THE UNIVERISTY OF NEW MEXICO's

Annual Stormwater Report

December 2022

Presented To:
U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

Prepared By:
UNM ENVIRONMENTAL HEALTH & SAFETY (EHS)

EXECUTIVE SUMMARY

The University of New Mexico's (UNM) Environmental Health and Safety (EHS) department prepared this MS4 Annual Report (Report). This Report supports the requirements of the United States Environmental Protection Agency's (EPA) National Pollutant Discharge Elimination System (NPDES) program. Specifically, the Report is published to comply with the Middle Rio Grande (MRG) Watershed Based Municipal Separate Stormwater Sewer System Permit (MS4 Permit).[1] The Permit requires UNM to implement a program to reduce pollutants in stormwater runoff to the maximum extent practicable.

EHS administers the MS4 Program on behalf of UNM, and it consists of six Minimum Control Measures (MCMs) to comply with the provisions of the MS4 Permit:

- MCM 1 – Public Education and Outreach
- MCM 2 – Public Participation
- MCM 3 – Pollution Prevention (P2) & Good Housekeeping
- MCM 4 – Illicit Discharge Detection and Elimination (IDDE)
- MCM 5 – Management of Construction Site Runoff
- MCM 6 – Management of Post-Construction Site Runoff

Each MCM above is addressed in detail in this Report. Additionally, this Report summarizes the changes, updates, progress, and limitations of the MS4 Program for Reporting Year 2022 (RY22), or July 1, 2021 – June 30, 2022. Likewise, it addresses UNM's water quality priorities, long-term stormwater management measures, program resources, and program evaluation efforts.

UNM's Stormwater Impact

UNM is a public research university located in central Albuquerque, New Mexico, serving a faculty, staff, and student population of 33,000. The main campus is approximately 600 acres, split into three parts – North, Central, and South. Central Campus sits between Central Avenue on the south, Girard Boulevard on the east, Lomas Boulevard on the north, and University Boulevard on the west. It is home to the primary academic operations of the university. North Campus, which includes the medical and law schools, is located on the north side of Lomas Boulevard across from Central Campus. South Campus is a mile south of Central Campus, centered around University Boulevard and Avenida César Chavez. It primarily houses athletic facilities and UNM's Science and Technology Park.

UNM's MS4 serves all three campuses, which contain numerous buildings and facilities with large areas of impervious surfaces where various operations occur that have stormwater implications. The UNM MS4 system drains stormwater to the west toward the Rio Grande, but before discharging to the river, UNM's storm sewer connects to two other permit-regulated municipalities:

- The City of Albuquerque (COA), and
- The Albuquerque Municipal Arroyo Flood Control Authority (AMAFCA).

How the General Public & UNM's Community Can Get Involved

If you have questions, would like more information, or wish to provide public comments, contact UNM's Department of Environmental Health & Safety and review UNM's stormwater website: https://ehs.unm.edu/environmental-affairs/stormwater.html.

[1] MS4 Permit # NMR04A000

Enclosures:

ENVIRONMENTAL HEALTH & SAFETY

NPDES Stormwater Program: MS4 Annual Report Format

On the following six pages, the completed MS4 Annual Report Format is attached. These six pages serve as UNM's official annual report. All other information contained within this document is for supplementary purposes only.

National Pollutant Discharge Elimination System Stormwater Program

MS4 Annual Report Format

Check box if you are submitting an individual Annual Report with one or more cooperative program elements. ☒

Check box if you are submitting an individual Annual Report with individual program elements only. ☐

Check box if this is a new name, address, etc. ☐

1. MS4(s) Information

UNIVERSITY OF NEW MEXICO
Name of MS4

Casey	Hall	Director, EHS
Name of Contact Person (First)	(Last)	(Title)

505-277-2753	cbhall4@unm.edu
Telephone (including area code)	E-mail

1801 Tucker St NE
Mailing Address

Albuquerque	NM	87131
City	State	ZIP code

What size population does your MS4(s) serve? 33,000 NPDES number

What is the reporting period for this report? (mm/dd/yyyy) From Jul 1, 2022 to Jun 30, 2022

2. Water Quality Priorities

A. Does your MS4(s) discharge to waters listed as impaired on a state 303(d) list? ☒ Yes ☐ No

B. If yes, identify each impaired water, the impairment, whether a TMDL has been approved by EPA for each, and whether the TMDL assigns a wasteload allocation to your MS4(s). Use a new line for each impairment, and attach additional pages as necessary.

Impaired Water	Impairment	Approved TMDL		TMDL assigns WLA to MS4	
AMAFCA (NDC) to Rio Grande	NM 2105_50	☒ Yes	☐ No	☒ Yes	☐ No
AMAFCA (SDC) to Rio Grande	NM 2105_50	☒ Yes	☐ No	☒ Yes	☐ No
		☐ Yes	☐ No	☐ Yes	☐ No
		☐ Yes	☐ No	☐ Yes	☐ No

2. B. Continued

Impaired Water	Impairment	Approved TMDL		TMDL assigns WLA to MS4	
		☐ Yes	☐ No	☐ Yes	☐ No
		☐ Yes	☐ No	☐ Yes	☐ No
		☐ Yes	☐ No	☐ Yes	☐ No
		☐ Yes	☐ No	☐ Yes	☐ No

C. What specific sources contributing to the impairment(s) are you targeting in your stormwater program?

Trash, debris, sediment, pet waste (E. coli), hazardous chemicals, waste from birds (E. coli), fats, oils, nutrients

D. Do you discharge to any high-quality waters (e.g., Tier 2, Tier 3, outstanding natural resource waters, or other state or federal designation)? ☐ Yes ☒ No

E. Are you implementing additional specific provisions to ensure their continued integrity? ☐ Yes ☒ No

3. Public Education and Public Participation

A. Is your public education program targeting specific pollutants and sources of those pollutants? ☒ Yes ☐ No

B. If yes, what are the specific sources and/or pollutants addressed by your public education program?

Trash, debris, animal waste, fats, oils, grease, sediment, hazardous chemicals

C. Note specific successful outcome(s) (e.g., quantified reduction in fertilizer use; NOT tasks, events, publications) fully or partially attributable to your public education program during this reporting period.

Educated >5,600 staff about SW via training; Aired 18 "scoop the poop" ads with the public radio station; Engaged >200 folks about pollution via in-person events; & Inventoried, repaired, and replaced 100% of the MS4's storm drain markers.

D. Do you have an advisory committee or other body comprised of the public and other stakeholders that provides regular input on your stormwater program? ☐ Yes ☒ No

4. Construction

A. Do you have an ordinance or other regulatory mechanism stipulating:

- Erosion and sediment control requirements? ☒ Yes ☐ No
- Other construction waste control requirements? ☒ Yes ☐ No
- Requirement to submit construction plans for review? ☒ Yes ☐ No
- MS4 enforcement authority? ☒ Yes ☐ No

B. Do you have written procedures for:

- Reviewing construction plans? ☒ Yes ☐ No
- Performing inspections? ☒ Yes ☐ No
- Responding to violations? ☒ Yes ☐ No

C. Identify the number of active construction sites ≥ 1 acre in operation in your jurisdiction at any time during the reporting period. 3

D. How many of the sites identified in 4.C did you inspect during this reporting period? 3

E. Describe, on average, the frequency with which your program conducts construction site inspections.

UNM (i.e., the owner) inspects sites once per month. The construction site operator inspects every two weeks or after significant rain events.

F. Do you prioritize certain construction sites for more frequent inspections? ☒ Yes ☐ No

If Yes, based on what criteria? Sites with significant violations are promptly re-inspected to ensure corrective actions are implemented.

G. Identify which of the following types of enforcement actions you used during the reporting period for construction activities, indicate the number of actions, or note those for which you do not have authority:

☒ Yes	Notice of violation	2	No Authority	☐
☐ Yes	Administrative fines		No Authority	☒
☒ Yes	Stop Work Orders	0	No Authority	☐
☐ Yes	Civil penalties		No Authority	☒
☐ Yes	Criminal actions		No Authority	☒
☐ Yes	Administrative orders		No Authority	☒
☐ Yes	Other			

H. Do you use an electronic tool (e.g., GIS, data base, spreadsheet) to track the locations, inspection results, and enforcement actions of active construction sites in your jurisdiction? ☒ Yes ☐ No

I. What are the 3 most common types of violations documented during this reporting period?

Concrete washout container leaking & evidence of paint discharged into a storm drain.

J. How often do municipal employees receive training on the construction program? Annually

5. Illicit Discharge Elimination

A. Have you completed a map of all outfalls and receiving waters of your storm sewer system? ☒ Yes ☐ No

B. Have you completed a map of all storm drain pipes and other conveyances in the storm sewer system? ☒ Yes ☐ No

C. Identify the number of outfalls in your storm sewer system. 0

D. Do you have documented procedures, including frequency, for screening outfalls? ☒ Yes ☐ No

E. Of the outfalls identified in 5.C, how many were screened for dry weather discharges during this reporting period?

0

F. Of the outfalls identified in 5.C, how many have been screened for dry weather discharges at any time since you obtained MS4 permit coverage? 0

G. What is your frequency for screening outfalls for illicit discharges? Describe any variation based on size/type.

UNM does not have what would be considered outfalls as defined in Part VII of the permit. However, UNM has identified significant discharge points into major drainage channels and monitors those according to the IDDE Plan's schedule.

H. Do you have an ordinance or other regulatory mechanism that effectively prohibits illicit discharges? ☒ Yes ☐ No

I. Do you have an ordinance or other regulatory mechanism that provides authority for you to take enforcement action and/or recover costs for addressing illicit discharges? ☒ Yes ☐ No

J. During this reporting period, how many illicit discharges/illegal connections have you discovered? 15

K. Of those illicit discharges/illegal connections that have been discovered or reported, how many have been eliminated? 11

L. How often do municipal employees receive training on the illicit discharge program? Annually

6. Stormwater Management for Municipal Operations

A. Have stormwater pollution prevention plans (or an equivalent plan) been developed for:

All public parks, ball fields, other recreational facilities and other open spaces	☒ Yes	☐ No
All municipal construction activities, including those disturbing less than 1 acre	☒ Yes	☐ No
All municipal turf grass/landscape management activities	☒ Yes	☐ No
All municipal vehicle fueling, operation and maintenance activities	☒ Yes	☐ No
All municipal maintenance yards	☒ Yes	☐ No
All municipal waste handling and disposal areas	☒ Yes	☐ No

Other

B. Are stormwater inspections conducted at these facilities? ☒ Yes ☐ No

C. If Yes, at what frequency are inspections conducted? Annually

D. List activities for which operating procedures or management practices specific to stormwater management have been developed (e.g., road repairs, catch basin cleaning).

Management practices are in place for construction activities, post-construction design and planning, illicit discharge, street sweeping, trash pickup, and infrastructure maintenance.

E. Do you prioritize certain municipal activities and/or facilities for more frequent inspection? ☒ Yes ☐ No

F. If Yes, which activities and/or facilities receive most frequent inspections?

Facilities cited with NOVs for illicit discharge are re-inspected promptly to ensure corrective actions are implemented.

G. Do all municipal employees and contractors overseeing planning and implementation of stormwater-related activities receive comprehensive training on stormwater management? ☒ Yes ☐ No

H. If yes, do you also provide regular updates and refreshers? ☒ Yes ☐ No

I. If so, how frequently and/or under what circumstances?

Updates are provided as new info arises. E.g., when the 2022 CGP was published, a memo was sent to relevant folks summarizing key amendments and identifying responsibilities. Refresher courses are mandated for recurring violators.

7. Long-term (Post-Construction) Stormwater Measures

A. Do you have an ordinance or other regulatory mechanism to require:

Site plan reviews for stormwater/water quality of all new and re-development projects?	☒ Yes	☐ No
Long-term operation and maintenance of stormwater management controls?	☒ Yes	☐ No
Retrofitting to incorporate long-term stormwater management controls?	☒ Yes	☐ No

B. If you have retrofit requirements, what are the circumstances/criteria?

Retrofitting requirements are limited to redevelopment ≥ 1 acre, which requires managing 80th percentile storm volumes. Voluntary retrofitting efforts are also under way across campus to treat >290,000 gallons of runoff/event.

C What are your criteria for determining which new/re-development stormwater plans you will review (e.g., all projects, projects disturbing greater than one acre, etc.)?

All new and redevelopment projects that disturb ≥ 1 acre or projects disturbing < 1acre but part of a common plan that is ≥ 1 acre. Some additional voluntary reviews are provided for sites not meeting those criteria.

D. Do you require water quality or quantity design standards or performance standards, either directly or by reference to a state or other standard, be met for new development and re-development? ☒ Yes ☐ No

E. Do these performance or design standards require that pre-development hydrology be met for:

Flow volumes	☒ Ye	☐ No
Peak discharge rates	☒ s	☐ No
Discharge frequency	☐ Yes	☒ No
Flow duration	☐ Yes	☒ No

F. Please provide the URL/reference where all post-construction stormwater management standards can be found.

https://iss.unm.edu/departments/standards-guidelines.html

G. How many development and redevelopment project plans were reviewed during the reporting period to assess impacts to water quality and receiving stream protection? 6

H. How many of the plans identified in 7.G were approved? 6

I. How many privately owned permanent stormwater management practices/facilities were inspected during the reporting period? 0

J. How many of the practices/facilities identified in I were found to have inadequate maintenance? N/A

K. How long do you give operators to remedy any operation and maintenance deficiencies identified during inspections? Depends on severity.

L. Do you have authority to take enforcement action for failure to properly operate and maintain stormwater practices/facilities? ☐ Yes ☒ No

M. How many formal enforcement actions (i.e., more than a verbal or written warning) were taken for failure to adequately operate and/or maintain stormwater management practices? 0

N. Do you use an electronic tool (e.g., GIS, database, spreadsheet) to track post-construction BMPs, inspections and maintenance? ☒ Yes ☐ No

O. Do all municipal departments and/or staff (as relevant) have access to this tracking system? ☐ Yes ☒ No

P. How often do municipal employees receive training on the post-construction program? Annually

8. Program Resources

A. What was the annual expenditure to implement MS4 permit requirements this reporting period? 150,000

B. What is next year's budget for implementing the requirements of your MS4 NPDES permit? 150,000

C. This year what is/are your source(s) of funding for the stormwater program, and annual revenue (amount or percentage) derived from each?

Source:	Institutional and General funds	Amount $		OR %	100
Source:		Amount $		OR %	
Source:		Amount $		OR %	

D. How many FTEs does your municipality devote to the stormwater program (specifically for implementing the stormwater program; not municipal employees with other primary responsibilities)? 1 FTE

E. Do you share program implementation responsibilities with any other entities? ☒ Yes ☐ No

Entity	Activity/Task/Responsibility	Your Oversight/Accountability Mechanism
TAG (Tech. Advis	cooperative compliance monitoring	Intergovernmental Agreement

9. Evaluating/Measuring Progress

A. What indicators do you use to evaluate the overall effectiveness of your stormwater management program, how long have you been tracking them, and at what frequency? These are not measurable goals for individual management practices or tasks, but large-scale or long-term metrics for the overall program, such as macroinvertebrate community indices, measures of effective impervious cover in the watershed, indicators of in-stream hydrologic stability, etc.

Indicator	Began Tracking (year)	Frequency	Number of Locations
Example: E. coli	2003	Weekly April–September	20
Volume of recycling & waste diversion	2012	Annually	N/A
# of community members engaged	2012	Semi-Annually	N/A
# of IDDE inspections w. NOVs	2018	Annually	Variable
% of P2 Inspections w. NOVs	2021	Annually	50
% of construction sites inspected	2021	Annually	Variable

B. What environmental quality trends have you documented over the duration of your stormwater program? Reports or summaries can be attached electronically, or provide the URL to where they may be found on the Web.

See report Middle Rio Grande E. Coli Analysis and Research: http://www.amafca.org/documents/2015_Annual_Report/AMAFCA%202015%20%28Jan%20to%20June%29%20Annual%20Report%20II.A%20-%20VI.pdf

10. Additional Information

Please attach any additional information on the performance of your MS4 program, including information required in Parts I.C, I.D, and III.B. If providing clarification to any of the questions above, please provide the question number (e.g., 2C) in your response.

Certification Statement and Signature

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

☒ Yes ☐ No

Federal regulations require this application to be signed as follows: **For a municipal, State, Federal, or other public facility**: by either a principal executive or ranking elected official.

Signature		Teresa Costantinidis, Senior Vice President	
		Name of Certifying Official, Title	Date (mm/dd/yyyy)

OVERVIEW: SWMP IMPLEMENTATION

Key Term(s):

- ***SWMP - Stormwater Management Plan:*** A plan outlining how UNM works to achieve stormwater management best practices, available at https://ehs.unm.edu/assets/documents/misc-environmental-health/UNM_SWMP.pdf

Below, MCM Tables 1 – 6 display permit requirements, proposed plans and goals, and the current status for implementing all six MCMs outlined in the permit. In other words, these tables communicate how UNM's SWMP complied with the permit requirements by implementing plans with measurable goals. Then, the status column shows if and how UNM achieved each goal for the previous reporting year period.

MCM Table 1 – Public Education & Outreach

Requirement	Plan	Goal	Status
1.1. Develop, revise, implement, and maintain an education and outreach program as required in Part I.D.5.g.(i) and Part I.D.5.g.(ii): (i) The permittee shall, individually or cooperatively, develop, revise, implement, and maintain a comprehensive stormwater program to educate the community, employees, businesses, and the general public of hazards associated with the illegal discharges and improper disposal of waste and about the impact that stormwater discharges on local waterways, as well as the steps that the public can take to reduce pollutants in stormwater. Permittees previously covered under NMS000101 and NMR040000 must continue existing programs while updating those programs, as necessary, to comply with the requirements of this permit.	UNM will provide public education and outreach regarding stormwater impacts on the Middle Rio Grande watershed.	To provide educational opportunities (e.g., literature, training, media campaigns) for the entire UNM community to learn about mitigating pollution.	EHS developed a written education and outreach program, as incorporated into the SWMP. EHS participated in UNM's "Welcome Back Days" event at the beginning of each academic semester and handed out fliers with stormwater education literature. In total, approximately 200 community members engaged with the material. EHS aired eighteen public radio station announcements in July on KUNM (89.9 FM) with the following message: "Support comes from the U-N-M Department of Environmental Health & Safety, reminding New Mexico that picking up after pets is a simple way to help keep the Rio Grande clean during monsoon season." EHS hosted three outreach events called "EHS Roadshows," where individual academic departments (e.g., Chemistry) were targeted to provide pollution prevention literature and

(ii) The permittee must implement a public education program to distribute educational knowledge to the community or conduct equivalent outreach activities about the impacts of stormwater discharges on water bodies and the steps that the public can take to reduce pollutants in stormwater runoff. The permittee must: (a) Define the goals and objectives of the program based on high-priority community-wide issues; (b) Develop or utilize appropriate educational materials, such as printed materials, billboard and mass transit advertisements, signage at select locations, radio advertisements, television advertisements, and websites; (c) Inform individuals and households about ensuring proper septic system maintenance, ensuring the proper use and disposal of landscape and garden chemicals, including fertilizers and pesticides, protecting and restoring riparian vegetation, and properly disposing of used motor oil or household hazardous wastes; (d) Inform individuals and groups how to become involved in local stream and beach restoration activities as well as activities that are coordinated by youth service and conservation corps or other citizen groups;			education. In total, approximately 60 staff members engaged with the material. EHS included stormwater education in its *Basic Annual Safety Training*, which is required to be completed annually by more than 4,300 UNM staff and more than 1,300 UNM faculty. UNM's public education & outreach efforts also included: (1) Posting general information on the UNM stormwater website; (2) Publishing information in UNM's newspaper, *The Daily Lobo*; and (3) Providing training to UNM staff. The information included: (1) How to review and provide feedback on UNM's Annual Report; (2) The proper handling, disposal, and recycling of: a. Used motor vehicle fluids, b. Household and industrial hazardous wastes, c. Organic waste, d. Recyclable waste, and e. Car wash water; (3) The proper use and handling of fertilizers, pesticides, and herbicides; and (4) The procedures to report illicit discharges and improper disposals. EHS educated pet owners about the proper disposal of pet waste and collaborated with UNM's Facilities Management Department to maintain pet waste collection stations across UNM's Albuquerque Campuses.

(e) Use tailored public education programs, using a mix of locally appropriate strategies, to target specific audiences and communities. Examples of strategies include distributing brochures or fact sheets, sponsoring speaking engagements before community groups, providing public service announcements, implementing educational programs targeted at school-age children, and conducting community-based projects such as storm drain stenciling, and watershed cleanups; and (f) Use materials or outreach programs directed toward targeted groups of commercial, industrial, and institutional entities likely to have significant stormwater impacts. For example, providing information to restaurants on the impact of grease clogging storm drains and to garages on the impact of oil discharges. The permittee may tailor the outreach program to address the viewpoints and concerns of all communities, particularly minority and disadvantaged communities, as well as any special concerns relating to children. The permittee must make information available for non-English speaking residents, where appropriate.			EHS educated owners and operators on their responsibility to control pollutants from their facility to the MS4. EHS collaborated with UNM's Facilities Management Department to install and maintain storm drain placards on inlets across UNM's Albuquerque Campuses with the message "No Dumping, only Rain in the Drain."
1.2. Enhance the program to include requirements in Part I.D.5.g.(v) through Part I.D.5.g.(viii):	UNM will engage its community about Green Stormwater	To promote GSI awareness and development on campus.	EHS engaged with various departments to assess their interest and willingness-to-accept GSI development in or around each department's existing infrastructure. A total of eight potential

(v) Where necessary, to comply with the Minimum Control Measures established in Part I.D.5.g.(i) and Part I.D.5.g.(ii), the permittee should develop a program or modify/revise an existing education and outreach program to: (a) Promote, publicize, and facilitate the use of Green Infrastructure (GI)/Low Impact Development (LID)/Sustainability practices; and (b) Include an integrated public education program (including all permittee departments and programs within the MS4) regarding litter reduction, reduction in pesticide/herbicide use, recycling, and proper disposal (including yard waste, hazardous waste materials, and used motor vehicle fluids), and GI/LID/Sustainable practices (including xeriscaping, reduced water consumption, water harvesting practices allowed by the New Mexico State Engineer Office). (vi) The permittee may collaborate or partner with other MS4 operators to maximize the program and cost-effectiveness of the required outreach. (vii) The education and outreach program may use citizen hotlines as a low-cost strategy to engage the public in illicit discharge surveillance. (viii) The permittee may use stormwater educational materials provided by the State, Tribe, EPA,	Infrastructure (GSI), illicit discharge reporting, and Fats, Oils, & Grease (FOG) best practices.	To inform the community about how and when to report illicit discharges. To inform food handling employees and residential hall inhabitants about reducing FOG discharges to wastewater and storm sewers.	GSI projects were scoped, and assessments included meetings with building coordinators to gather their input on GSI development. Three of the eight projects advanced to engineering studies aimed at developing construction documents to eventually build GSI. These three studies were contracted and underway at the end of the Reporting Year. EHS provided and maintained two primary reporting methods for illicit discharge: (1) The **Accident, Incident & Spill Reporting** form is available 24/7 to report spills at https://ehs.unm.edu/accident-incident-spill-reporting/index.html; and (2) A 24/7 Duty Officer is available to respond to reports of illicit discharges by calling (505) 951-0794. EHS informed UNM employees and students about these two methods in various training courses. EHS developed a new educational poster and posted more than ten of them above industrial and residential kitchen sinks. The poster's contents inform employees and students about how to dispose of FOG, the consequences of failing to do so, and how to report illicit discharges.

environmental, public interest or trade organizations, or other MS4s. The permittee may also integrate the education and outreach program with existing education and outreach programs in the Middle Rio Grande area. Examples of existing programs include: (a) Classroom education on stormwater; A. Develop a watershed map to help students visualize the area impacted. B. Develop pet-specific education (b) Establish a water committee/advisor group; (c) Contribute and participate in Stormwater Quality Team; (d) Education/outreach for commercial activities; (e) Hold regular employee training with industry groups (f) Education of lawn and garden activities; (g) Education on sustainable practices; (h) Education/outreach of pet waste management; (i) Education on the proper disposal of household hazardous waste; (j) Education/outreach programs aimed at minority and disadvantaged communities and children; (k) Education/outreach of trash management; (l) Education/outreach in public events; A. Participate in local events—brochures, posters, etc. B. Participate in regional events (i.e., State Fair, Balloon Fiesta).			

(m) Education/outreach using the media (e.g., publish local newsletters); (n) Education/outreach on water conservation practices designed to reduce pollutants in stormwater for home residences.			
1.3. Describe other proposed activities to address the Public Education and Outreach on Stormwater Impacts Measure:	N/A	N/A	N/A

MCM Table 2 – Public Participation

Requirement	Plan	Goal	Status
2.1. Develop (or update), implement, and maintain a public involvement and participation plan as required in Part I.D.5.h.(ii) and Part I.D.5.h.(iii): (ii) The permittee shall develop, revise, implement and maintain a plan to encourage public involvement and provide opportunities for participation in the review, modification, and implementation of the SWMP; develop and implement a process by which public comments on the plan are received and reviewed by the person(s) responsible for the SWMP; and, make the SWMP available to the public and to the operator of any MS4 or Tribal authority receiving discharges from the MS4. Permittees previously covered under NMS000101 or NMR040000 must continue existing public involvement and participation programs while updating those programs, as necessary, to comply with the requirements of this permit. (iii) The plan required in Part I.D.5.h.(ii) shall include a comprehensive planning process that involves public participation and, where necessary intergovernmental	UNM will continue to welcome public participation in its SWMP. EHS will involve academic and non-academic departments (e.g., Facilities Management, Planning, Design & Construction; Architecture [academic]; and Geography & Environmental Studies [academic]) as stakeholders in the development and revision of UNM's SWMP. UNM will participate in local public forums where active public involvement occurs (e.g., Technical Advisory Group) on stormwater issues. EHS will train and update other	To provide the community with the means to participate in the development, implementation, and revision of the SWMP.	UNM requested public participation and feedback on its SWMP and all Annual Reports. These are posted on the EHS website, and a participation narrative with a link is advertised in the *Daily Lobo* newspaper. For example, Annual Reports are advertised for public comment in the newspaper with the following language: "UNM commits to preventing pollution in the municipal storm drain system. Consequently, UNM posts the Stormwater Management Plan online for public comments, which can be emailed to EHSWEB-L@list.unm.edu. To review the plan, visit HTTPS://EHS.UNM.EDU/ASSETS/DOCUMENTS/STORM-WATER/STORM-WATER-2021-REPORT.PDF." Likewise, EHS posted 20 notices soliciting feedback on the Annual Report at various locations around campus. Notices included similar language to the ad and included a link and a QR code for accessing the report. EHS solicited comments from academic and non-academic departments regarding the Annual Report. EHS attended and participated in Technical Advisory Group meetings. Members regularly include: - City of Albuquerque - AMAFCA (Albuquerque Metropolitan Arroyo Flood Control Authority) - NM DOT (New Mexico Dept. of Transportation District 3) - Bernalillo County - Sandoval County - Village of Corrales - City of Rio Rancho - Los Ranchos de Albuquerque - KAFB (Kirtland Air Force Base) - Town of Bernalillo

coordination to reduce the discharge of pollutants to the maximum extent practicable using management practices, control techniques, and system, design and engineering methods, and such other provisions which are appropriate. The permittee must include the following elements in the plan: (a) A detailed description of the general plan for informing the public of involvement and participation opportunities, including types of activities; target audiences; how interested parties may access the SWMP; and how the public was involved in the development of the SWMP; (b) The development and implementation of at least one (1) assessment of public behavioral change following a public education and/or participation event; (c) A process to solicit involvement by environmental groups, environmental justice communities, civic organizations, or other neighborhoods/organizations interested in water quality-related issues, including but not limited to the Middle Rio Grande Water Quality Work Group, the Middle Rio Grande Bosque Initiative, the Middle Rio Grande Endangered Species Act Collaborative Program, the Middle	departments about stormwater issues and solicits input and participation.		- EXPO (State Fairgrounds/Expo NM) - SSCAFCA (Southern Sandoval County Arroyo Flood Control Authority) - ESCAFCA (Eastern Sandoval County Arroyo Flood Control Authority) - Sandia Laboratories, Department of Energy (DOE) - Pueblo of Sandia - Pueblo of Isleta - Pueblo of Santa Ana

Rio Grande-Albuquerque Reach Watershed Group, the Pueblos of Santa Ana, Sandia and Isleta, Albuquerque Bernalillo County Water Utility Authority, UNM Colleges, and Schools, and Chartered Student Organizations; and (d) An evaluation of opportunities to utilize volunteers for stormwater pollution prevention activities and awareness throughout the area.			
2.2. Describe the plan to comply with State, Tribal, and local notice requirements when implementing a Public Involvement and Participation Program as required in Part I.D.5.h.(iv): (iv) The permittee shall comply with State, Tribal, and local public notice requirements when implementing a public involvement/ participation program.	UNM will provide public notice of its plan to submit an NOI (Notice Of Intent) and SWMP to the EPA.	To comply with State, Tribal, and local notice requirements.	UNM provided public notice of its plan to submit an NOI and SWMP to the EPA. The notice was published in the Albuquerque Journal. The draft NOI and SWMP were published on the EHS website, with copies available at the Zimmerman Library, and the public was allowed 30 days to submit written comments.
2.3. Describe a plan to include elements as required in Part I.D.5.h.(v): (v) The public participation process must reach out to all economic and ethnic groups. Opportunities for members of the public to participate in program development and implementation include serving as	UNM will serve on the Technical Advisory Group (TAG) and participate in voluntary monitoring.	To encourage participation in program development and implementation.	EHS attended and participated in Technical Advisory Group meetings. EHS participated in the voluntary monitoring efforts led by AMAFCA and COA.

citizen representatives on a local stormwater management panel, attending public hearings, working as citizen volunteers to educate other individuals about the program, assisting in program coordination with other pre-existing programs, or participating in volunteer monitoring efforts.			
2.4. As required in Part I.D.5.h.(viii), provide the internet site (or website) where the SWMP document, Annual Reports, and other documents will be available to the public: (viii) The permittee must provide public accessibility of the Stormwater Management Program (SWMP) document and Annual Reports online via the Internet and during normal business hours at the MS4 operator's main office, a local library, posting on the internet, and/or other readily accessible location for public inspection and copying consistent with any applicable federal, state, tribal, or local open records requirements. Upon a showing of significant public interest, the MS4 operator is encouraged to hold a public meeting (or include it in the agenda of a regularly scheduled city council meeting, etc.) on the NOI, SWMP, and Annual Reports. (See Part III B)	EHS will publish UNM's SWMP and Annual Reports on its website and provide a forum.	To seek and address input from the public.	UNM requested public participation and feedback on its SWMP and all Annual Reports.

2.5. Enhance the program to include requirements in Part I.D.5.h.(ix): (ix) The permittee may integrate the public Involvement and participation program with existing education and outreach programs in the Middle Rio Grande area. Examples of existing programs include Adopt-A-Stream Programs; Attitude Surveys; Community Hotlines (e.g., the establishment of a "311"-type number and system established to handle storm-water-related concerns, setting up a public tracking/reporting system, using phones and social media); Revegetation Programs; Storm Drain Stenciling Programs; Stream cleanup and Monitoring program/events.	UNM will integrate public education and outreach efforts with public involvement and participation efforts.	To provide a cohesive outreach and participation campaign that informs the community about stormwater issues and reporting procedures.	EHS established and maintained campaigns and reporting infrastructure to facilitate maximum public education and involvement.
2.6. Describe other proposed activities to address the Public Involvement and Participation Measure:	N/A	N/A	N/A

MCM Table 3 – Pollution Prevention (P2) & Good Housekeeping

Requirement	Plan	Goal	Status
3.1. Develop or update the Pollution Prevention/Good House Keeping program to include the elements in Part I.D.5.c.(i): (i) The permittee must develop, revise and implement an operation and maintenance program that includes a training component and the ultimate goal of preventing or reducing pollutant runoff from municipal operations. Permittees previously covered under NMS000101 or NMR040000 must continue existing programs while updating those programs, as necessary, to comply with the requirements of this permit. The program must include: (a) Development and implementation of an employee training program to incorporate pollution prevention and good housekeeping techniques into everyday operations and maintenance activities. The employee training program must be designed to prevent and reduce stormwater pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and stormwater system maintenance. The permittee must also develop a tracking procedure and ensure that employee	UNM will implement, review and enhance pollution prevention practices. When possible, UNM will implement new source control procedures to limit the discharge of pollutants from the MS4. As required, UNM's Facilities Management Department will implement: a) Stormwater Operations & Maintenance (O&M) Program b) grounds and landscaping maintenance; c) road and parking lot operation and maintenance; d) fleet and building maintenance; e) new construction and	To train employees about pollution prevention, response, and reporting procedures relating to operations and maintenance of stormwater infrastructure.	In-person Stormwater Management training was not provided to UNM's Facilities Management Department during the reporting period due to COVID-19. However, online courses were offered. The following courses were offered with the following satisfactory completion statistics: o Stormwater Management: 112; o Hazardous Waste Management: 26; o Wastewater Management: 74; o Haz. Comm. in the Laboratory & Hazardous Waste Management: 16; o Hazard Evaluation and Heuristics: 7; o Hierarchy of Hazard Control and PPE: 11; & o Laboratory Safety: 3. EHS also published a new document: *Stormwater Guidance for UNM Staff and Contractors*. The goal of this document is to inform persons in charge of new and redevelopment projects on campus about stormwater rules and ways to comply with the EPA's *2022 Construction General Permit* and *MRG MS4 Permit*. EHS trained 13 persons in charge of new and redevelopment projects on campus about pre and post-construction requirements regarding stormwater rules. UNM continued implementation of its existing SPCC plan during the reporting period. EHS also started redrafting UNM's SPCC as required every five years. The new SPCC remained under development at the end of the Reporting Year. UNM has prepared a written Stormwater Operation and Maintenance manual that includes the required elements listed.

turnover is considered when determining the frequency of training; (b) Maintenance activities, maintenance schedules, and long-term inspection procedures for structural and non-structural stormwater controls to reduce floatable, trash, and other pollutants discharged from the MS4. (c) Controls for reducing or eliminating the discharge of pollutants from streets, roads, highways, municipal parking lots, maintenance and storage yards, fleet or maintenance shops with outdoor storage areas, salt/sand storage locations, snow disposal areas operated by the permittee, and waste transfer stations; (d) Procedures for properly disposing of waste removed from the separate storm sewers and areas listed in Part I.D.5.c.(i).(c) (such as dredge spoil, accumulated sediments, floatables, and other debris); and (e) Procedures to ensure that new flood management projects assess the impacts on water quality and examine existing projects for incorporating additional water quality protection devices or practices. Note: The permittee may use training materials that are available from EPA, NMED, Tribe, or other organizations.	land disturbance training; f) utility systems maintenance; & g) MS4 system maintenance. The UNM O&M program will include training for appropriate UNM staff on improving stormwater quality. UNM's Facilities Management Department's O&M Program maintains: a) An updated list of stormwater quality facilities by drainage basin, including location and description; b) A target number of 20 stormwater quality facilities will be inspected once every three months by UNM's Facilities Management Department and cleaned if necessary; and		UNM's Facilities Management Department implemented: a) Stormwater Operations & Maintenance (O&M) Program b) Grounds and landscaping maintenance; c) Road and parking lot operation and maintenance; d) Fleet and building maintenance; e) New construction and land disturbance training; f) Utility systems maintenance; & g) MS4 system maintenance.

	c) A leading source control program of the street and hard-scaping sweep and daily (M-F) litter pickup on campus. EHS maintains UNM's Spill Prevention, Countermeasure, and Control (SPCC) Plan to address the risks from oil tanks greater than or equal to 55 gallons. UNM takes measures to ensure that parties responsible for a spill on campus take reasonable steps to control and minimize threats to human health and the environment. Potential discharges will be controlled through the implementation of spill prevention practices, self-inspections, and employee training.		

	UNM's Facilities Management Department's O&M Program will also include measures to control the following stormwater pollutants: a) De-icing salts; b) Roadway debris and roadside vegetation management practices; leaked automotive fluids in equipment maintenance yards; c) Debris on hard-scaping (roads, etc.) that can be reduced by modifying street sweeping strategies; and d) Targeting problem areas on campus that may have greater pollution potential.		
3.2. Enhance the program to include the elements in Part I.D.5.c.(ii):	UNM will:	Submit annual progress	

(ii) The Pollution Prevention/Good Housekeeping program must include the following elements: (a) Develop or update the existing list of all stormwater quality facilities by drainage basin, including location and description; (b) Develop or modify existing operational manual for de-icing activities addressing alternate materials and methods to control impacts on stormwater quality; (c) Develop or modify an existing program to control pollution in stormwater runoff from equipment and vehicle maintenance yards and maintenance center operations located within the MS4; (d) Develop or modify the existing street sweeping program. Assess possible benefits from changing the frequency or timing of sweeping activities or utilizing different equipment for sweeping activities; (e) A description of procedures used by permittees to target roadway areas most likely to contribute pollutants to and from the MS4 (i.e., runoff discharges directly to sensitive receiving water, roadway receives a majority of de-icing material, roadway receives excess litter, roadway	Implement the O&M program to support waste disposal standard operating procedures (SOPs), including for motor vehicle fluids, toxic paints, solvents, fertilizers, pesticides, herbicides, and any other hazardous material, by June 2017. This will include a list of opportunities for recycling substances. Also, SOPs will address the removal of sediments, debris, floatables, and litter, including pet wastes. By June 20, 2017, re-assess existing flood control infrastructure for the potential to retro-fit it with additional water quality enhancement features. Note: UNM's O&M Program maintains:	updates in the Annual Report.	UNM's Facilities Management Department continued routine O&M operations for street sweeping, trash collections, and recycling. Hazardous chemicals and used oils from maintenance shops were disposed of through EHS or other third-party vendors. With the exception of a few small detention basins, UNM does not have flood control infrastructure. The flood control infrastructure is owned and operated by the AMAFCA. No retrofit evaluations were conducted during this reporting period.

receives greater loads of oil and grease); (f) Develop or revise existing standard operating procedures for the collection of used motor vehicle fluids (at a minimum oil and antifreeze) and toxics (including paint, solvents, fertilizers, pesticides, herbicides, and other hazardous materials) used in permittee operations or discarded in the MS4, for recycle, reuse, or proper disposal; (g) Develop or revise existing standard operating procedures for the disposal of accumulated sediments, floatables, and other debris collected from the MS4 and during permittee operations to ensure proper disposal; (h) Develop or revised existing litter source control programs to include public awareness campaigns targeting the permittee audience; and (i) Develop or review and revise, as necessary, the criteria, procedures, and schedule to evaluate existing flood control devices, structures, and drainage ways to assess the potential of retrofitting to provide additional pollutant removal from stormwater. Implement routine reviews to ensure new and/or innovative practices are implemented where applicable.	a) an updated list of stormwater quality facilities by drainage basin, including location and description; and b) a target number of 20 stormwater quality facilities shall be inspected once every three months by UNM's Facilities Management Department and cleaned if necessary.		

