCB	CU	ND	pg/L	13.3	40.0
60145-22-4	154-HxCB	U	ND	pg/L	6.66	20.0
33979-03-2	155-HxCB	U	ND	pg/L	6.66	20.0
38380-08-4	156-HxCB	CU	ND	pg/L	13.3	40.0
69782-90-7	157-HxCB	C156				
74472-42-7	158-HxCB	U	ND	pg/L	6.66	20.0
39635-35-3	159-HxCB	U	ND	pg/L	6.66	20.0
41411-62-5	160-HxCB	U	ND	pg/L	6.66	20.0

Comments:

C Congener has coeluters. When Cxxx, refer to congener number xxx for data
J Value is estimated
U Analyte was analyzed for, but not detected above the specified detection limit.

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Project:**	**HALL00114**
Lab Sample ID:	**12017564**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 33559**				
Client ID:	**MB for batch 33559**			**Prep Basis:**	**As Received**
Batch ID:	**33561**	**Method:**	**EPA Method 1668A**		
Run Date:	**12/16/2016 12:42**	**Analyst:**	**MJC**	**Instrument:**	**HRP791**
Data File:	**c16dec16a-4**			**Dilution:**	**1**
Prep Batch:	**33559**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**13-DEC-16**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL
74472-43-8	161-HxCB	U	ND	pg/L	6.66	20.0
39635-34-2	162-HxCB	U	ND	pg/L	6.66	20.0
74472-44-9	163-HxCB	C129				
74472-45-0	164-HxCB	U	ND	pg/L	6.66	20.0
74472-46-1	165-HxCB	U	ND	pg/L	6.66	20.0
41411-63-6	166-HxCB	C128				
52663-72-6	167-HxCB	U	ND	pg/L	6.66	20.0
59291-65-5	168-HxCB	C153				
32774-16-6	169-HxCB	U	ND	pg/L	6.66	20.0
35065-30-6	170-HpCB	U	ND	pg/L	6.66	20.0
52663-71-5	171-HpCB	CU	ND	pg/L	13.3	40.0
52663-74-8	172-HpCB	U	ND	pg/L	6.66	20.0
68194-16-1	173-HpCB	C171				
38411-25-5	174-HpCB	U	ND	pg/L	6.66	20.0
40186-70-7	175-HpCB	U	ND	pg/L	6.66	20.0
52663-65-7	176-HpCB	U	ND	pg/L	6.66	20.0
52663-70-4	177-HpCB	U	ND	pg/L	6.66	20.0
52663-67-9	178-HpCB	U	ND	pg/L	6.66	20.0
52663-64-6	179-HpCB	U	ND	pg/L	6.66	20.0
35065-29-3	180-HpCB	CU	ND	pg/L	13.3	40.0
74472-47-2	181-HpCB	U	ND	pg/L	6.66	20.0
60145-23-5	182-HpCB	U	ND	pg/L	6.66	20.0
52663-69-1	183-HpCB	CU	ND	pg/L	13.3	40.0
74472-48-3	184-HpCB	U	ND	pg/L	6.66	20.0
52712-05-7	185-HpCB	C183				
74472-49-4	186-HpCB	U	ND	pg/L	6.66	20.0
52663-68-0	187-HpCB	U	ND	pg/L	6.66	20.0
74487-85-7	188-HpCB	U	ND	pg/L	6.66	20.0
39635-31-9	189-HpCB	U	ND	pg/L	6.66	20.0
41411-64-7	190-HpCB	U	ND	pg/L	6.66	20.0
74472-50-7	191-HpCB	U	ND	pg/L	6.66	20.0
74472-51-8	192-HpCB	U	ND	pg/L	6.66	20.0

Comments:

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Project:**	**HALL00114**
Lab Sample ID:	**12017564**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 33559**				
Client ID:	**MB for batch 33559**			**Prep Basis:**	**As Received**
Batch ID:	**33561**	**Method:**	**EPA Method 1668A**		
Run Date:	**12/16/2016 12:42**	**Analyst:**	**MJC**	**Instrument:**	**HRP791**
Data File:	**c16dec16a-4**			**Dilution:**	**1**
Prep Batch:	**33559**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**13-DEC-16**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL
69782-91-8	193-HpCB	C180				
35694-08-7	194-OcCB	U	ND	pg/L	6.66	20.0
52663-78-2	195-OcCB	U	ND	pg/L	6.66	20.0
42740-50-1	196-OcCB	U	ND	pg/L	6.66	20.0
33091-17-7	197-OcCB	CU	ND	pg/L	13.3	40.0
68194-17-2	198-OcCB	CU	ND	pg/L	13.3	40.0
52663-75-9	199-OcCB	C198				
52663-73-7	200-OcCB	C197				
40186-71-8	201-OcCB	U	ND	pg/L	6.66	20.0
2136-99-4	202-OcCB	U	ND	pg/L	6.66	20.0
52663-76-0	203-OcCB	U	ND	pg/L	6.66	20.0
74472-52-9	204-OcCB	U	ND	pg/L	6.66	20.0
74472-53-0	205-OcCB	U	ND	pg/L	6.66	20.0
40186-72-9	206-NoCB	U	ND	pg/L	6.66	20.0
52663-79-3	207-NoCB	U	ND	pg/L	6.66	20.0
52663-77-1	208-NoCB	U	ND	pg/L	6.66	20.0
2051-24-3	209-DeCB	U	ND	pg/L	6.66	20.0
1336-36-3	Total PCB Congeners		35.2	pg/L	6.66	20.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1-MoCB		1090	2000	pg/L	54.3	(15%-150%)
13C-3-MoCB		1150	2000	pg/L	57.6	(15%-150%)
13C-4-DiCB		1150	2000	pg/L	57.4	(25%-150%)
13C-15-DiCB		2190	2000	pg/L	109	(25%-150%)
13C-19-TrCB		1610	2000	pg/L	80.5	(25%-150%)
13C-37-TrCB		1820	2000	pg/L	90.8	(25%-150%)
13C-54-TeCB		1350	2000	pg/L	67.3	(25%-150%)
13C-77-TeCB		2050	2000	pg/L	103	(25%-150%)
13C-81-TeCB		2100	2000	pg/L	105	(25%-150%)
13C-104-PeCB		1460	2000	pg/L	72.9	(25%-150%)
13C-105-PeCB		1730	2000	pg/L	86.7	(25%-150%)
13C-114-PeCB		1710	2000	pg/L	85.3	(25%-150%)
13C-118-PeCB		1740	2000	pg/L	87.2	(25%-150%)
13C-123-PeCB		1770	2000	pg/L	88.4	(25%-150%)
13C-126-PeCB		1700	2000	pg/L	84.9	(25%-150%)
13C-155-HxCB		1640	2000	pg/L	82.0	(25%-150%)
13C-156-HxCB	C	3140	4000	pg/L	78.6	(25%-150%)
13C-157-HxCB	C156L					
13C-167-HxCB		1670	2000	pg/L	83.7	(25%-150%)
13C-169-HxCB		1500	2000	pg/L	74.8	(25%-150%)
13C-188-HpCB		2120	2000	pg/L	106	(25%-150%)
13C-189-HpCB		1770	2000	pg/L	88.4	(25%-150%)

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Project:**	**HALL00114**
Lab Sample ID:	**12017564**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 33559**				
Client ID:	**MB for batch 33559**			**Prep Basis:**	**As Received**
Batch ID:	**33561**	**Method:**	**EPA Method 1668A**		
Run Date:	**12/16/2016 12:42**	**Analyst:**	**MJC**	**Instrument:**	**HRP791**
Data File:	**c16dec16a-4**			**Dilution:**	**1**
Prep Batch:	**33559**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**13-DEC-16**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-202-OcCB		2160	2000	pg/L	108	(25%-150%)
13C-205-OcCB		1900	2000	pg/L	95.1	(25%-150%)
13C-206-NoCB		1900	2000	pg/L	95.2	(25%-150%)
13C-208-NoCB		2010	2000	pg/L	100	(25%-150%)
13C-209-DeCB		2160	2000	pg/L	108	(25%-150%)
13C-28-TrCB		1490	2000	pg/L	74.3	(30%-135%)
13C-111-PeCB		1880	2000	pg/L	93.9	(30%-135%)
13C-178-HpCB		2120	2000	pg/L	106	(30%-135%)