(j) Enhance inspection and maintenance programs by coordinating with maintenance personnel to ensure that a target number of structures per basin are inspected and maintained per quarter; (k) Enhance the existing program to control the discharge of floatables and trash from the MS4 by implementing source control of floatables in industrial and commercial areas; (l) Include in each annual report a cumulative summary of retrofit evaluations conducted during the permit term on existing flood control devices, structures, and drainage ways to benefit water quality. Update the SWMP to include a schedule (with priorities) for identified retrofit projects; (m) Flood management projects: review and revise, as necessary, technical criteria guidance documents and program for the assessment of water quality impacts and incorporation of water quality controls into future flood control projects. The criteria guidance document must include the following elements: A. Describe how new flood control projects are assessed for water quality impacts. B. Provide citations and descriptions of design			

standards that ensure water quality controls are incorporated in future flood control projects. C. Include methods for permittees to update standards with new and/or innovative practices. D. Describe master planning and project planning procedures and design review procedures. (n) Develop procedures to control the discharge of pollutants related to the storage and application of pesticides, herbicides, and fertilizers applied, by the permittee's employees or contractors, to public right-of-ways, parks, and other municipal property. The permittee must provide an updated description of the data monitoring system for all permittee departments utilizing pesticides, herbicides, and fertilizers.			
3.3. Develop or update a list and a map of industrial facilities owned or operated by the permittee as required in Part I.D.5.c.(iii): (iii) Comply with the requirements included in the EPA Multi-Sector General Permit (MSGP) to control runoff from industrial facilities (as	UNM does not have operations within the campus jurisdiction that would normally be categorized as industrial.	N/A	N/A

defined in 40 CFR 122.26(b)(14)(i)-(ix) and (xi)) owned or operated by the permittees and ultimately discharge to the MS4. The permittees must develop or update: (a) A list of municipal/permittee operations impacted by this program, (b) A map showing the industrial facilities owned and operated by the MS4, (c) A list of the industrial facilities (other than large construction activities defined as industrial activity) that will be included in the industrial runoff control program by category and by basin. The list must include the permit authorization number or an MSGP NOI ID for each facility, as applicable.			
3.4. Describe other proposed activities to address Pollution Prevention/Good Housekeeping for Municipal/permittee Operations Measure:	UNM will continue to explore additional activities to address the Pollution Prevention/Good Housekeeping requirements for municipal operations.	Additional proposed activities will be reported in the annual report.	EHS completed a GIS inventory of all storm drains on campus and replaced all missing/damaged “no dumping” plaques. EHS performed 34 pollution prevention inspections across campus. EHS revised its Pollution Prevention program, tailoring inspections to 17 different facility operations. Previously, inspectors utilized a generic inspection checklist, which did not review specific guidelines for different operations. The new checklists are designed using agency (e.g., EPA, ABCWUA) factsheets and regulations to improve program efficacy. Now, each operations type has specific inspection criteria to identify hazards and reduce pollution. For example, the new checklists reflect the following 17 facility operations:

			1. Automotive 2. Business 3. Chemical 4. Dental 5. General (non-specific) 6. Groundskeeping & Pest Control 7. Material & Equip. Storage 8. Medical (non-Dental) 9. Metal Works 10. Painting & Coating 11. Print & Copy 12. Research Laboratory (non-Chem; non-Med.) 13. Restaurant (FOG) 14. Restaurant (non-FOG) 15. Solid Waste & Recycling 16. Utilities 17. Water Use & Conservation Also, in revising the Pollution Prevention program, the scope was expanded to reach beyond just stormwater quality issues. The new scope is designed to employ the Precautionary Principal in multiple steps to minimize pollution to the environment, including the hydrosphere, atmosphere, lithosphere, and biosphere. A logic model of the revised program is shown in Figure 1 below, detailing the new scope of work. EHS developed a new educational poster (see Figure 2) and posted more than ten of them above industrial and residential kitchen sinks. The poster's contents inform employees and students about how to dispose of FOG, the consequences of failing to do so, and how to report illicit discharges. Similarly, EHS purchased new educational stickers (see Figure 3) and continues to post them above laboratory sinks to reduce illicit discharges to wastewater sewers. Clearly, the MS4 Permit is exclusively concerned with stormwater sewers, but these types of illicit discharge can also lead to infrastructure failures that may cause wastewater overflows or leaks into storm sewers.

			Likewise, the educational materials reduce the potential to introduce POTW pass-throughs, which are also regulated under the federal NPDES program.

Figure 1 - A Logic Model for the Revised P2 Program.

UNM Pollution Prevention (P2) Program: A Logic Model

Intervening with the precautionary principal to minimize pollution.

ENVIRONMENTAL HEALTH & SAFETY

Inputs	Output Activities	Output Audience	Short-Term Outcomes	Med-Term Outcomes	Long-Term Outcomes
What EHS invests →	*What EHS does* →	*Who EHS reaches* →	*Quantitative/Measurable results* →		*Narrative results*
◷ Time ◴ $ Money $ • Expertise •	1. Inspect Facilities to minimize pollution risks. 2. Design training for P2 (general & sector-based). 3. Provide preventative training annually. 4. Provide remedial training for P2 violators.	1. Facilities Managers 2. Grounds/Landscaping Staff 3. Restaurant Staff 4. Automotive Staff 5. Waste Mgmt. Staff 6. Research Staff A. Arch./Eng./Plan B. Labs	↗ Training ↗ Awareness ↘ Ignorance ↘ Illicit behavior	↗ BMPs ↗ Use of green products ↗ IPM use ↗ Enhanced O&M ↗ Eco-consciousness ↘ IDDE ↘ Soil Erosion ↘ F.O.G. ↘ Petroleum ↘ Floatables ↘ Chemicals	**Enhance the quality of the:** • Atmosphere (air); • Hydrosphere (water); • Lithosphere (soil); & • Biosphere (life), ✓ Human & ✓ Non-human. **Achieve Compliance with:** • ABC AQB Title V Permit • SDWA (42 USC 300f) • NMED GWB MOU • P2 Act (42 USC 133) • PST Rule (20.5 NMAC) • SPCC Plan (40 CFR 112) • MS4 Permit • CGP Permit • ABCWUA MOU

Assumptions:

1. The P2 program focuses on preventing pollution sources that impacts air, water, soil, or life through inspection, education, & training.
2. Changes will be outlined in a new P2 SOP (expected FY23).
3. Implementing preventative & remedial training will reduce adverse behaviors.

External Factors:

1. Internal/External Policies
2. Internal/External Agencies/Departments

Program Evaluation:

Identify Metrics → Collect Data → Analyze → Synthesize & Report → Intervene → Restart

Key:

↗ = Increase; ↘ = Decrease

Figure 2 - New FOG Poster published February 2022.

Figure 3 - New "No Chemicals Down the Drain" Stickers.

Requirement	Plan	Goal	Status
3.1.2. Describe the plan to estimate the annual volume of floatables and trash removed from each control facility and characterize the floatable type as required in Part I.D.5.f.(i)(b): (b) Estimate the annual volume of floatables and trash removed from each control facility and characterize the floatable type.	UNM does not own or operate any major stormwater quality control facilities. UNM's Facilities Management Department recycling will continue to track and report the estimated volume of trash and recyclable materials collected from campus. UNM carefully collects and disposes of all wastes that could be hazardous to stormwater quality. For instance, the EHS Department picks up and properly disposes of UNM's hazardous wastes in compliance with RCRA requirements. EHS, UNM's Facilities Management Department, and other UNM departments properly manage and dispose of regulated universal wastes and other special wastes. UNM policy UBPP 7780 forbids automotive maintenance activities on campus outside of the fleet and equipment maintenance operations at the UNM's Facilities Management Department Automotive Center. UNM is expanding its waste collection program to include fats, oils, and greases. UNM continues to coordinate waste collection efforts amongst departments.	The progress and estimated volume of trash and recyclable materials will be reported in the annual report.	Records for waste management are mostly managed by the UNM Facilities Management (FM) department and reported to New Mexico Environment Department (NMED) on a Calendar Year (CY) basis. Therefore, most of the waste disposal data below match that format. However, EHS reports hazardous waste to NMED on a Reporting Year (RY) basis [i.e., 07/01/2021 – 06/30/2022]. Hazardous waste disposed of by EHS in RY22: • 10.5 tons Non-hazardous waste disposed of by EHS in FY22: • 4.7 tons Otherwise, FM recycles and disposes of UNM's municipal solid waste. CY22 totals are not yet available. However, CY21 totals equaled 424.1 tons of recycled material and 2,703.6 tons of landfilled waste. These totals are broken down below:

			MSW / **CY21 tons** Landfilled - UNM: 2696.02 Scrap Tires: 2.13 Lead Acid Batteries: ~7 **Recyclables** Mixed Paper: 38.18 Cardboard: 132.76 Newspaper: 0.41 Office Paper: 79.48 PET#1: 2.87 Aluminum: 1.51 Glass: 3.34 Scrap Metal: 45.50 White Goods: 21.14 Pallets: 4.93 Brush/Green Waste: 84.77 **Other Co-mingled** Mixed plastic: 2.66 Fluorescent bulbs: 5.51 Toners: 0.68 Batteries, rechargeable: 0.06 Batteries, alkaline: 0.30
3.1.3. Describe other proposed activities to address the Control of Floatables Discharges Measure:	No additional activities are being proposed at this time. UNM will continue to explore additional activities to address the Control of Floatables Discharges Measure.	N/A	N/A

Control of Floatables Discharges

Requirement	Plan	Goal	Status
3.1.1. Develop a schedule to implement the program as required in Part I.D.5.f.(i)(a): (i) The permittee must develop, update, and implement a program to address and control floatables in discharges into the MS4. The floatables control program shall include source controls and, where necessary, structural controls. Permittees previously covered under NMS000101 or NMR040000 must continue existing programs while updating those programs, as necessary, to comply with the requirements of this permit. The following elements must be included in the program: (a) Develop a schedule for implementation of the program to control floatables in discharges into the MS4 (Note: AMAFCA and the City of Albuquerque should update the schedule according to the findings of the 2005 AMAFCA/COA Floatable and Gross Pollutant Study and other studies).	UNM's approach is to control floatables at the source. UNM has a robust trash collection system, with a dense network of trash collection stations across campus. UNM may have the most intensive litter removal and street and sidewalk sweeping program in the Albuquerque metro area that removes floatables from the campus grounds before they can come into contact with stormwater. These activities will remain continuous. Furthermore, UNM will install and maintain grates in stormwater inlets across campus to control floatables discharge. The UNM Facilities Management department will continue to track and report the estimated volume of floatables and trash removed from our control facilities. Beginning in June 2017, UNM's Facilities Management Department will start characterizing the types of floatables removed from control facilities.	To implement a schedule for implementation of controls of floatables in discharges into the MS4 Include a discussion of the volume and type of trash removed in Annual Reports.	UNM Grounds and Landscaping personnel continued implementing quarterly maintenance and operations on stormwater inlets that trap floatables and other debris. UNM's Facilities Management Department has identified a list of storm drain inlets that are cleaned at least quarterly. UNM's Facilities Management Department performs street sweeping every day, and each UNM street is swept on average twice a week. The frequency of sweeping reduces in the winter months. The amount of debris collected from street sweeping is still to be determined. Note: these totals are included in the totals for Landfilled Municipal Solid Waste, listed in the "Waste Collection Programs" table above.

UNM Storm Drain Inlets for Quarterly Maintenance & Operations

Inlet #	Location:
1.	West of Centennial Engineering (Bldg.122) in the roadway along the West Curb line
2.	West of Hibben Center (Bldg. 15) in the bump out on the West side of the road (2 inlets)
3.	North of Zimmerman (Bldg. 53) in the parking lot
4.	Walkway east of Zimmerman (Bldg. 53) and East of Collage of Education (Bldg. 57)
5.	SE of Hokona Zia (Bldg. 58) in Redondo Way
6.	NE of Simpson Hall (Bldg. 66) in Redondo Way
7.	South of Santa Clara (Bldg. 61) in Redondo Way
8.	North of SRC Commons (Bldg. 88)
9.	NE of Mesa Vista (Bldg. 56) at Area 3
10.	South side of Duck Pond
11.	SE side of Scholes Hall (Bldg. 10)
12.	SW of Chapel (Bldg. 25)
13.	East of Bandelier Hall East (Bldg. 8) at Rose Garden
14.	North side of EECE (Bldg. 46) in the south end of the parking lot
15.	NW of Ford Utilities (Bldg. 116) in the parking lot
16.	SW corner of Novitski Hall (Bldg. 249) in SW corner of the south parking lot
17.	Southside of HSSB (Bldg. 266) in the walkway
18.	NW of HSSB (Bldg. 266) in the lawn area
19.	NW of Novitski Hall (Bldg. 249) in the SE corner of the north parking lot (2 inlets)
20.	NW of Observatory (Bldg. 208) in the NW corner of the parking lot.

Source: UNM Facilities Management, Grounds & Landscaping. 2012.

MCM Table 4 – Illicit Discharge Detection & Elimination (IDDE)

Requirement	Plan	Goal	Status
4.1. Mapping as required in Part I.D.5.e.(i)(a); (i) The permittee shall develop, revise, implement, and enforce a program to detect and eliminate illicit discharges (as defined at 40 CFR 122.26(b)(2)) entering the MS4. Permittees previously covered under NMS000101 or NMR040000 must continue existing programs while updating those programs, as necessary, to comply with the requirements of this permit. The permittee must: (a) Develop, if not already completed, a storm sewer system map showing the names and locations of all outfalls as well as the names and locations of all waters of the United States that receive discharges from those outfalls. Identify all discharges points into major drainage channels draining more than twenty (20) percent of the MS4 area;	UNM completed a campus utility map in 2013, which includes its storm sever map. UNM continues to revise and update its storm sewer system map as necessary.	Updates to the map will be reported in the annual report.	UNM does not have what would be considered outfalls as defined in Part VII of the permit. However, UNM has identified significant discharge points into major drainage channels. EHS updated campus utility maps to include location, condition, and photos of all storm sewers. The new utility map is now integrated into a GIS repository managed by UNM's Earth Data Analysis Center. EHS also developed a new internal dashboard, showing IDDE investigation results and descriptive statistics (Figure 4). The intent of the tool is to systematically streamline investigations and reports and to understand where and how IDDE occurs. Over time, the tool will show IDDE "hot spots" and identify common issues that can be met with interventions to further reduce IDDE.
	UNM does not have formal regulatory enforcement power since it is not a	To develop mechanisms to control non-stormwater	

4.2. Ordinance (or other control methods) as required in Part I.D.5.e.(i)(b): (b) To the extent allowable under State, Tribal, or local law, effectively prohibit, through ordinance or other regulatory mechanisms, non-stormwater discharges into the MS4, and implement appropriate enforcement procedures and actions;	traditional municipality, but UNM can utilize contractual and employee disciplinary mechanisms to discourage non-stormwater discharges from contractors and employees, respectively. To the extent possible, EHS will work with other UNM departments and stakeholders (e.g., developers) to train appropriate personnel about mitigating IDDE. EHS will also issue NOVs (Notices of Violations) as required per UNM's IDDE Plan.	discharges into the MS4 and implement appropriate enforcement procedures and actions	UNM continued to implement its activities to detect and eliminate illicit discharges. EHS continued to train staff on how to detect and report illicit discharges. The following official documents prohibit non-stormwater discharges into the MS4: • UNM's IDDE Plan • UNM's Stormwater Guidance for Staff and Contractors • UNM's Construction Safety Manual Likewise, during this reporting year, eleven IDDE investigations resulted in the issuance of NOVs per the UNM IDDE Plan. All NOVs resulted in conversations with affected employees and supervisors to discourage IDDE and train them about the impacts of their actions.
4.3. Develop and implement an IDDE plan as required in Part I.D.5.e.(i)(c): (c) Develop and implement a plan to detect and address non-stormwater discharges, including illegal dumping, to the MS4. The permittee must include the following elements in the plan:	UNM will implement efforts to detect and eliminate illicit discharges and improper disposal that may impact the quality of stormwater discharged from the campus. EHS will manage UNM's IDDE Program and maintain maps applicable to the campus. Newly discovered IDDE will be assessed for their potential impact on the Rio Grande.	To develop an IDDE plan and reduce illicit discharges.	A third-party contractor developed an IDDE plan on September 13, 2017. IDDE inspections were conducted at facilities identified as potential sources for illicit discharges. Additionally, all reports of illicit discharges are investigated, and a written report is issued to the appropriate staff for corrective action. If the source of an illicit

A. Procedures for locating priority areas likely to have illicit discharges, including field tests for selected pollutant indicators (ammonia, boron, chlorine, color, conductivity, detergents, E. coli, enterococci, total coliform, fluoride, hardness, pH, potassium, conductivity, surfactants), and visually screening outfalls during dry weather; B. Procedures for enforcement, including enforcement escalation procedures for recalcitrant or repeat offenders; C. Procedures for removing the source of the discharge; D. Procedures for program evaluation and assessment; and E. Procedures for coordination with adjacent municipalities and/or state, tribal, or federal regulatory agencies to address situations where investigations indicate the illicit discharge originates outside the MS4 jurisdiction.	EHS will investigate dry stormwater discharges. Initial assessments of stormwater quality will occur by visual methods. As suspicious water quality conditions are encountered, water quality samples may be tested with field instruments to monitor conductivity, pH, temperature, dissolved oxygen, turbidity, etc. If visual and field instrumentation assessment is unsatisfactory and another contamination is suspected, then grab samples may be collected for potentially applicable lab analysis by EPA methods, e.g., TPH, BTEX, E. Coli, nitrates/nitrite, etc. If unusual levels of water quality contaminants are observed, UNM will analyze the above information to identify the source (on campus) or up-gradient discharge location (off campus). UNM will notify relevant MS4 entities if IDDE is suspected to be discharged from their jurisdiction onto campus. If UNM identifies a significant illicit discharge or improper disposal on campus, then that finding and a brief explanation of any potential hazard will be posted on an EHS website page to inform any interested members of the campus or local communities. EHS will incorporate that finding into stormwater quality training for the		discharge is outside the jurisdiction of UNM, it is referred to the appropriate authority (e.g., the City of Albuquerque). A new IDDE dashboard was created to track incidents and report basic statistics that can be used to intervene in future operations to reduce illicit discharge (Figure 4). The dashboard shows how many investigations were routine (e.g., dry-day inspections) versus how many were reported by the community. It also shows how many reports of illicit discharge were investigated and determined to actually be illicit discharge, and it shows the overall severity of each discharge. During this reporting year, the new tool remains internal to EHS staff only. However, future plans to publish the dashboard for the general public are under way.

	associated UNM staff that can best control the problem. IDDE screening and inspections will be conducted at the frequency outlined in UNM's written IDDE Plan.		
4.4. Develop an education program as required in Part I.D.5.e.(i)(d): (d) Develop an education program to promote, publicize, and facilitate public reporting of illicit connections or discharges and distribution of outreach materials. The permittee shall inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste.	By June 20, 2016, EHS will include in its education program information to promote and facilitate anonymous reporting of illicit connections or discharges by the campus community.		A written education program has been completed and is incorporated by reference into this SWMP. Copies are available upon request. EHS provided and maintained two primary reporting methods for illicit discharge: (1) The **Accident, Incident & Spill Reporting** form is available 24/7 to report spills at https://ehs.unm.edu/accident-incident-spill-reporting/index.html; & (2) A 24/7 Duty Officer is available to respond to reports of illicit discharges by calling (505) 951-0794. EHS informed UNM employees and students about these two methods in various training courses.
4.5. Establish a hotline as required in Part I.D.5.e.(i)(e): (e) Establish a hotline to address complaints from the public.	Complaints from the public can be directed to EHS, which will conduct an investigation or notify the appropriate parties.	Complaints from the public will be tracked, recorded, and reported.	EHS has a 24/7 Duty Officer program where IDDE can be reported.

4.6. Investigate suspected significant/severe illicit discharges as required in Part I.D.5.e.(i)(f); (f) Investigate suspected significant/severe illicit discharges within forty-eight (48) hours of detection and all other discharges as soon as practicable; elimination of such discharges as expeditiously as possible; and requirement of immediate cessation of illicit discharges upon confirmation of responsible parties.	EHS will investigate all suspected significant/severe illicit discharges within forty-eight (48) hours of detection and all other discharges as soon as practicable; eliminate such discharges as expeditiously as possible; and require the immediate cessation of illicit discharges upon confirmation of responsible parties.	To track illicit discharges across UNM.	A review of the investigation process was completed as part of the updates to the IDDE plan. For this reporting year: • 33 illicit discharge investigations were conducted; • 7 were community reported; • 26 were (regular) dry day investigations; • Only 11 of those 33 investigations resulted in NOVs being issued to UNM personnel for illicit discharge; • Another 18 investigations were determined to have no illicit discharge; & • The four remaining investigations found discharge that was intermittent, and the source was not identifiable.
4.7. Review complaint records and develop a targeted source reduction program as required in Part I.D.5.e.(i)(g): (g) Review complaint records for the last permit term and develop a targeted source reduction program for those illicit discharge/improper disposal incidents that have occurred more than twice in two (2) or more years from different locations. (Applicable only to class A and B permittees)	EHS will maintain a log of complaint records from the last permit term and target source reduction efforts to repeat discharge incidents. EHS will investigate IDDE within 48 hours of being reported and will eliminate illicit discharges or improper disposal on campus within 30 days. If more time is needed, then EHS will develop an elimination schedule to be completed within no more than six months.	To identify “hot spots” for illicit discharge and repeat offenders so that the targeted source reduction program is effective.	Of the 11 illicit discharges, none were repeat offenders. Likewise, the new dashboard tool will help UNM better track and monitor repeat offenders.

	EHS will track and review NOV records to identify repeat offenders to prioritize remedial training aimed at mitigating IDDE.		
4.8. Screening of system as required in Part I.D.5.e.(iii) as follows: (iii) The permittee must screen the entire jurisdiction at least once every five (5) years and high-priority areas at least once every year. High-priority areas include any area where there is ongoing evidence of illicit discharges or dumping or where there are citizen complaints on more than five (5) separate events within twelve (12) months. The permittee must: (a) Include in its SWMP document a description of the means, methods, quality assurance and controls protocols, and schedule for successfully implementing the required screening, field monitoring, laboratory analysis, investigations, and analysis evaluation of data collected. (b) Comply with the dry weather screening program established in Table 6 and the monitoring requirements specified in Part III.A.2.	The screening will occur as part of the IDDE Plan. The screening will be done according to the schedule in the permit.	To inspect all high-priority areas and the entire jurisdiction annually.	All high-priority areas and the entire jurisdiction were visually inspected for illicit discharge this reporting year. Screening the entire jurisdiction is relatively achievable compared to other municipalities due to the small acreage (i.e., size) of UNM's MS4.

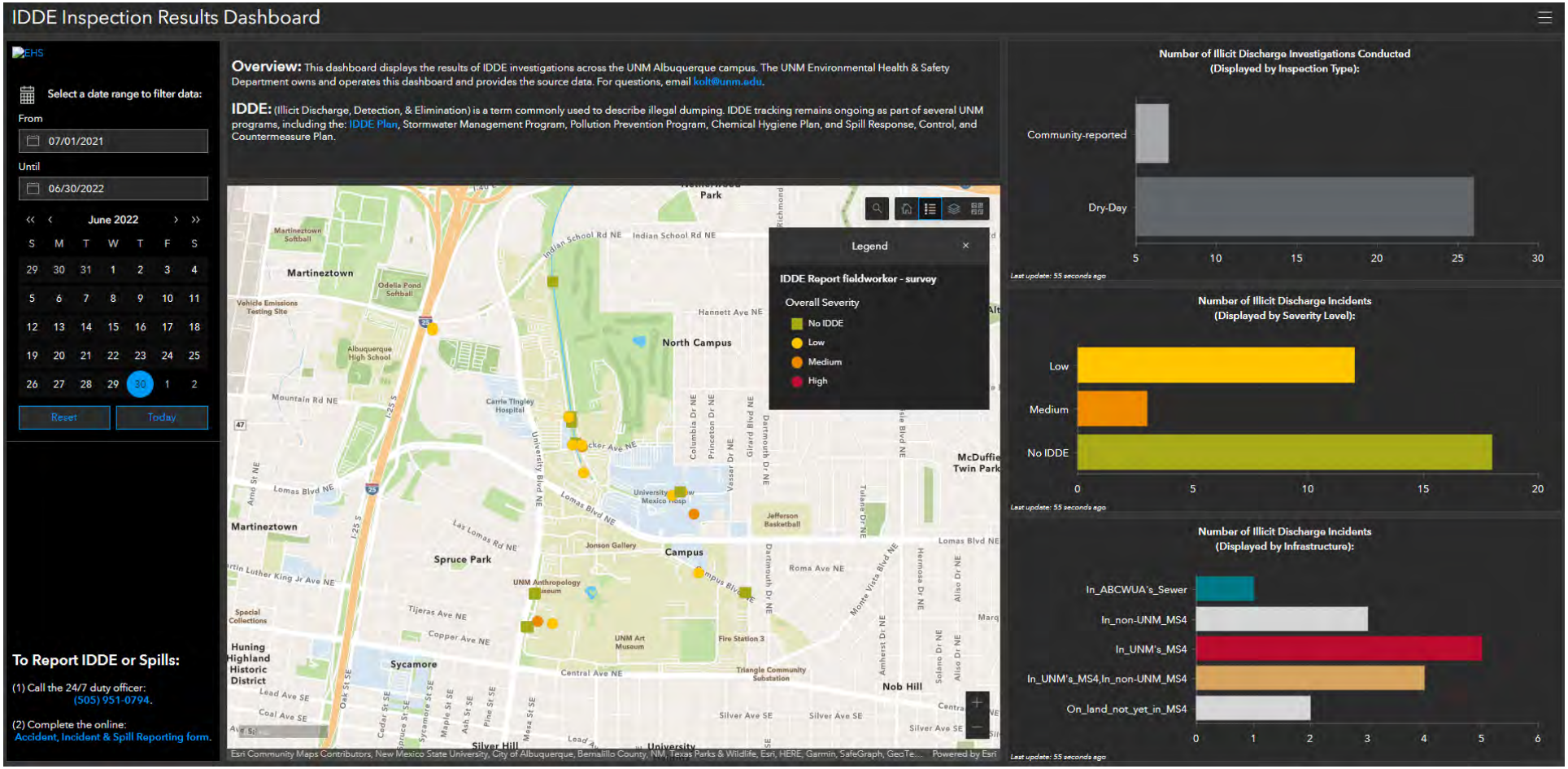
(c) If applicable, implement the priority ranking system developed in the previous permit term.			
4.9. Develop, update, and implement a Waste Collection Program as required in Part I.D.5.e.(iv): (iv) Waste Collection Programs: The permittee must develop, update, and implement programs to collect used motor vehicle fluids (at a minimum, oil, and antifreeze) for recycling, reuse, or proper disposal, and to collect household hazardous waste materials (including paint, solvents, fertilizers, pesticides, herbicides, and other hazardous materials) for recycle, reuse, or proper disposal. Where available, collection programs operated by third parties may be a component of the programs. Permittees shall enhance these programs by establishing the following elements as a goal in the SWMP: A. Increasing the frequency of the collection days hosted; B. Expanding the program to include commercial fats, oils, and greases; and	UNM's Facilities Management Department's O&M program will identify waste disposal standard operating procedures (SOPs), including SOPs for motor vehicle fluids, toxic paints, solvents, fertilizers, pesticides, herbicides, and any other hazardous materials. This will include a list of opportunities for recycling substances. Also, SOPs will address the removal of sediments, debris, floatables, and litter, including pet wastes. This will be completed by June 20, 2017. While EHS collects and disposes of hazardous waste (per RCRA), UNM does not have a traditional household hazardous waste collection facility. Nonetheless, EHS will collect and dispose of any hazardous waste associated with UNM operations and student living.	To increase recycling and reuse of hazardous materials and to reduce the potential for improper disposal.	UNM's Stormwater O&M Program contains a description of waste management operations. UNM's Facilities Management Department continued to operate a waste collection program that included recycling. EHS continued to operate its hazardous waste collection and disposal program across campus. See the above section on Waste Collection Programs for more details.

C. Coordinating program efforts between applicable permittee departments.			
4.10. Develop, update and implement a Spill Prevention and Response program to prevent, contain, and respond to spills that may discharge into the MS4 as required in Part I.D.5.e.(v): (v) Spill Prevention and Response. The permittee must develop, update and implement a program to prevent, contain, and respond to spills that may discharge into the MS4. The permittees must continue existing programs while updating those programs, as necessary, to comply with the requirements of this permit. The Spill Prevention and Response program shall include: (a) Where the discharge of material resulting from a spill is necessary to prevent loss of life, personal injury, or severe property damage, the permittee(s) shall take, or ensure the party responsible for the spill takes, all reasonable steps to control or prevent any adverse effects to human health or the environment: and	EHS has developed and regularly updates spill prevention and response programs. Specifically, EHS maintains a Spill Response Team administered by the UNM Chemical Hygiene Officer. At a minimum, all team members are trained in HAZWOPER-24. When this team determines that a spill is too large or dangerous to respond to, environmental and safety measures will be implemented to stabilize the incident until an on-call contractor can respond to manage the spill. EHS will also implement and maintain UNM's Spill Prevention, Control, and Countermeasure (SPCC) Plan, per 40 CFR 112. EHS will maintain spill reporting mechanisms for the campus community. A complete review of these programs will be completed by June 20, 2017.	To implement, maintain, and expand a spill prevention and response program. To establish and maintain a Spill Response Team capable of managing spills that may discharge to the MS4.	EHS maintained spill reporting methods and a response team with on-call spill response contractors. UNM continues to implement its SPCC Plan during the reporting period. The plan is available upon request. The plan is set to expire in September 2022, so initial revision efforts began during this reporting year. During the reporting period, there was no response to spills that have the potential to impact water quality.

(b) The spill response program may include a combination of spill response actions by the permittee (and/or another public or private entity) and legal requirements for private entities within the permittee's municipal jurisdiction.			
4.11. Enhance the program to include requirements in Part I.D.5.e.(ix): (ix) The permittee may: (a) Divide the jurisdiction into assessment areas where monitoring at fewer locations would still provide sufficient information to determine the presence or absence of illicit discharges within the larger area; (b) Downgrade high priority areas after the area has been screened at least once, and there are citizen complaints on no more than five (5) separate events within a twelve (12) month period; (c) Rely on a cooperative program with other MS4s for detection and elimination of illicit discharges and illegal dumping; (d) If participating in a cooperative program with other MS4s, required detection program frequencies	EHS identifies six primary sub-basins to monitor for illicit discharge. These basins are sub-watersheds (identified using AMAFCA's GIS data) that each discharge into other MS4s (e.g., AMAFCA, COA). Downgrading will not be performed, given that all identified high-risk areas are easily surveyed annually. UNM will rely on TAG members (i.e., a cooperative MS4 group) for additional detection and elimination of illicit discharges	An update on progress will be included in the annual report.	Twenty-six dry day inspections occurred this reporting year across the six sub-basins.

may be based on the combined jurisdictional area rather than individual jurisdictional areas and may use assessment areas crossing jurisdictional boundaries to reduce the total number of screening locations (e.g., a shared single screening location that would provide information on more than one jurisdiction); and (e) After screening a non-high priority area once, adopt an "in response to complaints only" IDDE for that area, provided there are citizen complaints on no more than two (2) separate events within a twelve (12) month period. (f) Enhance the program to utilize procedures and methodologies consistent with those described in "Illicit Discharge Detection and Elimination, A Guidance Manual for Program Development and Technical Assessments."			
4.12. Describe other proposed activities to address the Illicit Discharges and Improper Disposal Measure:	No additional activities are being proposed at this time. UNM will continue to explore additional activities to address the Illicit Discharges and Improper Disposal Measure.	N/A	N/A

Figure 4 - Screenshot of UNM's IDDE Inspection Results Dashboard



Requirement	Plan	Goal	Status
4.1.1 Ordinance (or other control methods) as required in Part I.D.5.d.(i): (i) The permittee must control through ordinance, permit, contract, order, or similar means the contribution of pollutants to the municipal storm sewer by stormwater discharges associated with industrial activity and the quality of stormwater discharged from sites of industrial activity as defined in 40 CFR 122.26(b)(14)(i)-(ix) and (xi). If no such industrial activities are in a permittee's jurisdiction, that permittee may certify that this program element does not apply.	UNM does not have operations within the campus jurisdiction that would normally be categorized as industrial. UNM self-certifies that this program element does not apply.	N/A	N/A
4.2. Continue implementation and Enforcement of the Industrial and High-Risk Runoff program, assess the overall success of the program, and document both direct and indirect measurements of program effectiveness in the annual report as required in Part I.D.5.d.(ii): (ii) The permittee must continue implementation and enforcement of the Industrial and High-Risk Runoff program, assess the overall success of the program, and document both direct and indirect measurements of program effectiveness in the annual report. The program shall include: (a) A description of a program to identify, monitor, and control pollutants in stormwater discharges to the MS4 from municipal landfills;	UNM does not have operations within the campus jurisdiction that would normally be categorized as industrial. UNM self-certifies that this program element does not apply.	N/A	N/A

other treatment, storage, or disposal facilities for municipal waste (e.g., transfer stations, incinerators, etc.); hazardous waste treatment, storage, disposal, and recovery facilities; facilities that are subject to EPCRA Title III, Section 313; and any other industrial or commercial discharge the permittee(s) determines are contributing a substantial pollutant loading to the MS4. (Note: If no such facilities are in a permittee's jurisdiction, that permittee may certify that this program element does not apply.); and (b) Priorities and procedures for inspections and establishing and implementing control measures for such discharges.			
4.3. Meet the monitoring requirements in Part I.D.5.d.(iii): (iii) Permittees must comply with the monitoring requirements specified in Part III.A.4;	UNM will serve on the Technical Advisory Group (TAG) and participate in voluntary monitoring.	To encourage participation in program development and implementation.	EHS attended and participated in the Technical Advisory Group meetings. EHS participated in the voluntary monitoring efforts led by AMAFCA and COA.
4.4. Include requirements in Part I.D.5.d.(iv): (iv) The permittee must modify the following as necessary: (a) The list of the facilities included in the program, by category and basin; (b) Schedules and frequency of inspection for listed facilities. Facility inspections may be carried out in conjunction with other municipal programs	UNM does not have operations within the campus jurisdiction that would normally be categorized as industrial. UNM self-certifies that this program element does not apply.	N/A	N/A

(e.g., pretreatment inspections of industrial users, health inspections, fire inspections, etc.) but must include random inspections for facilities not normally visited by the municipality; (c) The priorities for inspections and procedures used during inspections (e.g., inspection checklist, review for NPDES permit coverage; review of stormwater pollution prevention plan; etc.); and (d) Monitoring frequency, parameters, and the entity performing monitoring and analyses (MS4 permittees or subject facility). The monitoring program may include a waiver of monitoring for parameters at individual facilities based on a "no-exposure" certification;			
4.5. Enhance the program to include requirements in Part I.D.5.d.(vii): (vii) The permittee may: (a) Use analytical monitoring data, on a parameter-by-parameter basis, that a facility has collected to comply with or apply for a State or NPDES discharge permit (other than this permit) so as to avoid unnecessary cost and duplication of effort; (b) Allow the facility to test only one (1) outfall and to report that the quantitative data also apply to the substantially identical outfalls if: A. A Type 1 or Type 2 industrial facility has two or more outfalls with substantially identical effluents, and	UNM does not have operations within the campus jurisdiction that would normally be categorized as industrial. UNM self-certifies that this program element does not apply.	N/A	N/A

B. Demonstration by the facility that the stormwater outfalls are substantially identical, using one or all of the following methods for such demonstration. The NPDES Stormwater Sampling Guidance Document (EPA 833-B-92-001), available on EPA's website, provides detailed guidance on each of the three options: (1) submission of a narrative description and a site map; (2) submission of matrices; or (3) submission of model matrices. (c) Accept a copy of a "no exposure" certification from a facility made to EPA under 40 CFR §122.26(g), in lieu of analytic monitoring.			
4.6. Describe other proposed activities to address the Industrial and High-Risk Runoff Measure:	UNM does not have operations within the campus jurisdiction that would normally be categorized as industrial. UNM self-certifies that this program element does not apply.	N/A	N/A

Requirement	Plan	Goal	Status
As described in Part III, A.1, permittees shall conduct wet weather monitoring to gather information on the response of receiving waters to wet weather discharges from the MS4 during both the wet season (July 1 through October 31) and dry Season (November 1 through June 30). Wet Weather Monitoring shall be conducted at outfalls, internal sampling stations, and/or in-stream monitoring locations at each water of the US that runs in each entity or entity's jurisdiction(s). Permittees may choose either Option A (individual monitoring) or Option B (cooperative monitoring program). As described in Part III A.1.b: A cooperative monitoring program will monitor waters coming into the watershed (upstream) and leaving the watershed (downstream). Include sampling for TSS, TDS, COD, BOD5, DO, oil and grease, E.coli, pH, total Kjeldahl nitrogen, nitrate plus nitrite, dissolved phosphorus, total ammonia plus organic nitrogen, total phosphorus, PCBs, and Gross alpha.	UNM and its current MS4 partners have hired the USGS to perform sample collection at five representative outfall locations. If new wet weather monitoring sites are installed, a certification that they are operational and actual monitoring at these sites will be provided by April 15, 2016. A detailed description of the monitoring scheme will be submitted for EPA and NMED approval by December 2015. Samples will be analyzed for all of the parameters in Part III A.1.b according to the schedule in Part III A.1.b for wet weather. Composite samples are collected using an automated ISCO sampling device. Grab samples are collected by USGS personnel. Temperature probes continuously record air and water temperatures. Sondes are used to monitor D.O., water temperature, and conductivity.	Provide results of the assessment in each annual report.	UNM entered into a monitoring cooperative monitoring group (i.e., the Technical Advisory Group or TAG) and signed an intergovernmental agreement with several members during the reporting cycle. It also provided the EPA with a monitoring plan and certification to start monitoring stormwater. Monitoring results (DMRs) are reported by one of the members (i.e., AMAFCA) on behalf of TAG.

Monitoring for temperature at outfalls and/or Rio Grande monitoring locations. Include additional parameters from monitoring conducted under permits NMS000101, NMR040000, or/and NMR04000I, whose mean values are at or above a WQS. Sample the pollutants for a minimum of 7 storm events per location during the permit term, with at least three events during the wet season and two events in the dry season.			

Dry Weather Discharge Screening of MS4

Requirement	Plan	Goal	Status
As described in part III.A.2, the permittee shall: Identify, investigate, and address areas within its jurisdiction that may be contributing excessive levels of pollutants to the Municipal Separate Storm Sewer System as a result of dry weather discharges (i.e., discharges from separate storm sewers that occur without the direct influence of runoff from storm events, e.g., illicit discharges, allowable non-stormwater, groundwater infiltration, etc.). Due to the arid and semi-arid conditions of the area, the dry weather discharges screening program may be carried out during both the wet season	There are no perennial streams in the Albuquerque Metropolitan area. Accordingly, the dry weather screening program serves a dual purpose as an illicit discharge screening analysis. Seventeen locations, which screen 100% of the MS4 and target industrial areas, have been chosen. Should any discharge be present in a quantity sufficient for analysis, it will be screened for BOD5, sediment, or a parameter addressing sediment (e.g., TSS or turbidity), *E. coli*, Oil	Provide results of the assessment in each annual report.	UNM entered into a monitoring cooperative monitoring group (i.e., the Technical Advisory Group or TAG) and signed an intergovernmental agreement with several members during the reporting cycle. It also provided the EPA with a monitoring plan and certification to start monitoring stormwater. Monitoring results (DMRs) are reported by one of the members (i.e., AMAFCA) on behalf of TAG. Likewise, EHS performed 26 visual dry day inspections this

(July 1 through October 31) and dry Season (November 1 through June 30). This program may be coordinated with the illicit discharge detection and elimination program required in Part I.D.5.e. Include sufficient screening points to adequately assess pollutant levels from all areas of the MS4. Screen for, at a minimum, BOD5, sediment, or a parameter addressing sediment (e.g., TSS or turbidity), E. coli, Oil and Grease, nutrients, and any pollutant that has been identified as a cause of impairment of a waterbody receiving discharges from that portion of the MS4, including temperature. Specify the sampling and non-sampling techniques to be issued for initial screening and follow-up purposes. Sample collection and analysis need not conform to the requirements of 40 CFR Part 136; and Perform monitoring only when an antecedent dry period of at least seventy-two (72) hours after a rain event greater than 0.1 inch in magnitude is satisfied.	and Grease, and nutrients. Any discharge collected will be a grab sample.		reporting year across the six sub-basins.