Comments:

C **Congener has coeluters. When Cxxx, refer to congener number xxx for data**

J **Value is estimated**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Project:**	**HALL00114**
Lab Sample ID:	**12017565**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 33559**				
Client ID:	**LCS for batch 33559**			**Prep Basis:**	**As Received**
Batch ID:	**33561**	**Method:**	**EPA Method 1668A**		
Run Date:	**12/16/2016 10:30**	**Analyst:**	**MJC**	**Instrument:**	**HRP791**
Data File:	**c16dec16a-2**			**Dilution:**	**1**
Prep Batch:	**33559**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**13-DEC-16**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL
2051-60-7	1-MoCB		547	pg/L	6.76	20.0
2051-62-9	3-MoCB		600	pg/L	6.66	20.0
13029-08-8	4-DiCB		471	pg/L	6.72	20.0
2050-68-2	15-DiCB		584	pg/L	6.66	20.0
38444-73-4	19-TrCB		502	pg/L	6.66	20.0
38444-90-5	37-TrCB		512	pg/L	6.66	20.0
15968-05-5	54-TeCB		977	pg/L	6.66	20.0
32598-13-3	77-TeCB		1000	pg/L	6.66	20.0
70362-50-4	81-TeCB		1140	pg/L	6.66	20.0
56558-16-8	104-PeCB		1070	pg/L	6.66	20.0
32598-14-4	105-PeCB		1260	pg/L	6.66	20.0
74472-37-0	114-PeCB		1140	pg/L	6.66	20.0
31508-00-6	118-PeCB		1070	pg/L	6.66	20.0
65510-44-3	123-PeCB		1050	pg/L	6.66	20.0
57465-28-8	126-PeCB		1180	pg/L	6.66	20.0
33979-03-2	155-HxCB		1000	pg/L	6.66	20.0
38380-08-4	156-HxCB	C	2380	pg/L	13.3	40.0
69782-90-7	157-HxCB	C156				
52663-72-6	167-HxCB		1240	pg/L	6.66	20.0
32774-16-6	169-HxCB		1110	pg/L	6.66	20.0
74487-85-7	188-HpCB		1020	pg/L	6.66	20.0
39635-31-9	189-HpCB		1100	pg/L	6.66	20.0
2136-99-4	202-OcCB		1490	pg/L	6.66	20.0
74472-53-0	205-OcCB		1440	pg/L	6.66	20.0
40186-72-9	206-NoCB		1470	pg/L	6.66	20.0
52663-77-1	208-NoCB		1580	pg/L	6.66	20.0
2051-24-3	209-DeCB		1440	pg/L	6.66	20.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1-MoCB		937	2000	pg/L	46.8	(15%-140%)
13C-3-MoCB		1050	2000	pg/L	52.3	(15%-140%)
13C-4-DiCB		1080	2000	pg/L	54.2	(30%-140%)
13C-15-DiCB		1780	2000	pg/L	89.2	(30%-140%)
13C-19-TrCB		1440	2000	pg/L	72.1	(30%-140%)
13C-37-TrCB		1560	2000	pg/L	77.9	(30%-140%)
13C-54-TeCB		1370	2000	pg/L	68.5	(30%-140%)
13C-77-TeCB		1770	2000	pg/L	88.4	(30%-140%)
13C-81-TeCB		1810	2000	pg/L	90.4	(30%-140%)
13C-104-PeCB		1470	2000	pg/L	73.7	(30%-140%)
13C-105-PeCB		1650	2000	pg/L	82.4	(30%-140%)
13C-114-PeCB		1630	2000	pg/L	81.6	(30%-140%)
13C-118-PeCB		1680	2000	pg/L	83.9	(30%-140%)

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Project:**	**HALL00114**
Lab Sample ID:	**12017565**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 33559**				
Client ID:	**LCS for batch 33559**			**Prep Basis:**	**As Received**
Batch ID:	**33561**	**Method:**	**EPA Method 1668A**		
Run Date:	**12/16/2016 10:30**	**Analyst:**	**MJC**	**Instrument:**	**HRP791**
Data File:	**c16dec16a-2**			**Dilution:**	**1**
Prep Batch:	**33559**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**13-DEC-16**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-123-PeCB		1700	2000	pg/L	84.9	(30%-140%)
13C-126-PeCB		1570	2000	pg/L	78.7	(30%-140%)
13C-155-HxCB		1600	2000	pg/L	79.9	(30%-140%)
13C-156-HxCB	C	3020	4000	pg/L	75.5	(30%-140%)
13C-157-HxCB	C156L					
13C-167-HxCB		1590	2000	pg/L	79.4	(30%-140%)
13C-169-HxCB		1440	2000	pg/L	72.2	(30%-140%)
13C-188-HpCB		2070	2000	pg/L	104	(30%-140%)
13C-189-HpCB		1720	2000	pg/L	85.8	(30%-140%)
13C-202-OcCB		2120	2000	pg/L	106	(30%-140%)
13C-205-OcCB		1870	2000	pg/L	93.5	(30%-140%)
13C-206-NoCB		1890	2000	pg/L	94.5	(30%-140%)
13C-208-NoCB		1950	2000	pg/L	97.6	(30%-140%)
13C-209-DeCB		2150	2000	pg/L	107	(30%-140%)
13C-28-TrCB		1490	2000	pg/L	74.6	(40%-125%)
13C-111-PeCB		1780	2000	pg/L	88.8	(40%-125%)
13C-178-HpCB		2010	2000	pg/L	101	(40%-125%)

Comments:

C Congener has coeluters. When Cxxx, refer to congener number xxx for data

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Project:**	**HALL00114**
Lab Sample ID:	**12017566**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 33559**				
Client ID:	**LCSD for batch 33559**			**Prep Basis:**	**As Received**
Batch ID:	**33561**	**Method:**	**EPA Method 1668A**		
Run Date:	**12/16/2016 11:36**	**Analyst:**	**MJC**	**Instrument:**	**HRP791**
Data File:	**c16dec16a-3**			**Dilution:**	**1**
Prep Batch:	**33559**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**13-DEC-16**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL
2051-60-7	1-MoCB		539	pg/L	6.76	20.0
2051-62-9	3-MoCB		582	pg/L	6.66	20.0
13029-08-8	4-DiCB		472	pg/L	6.72	20.0
2050-68-2	15-DiCB		577	pg/L	6.66	20.0
38444-73-4	19-TrCB		508	pg/L	6.66	20.0
38444-90-5	37-TrCB		520	pg/L	6.66	20.0
15968-05-5	54-TeCB		967	pg/L	6.66	20.0
32598-13-3	77-TeCB		1010	pg/L	6.66	20.0
70362-50-4	81-TeCB		1140	pg/L	6.66	20.0
56558-16-8	104-PeCB		1080	pg/L	6.66	20.0
32598-14-4	105-PeCB		1280	pg/L	6.66	20.0
74472-37-0	114-PeCB		1150	pg/L	6.66	20.0
31508-00-6	118-PeCB		1050	pg/L	6.66	20.0
65510-44-3	123-PeCB		1040	pg/L	6.66	20.0
57465-28-8	126-PeCB		1190	pg/L	6.66	20.0
33979-03-2	155-HxCB		992	pg/L	6.66	20.0
38380-08-4	156-HxCB	C	2390	pg/L	13.3	40.0
69782-90-7	157-HxCB	C156				
52663-72-6	167-HxCB		1230	pg/L	6.66	20.0
32774-16-6	169-HxCB		1120	pg/L	6.66	20.0
74487-85-7	188-HpCB		1010	pg/L	6.66	20.0
39635-31-9	189-HpCB		1080	pg/L	6.66	20.0
2136-99-4	202-OcCB		1470	pg/L	6.66	20.0
74472-53-0	205-OcCB		1430	pg/L	6.66	20.0
40186-72-9	206-NoCB		1480	pg/L	6.66	20.0
52663-77-1	208-NoCB		1570	pg/L	6.66	20.0
2051-24-3	209-DeCB		1430	pg/L	6.66	20.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1-MoCB		877	2000	pg/L	43.9	(15%-140%)
13C-3-MoCB		1040	2000	pg/L	51.9	(15%-140%)
13C-4-DiCB		1000	2000	pg/L	50.1	(30%-140%)
13C-15-DiCB		1810	2000	pg/L	90.3	(30%-140%)
13C-19-TrCB		1390	2000	pg/L	69.3	(30%-140%)
13C-37-TrCB		1440	2000	pg/L	72.0	(30%-140%)
13C-54-TeCB		1180	2000	pg/L	58.8	(30%-140%)
13C-77-TeCB		1590	2000	pg/L	79.7	(30%-140%)
13C-81-TeCB		1630	2000	pg/L	81.5	(30%-140%)
13C-104-PeCB		1320	2000	pg/L	65.8	(30%-140%)
13C-105-PeCB		1480	2000	pg/L	74.2	(30%-140%)
13C-114-PeCB		1450	2000	pg/L	72.7	(30%-140%)
13C-118-PeCB		1510	2000	pg/L	75.3	(30%-140%)