Discharges to Impaired Waters

Requirement	Plan	Goal	Status
6.1.1. The permittee shall control the discharges of pollutant(s) of concern to impaired waters and waters with approved TMDLs as provided in sections (i) and (ii) below and shall assess the success in controlling those pollutants. (i) Discharges to Water Quality Impaired Water Bodies with an Approved TMDL: If the permittee discharges to an impaired water body with an approved TMDL (see Appendix B of permit), where stormwater has the potential to cause or contribute to the impairment, the permittee shall include in the SWMP controls targeting the pollutant(s) of concern along with any additional or modified controls required in the TMDL and this section. The SWMP and required annual reports must include information on implementing any focused controls required to reduce the pollutant(s) of concern. (ii) Discharges Directly to Water Quality Impaired Water Bodies without an Approved TMDL: The permittee shall also determine whether the permitted discharge is direct to one or more water quality impaired water bodies where a TMDL has not yet	UNM continues to implement practices that reduce bacterial contamination of stormwater. Most of these practices have multi-purpose benefits in addition to stormwater pollution prevention and bacterial reduction. These ongoing practices involve the structural best management practices (BMPs) in the operation of facilities and grounds as well as our public education and outreach efforts. The following describes UNM's program to minimize contamination of stormwater. UNM is aware of the bacterial source tracking study in the local Middle Rio Grande watershed, which identified the various sources of animal enteric bacteria contributions. The study indicated that birds contributed the most at roughly a third of the bacteria loading. Dogs were the second largest source. Therefore, UNM's efforts have been focused on controlling bird and dog waste impacts on stormwater. (1) Pet Waste Stations - UNM's campus is open to the public, and people walk their dogs on campus. This activity is centered around the green spaces (e.g., the Duck Pond on the Central Campus and the Golf Course on North Campus). UNM's Facilities Management Department has installed and maintains pet waste disposal bag dispensers across campus. The North Campus Neighborhood Association has also been stocking shopping bags for similar purposes on the southeast corner of the North Golf Course, where many folks begin on the perimeter jogging trail. This is also a notable example of public involvement with stormwater pollution prevention on campus. (2) Bird Controls - UNM continues bird control efforts, especially related to roosting pigeons on UNM buildings.	Submission of water quality monitoring results in DMRs and Annual Reports.	UNM entered into a monitoring cooperative monitoring group (i.e., the Technical Advisory Group or TAG) and signed an intergovernmental agreement with several members during the reporting cycle. It also provided the EPA with a monitoring plan and certification to start monitoring stormwater. Monitoring results (DMRs) are reported by one of the members (i.e., AMAFCA) on behalf of TAG.

been approved by NMED and EPA. If the permittee discharges directly into an impaired water body without an approved TMDL, the permittee shall perform certain activities (see permit for a full description of such activities).	Bird control efforts range from netting at Coronado Hall's trash storage area, equipment bird skirting at the Business Center, and bird control wires on the Electrical Engineering & Computer Engineering building window sills. UNM also has an ongoing trapping program that captures hundreds of pigeons a year on many campus rooftops or wherever there may be a roosting problem. (3) Street and Sidewalk Sweeping - UNM makes a great effort to keep the campus grounds beautiful. UNM's Facilities Management Department's efforts include regular street sweeping and sidewalk sweeping. UNM's street sweeping schedule may be among the most frequent in the metro area, and this serves to protect stormwater quality from contaminants, including bacteria-laden animal wastes on hardscaping. (4) Trash & Litter Controls - The local bacterial tracking study also indicated that humans are one of the smaller sources of bacterial contamination in stormwater. In addition to the homeless population in the metro area that may not be using bathrooms, it was recognized that leaking trash dumpsters and compactors might contribute to some of the human contamination. Therefore, lids are installed and kept closed on UNM's large trash dumpsters to keep stormwater out. The multitude of small trash receptacles along campus sidewalks, at building entrances, etc., are also always lined with trash bags and usually topped with lids that allow trash in and keep it inside. Bagging and lids also prevent wind from blowing trash out of dumpsters and receptacles. (5) Leaked Fluid - If trash compactors leak fluids, the standard practice at UNM is to absorb the leaked fluids and dispose of the absorbent with the other solid waste. Litter is picked up daily, Monday through Friday, all over campus and is disposed of properly with other solid wastes. Litter pickup includes scooping visible pet waste as well as floatables/litter. UNM notifies the COA about problems with pet wastes being left by occupants of		

	neighboring apartment complexes who bring their dogs onto campus property to defecate. (6) Stormwater Retention Ponds - UNM has a few stormwater retention ponds on the South Campus and on the North Campus. In addition to reducing peak flow into the local MS4, these ponds act to settle out suspended solids and expose bacteria to solar UV radiation. Solar UV disinfection and settling out suspended solids both help to reduce bacteria levels in stormwater discharged from campus. (7) Public Education and Outreach & Campus Training - Stormwater pollution prevention training will become part of UNM's Mandatory Basic Annual Safety Training (BAST) program for all UNM employees. Additionally, EHS conducts specialized stormwater pollution prevention training for UNM's Facilities Management Department employees. EHS's specialized training includes an emphasis on pet waste pickup and measures to minimize bacterial, nutrient, and sediment contamination. At UNM's Welcome Back Days event at the beginning of each semester, EHS hosts booths with handouts on stormwater pollution prevention, including pet wastes and measures to minimize bacterial contamination. EHS's website also has information on stormwater pollution prevention, including pet wastes and measures to minimize bacterial contamination. UNM continues to operate pursuant to the COA bacterial program as necessary for consistency with the E-Coli TMDL. UNM, as a Phase 1 MS4 participant in a cooperative monitoring program, continues to pay a share of the monitoring costs for stormwater monitoring work. UNM remains involved in the decisions and reports that this monitoring cooperative generates until such time when a new monitoring cooperative is formed. UNM will calculate WLA for impaired waters and may coordinate efforts with other watershed permittees.		

MCM Table 5 – Management of Construction Site Runoff

Requirement	Plan	Goal	Status
5.1 Development of an ordinance or other regulatory mechanism as required in Part I.D.5.a.(ii)(a), The program must include the development, implementation, and enforcement of, at a minimum: (a) An ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions to ensure compliance, to the extent allowable under State, Tribal, or local law;	UNM does not have formal enforcement authority like traditional MS4s. Accordingly, EHS, UNM's Facilities Management Department, and UNM's Office of Planning, Design & Construction (PDC) will continue to review, revise, and enforce existing design and construction standards and guidelines, and develop new guidelines where appropriate.	Revisions to existing policy, design, or construction standards and guidelines; or the creation of new policy, design, or construction standards and guidelines that pertain to erosion and sediment control will be tracked and reported in the annual report.	EHS published a new document entitled *Stormwater Guidance for UNM Staff and Contractors*. The guidance document provides rules for construction sites greater than or equal to one acre. EHS continues to update it with the latest permit rules as necessary (e.g., the 2022 CGP Permit rules were incorporated in April 2022).
5.2. Develop requirements and procedures as required in Part I.D.5.a.(ii)(b) through in Part I.D.5.a.(ii)(h) (b) Requirements for construction site operators to implement appropriate erosion and sediment control best management practices (both structural and non-structural); (c) Requirements for construction site operators to control waste such as, but not limited to, discarded	EHS and other UNM departments will continue to inform UNM contractors of requirements and review necessary documents (i.e., erosion control plan, SWPPP/eNOI application, and fugitive dust permit) during the Construction Review Process. EHS and other UNM departments will continue to oversee UNM contractors to ensure that they comply with federal and state law and contractual provisions implementing a Stormwater Pollution Prevention Plan (SWPPP).	Revisions to existing policy, design, or construction standards and guidelines; or the creation of new policy, design, or construction standards and guidelines that pertain to erosion and sediment control will be tracked and reported in the annual report. EHS and other UNM departments will maintain	During the reporting period, three sites were inspected monthly for compliance with the 2017 and 2022 GCPs as necessary. Records are available for review upon request. Note: inspections were temporarily halted due to staff shortages and the COVID-19 Pandemic. However, normal monthly inspections resumed in

building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality (see EPA guidance at http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.c). (d) Procedures for site plan review, which incorporate consideration of potential water quality impacts. The site plan review must be conducted prior to the commencement of construction activities and include a review of the site design, the planned operations at the construction site, and the planned control measures during the construction phase (including the technical criteria for selection of the control measures), and the planned controls to be used to manage runoff created after the development; (e) Procedures for receipt and consideration of information submitted by the public; (f) Procedures for a site inspection (during construction) and enforcement of control measures, including provisions to ensure proper construction, operation, maintenance, and repair. The procedures must clearly define who is responsible for site inspections; who has the authority to implement	UNM's Facilities Management Department's Environmental Services Design & Development Standard Requirements prohibit the washing of concrete trucks in an uncontrolled area and require the removal of construction debris, including concrete tailings from the site. EHS and other UNM departments will continue to review site plans and attend pre-construction review meetings to try to ensure consistency with applicable stormwater quality requirements. The plan review must occur prior to construction and focus on construction and post-construction stormwater quality measures that address likely impacts and public concerns. The site plan review must include an evaluation of opportunities for incorporating green infrastructure (GI). UNM will continue to comply with the CGP, including SWPPP preparation and eNOI application for all public projects greater than one acre. UNM continues to welcome public participation in its SWMP. The draft SWMP was published for public comment before submission to the EPA. Public comments were reviewed and addressed accordingly. The EHS Department continues to involve other UNM departments as stakeholders in the development and revision of UNM's SWMP. UNM will continue to develop inspection procedures for exterior construction sites less than 1 acre. The new procedures will include: (1) determining who is responsible for	records of documents required from contractors pertaining to Stormwater (i.e., erosion control plan, SWPP/eNOI application, and fugitive dust permit). The number of documents will be reported in the annual report. Site plan reviews and evaluation of opportunities for incorporating green infrastructure (GI) will be documented and reported in the annual report. Finalized inspection procedures for exterior construction sites less than 1 acre will be included in the annual report as an appendix. EHS will maintain records of the number of trainings offered on the SWMP and general stormwater pollution prevention (P2) basics and will report these in the annual report.	January 2022 with a new staff hire. Inspection checklists were also revised for examining construction sites. The inspector obtained the Certified Stormwater Inspector (CSI) credential in April 2022 from the National Stormwater Center, LLC. (NPDES.com). During the review period, EHS reviewed site plans for the above-mentioned projects. Additionally, two other site plans were reviewed for construction slated to begin in the next reporting year. EHS requested project managers from all five construction sites to assess the costs, benefits, and feasibility of incorporating GI/LID. Those assessments are available upon request. The UNM SWMP was finalized and sent to PDC and UNM's Facilities Management Department and is being implemented. Training material on

enforcement procedures; and the steps utilized to identify priority sites for inspection and enforcement based on the nature of the construction activity, topography, and the characteristics of soils and the quality of the receiving water. If a construction site operator fails to comply with procedures or policies established by the permittee, the permittee may request EPA enforcement assistance. The site inspection and enforcement procedures must describe sanctions and enforcement mechanism(s) for violations of permit requirements and penalties with detail regarding corrective action follow-up procedures, including enforcement escalation procedures for recalcitrant or repeat offenders. Possible sanctions include non-monetary penalties (such as stop work orders and/or permit denials for non-compliance), as well as monetary penalties such as fines and bonding requirements; (g) Procedures to educate and train permittee personnel involved in the planning, review, permitting, and/or approval of construction site plans, inspections, and enforcement. Education and training shall also be provided for developers, construction site operators, contractors, and supporting personnel, including requiring a stormwater pollution	conducting UNM construction site stormwater quality inspections; determining who has authority to implement enforcement procedures regarding construction stormwater quality at UNM; developing a process for prioritizing sites for inspection and enforcement based on the type of construction activity; inspecting all sites greater than 1-acre at least once per month and follow up on any deficiencies to ensure corrective action; inspecting sites once project team believes final site stabilization is complete, and describing enforcement procedures and any penalties for repeated non-compliance at a UNM construction site. The leadership of PDC & FM will be engaged by EHS in the development and implementation of UNM's SWMP. Once the SWMP is finalized, training on the SWMP and general stormwater pollution prevention (P2) basics will be offered. UNM will continue its procedures for construction project record-keeping, including site reviews, inspections, inspection reports, and any enforcement letters & documents.		stormwater management and pollution prevention was finalized, and training was provided to the UNM Grounds and Landscaping Staff. Inspection procedures for exterior construction sites less than 1 acre have been completed and are incorporated into this SWMP and included in the annual report as an appendix.

prevention plan for construction sites within the permittee's jurisdiction; (h) Procedures for keeping records of and tracking all regulated construction activities within the MS4, i.e., site reviews, inspections, inspection reports, warning letters, and other enforcement documents. A summary of the number and frequency of site reviews, inspections (including inspector's checklist for oversight of sediment and erosion controls and proper disposal of construction wastes), and enforcement activities that are conducted annually and cumulatively during the permit term shall be included in each annual report;			
5.3. Annually conduct site inspections of 100 percent of all construction projects cumulatively disturbing one (1) or more acres as required in Part I.D.5.a.(iii): (iii) Annually conduct site inspections of 100 percent of all construction projects cumulatively disturbing one (1) or more acres within the MS4 jurisdiction. Site inspections are to be followed by any necessary compliance or enforcement action. Follow-up inspections are to be conducted to ensure corrective maintenance has occurred, and all projects must be inspected at	UNM will continue to develop inspection procedures for 100% of all exterior construction projects cumulatively disturbing one (1) or more acres. The new procedures will include determining who is responsible for conducting UNM construction site stormwater quality inspections; determining who has authority to implement enforcement procedures regarding construction stormwater quality at UNM; developing a process for prioritizing sites for inspection and enforcement based on the type of construction activity; inspecting all sites greater than 1-acre at least once per month and follow up on any deficiencies to ensure corrective action; inspecting sites once project team believes final site stabilization is complete, and describing enforcement procedures and	Finalized inspection procedures and the number of site inspections done will be included in the annual report as an appendix.	During the reporting period, three sites were inspected monthly for compliance with the 2017 and 2022 GCPs as necessary. Records are available for review upon request. Note: inspections were temporarily halted due to staff shortages and the COVID-19 Pandemic. However, normal monthly inspections resumed in January 2022 with a new staff hire.

completion for confirmation of final stabilization.	any penalties for repeated non-compliance at a UNM construction site. The procedures will be developed, and inspections will begin no later than December 20, 2016.		These inspections were in addition to the contractor-required inspections, which are scheduled per the 2022 CGP.
5.4. Coordinate with all departments and boards with jurisdiction over the planning, review, permitting, or approval of public and private construction projects/activities within the permit area as required in Part I.D.5.a.(iv); (iv) The permittee must coordinate with all departments and boards with jurisdiction over the planning, review, permitting, or approval of the public and private construction projects/activities within the permit area to ensure that the construction stormwater runoff controls eliminate erosion and maintain sediment on site. Planning documents include, but are not limited to: comprehensive or master plans, subdivision ordinances, general land use plans, zoning codes, transportation master plans, specific area plans, such as sector plans, site area plans, corridor plans, or unified development ordinances.	EHS will continue to coordinate all UNM departments that have a role in construction activities to ensure proper controls are in place to eliminate erosion and reduce the transport of sediment from construction projects. EHS acts in an advisory role for projects under 1 acre and ensures compliance in projects 1 acre or greater. Inform UNM contractors of requirements and review necessary documents (i.e., erosion control plan, SWPP/eNOI application, and fugitive dust permit) during the Construction Review Process. EHS and other UNM departments will continue to oversee UNM contractors, ensuring that they comply with federal law, municipal ordinance, and contractual provisions and implementing a Stormwater Pollution Prevention Plan (SWPPP). EHS and other UNM departments will continue to review site plans and attend pre-construction review meetings to try to ensure consistency with applicable stormwater quality requirements. The plan review must occur prior to construction and focus on construction and post-construction stormwater quality measures that address likely impacts and public concerns. The site plan review must	UNM will include a summary of regulated construction activities in the Annual Report.	During the reporting period, EHS reviewed project planning and design documents and participated in regular construction project meetings that included construction companies, Facilities Management (UNM's Facilities Management Department), Planning, Design and Construction (PDC), Parking and Transportation Services (PATS), and other UNM departments. EHS provided input to ensure proper controls are in place to eliminate erosion and reduce the transport of sediment from construction project sites.

	include an evaluation of opportunities for incorporating green infrastructure (GI).		
5.5. Evaluation of GI/LID/Sustainable practices in site plan reviews as required in Part I.D.5.a.(v): (v) The site plan review required in Part I.D.5.a.(ii)(d) must include an evaluation of opportunities for the use of GI/LID/Sustainable practices and, when the opportunity exists, encourage project proponents to incorporate such practices into the site design to mimic the pre-development hydrology of the previously undeveloped site. For purposes of this permit, pre-development hydrology shall be met according to Part I.D.5.b of this permit. (consistent with any limitations on that capture). Include a reporting requirement of the number of plans that had opportunities to implement these practices and how many incorporated these practices.	EHS will request assessments for incorporating GI/LID into all construction sites disturbing more than or equal to one acre.	EHS will include in the Annual Report the number of opportunities to incorporate GI and the number of times GI has actually been incorporated.	EHS requested project managers from all five construction sites to assess the costs, benefits, and feasibility of incorporating GI/LID. Those assessments are available upon request. Notably, this review process prompted the installation of a large rainwater harvesting system that was not previously incorporated into the design of the new Crisis Triage Center.
5.6. Enhance the program to include program elements in Part I.D.5.a.(viii) through Part I.D.5.a.(x): (viii) The permittee may use stormwater educational materials locally developed or provided by the	UNM will utilize its own, or when appropriate, publicly available, stormwater educational material to enhance its stormwater program. Where applicable, UNM will refer to existing local, state, and federal	EHS participated in the revision/update of the local "NPDES Stormwater Management Guideline for Construction and	UNM has used stormwater educational materials provided by the EPA and COA to enhance its stormwater education training and outreach material. UNM has also

EPA (refer to http://water.epa.gov/polwaste/npdes/swbmp/index.cUNM's Facilities Management Department, http://www.epa.gov/smartgrowth/parking.htm, http://www.epa.gov/smartgrowth/stormwater.htm), the NMED, environmental, public interest or trade organizations, and/or other MS4s. (ix) The permittee may develop or update existing construction handbooks (e.g., the COA NPDES Stormwater Management Guidelines for Construction and Industrial Activities Handbook) to be consistent with promulgated construction and development effluent limitation guidelines. (x) The construction site inspections required in Part I.D.5.a.(iii) may be carried out in conjunction with the permittee's building code inspections using a screening prioritization process.	construction handbooks and stormwater management guidelines to ensure consistency and compliance with promulgated construction and development effluent limitation guidelines.	Industrial Activities Handbook." It is now completed. UNM will include an update on educational materials in its annual report.	created its own stormwater education training and outreach material. Copies of UNM's education training and outreach material are available upon request. No changes were made to the NPDES Stormwater Management Guideline for Construction and Industrial Activities Handbook.
5.7. Describe other proposed activities to address the Construction Site Stormwater Runoff Control Measure:	No additional activities are being proposed at this time. UNM will continue to explore additional activities to address the Construction Site Stormwater Runoff Control Measure.	N/A	N/A

MCM Table 6 – Management of Post-Construction Site Runoff

Requirement	Plan	Goal	Status
6.1. Development of strategies as required in Part I.D.5.b.(ii). (a): (ii) The program must include the development, implementation, and enforcement of, at a minimum: (a) Strategies that include a combination of structural and/or non-structural best management practices (BMPs) to control pollutants in stormwater runoff.	EHS will work with other UNM departments (e.g., FM, PDC, and Parking and Transportation Services) to propose the implementation of design review and construction, as well as operation and maintenance procedures to assure structural and/or non-structural best management practices (BMPs) to control pollutants in stormwater runoff. EHS will propose the development of contractual procedures to ensure the implementation of UNM's SWMP in UNM development and redevelopment projects. By February 20, 2016, EHS will work to develop and adopt design standards, including methodology, to estimate water quality impacts and selection of controls.	Submit draft policies, procedures, guidelines, and protocols regarding stormwater quality upon completion. Submit cumulative changes in UNM's SWMP in the Annual Report.	EHS published a new document entitled *Stormwater Guidance for UNM Staff and Contractors.* The guidance document provides rules for post-construction sites greater than or equal to one acre. For example, the guidance requires project managers to evaluate GI/LID incorporations into the project. It also requires project managers to disconnect impervious surfaces through the use of permanent BMPs. EHS continues to update it with the latest permit rules as necessary.
6.2. Development of an ordinance or other regulatory mechanism as required in Part I.D.5.b.(ii). (b): (b) An ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under State, Tribal, or local law. The ordinance or policy must:	EHS will work with other UNM departments to develop and adopt design standards, policy, and enforcement mechanisms for requiring on-site management of 90th percentile storm event discharge volume associated with new development sites and 80th percentile storm event discharge volume associated with redevelopment sites.	Submit finalized policies, procedures, guidelines, and protocols regarding Stormwater Quality upon completion of the finalized draft.	EHS continues to work with FM, PDC, and PATS to comply with stormwater rules and implement GI/LID on projects. EHS continues to reevaluate its estimation of the 90th and 80th percentile storm event with the most recently available data in accordance with

Incorporate a stormwater quality design standard that manages on-site the 90th percentile storm event discharge volume associated with new development sites and 80th percentile storm event discharge volume associated with redevelopment sites through stormwater controls that infiltrate, evapotranspire the discharge volume, except in instances where full compliance cannot be achieved, as provided in Part I.D.5.b.(v). The stormwater from rooftop discharge may be harvested and used on-site for non-commercial use. Any controls utilizing impoundments that are also used for flood control that are located in areas where the New Mexico Office of the State Engineer requirements at NMAC 19.26.2.15 (see also Section 72-5-32 NMSA) apply must drain within 96 hours unless the state engineer has issued a waiver to the owner of the impoundment. Options to implement the site design standard include, but are not limited to: management of the discharge volume achieved by canopy interception, soil amendments, rainfall harvesting, rain tanks and cisterns, engineered infiltration, extended filtration, dry swales, bioretention, rooftop disconnections, permeable pavement, porous concrete, permeable pavers,			the methods in “Estimating Predevelopment Hydrology in the Middle Rio Grande Watershed, New Mexico, EPA Publication Number 832-R-14-007”.

reforestation, grass channels, green roofs and other appropriate techniques, and any combination of these practices, including implementation of other stormwater controls are used to reduce pollutants in stormwater (e.g., a water quality facility). Estimation of the 90th or 80th percentile storm event discharge volume is included in EPA Technical Report entitled "Estimating Predevelopment Hydrology in the Middle Rio Grande Watershed, New Mexico, EPA Publication Number 832-R-14-007". Permittees can also estimate: Option A: a site-specific 90th or 80th percentile storm event discharge volume using the methodology specified in the referenced EPA Technical Report. Option B: site-specific pre-development hydrology and associated storm event discharge volume using the methodology specified in the referenced EPA Technical Report.			
6.3. Ensure appropriate implementation of structural controls as required in Part I.D.5.b.(ii). (c) and Part I.D.5.b.(ii).(d):	Once developed, the post-construction program requirements will be monitored, reviewed, and revised as appropriate by EHS, with input from other departments,	In each annual report to EPA, EHS will report any changes or revisions to UNM's	EHS published a new document entitled *Stormwater Guidance for UNM Staff and Contractors.*

(d) The permittee must ensure that the post-construction program requirements are constantly reviewed and revised as appropriate to incorporate improvements in control techniques;	on an annual basis. A process will be put in place by June 20, 2017.	Post-Construction Program.	
6.4. Develop procedures as required in Part I.D.5.b.(ii).(e), Part I.D.5.b.(ii).(f), Part I.D.5.b.(ii).(g), and Part I.D.5.b.(ii).(h): (e) Procedure to develop and implement an educational program for project developers regarding designs to control water quality effects from stormwater, and a training program for plan review staff regarding stormwater standards, site design techniques, and controls, including training regarding GI/LID/Sustainability practices. Training may be developed independently or obtained from outside resources, i.e., federal, state, or local experts; (f) Procedures for site inspection and enforcement to ensure proper long-term operation, maintenance, and repair of stormwater management practices that are put into place as part of construction projects/activities. Procedure(s) shall include the requirement that as-built plans be submitted within ninety (90)	EHS will participate and cooperate in local experts' combined efforts to refine and present stormwater quality educational training for project developers. UNM staff (e.g., PDC, UNM's Facilities Management Department, etc.), including plan reviewers, on construction project teams, will receive such training. EHS, in conjunction with UNM's Facilities Management Department, will inspect campus stormwater management and control systems to assure long-term operation, maintenance, and repair of stormwater management and control systems. UNM contractors are already required to submit the project's as-built plans to PDC upon completion. These plans are stored in PDC's database. The number of such inspections will be mentioned in UNM's Annual Reports to EPA. UNM's Integrated Pest Management (IPM) manual applies to UNM campus-wide. UNM's Facilities Management Department will review and revise the IPM, provide more IPM-related training to employees, and seek less toxic and equally less	Provide a discussion of education and outreach activities geared toward LID implementation in the Annual Report. Provide a discussion of maintenance and inspections of stormwater control features in the Annual Report.	EHS trained 13 persons in charge of new and redevelopment projects on campus about pre and post-construction requirements regarding stormwater rules. UNM Golf Course contractors and FM's Grounds and Landscaping division staff engaged in IPM (i.e., Integrated Pest Management) activities as required to maintain licenses. As part of the licensing process, they receive annual training on IPM. They are also required by the New Mexico Department of Agriculture to maintain detailed logs of herbicide and fertilizer applications.

days of completion of construction projects/activities that include controls designed to manage the stormwater associated with the completed site (post-construction stormwater management). Procedure(s) may include the use of dedicated funds or escrow accounts for development projects or the adoption by the permittee of all privately owned control measures. This may also include the development of maintenance contracts between the owner of the control measure and the permittee. The maintenance contract shall include verification of maintenance practices by the owner, allows the MS4 owner/operator to inspect the maintenance practices, and perform maintenance if inspections indicate neglect by the owner; (g) Procedures to control the discharge of pollutants related to commercial application and distribution of pesticides, herbicides, and fertilizers where permittee(s) hold jurisdiction over lands not directly owned by that entity (e.g., incorporated city). The procedures must ensure that herbicides and pesticides applicators doing business within the permittee's jurisdiction have been properly trained and certified, are encouraged to use the least toxic products, and control use	expensive new approaches. EHS will work with UNM's Facilities Management Department to review their protocols for applying herbicides and fertilizers and will work to monitor the use of pesticides, herbicides, and fertilizers.		

and application rates according to the applicable requirements; and (h) Procedure or system to review and update, as necessary, the existing program to ensure that stormwater controls or management practices for new development and redevelopment projects/activities continue to meet the requirements and objectives of the permit.			
6.5. Coordinate internally with all departments and boards with jurisdiction over the planning, review, permitting, or approval of public and private construction projects/activities within the permit area as required in Part I.D.5.b.(iii) (iii) The permittee must coordinate with all departments and boards with jurisdiction over the planning, review, permitting, or approval of public and private new development and redevelopment projects/activities within the permit area to ensure the hydrology associated with new development and redevelopment sites. Mimic to the extent practicable the pre-development hydrology of the previously undeveloped site, except in instances where the pre-development hydrology requirement conflicts with applicable water rights appropriation requirements. For	EHS will work with other UNM departments to develop and adopt design standards, policy, and enforcement mechanisms for requiring on-site management of 90th percentile storm event discharge volume associated with new development sites and 80th percentile storm event discharge volume associated with redevelopment sites. This will be done by December 2015.	A discussion on UNM's progress in developing and adopting such design standards, policy, and enforcement mechanisms will be included in the annual report.	The *Stormwater Guidance for UNM Staff and Contractors* requires that Persons In Charge (PICs) of UNM construction projects (regardless of department) collaborate with EHS to meet stormwater rules. Specifically, PICs must assess GI/LID installation, provide copies of SWPPPs, NOIs, and NOTs, and generally ensure the availability of or provide the resources necessary to comply with stormwater rules. EHS continues to coordinate with FM, PDC, and PATS to ensure development complies with the MS4 permit.

purposes of this permit, pre-development hydrology shall be met by capturing the 90th percentile storm event runoff (consistent with any limitations on that capture), which under undeveloped natural conditions would be expected to infiltrate or evapotranspirate on-site and result in little, if any, off-site runoff. (Note: This permit does not prevent permittees from requiring additional controls for flood control purposes.) Planning documents include, but are not limited to: comprehensive or master plans, subdivision ordinances, general land use plans, zoning codes, transportation master plans, specific area plans, such as sector plan, site area plans, corridor plans, or unified development ordinances.			
6.6. As required in Part I.D.5.b.(iv), the permittee must assess all existing codes, ordinances, planning documents, and other applicable regulations for impediments to the use of GI/LID/Sustainable practices: (iv) The permittee must assess all existing codes, ordinances, planning documents, and other applicable regulations for impediments to the use of GI/LID/Sustainable practices. The assessment shall include a list of the identified impediments,	Again, UNM does not have formal ordinances or enforcement authority like many other MS4s. EHS will work with other UNM departments to assess facility planning and design procedures.	To remove impediments to GI/LID installation.	EHS continued to work with UNM's Facilities Management Department and PDC to discuss potential GI/LID features for current and upcoming projects. EHS has reviewed multiple projects during the reporting period, incorporating infiltration and water harvesting into

necessary regulation changes, and recommendations and proposed schedules to incorporate policies and standards to relevant documents and procedures to maximize infiltration, recharge water harvesting, improve habitat, and hydrologically manage stormwater runoff as allowed under the applicable water rights appropriation requirements. The permittee must develop a report of the assessment findings, which is to be used to provide information to the permittee on the regulation changes necessary to remove impediments and allow implementation of these practices.			remodels and new construction.
6.7. As required in Part I.D.5.b.(iv), describe the plan to report the assessment findings on GI/LID/Sustainable practices	Assessment findings will be tracked, recorded, and summarized in each annual report after March 20, 2017.	To identify impediments to GI/LID implementation so they can be remedied.	EHS began tracking GI/LID assessments and requesting data about the largest hurdles to implementing GI/LID. Results show project managers' biggest hurdle is cost, not regulation or policy.
6.8. Estimation of the number of acres of IA and DCIA as required in Part I.D.5.b.(vi): (vi) The permittee must estimate the number of acres of impervious area (IA) and directly connected	By June 20, 2017, EHS will calculate and update an estimate of the acreage of impervious areas (IA) and directly connected impervious areas (DCIA). UNM may report the acreages of IA and DCIA in a tabular format to EPA and describe the methodology used to calculate the acreages.	Estimation of campus IAs and DCIA removed or added in the Annual Report.	This process has been completed. There are 576.3 acres of impervious area and 681.7 acres of permeable area at UNM. The majority of UNM's impervious area has a

impervious area (DCIA). For the purpose of his part, IA includes conventional pavements, sidewalks, driveways, roadways, parking lots, and rooftops. DCIA is the portion of IA with a direct hydraulic connection to the permittee's MS4 or a waterbody via continuous paved surfaces, gutters, pipes, and other impervious features. DCIA typically does not include isolated impervious areas with an indirect hydraulic connection to the MS4 (e.g., swale or detention basin) or that otherwise drain to a pervious area.			direct hydraulic connection to the MS4 and can therefore be considered DCIA. The assessment report is available upon request. EHS will continue to provide IA and DCIA estimates for upcoming projects.
2.9. Inventory and priority ranking as required in section in Part I.D.5.b.(vii): (vii) The permittee must develop an inventory and priority ranking of MS4-owned property and infrastructure (including public right-of-way) that may have the potential to be retrofitted with control measures designed to control the frequency, volume, and peak intensity of stormwater discharges to and from its MS4. In determining the potential for retrofitting, the permittee shall consider factors such as the complexity and cost of implementation, public safety, access for maintenance purposes, subsurface geology, depth to the water table, proximity to aquifers and subsurface infrastructure, including	By June 20, 2018, EHS will complete an inventory and rank campus property and MS4 infrastructure that may have the potential to be retrofitted with control measures to improve stormwater quality. Factors such as implementation cost, public safety, maintenance access, geology, depth to groundwater/aquifer, proximity to other infrastructure (e.g., sanitary sewer & septic systems), opportunities for public use, and education should be considered in the priority ranking of potential retrofit projects.	An annual report on what retrofitting work has been completed will be made available beginning in the 2017 Annual Report, and such reporting will continue in each subsequent Annual Report.	This process is ongoing. An inventory of UNM's storm drain system is shown in UNM's Campus Utility Maps prepared by UNM's Facilities Management Department. In 2015 FM's Engineering division hired an engineering firm to study these topics. The final reports titled: *UNM Drainage Study: Popejoy Hall and Woodward Lecture Hall Drainage issues* and *UNM Drainage Study: Science and Math Learning Center Area Drainage issues* identify and recommend several GI/LID and BMP options to

sanitary sewers and septic systems, and opportunities for public use and education under the applicable water right requirements and restrictions. In determining its priority ranking, the permittee shall consider factors such as schedules for planned capital improvements to storm and sanitary sewer infrastructure and paving projects; current storm sewer level of service, and control of discharges to impaired waters, streams, and critical receiving water (drinking water supply sources);			reduce flow and improve water quality. FM's Grounds and Landscaping division has also identified and retrofitted UNM storm drain inlets with smaller size grates to reduce the amount of debris flowing into the storm drains. EHS also commissioned three more studies during this reporting year. The studies are expected to be published in the next reporting year. EHS also identified an additional five areas where UNM may contract similar studies in the next reporting year. EHS is also collaborating with the state NMED to apply for EPA Overflow Sewer Grants via the Clean Water State Revolving Fund.
6.10. Incorporate watershed protection elements as required in Part I.D.5.b.(viii): (viii) The permittee must incorporate watershed protection elements into relevant policy and/or planning	By June 20, 2017, EHS will work to research and develop watershed protection measures and propose their incorporation into UNM policy and planning documents as they come up for review for renewal. Such policy and planning documents will include:	All new proposed watershed protection measures will be discussed in the annual report.	UNM's written Stormwater Operations and Maintenance Plan describes UNM's stormwater management practices that minimize

documents as they come up for regular review. If a relevant planning document is not scheduled for review during the term of this permit, the permittee must identify the elements that cannot be implemented until that document is revised and provide EPA and NMED with a schedule for incorporation and implementation not to exceed five years from the effective date of this permit. As applicable to each permittee's MS4 jurisdiction, policy and/or planning documents must include the following: (a) A description of master planning and project planning procedures to control the discharge of pollutants to and from the MS4. (b) Minimize the amount of impervious surfaces (roads, parking lots, roofs, etc.) within each watershed by controlling the unnecessary creation, extension, and widening of impervious parking lots, roads, and associated development. The permittee may evaluate the need to add an impervious surface on a case-by-case basis and seek to identify alternatives that will meet the need without creating the impervious surface. (c) Identify environmentally and ecologically sensitive areas that provide water quality benefits and	(1) A description of UNM's master planning and project planning procedures to control the discharge of pollutants into the MS4. (2) Minimize the amount of impervious surfaces (roads, parking lots, roofs, etc.) within the campus by controlling the creation and expansion of such during development and re-development. (3) Identify any environmentally or ecologically sensitive areas that provide water quality benefits or serve critical watershed functions. Requirements may be needed to protect such if there is a technical basis to justify the actual existence of any such areas on campus. Inviting stakeholder input may be required for identifying sensitive areas. (4) No streams exist on campus. Should UNM acquire and develop a stream-side property, then measures will be taken to disconnect direct discharge to the stream from impervious areas. (5) UNM will seek to avoid hydro-modification of arroyos caused by campus development, including roads, etc. (6) UNM will develop and implement development policies to protect soils		water quality impacts on streams. Using resources (such as the engineering reports cited earlier in this report and EPA's *Handbook for Developing Watershed Plans to Restore and Protect Our Waters* and *Community Solutions for Stormwater Management: A Guide for Voluntary Long-Term Planning*), EHS has identified watershed protection measures that could be incorporated into UNM's master planning documents. Upcoming revisions include FM's engineering design guidelines in addition to the UNM 2040 master plan.

serve critical watershed functions within the MS4 and ensure requirements to preserve, protect, create and/or restore these areas are developed and implemented during the plan and design phases of projects in these identified areas. These areas may include but are not limited to critical watersheds, floodplains, and areas with endangered species concerns and historic properties. Stakeholders shall be consulted as appropriate. (d) Implement stormwater management practices that minimize water quality impacts to streams, including disconnecting direct discharges to surface waters from impervious surfaces such as parking lots. (e) Implement stormwater management practices that protect and enhance groundwater recharge as allowed under the applicable water rights laws. (f) Seek to avoid or prevent hydromodification of streams and other water bodies caused by development, including roads, highways, and bridges. (g) Develop and implement policies to protect native soils, prevent topsoil stripping, and prevent compaction of soils.	and prevent topsoil stripping and soil compaction. (7) UNM will continue to incorporate watershed protection elements into relevant policy and/or planning documents as they come up for regular review.		

(h) The program must be specifically tailored to address local community needs (e.g., protection of drinking water sources, reduction of water quality impacts) and must be designed to attempt to maintain pre-development runoff conditions.			
6.11. Enhance the program to include program elements in Part I.D.5.b.(xi) and Part I.D.5.b.(xii): (xii) When choosing appropriate BMPs, the permittee may participate in locally-based watershed planning efforts, which attempt to involve a diverse group of stakeholders, including interested citizens. When developing a program that is consistent with this measure's intent, the permittee may adopt a planning process that identifies the municipality's program goals (e.g., minimizing water quality impacts resulting from post-construction runoff from new development and redevelopment), implementation strategies (e.g., adopt a combination of structural and/or non-structural BMPs), operation and maintenance policies and procedures, and enforcement procedures.	UNM will continue to participate in locally-based watershed planning efforts, such as the stormwater Technical Advisory Group (TAG) and the Middle Rio Grande Urban Waters Partnership, and work to incorporate ideas from these efforts into its Stormwater management program.		During the reporting period, EHS participated in TAG meetings and discussions with the Compliance Monitoring Cooperative committee.
6.12. Describe other proposed activities to address the Post-	No additional activities are being proposed at this time. UNM will continue to explore	N/A	N/A

Construction Stormwater Management in New Development and Redevelopment Measure:	additional activities to address the Post Construction Stormwater Management in New Development and Redevelopment Measure.		

MCM Table 7 – Going Above & Beyond the 6 Established MCMs

Requirement	Plan	Goal	Status
7.1. None.	UNM will continue to exceed the six Minimum Control Measures (MCMs), however feasible.	To further reduce stormwater pollution.	EHS sent a notice to UNM leadership and contractors about new EPA rules for construction activities (i.e., the 2022 CGP). EHS developed a block-flow chart to help construction project managers understand when SWPPP inspections are required. This document has proven useful given the nuances of the required schedules, which require inspections based on climatological drought conditions and recent rainfall events. EHS notified UNM's Grounds and Landscaping Manager about a local training session, "Proper Maintenance of GSI Features." EHS assisted with a stormwater-runoff redesign project (less than one acre) for the Office of Research and Compliance building. EHS recommended the installation of GI/LID to better manage the runoff issues. EHS collected data about the pedagogical materials used by UNM Faculty in the Engineering and Architecture departments. EHS confirmed that local regulations (e.g., EPA MS4 Permit, 2022 CGP Permit, COA ordinances) and industry-leading BMPs are emphasized in the curriculum. EHS expressed its willingness to assist UNM Faculty who may decide to form a team to participate in the EPA Campus Rainwater Challenge. EHS welcomed and reconnected with the Ciudad Soil and Water Conservation District to bring their “Rolling River” diorama to campus for outreach and education purposes. During its residency at UNM, more than 200 UNM community members interacted with the Rolling River, learning about the Middle Rio Grande watershed and common sources of stormwater pollution.

Appendix 1 - Wet Weather Stormwater Monitoring

On the remaining pages, shared data from the TAG (Technical Advisory Group) are displayed to fulfill the cooperative compliance monitoring requirement, as outlined in the permit.

Bohannan Huston

Engineering
Spatial Data
Advanced Technologies

Courtyard I
7500 Jefferson St. NE
Albuquerque, NM
87109-4335
www.bhinc.com
voice: 505.823.1000
facsimile: 505.798.7988
toll free: 800.877.5332

M E M O R A N D U M

DATE: August 10, 2022

TO: Patrick Chavez, PE, AMAFCA

FROM: Sarah Ganley, PE, ENV-SP
Savannah Maynard
Emma Adams, EI

SUBJECT: **CMC Wet Season, Wet Weather Stormwater Monitoring Data Verification, Analysis Results Database, and Reporting Memo FY 2022 Wet Season (July 1, 2021 to October 31, 2021)**

Notification of In-Stream Water Quality Exceedances

For downstream notification purposes, the following parameters for in-stream samples taken in the Rio Grande for the FY 2022 wet season had results that exceeded applicable water quality standards (WQSs) for one or more samples: E. coli, polychlorinated biphenyls (PCBs), and gross alpha, adjusted. Table 1 summarizes the samples with exceedances and the applicable WQS that was exceeded. Additional details on the sampling results are provided in this memo.

Table 1: Parameters Detected Above Applicable Water Quality Standards CMC FY 2022 Wet Season Monitoring

Sampling Date Location	Parameters, Applicable Water Quality Standard (WQS), and Results Exceeding Applicable WQS		
	E. coli	**PCBs**	**Gross Alpha, Adjusted**
	WQS: 88 MPN (CFU/100 mL) Pueblo of Isleta Primary Contact Ceremonial & Recreational	**WQS: 0.00017 ug/L** Pueblo of Isleta Human Health Criteria (based on fish consumption only)	**WQS: 0.00017 ug/L** Pueblo of Isleta Human Health Criteria (based on fish consumption only)
8/16/2021 Rio Grande North Angostura Diversion Dam Pre-Storm Sample – E. coli Only	6,867 MPN (CFU/100mL)	Not Tested	Not Tested

Table 1 (continued).