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**1611B75**	**Client:**	**HALL001**	**Project:**	**HALL00114**
Lab Sample ID:	**12017566**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 33559**				
Client ID:	**LCSD for batch 33559**			**Prep Basis:**	**As Received**
Batch ID:	**33561**	**Method:**	**EPA Method 1668A**		
Run Date:	**12/16/2016 11:36**	**Analyst:**	**MJC**	**Instrument:**	**HRP791**
Data File:	**c16dec16a-3**			**Dilution:**	**1**
Prep Batch:	**33559**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**13-DEC-16**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	MDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-123-PeCB		1520	2000	pg/L	76.0	(30%-140%)
13C-126-PeCB		1430	2000	pg/L	71.6	(30%-140%)
13C-155-HxCB		1390	2000	pg/L	69.7	(30%-140%)
13C-156-HxCB	C	2680	4000	pg/L	67.1	(30%-140%)
13C-157-HxCB	C156L					
13C-167-HxCB		1420	2000	pg/L	71.1	(30%-140%)
13C-169-HxCB		1280	2000	pg/L	64.2	(30%-140%)
13C-188-HpCB		1830	2000	pg/L	91.6	(30%-140%)
13C-189-HpCB		1530	2000	pg/L	76.7	(30%-140%)
13C-202-OcCB		1860	2000	pg/L	93.2	(30%-140%)
13C-205-OcCB		1670	2000	pg/L	83.4	(30%-140%)
13C-206-NoCB		1670	2000	pg/L	83.3	(30%-140%)
13C-208-NoCB		1720	2000	pg/L	85.8	(30%-140%)
13C-209-DeCB		1890	2000	pg/L	94.5	(30%-140%)
13C-28-TrCB		1440	2000	pg/L	71.9	(40%-125%)
13C-111-PeCB		1770	2000	pg/L	88.7	(40%-125%)
13C-178-HpCB		1970	2000	pg/L	98.6	(40%-125%)

Comments:

C Congener has coeluters. When Cxxx, refer to congener number xxx for data

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1611B75**

23-Dec-16

Client: AMAFCA

Project: CMC

Sample ID	**MB-28858**	SampType:	**MBLK**	TestCode:	**EPA Method 1664A**					
Client ID:	**PBW**	Batch ID:	**28858**	RunNo:	**39004**					
Prep Date:	**11/28/2016**	Analysis Date:	**11/28/2016**	SeqNo:	**1219830**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
N-Hexane Extractable Material	ND	10.0								

Sample ID	**LCS-28858**	SampType:	**LCS**	TestCode:	**EPA Method 1664A**					
Client ID:	**LCSW**	Batch ID:	**28858**	RunNo:	**39004**					
Prep Date:	**11/28/2016**	Analysis Date:	**11/28/2016**	SeqNo:	**1219831**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
N-Hexane Extractable Material	39.4	10.0	40.00	0	98.5	78	114			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1611B75**

23-Dec-16

Client: AMAFCA

Project: CMC

Sample ID	**MB-A**	SampType:	**MBLK**	TestCode:	**EPA Method 200.7: Dissolved Metals**					
Client ID:	**PBW**	Batch ID:	**A39376**	RunNo:	**39376**					
Prep Date:		Analysis Date:	**12/14/2016**	SeqNo:	**1232681**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								

Sample ID	**LCS-A**	SampType:	**LCS**	TestCode:	**EPA Method 200.7: Dissolved Metals**					
Client ID:	**LCSW**	Batch ID:	**A39376**	RunNo:	**39376**					
Prep Date:		Analysis Date:	**12/14/2016**	SeqNo:	**1232682**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	50	1.0	50.00	0	99.4	85	115			
Magnesium	51	1.0	50.00	0	102	85	115			

Sample ID	**LLLCS-A**	SampType:	**LCSLL**	TestCode:	**EPA Method 200.7: Dissolved Metals**					
Client ID:	**BatchQC**	Batch ID:	**A39376**	RunNo:	**39376**					
Prep Date:		Analysis Date:	**12/14/2016**	SeqNo:	**1232683**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0	0.5000	0	108	50	150			
Magnesium	ND	1.0	0.5000	0	112	50	150			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1611B75**

23-Dec-16

Client: AMAFCA

Project: CMC

Sample ID	**LCS**	SampType:	**LCS**		TestCode:	**EPA 200.8: Dissolved Metals**				
Client ID:	**LCSW**	Batch ID:	**B39114**		RunNo:	**39114**				
Prep Date:		Analysis Date:	**12/2/2016**		SeqNo:	**1224351**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper	0.025	0.0010	0.02500	0	99.7	85	115			
Lead	0.012	0.00050	0.01250	0	99.0	85	115			
Uranium	0.012	0.00050	0.01250	0	95.6	85	115			

Sample ID	**LLLCS**	SampType:	**LCSLL**		TestCode:	**EPA 200.8: Dissolved Metals**				
Client ID:	**BatchQC**	Batch ID:	**B39114**		RunNo:	**39114**				
Prep Date:		Analysis Date:	**12/2/2016**		SeqNo:	**1224353**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper	ND	0.0010	0.001000	0	72.4	50	150			
Lead	ND	0.00050	0.0005000	0	95.5	50	150			
Uranium	ND	0.00050	0.0005000	0	92.0	50	150			

Sample ID	**MB**	SampType:	**MBLK**		TestCode:	**EPA 200.8: Dissolved Metals**				
Client ID:	**PBW**	Batch ID:	**B39114**		RunNo:	**39114**				
Prep Date:		Analysis Date:	**12/2/2016**		SeqNo:	**1224355**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper	ND	0.0010								
Lead	ND	0.00050								
Uranium	ND	0.00050								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1611B75**

23-Dec-16

Client: AMAFCA

Project: CMC

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R38938**	RunNo: **38938**
Prep Date:	Analysis Date: **11/22/2016**	SeqNo: **1217522** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R38938**	RunNo: **38938**
Prep Date:	Analysis Date: **11/22/2016**	SeqNo: **1217523** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.92	0.10	1.000	0	92.4	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	99.3	90	110			

Sample ID **1611B75-001DMS**	SampType: **MS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **Rio Grande-North-1**	Batch ID: **R38938**	RunNo: **38938**
Prep Date:	Analysis Date: **11/22/2016**	SeqNo: **1217529** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.88	0.10	1.000	0	88.2	76.7	103			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0.04580	96.5	84.9	115			

Sample ID **1611B75-001DMSD**	SampType: **MSD**	TestCode: **EPA Method 300.0: Anions**
Client ID: **Rio Grande-North-1**	Batch ID: **R38938**	RunNo: **38938**
Prep Date:	Analysis Date: **11/22/2016**	SeqNo: **1217530** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.90	0.10	1.000	0	89.6	76.7	103	1.59	20	
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0.04580	98.2	84.9	115	1.77	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1611B75**