Sampling Date Location	Parameters, Applicable Water Quality Standard (WQS), and Results Exceeding Applicable WQS		
	E. coli	**PCBs**	**Gross Alpha, Adjusted**
	WQS: 88 MPN (CFU/100 mL) Pueblo of Isleta Primary Contact Ceremonial & Recreational	**WQS: 0.00017 ug/L** Pueblo of Isleta Human Health Criteria (based on fish consumption only)	**WQS: 0.00017 ug/L** Pueblo of Isleta Human Health Criteria (based on fish consumption only)
9/1/2021 Rio Grande North Angostura Diversion Dam Pre-Storm Sample	183 MPN (CFU/100mL)	0.00027 ug/L	No Exceedance
9/2/2021 Rio Grande at Alameda Bridge E. coli Only	554 MPN (CFU/100mL)	Not Tested	Not Tested
9/2/2021 Rio Grande South Isleta Diversion Dam	4,884 MPN (CFU/100mL)	0.00172 ug/L	31.56 pCi/L

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) 2022 (July 1, 2021 to June 30, 2022). 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 loading to compare with the Waste Load Allocation (WLA) for the qualifying storm events. The stormwater compliance monitoring is conducted separately by Daniel B. Stephens & Associates, Inc. (DBS&A) and is not a part of this 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 (MRG) Watershed Based Municipal Separate Storm Sewer System (MS4) Permit, NPDES Permit No. NMR04A000 ("WSB MS4 Permit").

The WSB MS4 Permit entered Administrative Continuance in December 2019 when U.S. Environmental Protection Agency (EPA) Region 6 did not issue a new MS4 Permit before the current MS4 Permit's expiration date. The MRG Technical Advisory Group (TAG) sent EPA a letter dated October 15, 2019, acknowledging Administrative Continuance after the expiration date of the 5-year Permit term. Until a new MS4 Permit is issued, there are no compliance monitoring requirements for the CMC in the Rio Grande. As identified in the CMC Monitoring

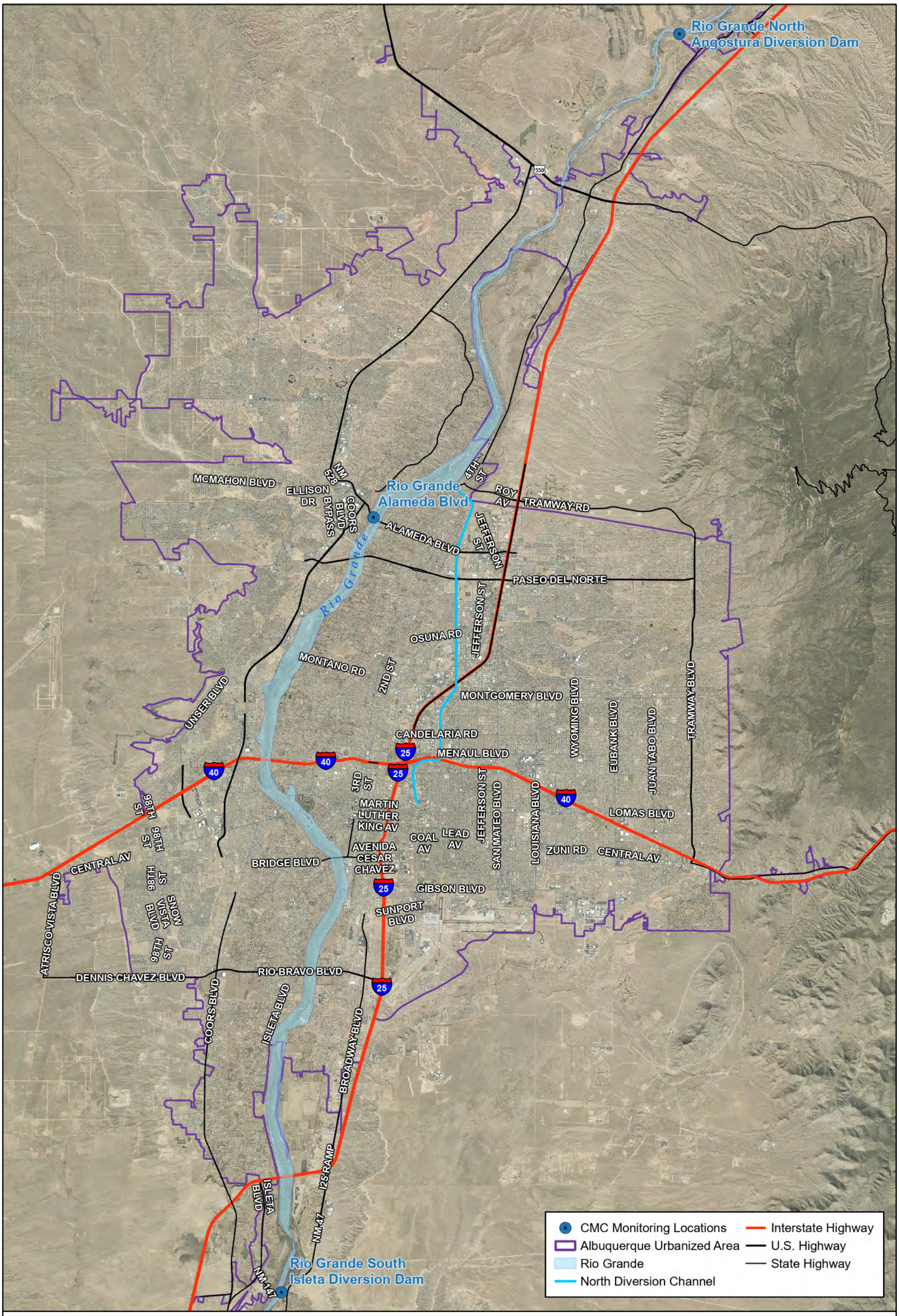
Plan, the WSB MS4 Permit required a minimum of seven (7) storm events be sampled at both the Rio Grande North and Rio Grande South locations (refer to Figure 1, page 4). All Permit required samples have been obtained by the CMC, as well as two (2) samples obtained in FY 2021 and the one (1) sample obtained in FY 2022 wet season during Administrative Continuance; all CMC samples are summarized in Table 2 below.

Table 2: CMC Sample Summary
Compared to WSB MS4 Permit Requirements

No. of Storm Events Required to Sample	CMC-WSB MS4 Permit Required Samples per Season	FY (Date) Samples Obtained for CMC
1	#1 Wet Season	FY 2017 (8/10/2016)
2	#2 Wet Season	FY 2017 (9/12/2016)
3	#3 Wet Season	FY 2017 (9/21/2016)
4	#1 Dry Season	FY 2017 (11/21/2016)
5	#2 Dry Season	FY 2019 (3/13/2019)
6	Any Season	FY 2018 (Wet Season - 7/27/2017)
7	Any Season	FY 2018 (Wet Season - 9/27/2017)
Not Required	Wet Season	FY 2021 (10/28/2020)
Not Required	Dry Season	FY 2021 (4/28/2021)
Not Required	Wet Season	FY 2022 (9/1/2021)

During the WSB MS4 Permit Administrative Continuance, the CMC members chose to continue sampling within the Rio Grande to support their MS4 program needs and gather additional data in support of the future MS4 Permit compliance. This memo reports on the wet weather stormwater monitoring activity for the FY 2022 wet season (July 1, 2021 to October 31, 2021).

The CMC Excel database was updated with the FY 2022 wet season, wet weather monitoring data as results were received. The database contains sample location, sample date, analyses conducted, methods used, applicable surface WQSs, WSB MS4 Permit required Minimum Qualification Levels (MQL) and results. Any unusable data will be identified.



P:\20230125\WR\Reports\Preliminary & Draft\Figures\APRXs\Figure1.aprx
Author: mcrooks

August 2022

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, adjusted
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) was added to the parameter list to allow dissolved metal results to be compared to the applicable WQSs. 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 15 minutes of sample collection. All E. coli samples were submitted to the laboratory within eight (8) hours of collection in order to meet the specified hold time.

Sampling Locations:

The sampling locations are shown in Figure 1, page 4.

Rio Grande North – In-stream 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 – In-stream 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 the New Mexico Environment Department (NMED) to meet the WSB MS4 Permit requirements in Part III.A.

During this FY 2022 wet season, E. coli samples were collected within the Rio Grande at Alameda Blvd. This is the location of the NMED defined stream segment divide (refer to Figure 6). This sample point was added after discussion with NMED in February 2017 regarding potential refinements to E. coli loading calculations.

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 in the sample collection, 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 Alameda and Rio Grande South locations.

DBS&A provided BHI their field notes and field sample data (temperature, DO, specific conductivity, and pH) for the FY 2022 wet 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 summary of the CMC comprehensive monitoring program activities completed for the FY 2022 wet season from July 2021 through October 2021. One (1) qualifying storm event was sampled and analyzed during the FY 2022 wet season.

- **August 16, 2021 – Only E. Coli for Rio Grande North.** A sample was collected at the Rio Grande North location at 10:00 a.m. on August 16, 2021, and was sent to the laboratory for an E. coli only test. Based on the CMC review of the storm, it was determined this was not a qualifying storm event, hence further parameter testing was not conducted for the sample collected at the Rio Grande North location.

- **September 1-2, 2021 – Qualifying Storm Event – Full Analysis of Samples.** A sample was collected at the Rio Grande North location beginning at 9:15 a.m. on September 1 and sent to the laboratory for an E. coli and BOD test. A pre-storm sample was collected at the Rio Grande at Alameda Blvd. location at 11:25 a.m. on September 1 and tested for E. Coli only. The CMC determined that the storm event beginning September 1 was a qualifying storm event. A sample in the Rio Grande at Alameda Blvd. was obtained at 10:30 a.m. on September 2 and sent to the laboratory for E. Coli testing only. A Rio Grande South sample was collected beginning at 8:35 a.m. on September 2. The samples from the North (from September 1) and South (from September 2) locations were taken to HEAL for full parameter testing.

Stormwater Quality Database for CMC

As stated previously, there was one (1) qualifying storm event during the FY 2022 wet season, wet weather monitoring sampled by the CMC, which occurred September 1-2, 2021. DBS&A's field notes containing DO, pH, conductivity, and temperature measurements, as well as sampling comments 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 the laboratory report.

Database Data Entry:

The CMC Excel database was updated with the FY 2022 wet season, wet weather monitoring data. The database contains sample locations, sample date, analyses conducted, methods used, applicable surface water quality standards (WQS), WSB MS4 Permit required Minimum Quantification Levels (MQL), and analysis results. The database was updated under this Task to include the Rio Grande at Alameda sample location. Applicable surface WQSs found in New Mexico Administrative Code (NMAC) 20.6.4, as well as the Pueblo of Isleta WQSs, 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 WQS.

Water quality data was entered into the database upon receipt of the lab reports. 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 qualifying storm events for both Rio Grande North and Rio Grande South locations were entered respectively into the database. The E. coli only samples from the Rio Grande Alameda location were also entered into the database.

Data Verification and Validation:

The HEAL 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 WQS 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 (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 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 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.

All CMC FY 2021 wet season data met 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 codes. 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 2022 Wet Season Assessment and Evaluation of Monitoring Results

The EPA approved WSB MS4 CMC Monitoring Plan, May 5, 2016, has 33 parameters to monitor at the Rio Grande North and Rio Grande South monitoring locations. Of these 33 parameters, 15 parameters were not detected in the FY 2022 wet season samples at either the Rio Grande North or South locations. Refer to Table 3 for a list of the parameters that were not detected.

Table 3: Parameters Not Detected
CMC FY 2022 Wet Season Monitoring

Parameters Not Detected	
Oil and Grease (N-Hexane Extractable Material)	Pentachlorophenol
Tetrahydrofuran	Benzidine
Benzo(a)pyrene	Benzo(a)anthracene
Benzo(b)fluoranthene (3, 4 Benzofluoranthene)	Dibenzofuran
Benzo(k)fluoranthene	Dibenzo(a,h)anthracene
Chrysene	Chromium VI (Hexavalent)
Indeno (1,2,3-cd) Pyrene	Bis (2-ethyhexyl) Phthalate (other names: Di(2-ethylhexly)phthalate, DEHP)
Dieldrin	

For the remaining 18 parameters on the CMC monitoring parameter list, only three (3) parameters (E. coli, PCBs, and gross alpha, adjusted) had exceedances of the applicable surface WQS found in New Mexico Administrative Code (NMAC) 20.6.4 and the Pueblo of Isleta WQS during the FY 2022 wet season. These exceedances are summarized on Table 1, pages 1-2, and discussed below in further detail.

E. coli:

The E. coli results collected during the FY 2022 wet season are summarized in Table 4.

Table 4: E. coli Results
CMC FY 2022 Wet Season Monitoring

Date – Rio Grande Location	E. coli Results MPN (CFU/100 mL)
August 16, 2021 – North	6,867
September 1, 2021 – North	183
September 1, 2021 – Alameda	20
September 2, 2021 – Alameda	554
September 2, 2021 – South	4,884

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. Both E. coli results exceeded Pueblo of Isleta and Pueblo of Sandia's primary contact-single sample WQS of 88 CFU/100 mL, and one sample (August 16, 2021) was above and one sample (September 1, 2021) was below NMAC's primary contact-single sample WQS of 410 CFU/100 mL. At the Rio Grande South location (downstream of the MS4 UA), one (1) sample was collected and tested for E. coli. This sample also exceeded the Pueblo of Isleta WQS (88 CFU/100 mL) and the NMAC's WQS (410 CFU/100 mL) for E. coli concentration.

In addition, the CMC collected two (2) E. coli samples in the Rio Grande at Alameda Blvd. during the FY 2022 wet season. The Alameda Blvd. analysis point was based on discussions with NMED in February 2017 on collecting actual E. coli data at the stream segment divide verses using an area percentage (as defined in the TMDL) for E. coli loading calculations. For the FY 2022 wet season storm event, two (2) samples were collected at the Alameda location. One sample was taken before the storm event and one was taken after. The lab results showed that the pre-storm sample had an acceptable E. coli concentration, while the post-storm sample exceeded the primary contact-single sample Pueblo of Isleta WQS (88 CFU/100 mL) and the primary contact-single sample NMAC WQS (410 CFU/100 mL).

As a reminder, in January 2017 the CMC members clarified with NMED that the units MPN/100 mL and CFU/100 mL are considered to be interchangeable for the purposes of this stormwater quality monitoring reporting. The New Mexico and Pueblo WQS for E. coli are currently in units of CFU/100 mL while the lab reports are typically in units of MPN/100mL. The graph presented in this section uses units of CFU/100 mL to be consistent with the WQS units. Refer to Figure 2 for a graphical representation of E. coli results from August and September 2021.

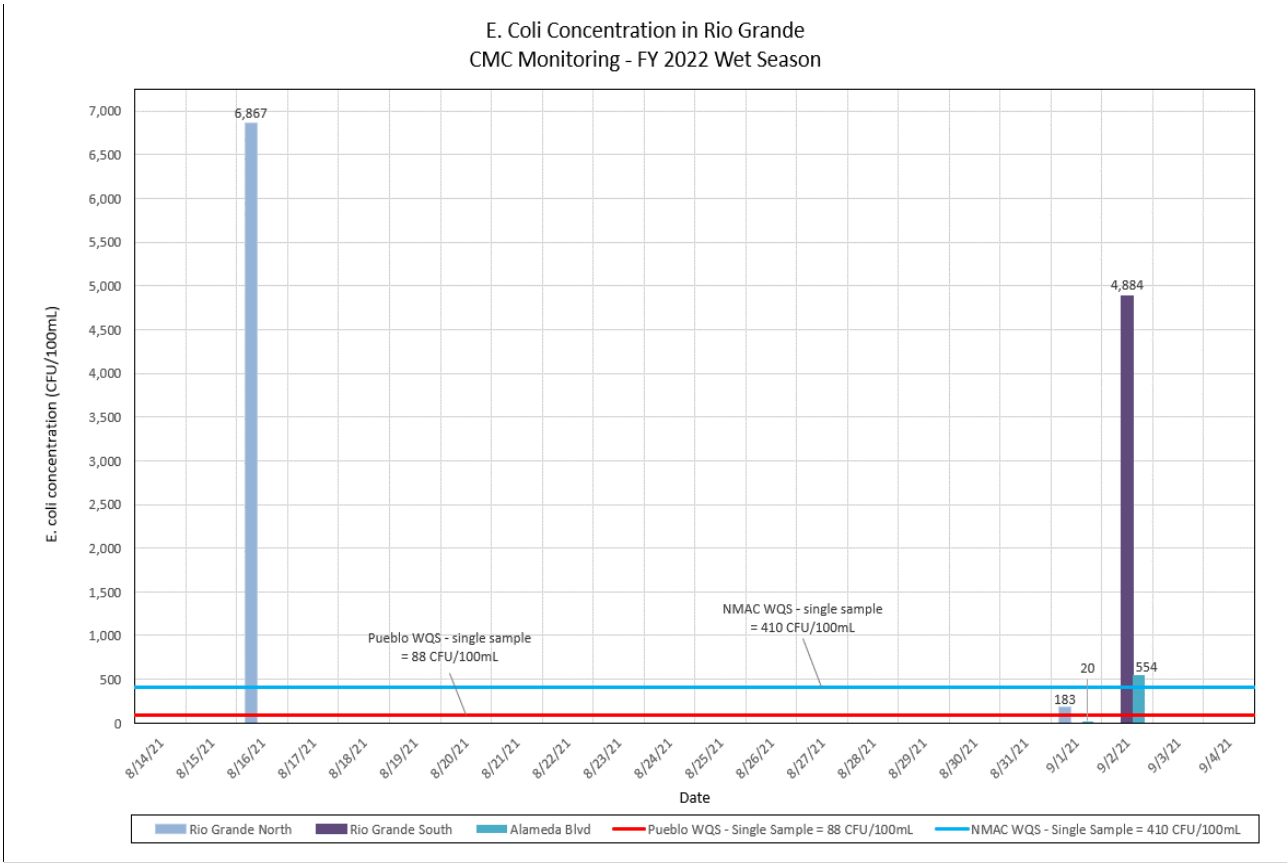


Figure 2: E. coli Results in Rio Grande
CMC Monitoring – FY 2022 Wet Season

PCBs:

There are multiple surface WQS values listed for PCBs in both the Pueblo of Isleta and the State of New Mexico standards for the various designated uses. The PCBs measured in samples collected from the Rio Grande during the FY 2022 wet season stormwater event were all below the minimum quantification level (MQL) established in EPA standards for the MS4 NPDES Permit (Appendix F, 0.2 ug/L for PCBs). The PCB results were also well below the New Mexico Surface WQSs and Pueblo of Isleta Surface WQSs for designated uses including drinking water (0.5 ug/L) and wildlife habitat, acute aquatic life, and chronic aquatic life (0.014 ug/L). However, the CMC sample from the Rio Grande South location was above the Pueblo of Isleta human health criteria (based on fish consumption only) WQS for surface waters. The human health-organism only criterion is based upon human consumption of fish and other aquatic life that bioaccumulate contaminants over time. The PCB results from 2016 through 2021 are shown in Figure 3 relative to several of the WQSs for PCBs.

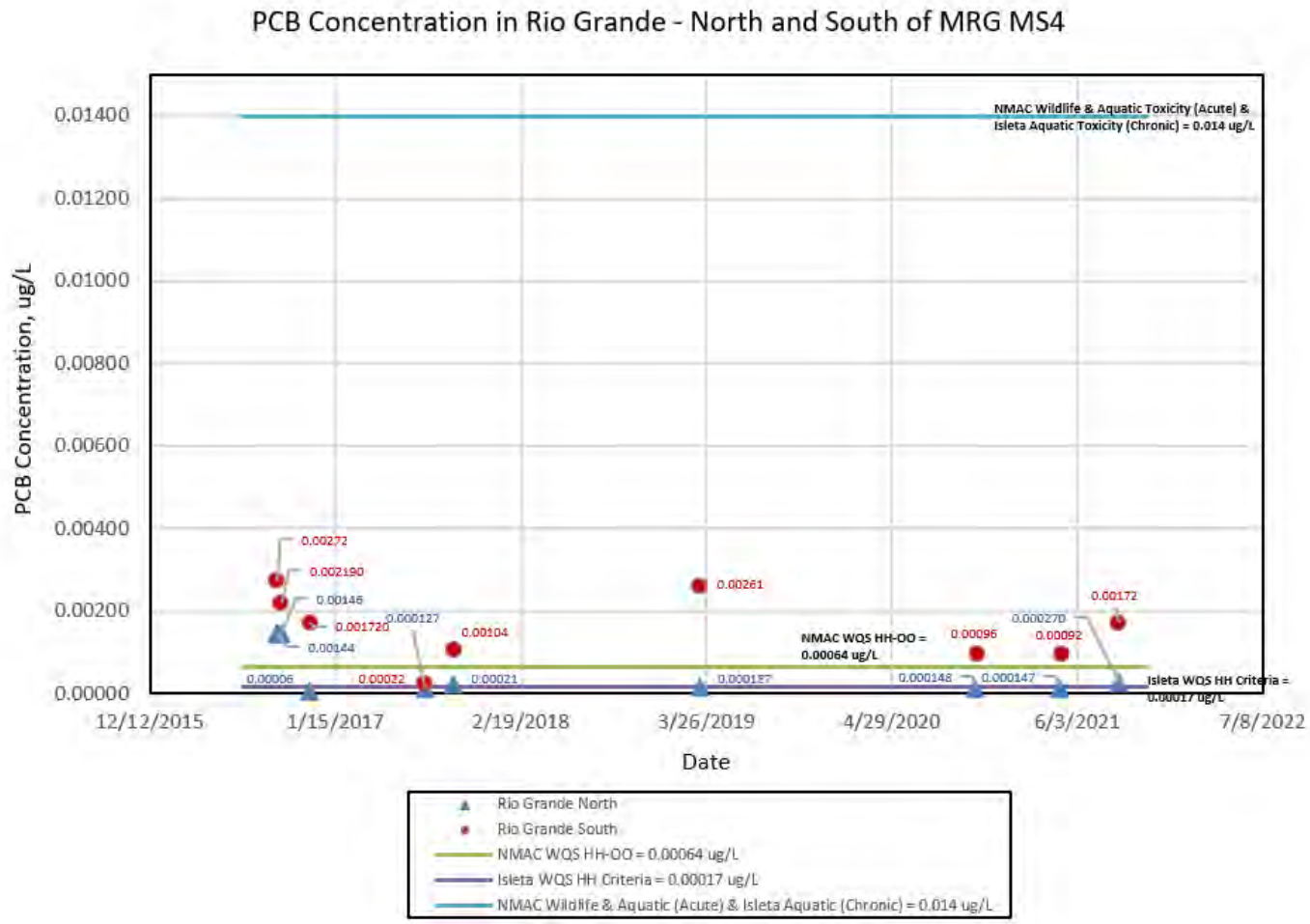


Figure 3: PCB Monitoring Results in Rio Grande
CMC Monitoring – 2016 - 2021

Adjusted Gross Alpha:

The September 2, 2021, Rio Grande South sample results exceeded the New Mexico and Pueblo of Isleta WQS for adjusted gross alpha. The WQS for adjusted gross alpha is the same value for both the NMAC 20.6.4 Water Quality Criterion and Pueblo of Isleta; the WQS of 15 pCi/L ("pCi/L" means picocuries per liter) is a general standard for the Pueblo of Isleta, and for New Mexico it is based on Domestic Water Supply and Livestock Watering designated uses. In surface water, the adjusted gross alpha analyses may be affected by a high content of suspended load, particularly where sediment sources may be derived from granitic terrain; gross alpha results may reflect the radioactivity of the natural elements in the sediment more than the surface water.

The September 2, 2021, Rio Grande South adjusted gross alpha analytical results are detailed below; the units are in pCi/L:

- Rio Grande South CMC sample result for adjusted gross alpha = 31.56 pCi/L
- Adjusted gross alpha WQS at the Rio Grande South location = 15 pCi/L (NMAC 20.6.4 Water Quality Criterion for livestock watering and domestic water supply designated uses and general standard for Pueblo of Isleta)

This is the second time since 2016 that the analytical results from a CMC sample have had an exceedance in adjusted gross alpha. The prior exceedance was reported for the September 28, 2017, Rio Grande South sample. The CMC will continue to closely evaluate this parameter in future samples. If additional exceedances occur, the CMC will discuss the results further and may consult NMED for further guidance.

Dissolved Oxygen and Temperature:

Two (2) 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 and temperature. These parameters did not have any surface water quality exceedances during the FY 2022 wet season sampling.

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 2022 wet season monitoring had dissolved oxygen values below 5 mg/L. This provides the MS4s with specific monitoring data showing that stormwater did not cause or contribute to exceedances of applicable dissolved oxygen water quality standards in the Rio Grande from any of the CMC samples from 2016 to 2021. Refer to Figure 4 for CMC dissolved oxygen results and comparison to applicable WQSs.

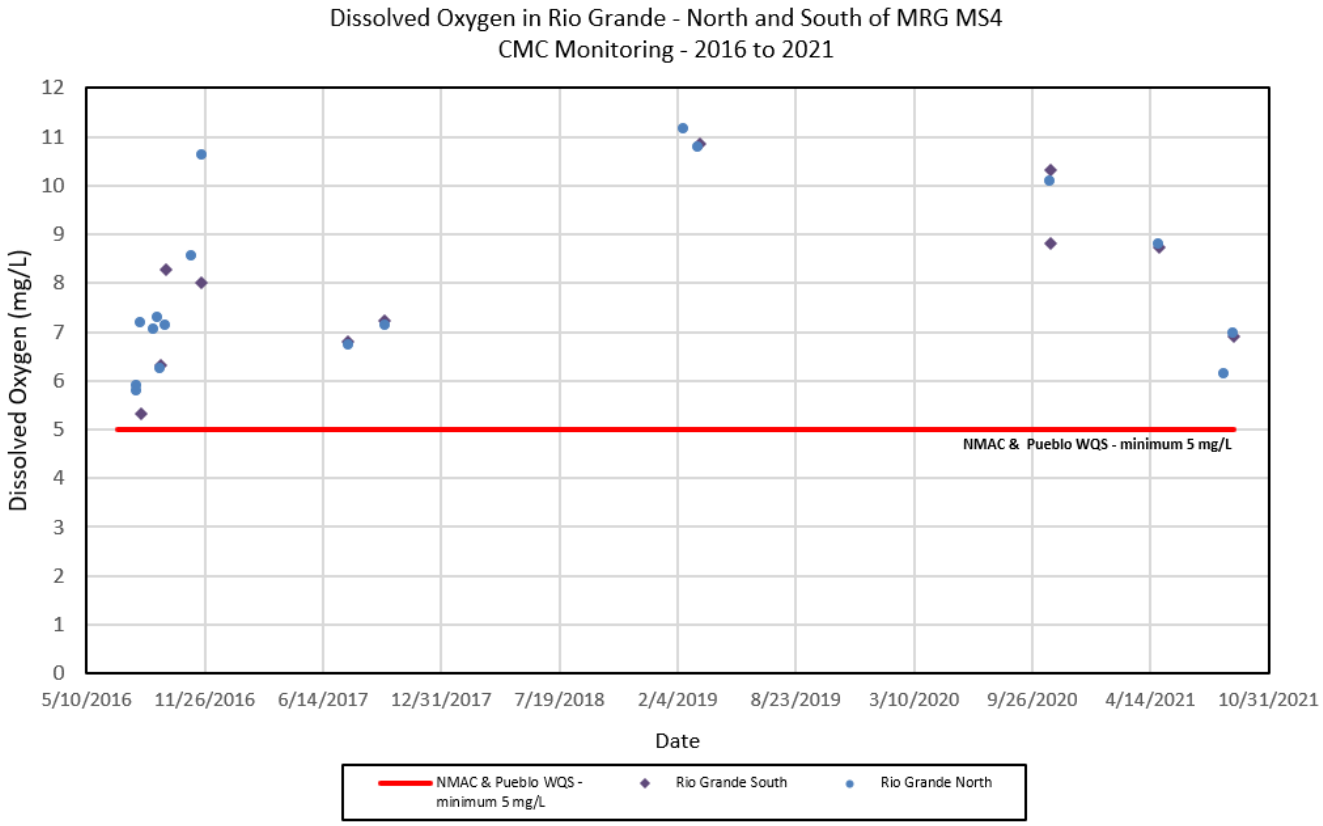


Figure 4: Dissolved Oxygen Results in the Rio Grande
CMC Monitoring – 2016 - 2021

Temperature is listed in the WSB MS4 Permit as a special condition (currently only applicable to the City of Albuquerque and AMAFCA). Past data submitted to EPA and NMED by the MS4 permittees have proven that stormwater discharges into the Rio Grande are not raising the Rio Grande temperature above the WQSs. The data collected during this FY 2022 wet season monitoring also supports this conclusion. All the temperature field readings taken in the Rio Grande during the CMC FY 2022 wet season were below 32.2°C (90°F), which is the WQS for the State of New Mexico and for the Isleta and Sandia Pueblos. Refer to Figure 5 for temperature results and comparison to applicable WQSs for all CMC samples taken upstream and downstream of the MRG MS4 area from 2016 to 2021.

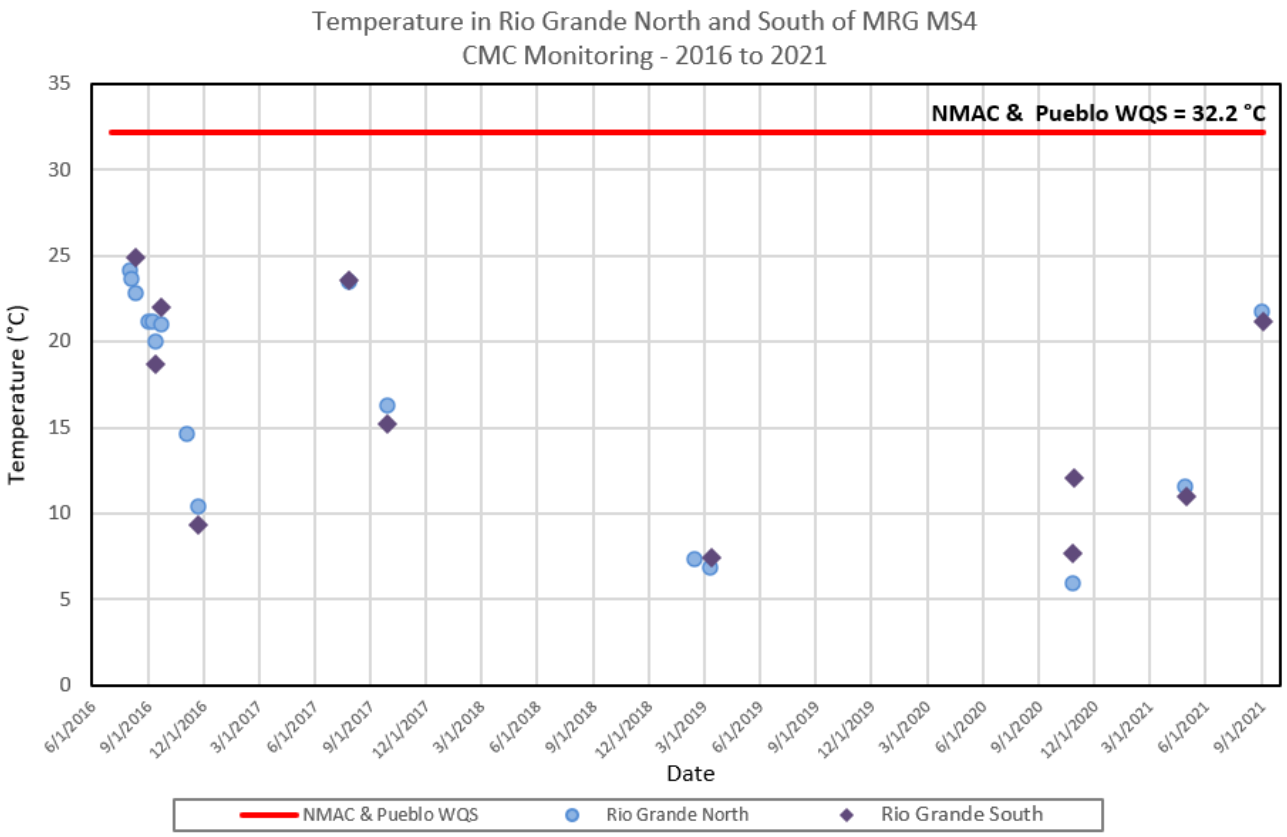


Figure 5: Temperature Monitoring Results in the Rio Grande CMC Monitoring – 2016 - 2021

CMC FY 2022 Wet Season E. coli Loading Calculations and Waste Load Allocation (WLA)

Related to assessing the stormwater results, the E. coli loading was calculated and compared 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 WQSs. 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 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 loading calculations and assumptions comparing the calculated E. coli loading to the CMC aggregate WLA defined by NMED.

There are two (2) stream segments defined in the WSB MS4 Permit (Appendix B): 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 the *2020-2022 State of New Mexico Clean Water Act Section 303(d)/Section 305(b) Integrated Report* (NMED, 2020). NMED currently has four (4) stream segments instead of the two (2) WSB MS4 stream segments. These various stream segment designations are shown in Figure 6, page 16.

The *NMED 303(d)/305(b) 2020-2022 Integrated Report* tables show the most recent assessment results, and currently all segments of the Rio Grande (Isleta to Angostura Diversion) are impaired for E. coli and have a TMDL for E. coli.

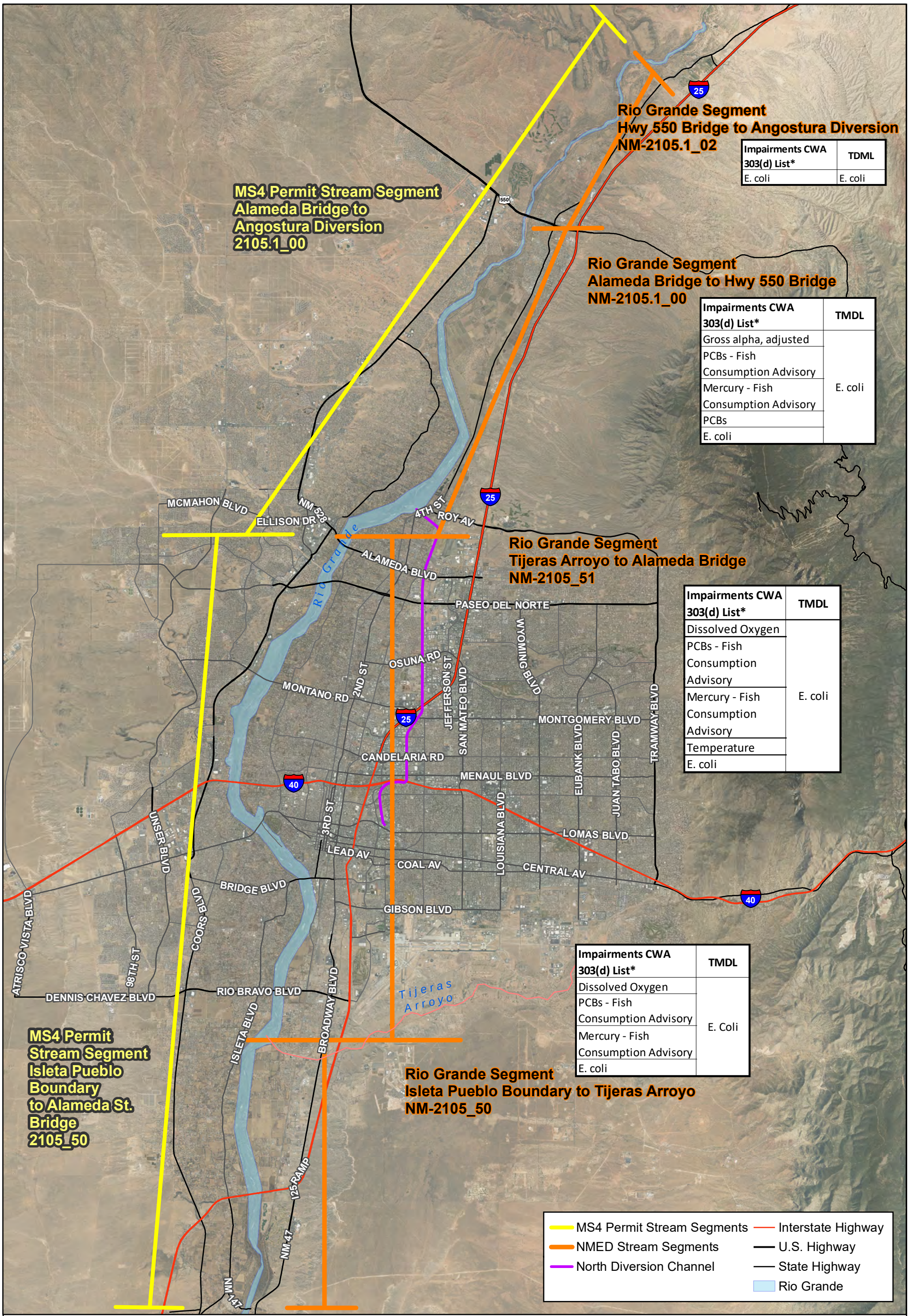
The E. coli daily loading associated with the CMC group and comparison to the NMED WLA was completed for the one (1) qualifying wet season storm event – September 1-2, 2021. For this event, the CMC obtained an E. coli sample in the Rio Grande at Alameda and used this to calculate the E. coli loading for the two (2) river segments. Refer to Table 5 for a summary of the WLA comparison results. A spreadsheet is attached to this memo that provides the detailed WLA calculations.

Table 5: Summary of CMC 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
September 1-2, 2021 – Rio Grande North E. coli Concentration 9/1/2021 = 183 MPN (CFU/100 mL) Rio Grande at Alameda pre-storm E. coli Concentration 9/1/2021 = 20 MPN (CFU/100 mL) Rio Grande at Alameda E. coli Concentration 9/2/2021 = 554 MPN (CFU/100 mL) Rio Grande South E. coli Concentration 9/2/2021 = 4,884 MPN (CFU/100 mL)					
Alameda to Angostura	146	Low	1.02E+12	1.68E+10	WLA Potential Exceedance
Isleta to Alameda	165	Low	3.20E+11	3.42E+09	WLA Potential Exceedance

As Table 5 illustrates, the calculated E. coli loading for the September 1-2, 2021 storm event for the northern segment (Alameda to Angostura) and the southern segment (Isleta to Almeda) of the Rio Grande exceeded the WLA for the CMC MS4s. This analysis used the mid-point E. coli sample result obtained in the Rio Grande at Alameda.

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 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.



AMAFCA

Bohannan Huston
www.bhinc.com
800.877.5332

N

0 12,000 24,000 Feet
1 in = 12,500 ft

CMC Monitoring

Figure 6
Rio Grande Impairments & TMDL Information

* Final 2020-2022 State of NM Clean Water Act, Section 303(d)/Section 305(b) Integrated Report

P:\20230125\WR\Reports\Final\Figures\MXDs\Figure6-MS4_TMDLStreamSegments_2021_0416.mxd
Author: mcrooks

August 2022

Page 40 of the 2010 TMDL Report states, “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 means WQSs 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 meeting on February 1, 2017, and the CMC discussion with NMED on February 16, 2017, demonstrate CMC members are working toward understanding the WLA. In addition, the CMC members began implementing a refinement to the sampling plan discussed with NMED by obtaining an E. coli sample in the Rio Grande at Alameda effective the FY 2018 wet season, as feasible. This demonstrates that the CMC is continuing to investigate the potential exceedances and make improvements to monitor E. coli in the Rio Grande.

Data Entry for Discharge Monitoring Reports

The WSB MS4 Permit entered Administrative Continuance in December 2019 when EPA Region 6 did not issue a new MS4 Permit before the current MS4 Permit’s expiration date. Until a new MS4 Permit is issued, there are no compliance monitoring requirements for the CMC in the Rio Grande. As identified in the CMC Monitoring Plan, the WSB MS4 Permit required a minimum of seven (7) storm events be sampled at both the Rio Grande North and Rio Grande South locations. All MS4 Permit required samples have been obtained by the CMC and verified stormwater quality data from these required events have been submitted to the EPA using electronic Discharge Monitoring Report (DMR) forms. Data from the DMRs are uploaded to a comprehensive nationwide database that contains discharge data for facilities and other point sources that discharge directly to receiving streams. For this Task, BHI has not completed any data entry related to the EPA DMRs for the FY 2022 wet season.

Conclusions and Planning

During the FY 2022 wet season (July 1 to October 31, 2021), one (1) qualifying stormwater sample was obtained by the CMC. Lab results were received, and this data has been entered into the CMC Excel database. The lab data entered is marked in the spreadsheet as “V” (verified), and data V&V has been completed (refer to Attachment 2).

To summarize, monitoring results and E. coli loading calculations for the FY 2022 wet season show that:

- The WSB MS4 Permit entered Administrative Continuance in December 2019 when U.S. Environmental Protection Agency (EPA) Region 6 did not issue a new MS4 Permit before the current MS4 Permit’s expiration date. Until a new MS4 Permit is issued, there are no compliance monitoring requirements for the CMC in the Rio Grande. All MS4 Permit required samples have been obtained by the CMC, as well several samples collected during Administrative Continuance, including the one (1) sample obtained in the FY 2022 wet season, as reported in this memo.

- For the FY 2022 wet season, 15 of the 33 parameters tested were not detected in any of the Rio Grande North or South samples.
- Several key parameters all met the applicable WQSs, as they have for all the CMC samples to date:
    - All dissolved oxygen results were greater than 5 mg/L (minimum WQS).
    - All temperature results were less than 32.2°C (maximum WQS).
- The PCB results were below the New Mexico Surface WQSs and Pueblo of Isleta Surface WQSs for designated uses including drinking water, wildlife habitat, acute aquatic life, and chronic aquatic life. However, the Rio Grande North and South CMC samples from September 1-2, 2021 were above the Pueblo of Isleta human health criteria (based on fish consumption only) WQS for surface waters.
- The September 2, 2021, Rio Grande South sample result exceeded the New Mexico Surface WQSs and Pueblo of Isleta Surface WQSs (15 pCi/L) for adjusted gross alpha. This is the second time since 2016 that the analytical results from a CMC sample have had an exceedance in adjusted gross alpha. The CMC will continue to closely evaluate this parameter in future samples
- The calculated E. coli loading for the September 1-2, 2021 storm event for the northern segment (Alameda to Angostura) and the southern segment (Isleta to Almeda) of the Rio Grande exceeded the WLA for the CMC MS4s. This analysis used the mid-point E. coli sample result obtained in the Rio Grande at Alameda.
    - 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.

For planning purposes for the CMC members, the FY 2022 dry season CMC monitoring will be summarized by BHI for the CMC in a dry season memo.

SG/ab

Attachments:

Attachment 1 – DBS&A Field Data & Hall Environmental Analysis Laboratory Reports with BHI Notes for FY 2022 Wet Season

Attachment 2 – FY 2022 Wet Season Completed Data Verification and Validation (V&V) Forms

Spreadsheets Included Separately:

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

Excel CMC Spreadsheet with FY 2022 Wet Season Stormwater Quality Monitoring Results

ATTACHMENT 1

DBS&A FIELD DATA & HALL ENVIRONMENTAL ANALYSIS LABORATORY REPORTS WITH BHI NOTES FOR FY 2022 WET SEASON

CMC Water Quality Results Database
FY 2017 -FY 2021
Date: August 10, 2022
Summary of Lab Results for CMC samples

		Rio Grande - North - At Angostura Dam								Rio Grande - Alameda Bridge (E. coli Only Samples)									
Parameter	**Permit Required Units**	**Provisional or Verified**	**2022 CMC SAMPLE - EXTRA NORTH Collection Date 8/16/2021** Wet Season Sample Non Qualifying Storm Event	**Qualifier**	**Check compared to Water Quality Criterion**	**Provisional or Verified**	**2022 CMC SAMPLE - EXTRA NORTH Collection Date 9/01/2021** Wet Season Sample	**Qualifier**	**Check compared to Water Quality Criterion**	**Provisional or Verified**	**2022 CMC SAMPLE - EXTRA SOUTH Collection Date 9/02/2021** Wet Season Sample	**Qualifier**	**Check compared to Water Quality Criterion**	**Provisional or Verified**	**2022 CMC SAMPLE - EXTRA ALAMEDA Collection Date 9/1/2021** Wet Season Pre-Storm Sample	**Qualifier**	**Check compared to Water Quality Criterion**	**Provisional or Verified**	**2022 CMC SAMPLE - EXTRA ALAMEDA Collection Date 9/2/2021** Wet Season Sample	**Qualifier**	**Check compared to Water Quality Criterion**
Total Suspended Solids (TSS)	mg/L					V	130		--	V	790	D	--								
Total Dissolved Solids (TDS)	mg/L					V	230	D	OK	V	330	D	OK								
Chemical Oxygen Demand (COD)	mg/L					V	22.2		--	V	54.2		--								
Biochemical Oxygen Demand (BOD_5)	mg/L					V	2.7	RE	--	V	4.9		--								
Dissolved Oxygen (DO)	mg/L	V	6.13		OK	V	6.98		OK	V	6.92		OK	V	7.06		OK	V	6.92		OK
Oil and Grease (N-Hexane Extractable Material)	mg/L					V	ND		OK	V	ND		OK								
E. coli	MPN (CFU/100 mL)	V	6,867		>WQ Standard	V	183		>WQ Standard	V	4,884		>WQ Standard	V	20.0		OK	V	554.0		>WQ Standard
pH	S.U.	V	7.92		OK	V	8.63		OK	V	8.11		OK	V	8.37		OK	V	7.72		OK
Total Kjedahl Nitrogen (TKN)	mg/L					V	4.1		--	V	2	JD	--								
Nitrate plus Nitrite	mg/L					V	ND		OK	V	1.8		OK								
Dissolved Phosphorous	mg/L					V	0.15	D	--	V	1.4	D	--								
Ammonia (mg/L as N)	mg/L					V	0.42	J	OK	V	ND		OK								
Total Nitrogen	mg/L					V	4.52	J	OK	V	3.80		OK								
Total Phosphorous	mg/L					V	0.29	D	--	V	1.3	D	--								
PCBS - 0.000064 (Method 1668A - sum of all congeners)	µg/L					V	0.00027	J	>WQ Standard	V	0.00172	J	>WQ Standard								
Gross Alpha, Adjusted	pCi/L					v	4.94	Note - Gross Alpha was reported, not adjusted gross alpha. Calculation completed to determine adjusted gross alpha.	OK	V	31.56	Note - Gross Alpha was reported, not adjusted gross alpha. Calculation completed to determine adjusted gross alpha.	>WQ Standard								
Tetrahydrofuran	µg/L					V	ND		--	V	ND		--								
Benzo(a)pyrene	µg/L					V	ND		OK	V	ND		OK								
Benzo[b]fluoranthene (other name: 3,4-Benzofluoranthene)	µg/L					V	ND		OK	V	ND		OK								
Benzo(k)fluoranthene	µg/L					V	ND		OK	V	ND		OK								
Chrysene	µg/L					V	ND		OK	V	ND		OK								
Indeno(1,2,3-cd)Pyrene	µg/L					V	ND		OK	V	ND		OK								
Dieldrin	µg/L					V	ND		OK	V	ND		OK								
Pentachlorophenol	µg/L					V	ND		OK	V	ND		OK								
Benzidine	µg/L					V	ND		OK	V	ND		OK								
Benzo(a)anthracene	µg/L					V	ND		OK	V	ND		OK								
Dibenzofuran	µg/L					V	ND		--	V	ND		--								
Dibenzo(a,h)anthracene	µg/L					V	ND		OK	V	ND		OK								
Chromium VI (Hexavalent)	µg/L					V	ND		OK	V	ND		OK								
Dissolved Copper	µg/L					V	0.84	J	OK	V	1.5		OK								
Dissolved Lead	µg/L					V	0.065	J	OK	V	0.32	J	OK								
Bis (2-ethyhexyl) Phthalate (other names: Di(2-ethylhexly)phthalate, DEHP) - 2.2	µg/L					V	ND		OK	V	ND		OK								
Conductivity	umhos/cm	V	591		--	V	315		--	V	484		--	V	375		--	V	383		--
Temperature	°C	V	21.24		OK	V	21.71		OK	V	21.21		OK	V	23.19		OK	V	22.14		OK
Hardness (as $CaCO_3$)	mg/L					V	160		--	V	290		--								
Mercury	µg/l																				

Data Verification/Validation and Qualifier Notes:
(R) The sample results are unusable because certain criteria were not met. The analyte may or may not be present in the sample.
(H) Sample holding time exceeded.
(J) The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
(D) Sample was diluted by Lab due to matrix
(U) Analyte was analyzed for, but not detected above the specified detection limit.

Notes:
1. Wet Season monitoring period - July 1 to October 31 and Dry Season monitoring period - November 1 to June 30 according to the Watershed Based MS4 Permit NMR04A000.
2. Water Quality Criterion from 20.6.4 NMAC; Rio Grande Basin - section 20.6.4.105; For a mean monthly flow of 100 cfs, monthly average
3. Aquatic life criteria for metals are expressed as a function of total
4. According to NMAC 20.6.4, E. coli bacteria for Primary Contact - monthly
5. Water quality criterion for metals is based on dissolved metals, NMAC 20.6.4.900.I and individual sample results compared to acute toxicity
6. HEAL lab method: SM 9223B Fecal Indicator. Note - lab method for units of MPN/100 ml, lab report uses units CFU/100 ml, for this analysis assuming

ND - analyte not detected above the laboratory method detection limit
NA - not analyzed
Hatching also indicates that parameter was not analyzed

National recommended WQ criteria Human Health
https://www.epa.gov/wqc/national-recommended-water-quality-criteria-human-health-criteria-table

Samplers S. Williams / M. Zbozek

CMC Sampling Data Sheet

Site Identification: Angastoca Dam

Notes:

Full Suite Sample Date and Time:	8/16/21 1049
Full Sample Identification:	RGNorth-20210816
QC Samples:	Duplicate / ~~None~~ QC Sample ID:
QC samples require a DIFFERENT sample time than the environmental sample. QC Sample time:	

Full Suite Collection Point : Angastoca Dam

Full Suite Sample Volume: ~2.5 gal Collection Time Start: 1000 End: 1045

Field Parameters for each 2-gallon grab

Grab	Time	Temp (°C)	pH	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)
1						
2						
3	1030	20.92	7.83	591	5.29	58.4
4	1045	20.69	7.89	581	5.37	59.2
Composite	1049	21.24	7.92	591	6.13	68.4

☒ *Turbid Water* ☒ *Color* B/N ☐ *Solids* ☐ *Oil/Sheen* ☐ *Foam* ☐ *Odor*_____

Analytical -see 2020 COC table

☐ Site Photo ☐ Sample Photo

Samplers Amy Ewing + Mike Zbrozek

CMC Sampling Data Sheet

Site Identification: RG North (Angostura Dam)

Notes:

Full Suite Sample Date and Time:	RGNorth-20210901
Full Sample Identification:	9/1/2021 1005
QC Samples: Duplicate / (None)	QC Sample ID:
QC samples require a DIFFERENT sample time than the environmental sample. QC Sample time:	

Full Suite Collection Point : NNE off the end of Angostura Dam

Full Suite Sample Volume: 4 gal Collection Time Start: 0917 End: 1002

Field Parameters for each 2-gallon grab

Grab	Time	Temp (°C)	pH	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)	ORP (mV)
1	0917	21.73	8.54	351	6.90	74.8	149.5
2	0932	21.33	8.62	305	7.23	84.1	168.4
3	0947	21.69	8.65	303	6.81	78.6	150.6
4	1002	22.07	8.70	302	6.98	80.7	134.5
Composite	1005	21.71	8.63	315	6.98	79.6	150.7

☑Turbid Water (semi-) ☐Color tan / clear ☐Solids ☐Oil/Sheen ☐Foam ☐Odor_____

Analytical -see 2020 COC table

☑Site Photo ☑Sample Photo

Samplers Amy Ewing + Mike Zbrozek

CMC Sampling Data Sheet

Site Identification: Rio Grande at Alameda

Notes: Sampled per Kali's request

E. coli

~~Full Suite~~ **Sample Date and Time:** 9/01/2021 1125

Full Sample Identification: RGAlameda-20210901

QC Samples: Duplicate / (None) QC Sample ID:

QC samples require a DIFFERENT sample time than the environmental sample.
QC Sample time:

E. coli Downstream side of the

~~Full Suite~~ **Collection Point :** Alameda foot bridge across from USGS gage

Full Suite Sample Volume: — Collection Time Start: 1125 End: 1125 (grab)

Field Parameters for each 2-gallon grab

Grab	Time	Temp (°C)	pH	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)	ORP (mV)
1	1125	23.19	8.37	375	7.06	83.7	97.7
2							
3							
4							
Composite							

☑Turbid Water ☑Color Brown ☐Solids ☐Oil/Sheen ☐Foam ☐Odor_____

Analytical - see 2021 COC table

☑Site Photo ☑Sample Photo

Samplers Amy Ewing and Mike Zbrozek

CMC Sampling Data Sheet

Site Identification: Rio Grande at Alameda

Notes:

E. coli

~~Full Suite~~ Sample Date and Time:	9/2/21 1030
~~Full Sample~~ Identification:	RGAlameda-20210902
QC Samples: Duplicate / None	QC Sample ID:
QC samples require a DIFFERENT sample time than the environmental sample. QC Sample time:	

E. coli

~~Full Suite~~ Collection Point : off footbridge, downstream side, across from USGS stream gage

~~Full Suite~~ Sample Volume: — Collection Time Start: — End: —

Field Parameters for each 2-gallon grab

Grab	Time	Temp (°C)	pH	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)
1	1030	22.14	7.72	383	6.72	77.4
2						
3						
4						
Composite						

☑Turbid Water ☑Color Brown ☐Solids ☐Oil/Sheen ☐Foam ☐Odor_____

Analytical - ~~see 2021 COC table~~

E. coli only

☑Site Photo ☑Sample Photo

Samplers Amy Ewing and Mike Zbrozek

CMC Sampling Data Sheet

Site Identification: Rio Grande at Isleta diversion

Notes:

Full Suite Sample Date and Time:	9/2/21 ~~0905~~ 0920
Full Sample Identification:	RG South - 20210902
QC Samples: Duplicate / (None)	QC Sample ID:
QC samples require a DIFFERENT sample time than the environmental sample. QC Sample time:	

Full Suite Collection Point : off diversion structure, next to bldg.

Full Suite Sample Volume: 5 gallons Collection Time Start: 0835 End: 092

Field Parameters for each 2-gallon grab

Grab	Time	Temp (°C)	pH	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)
1	0835	20.05	7.99	495	5.89	64.1
2	0850	20.37	7.93	484	7.93	83.1
3	0905	20.66	7.97	485	6.06	66.6
4	0920	20.68	7.95	477	6.06	67.2
Composite	0928	21.21	8.11	484	6.92	77.6

☑Turbid Water ☑Color Brown ☑Solids minor bits ☐Oil/Sheen ☐Foam ☐Odor_____

Analytical - see 2021 COC table

☑Site Photo ☑Sample Photo

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

August 19, 2021

8/16/2021 CMC Sample at Rio Grande North. E. coli results for the pre-storm. Storm did not become a qualifying event.

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

RE: CMC

OrderNo.: 2108836

Dear Patrick Chavez:

Hall Environmental Analysis Laboratory received 1 sample(s) on 8/16/2021 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 qualifiers 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 #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Field Parameters
Rio Grande North-
Temp = 21.24 °C
pH = 7.92
Conductivity (uS/cm=umho/cm) = 591
Dissolved Oxygen (mg/L) = 6.13

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **2108836**
Date Reported: **8/19/2021**

CLIENT: AMAFCA
Client Sample ID: RG North-20210816
Project: CMC
Collection Date: 8/16/2021 10:49:00 AM
Lab ID: 2108836-001 **Matrix:** AQUEOUS **Received Date:** 8/16/2021 12:49:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dms**
E. Coli	6867	10.00		MPN/100	10	8/17/2021 5:44:00 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **AMAFCA** Work Order Number: **2108836** RcptNo: **1**

Received By: **Tracy Casarrubias** **8/16/2021 12:49:00 PM**

Completed By: **Sean Livingston** **8/16/2021 4:14:27 PM** S Livingston

Reviewed By: BOD/Enumeration JR @ 8/16/21 @ 16:40

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. 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.
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☐ No ☐ NA ☑
10. Were any sample containers received broken? Yes ☐ No ☑
    # of preserved bottles checked for pH:
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
    (<2 or >12 unless noted)
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐ Adjusted?
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐ Checked by:

BOD/Enumeration: TML 8.16.21

Special Handling (if applicable)

15. 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:

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	23.8	Good				

Chain-of-Custody Record

Client: AMAFCA

Mailing Address:

Phone #:

email or Fax#: pchavez@amafca.org

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: CMC

Project #:

Project Manager: Patrick Chavez

Sampler:

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(Including CF): 24.0-0.2=23.8 (°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 Name	Container Type and #	Preservative Type	HEAL No. 2108836	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
8.16.21	1049	AQ	RGNorth-20210816	bottles		001		See attached								

Date: 8/16/21 Time: 1241 Relinquished by:

Received by: Via: Date Time 8.16.21 12:49

Date: Time: Relinquished by:

Received by: Via: Date Time

Remarks: Per Chad - only analyze for E.coli enumeration. JF 8/17/21

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: clients.hallenvironmental.com

September 07, 2021

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

9/1/2021 CMC Sample at Rio Grande North and Alameda. E. coli results for the pre-storm. Storm did become a qualifying event.

RE: CMC

OrderNo.: 2109083

Dear Patrick Chavez:

Hall Environmental Analysis Laboratory received 2 sample(s) on 9/1/2021 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 qualifiers 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 #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Field Parameters
Rio Grande North-
Temp = 21.71 °C
pH = 8.63
Conductivity (uS/cm=umho/cm) = 315
Dissolved Oxygen (mg/L) = 6.98
Alameda-
Temp = 23.19 °C
pH = 8.37
Conductivity (uS/cm=umho/cm) = 375
Dissolved Oxygen (mg/L) = 7.06

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **2109083**
Date Reported: **9/7/2021**

CLIENT: AMAFCA
Client Sample ID: RG North- 20210901
Project: CMC
Collection Date: 9/1/2021 10:05:00 AM
Lab ID: 2109083-001 **Matrix:** AQUEOUS **Received Date:** 9/1/2021 4:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dms**
E. Coli	183	10.00		MPN/100	10	9/2/2021 5:05:00 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Client Sample ID: RG Alameda- 20210901
Project: CMC
Collection Date: 9/1/2021 11:25:00 AM
Lab ID: 2109083-002
Matrix: AQUEOUS
Received Date: 9/1/2021 4:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dms**
E. Coli	20	10.00		MPN/100	10	9/2/2021 5:05:00 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: AMAFCA Work Order Number: 2109083 RcptNo: 1

Received By: Sean Livingston 9/1/2021 4:10:00 PM

Completed By: Isaiah Ortiz 9/1/2021 4:18:41 PM

Reviewed By: JRa 9/1/21 @ 16:25

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☐	No ☐	NA ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: (<2 or >12 unless noted)
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: SPA 9.1.21

Special Handling (if applicable)

15. 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:

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.9	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: ☐ Az Compliance
☐ NELAC ☐ Other

☑ EDD (Type)

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: CMC

Project #:

Project Manager: Patrick Chavez

Sampler: A.Ewing - DBS+A

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 4.2-0.3 3.9 (°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 Name	Container Type and #	Preservative Type	HEAL No. 2109083	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	E. coli - enumeration
9/1/21	1005	AQ	RGNorth-20210901	1		001											✓
9/1/21	1125	AQ	RGAlameda-20210901	1		002											✓

Amy Ewing 9/1/21

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
9/1/21	1610	Amy Ewing	Sa	cmo	9/1/21	16:10
Date:	Time:	Relinquished by:	Received by:	Via:	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: clients.hallenvironmental.com

9/2/2021 CMC Sample at Rio Grande North, Alameda (only E. coli), and Rio Grand South.

October 13, 2021

Patrick Chavez

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

RE: CMC OrderNo.: 2109132

Dear Patrick Chavez:

Hall Environmental Analysis Laboratory received 6 sample(s) on 9/2/2021 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 qualifiers 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 -

Field Parameters
Rio Grande North-
Temp = 21.71 °C
pH = 8.63
Conductivity (uS/cm=umho/cm) = 315
Dissolved Oxygen (mg/L) = 6.98
Rio Grande South-
Temp = 21.21 °C
pH = 8.11
Conductivity (uS/cm=umho/cm) = 484
Dissolved Oxygen (mg/L) = 6.92
Alameda-
Temp = 22.14 °C
pH = 7.72
Conductivity (uS/cm=umho/cm) = 383
Dissolved Oxygen (mg/L) = 6.72

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Case Narrative

WO#: **2109132**
Date: **10/13/2021**

CLIENT: AMAFCA
Project: CMC

Analytical Notes Regarding EPA Method 8081:
The method blank and sample RG South-20210902 were not spiked with surrogates. The samples were reextracted, outside of the holding time to confirm the original data. The samples are reported from the original extraction and analysis.

Analytical Notes Regarding BOD:
The method blank(s) had a DO depletion >0.2mg/L.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Client Sample ID: RG North-20210901
Project: CMC
Collection Date: 9/1/2021 10:05:00 AM
Lab ID: 2109132-001
Matrix: AQUEOUS
Received Date: 9/2/2021 12:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES							Analyst: **LSB**	
Dieldrin	ND	0.040	0.10		µg/L	1	9/17/2021 1:57:29 PM	62459
Surr: Decachlorobiphenyl	89.1	0	41.7-129		%Rec	1	9/17/2021 1:57:29 PM	62459
Surr: Tetrachloro-m-xylene	58.7	0	31.8-88.5		%Rec	1	9/17/2021 1:57:29 PM	62459
EPA METHOD 300.0: ANIONS							Analyst: **LRN**	
Nitrate+Nitrite as N	ND	0.11	1.0		mg/L	5	9/3/2021 4:14:05 PM	R81067
EPA METHOD 200.7: METALS							Analyst: **ELS**	
Calcium	51	0.11	1.0		mg/L	1	9/14/2021 12:30:15 PM	62544
Magnesium	8.7	0.067	1.0		mg/L	1	9/14/2021 12:30:15 PM	62544
EPA 200.8: DISSOLVED METALS							Analyst: **bcv**	
Copper	0.00084	0.00037	0.0010	J	mg/L	1	9/18/2021 6:25:56 PM	A81374
Lead	0.000065	0.000057	0.00050	J	mg/L	1	9/18/2021 6:25:56 PM	A81374
SM2340B: HARDNESS							Analyst: **ELS**	
Hardness as CaCO3	160	2.5	6.6		mg/L	1	9/14/2021 8:50:00 AM	R81263
EPA METHOD 1664B							Analyst: **dms**	
N-Hexane Extractable Material	ND	4.10	10.2		mg/L	1	9/8/2021 12:03:00 PM	62408
SM5210B: BOD							Analyst: **AG**	
Biochemical Oxygen Demand	2.7	2.0	2.0	RE	mg/L	1	9/8/2021 4:15:00 PM	62380

NOTES:
R- RPD between dilutions >30%. E- Estimated value due to final read time exceeding +/-6 hour read time.

SM 4500 NH3: AMMONIA							Analyst: **CJS**	
Nitrogen, Ammonia	0.42	0.42	1.0	J	mg/L	1	9/16/2021 2:40:00 PM	R81339
SM4500-H+B / 9040C: PH							Analyst: **CAS**	
pH	8.54			H*	pH units	1	9/8/2021 9:52:08 PM	R81133
EPA METHOD 365.1: TOTAL PHOSPHOROUS							Analyst: **CJS**	
Phosphorus, Total (As P)	0.29	0.050	0.050	D	mg/L	1	9/15/2021 1:39:00 PM	62548
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **KS**	
Total Dissolved Solids	230	100	100	D	mg/L	1	9/10/2021 10:00:00 AM	62453
SM 4500 NORG C: TKN							Analyst: **EKM**	
Nitrogen, Kjeldahl, Total	4.1	0.50	1.0		mg/L	1	9/17/2021 1:45:00 PM	62630
SM 2540D: TSS							Analyst: **KS**	
Suspended Solids	130	4.0	4.0		mg/L	1	9/9/2021 1:39:00 PM	62455

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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Client Sample ID: RG North-20210901
Project: CMC
Collection Date: 9/1/2021 10:05:00 AM
Lab ID: 2109132-002
Matrix: AQUEOUS
Received Date: 9/2/2021 12:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 365.1: TOTAL PHOSPHOROUS							Analyst: **CJS**	
Phosphorus, Total (As P)	0.15	0.050	0.050	D	mg/L	1	9/15/2021 1:40:00 PM	62548

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.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Client Sample ID: RG South-20210902
Project: CMC
Collection Date: 9/2/2021 9:20:00 AM
Lab ID: 2109132-003
Matrix: AQUEOUS
Received Date: 9/2/2021 12:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES							Analyst: **LSB**	
Dieldrin	ND	0.040	0.10		µg/L	1	9/17/2021 2:23:56 PM	62459
Surr: Decachlorobiphenyl	0	0	41.7-129	S	%Rec	1	9/17/2021 2:23:56 PM	62459
Surr: Tetrachloro-m-xylene	0	0	31.8-88.5	S	%Rec	1	9/17/2021 2:23:56 PM	62459
EPA METHOD 300.0: ANIONS							Analyst: **LRN**	
Nitrogen, Nitrite (As N)	ND	0.073	0.50		mg/L	5	9/3/2021 3:48:20 PM	R81067
Nitrogen, Nitrate (As N)	1.8	0.10	0.50		mg/L	5	9/3/2021 3:48:20 PM	R81067
EPA METHOD 200.7: METALS							Analyst: **ELS**	
Calcium	86	0.11	1.0		mg/L	1	9/14/2021 12:33:10 PM	62544
Magnesium	19	0.067	1.0		mg/L	1	9/14/2021 12:33:10 PM	62544
EPA 200.8: DISSOLVED METALS							Analyst: **bcv**	
Copper	0.0015	0.00037	0.0010		mg/L	1	9/18/2021 6:30:41 PM	A81374
Lead	0.00032	0.000057	0.00050	J	mg/L	1	9/18/2021 6:30:41 PM	A81374
SM2340B: HARDNESS							Analyst: **ELS**	
Hardness as CaCO3	290	2.5	6.6		mg/L	1	9/14/2021 8:50:00 AM	R81263
EPA METHOD 1664B							Analyst: **dms**	
N-Hexane Extractable Material	ND	3.99	9.89		mg/L	1	9/8/2021 12:03:00 PM	62408
SM5210B: BOD							Analyst: **AG**	
Biochemical Oxygen Demand	4.9	2.0	2.0		mg/L	1	9/8/2021 4:15:00 PM	62380
SM 9223B FECAL INDICATOR: E. COLI MPN							Analyst: **SMS**	
E. Coli	4884	10.00	10.00		MPN/100	10	9/3/2021 5:45:00 PM	62378
SM 4500 NH3: AMMONIA							Analyst: **CJS**	
Nitrogen, Ammonia	ND	0.42	1.0		mg/L	1	9/16/2021 2:40:00 PM	R81339
SM4500-H+B / 9040C: PH							Analyst: **CAS**	
pH	8.18			H	pH units	1	9/8/2021 9:56:07 PM	R81133
EPA METHOD 365.1: TOTAL PHOSPHOROUS							Analyst: **CJS**	
Phosphorus, Total (As P)	1.3	0.050	0.050	D	mg/L	1	9/15/2021 1:42:00 PM	62548
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **KS**	
Total Dissolved Solids	330	200	200	D	mg/L	1	9/10/2021 10:00:00 AM	62453
SM 4500 NORG C: TKN							Analyst: **EKM**	
Nitrogen, Kjeldahl, Total	2.0	1.0	2.0	JD	mg/L	1	9/17/2021 1:45:00 PM	62630
SM 2540D: TSS							Analyst: **KS**	
Suspended Solids	790	40	40	D	mg/L	1	9/9/2021 1:39:00 PM	62455

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Client Sample ID: RG South-20210902
Project: CMC
Collection Date: 9/2/2021 9:20:00 AM
Lab ID: 2109132-004
Matrix: AQUEOUS
Received Date: 9/2/2021 12:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 365.1: TOTAL PHOSPHOROUS							Analyst: **CJS**	
Phosphorus, Total (As P)	1.4	0.050	0.050	D	mg/L	1	9/15/2021 1:43:00 PM	62548

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.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Client Sample ID: RG Alameda-20210902
Project: CMC
Collection Date: 9/2/2021 10:30:00 AM
Lab ID: 2109132-005
Matrix: AQUEOUS
Received Date: 9/2/2021 12:17:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
SM 9223B FECAL INDICATOR: E. COLI MPN							Analyst: **SMS**	
E. Coli	554	10.00	10.00		MPN/100	10	9/3/2021 5:45:00 PM	62378

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Anatek Labs, Inc.

1282 Alturas Drive - Moscow, ID 83843 - (208) 883-2839 - Fax (208) 8829246 - 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	Work Order:	MBI0301
Address:	4901 Hawkins NE Suite D	Project:	MDL Projects
	Albuquerque, NM 87109	Reported:	9/21/2021 11:03
Attn:	Andy Freeman		

Analytical Results Report

Sample Location:	2109132-001A (RG North-20210901)		
Lab/Sample Number:	MBI0301-01	Collect Date:	09/01/21 10:05
Date Received:	09/08/21 12:41	Collected By:	
Matrix:	Water		

Analyte	Result	Units	MDL	PQL	Analyzed	Analyst	Method	Qualifier
Volatiles								
Tetrahydrofuran	ND	ug/L	0.500	2.50	9/10/21 14:05	TEC	EPA 8260D	U
Surrogate: 1,2-Dichlorobenzene-d4	*104%*		*70-130*		*9/10/21 14:05*	*TEC*	*EPA 8260D*	
Surrogate: 4-Bromofluorobenzene	*98.8%*		*70-130*		*9/10/21 14:05*	*TEC*	*EPA 8260D*	
Surrogate: Toluene-d8	*94.9%*		*70-130*		*9/10/21 14:05*	*TEC*	*EPA 8260D*	

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Analytical Results Report

(Continued)

Sample Location: 2109132-001K (RG North-20210901)
Lab/Sample Number: MBI0301-02 Collect Date: 09/01/21 10:05
Date Received: 09/08/21 12:41 Collected By:
Matrix: Water

Analyte	Result	Units	MDL	PQL	Analyzed	Analyst	Method	Qualifier
Semivolatiles								
Benzidine	ND	ug/L	0.833	1.67	9/13/21 23:44	MAH	EPA 8270D	
Benzo[a]anthracene	ND	ug/L	0.333	1.67	9/13/21 23:44	MAH	EPA 8270D	
Benzo[a]pyrene	ND	ug/L	0.333	1.67	9/13/21 23:44	MAH	EPA 8270D	
Benzo[b]fluoranthene	ND	ug/L	0.333	1.67	9/13/21 23:44	MAH	EPA 8270D	
Benzo[k]fluoranthene	ND	ug/L	0.333	1.67	9/13/21 23:44	MAH	EPA 8270D	
Chrysene	ND	ug/L	0.333	1.67	9/13/21 23:44	MAH	EPA 8270D	
Di (2-ethylhexyl) phthalate	ND	ug/L	0.667	1.67	9/13/21 23:44	MAH	EPA 8270D	
Dibenz(a,h)anthracene	ND	ug/L	0.333	1.67	9/13/21 23:44	MAH	EPA 8270D	
Dibenzofuran	ND	ug/L	0.333	1.67	9/13/21 23:44	MAH	EPA 8270D	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.333	1.67	9/13/21 23:44	MAH	EPA 8270D	
Pentachlorophenol	ND	ug/L	0.667	1.67	9/13/21 23:44	MAH	EPA 8270D	
Surrogate: 2,4,6-Tribromophenol	*94.0%*		*48-120*		*9/13/21 23:44*	*MAH*	*EPA 8270D*	
Surrogate: 2-Fluorobiphenyl	*107%*		*57-120*		*9/13/21 23:44*	*MAH*	*EPA 8270D*	
Surrogate: 2-Fluorophenol	*64.6%*		*37-110*		*9/13/21 23:44*	*MAH*	*EPA 8270D*	
Surrogate: Nitrobenzene-d5	*81.0%*		*65-110*		*9/13/21 23:44*	*MAH*	*EPA 8270D*	
Surrogate: Phenol-2,3,4,5,6-d5	*85.3%*		*51-112*		*9/13/21 23:44*	*MAH*	*EPA 8270D*	
Surrogate: Terphenyl-d14	*102%*		*57-133*		*9/13/21 23:44*	*MAH*	*EPA 8270D*	

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Analytical Results Report

(Continued)

Sample Location: 2109132-003A (RG South-20210902)
Lab/Sample Number: MBI0301-03 Collect Date: 09/02/21 09:20
Date Received: 09/08/21 12:41 Collected By:
Matrix: Water

Analyte	Result	Units	MDL	PQL	Analyzed	Analyst	Method	Qualifier
Volatiles								
Tetrahydrofuran	ND	ug/L	0.500	2.50	9/10/21 14:34	TEC	EPA 8260D	U
Surrogate: 1,2-Dichlorobenzene-d4	*104%*		*70-130*		*9/10/21 14:34*	*TEC*	*EPA 8260D*	
Surrogate: 4-Bromofluorobenzene	*99.1%*		*70-130*		*9/10/21 14:34*	*TEC*	*EPA 8260D*	
Surrogate: Toluene-d8	*95.2%*		*70-130*		*9/10/21 14:34*	*TEC*	*EPA 8260D*	

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Analytical Results Report

(Continued)

Sample Location: 2109132-003K (RG South-20210902)
Lab/Sample Number: MBI0301-04 Collect Date: 09/02/21 09:20
Date Received: 09/08/21 12:41 Collected By:
Matrix: Water

Analyte	Result	Units	MDL	PQL	Analyzed	Analyst	Method	Qualifier
Semivolatiles								
Benzidine	ND	ug/L	1.25	2.50	9/14/21 0:12	MAH	EPA 8270D	
Benzo[a]anthracene	ND	ug/L	0.500	2.50	9/14/21 0:12	MAH	EPA 8270D	
Benzo[a]pyrene	ND	ug/L	0.500	2.50	9/14/21 0:12	MAH	EPA 8270D	
Benzo[b]fluoranthene	ND	ug/L	0.500	2.50	9/14/21 0:12	MAH	EPA 8270D	
Benzo[k]fluoranthene	ND	ug/L	0.500	2.50	9/14/21 0:12	MAH	EPA 8270D	
Chrysene	ND	ug/L	0.500	2.50	9/14/21 0:12	MAH	EPA 8270D	
Di (2-ethylhexyl) phthalate	ND	ug/L	1.00	2.50	9/14/21 0:12	MAH	EPA 8270D	
Dibenz(a,h)anthracene	ND	ug/L	0.500	2.50	9/14/21 0:12	MAH	EPA 8270D	
Dibenzofuran	ND	ug/L	0.500	2.50	9/14/21 0:12	MAH	EPA 8270D	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.500	2.50	9/14/21 0:12	MAH	EPA 8270D	
Pentachlorophenol	ND	ug/L	1.00	2.50	9/14/21 0:12	MAH	EPA 8270D	
Surrogate: 2,4,6-Tribromophenol	*101%*		*48-120*		*9/14/21 0:12*	*MAH*	*EPA 8270D*	
Surrogate: 2-Fluorobiphenyl	*110%*		*57-120*		*9/14/21 0:12*	*MAH*	*EPA 8270D*	
Surrogate: 2-Fluorophenol	*64.4%*		*37-110*		*9/14/21 0:12*	*MAH*	*EPA 8270D*	
Surrogate: Nitrobenzene-d5	*81.9%*		*65-110*		*9/14/21 0:12*	*MAH*	*EPA 8270D*	
Surrogate: Phenol-2,3,4,5,6-d5	*83.3%*		*51-112*		*9/14/21 0:12*	*MAH*	*EPA 8270D*	
Surrogate: Terphenyl-d14	*96.5%*		*57-133*		*9/14/21 0:12*	*MAH*	*EPA 8270D*	

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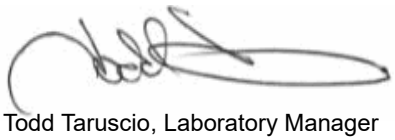
Analytical Results Report

(Continued)

Sample Location: 2109132-006A (Trip Blank)
Lab/Sample Number: MBI0301-05 Collect Date: 09/02/21 00:00
Date Received: 09/08/21 12:41 Collected By:
Matrix: Water

Analyte	Result	Units	MDL	PQL	Analyzed	Analyst	Method	Qualifier
Volatiles								
Tetrahydrofuran	ND	ug/L	0.100	0.500	9/10/21 12:03	TEC	EPA 8260D	U
Surrogate: 1,2-Dichlorobenzene-d4	*103%*		*70-130*		*9/10/21 12:03*	*TEC*	*EPA 8260D*	
Surrogate: 4-Bromofluorobenzene	*98.9%*		*70-130*		*9/10/21 12:03*	*TEC*	*EPA 8260D*	
Surrogate: Toluene-d8	*95.1%*		*70-130*		*9/10/21 12:03*	*TEC*	*EPA 8260D*	

Authorized Signature,



Todd Taruscio, Laboratory Manager

U	Compound was analyzed for but not detected
PQL	Practical Quantitation Limit
ND	Not Detected
MDL	Method Detection Limit
Dry	Sample results reported on a dry weight basis
*	Not a state-certified analyte
RPD	Relative Percent Difference
%REC	Percent Recovery
Source	Sample that was spiked or duplicated.