23-Dec-16

Client: AMAFCA

Project: CMC

Sample ID **MB-28809**	SampType: **MBLK**	TestCode: **SM5210B: BOD**							
Client ID: **PBW**	Batch ID: **28809**	RunNo: **39012**							
Prep Date: **11/22/2016**	Analysis Date: **11/27/2016**	SeqNo: **1220182**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Biochemical Oxygen Demand	ND	2.0								

Sample ID **MB--28809**	SampType: **MBLK**	TestCode: **SM5210B: BOD**							
Client ID: **PBW**	Batch ID: **28809**	RunNo: **39012**							
Prep Date: **11/22/2016**	Analysis Date: **11/27/2016**	SeqNo: **1220183**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Biochemical Oxygen Demand	ND	2.0								

Sample ID **LCS-28809**	SampType: **LCS**	TestCode: **SM5210B: BOD**							
Client ID: **LCSW**	Batch ID: **28809**	RunNo: **39012**							
Prep Date: **11/22/2016**	Analysis Date: **11/27/2016**	SeqNo: **1220184**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Biochemical Oxygen Demand	210	2.0	198.0	0	109	59.3	123			

Sample ID **LCSD-28809**	SampType: **LCSD**	TestCode: **SM5210B: BOD**							
Client ID: **LCSS02**	Batch ID: **28809**	RunNo: **39012**							
Prep Date: **11/22/2016**	Analysis Date: **11/27/2016**	SeqNo: **1220185**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Biochemical Oxygen Demand	220	2.0	198.0	0	111	59.3	123	1.84	29.9	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1611B75**

23-Dec-16

Client: AMAFCA

Project: CMC

Sample ID	**MB-28825**	SampType:	**MBLK**	TestCode:	**SM 9223B Fecal Indicator: E. coli MPN**					
Client ID:	**PBW**	Batch ID:	**28825**	RunNo:	**38956**					
Prep Date:	**11/22/2016**	Analysis Date:	**11/23/2016**	SeqNo:	**1217926**	Units:	**CFU/100ml**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
E. Coli	<1	1.000								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1611B75**

23-Dec-16

Client: AMAFCA

Project: CMC

Sample ID **MB**	SampType: **MBLK**	TestCode: **SM 4500 NH3: Ammonia**
Client ID: **PBW**	Batch ID: **R39298**	RunNo: **39298**
Prep Date:	Analysis Date: **12/9/2016**	SeqNo: **1229981** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Ammonia	ND	1.0								

Sample ID **LCS**	SampType: **LCS**	TestCode: **SM 4500 NH3: Ammonia**
Client ID: **LCSW**	Batch ID: **R39298**	RunNo: **39298**
Prep Date:	Analysis Date: **12/9/2016**	SeqNo: **1229982** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Ammonia	9.8	1.0	10.00	0	98.0	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1611B75**

23-Dec-16

Client: AMAFCA

Project: CMC

Sample ID	**MB-28952**	SampType:	**MBLK**	TestCode:	**EPA Method 365.1: Total Phosphorous**					
Client ID:	**PBW**	Batch ID:	**28952**	RunNo:	**39106**					
Prep Date:	**12/1/2016**	Analysis Date:	**12/2/2016**	SeqNo:	**1223359**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	ND	0.010								

Sample ID	**LCS-28952**	SampType:	**LCS**	TestCode:	**EPA Method 365.1: Total Phosphorous**					
Client ID:	**LCSW**	Batch ID:	**28952**	RunNo:	**39106**					
Prep Date:	**12/1/2016**	Analysis Date:	**12/2/2016**	SeqNo:	**1223360**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	0.25	0.010	0.2500	0	98.9	90	110			

Sample ID	**1611B75-001DMS**	SampType:	**MS**	TestCode:	**EPA Method 365.1: Total Phosphorous**					
Client ID:	**Rio Grande-North-1**	Batch ID:	**28952**	RunNo:	**39106**					
Prep Date:	**12/1/2016**	Analysis Date:	**12/2/2016**	SeqNo:	**1223365**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	0.29	0.010	0.2500	0.04180	99.0	90	110			

Sample ID	**1611B75-001DMSD**	SampType:	**MSD**	TestCode:	**EPA Method 365.1: Total Phosphorous**					
Client ID:	**Rio Grande-North-1**	Batch ID:	**28952**	RunNo:	**39106**					
Prep Date:	**12/1/2016**	Analysis Date:	**12/2/2016**	SeqNo:	**1223366**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	0.29	0.010	0.2500	0.04180	98.0	90	110	0.937	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1611B75**

23-Dec-16

Client: AMAFCA

Project: CMC

Sample ID	**MB-28867**	SampType:	**MBLK**	TestCode:	**SM2540C MOD: Total Dissolved Solids**					
Client ID:	**PBW**	Batch ID:	**28867**	RunNo:	**39028**					
Prep Date:	**11/28/2016**	Analysis Date:	**11/29/2016**	SeqNo:	**1220776**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID	**LCS-28867**	SampType:	**LCS**	TestCode:	**SM2540C MOD: Total Dissolved Solids**					
Client ID:	**LCSW**	Batch ID:	**28867**	RunNo:	**39028**					
Prep Date:	**11/28/2016**	Analysis Date:	**11/29/2016**	SeqNo:	**1220777**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1010	20.0	1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1611B75**

23-Dec-16

Client: AMAFCA

Project: CMC

Sample ID	**MB-29132**	SampType:	**MBLK**	TestCode:	**SM 4500 Norg C: TKN**					
Client ID:	**PBW**	Batch ID:	**29132**	RunNo:	**39357**					
Prep Date:	**12/12/2016**	Analysis Date:	**12/13/2016**	SeqNo:	**1231859**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Kjeldahl, Total	ND	1.0								

Sample ID	**LCS-29132**	SampType:	**LCS**	TestCode:	**SM 4500 Norg C: TKN**					
Client ID:	**LCSW**	Batch ID:	**29132**	RunNo:	**39357**					
Prep Date:	**12/12/2016**	Analysis Date:	**12/13/2016**	SeqNo:	**1231860**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Kjeldahl, Total	10	1.0	10.00	0	102	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1611B75**

23-Dec-16

Client: AMAFCA

Project: CMC

Sample ID	**MB-28852**	SampType:	**MBLK**	TestCode:	**SM 2540D: TSS**					
Client ID:	**PBW**	Batch ID:	**28852**	RunNo:	**39013**					
Prep Date:	**11/23/2016**	Analysis Date:	**11/28/2016**	SeqNo:	**1220216**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	ND	4.0								

Sample ID	**LCS-28852**	SampType:	**LCS**	TestCode:	**SM 2540D: TSS**					
Client ID:	**LCSW**	Batch ID:	**28852**	RunNo:	**39013**					
Prep Date:	**11/23/2016**	Analysis Date:	**11/28/2016**	SeqNo:	**1220217**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	94	4.0	92.50	0	102	83.35	118.92			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: AMAFCA Work Order Number: 1611B75 RcptNo: 1

Received by/date: MF 11/22/16

Logged By: Lindsay Mangin 11/22/2016 9:15:00 AM

Completed By: Lindsay Mangin 11/22/2016 9:41:52 AM

Reviewed By: JC 11/22/16 CP 1130

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Client		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☑	No ☐	No VOA Vials ☐
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: 12 (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted? NO
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: RA

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.9	Good	Not Present			

Chain-of-Custody Record

Client: AMAFCA

Mailing Address:

Phone #:

email or Fax#: pchavez@amafca.org

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: CMC

Project #: NM15.0156

Project Manager: Patrick Chavez, C Johannesen

Sampler:

On Ice: ☒ Yes ☐ No

Sample Temperature: 5.9°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1611875
11/21/16	0930	AQ	Rio Grande North 112216	Numerous	Numerous	-001
11/22/16	0700	AQ	Rio Grande South 112216	"	"	-002

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	See attached table	E coli: Nom			Air Bubbles (Y or N)
											+				
											+	+			

Date:	Time:	Relinquished by:	Received by:	Date	Time
11/22/16	0915			11/22/16	0915
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:
PCB analysis by 1668
Tetrahydrofuran by 8260C

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Collaborative Monitoring Cooperative - Analyses List
Attach to Chain of Custody

Analyte (Bold Indicates WQS)	CAS #	Fraction	Method #	MDL (µg/L)
Hardness (Ca + Mg)	NA	Total	200.7	2.4
Lead	7439-92-1	Dissolved	200.8	0.09
Copper	7440-50-8	Dissolved	200.8	1.06
Ammonia + organic nitrogen	7664-41-7	Total	350.1	31.32
Total Kjehldal Nitrogen	17778-88-0	Total	351.2	58.78
Nitrate + Nitrite	14797-55-8	Total	353.2	10.17
sub **Polychlorinated biphenyls (PCBs)**	1336-36-3	Total	1668	~~NA~~ .014
Tetrahydrofuran (THF)	109-99-9	Total	8260C	7.9
bis(2-Ethylhexyl)phthalate	117-81-7	Total	8270D	0.2
Dibenzofuran	132-64-9	Total	8270D	0.2
Indeno(1,2,3-cd)pyrene	193-39-5	Total	8270D	0.2
Benzo(b)fluoranthene	205-99-2	Total	8270D	0.1
Benzo(k)fluoranthene	207-08-9	Total	8270D	0.1
Chrysene	218-01-9	Total	8270D	0.2
Benzo(a)pyrene	50-32-8	Total	8270D	0.3
Dibenzo(a,h)anthracene	53-70-3	Total	8270D	0.3
Benzo(a)anthracene	56-55-3	Total	8270D	0.2
Dieldrin	60-57-1	Total	8270D	0.1
Pentachlorophenol	87-86-5	Total	8270D	0.2
Benzidine	92-87-5	Total	8270D	0.1
Chemical Oxygen Demand	E1641638[2]	Total	HACH	5100
Gross alpha (adjusted)	NA	Total	Method 900	0.1 pCi/L
Total Dissolved Solids	E1642222[2]	Total	SM 2540C	60.4
Total Suspended Solids	NA	Total	SM 2540D	3450
Biological Oxygen Demand	N/A	Total	Standard Methods	930
Oil and Grease		Total	1664A	5000
Ecoli			SM 9223B	
pH			SM 4500	
Phosphorus		Dissolved	365.1	100
Phosphorus		Total	365.1	100
Chromium IV		Total	3500Cr C-2011	100

This sheet just for detection levels.

Appendix F - Minimum Quantification Levels (MQL's)

The following Minimum Quantification Levels (MQL's) are to be used for reporting pollutant data for NPDES permit applications and/or compliance reporting.

POLLUTANTS	MQL µg/l	POLLUTANTS	MQL µg/l
METALS, RADIOACTIVITY, CYANIDE and CHLORINE			
Aluminum	2.5	Molybdenum	10
Antimony	60	Nickel	0.5
Arsenic	0.5	Selenium	5
Barium	100	Silver	0.5
Beryllium	0.5	Thalllium	0.5
Boron	100	Uranium	0.1
Cadmium	1	Vanadium	50
Chromium	10	Zinc	20
Cobalt	50	Cyanide	10
Copper	0.5	Cyanide, weak acid dissociable	10
Lead	0.5	Total Residual Chlorine	33
Mercury (*)	0.0005 0.005		
DIOXIN			
2,3,7,8-TCDD	0.00001		
VOLATILE COMPOUNDS			
Acrolein	50	1,3-Dichloropropylene	10
Acrylonitrile	20	Ethylbenzene	10
Benzene	10	Methyl Bromide	50
Bromoform	10	Methylene Chloride	20
Carbon Tetrachloride	2	1,1,2,2-Tetrachloroethane	10
Chlorobenzene	10	Tetrachloroethylene	10
Clorodibromomethane	10	Toluene	10
Chloroform	50	1,2-trans-Dichloroethylene	10
Dichlorobromomethane	10	1,1,2-Trichloroethane	10
1,2-Dichloroethane	10	Trichloroethylene	10
1,1-Dichloroethylene	10	Vinyl Chloride	10
1,2-Dichloropropane	10		
ACID COMPOUNDS			
2-Chlorophenol	10	2,4-Dinitrophenol	50
2,4-Dichlorophenol	10	Pentachlorophenol	5
2,4-Dimethylphenol	10	Phenol	10
4,6-Dinitro-o-Cresol	50	2,4,6-Trichlorophenol	10

ATTACHMENT 2

FY 2017 DRY SEASON COMPLETED DATA VERIFICATION AND VALIDATION FORMS

Attachment 1.1 Water Quality Sample Data Verification and Validation Worksheet

Study Name: Compliance Monitoring Cooperative (CMC)
Year: FY 2017 (November 2016 – Dry Season Sample)
Project Coordinator: For Data Review and Reporting – SJG, BHI
V&V Reviewer: SJG
Data covered by this worksheet: Rio Grande North – 11/3/16 – E. coli Only Sample – Was Not Qualifying Storm Event
Version of Verification/Validation Procedures: QAPP – SOP #2 (2/2015)

Step 1: Verify Field Data
A. Are all Field Data forms present and complete? ☒ Yes ☐ No

If yes, proceed; if no, attempt to locate missing forms, then indicate any remaining missing forms and action taken.

Missing Field Data Forms	Action Taken
_____	_____
_____	_____

Total number of occurrences: 0

B. Are station name and ID, and sampling date and time on forms consistent with database? ☒ Yes ☐ No
If yes, proceed; if no, indicate errors identified, correct errors in database and re-verify.

Station and Parameter	Action Taken	Re-verified?
_____	_____	_____
_____	_____	_____

Total number of occurrences: 0

C. Are field data on forms consistent with database? ☒ Yes ☐ No
If yes, proceed; if no, indicate errors identified, correct errors in database and re-verify.

Station	Sampling Date	Parameter(s) Corrected	Re-verified?
_____	_____	_____	_____
_____	_____	_____	_____

Total number of occurrences: 0

D. Are RIDs correct and associated with the correct analytical suite, media subdivision (e.g. surface water, municipal waste, etc.) and activity type (e.g. Field observation, Routine sample, QA sample etc.)?

☒ Yes ☐ No

If yes, proceed; if no, indicate errors identified, correct errors in database and re-verify

Station/RID	Sampling Date	RID Corrected	Re-verified?
______	______	______	_________
______	______	______	_________

Total number of occurrences: 0

☒ **Step 1 Completed** ***Initials:*** SJG ***Date:*** 1/20/17

- -

Step 2: Verify Data Deliverables

A. Have all data in question been delivered? ☒ Yes ☐ No

If yes, proceed; if no, indicate RIDs with missing data (samples or blanks) or attach report with applicable RIDs highlighted. Contact data source and indicate action taken. Complete this step upon receipt of all missing data.

RID	Submittal Date	Missing Data/Parameters	Date of Initial Verification	Date Missing Data Were Received
______	______	______	______	______
______	______	______	______	______

Total number of occurrences: 0

B. Do all of the analytical suites have the correct number and type of analytes. ☒ Yes ☐ No

If yes, proceed; if no, indicate RIDs with missing or incorrect analyte(s) or attach report with applicable RIDs highlighted. Contact data source and indicate action taken.

RID	Submittal Date	Missing or Incorrect Parameters	Action Taken	Re-verified?

______	______	______	______	______
______	______	______	______	______

☒ **Step 2 Completed** ***Initials:*** SJG ***Date:*** 1/20/17

- -

Step 3: Verify Flow Data
*Note – Not Applicable – no flow data provided with CMC sample collection
A._Identify incorrect or missing data on the flow calculation spreadsheet and correct errors.

Station	Sampling Date	Flow data missing or incorrect?
______	______	_________
______	______	_________

Total number of occurrences: 0

B. Identify incorrect or missing discharge measurements, correct errors in database and re-verify.

Station	Sampling Date	Flow data missing or incorrect?	Re-verified?
______	______	_________	_________
______	______	_________	_________

Total number of occurrences: 0

Not Applicable
☐ **Step 3 Completed** ***Initials:*** SJG ***Date:*** 1/20/17

- -

Step 4: Verify Analytical Results for Missing Information or Questionable Results

Were any results with missing/questionable information identified? ☒ Yes ☐ No

If no, proceed; if yes, indicate results with missing information or questionable results or attach report. Contact data source and indicate action taken. Complete this step upon receipt of missing information or clarification of questionable results (clarify questionable results only, DO NOT change results without written approval (from lab or QA officer) and associated documentation).