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Quality Control Data

Semivolatiles

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BBI0298 - SVOC Water										
Blank (BBI0298-BLK1)					Prepared: 9/8/2021 Analyzed: 9/13/2021					
bis(2-Chloroethyl)ether	ND		0.500	ug/L						
Di-n-octyl phthalate	ND		0.500	ug/L						
Di-n-butyl phthalate	ND		0.500	ug/L						
Dimethyl phthalate	ND		0.500	ug/L						
Dibenzofuran	ND		0.500	ug/L						
Chrysene	ND		0.500	ug/L						
Carbazole	ND		0.500	ug/L						
Benzyl Butyl Phthalate	ND		0.500	ug/L						
Anthracene	ND		0.500	ug/L						
bis(2-chloroisopropyl)ether	ND		0.500	ug/L						
Hexachlorobenzene	ND		0.500	ug/L						
bis(2-Chloroethoxy)methane	ND		0.500	ug/L						
Benzyl alcohol	ND		0.500	ug/L						
Benzo[k]fluoranthene	ND		0.500	ug/L						
Benzo(g,h,i)perylene	ND		0.500	ug/L						
Benzo[b]fluoranthene	ND		0.500	ug/L						
Benzo[a]pyrene	ND		0.500	ug/L						
Benzo[a]anthracene	ND		0.500	ug/L						
Benzidine	ND		0.500	ug/L						
Di (2-ethylhexyl) phthalate	ND		0.500	ug/L						
Pyridine	ND		0.500	ug/L						
Pyrene	ND		0.500	ug/L						
Phenol	ND		0.500	ug/L						
Phenanthrene	ND		0.500	ug/L						
Pentachlorophenol	ND		0.500	ug/L						
n-Nitrosodiphenylamine	ND		0.500	ug/L						
Fluoranthene	ND		0.500	ug/L						
n-nitrosodimethylamine	ND		0.500	ug/L						
Fluorene	ND		0.500	ug/L						
Nitrobenzene	ND		0.500	ug/L						
Naphthalene	ND		0.500	ug/L						
Isophorone	ND		0.500	ug/L						
Indeno(1,2,3-cd)pyrene	ND		0.500	ug/L						
Hexachloroethane	ND		0.500	ug/L						
Hexachlorocyclopentadiene	ND		0.500	ug/L						
Hexachlorobutadiene	ND		0.500	ug/L						
Dibenz(a,h)anthracene	ND		0.500	ug/L						
n-Nitroso-di-n-propylamine	ND		0.500	ug/L						
1-Methylnaphthalene	ND		0.500	ug/L						
2,6-Dinitrotoluene	ND		0.500	ug/L						
2,4-Dinitrotoluene	ND		0.500	ug/L						
2,4-Dinitrophenol	ND		0.500	ug/L						
2,4-Dimethylphenol	ND		0.500	ug/L						

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Quality Control Data
(Continued)

Semivolatiles (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BBI0298 - SVOC Water (Continued)										
Blank (BBI0298-BLK1)					Prepared: 9/8/2021 Analyzed: 9/13/2021					
2,4-Dichlorophenol	ND		0.500	ug/L						
2,4,6-Trichlorophenol	ND		0.500	ug/L						
2,4,5-Trichlorophenol	ND		0.500	ug/L						
2-Chloronaphthalene	ND		0.500	ug/L						
2,3,4,6-Tetrachlorophenol	ND		0.500	ug/L						
1,4-Dichlorobenzene (para-Dichlorobenzene)	ND		0.500	ug/L						
1,4-Dinitrobenzene	ND		0.500	ug/L						
Aniline	ND		0.500	ug/L						
1,3-Dinitrobenzene	ND		0.500	ug/L						
Diethyl phthalate	ND		0.500	ug/L						
1,2-Diphenyl hydrazine	ND		0.500	ug/L						
1,2-Dinitrobenzene	ND		0.500	ug/L						
1,2-Dichlorobenzene (ortho-Dichlorobenzene)	ND		0.500	ug/L						
1,2,4-Trichlorobenzene	ND		0.500	ug/L						
2,3,5,6-Tetrachlorophenol	ND		0.500	ug/L						
4-Nitroaniline	ND		0.500	ug/L						
m-Dichlorobenzene	ND		0.500	ug/L						
2-Chlorophenol	ND		0.500	ug/L						
Acenaphthylene	ND		0.500	ug/L						
4-Nitrophenol	ND		0.500	ug/L						
4-Chlorophenyl-phenylether	ND		0.500	ug/L						
4-Chloroaniline	ND		0.500	ug/L						
4-Chloro-3-methylphenol	ND		0.500	ug/L						
4-Bromophenyl-phenylether	ND		0.500	ug/L						
4,6-Dinitro-2-methylphenol	ND		0.500	ug/L						
3-Nitroaniline	ND		0.500	ug/L						
2-Methylnaphthalene	ND		0.500	ug/L						
3,3'-Dichlorobenzidine	ND		0.500	ug/L						
2-Nitrophenol	ND		0.500	ug/L						
2-Nitroaniline	ND		0.500	ug/L						
2-Methylphenol	ND		0.500	ug/L						
Acenaphthene	ND		0.500	ug/L						
3+4-Methylphenol	ND		0.500	ug/L						
Surrogate: Phenol-2,3,4,5,6-d5			*40.4*	*ug/L*	*50.5*		*79.9*	*51-112*		
Surrogate: Nitrobenzene-d5			*19.8*	*ug/L*	*25.0*		*79.4*	*65-110*		
Surrogate: Terphenyl-d14			*26.1*	*ug/L*	*25.8*		*101*	*57-133*		
Surrogate: 2-Fluorophenol			*29.1*	*ug/L*	*50.0*		*58.1*	*37-110*		
Surrogate: 2-Fluorobiphenyl			*25.7*	*ug/L*	*25.5*		*101*	*57-120*		
Surrogate: 2,4,6-Tribromophenol			*45.2*	*ug/L*	*51.8*		*87.2*	*48-120*		

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Quality Control Data
(Continued)

Semivolatiles (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BBI0298 - SVOC Water (Continued)										
LCS (BBI0298-BS1)					Prepared: 9/8/2021 Analyzed: 9/13/2021					
2-Methylphenol	4.08		0.500	ug/L	5.00		81.6	66-120		
2-Methylnaphthalene	4.24		0.500	ug/L	5.00		84.8	67-121		
2-Chlorophenol	4.13		0.500	ug/L	5.00		82.6	64-120		
3-Nitroaniline	4.23		0.500	ug/L	5.00		84.6	49-121		
2-Chloronaphthalene	4.34		0.500	ug/L	5.00		86.8	72-120		
2,6-Dinitrotoluene	4.53		0.500	ug/L	5.00		90.6	67-116		
2-Nitroaniline	4.79		0.500	ug/L	5.00		95.8	69-120		
3+4-Methylphenol	4.26		0.500	ug/L	5.00		85.2	68-120		
4,6-Dinitro-2-methylphenol	4.72		0.500	ug/L	5.00		94.4	26-150		
2,4-Dinitrotoluene	4.79		0.500	ug/L	5.00		95.8	74-121		
4-Chloroaniline	3.01		0.500	ug/L	5.00		60.2	30-130		
1,3-Dinitrobenzene	4.70		0.500	ug/L	5.00		94.0	75-123		
4-Bromophenyl-phenylether	4.28		0.500	ug/L	5.00		85.6	71-121		
2-Nitrophenol	4.21		0.500	ug/L	5.00		84.2	69-120		
1-Methylnaphthalene	4.23		0.500	ug/L	5.00		84.6	67-121		
4-Nitroaniline	4.53		0.500	ug/L	5.00		90.6	47-128		
4-Chlorophenyl-phenylether	4.29		0.500	ug/L	5.00		85.8	72-120		
1,2,4-Trichlorobenzene	3.86		0.500	ug/L	5.00		77.2	69-120		
1,2-Dichlorobenzene (ortho-Dichlorobenzene)	3.91		0.500	ug/L	5.00		78.2	67-120		
1,2-Dinitrobenzene	4.38		0.500	ug/L	5.00		87.6	70-120		
1,4-Dinitrobenzene	5.05		0.500	ug/L	5.00		101	71-121		
1,4-Dichlorobenzene (para-Dichlorobenzene)	3.84		0.500	ug/L	5.00		76.8	67-120		
2,4-Dinitrophenol	5.00		0.500	ug/L	5.00		100	21-128		
2,3,4,6-Tetrachlorophenol	4.25		0.500	ug/L	5.00		85.0	66-120		
2,3,5,6-Tetrachlorophenol	4.28		0.500	ug/L	5.00		85.6	52-115		
2,4,5-Trichlorophenol	4.34		0.500	ug/L	5.00		86.8	71-120		
2,4,6-Trichlorophenol	4.37		0.500	ug/L	5.00		87.4	72-120		
2,4-Dichlorophenol	4.28		0.500	ug/L	5.00		85.6	72-120		
m-Dichlorobenzene	3.77		0.500	ug/L	5.00		75.4	67-120		
Di-n-octyl phthalate	4.81		0.500	ug/L	5.00		96.2	45-127		
Fluoranthene	4.56		0.500	ug/L	5.00		91.2	70-121		
Fluorene	4.41		0.500	ug/L	5.00		88.2	74-120		
Hexachlorobenzene	4.21		0.500	ug/L	5.00		84.2	67-118		
Hexachlorobutadiene	3.65		0.500	ug/L	5.00		73.0	68-120		
Hexachloroethane	3.65		0.500	ug/L	5.00		73.0	68-120		
Indeno(1,2,3-cd)pyrene	4.24		0.500	ug/L	5.00		84.8	62-123		
Isophorone	4.61		0.500	ug/L	5.00		92.2	78-120		
Di-n-butyl phthalate	4.63		0.500	ug/L	5.00		92.6	74-124		
Nitrobenzene	4.22		0.500	ug/L	5.00		84.4	71-120		
Phenanthrene	4.45		0.500	ug/L	5.00		89.0	74-120		
n-nitrosodimethylamine	4.11		0.500	ug/L	5.00		82.2	60-120		
n-Nitroso-di-n-propylamine	4.44		0.500	ug/L	5.00		88.8	71-112		
n-Nitrosodiphenylamine	4.36		0.500	ug/L	5.00		87.2	70-121		
Pentachlorophenol	4.36		0.500	ug/L	5.00		87.2	51-118		
Phenol	4.08		0.500	ug/L	5.00		81.6	54-121		
Pyrene	4.65		0.500	ug/L	5.00		93.0	59-130		

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Quality Control Data
(Continued)

Semivolatiles (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BBI0298 - SVOC Water (Continued)										
LCS (BBI0298-BS1)					Prepared: 9/8/2021 Analyzed: 9/13/2021					
4-Nitrophenol	4.12		0.500	ug/L	5.00		82.4	52-118		
4-Chloro-3-methylphenol	4.49		0.500	ug/L	5.00		89.8	74-120		
Naphthalene	4.13		0.500	ug/L	5.00		82.6	70-120		
Benzo(g,h,i)perylene	4.23		0.500	ug/L	5.00		84.6	63-129		
Anthracene	4.51		0.500	ug/L	5.00		90.2	76-120		
Acenaphthene	4.11		0.500	ug/L	5.00		82.2	76-120		
Benzo[a]anthracene	4.35		0.500	ug/L	5.00		87.0	80-120		
Dimethyl phthalate	4.50		0.500	ug/L	5.00		90.0	72-122		
Benzo[b]fluoranthene	4.29		0.500	ug/L	5.00		85.8	72-116		
Acenaphthylene	4.36		0.500	ug/L	5.00		87.2	75-120		
Benzo[k]fluoranthene	5.03		0.500	ug/L	5.00		101	71-121		
bis(2-Chloroethoxy)methane	4.42		0.500	ug/L	5.00		88.4	74-120		
Dibenzofuran	4.46		0.500	ug/L	5.00		89.2	75-120		
bis(2-chloroisopropyl)ether	4.18		0.500	ug/L	5.00		83.6	69-120		
Di (2-ethylhexyl) phthalate	4.91		0.500	ug/L	5.00		98.2	60-144		
Benzyl Butyl Phthalate	4.71		0.500	ug/L	5.00		94.2	62-135		
Carbazole	4.92		0.500	ug/L	5.00		98.4	76-123		
Chrysene	4.53		0.500	ug/L	5.00		90.6	74-124		
Dibenz(a,h)anthracene	4.44		0.500	ug/L	5.00		88.8	62-120		
bis(2-Chloroethyl)ether	4.33		0.500	ug/L	5.00		86.6	70-120		
Benzo[a]pyrene	4.14		0.500	ug/L	5.00		82.8	66-116		
Diethyl phthalate	4.52		0.500	ug/L	5.00		90.4	76-121		
Surrogate: Phenol-2,3,4,5,6-d5			*46.5*	*ug/L*	*50.5*		*92.0*	*51-112*		
Surrogate: Nitrobenzene-d5			*22.5*	*ug/L*	*25.0*		*90.0*	*65-110*		
Surrogate: Terphenyl-d14			*26.8*	*ug/L*	*25.8*		*104*	*57-133*		
Surrogate: 2-Fluorophenol			*34.4*	*ug/L*	*50.0*		*68.7*	*37-110*		
Surrogate: 2-Fluorobiphenyl			*29.2*	*ug/L*	*25.5*		*115*	*57-120*		
Surrogate: 2,4,6-Tribromophenol			*50.5*	*ug/L*	*51.8*		*97.6*	*48-120*		

Anatek Labs, Inc.

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Quality Control Data
(Continued)

Semivolatiles (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BBI0298 - SVOC Water (Continued)										
LCS Dup (BBI0298-BSD1)					Prepared: 9/8/2021 Analyzed: 9/13/2021					
Carbazole	4.90		0.500	ug/L	5.00		98.0	76-123	0.407	40
Chrysene	4.48		0.500	ug/L	5.00		89.6	74-124	1.11	25
Dibenz(a,h)anthracene	4.83		0.500	ug/L	5.00		96.6	62-120	8.41	30
Dibenzofuran	4.43		0.500	ug/L	5.00		88.6	75-120	0.675	25
Diethyl phthalate	4.47		0.500	ug/L	5.00		89.4	76-121	1.11	25
Di-n-butyl phthalate	4.75		0.500	ug/L	5.00		95.0	74-124	2.56	25
Dimethyl phthalate	4.51		0.500	ug/L	5.00		90.2	72-122	0.222	25
Benzyl Butyl Phthalate	4.29		0.500	ug/L	5.00		85.8	62-135	9.33	34
Di (2-ethylhexyl) phthalate	4.48		0.500	ug/L	5.00		89.6	60-144	9.16	32
bis(2-chloroisopropyl)ether	4.22		0.500	ug/L	5.00		84.4	69-120	0.952	28
bis(2-Chloroethyl)ether	4.27		0.500	ug/L	5.00		85.4	70-120	1.40	30
bis(2-Chloroethoxy)methane	4.29		0.500	ug/L	5.00		85.8	74-120	2.99	25
Benzo[k]fluoranthene	4.96		0.500	ug/L	5.00		99.2	71-121	1.40	25
Di-n-octyl phthalate	4.01		0.500	ug/L	5.00		80.2	45-127	18.1	32
Benzo[b]fluoranthene	4.10		0.500	ug/L	5.00		82.0	72-116	4.53	25
Benzo[a]pyrene	4.89		0.500	ug/L	5.00		97.8	66-116	16.6	25
Benzo(g,h,i)perylene	4.55		0.500	ug/L	5.00		91.0	63-129	7.29	25
Nitrobenzene	4.14		0.500	ug/L	5.00		82.8	71-120	1.91	25
2,6-Dinitrotoluene	4.48		0.500	ug/L	5.00		89.6	67-116	1.11	35
Benzo[a]anthracene	4.33		0.500	ug/L	5.00		86.6	80-120	0.461	25
Phenol	4.09		0.500	ug/L	5.00		81.8	54-121	0.245	33
Phenanthrene	4.50		0.500	ug/L	5.00		90.0	74-120	1.12	25
Pentachlorophenol	4.29		0.500	ug/L	5.00		85.8	51-118	1.62	25
n-Nitrosodiphenylamine	4.45		0.500	ug/L	5.00		89.0	70-121	2.04	25
Naphthalene	4.22		0.500	ug/L	5.00		84.4	70-120	2.16	25
n-nitrosodimethylamine	4.03		0.500	ug/L	5.00		80.6	60-120	1.97	35
Pyrene	4.33		0.500	ug/L	5.00		86.6	59-130	7.13	35
Isophorone	4.48		0.500	ug/L	5.00		89.6	78-120	2.86	25
Indeno(1,2,3-cd)pyrene	4.63		0.500	ug/L	5.00		92.6	62-123	8.79	25
Hexachloroethane	3.67		0.500	ug/L	5.00		73.4	68-120	0.546	28
Hexachlorobutadiene	3.74		0.500	ug/L	5.00		74.8	68-120	2.44	25
Hexachlorobenzene	4.51		0.500	ug/L	5.00		90.2	67-118	6.88	25
Fluorene	4.38		0.500	ug/L	5.00		87.6	74-120	0.683	25
Fluoranthene	4.70		0.500	ug/L	5.00		94.0	70-121	3.02	25
n-Nitroso-di-n-propylamine	4.37		0.500	ug/L	5.00		87.4	71-112	1.59	25
1,4-Dinitrobenzene	4.84		0.500	ug/L	5.00		96.8	71-121	4.25	25
2,4-Dinitrophenol	4.18		0.500	ug/L	5.00		83.6	21-128	17.9	36
2-Chlorophenol	4.13		0.500	ug/L	5.00		82.6	64-120	0.00	33
2,4,6-Trichlorophenol	4.39		0.500	ug/L	5.00		87.8	72-120	0.457	25
2,4,5-Trichlorophenol	4.39		0.500	ug/L	5.00		87.8	71-120	1.15	25
2,3,5,6-Tetrachlorophenol	4.20		0.500	ug/L	5.00		84.0	52-115	1.89	25
Anthracene	4.50		0.500	ug/L	5.00		90.0	76-120	0.222	25
1-Methylnaphthalene	4.26		0.500	ug/L	5.00		85.2	67-121	0.707	25
2,4-Dinitrotoluene	4.58		0.500	ug/L	5.00		91.6	74-121	4.48	25
1,4-Dichlorobenzene (para-Dichlorobenzene)	3.85		0.500	ug/L	5.00		77.0	67-120	0.260	25
1,3-Dinitrobenzene	4.27		0.500	ug/L	5.00		85.4	75-123	9.59	25

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Quality Control Data
(Continued)

Semivolatiles (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BBI0298 - SVOC Water (Continued)										
LCS Dup (BBI0298-BSD1)					Prepared: 9/8/2021 Analyzed: 9/13/2021					
m-Dichlorobenzene	3.82		0.500	ug/L	5.00		76.4	67-120	1.32	25
1,2-Dinitrobenzene	3.73		0.500	ug/L	5.00		74.6	70-120	16.0	25
1,2-Dichlorobenzene (ortho-Dichlorobenzene)	3.94		0.500	ug/L	5.00		78.8	67-120	0.764	25
1,2,4-Trichlorobenzene	4.01		0.500	ug/L	5.00		80.2	69-120	3.81	25
2,3,4,6-Tetrachlorophenol	4.03		0.500	ug/L	5.00		80.6	66-120	5.31	25
4-Bromophenyl-phenylether	4.58		0.500	ug/L	5.00		91.6	71-121	6.77	25
Acenaphthylene	4.44		0.500	ug/L	5.00		88.8	75-120	1.82	30
Acenaphthene	4.20		0.500	ug/L	5.00		84.0	76-120	2.17	25
4-Nitrophenol	3.26		0.500	ug/L	5.00		65.2	52-118	23.3	35
4-Nitroaniline	4.12		0.500	ug/L	5.00		82.4	47-128	9.48	32
4-Chlorophenyl-phenylether	4.29		0.500	ug/L	5.00		85.8	72-120	0.00	25
2,4-Dichlorophenol	4.25		0.500	ug/L	5.00		85.0	72-120	0.703	25
4-Chloro-3-methylphenol	4.22		0.500	ug/L	5.00		84.4	74-120	6.20	25
2-Chloronaphthalene	4.39		0.500	ug/L	5.00		87.8	72-120	1.15	25
4,6-Dinitro-2-methylphenol	4.38		0.500	ug/L	5.00		87.6	26-150	7.47	25
3-Nitroaniline	3.96		0.500	ug/L	5.00		79.2	49-121	6.59	39
3+4-Methylphenol	4.20		0.500	ug/L	5.00		84.0	68-120	1.42	25
2-Nitrophenol	4.24		0.500	ug/L	5.00		84.8	69-120	0.710	25
2-Nitroaniline	4.39		0.500	ug/L	5.00		87.8	69-120	8.71	25
2-Methylphenol	4.05		0.500	ug/L	5.00		81.0	66-120	0.738	25
2-Methylnaphthalene	4.27		0.500	ug/L	5.00		85.4	67-121	0.705	25
4-Chloroaniline	3.04		0.500	ug/L	5.00		60.8	30-130	0.992	40
Surrogate: Phenol-2,3,4,5,6-d5			*45.6*	*ug/L*	*50.5*		*90.3*	*51-112*		
Surrogate: Nitrobenzene-d5			*21.8*	*ug/L*	*25.0*		*87.3*	*65-110*		
Surrogate: Terphenyl-d14			*24.7*	*ug/L*	*25.8*		*95.8*	*57-133*		
Surrogate: 2-Fluorophenol			*33.5*	*ug/L*	*50.0*		*67.0*	*37-110*		
Surrogate: 2-Fluorobiphenyl			*29.9*	*ug/L*	*25.5*		*117*	*57-120*		
Surrogate: 2,4,6-Tribromophenol			*51.1*	*ug/L*	*51.8*		*98.7*	*48-120*		

Quality Control Data
(Continued)

Volatiles

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BBI0293 - VOC										
Blank (BBI0293-BLK1)					Prepared & Analyzed: 9/10/2021					
Tetrahydrofuran	ND	U	0.500	ug/L						
LCS (BBI0293-BS1)					Prepared & Analyzed: 9/10/2021					
Tetrahydrofuran	21.9		0.500	ug/L	20.0		109	80-120		
Matrix Spike (BBI0293-MS1)		**Source: MBI0298-01**			Prepared & Analyzed: 9/10/2021					
Tetrahydrofuran	108		2.50	ug/L	100	ND	108	70-130		
Matrix Spike Dup (BBI0293-MSD1)		**Source: MBI0298-01**			Prepared & Analyzed: 9/10/2021					

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Quality Control Data
(Continued)

Volatiles (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BBI0293 - VOC (Continued)										
Matrix Spike Dup (BBI0293-MSD1)		**Source: MBI0298-01**			Prepared & Analyzed: 9/10/2021					
Tetrahydrofuran	98.4		2.50	ug/L	100	ND	98.4	70-130	9.12	25

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

Hall

MBI0301

Due: 09/22/21

Wel

SUB CONTRACTOR: Anatek ID	COMPANY: Anatek Labs, Inc.	PHONE: (208) 883-2839	FAX: (208) 882-9246
ADDRESS: 1282 Alturas Dr		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Moscow, ID 83843			

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2109132-001A	RG North-20210901	VOAHCL	Aqueous	9/1/2021 10:05:00 AM	3	8260: Tetrahydrofuran
2	2109132-001K	RG North-20210901	1LAMGU	Aqueous	9/1/2021 10:05:00 AM	2	8270 See attached list
3	2109132-003A	RG South-20210902	VOAHCL	Aqueous	9/2/2021 9:20:00 AM	3	8260: Tetrahydrofuran
4	2109132-003K	RG South-20210902	1LAMGU	Aqueous	9/2/2021 9:20:00 AM	2	8270 See attached list
5	2109132-006A	Trip Blank	VOAHCL	Trip Blank		2	8260: Tetrahydrofuran

SeL 9/3/21

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: SeL	Date: 9/2/2021	Time: 2:44 PM	Received By: CS	Date: 09/03/21	Time: 1241
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: ____ °C Attempt to Cool ?: ____

Comments: ____

MBI0301

Due: 09/22/21

Collaborative Monitoring Cooperative - Analyses Li

Attach to Chain of Custody

Please refer to attached NPDES Permit No. NMR04A00 Appendix F. Methods and minimum (MQL's) will be those approved under 40 CFR 136 and specified in the attached permit

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
Polychlorinated biphenyls (PCBs)	1336-36-3	Total	1668	0.014
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	8081	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-enumeration			SM 9223B	
pH			SM 4500	
Phosphorus		Dissolved	365.1	100
Phosphorus		Total	365.1	100
Chromium IV		Total	3500Cr C-2011	100

Anatek Labs, Inc.

Sample Receipt and Preservation Form

MBI0301

Due: 09/22/21

Client Name: HALL Project:

TAT: (Normal) RUSH: _____ days

Samples Received From: (FedEx) UPS USPS Client Courier Other: _____

Custody Seal on Cooler/Box: (Yes) No Custody Seals Intact: (Yes) No N/A

Number of Coolers/Boxes: 1 Type of Ice: (Ice/Ice Packs) Blue Ice Dry Ice None

Packing Material: (Bubble Wrap) Bags Foam/Peanuts None Other: (Paper)

Cooler Temp As Read (°C): 2.6 Cooler Temp Corrected (°C): — Thermometer Used: IR-5

				Comments:
Samples Received Intact?	(Yes)	No	N/A	
Chain of Custody Present?	(Yes)	No	N/A	
Samples Received Within Hold Time?	(Yes)	No	N/A	
Samples Properly Preserved?	(Yes)	No	N/A	
VOC Vials Free of Headspace (<6mm)?	(Yes)	No	N/A	
VOC Trip Blanks Present?	(Yes)	No	N/A	
Labels and Chains Agree?	(Yes)	No	N/A	
Total Number of Sample Bottles Received: 10				

Chain of Custody Fully Completed?	(Yes)	No	N/A	
Correct Containers Received?	(Yes)	No	N/A	
Anatek Bottles Used?	Yes	(No)	Unknown	

Record preservatives (and lot numbers, if known) for containers below:

HCl - 8260 - 54441 x 6 + 2TB

Notes, comments, etc. (also use this space if contacting the client - record names and date/time)

8270 - 1L x2

Received/Inspected By: _____ Date/Time: 09/08/2021 1241

Form F19.00 - Eff 8 Feb 2019

ANALYTICAL REPORT

September 13, 2021

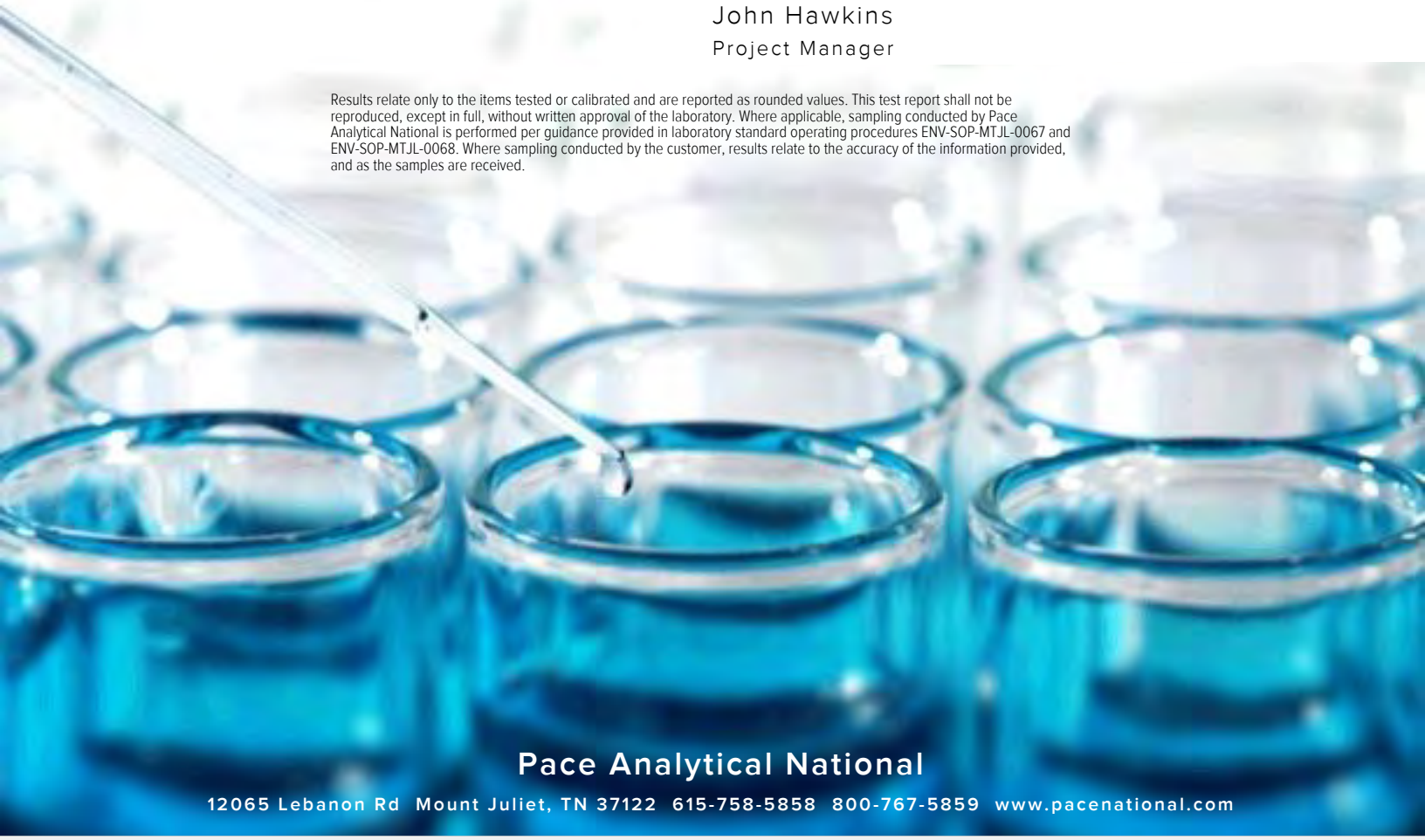
Hall Environmental Analysis Laboratory

Sample Delivery Group:	L1400264
Samples Received:	09/08/2021
Project Number:	
Description:	

Report To: Jackie Bolte
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

2109132-001 RG NORTH-20210901 L1400264-01 WW

Collected by	Collected date/time	Received date/time
	09/01/21 10:05	09/08/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 3500Cr C-2011	WG1737107	1	09/10/21 16:47	09/10/21 16:47	GB	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1737390	1	09/09/21 20:00	09/09/21 23:09	BFG	Mt. Juliet, TN

2109132-003 RG SOUTH-20210902 L1400264-02 WW

Collected by	Collected date/time	Received date/time
	09/02/21 09:20	09/08/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 3500Cr C-2011	WG1737107	1	09/10/21 17:03	09/10/21 17:03	GB	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1737390	1	09/09/21 20:00	09/09/21 23:09	BFG	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Wet Chemistry by Method 3500Cr C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		0.000500	1	09/10/2021 16:47	WG1737107

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	22.2		20.0	1	09/09/2021 23:09	WG1737390

Wet Chemistry by Method 3500Cr C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		0.000500	1	09/10/2021 17:03	WG1737107

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	54.2		20.0	1	09/09/2021 23:09	WG1737390

Method Blank (MB)

(MB) R3703139-1 09/10/21 11:55

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

L1397842-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1397842-03 09/10/21 13:33 • (DUP) R3703139-3 09/10/21 13:43

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

L1400264-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1400264-02 09/10/21 17:03 • (DUP) R3703139-7 09/10/21 17:11

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

Laboratory Control Sample (LCS)

(LCS) R3703139-2 09/10/21 12:03

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	0.00200	0.00200	100	90.0-110	

L1397842-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1397842-04 09/10/21 13:51 • (MS) R3703139-4 09/10/21 13:58 • (MSD) R3703139-5 09/10/21 14:06

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexavalent Chromium	0.0500	0.109	0.152	0.152	86.1	87.0	1	90.0-110	E J6	E J6	0.294	20

L1400264-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1400264-01 09/10/21 16:47 • (MS) R3703139-6 09/10/21 16:55

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	0.0500	ND	0.0492	98.5	1	90.0-110	

Method Blank (MB)

(MB) R3702571-1 09/09/21 23:07

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
COD	U		11.7	20.0

L1400084-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1400084-01 09/09/21 23:07 • (DUP) R3702571-3 09/09/21 23:08

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
COD	ND	ND	1	200	P1	20

L1400373-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1400373-03 09/09/21 23:11 • (DUP) R3702571-6 09/09/21 23:11

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

Laboratory Control Sample (LCS)

(LCS) R3702571-2 09/09/21 23:07

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
COD	500	495	98.9	90.0-110	

L1400264-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1400264-02 09/09/21 23:09 • (MS) R3702571-4 09/09/21 23:10 • (MSD) R3702571-5 09/09/21 23:10

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
COD	500	54.2	568	570	103	103	1	80.0-120			0.399	20

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

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

SUB CONTRATOR: Pace TN	COMPANY: PACE TN		PHONE: (800) 767-5859	FAX: (615) 758-5859	
ADDRESS: 12065 Lebanon Rd			ACCOUNT #:	EMAIL:	
CITY, STATE, ZIP: Mt. Juliet, TN 37122					

L1400264

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS	
1	2109132-001H	RG North-20210901	500HDPEH2SO4	Aqueous	9/1/2021 10:05:00 AM	1	COD	-01
~~2~~	~~2109132-001I~~	~~RG North-20210901~~	~~1LHDPEHNO3~~	~~Aqueous~~	~~9/1/2021 10:05:00 AM~~	~~1~~	~~Adjusted Gross Alpha~~	
3	2109132-001J	RG North-20210901	120mL	Aqueous	9/1/2021 10:05:00 AM	1	Cr 6	-01
4	2109132-003H	RG South-20210902	500HDPEH2SO4	Aqueous	9/2/2021 9:20:00 AM	1	COD	-02
~~5~~	~~2109132-003I~~	~~RG South-20210902~~	~~1LHDPEHNO3~~	~~Aqueous~~	~~9/2/2021 9:20:00 AM~~	~~1~~	~~Adjusted Gross Alpha~~	
6	2109132-003J	RG South-20210902	120mL	Aqueous	9/2/2021 9:20:00 AM	1	Cr 6	-02

Sample Receipt Checklist

COC Seal Present/Intact: Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
RAD Screen <0.5 mR/hr: Y N

If Applicable
VOA Zero Headspace: Y N
Pres.Correct/Check: Y N

B182

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.

* in separate cooler SGL 9/7/21

Relinquished By: SGL	Date: 9/2/2021	Time: 2:48 PM	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date: 9/8/21	Time: 9:15

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 1.3+1=1.4 #205 Attempt to Cool ?
Comments

2834/8373660

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

October 01, 2021

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

Re: Routine Analysis
Work Order: 18708
SDG: 2109132

Dear Mr. Freeman:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on September 08, 2021. 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

Purchase Order: IDIQ Pricing
Enclosures

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

CFA WO#18708

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	2109132-001G	RG North-20210901	1LAMGU	Aqueous	9/1/2021 10:05:00 AM	2	PCB Congeners 1668
2	2109132-003G	RG South-20210902	1LAMGU	Aqueous	9/2/2021 9:20:00 AM	2	PCB Congeners 1668

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.Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Ple

Relinquished By: Sea	Date: 9/2/2021	Time: 2:49 PM	Received By:	Date: 9/9/21	Time: 13:20
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 7.7 °C Attempt to Cool ? ✓
Comments:

SAMPLE RECEIPT CHECKLIST

Cape Fear Analytical

Client: HALL	Work Order: 18708
Shipping Company: FedEx	Date/Time Received: 9/8/21 13:20

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	Custody seal/s present on cooler?	✓			Seal intact? (Yes) No
3	Chain of Custody documents included with shipment?	✓			
4	Samples requiring cold preservation within 0-6°C?			✓	Preservation Method: ice bags loose ice (blue ice) dry ice none other (describe) Temperature Blank present: Yes (No) 7.7+0.0=7.7
5	Aqueous samples found to have visible solids?	✓			Sample IDs, containers affected: all - minimal solids
5	Samples requiring chemical preservation at proper pH?	✓			Sample IDs, containers affected and pH observed: all - pH=7 If preservative added, Lot#:
7	Samples requiring preservation have no residual chlorine?	✓			Sample IDs, containers affected: If preservative added, Lot#:
8	Samples received within holding time?	✓			Sample IDs, tests affected:
9	Sample IDs on COC match IDs on containers?	✓			Sample IDs, containers affected:
10	Date & time of COC match date & time on containers?	✓			Sample IDs, containers affected:
11	Number of containers received match number indicated on COC?			✓	List type and number of containers / Sample IDs, containers affected: # containers listed on COC = 2 bottles per sample received 2-1 Liter - 1 per sample
12	COC form is properly signed in relinquished/received sections?	✓			

Comments:

Checklist performed by: Initials: JP Date: 9/8/21

CF-UD-F-7

Cynde Larkins

From: Andy Freeman <andy@hallenvironmental.com>
Sent: Wednesday, September 8, 2021 3:39 PM
To: Cynde Larkins
Subject: RE: 2109132

Please proceed with the analysis and note the temperature.

CFA WO#18708

Thank you,

Andy Freeman - Hall Environmental, 4901 Hawkins NE, Albuquerque, NM 87109, 505-345-3975, 505-345-4107 fax
www.hallenvironmental.com - andy@hallenvironmental.com - https://www.surveymonkey.com/r/NGVXRBV
For easy access to all of your past reports, setup an account on the Hall Environmental Web Portal. Just visit our website and follow the instructions for setting up an account.
We welcome your feedback. Please visit the survey monkey link to complete a brief survey on your experience with Hall Environmental.

From: Cynde Larkins <Cynde.Larkins@cfanalytical.com>
Sent: Wednesday, September 8, 2021 1:39 PM
To: Andy Freeman <andy@hallenvironmental.com>
Subject: 2109132

Andy,
CFA received these samples today in good condition but out of temperature at 7.7°C. Please advise if the lab can proceed with extraction and analysis.
Thank you,

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

CFA | Cape Fear Analytical

PCB Congeners Analysis

Case Narrative

PCBC Case Narrative
Hall Environmental Analysis Laboratory (HALL)
SDG 2109132
Work Order 18708

Method/Analysis Information

Product:	**PCB Congeners by EPA Method 1668A in Liquids**
Analytical Method:	EPA Method 1668A
Extraction Method:	SW846 3520C
Analytical Batch Number:	47901
Clean Up Batch Number:	47899
Extraction Batch Number:	47898

Sample Analysis

Samples were received at 7.7°C. (18708001,18708002).
The following samples were analyzed using the analytical protocol as established in EPA Method 1668A:

Sample ID	Client ID
12030238	Method Blank (MB)
12030239	Laboratory Control Sample (LCS)
12030240	Laboratory Control Sample Duplicate (LCSD)
18708001	2109132-001G RG North-20210901
18708002	2109132-003G RG South-20210902

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# 9.

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

Receipt Temperature
Samples were outside of the recommended range of 0-6°C. The client was notified of the temperature exceedance and the laboratory was instructed to proceed with analysis.

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

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
HRP875_1	PCB Analysis	PCB Analysis	SPB-Octyl	30m x 0.25mm, 0.25um

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: 2109132 CFA Work Order: 18708

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: Erin Suhrie**

Date: 01 OCT 2021 **Title: Data Validator**

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**18708001**	**Date Collected:**	**09/01/2021 10:05**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**09/08/2021 13:20**		
Client ID:	**2109132-001G RG North-20210901**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/23/2021 08:11**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a_2-4**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**918.3 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
2051-60-7	1-MoCB	U	ND	pg/L	1.26	109
2051-61-8	2-MoCB	U	ND	pg/L	1.63	109
2051-62-9	3-MoCB	U	ND	pg/L	1.57	109
13029-08-8	4-DiCB	U	ND	pg/L	8.47	109
16605-91-7	5-DiCB	U	ND	pg/L	6.23	109
25569-80-6	6-DiCB	U	ND	pg/L	5.82	109
33284-50-3	7-DiCB	U	ND	pg/L	5.31	109
34883-43-7	8-DiCB	U	ND	pg/L	5.12	109
34883-39-1	9-DiCB	U	ND	pg/L	6.73	109
33146-45-1	10-DiCB	U	ND	pg/L	5.51	109
2050-67-1	11-DiCB	J	41.6	pg/L	6.47	109
2974-92-7	12-DiCB	CU	ND	pg/L	5.84	218
2974-90-5	13-DiCB	C12				
34883-41-5	14-DiCB	U	ND	pg/L	6.27	109
2050-68-2	15-DiCB	U	ND	pg/L	6.49	109
38444-78-9	16-TrCB	U	ND	pg/L	2.83	109
37680-66-3	17-TrCB	U	ND	pg/L	2.74	109
37680-65-2	18-TrCB	CJ	3.85	pg/L	2.31	218
38444-73-4	19-TrCB	U	ND	pg/L	2.83	109
38444-84-7	20-TrCB	CJ	6.60	pg/L	1.85	218
55702-46-0	21-TrCB	CJ	3.20	pg/L	1.89	218
38444-85-8	22-TrCB	J	2.48	pg/L	1.81	109
55720-44-0	23-TrCB	U	ND	pg/L	1.81	109
55702-45-9	24-TrCB	U	ND	pg/L	1.85	109
55712-37-3	25-TrCB	U	ND	pg/L	1.68	109
38444-81-4	26-TrCB	CU	ND	pg/L	1.96	218
38444-76-7	27-TrCB	U	ND	pg/L	2.13	109
7012-37-5	28-TrCB	C20				
15862-07-4	29-TrCB	C26				
35693-92-6	30-TrCB	C18				
16606-02-3	31-TrCB	J	5.10	pg/L	1.92	109
38444-77-8	32-TrCB	U	ND	pg/L	1.89	109

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:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**18708001**	**Date Collected:**	**09/01/2021 10:05**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**09/08/2021 13:20**		
Client ID:	**2109132-001G RG North-20210901**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/23/2021 08:11**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a_2-4**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**918.3 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
38444-86-9	33-TrCB	C21				
37680-68-5	34-TrCB	U	ND	pg/L	2.20	109
37680-69-6	35-TrCB	U	ND	pg/L	1.83	109
38444-87-0	36-TrCB	U	ND	pg/L	1.59	109
38444-90-5	37-TrCB	U	ND	pg/L	2.53	109
53555-66-1	38-TrCB	U	ND	pg/L	1.81	109
38444-88-1	39-TrCB	U	ND	pg/L	1.50	109
38444-93-8	40-TeCB	CU	ND	pg/L	2.81	218
52663-59-9	41-TeCB	U	ND	pg/L	4.18	109
36559-22-5	42-TeCB	U	ND	pg/L	3.35	109
70362-46-8	43-TeCB	U	ND	pg/L	4.53	109
41464-39-5	44-TeCB	CJ	5.03	pg/L	3.03	327
70362-45-7	45-TeCB	CJ	2.11	pg/L	1.81	218
41464-47-5	46-TeCB	U	ND	pg/L	1.85	109
2437-79-8	47-TeCB	C44				
70362-47-9	48-TeCB	U	ND	pg/L	2.96	109
41464-40-8	49-TeCB	CU	ND	pg/L	2.87	218
62796-65-0	50-TeCB	CU	ND	pg/L	1.70	218
68194-04-7	51-TeCB	C45				
35693-99-3	52-TeCB	U	ND	pg/L	5.92	218
41464-41-9	53-TeCB	C50				
15968-05-5	54-TeCB	U	ND	pg/L	1.37	109
74338-24-2	55-TeCB	U	ND	pg/L	1.66	109
41464-43-1	56-TeCB	U	ND	pg/L	1.79	109
70424-67-8	57-TeCB	U	ND	pg/L	1.76	109
41464-49-7	58-TeCB	U	ND	pg/L	1.59	109
74472-33-6	59-TeCB	CU	ND	pg/L	2.42	327
33025-41-1	60-TeCB	U	ND	pg/L	1.59	109
33284-53-6	61-TeCB	BCJ	7.21	pg/L	1.66	436
54230-22-7	62-TeCB	C59				
74472-34-7	63-TeCB	U	ND	pg/L	1.70	109
52663-58-8	64-TeCB	U	ND	pg/L	2.24	109

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:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**18708001**	**Date Collected:**	**09/01/2021 10:05**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**09/08/2021 13:20**		
Client ID:	**2109132-001G RG North-20210901**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/23/2021 08:11**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a_2-4**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**918.3 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
33284-54-7	65-TeCB	C44				
32598-10-0	66-TeCB	U	ND	pg/L	3.22	109
73575-53-8	67-TeCB	U	ND	pg/L	1.52	109
73575-52-7	68-TeCB	U	ND	pg/L	1.46	109
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	1.74	109
74338-23-1	73-TeCB	U	ND	pg/L	2.29	109
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	1.83	109
70362-49-1	78-TeCB	U	ND	pg/L	1.98	109
41464-48-6	79-TeCB	U	ND	pg/L	1.63	109
33284-52-5	80-TeCB	U	ND	pg/L	1.48	109
70362-50-4	81-TeCB	U	ND	pg/L	1.72	109
52663-62-4	82-PeCB	U	ND	pg/L	3.14	109
60145-20-2	83-PeCB	U	ND	pg/L	3.22	109
52663-60-2	84-PeCB	U	ND	pg/L	2.70	109
65510-45-4	85-PeCB	CU	ND	pg/L	2.05	327
55312-69-1	86-PeCB	CJ	5.03	pg/L	2.18	653
38380-02-8	87-PeCB	C86				
55215-17-3	88-PeCB	CU	ND	pg/L	2.59	218
73575-57-2	89-PeCB	U	ND	pg/L	3.20	109
68194-07-0	90-PeCB	CU	ND	pg/L	6.16	327
68194-05-8	91-PeCB	C88				
52663-61-3	92-PeCB	U	ND	pg/L	3.03	109
73575-56-1	93-PeCB	CU	ND	pg/L	2.33	218
73575-55-0	94-PeCB	U	ND	pg/L	2.46	109
38379-99-6	95-PeCB	J	4.97	pg/L	2.98	109
73575-54-9	96-PeCB	U	ND	pg/L	1.79	109