RID	Sample Date	Missing or Questionable Information/Results	Action Taken

*Note – HEAL Lab report order number – 1611208_v1
Total number of occurrences: 0

☒ **Step 4 Completed** ***Initials:*** SJG ***Date:*** 1/20/17

- -

Step 5: Validate Blanks Results
Were any analytes of concern detected in blank samples? ☐ Yes ☒ No

If no, proceed; if yes, list results that need to have validation codes applied in the database save these results as an excel file and forward to QA officer or Program Manager, with a request to add appropriate validation codes to database. Complete this step after verifying that validation codes have been added to database correctly.

RID	Sample Date	Parameter	[Blank]	[Sample]	Validation Code/Flag Applied	Code/Flag verified in database?*
_____	______	______	______	______		_________
______	______	______	______	______		_________

*See validation procedures to determine which associated data need to be flagged and include on *Validation Codes Form*.

Total number of occurrences: 0

☒ **Step 5 Completed** ***Initials:*** SJG ***Date:*** 1/20/17

- -

Step 6: Validate Holding Times Violations
Were any samples submitted that did not meet specified holding times? ☐ Yes ☒ No

If no, proceed; if yes, list results that need to have validation codes applied in the database save these results as an excel file and forward to QA officer or Program Manager with a request to add appropriate validation codes to database. Complete this step after verifying that validation codes/flags have been added to database.

RID	Sample Date	Parameter	[Blank]	[Sample]	Validation Code/Flag Applied	Code/Flag verified in database to ALL associated data?*
______	______	______	______	______		_________
______	______	______	______	______		_________

*See validation procedures to determine which associated data need to be flagged.

Total number of occurrences: 0

☒ **Step 6 Completed** ***Initials:*** SJG ***Date:*** 1/20/17

- -

Step 7: Validate Replicate/Duplicate Results (if applicable)

Were any replicate/duplicate pairs submitted outside of the established control limit of 20%?

☐ Yes ☒ No

If no, proceed; if yes, list results that need to have validation codes applied in the database save these results as an excel file and forward to QA officer or Program Manager with a request to add appropriate validation codes to database. Complete this step after verifying that validation codes/flags have been added to database.

RID Pairs		Replicate or Duplicate?	Sample Date	Parameter	RPD	Validation Code/Flag Applied	Code/Flag verified in database applied?*
______	______	______	______	______	______		_________
______	______	______	______	______	______		_________

*See validation procedures to determine which associated data need to be flagged.

Total number of occurrences: 0

☒ **Step 7 Completed** ***Initials:*** SJG ***Date:*** 1/20/16

****

After all of the above steps have been completed, save and print the worksheet, attach all applicable supplemental information and sign below.

I acknowledge that the data verification and validation process has been completed for the data identified above in accordance with the procedures described in the CMC QAPP, SOP #2

1/20/17

Data Verifier/Validator Signature Date

COMPLETION OF DATA VERIFICATION AND VALIDATION PROCESS

Once the data verification and validation process has been completed for the entire study (note: if the worksheet is for a subset of the data from a study, be sure ALL the data for the entire study is included before final completion of the data verification and validation process), notify the NMSQUID administrator that the process is complete and request that “V V in STORET” be added to the project title.

Once all data have been verified and validated for a study provide copies of ALL *Data Verification and Validation Worksheets* and attachments associated with the study to the Quality Assurance Officer and retain originals in the project binder.

Attachment 1.2 SWQB Validation Codes

When deficiencies are identified through the data verification and validation process, AMAFCA documents or "flags" the deficiencies by assigning validation codes. All data collected from the last compliant QC sample and up to the next compliant QC sample are assigned validation codes. The validation code alerts the data user that the results are outside QA control limits and may require re-sampling or a separate, qualitative analysis based on professional judgment.

Validation Code	Definition	WQX Equivalent
A1	Sample not collected according to SOP	
B1	Chemical was detected in the field blank at a concentration less than 5% of the sample concentration.	
BN	Blanks NOT collected during sampling run	
BU	Detection in blank. Analyte was not detected in this sample above the method's sample detection limit.	BU
RB1	Chemical was detected in the field blank at a concentration greater than or equal to 5% of the sample concentration. Results for this sample are rejected because they may be the result of contamination; the results may not be reported or used for regulatory compliance purposes.	B
R1	Rejected due to incorrect sample preservation	R
R2	Rejected due to equipment failure in the field	R
R3	Rejected based on best professional judgment	R
D1	Spike recovery not within method acceptance limits	
F1	Sample filter time exceeded	
J1	Estimated: the analyte was positively identified and the associated value is an approximate concentration of the analyte in the sample	J
K1	Holding time violation	H
Ea	Estimated-Incubation temperature between 35.5 and 38.0° Celsius	
Er	Rejected-Incubation temperature < 34.5 or >38.0° Celsius	
PD1	Percent difference between duplicate samples excessive	
S1	Per SLD, uncertainties (sigmas) are expressed as one standard deviation, i.e. one standard error. Small negative or positive values that are less than two standard deviations should be interpreted as "less than the detection limit."	
S2	Data are suspect but deemed usable based on best professional judgment; documentation of justification is required and should be included in the Data Verification and Validation Packet and reported with results	
Z1	Macroinvertebrate data did not meet QC criteria specified in Section 2.5 of QAPP	
H1	Habitat data did not meet QC criteria specified in Section 2.5 of QAPP	

Attachment 1.1 Water Quality Sample Data Verification and Validation Worksheet

Study Name: Compliance Monitoring Cooperative (CMC)
Year: FY 2017 (November 2016 – Dry Season Sample)
Project Coordinator: For Data Review and Reporting – SJG, BHI
V&V Reviewer: SJG
Data covered by this worksheet: Rio Grande North – 11/21/16 and 11/22/16
Version of Verification/Validation Procedures: QAPP – SOP #2 (2/2015)

Step 1: Verify Field Data
A. Are all Field Data forms present and complete? ☒ Yes ☐ No

If yes, proceed; if no, attempt to locate missing forms, then indicate any remaining missing forms and action taken.

Missing Field Data Forms	Action Taken
_____	_____
_____	_____

Total number of occurrences: 0

B. Are station name and ID, and sampling date and time on forms consistent with database? ☒ Yes ☐ No
If yes, proceed; if no, indicate errors identified, correct errors in database and re-verify.

Station and Parameter	Action Taken	Re-verified?
_____	_____	_____
_____	_____	_____

Total number of occurrences: 0

C. Are field data on forms consistent with database? ☒ Yes ☐ No
If yes, proceed; if no, indicate errors identified, correct errors in database and re-verify.

Station	Sampling Date	Parameter(s) Corrected	Re-verified?
_____	_____	_____	_____
_____	_____	_____	_____

Total number of occurrences: 0

D. Are RIDs correct and associated with the correct analytical suite, media subdivision (e.g. surface water, municipal waste, etc.) and activity type (e.g. Field observation, Routine sample, QA sample etc.)?
☒ Yes ☐ No

If yes, proceed; if no, indicate errors identified, correct errors in database and re-verify

Station/RID	Sampling Date	RID Corrected	Re-verified?
______	______	______	_________
______	______	______	_________

Total number of occurrences: **0**

☒ **Step 1 Completed** ***Initials:*** SJG ***Date:*** 1/20/17

- -

Step 2: Verify Data Deliverables

A. Have all data in question been delivered? ☒ Yes ☐ No

If yes, proceed; if no, indicate RIDs with missing data (samples or blanks) or attach report with applicable RIDs highlighted. Contact data source and indicate action taken. Complete this step upon receipt of all missing data.

RID	Submittal Date	Missing Data/Parameters	Date of Initial Verification	Date Missing Data Were Received
______	______	______	______	______
______	______	______	______	______

Total number of occurrences: **0**

B. Do all of the analytical suites have the correct number and type of analytes. ☒ Yes ☐ No

If yes, proceed; if no, indicate RIDs with missing or incorrect analyte(s) or attach report with applicable RIDs highlighted. Contact data source and indicate action taken.
*Note – Lab report identifies "Dissolved Phosphorous" as "Total Phosphorous" and does not distinguish this as a filtered sample, as prior lab reports have done. Lower value of "Total Phosphorous" reported as the "Dissolved Phosphorous" result.

RID	Submittal Date	Missing or Incorrect Parameters	Action Taken	Re-verified?
______	______	______	______	______
______	______	______	______	______

☒ **Step 2 Completed** ***Initials:*** SJG ***Date:*** 1/20/17

- -

Step 3: Verify Flow Data
*Note – Not Applicable – no flow data provided with CMC sample collection
A._Identify incorrect or missing data on the flow calculation spreadsheet and correct errors.

Station	Sampling Date	Flow data missing or incorrect?
______	______	__________
______	______	__________

Total number of occurrences: 0

B. Identify incorrect or missing discharge measurements, correct errors in database and re-verify.

Station	Sampling Date	Flow data missing or incorrect?	Re-verified?
______	______	__________	__________
______	______	__________	__________

Total number of occurrences: 0

Not Applicable
☐ **Step 3 Completed** ***Initials:*** SJG ***Date:*** 1/20/17

- -

Step 4: Verify Analytical Results for Missing Information or Questionable Results

Were any results with missing/questionable information identified? ☒ Yes ☐ No

If no, proceed; if yes, indicate results with missing information or questionable results or attach report. Contact data source and indicate action taken. Complete this step upon receipt of missing information or clarification of questionable results (clarify questionable results only, DO NOT change results without written approval (from lab or QA officer) and associated documentation).

RID	Sample Date	Missing or Questionable Information/Results	Action Taken
Rio Grande North & South	11/22/16	Lab report provides two "Total Phosphorous" results, and no "Dissolved Phosphorous" results. Used lower value as "Dissolved Phosphorous".	Notified AMAFCA and DBS&A of this and requested that lab more clearly report data.

*Note – HEAL Lab report order number – 1611B12_v1 and 1611B75_v2

Total number of occurrences: 1

☒ **Step 4 Completed** ***Initials:*** SJG ***Date:*** 1/20/17

- -

Step 5: Validate Blanks Results

Were any analytes of concern detected in blank samples? ☐ Yes ☒ No

If no, proceed; if yes, list results that need to have validation codes applied in the database save these results as an excel file and forward to QA officer or Program Manager, with a request to add appropriate validation codes to database. Complete this step after verifying that validation codes have been added to database correctly.

RID	Sample Date	Parameter	[Blank]	[Sample]	Validation Code/Flag Applied	Code/Flag verified in database?*
_____	______	______	______	______		_________
______	______	______	______	______		_________

*See validation procedures to determine which associated data need to be flagged and include on *Validation Codes Form*.

Total number of occurrences: 0

☒ **Step 5 Completed** ***Initials:*** SJG ***Date:*** 1/20/17

- -

Step 6: Validate Holding Times Violations
Were any samples submitted that did not meet specified holding times? ☐ Yes ☒ No

If no, proceed; if yes, list results that need to have validation codes applied in the database save these results as an excel file and forward to QA officer or Program Manager with a request to add appropriate validation codes to database. Complete this step after verifying that validation codes/flags have been added to database.

RID	Sample Date	Parameter	[Blank]	[Sample]	Validation Code/Flag Applied	Code/Flag verified in database to ALL associated data?*
_____	_____	_____	_____	_____		_____
_____	_____	_____	_____	_____		_____

*See validation procedures to determine which associated data need to be flagged.
Total number of occurrences: 0

☒ **Step 6 Completed** ***Initials:*** SJG ***Date:*** 1/20/17

- -

Step 7: Validate Replicate/Duplicate Results (if applicable)
Were any replicate/duplicate pairs submitted outside of the established control limit of 20%?
☐ Yes ☒ No
If no, proceed; if yes, list results that need to have validation codes applied in the database save these results as an excel file and forward to QA officer or Program Manager with a request to add appropriate validation codes to database. Complete this step after verifying that validation codes/flags have been added to database.

RID Pairs		Replicate or Duplicate?	Sample Date	Parameter	RPD	Validation Code/Flag Applied	Code/Flag verified in database applied?*
_____	_____	_____	_____	_____	_____		_____
_____	_____	_____	_____	_____	_____		_____

*See validation procedures to determine which associated data need to be flagged.

Total number of occurrences: 0

☒ **Step 7 Completed** ***Initials:*** SJG ***Date:*** 1/20/16

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After all of the above steps have been completed, save and print the worksheet, attach all applicable supplemental information and sign below.

I acknowledge that the data verification and validation process has been completed for the data identified above in accordance with the procedures described in the CMC QAPP, SOP #2

1/20/17

Data Verifier/Validator Signature Date

COMPLETION OF DATA VERIFICATION AND VALIDATION PROCESS

Once the data verification and validation process has been completed for the entire study (note: if the worksheet is for a subset of the data from a study, be sure ALL the data for the entire study is included before final completion of the data verification and validation process), notify the NMSQUID administrator that the process is complete and request that “V V in STORET” be added to the project title.

Once all data have been verified and validated for a study provide copies of ALL *Data Verification and Validation Worksheets* and attachments associated with the study to the Quality Assurance Officer and retain originals in the project binder.

Attachment 1.2 SWQB Validation Codes

When deficiencies are identified through the data verification and validation process, AMAFCA documents or "flags" the deficiencies by assigning validation codes. All data collected from the last compliant QC sample and up to the next compliant QC sample are assigned validation codes. The validation code alerts the data user that the results are outside QA control limits and may require re-sampling or a separate, qualitative analysis based on professional judgment.

Validation Code	Definition	WQX Equivalent
A1	Sample not collected according to SOP	
B1	Chemical was detected in the field blank at a concentration less than 5% of the sample concentration.	
BN	Blanks NOT collected during sampling run	
BU	Detection in blank. Analyte was not detected in this sample above the method's sample detection limit.	BU
RB1	Chemical was detected in the field blank at a concentration greater than or equal to 5% of the sample concentration. Results for this sample are rejected because they may be the result of contamination; the results may not be reported or used for regulatory compliance purposes.	B
R1	Rejected due to incorrect sample preservation	R
R2	Rejected due to equipment failure in the field	R
R3	Rejected based on best professional judgment	R
D1	Spike recovery not within method acceptance limits	
F1	Sample filter time exceeded	
J1	Estimated: the analyte was positively identified and the associated value is an approximate concentration of the analyte in the sample	J
K1	Holding time violation	H
Ea	Estimated-Incubation temperature between 35.5 and 38.0° Celsius	
Er	Rejected-Incubation temperature < 34.5 or >38.0° Celsius	
PD1	Percent difference between duplicate samples excessive	
S1	Per SLD, uncertainties (sigmas) are expressed as one standard deviation, i.e. one standard error. Small negative or positive values that are less than two standard deviations should be interpreted as "less than the detection limit."	
S2	Data are suspect but deemed usable based on best professional judgment; documentation of justification is required and should be included in the Data Verification and Validation Packet and reported with results	
Z1	Macroinvertebrate data did not meet QC criteria specified in Section 2.5 of QAPP	
H1	Habitat data did not meet QC criteria specified in Section 2.5 of QAPP	

Attachment 1.1 Water Quality Sample Data Verification and Validation Worksheet

Study Name: Compliance Monitoring Cooperative (CMC)
Year: FY 2017 (November 2016 – Dry Season Sample)
Project Coordinator: For Data Review and Reporting – SJG, BHI
V&V Reviewer: SJG
Data covered by this worksheet: Rio Grande South – 11/22/16
Version of Verification/Validation Procedures: QAPP – SOP #2 (2/2015)

Step 1: Verify Field Data

A. Are all Field Data forms present and complete? ☒ Yes ☐ No

If yes, proceed; if no, attempt to locate missing forms, then indicate any remaining missing forms and action taken.