Comments:

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

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PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**18708001**	**Date Collected:**	**09/01/2021 10:05**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**09/08/2021 13:20**		
Client ID:	**2109132-001G RG North-20210901**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/23/2021 08:11**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a_2-4**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**918.3 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
41464-51-1	97-PeCB	C86				
60233-25-2	98-PeCB	CU	ND	pg/L	2.59	218
38380-01-7	99-PeCB	U	ND	pg/L	2.05	109
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	2.70	109
56558-16-8	104-PeCB	U	ND	pg/L	1.63	109
32598-14-4	105-PeCB	J	3.85	pg/L	2.59	109
70424-69-0	106-PeCB	U	ND	pg/L	2.81	109
70424-68-9	107-PeCB	U	ND	pg/L	2.00	109
70362-41-3	108-PeCB	CU	ND	pg/L	2.42	218
74472-35-8	109-PeCB	C86				
38380-03-9	110-PeCB	CJ	7.36	pg/L	1.96	218
39635-32-0	111-PeCB	U	ND	pg/L	1.72	109
74472-36-9	112-PeCB	U	ND	pg/L	1.94	109
68194-10-5	113-PeCB	C90				
74472-37-0	114-PeCB	U	ND	pg/L	2.44	109
74472-38-1	115-PeCB	C110				
18259-05-7	116-PeCB	C85				
68194-11-6	117-PeCB	C85				
31508-00-6	118-PeCB	J	5.38	pg/L	2.40	109
56558-17-9	119-PeCB	C86				
68194-12-7	120-PeCB	U	ND	pg/L	2.05	109
56558-18-0	121-PeCB	U	ND	pg/L	1.76	109
76842-07-4	122-PeCB	U	ND	pg/L	3.29	109
65510-44-3	123-PeCB	U	ND	pg/L	2.40	109
70424-70-3	124-PeCB	C108				
74472-39-2	125-PeCB	C86				
57465-28-8	126-PeCB	U	ND	pg/L	2.83	109
39635-33-1	127-PeCB	U	ND	pg/L	2.66	109
38380-07-3	128-HxCB	CU	ND	pg/L	1.87	218

Comments:

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

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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:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**18708001**	**Date Collected:**	**09/01/2021 10:05**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**09/08/2021 13:20**		
Client ID:	**2109132-001G RG North-20210901**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/23/2021 08:11**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a_2-4**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**918.3 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
55215-18-4	129-HxCB	CJ	22.1	pg/L	1.94	327
52663-66-8	130-HxCB	U	ND	pg/L	2.37	109
61798-70-7	131-HxCB	U	ND	pg/L	2.33	109
38380-05-1	132-HxCB	J	4.31	pg/L	2.11	109
35694-04-3	133-HxCB	U	ND	pg/L	2.40	109
52704-70-8	134-HxCB	U	ND	pg/L	2.48	109
52744-13-5	135-HxCB	CU	ND	pg/L	6.71	218
38411-22-2	136-HxCB	U	ND	pg/L	2.44	109
35694-06-5	137-HxCB	U	ND	pg/L	1.79	109
35065-28-2	138-HxCB	C129				
56030-56-9	139-HxCB	CU	ND	pg/L	1.92	218
59291-64-4	140-HxCB	C139				
52712-04-6	141-HxCB	J	4.97	pg/L	2.13	109
41411-61-4	142-HxCB	U	ND	pg/L	2.64	109
68194-15-0	143-HxCB	U	ND	pg/L	2.81	109
68194-14-9	144-HxCB	U	ND	pg/L	1.85	109
74472-40-5	145-HxCB	U	ND	pg/L	1.24	109
51908-16-8	146-HxCB	U	ND	pg/L	2.92	109
68194-13-8	147-HxCB	CJ	14.6	pg/L	2.13	218
74472-41-6	148-HxCB	U	ND	pg/L	1.79	109
38380-04-0	149-HxCB	C147				
68194-08-1	150-HxCB	U	ND	pg/L	1.22	109
52663-63-5	151-HxCB	C135				
68194-09-2	152-HxCB	U	ND	pg/L	1.42	109
35065-27-1	153-HxCB	BCJ	20.3	pg/L	1.59	218
60145-22-4	154-HxCB	U	ND	pg/L	1.48	109
33979-03-2	155-HxCB	U	ND	pg/L	1.22	109
38380-08-4	156-HxCB	BCJ	3.35	pg/L	2.03	218
69782-90-7	157-HxCB	C156				
74472-42-7	158-HxCB	U	ND	pg/L	1.76	109
39635-35-3	159-HxCB	U	ND	pg/L	1.57	109
41411-62-5	160-HxCB	U	ND	pg/L	1.66	109

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:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**18708001**	**Date Collected:**	**09/01/2021 10:05**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**09/08/2021 13:20**		
Client ID:	**2109132-001G RG North-20210901**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/23/2021 08:11**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a_2-4**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**918.3 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
74472-43-8	161-HxCB	U	ND	pg/L	1.76	109
39635-34-2	162-HxCB	U	ND	pg/L	1.42	109
74472-44-9	163-HxCB	C129				
74472-45-0	164-HxCB	U	ND	pg/L	1.70	109
74472-46-1	165-HxCB	U	ND	pg/L	1.59	109
41411-63-6	166-HxCB	C128				
52663-72-6	167-HxCB	U	ND	pg/L	1.50	109
59291-65-5	168-HxCB	C153				
32774-16-6	169-HxCB	U	ND	pg/L	1.72	109
35065-30-6	170-HpCB	J	10.0	pg/L	2.05	109
52663-71-5	171-HpCB	CU	ND	pg/L	3.14	218
52663-74-8	172-HpCB	U	ND	pg/L	2.16	109
68194-16-1	173-HpCB	C171				
38411-25-5	174-HpCB	J	14.0	pg/L	2.03	109
40186-70-7	175-HpCB	U	ND	pg/L	2.05	109
52663-65-7	176-HpCB	U	ND	pg/L	1.61	109
52663-70-4	177-HpCB	U	ND	pg/L	7.95	109
52663-67-9	178-HpCB	U	ND	pg/L	3.99	109
52663-64-6	179-HpCB	U	ND	pg/L	5.42	109
35065-29-3	180-HpCB	CJ	25.4	pg/L	1.68	218
74472-47-2	181-HpCB	U	ND	pg/L	1.76	109
60145-23-5	182-HpCB	U	ND	pg/L	1.98	109
52663-69-1	183-HpCB	CJ	6.53	pg/L	1.85	218
74472-48-3	184-HpCB	U	ND	pg/L	1.37	109
52712-05-7	185-HpCB	C183				
74472-49-4	186-HpCB	U	ND	pg/L	1.48	109
52663-68-0	187-HpCB	J	15.1	pg/L	1.74	109
74487-85-7	188-HpCB	U	ND	pg/L	1.57	109
39635-31-9	189-HpCB	U	ND	pg/L	1.57	109
41411-64-7	190-HpCB	U	ND	pg/L	3.18	109
74472-50-7	191-HpCB	U	ND	pg/L	1.57	109
74472-51-8	192-HpCB	U	ND	pg/L	1.57	109

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:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**18708001**	**Date Collected:**	**09/01/2021 10:05**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**09/08/2021 13:20**		
Client ID:	**2109132-001G RG North-20210901**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/23/2021 08:11**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a_2-4**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**918.3 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
69782-91-8	193-HpCB	C180				
35694-08-7	194-OcCB	BJ	7.08	pg/L	1.79	109
52663-78-2	195-OcCB	J	3.20	pg/L	1.85	109
42740-50-1	196-OcCB	J	3.35	pg/L	1.70	109
33091-17-7	197-OcCB	CU	ND	pg/L	1.28	218
68194-17-2	198-OcCB	CJ	8.04	pg/L	1.66	218
52663-75-9	199-OcCB	C198				
52663-73-7	200-OcCB	C197				
40186-71-8	201-OcCB	U	ND	pg/L	1.28	109
2136-99-4	202-OcCB	U	ND	pg/L	1.85	109
52663-76-0	203-OcCB	BJ	3.99	pg/L	1.48	109
74472-52-9	204-OcCB	U	ND	pg/L	1.28	109
74472-53-0	205-OcCB	U	ND	pg/L	1.42	109
40186-72-9	206-NoCB	U	ND	pg/L	2.48	109
52663-79-3	207-NoCB	U	ND	pg/L	1.85	109
52663-77-1	208-NoCB	U	ND	pg/L	1.92	109
2051-24-3	209-DeCB	U	ND	pg/L	1.81	109
1336-36-3	Total PCB Congeners	J	270	pg/L		109

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1-MoCB		780	2180	pg/L	35.8	(15%-150%)
13C-3-MoCB		864	2180	pg/L	39.7	(15%-150%)
13C-4-DiCB		1020	2180	pg/L	46.6	(25%-150%)
13C-15-DiCB		1360	2180	pg/L	62.4	(25%-150%)
13C-19-TrCB		1330	2180	pg/L	60.9	(25%-150%)
13C-37-TrCB		1340	2180	pg/L	61.7	(25%-150%)
13C-54-TeCB		1180	2180	pg/L	54.3	(25%-150%)
13C-77-TeCB		1930	2180	pg/L	88.6	(25%-150%)
13C-81-TeCB		1940	2180	pg/L	88.9	(25%-150%)
13C-104-PeCB		1060	2180	pg/L	48.9	(25%-150%)
13C-105-PeCB		1610	2180	pg/L	73.8	(25%-150%)
13C-114-PeCB		1590	2180	pg/L	72.8	(25%-150%)
13C-118-PeCB		1560	2180	pg/L	71.6	(25%-150%)
13C-123-PeCB		1650	2180	pg/L	76.0	(25%-150%)
13C-126-PeCB		1740	2180	pg/L	79.9	(25%-150%)
13C-155-HxCB		1240	2180	pg/L	57.0	(25%-150%)
13C-156-HxCB	C	2620	4360	pg/L	60.2	(25%-150%)
13C-157-HxCB	C156L					
13C-167-HxCB		1350	2180	pg/L	62.1	(25%-150%)
13C-169-HxCB		1400	2180	pg/L	64.1	(25%-150%)
13C-188-HpCB		1670	2180	pg/L	76.6	(25%-150%)
13C-189-HpCB		1460	2180	pg/L	67.0	(25%-150%)

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**18708001**	**Date Collected:**	**09/01/2021 10:05**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**09/08/2021 13:20**		
Client ID:	**2109132-001G RG North-20210901**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/23/2021 08:11**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a_2-4**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**918.3 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-202-OcCB		1540	2180	pg/L	70.6	(25%-150%)
13C-205-OcCB		1750	2180	pg/L	80.1	(25%-150%)
13C-206-NoCB		1840	2180	pg/L	84.6	(25%-150%)
13C-208-NoCB		1550	2180	pg/L	71.3	(25%-150%)
13C-209-DeCB		1640	2180	pg/L	75.4	(25%-150%)
13C-28-TrCB		1610	2180	pg/L	74.1	(30%-135%)
13C-111-PeCB		1830	2180	pg/L	84.0	(30%-135%)
13C-178-HpCB		1920	2180	pg/L	88.3	(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:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**18708002**	**Date Collected:**	**09/02/2021 09:20**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**09/08/2021 13:20**		
Client ID:	**2109132-003G RG South-20210902**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/23/2021 09:21**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a_2-5**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**938.2 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
2051-60-7	1-MoCB	J	2.09	pg/L	0.938	107
2051-61-8	2-MoCB	J	2.03	pg/L	1.24	107
2051-62-9	3-MoCB	J	3.07	pg/L	1.22	107
13029-08-8	4-DiCB	U	ND	pg/L	7.80	107
16605-91-7	5-DiCB	U	ND	pg/L	5.52	107
25569-80-6	6-DiCB	U	ND	pg/L	5.14	107
33284-50-3	7-DiCB	U	ND	pg/L	4.71	107
34883-43-7	8-DiCB	U	ND	pg/L	4.52	107
34883-39-1	9-DiCB	U	ND	pg/L	5.95	107
33146-45-1	10-DiCB	U	ND	pg/L	5.97	107
2050-67-1	11-DiCB	J	95.7	pg/L	5.71	107
2974-92-7	12-DiCB	CU	ND	pg/L	5.16	213
2974-90-5	13-DiCB	C12				
34883-41-5	14-DiCB	U	ND	pg/L	5.54	107
2050-68-2	15-DiCB	J	10.4	pg/L	6.25	107
38444-78-9	16-TrCB	J	4.05	pg/L	2.69	107
37680-66-3	17-TrCB	U	ND	pg/L	3.97	107
37680-65-2	18-TrCB	CU	ND	pg/L	8.68	213
38444-73-4	19-TrCB	U	ND	pg/L	2.39	107
38444-84-7	20-TrCB	CU	ND	pg/L	17.0	213
55702-46-0	21-TrCB	CJ	7.08	pg/L	1.79	213
38444-85-8	22-TrCB	J	5.59	pg/L	1.71	107
55720-44-0	23-TrCB	U	ND	pg/L	1.73	107
55702-45-9	24-TrCB	U	ND	pg/L	1.75	107
55712-37-3	25-TrCB	U	ND	pg/L	1.60	107
38444-81-4	26-TrCB	CU	ND	pg/L	3.01	213
38444-76-7	27-TrCB	U	ND	pg/L	2.03	107
7012-37-5	28-TrCB	C20				
15862-07-4	29-TrCB	C26				
35693-92-6	30-TrCB	C18				
16606-02-3	31-TrCB	J	12.5	pg/L	1.81	107
38444-77-8	32-TrCB	J	3.20	pg/L	1.79	107

Comments:

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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:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**18708002**	**Date Collected:**	**09/02/2021 09:20**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**09/08/2021 13:20**		
Client ID:	**2109132-003G RG South-20210902**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/23/2021 09:21**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a_2-5**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**938.2 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
38444-86-9	33-TrCB	C21				
37680-68-5	34-TrCB	U	ND	pg/L	2.09	107
37680-69-6	35-TrCB	U	ND	pg/L	2.07	107
38444-87-0	36-TrCB	U	ND	pg/L	1.79	107
38444-90-5	37-TrCB	J	7.84	pg/L	2.28	107
53555-66-1	38-TrCB	U	ND	pg/L	2.05	107
38444-88-1	39-TrCB	U	ND	pg/L	1.71	107
38444-93-8	40-TeCB	CJ	5.90	pg/L	3.45	213
52663-59-9	41-TeCB	U	ND	pg/L	5.12	107
36559-22-5	42-TeCB	J	4.67	pg/L	4.11	107
70362-46-8	43-TeCB	U	ND	pg/L	5.54	107
41464-39-5	44-TeCB	CJ	19.9	pg/L	3.71	320
70362-45-7	45-TeCB	CJ	3.56	pg/L	1.96	213
41464-47-5	46-TeCB	U	ND	pg/L	2.03	107
2437-79-8	47-TeCB	C44				
70362-47-9	48-TeCB	U	ND	pg/L	3.62	107
41464-40-8	49-TeCB	CJ	10.7	pg/L	3.52	213
62796-65-0	50-TeCB	CJ	3.07	pg/L	1.85	213
68194-04-7	51-TeCB	C45				
35693-99-3	52-TeCB	J	35.8	pg/L	4.31	213
41464-41-9	53-TeCB	C50				
15968-05-5	54-TeCB	U	ND	pg/L	1.41	107
74338-24-2	55-TeCB	U	ND	pg/L	2.00	107
41464-43-1	56-TeCB	J	8.16	pg/L	2.17	107
70424-67-8	57-TeCB	U	ND	pg/L	2.15	107
41464-49-7	58-TeCB	U	ND	pg/L	1.92	107
74472-33-6	59-TeCB	CU	ND	pg/L	2.96	320
33025-41-1	60-TeCB	J	3.97	pg/L	1.94	107
33284-53-6	61-TeCB	BCJ	34.4	pg/L	2.00	426
54230-22-7	62-TeCB	C59				
74472-34-7	63-TeCB	U	ND	pg/L	2.07	107
52663-58-8	64-TeCB	J	8.16	pg/L	2.75	107

Comments:

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PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**18708002**	**Date Collected:**	**09/02/2021 09:20**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**09/08/2021 13:20**		
Client ID:	**2109132-003G RG South-20210902**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/23/2021 09:21**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a_2-5**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**938.2 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
33284-54-7	65-TeCB	C44				
32598-10-0	66-TeCB	J	13.5	pg/L	2.03	107
73575-53-8	67-TeCB	U	ND	pg/L	1.83	107
73575-52-7	68-TeCB	U	ND	pg/L	1.77	107
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	2.11	107
74338-23-1	73-TeCB	U	ND	pg/L	2.79	107
32690-93-0	74-TeCB	C61				
32598-12-2	75-TeCB	C59				
70362-48-0	76-TeCB	C61				
32598-13-3	77-TeCB	J	6.31	pg/L	2.30	107
70362-49-1	78-TeCB	U	ND	pg/L	2.41	107
41464-48-6	79-TeCB	U	ND	pg/L	1.98	107
33284-52-5	80-TeCB	U	ND	pg/L	1.79	107
70362-50-4	81-TeCB	U	ND	pg/L	2.13	107
52663-62-4	82-PeCB	J	9.23	pg/L	5.73	107
60145-20-2	83-PeCB	U	ND	pg/L	5.90	107
52663-60-2	84-PeCB	J	13.1	pg/L	4.97	107
65510-45-4	85-PeCB	CJ	8.25	pg/L	3.75	320
55312-69-1	86-PeCB	CJ	47.1	pg/L	3.99	640
38380-02-8	87-PeCB	C86				
55215-17-3	88-PeCB	CJ	7.53	pg/L	4.75	213
73575-57-2	89-PeCB	U	ND	pg/L	5.86	107
68194-07-0	90-PeCB	CJ	63.7	pg/L	4.16	320
68194-05-8	91-PeCB	C88				
52663-61-3	92-PeCB	J	12.4	pg/L	5.52	107
73575-56-1	93-PeCB	CU	ND	pg/L	4.26	213
73575-55-0	94-PeCB	U	ND	pg/L	4.52	107
38379-99-6	95-PeCB	J	47.6	pg/L	5.46	107
73575-54-9	96-PeCB	U	ND	pg/L	1.79	107

Comments:

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PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**18708002**	**Date Collected:**	**09/02/2021 09:20**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**09/08/2021 13:20**		
Client ID:	**2109132-003G RG South-20210902**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/23/2021 09:21**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a_2-5**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**938.2 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
41464-51-1	97-PeCB	C86				
60233-25-2	98-PeCB	CU	ND	pg/L	4.75	213
38380-01-7	99-PeCB	J	19.2	pg/L	3.77	107
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	4.95	107
56558-16-8	104-PeCB	U	ND	pg/L	1.64	107
32598-14-4	105-PeCB	J	32.6	pg/L	2.73	107
70424-69-0	106-PeCB	U	ND	pg/L	2.98	107
70424-68-9	107-PeCB	U	ND	pg/L	4.60	107
70362-41-3	108-PeCB	CU	ND	pg/L	2.56	213
74472-35-8	109-PeCB	C86				
38380-03-9	110-PeCB	CJ	93.9	pg/L	3.58	213
39635-32-0	111-PeCB	U	ND	pg/L	3.13	107
74472-36-9	112-PeCB	U	ND	pg/L	3.54	107
68194-10-5	113-PeCB	C90				
74472-37-0	114-PeCB	U	ND	pg/L	2.66	107
74472-38-1	115-PeCB	C110				
18259-05-7	116-PeCB	C85				
68194-11-6	117-PeCB	C85				
31508-00-6	118-PeCB	J	64.2	pg/L	2.56	107
56558-17-9	119-PeCB	C86				
68194-12-7	120-PeCB	U	ND	pg/L	3.75	107
56558-18-0	121-PeCB	U	ND	pg/L	3.22	107
76842-07-4	122-PeCB	U	ND	pg/L	3.50	107
65510-44-3	123-PeCB	U	ND	pg/L	2.54	107
70424-70-3	124-PeCB	C108				
74472-39-2	125-PeCB	C86				
57465-28-8	126-PeCB	U	ND	pg/L	2.92	107
39635-33-1	127-PeCB	U	ND	pg/L	2.84	107
38380-07-3	128-HxCB	CJ	20.6	pg/L	2.69	213

Comments:

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PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**18708002**	**Date Collected:**	**09/02/2021 09:20**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**09/08/2021 13:20**		
Client ID:	**2109132-003G RG South-20210902**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/23/2021 09:21**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a_2-5**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**938.2 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
55215-18-4	129-HxCB	CJ	151	pg/L	2.88	320
52663-66-8	130-HxCB	J	7.74	pg/L	3.56	107
61798-70-7	131-HxCB	U	ND	pg/L	3.50	107
38380-05-1	132-HxCB	J	38.2	pg/L	3.15	107
35694-04-3	133-HxCB	U	ND	pg/L	3.58	107
52704-70-8	134-HxCB	U	ND	pg/L	4.73	107
52744-13-5	135-HxCB	CJ	38.2	pg/L	1.68	213
38411-22-2	136-HxCB	J	13.3	pg/L	1.41	107
35694-06-5	137-HxCB	J	4.73	pg/L	2.66	107
35065-28-2	138-HxCB	C129				
56030-56-9	139-HxCB	CU	ND	pg/L	2.86	213
59291-64-4	140-HxCB	C139				
52712-04-6	141-HxCB	J	25.4	pg/L	3.20	107
41411-61-4	142-HxCB	U	ND	pg/L	3.92	107
68194-15-0	143-HxCB	U	ND	pg/L	4.20	107
68194-14-9	144-HxCB	J	5.44	pg/L	1.79	107
74472-40-5	145-HxCB	U	ND	pg/L	1.19	107
51908-16-8	146-HxCB	J	16.6	pg/L	2.69	107
68194-13-8	147-HxCB	CJ	83.4	pg/L	3.18	213
74472-41-6	148-HxCB	U	ND	pg/L	1.75	107
38380-04-0	149-HxCB	C147				
68194-08-1	150-HxCB	U	ND	pg/L	1.19	107
52663-63-5	151-HxCB	C135				
68194-09-2	152-HxCB	U	ND	pg/L	1.39	107
35065-27-1	153-HxCB	CJ	105	pg/L	2.37	213
60145-22-4	154-HxCB	U	ND	pg/L	1.43	107
33979-03-2	155-HxCB	U	ND	pg/L	1.22	107
38380-08-4	156-HxCB	BCJ	16.1	pg/L	2.69	213
69782-90-7	157-HxCB	C156				
74472-42-7	158-HxCB	J	14.0	pg/L	2.17	107
39635-35-3	159-HxCB	U	ND	pg/L	2.11	107
41411-62-5	160-HxCB	U	ND	pg/L	2.45	107

Comments:

B **The target analyte was detected in the associated blank.**
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J **Value is estimated**
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PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**18708002**	**Date Collected:**	**09/02/2021 09:20**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**09/08/2021 13:20**		
Client ID:	**2109132-003G RG South-20210902**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/23/2021 09:21**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a_2-5**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**938.2 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
74472-43-8	161-HxCB	U	ND	pg/L	2.64	107
39635-34-2	162-HxCB	U	ND	pg/L	1.92	107
74472-44-9	163-HxCB	C129				
74472-45-0	164-HxCB	J	10.3	pg/L	2.54	107
74472-46-1	165-HxCB	U	ND	pg/L	2.37	107
41411-63-6	166-HxCB	C128				
52663-72-6	167-HxCB	J	6.35	pg/L	2.03	107
59291-65-5	168-HxCB	C153				
32774-16-6	169-HxCB	U	ND	pg/L	2.26	107
35065-30-6	170-HpCB	J	40.6	pg/L	2.64	107
52663-71-5	171-HpCB	CJ	12.3	pg/L	2.77	213
52663-74-8	172-HpCB	U	ND	pg/L	9.55	107
68194-16-1	173-HpCB	C171				
38411-25-5	174-HpCB	J	42.6	pg/L	2.62	107
40186-70-7	175-HpCB	U	ND	pg/L	1.85	107
52663-65-7	176-HpCB	J	3.90	pg/L	1.47	107
52663-70-4	177-HpCB	J	27.4	pg/L	2.75	107
52663-67-9	178-HpCB	J	9.06	pg/L	2.00	107
52663-64-6	179-HpCB	J	16.2	pg/L	1.43	107
35065-29-3	180-HpCB	CJ	92.0	pg/L	2.15	213
74472-47-2	181-HpCB	U	ND	pg/L	2.28	107
60145-23-5	182-HpCB	U	ND	pg/L	1.79	107
52663-69-1	183-HpCB	CJ	26.5	pg/L	2.39	213
74472-48-3	184-HpCB	U	ND	pg/L	1.24	107
52712-05-7	185-HpCB	C183				
74472-49-4	186-HpCB	U	ND	pg/L	1.34	107
52663-68-0	187-HpCB	J	47.2	pg/L	1.58	107
74487-85-7	188-HpCB	U	ND	pg/L	1.49	107
39635-31-9	189-HpCB	U	ND	pg/L	2.34	107
41411-64-7	190-HpCB	J	9.61	pg/L	1.96	107
74472-50-7	191-HpCB	U	ND	pg/L	2.03	107
74472-51-8	192-HpCB	U	ND	pg/L	2.00	107

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**

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PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**18708002**	**Date Collected:**	**09/02/2021 09:20**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**09/08/2021 13:20**		
Client ID:	**2109132-003G RG South-20210902**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/23/2021 09:21**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a_2-5**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**938.2 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
69782-91-8	193-HpCB	C180				
35694-08-7	194-OcCB	BJ	22.0	pg/L	1.98	107
52663-78-2	195-OcCB	J	8.83	pg/L	2.07	107
42740-50-1	196-OcCB	J	10.4	pg/L	1.88	107
33091-17-7	197-OcCB	CJ	4.01	pg/L	1.43	213
68194-17-2	198-OcCB	CJ	21.9	pg/L	1.83	213
52663-75-9	199-OcCB	C198				
52663-73-7	200-OcCB	C197				
40186-71-8	201-OcCB	J	2.54	pg/L	1.41	107
2136-99-4	202-OcCB	J	5.09	pg/L	1.62	107
52663-76-0	203-OcCB	BJ	13.2	pg/L	1.66	107
74472-52-9	204-OcCB	U	ND	pg/L	1.43	107
74472-53-0	205-OcCB	U	ND	pg/L	1.83	107
40186-72-9	206-NoCB	J	9.64	pg/L	2.98	107
52663-79-3	207-NoCB	U	ND	pg/L	2.22	107
52663-77-1	208-NoCB	U	ND	pg/L	4.22	107
2051-24-3	209-DeCB	J	7.97	pg/L	1.79	107
1336-36-3	Total PCB Congeners	J	1720	pg/L		107

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1-MoCB		909	2130	pg/L	42.6	(15%-150%)
13C-3-MoCB		980	2130	pg/L	46.0	(15%-150%)
13C-4-DiCB		1170	2130	pg/L	55.0	(25%-150%)
13C-15-DiCB		1310	2130	pg/L	61.5	(25%-150%)
13C-19-TrCB		1350	2130	pg/L	63.5	(25%-150%)
13C-37-TrCB		1300	2130	pg/L	61.1	(25%-150%)
13C-54-TeCB		1120	2130	pg/L	52.7	(25%-150%)
13C-77-TeCB		1820	2130	pg/L	85.4	(25%-150%)
13C-81-TeCB		1850	2130	pg/L	86.7	(25%-150%)
13C-104-PeCB		954	2130	pg/L	44.8	(25%-150%)
13C-105-PeCB		1470	2130	pg/L	69.1	(25%-150%)
13C-114-PeCB		1460	2130	pg/L	68.4	(25%-150%)
13C-118-PeCB		1430	2130	pg/L	67.0	(25%-150%)
13C-123-PeCB		1500	2130	pg/L	70.2	(25%-150%)
13C-126-PeCB		1670	2130	pg/L	78.2	(25%-150%)
13C-155-HxCB		1100	2130	pg/L	51.5	(25%-150%)
13C-156-HxCB	C	2420	4260	pg/L	56.6	(25%-150%)
13C-157-HxCB	C156L					
13C-167-HxCB		1230	2130	pg/L	57.6	(25%-150%)
13C-169-HxCB		1340	2130	pg/L	62.8	(25%-150%)
13C-188-HpCB		1440	2130	pg/L	67.4	(25%-150%)
13C-189-HpCB		1360	2130	pg/L	63.6	(25%-150%)

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**18708002**	**Date Collected:**	**09/02/2021 09:20**	**Matrix:**	**WATER**
Client Sample:	**1668A Water**	**Date Received:**	**09/08/2021 13:20**		
Client ID:	**2109132-003G RG South-20210902**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/23/2021 09:21**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a_2-5**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**938.2 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-202-OcCB		1320	2130	pg/L	61.9	(25%-150%)
13C-205-OcCB		1540	2130	pg/L	72.4	(25%-150%)
13C-206-NoCB		1650	2130	pg/L	77.4	(25%-150%)
13C-208-NoCB		1400	2130	pg/L	65.5	(25%-150%)
13C-209-DeCB		1440	2130	pg/L	67.5	(25%-150%)
13C-28-TrCB		1590	2130	pg/L	74.4	(30%-135%)
13C-111-PeCB		1750	2130	pg/L	82.0	(30%-135%)
13C-178-HpCB		1840	2130	pg/L	86.5	(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.**

Quality Control Summary

PCB Congeners

Surrogate Recovery Report

SDG Number: 2109132

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12030239	LCS for batch 47898	13C-1-MoCB		53.1	(15%-140%)
		13C-3-MoCB		58.3	(15%-140%)
		13C-4-DiCB		67.2	(30%-140%)
		13C-15-DiCB		80.8	(30%-140%)
		13C-19-TrCB		85.3	(30%-140%)
		13C-37-TrCB		64.0	(30%-140%)
		13C-54-TeCB		57.2	(30%-140%)
		13C-77-TeCB		84.3	(30%-140%)
		13C-81-TeCB		85.6	(30%-140%)
		13C-104-PeCB		55.9	(30%-140%)
		13C-105-PeCB		69.7	(30%-140%)
		13C-114-PeCB		70.5	(30%-140%)
		13C-118-PeCB		68.8	(30%-140%)
		13C-123-PeCB		73.0	(30%-140%)
		13C-126-PeCB		75.6	(30%-140%)
		13C-155-HxCB		65.9	(30%-140%)
		13C-156-HxCB	C	65.4	(30%-140%)
		13C-157-HxCB	C156L		
		13C-167-HxCB		66.8	(30%-140%)
		13C-169-HxCB		67.6	(30%-140%)
		13C-188-HpCB		83.6	(30%-140%)
		13C-189-HpCB		71.4	(30%-140%)
		13C-202-OcCB		77.8	(30%-140%)
		13C-205-OcCB		84.9	(30%-140%)
		13C-206-NoCB		90.1	(30%-140%)
		13C-208-NoCB		77.1	(30%-140%)
		13C-209-DeCB		82.2	(30%-140%)
		13C-28-TrCB		77.2	(40%-125%)
		13C-111-PeCB		87.1	(40%-125%)
		13C-178-HpCB		98.3	(40%-125%)
12030240	LCSD for batch 47898	13C-1-MoCB		51.1	(15%-140%)
		13C-3-MoCB		58.1	(15%-140%)
		13C-4-DiCB		67.8	(30%-140%)
		13C-15-DiCB		83.4	(30%-140%)
		13C-19-TrCB		84.3	(30%-140%)
		13C-37-TrCB		66.1	(30%-140%)
		13C-54-TeCB		58.5	(30%-140%)
		13C-77-TeCB		85.7	(30%-140%)
		13C-81-TeCB		87.1	(30%-140%)
		13C-104-PeCB		54.9	(30%-140%)
		13C-105-PeCB		70.2	(30%-140%)
		13C-114-PeCB		70.1	(30%-140%)
		13C-118-PeCB		68.4	(30%-140%)
		13C-123-PeCB		72.6	(30%-140%)
		13C-126-PeCB		74.8	(30%-140%)
		13C-155-HxCB		63.3	(30%-140%)
		13C-156-HxCB	C	63.6	(30%-140%)
		13C-157-HxCB	C156L		
		13C-167-HxCB		64.4	(30%-140%)
		13C-169-HxCB		66.2	(30%-140%)
		13C-188-HpCB		81.7	(30%-140%)
		13C-189-HpCB		69.5	(30%-140%)

Surrogate Recovery Report

SDG Number: 2109132

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12030240	LCSD for batch 47898	13C-202-OcCB		76.3	(30%-140%)
		13C-205-OcCB		81.2	(30%-140%)
		13C-206-NoCB		84.7	(30%-140%)
		13C-208-NoCB		75.5	(30%-140%)
		13C-209-DeCB		77.0	(30%-140%)
		13C-28-TrCB		71.3	(40%-125%)
		13C-111-PeCB		80.9	(40%-125%)
		13C-178-HpCB		86.5	(40%-125%)
12030238	MB for batch 47898	13C-1-MoCB		36.6	(15%-150%)
		13C-3-MoCB		39.9	(15%-150%)
		13C-4-DiCB		47.9	(25%-150%)
		13C-15-DiCB		60.2	(25%-150%)
		13C-19-TrCB		59.9	(25%-150%)
		13C-37-TrCB		52.5	(25%-150%)
		13C-54-TeCB		47.0	(25%-150%)
		13C-77-TeCB		68.3	(25%-150%)
		13C-81-TeCB		68.5	(25%-150%)
		13C-104-PeCB		44.0	(25%-150%)
		13C-105-PeCB		57.8	(25%-150%)
		13C-114-PeCB		57.7	(25%-150%)
		13C-118-PeCB		56.2	(25%-150%)
		13C-123-PeCB		59.2	(25%-150%)
		13C-126-PeCB		60.9	(25%-150%)
		13C-155-HxCB		50.0	(25%-150%)
		13C-156-HxCB	C	49.2	(25%-150%)
		13C-157-HxCB	C156L		
		13C-167-HxCB		50.2	(25%-150%)
		13C-169-HxCB		51.5	(25%-150%)
		13C-188-HpCB		67.2	(25%-150%)
		13C-189-HpCB		55.8	(25%-150%)
		13C-202-OcCB		59.6	(25%-150%)
		13C-205-OcCB		65.5	(25%-150%)
		13C-206-NoCB		69.3	(25%-150%)
		13C-208-NoCB		61.0	(25%-150%)
		13C-209-DeCB		62.0	(25%-150%)
		13C-28-TrCB		60.1	(30%-135%)
		13C-111-PeCB		69.1	(30%-135%)
		13C-178-HpCB		73.3	(30%-135%)
18708001	2109132-001G RG North-20210901	13C-1-MoCB		35.8	(15%-150%)
		13C-3-MoCB		39.7	(15%-150%)
		13C-4-DiCB		46.6	(25%-150%)
		13C-15-DiCB		62.4	(25%-150%)
		13C-19-TrCB		60.9	(25%-150%)
		13C-37-TrCB		61.7	(25%-150%)
		13C-54-TeCB		54.3	(25%-150%)
		13C-77-TeCB		88.6	(25%-150%)
		13C-81-TeCB		88.9	(25%-150%)
		13C-104-PeCB		48.9	(25%-150%)
		13C-105-PeCB		73.8	(25%-150%)
		13C-114-PeCB		72.8	(25%-150%)
		13C-118-PeCB		71.6	(25%-150%)

PCB Congeners

Surrogate Recovery Report

SDG Number: 2109132

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
18708001	2109132-001G RG North-20210901	13C-123-PeCB		76.0	(25%-150%)
		13C-126-PeCB		79.9	(25%-150%)
		13C-155-HxCB		57.0	(25%-150%)
		13C-156-HxCB	C	60.2	(25%-150%)
		13C-157-HxCB	C156L		
		13C-167-HxCB		62.1	(25%-150%)
		13C-169-HxCB		64.1	(25%-150%)
		13C-188-HpCB		76.6	(25%-150%)
		13C-189-HpCB		67.0	(25%-150%)
		13C-202-OcCB		70.6	(25%-150%)
		13C-205-OcCB		80.1	(25%-150%)
		13C-206-NoCB		84.6	(25%-150%)
		13C-208-NoCB		71.3	(25%-150%)
		13C-209-DeCB		75.4	(25%-150%)
		13C-28-TrCB		74.1	(30%-135%)
		13C-111-PeCB		84.0	(30%-135%)
		13C-178-HpCB		88.3	(30%-135%)
18708002	2109132-003G RG South-20210902	13C-1-MoCB		42.6	(15%-150%)
		13C-3-MoCB		46.0	(15%-150%)
		13C-4-DiCB		55.0	(25%-150%)
		13C-15-DiCB		61.5	(25%-150%)
		13C-19-TrCB		63.5	(25%-150%)
		13C-37-TrCB		61.1	(25%-150%)
		13C-54-TeCB		52.7	(25%-150%)
		13C-77-TeCB		85.4	(25%-150%)
		13C-81-TeCB		86.7	(25%-150%)
		13C-104-PeCB		44.8	(25%-150%)
		13C-105-PeCB		69.1	(25%-150%)
		13C-114-PeCB		68.4	(25%-150%)
		13C-118-PeCB		67.0	(25%-150%)
		13C-123-PeCB		70.2	(25%-150%)
		13C-126-PeCB		78.2	(25%-150%)
		13C-155-HxCB		51.5	(25%-150%)
		13C-156-HxCB	C	56.6	(25%-150%)
		13C-157-HxCB	C156L		
		13C-167-HxCB		57.6	(25%-150%)
		13C-169-HxCB		62.8	(25%-150%)
		13C-188-HpCB		67.4	(25%-150%)
		13C-189-HpCB		63.6	(25%-150%)
		13C-202-OcCB		61.9	(25%-150%)
		13C-205-OcCB		72.4	(25%-150%)
		13C-206-NoCB		77.4	(25%-150%)
		13C-208-NoCB		65.5	(25%-150%)
		13C-209-DeCB		67.5	(25%-150%)
		13C-28-TrCB		74.4	(30%-135%)
		13C-111-PeCB		82.0	(30%-135%)
		13C-178-HpCB		86.5	(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: 2109132 **Sample Type:** Laboratory Control Sample

Client ID: LCS for batch 47898 **Matrix:** WATER

Lab Sample ID: 12030239

Instrument: HRP875 **Analysis Date:** 09/22/2021 18:01 **Dilution:** 1

Analyst: MJC **Prep Batch ID:** 47898

Batch ID: 47901

CAS No.		Parmname	Amount Added pg/L		Spike Conc. pg/L	Recovery %	Acceptance Limits
2051-60-7	LCS	1-MoCB	500		433	86.7	50-150
2051-62-9	LCS	3-MoCB	500		481	96.1	50-150
13029-08-8	LCS	4-DiCB	500		427	85.5	50-150
2050-68-2	LCS	15-DiCB	500		494	98.8	50-150
38444-73-4	LCS	19-TrCB	500		454	90.9	50-150
38444-90-5	LCS	37-TrCB	500		477	95.4	50-150
15968-05-5	LCS	54-TeCB	1000		1040	104	50-150
32598-13-3	LCS	77-TeCB	1000		928	92.8	50-150
70362-50-4	LCS	81-TeCB	1000		792	79.2	50-150
56558-16-8	LCS	104-PeCB	1000		1080	108	50-150
32598-14-4	LCS	105-PeCB	1000		887	88.7	50-150
74472-37-0	LCS	114-PeCB	1000		1080	108	50-150
31508-00-6	LCS	118-PeCB	1000		1050	105	50-150
65510-44-3	LCS	123-PeCB	1000		989	98.9	50-150
57465-28-8	LCS	126-PeCB	1000		967	96.7	50-150
33979-03-2	LCS	155-HxCB	1000		1040	104	50-150
38380-08-4	LCS	156-HxCB	2000	C	2160	108	50-150
69782-90-7	LCS	157-HxCB		C156			
52663-72-6	LCS	167-HxCB	1000		1020	102	50-150
32774-16-6	LCS	169-HxCB	1000		964	96.4	50-150
74487-85-7	LCS	188-HpCB	1000		954	95.4	50-150
39635-31-9	LCS	189-HpCB	1000		976	97.6	50-150
2136-99-4	LCS	202-OcCB	1500		1600	107	50-150
74472-53-0	LCS	205-OcCB	1500		1380	91.8	50-150
40186-72-9	LCS	206-NoCB	1500		1360	90.8	50-150
52663-77-1	LCS	208-NoCB	1500		1600	107	50-150
2051-24-3	LCS	209-DeCB	1500		1470	97.7	50-150