Missing Field Data Forms	Action Taken
_____	_____
_____	_____

Total number of occurrences: 0

B. Are station name and ID, and sampling date and time on forms consistent with database? ☒ Yes ☐ No
If yes, proceed; if no, indicate errors identified, correct errors in database and re-verify.

Station and Parameter	Action Taken	Re-verified?
_____	_____	_____
_____	_____	_____

Total number of occurrences: 0

C. Are field data on forms consistent with database? ☒ Yes ☐ No
If yes, proceed; if no, indicate errors identified, correct errors in database and re-verify.

Station	Sampling Date	Parameter(s) Corrected	Re-verified?
_____	_____	_____	_____
_____	_____	_____	_____

Total number of occurrences: 0

D. Are RIDs correct and associated with the correct analytical suite, media subdivision (e.g. surface water, municipal waste, etc.) and activity type (e.g. Field observation, Routine sample, QA sample etc.)?

☒ Yes ☐ No

If yes, proceed; if no, indicate errors identified, correct errors in database and re-verify

Station/RID	Sampling Date	RID Corrected	Re-verified?
______	______	______	_________
______	______	______	_________

Total number of occurrences: 0

☒ **Step 1 Completed** ***Initials:*** SJG ***Date:*** 1/20/17

- -

Step 2: Verify Data Deliverables

A. Have all data in question been delivered? ☒ Yes ☐ No

If yes, proceed; if no, indicate RIDs with missing data (samples or blanks) or attach report with applicable RIDs highlighted. Contact data source and indicate action taken. Complete this step upon receipt of all missing data.

RID	Submittal Date	Missing Data/Parameters	Date of Initial Verification	Date Missing Data Were Received
______	______	______	______	______
______	______	______	______	______

Total number of occurrences: 0

B. Do all of the analytical suites have the correct number and type of analytes. ☒ Yes ☐ No

If yes, proceed; if no, indicate RIDs with missing or incorrect analyte(s) or attach report with applicable RIDs highlighted. Contact data source and indicate action taken.
*Note – Lab report identifies “Dissolved Phosphorous” as “Total Phosphorous” and does not distinguish this as a filtered sample, as prior lab reports have done. Lower value of “Total Phosphorous” reported as the “Dissolved Phosphorous” result.

RID	Submittal Date	Missing or Incorrect Parameters	Action Taken	Re-verified?
______	______	______	______	______
______	______	______	______	______

☒ **Step 2 Completed** ***Initials:*** SJG ***Date:*** 1/20/17

- -

Step 3: Verify Flow Data
*Note – Not Applicable – no flow data provided with CMC sample collection
A._Identify incorrect or missing data on the flow calculation spreadsheet and correct errors.

Station	Sampling Date	Flow data missing or incorrect?
______	______	_________
______	______	_________

Total number of occurrences: 0

B. Identify incorrect or missing discharge measurements, correct errors in database and re-verify.

Station	Sampling Date	Flow data missing or incorrect?	Re-verified?
______	______	_________	_________
______	______	_________	_________

Total number of occurrences: 0

Not Applicable
☐ **Step 3 Completed** ***Initials:*** SJG ***Date:*** 1/20/17

- -

Step 4: Verify Analytical Results for Missing Information or Questionable Results

Were any results with missing/questionable information identified? ☒ Yes ☐ No

If no, proceed; if yes, indicate results with missing information or questionable results or attach report. Contact data source and indicate action taken. Complete this step upon receipt of missing information or clarification of questionable results (clarify questionable results only, DO NOT change results without written approval (from lab or QA officer) and associated documentation).

RID	Sample Date	Missing or Questionable Information/Results	Action Taken
Rio Grande North & South	11/22/16	Lab report provides two “Total Phosphorous” results, and no “Dissolved Phosphorous” results. Used lower value as “Dissolved Phosphorous”.	Notified AMAFCA and DBS&A of this and requested that lab more clearly report data.
Rio Grande South	11/22/16	Hexavalent Chromium for Rio Grande South (02) incorrectly labeled in lab report as Rio Grande North	Notified AMAFCA and of this and requested that lab more clearly report data.

*Note – HEAL Lab report order number – 1611B75_v2
Total number of occurrences: 2

☒ **Step 4 Completed** ***Initials:*** SJG ***Date:*** 1/20/17

- -

Step 5: Validate Blanks Results
Were any analytes of concern detected in blank samples? ☐ Yes ☒ No

If no, proceed; if yes, list results that need to have validation codes applied in the database save these results as an excel file and forward to QA officer or Program Manager, with a request to add appropriate validation codes to database. Complete this step after verifying that validation codes have been added to database correctly.

RID	Sample Date	Parameter	[Blank]	[Sample]	Validation Code/Flag Applied	Code/Flag verified in database?*
_____	______	______	______	______		_________
______	______	______	______	______		_________

*See validation procedures to determine which associated data need to be flagged and include on *Validation Codes Form*.

Total number of occurrences: 0

☒ **Step 5 Completed** ***Initials:*** SJG ***Date:*** 1/20/17

- -

Step 6: Validate Holding Times Violations
Were any samples submitted that did not meet specified holding times? ☐ Yes ☒ No

If no, proceed; if yes, list results that need to have validation codes applied in the database save these results as an excel file and forward to QA officer or Program Manager with a request to add appropriate validation codes to database. Complete this step after verifying that validation codes/flags have been added to database.

RID	Sample Date	Parameter	[Blank]	[Sample]	Validation Code/Flag Applied	Code/Flag verified in database to ALL associated data?*
_____	_____	_____	_____	_____		_____
_____	_____	_____	_____	_____		_____

*See validation procedures to determine which associated data need to be flagged.
Total number of occurrences: 0

☒ **Step 6 Completed** ***Initials:*** SJG ***Date:*** 1/20/17

- -

Step 7: Validate Replicate/Duplicate Results (if applicable)
Were any replicate/duplicate pairs submitted outside of the established control limit of 20%?
☐ Yes ☒ No
If no, proceed; if yes, list results that need to have validation codes applied in the database save these results as an excel file and forward to QA officer or Program Manager with a request to add appropriate validation codes to database. Complete this step after verifying that validation codes/flags have been added to database.

RID Pairs		Replicate or Duplicate?	Sample Date	Parameter	RPD	Validation Code/Flag Applied	Code/Flag verified in database applied?*
_____	_____	_____	_____	_____	_____		_____
_____	_____	_____	_____	_____	_____		_____

*See validation procedures to determine which associated data need to be flagged.

Total number of occurrences: 0

☒ **Step 7 Completed** ***Initials:*** SJG ***Date:*** 1/20/16

****

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1/20/17

Data Verifier/Validator Signature Date

COMPLETION OF DATA VERIFICATION AND VALIDATION PROCESS

Once the data verification and validation process has been completed for the entire study (note: if the worksheet is for a subset of the data from a study, be sure ALL the data for the entire study is included before final completion of the data verification and validation process), notify the NMSQUID administrator that the process is complete and request that “V V in STORET” be added to the project title.

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R1	Rejected due to incorrect sample preservation	R
R2	Rejected due to equipment failure in the field	R
R3	Rejected based on best professional judgment	R
D1	Spike recovery not within method acceptance limits	
F1	Sample filter time exceeded	
J1	Estimated: the analyte was positively identified and the associated value is an approximate concentration of the analyte in the sample	J
K1	Holding time violation	H
Ea	Estimated-Incubation temperature between 35.5 and 38.0° Celsius	
Er	Rejected-Incubation temperature < 34.5 or >38.0° Celsius	
PD1	Percent difference between duplicate samples excessive	
S1	Per SLD, uncertainties (sigmas) are expressed as one standard deviation, i.e. one standard error. Small negative or positive values that are less than two standard deviations should be interpreted as "less than the detection limit."	
S2	Data are suspect but deemed usable based on best professional judgment; documentation of justification is required and should be included in the Data Verification and Validation Packet and reported with results	
Z1	Macroinvertebrate data did not meet QC criteria specified in Section 2.5 of QAPP	
H1	Habitat data did not meet QC criteria specified in Section 2.5 of QAPP	