PCB Congeners

Quality Control Summary
Spike Recovery Report

SDG Number: 2109132 **Sample Type:** Laboratory Control Sample Duplicate

Client ID: LCSD for batch 47898 **Matrix:** WATER

Lab Sample ID: 12030240

Instrument: HRP875 **Analysis Date:** 09/22/2021 19:11 **Dilution:** 1

Analyst: MJC **Prep Batch ID:** 47898

Batch ID: 47901

CAS No.		Parmname	Amount Added pg/L		Spike Conc. pg/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
2051-60-7	LCSD	1-MoCB	500		447	89.4	50-150	3.06	0-20
2051-62-9	LCSD	3-MoCB	500		504	101	50-150	4.68	0-20
13029-08-8	LCSD	4-DiCB	500		434	86.9	50-150	1.62	0-20
2050-68-2	LCSD	15-DiCB	500		507	101	50-150	2.49	0-20
38444-73-4	LCSD	19-TrCB	500		478	95.7	50-150	5.12	0-20
38444-90-5	LCSD	37-TrCB	500		484	96.8	50-150	1.48	0-20
15968-05-5	LCSD	54-TeCB	1000		1040	104	50-150	0.148	0-20
32598-13-3	LCSD	77-TeCB	1000		937	93.7	50-150	0.912	0-20
70362-50-4	LCSD	81-TeCB	1000		808	80.8	50-150	2.01	0-20
56558-16-8	LCSD	104-PeCB	1000		1090	109	50-150	0.877	0-20
32598-14-4	LCSD	105-PeCB	1000		905	90.5	50-150	2.10	0-20
74472-37-0	LCSD	114-PeCB	1000		1110	111	50-150	2.80	0-20
31508-00-6	LCSD	118-PeCB	1000		1070	107	50-150	1.55	0-20
65510-44-3	LCSD	123-PeCB	1000		1000	100	50-150	1.49	0-20
57465-28-8	LCSD	126-PeCB	1000		1010	101	50-150	4.46	0-20
33979-03-2	LCSD	155-HxCB	1000		1050	105	50-150	1.34	0-20
38380-08-4	LCSD	156-HxCB	2000	C	2200	110	50-150	1.40	0-20
69782-90-7	LCSD	157-HxCB		C156					
52663-72-6	LCSD	167-HxCB	1000		1030	103	50-150	1.29	0-20
32774-16-6	LCSD	169-HxCB	1000		990	99	50-150	2.65	0-20
74487-85-7	LCSD	188-HpCB	1000		980	98	50-150	2.75	0-20
39635-31-9	LCSD	189-HpCB	1000		1000	100	50-150	2.82	0-20
2136-99-4	LCSD	202-OcCB	1500		1610	107	50-150	0.759	0-20
74472-53-0	LCSD	205-OcCB	1500		1390	92.8	50-150	1.12	0-20
40186-72-9	LCSD	206-NoCB	1500		1380	92.3	50-150	1.71	0-20
52663-77-1	LCSD	208-NoCB	1500		1610	107	50-150	0.721	0-20
2051-24-3	LCSD	209-DeCB	1500		1490	99.2	50-150	1.50	0-20

Method Blank Summary

SDG Number:	**2109132**	**Client:**	**HALL001**	**Matrix:**	**WATER**
Client ID:	**MB for batch 47898**	**Instrument ID:**	**HRP875**	**Data File:**	**d22sep21a-5**
Lab Sample ID:	**12030238**	**Prep Date:**	**21-SEP-21**	**Analyzed:**	**09/22/21 20:21**
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 47898	12030239	d22sep21a-3	09/22/21	1801
02	LCSD for batch 47898	12030240	d22sep21a-4	09/22/21	1911
03	2109132-001G RG North-20210901	18708001	d22sep21a_2-4	09/23/21	0811
04	2109132-003G RG South-20210902	18708002	d22sep21a_2-5	09/23/21	0921

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**12030238**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 47898**				
Client ID:	**MB for batch 47898**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/22/2021 20:21**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a-5**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
2051-60-7	1-MoCB	U	ND	pg/L	1.48	100
2051-61-8	2-MoCB	U	ND	pg/L	2.02	100
2051-62-9	3-MoCB	U	ND	pg/L	1.86	100
13029-08-8	4-DiCB	U	ND	pg/L	12.2	100
16605-91-7	5-DiCB	U	ND	pg/L	9.28	100
25569-80-6	6-DiCB	U	ND	pg/L	8.66	100
33284-50-3	7-DiCB	U	ND	pg/L	7.94	100
34883-43-7	8-DiCB	U	ND	pg/L	7.82	100
34883-39-1	9-DiCB	U	ND	pg/L	10.3	100
33146-45-1	10-DiCB	U	ND	pg/L	8.30	100
2050-67-1	11-DiCB	U	ND	pg/L	52.4	100
2974-92-7	12-DiCB	CU	ND	pg/L	8.88	200
2974-90-5	13-DiCB	C12				
34883-41-5	14-DiCB	U	ND	pg/L	9.44	100
2050-68-2	15-DiCB	U	ND	pg/L	9.80	100
38444-78-9	16-TrCB	U	ND	pg/L	3.14	100
37680-66-3	17-TrCB	U	ND	pg/L	3.18	100
37680-65-2	18-TrCB	CU	ND	pg/L	2.62	200
38444-73-4	19-TrCB	U	ND	pg/L	3.28	100
38444-84-7	20-TrCB	CU	ND	pg/L	2.08	200
55702-46-0	21-TrCB	CU	ND	pg/L	2.20	200
38444-85-8	22-TrCB	U	ND	pg/L	2.08	100
55720-44-0	23-TrCB	U	ND	pg/L	2.10	100
55702-45-9	24-TrCB	U	ND	pg/L	2.14	100
55712-37-3	25-TrCB	U	ND	pg/L	1.94	100
38444-81-4	26-TrCB	CU	ND	pg/L	2.24	200
38444-76-7	27-TrCB	U	ND	pg/L	2.48	100
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	2.46	100
38444-77-8	32-TrCB	U	ND	pg/L	2.18	100

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:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**12030238**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 47898**				
Client ID:	**MB for batch 47898**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/22/2021 20:21**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a-5**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
38444-86-9	33-TrCB	C21				
37680-68-5	34-TrCB	U	ND	pg/L	2.44	100
37680-69-6	35-TrCB	U	ND	pg/L	2.52	100
38444-87-0	36-TrCB	U	ND	pg/L	2.24	100
38444-90-5	37-TrCB	U	ND	pg/L	2.58	100
53555-66-1	38-TrCB	U	ND	pg/L	2.52	100
38444-88-1	39-TrCB	U	ND	pg/L	2.10	100
38444-93-8	40-TeCB	CU	ND	pg/L	2.56	200
52663-59-9	41-TeCB	U	ND	pg/L	3.92	100
36559-22-5	42-TeCB	U	ND	pg/L	3.08	100
70362-46-8	43-TeCB	U	ND	pg/L	4.04	100
41464-39-5	44-TeCB	CU	ND	pg/L	2.78	300
70362-45-7	45-TeCB	CU	ND	pg/L	2.38	200
41464-47-5	46-TeCB	U	ND	pg/L	2.46	100
2437-79-8	47-TeCB	C44				
70362-47-9	48-TeCB	U	ND	pg/L	2.72	100
41464-40-8	49-TeCB	CU	ND	pg/L	2.62	200
62796-65-0	50-TeCB	CU	ND	pg/L	2.24	200
68194-04-7	51-TeCB	C45				
35693-99-3	52-TeCB	U	ND	pg/L	3.36	200
41464-41-9	53-TeCB	C50				
15968-05-5	54-TeCB	U	ND	pg/L	1.80	100
74338-24-2	55-TeCB	U	ND	pg/L	2.46	100
41464-43-1	56-TeCB	U	ND	pg/L	2.64	100
70424-67-8	57-TeCB	U	ND	pg/L	2.60	100
41464-49-7	58-TeCB	U	ND	pg/L	2.30	100
74472-33-6	59-TeCB	CU	ND	pg/L	2.24	300
33025-41-1	60-TeCB	U	ND	pg/L	2.38	100
33284-53-6	61-TeCB	CJ	5.62	pg/L	2.46	400
54230-22-7	62-TeCB	C59				
74472-34-7	63-TeCB	U	ND	pg/L	2.56	100
52663-58-8	64-TeCB	U	ND	pg/L	2.10	100

Comments:

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PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**12030238**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 47898**				
Client ID:	**MB for batch 47898**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/22/2021 20:21**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a-5**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
33284-54-7	65-TeCB	C44				
32598-10-0	66-TeCB	U	ND	pg/L	2.52	100
73575-53-8	67-TeCB	U	ND	pg/L	2.28	100
73575-52-7	68-TeCB	U	ND	pg/L	2.14	100
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	2.56	100
74338-23-1	73-TeCB	U	ND	pg/L	2.12	100
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	2.68	100
70362-49-1	78-TeCB	U	ND	pg/L	3.02	100
41464-48-6	79-TeCB	U	ND	pg/L	2.48	100
33284-52-5	80-TeCB	U	ND	pg/L	2.20	100
70362-50-4	81-TeCB	U	ND	pg/L	2.60	100
52663-62-4	82-PeCB	U	ND	pg/L	4.58	100
60145-20-2	83-PeCB	U	ND	pg/L	4.64	100
52663-60-2	84-PeCB	U	ND	pg/L	3.82	100
65510-45-4	85-PeCB	CU	ND	pg/L	2.96	300
55312-69-1	86-PeCB	CU	ND	pg/L	3.08	600
38380-02-8	87-PeCB	C86				
55215-17-3	88-PeCB	CU	ND	pg/L	3.66	200
73575-57-2	89-PeCB	U	ND	pg/L	4.48	100
68194-07-0	90-PeCB	CU	ND	pg/L	3.18	300
68194-05-8	91-PeCB	C88				
52663-61-3	92-PeCB	U	ND	pg/L	4.24	100
73575-56-1	93-PeCB	CU	ND	pg/L	3.26	200
73575-55-0	94-PeCB	U	ND	pg/L	3.44	100
38379-99-6	95-PeCB	U	ND	pg/L	4.20	100
73575-54-9	96-PeCB	U	ND	pg/L	2.36	100

Comments:

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

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PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**12030238**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 47898**				
Client ID:	**MB for batch 47898**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/22/2021 20:21**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a-5**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
41464-51-1	97-PeCB	C86				
60233-25-2	98-PeCB	CU	ND	pg/L	3.60	200
38380-01-7	99-PeCB	U	ND	pg/L	2.80	100
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	3.76	100
56558-16-8	104-PeCB	U	ND	pg/L	2.20	100
32598-14-4	105-PeCB	U	ND	pg/L	3.74	100
70424-69-0	106-PeCB	U	ND	pg/L	4.36	100
70424-68-9	107-PeCB	U	ND	pg/L	2.90	100
70362-41-3	108-PeCB	CU	ND	pg/L	3.48	200
74472-35-8	109-PeCB	C86				
38380-03-9	110-PeCB	CU	ND	pg/L	2.86	200
39635-32-0	111-PeCB	U	ND	pg/L	2.50	100
74472-36-9	112-PeCB	U	ND	pg/L	2.90	100
68194-10-5	113-PeCB	C90				
74472-37-0	114-PeCB	U	ND	pg/L	3.52	100
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	3.44	100
56558-17-9	119-PeCB	C86				
68194-12-7	120-PeCB	U	ND	pg/L	2.98	100
56558-18-0	121-PeCB	U	ND	pg/L	2.44	100
76842-07-4	122-PeCB	U	ND	pg/L	4.80	100
65510-44-3	123-PeCB	U	ND	pg/L	3.42	100
70424-70-3	124-PeCB	C108				
74472-39-2	125-PeCB	C86				
57465-28-8	126-PeCB	U	ND	pg/L	4.22	100
39635-33-1	127-PeCB	U	ND	pg/L	4.00	100
38380-07-3	128-HxCB	CU	ND	pg/L	3.58	200

Comments:

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PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**12030238**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 47898**				
Client ID:	**MB for batch 47898**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/22/2021 20:21**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a-5**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
55215-18-4	129-HxCB	CU	ND	pg/L	6.84	300
52663-66-8	130-HxCB	U	ND	pg/L	3.76	100
61798-70-7	131-HxCB	U	ND	pg/L	3.56	100
38380-05-1	132-HxCB	U	ND	pg/L	3.22	100
35694-04-3	133-HxCB	U	ND	pg/L	3.74	100
52704-70-8	134-HxCB	U	ND	pg/L	3.94	100
52744-13-5	135-HxCB	CU	ND	pg/L	1.86	200
38411-22-2	136-HxCB	U	ND	pg/L	1.50	100
35694-06-5	137-HxCB	U	ND	pg/L	2.82	100
35065-28-2	138-HxCB	C129				
56030-56-9	139-HxCB	CU	ND	pg/L	2.90	200
59291-64-4	140-HxCB	C139				
52712-04-6	141-HxCB	U	ND	pg/L	3.50	100
41411-61-4	142-HxCB	U	ND	pg/L	4.04	100
68194-15-0	143-HxCB	U	ND	pg/L	4.34	100
68194-14-9	144-HxCB	U	ND	pg/L	2.00	100
74472-40-5	145-HxCB	U	ND	pg/L	1.30	100
51908-16-8	146-HxCB	U	ND	pg/L	2.78	100
68194-13-8	147-HxCB	CU	ND	pg/L	3.40	200
74472-41-6	148-HxCB	U	ND	pg/L	1.92	100
38380-04-0	149-HxCB	C147				
68194-08-1	150-HxCB	U	ND	pg/L	1.28	100
52663-63-5	151-HxCB	C135				
68194-09-2	152-HxCB	U	ND	pg/L	1.50	100
35065-27-1	153-HxCB	CJ	2.90	pg/L	2.46	200
60145-22-4	154-HxCB	U	ND	pg/L	1.56	100
33979-03-2	155-HxCB	U	ND	pg/L	1.28	100
38380-08-4	156-HxCB	CJ	5.02	pg/L	2.68	200
69782-90-7	157-HxCB	C156				
74472-42-7	158-HxCB	U	ND	pg/L	2.32	100
39635-35-3	159-HxCB	U	ND	pg/L	2.06	100
41411-62-5	160-HxCB	U	ND	pg/L	2.64	100

Comments:

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PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**12030238**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 47898**				
Client ID:	**MB for batch 47898**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/22/2021 20:21**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a-5**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
74472-43-8	161-HxCB	U	ND	pg/L	2.74	100
39635-34-2	162-HxCB	U	ND	pg/L	1.84	100
74472-44-9	163-HxCB	C129				
74472-45-0	164-HxCB	U	ND	pg/L	2.68	100
74472-46-1	165-HxCB	U	ND	pg/L	2.44	100
41411-63-6	166-HxCB	C128				
52663-72-6	167-HxCB	U	ND	pg/L	2.46	100
59291-65-5	168-HxCB	C153				
32774-16-6	169-HxCB	U	ND	pg/L	2.32	100
35065-30-6	170-HpCB	U	ND	pg/L	2.82	100
52663-71-5	171-HpCB	CU	ND	pg/L	2.84	200
52663-74-8	172-HpCB	U	ND	pg/L	2.88	100
68194-16-1	173-HpCB	C171				
38411-25-5	174-HpCB	U	ND	pg/L	2.66	100
40186-70-7	175-HpCB	U	ND	pg/L	2.04	100
52663-65-7	176-HpCB	U	ND	pg/L	1.58	100
52663-70-4	177-HpCB	U	ND	pg/L	2.78	100
52663-67-9	178-HpCB	U	ND	pg/L	2.20	100
52663-64-6	179-HpCB	U	ND	pg/L	1.56	100
35065-29-3	180-HpCB	CU	ND	pg/L	2.22	200
74472-47-2	181-HpCB	U	ND	pg/L	2.32	100
60145-23-5	182-HpCB	U	ND	pg/L	1.98	100
52663-69-1	183-HpCB	CU	ND	pg/L	2.42	200
74472-48-3	184-HpCB	U	ND	pg/L	1.34	100
52712-05-7	185-HpCB	C183				
74472-49-4	186-HpCB	U	ND	pg/L	1.46	100
52663-68-0	187-HpCB	U	ND	pg/L	1.74	100
74487-85-7	188-HpCB	U	ND	pg/L	1.50	100
39635-31-9	189-HpCB	U	ND	pg/L	2.32	100
41411-64-7	190-HpCB	U	ND	pg/L	2.16	100
74472-50-7	191-HpCB	U	ND	pg/L	2.10	100
74472-51-8	192-HpCB	U	ND	pg/L	2.08	100

Comments:

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

J Value is estimated

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PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**12030238**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 47898**				
Client ID:	**MB for batch 47898**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/22/2021 20:21**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a-5**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
69782-91-8	193-HpCB	C180				
35694-08-7	194-OcCB	J	3.38	pg/L	2.26	100
52663-78-2	195-OcCB	U	ND	pg/L	2.38	100
42740-50-1	196-OcCB	U	ND	pg/L	1.98	100
33091-17-7	197-OcCB	CU	ND	pg/L	1.42	200
68194-17-2	198-OcCB	CU	ND	pg/L	1.98	200
52663-75-9	199-OcCB	C198				
52663-73-7	200-OcCB	C197				
40186-71-8	201-OcCB	U	ND	pg/L	1.42	100
2136-99-4	202-OcCB	U	ND	pg/L	1.56	100
52663-76-0	203-OcCB	J	1.88	pg/L	1.74	100
74472-52-9	204-OcCB	U	ND	pg/L	1.44	100
74472-53-0	205-OcCB	U	ND	pg/L	1.78	100
40186-72-9	206-NoCB	U	ND	pg/L	3.08	100
52663-79-3	207-NoCB	U	ND	pg/L	2.30	100
52663-77-1	208-NoCB	U	ND	pg/L	2.30	100
2051-24-3	209-DeCB	U	ND	pg/L	1.94	100
1336-36-3	Total PCB Congeners	J	18.8	pg/L		100

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1-MoCB		732	2000	pg/L	36.6	(15%-150%)
13C-3-MoCB		798	2000	pg/L	39.9	(15%-150%)
13C-4-DiCB		959	2000	pg/L	47.9	(25%-150%)
13C-15-DiCB		1200	2000	pg/L	60.2	(25%-150%)
13C-19-TrCB		1200	2000	pg/L	59.9	(25%-150%)
13C-37-TrCB		1050	2000	pg/L	52.5	(25%-150%)
13C-54-TeCB		941	2000	pg/L	47.0	(25%-150%)
13C-77-TeCB		1370	2000	pg/L	68.3	(25%-150%)
13C-81-TeCB		1370	2000	pg/L	68.5	(25%-150%)
13C-104-PeCB		880	2000	pg/L	44.0	(25%-150%)
13C-105-PeCB		1160	2000	pg/L	57.8	(25%-150%)
13C-114-PeCB		1150	2000	pg/L	57.7	(25%-150%)
13C-118-PeCB		1120	2000	pg/L	56.2	(25%-150%)
13C-123-PeCB		1180	2000	pg/L	59.2	(25%-150%)
13C-126-PeCB		1220	2000	pg/L	60.9	(25%-150%)
13C-155-HxCB		1000	2000	pg/L	50.0	(25%-150%)
13C-156-HxCB	C	1970	4000	pg/L	49.2	(25%-150%)
13C-157-HxCB	C156L					
13C-167-HxCB		1000	2000	pg/L	50.2	(25%-150%)
13C-169-HxCB		1030	2000	pg/L	51.5	(25%-150%)
13C-188-HpCB		1340	2000	pg/L	67.2	(25%-150%)
13C-189-HpCB		1120	2000	pg/L	55.8	(25%-150%)

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**12030238**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 47898**				
Client ID:	**MB for batch 47898**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/22/2021 20:21**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a-5**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-202-OcCB		1190	2000	pg/L	59.6	(25%-150%)
13C-205-OcCB		1310	2000	pg/L	65.5	(25%-150%)
13C-206-NoCB		1390	2000	pg/L	69.3	(25%-150%)
13C-208-NoCB		1220	2000	pg/L	61.0	(25%-150%)
13C-209-DeCB		1240	2000	pg/L	62.0	(25%-150%)
13C-28-TrCB		1200	2000	pg/L	60.1	(30%-135%)
13C-111-PeCB		1380	2000	pg/L	69.1	(30%-135%)
13C-178-HpCB		1470	2000	pg/L	73.3	(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:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**12030239**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 47898**				
Client ID:	**LCS for batch 47898**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/22/2021 18:01**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a-3**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
2051-60-7	1-MoCB		433	pg/L	2.16	100
2051-62-9	3-MoCB		481	pg/L	2.58	100
13029-08-8	4-DiCB		427	pg/L	13.1	100
2050-68-2	15-DiCB		494	pg/L	9.78	100
38444-73-4	19-TrCB		454	pg/L	3.84	100
38444-90-5	37-TrCB		477	pg/L	7.66	100
15968-05-5	54-TeCB		1040	pg/L	1.68	100
32598-13-3	77-TeCB		928	pg/L	8.20	100
70362-50-4	81-TeCB		792	pg/L	7.64	100
56558-16-8	104-PeCB		1080	pg/L	2.12	100
32598-14-4	105-PeCB		887	pg/L	9.04	100
74472-37-0	114-PeCB		1080	pg/L	8.26	100
31508-00-6	118-PeCB		1050	pg/L	8.16	100
65510-44-3	123-PeCB		989	pg/L	7.86	100
57465-28-8	126-PeCB		967	pg/L	9.82	100
33979-03-2	155-HxCB		1040	pg/L	1.56	100
38380-08-4	156-HxCB	C	2160	pg/L	8.28	200
69782-90-7	157-HxCB	C156				
52663-72-6	167-HxCB		1020	pg/L	6.02	100
32774-16-6	169-HxCB		964	pg/L	7.04	100
74487-85-7	188-HpCB		954	pg/L	2.02	100
39635-31-9	189-HpCB		976	pg/L	3.06	100
2136-99-4	202-OcCB		1600	pg/L	1.94	100
74472-53-0	205-OcCB		1380	pg/L	2.78	100
40186-72-9	206-NoCB		1360	pg/L	3.44	100
52663-77-1	208-NoCB		1600	pg/L	2.68	100
2051-24-3	209-DeCB		1470	pg/L	1.78	100

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1-MoCB		1060	2000	pg/L	53.1	(15%-140%)
13C-3-MoCB		1170	2000	pg/L	58.3	(15%-140%)
13C-4-DiCB		1340	2000	pg/L	67.2	(30%-140%)
13C-15-DiCB		1620	2000	pg/L	80.8	(30%-140%)
13C-19-TrCB		1710	2000	pg/L	85.3	(30%-140%)
13C-37-TrCB		1280	2000	pg/L	64.0	(30%-140%)
13C-54-TeCB		1140	2000	pg/L	57.2	(30%-140%)
13C-77-TeCB		1690	2000	pg/L	84.3	(30%-140%)
13C-81-TeCB		1710	2000	pg/L	85.6	(30%-140%)
13C-104-PeCB		1120	2000	pg/L	55.9	(30%-140%)
13C-105-PeCB		1390	2000	pg/L	69.7	(30%-140%)
13C-114-PeCB		1410	2000	pg/L	70.5	(30%-140%)
13C-118-PeCB		1380	2000	pg/L	68.8	(30%-140%)

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**12030239**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 47898**				
Client ID:	**LCS for batch 47898**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/22/2021 18:01**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a-3**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-123-PeCB		1460	2000	pg/L	73.0	(30%-140%)
13C-126-PeCB		1510	2000	pg/L	75.6	(30%-140%)
13C-155-HxCB		1320	2000	pg/L	65.9	(30%-140%)
13C-156-HxCB	C	2610	4000	pg/L	65.4	(30%-140%)
13C-157-HxCB	C156L					
13C-167-HxCB		1340	2000	pg/L	66.8	(30%-140%)
13C-169-HxCB		1350	2000	pg/L	67.6	(30%-140%)
13C-188-HpCB		1670	2000	pg/L	83.6	(30%-140%)
13C-189-HpCB		1430	2000	pg/L	71.4	(30%-140%)
13C-202-OcCB		1560	2000	pg/L	77.8	(30%-140%)
13C-205-OcCB		1700	2000	pg/L	84.9	(30%-140%)
13C-206-NoCB		1800	2000	pg/L	90.1	(30%-140%)
13C-208-NoCB		1540	2000	pg/L	77.1	(30%-140%)
13C-209-DeCB		1640	2000	pg/L	82.2	(30%-140%)
13C-28-TrCB		1540	2000	pg/L	77.2	(40%-125%)
13C-111-PeCB		1740	2000	pg/L	87.1	(40%-125%)
13C-178-HpCB		1970	2000	pg/L	98.3	(40%-125%)

Comments:

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

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

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**12030240**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 47898**				
Client ID:	**LCSD for batch 47898**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/22/2021 19:11**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a-4**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
2051-60-7	1-MoCB		447	pg/L	2.22	100
2051-62-9	3-MoCB		504	pg/L	2.60	100
13029-08-8	4-DiCB		434	pg/L	8.98	100
2050-68-2	15-DiCB		507	pg/L	7.66	100
38444-73-4	19-TrCB		478	pg/L	3.56	100
38444-90-5	37-TrCB		484	pg/L	2.84	100
15968-05-5	54-TeCB		1040	pg/L	1.44	100
32598-13-3	77-TeCB		937	pg/L	6.96	100
70362-50-4	81-TeCB		808	pg/L	6.58	100
56558-16-8	104-PeCB		1090	pg/L	1.70	100
32598-14-4	105-PeCB		905	pg/L	7.98	100
74472-37-0	114-PeCB		1110	pg/L	7.72	100
31508-00-6	118-PeCB		1070	pg/L	7.52	100
65510-44-3	123-PeCB		1000	pg/L	7.36	100
57465-28-8	126-PeCB		1010	pg/L	9.14	100
33979-03-2	155-HxCB		1050	pg/L	9.20	100
38380-08-4	156-HxCB	C	2200	pg/L	7.88	200
69782-90-7	157-HxCB	C156				
52663-72-6	167-HxCB		1030	pg/L	5.84	100
32774-16-6	169-HxCB		990	pg/L	6.86	100
74487-85-7	188-HpCB		980	pg/L	1.50	100
39635-31-9	189-HpCB		1000	pg/L	4.86	100
2136-99-4	202-OcCB		1610	pg/L	1.56	100
74472-53-0	205-OcCB		1390	pg/L	4.38	100
40186-72-9	206-NoCB		1380	pg/L	2.54	100
52663-77-1	208-NoCB		1610	pg/L	1.86	100
2051-24-3	209-DeCB		1490	pg/L	1.50	100

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1-MoCB		1020	2000	pg/L	51.1	(15%-140%)
13C-3-MoCB		1160	2000	pg/L	58.1	(15%-140%)
13C-4-DiCB		1360	2000	pg/L	67.8	(30%-140%)
13C-15-DiCB		1670	2000	pg/L	83.4	(30%-140%)
13C-19-TrCB		1690	2000	pg/L	84.3	(30%-140%)
13C-37-TrCB		1320	2000	pg/L	66.1	(30%-140%)
13C-54-TeCB		1170	2000	pg/L	58.5	(30%-140%)
13C-77-TeCB		1710	2000	pg/L	85.7	(30%-140%)
13C-81-TeCB		1740	2000	pg/L	87.1	(30%-140%)
13C-104-PeCB		1100	2000	pg/L	54.9	(30%-140%)
13C-105-PeCB		1400	2000	pg/L	70.2	(30%-140%)
13C-114-PeCB		1400	2000	pg/L	70.1	(30%-140%)
13C-118-PeCB		1370	2000	pg/L	68.4	(30%-140%)

PCB Congeners
Certificate of Analysis
Sample Summary

SDG Number:	**2109132**	**Client:**	**HALL001**	**Project:**	**HALL00113**
Lab Sample ID:	**12030240**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 47898**				
Client ID:	**LCSD for batch 47898**			**Prep Basis:**	**As Received**
Batch ID:	**47901**	**Method:**	**EPA Method 1668A**		
Run Date:	**09/22/2021 19:11**	**Analyst:**	**MJC**	**Instrument:**	**HRP875**
Data File:	**d22sep21a-4**			**Dilution:**	**1**
Prep Batch:	**47898**	**Prep Method:**	**SW846 3520C**	**Prep SOP Ref:**	**CF-OA-E-001**
Prep Date:	**21-SEP-21**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-123-PeCB		1450	2000	pg/L	72.6	(30%-140%)
13C-126-PeCB		1500	2000	pg/L	74.8	(30%-140%)
13C-155-HxCB		1270	2000	pg/L	63.3	(30%-140%)
13C-156-HxCB	C	2540	4000	pg/L	63.6	(30%-140%)
13C-157-HxCB	C156L					
13C-167-HxCB		1290	2000	pg/L	64.4	(30%-140%)
13C-169-HxCB		1320	2000	pg/L	66.2	(30%-140%)
13C-188-HpCB		1630	2000	pg/L	81.7	(30%-140%)
13C-189-HpCB		1390	2000	pg/L	69.5	(30%-140%)
13C-202-OcCB		1530	2000	pg/L	76.3	(30%-140%)
13C-205-OcCB		1620	2000	pg/L	81.2	(30%-140%)
13C-206-NoCB		1690	2000	pg/L	84.7	(30%-140%)
13C-208-NoCB		1510	2000	pg/L	75.5	(30%-140%)
13C-209-DeCB		1540	2000	pg/L	77.0	(30%-140%)
13C-28-TrCB		1430	2000	pg/L	71.3	(40%-125%)
13C-111-PeCB		1620	2000	pg/L	80.9	(40%-125%)
13C-178-HpCB		1730	2000	pg/L	86.5	(40%-125%)

Comments:

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

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

ANALYTICAL REPORT

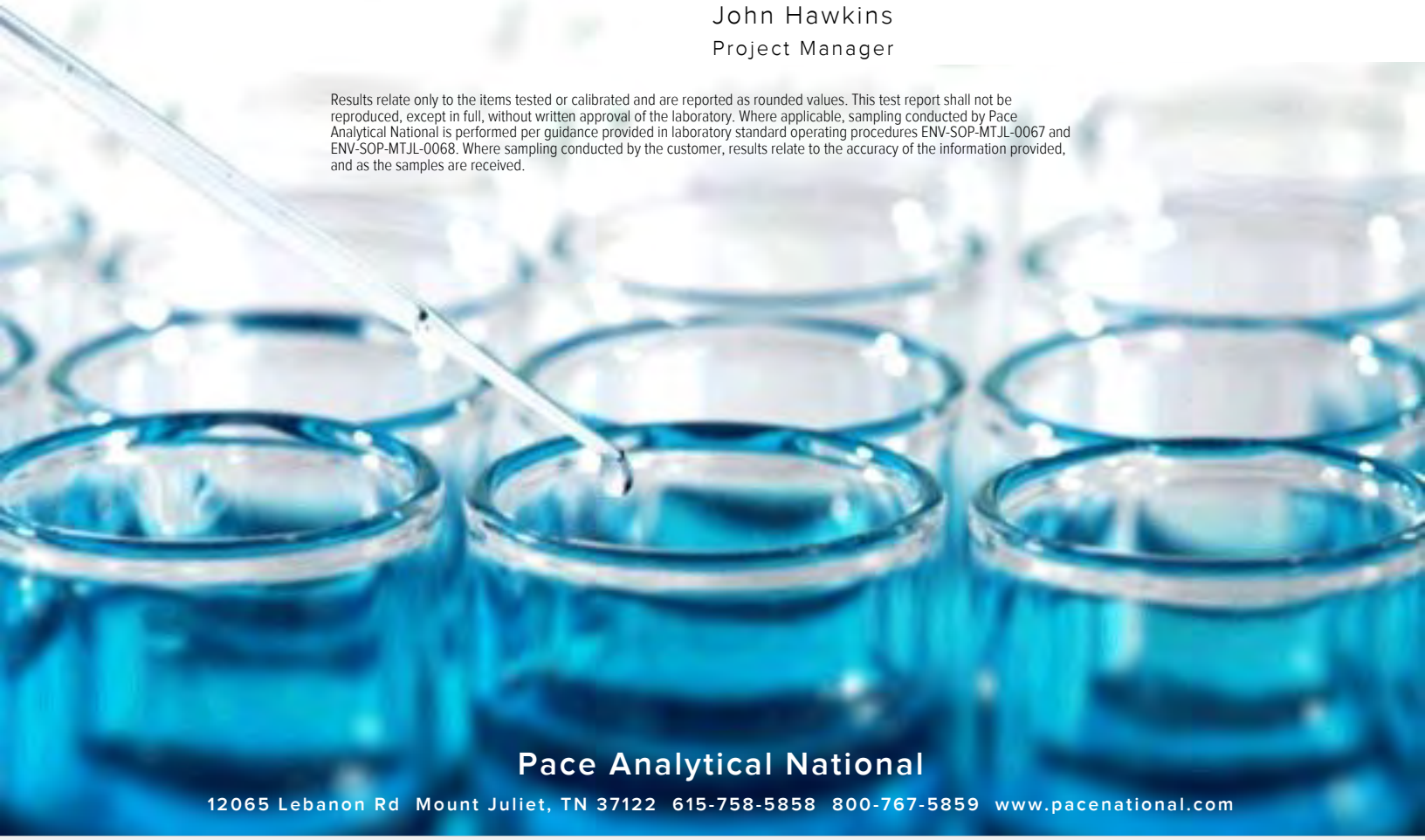
September 17, 2021

Hall Environmental Analysis Laboratory

Sample Delivery Group:	L1400265
Samples Received:	09/08/2021
Project Number:	
Description:	
Report To:	Andy Freeman

Entire Report Reviewed By:

John Hawkins
Project Manager



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

2109132-001I RG NORTH-20210901 L1400265-01 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/01/21 10:05	09/08/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 900	WG1737547	1	09/13/21 14:07	09/14/21 22:57	JMR	Mt. Juliet, TN
Radiochemistry by Method D5174	WG1739188	1	09/15/21 10:53	09/16/21 12:31	KK	Mt. Juliet, TN

2109132-003I RG SOUTH-20210901 L1400265-02 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/01/21 10:05	09/08/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 900	WG1737547	1	09/13/21 14:07	09/14/21 22:57	JMR	Mt. Juliet, TN
Radiochemistry by Method D5174	WG1739188	1	09/15/21 10:53	09/16/21 12:33	KK	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Radiochemistry by Method 900

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
GROSS ALPHA	7.03		1.76	1.25	09/14/2021 22:57	WG1737547

Radiochemistry by Method D5174

Analyte	Result	Qualifier	Uncertainty	RDL	Analysis Date	Batch
	mg/l		+ / -	mg/l	date / time	
Uranium	0.00312			0.00100	09/16/2021 12:31	WG1739188

Uranium = 0.00312 mg/l = 2.09 pCi/L
milligrams per liter (mg/L) can be converted to pCi/L by multiplying the U (mg/L) by 670

Adjusted Gross Alpha = Gross Alpha minus Uranium.
Adjusted Gross Alpha =7.03 pCi/L - 2.09 = 4.94 pCi/L
* Compliance gross alpha equals the concentration of analytical gross alpha minus the concentration of Uranium
Reference: http://www.eai-labs.com/assets/docs/radioactive_in_water.pdf

Radiochemistry by Method 900

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
GROSS ALPHA	34.4		7.82	5.87	09/14/2021 22:57	WG1737547

Radiochemistry by Method D5174

Analyte	Result	Qualifier	Uncertainty	RDL	Analysis Date	Batch
	mg/l		+ / -	mg/l	date / time	
Uranium	0.00424			0.00100	09/16/2021 12:33	WG1739188

Uranium = 0.00424 mg/l = 2.84 pCi/L
milligrams per liter (mg/L) can be converted to pCi/L by multiplying the U (mg/L) by 670

Adjusted Gross Alpha = Gross Alpha minus Uranium.
Adjusted Gross Alpha =34.4 pCi/L - 2.84 = 31.56 pCi/L
* Compliance gross alpha equals the concentration of analytical gross alpha minus the concentration of Uranium
Reference: http://www.eai-labs.com/assets/docs/radioactive_in_water.pdf

Method Blank (MB)

(MB) R3704721-1 09/14/21 22:57

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
GROSS ALPHA	0.0501	U	0.704

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3704721-5 09/14/21 22:57

Analyte	Original Result	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
GROSS ALPHA		3.03	1	64.8	0.900		20	3

Laboratory Control Sample (LCS)

(LCS) R3704721-2 09/14/21 22:57

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
GROSS ALPHA	15.0	14.3	95.4	80.0-120	

Method Blank (MB)

(MB) R3705183-1 09/16/21 11:45

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Uranium	U		0.00100	0.00100

L1397565-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1397565-03 09/16/21 12:02 • (DUP) R3705183-5 09/16/21 11:57

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Uranium	0.00556	0.00559	1	0.427		20

Laboratory Control Sample (LCS)

(LCS) R3705183-2 09/16/21 11:48

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Uranium	0.0300	0.0287	95.7	80.0-120	

L1397565-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1397565-01 09/16/21 11:59 • (MS) R3705183-3 09/16/21 11:52 • (MSD) R3705183-4 09/16/21 11:54

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Uranium	0.0200	0.0915	0.109	0.110	88.8	93.4	1	75.0-125			0.840	20

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
U	Below Detectable Limits: Indicates that the analyte was not detected.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

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

COPY

SUB CONTRATOR: Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

L1400264 5

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2109132-001H	RG North-20210901	500HDPEH2SO4	Aqueous	9/1/2021 10:05:00 AM	1	COD
2	2109132-001I	RG North-20210901	1LHDPEHNO3	Aqueous	9/1/2021 10:05:00 AM	1	Adjusted Gross Alpha 22 -01
3	2109132-001J	RG North-20210901	120mL	Aqueous	9/1/2021 10:05:00 AM	1	Cr 6
4	2109132-003H	RG South-20210902	500HDPEH2SO4	Aqueous	9/2/2021 9:20:00 AM	1	COD
5	2109132-003I	RG South-20210902	1LHDPEHNO3	Aqueous	9/2/2021 9:20:00 AM	1	Adjusted Gross Alpha 22 -02
6	2109132-003J	RG South-20210902	120mL	Aqueous	9/2/2021 9:20:00 AM	1	Cr 6

B185

Sample Receipt Checklist

				If Applicable	
COC Seal Present/Intact:	Y	N		VOA Zero Headspace:	Y N
COC Signed/Accurate:	Y	N		Pres.Correct/Check:	Y N
Bottles arrive intact:	Y	N			
Correct bottles used:	Y	N			
Sufficient volume sent:	Y	N			
RAD Screen <0.5 mR/hr:	Y	N			

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.

Samples 001I, 003I in this cooler

Relinquished By: SH	Date: 9/2/2021	Time: 2:48 PM	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	9/4/21	9:15

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 1.9 +1.2 0 AVG Attempt to Cool ?
Comments:

2834 1886 3777

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2109132**

13-Oct-21

Client: AMAFCA

Project: CMC

Sample ID: **MB-62408**	SampType: **MBLK**	TestCode: **EPA Method 1664B**
Client ID: **PBW**	Batch ID: **62408**	RunNo: **81111**
Prep Date: **9/7/2021**	Analysis Date: **9/8/2021**	SeqNo: **2863208** 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-62408**	SampType: **LCS**	TestCode: **EPA Method 1664B**
Client ID: **LCSW**	Batch ID: **62408**	RunNo: **81111**
Prep Date: **9/7/2021**	Analysis Date: **9/8/2021**	SeqNo: **2863209** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
N-Hexane Extractable Material	32.2	10.0	40.00	0	80.5	78	114			

Sample ID: **LCSD-62408**	SampType: **LCSD**	TestCode: **EPA Method 1664B**
Client ID: **LCSS02**	Batch ID: **62408**	RunNo: **81111**
Prep Date: **9/7/2021**	Analysis Date: **9/8/2021**	SeqNo: **2863210** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
N-Hexane Extractable Material	32.8	10.0	40.00	0	82.0	78	114	1.85	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2109132**

13-Oct-21

Client: AMAFCA

Project: CMC

Sample ID: **LCS-62544** SampType: **LCS** TestCode: **EPA Method 200.7: Metals**

Client ID: **LCSW** Batch ID: **62544** RunNo: **81263**

Prep Date: **9/13/2021** Analysis Date: **9/14/2021** SeqNo: **2869383** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	49	1.0	50.00	0	97.9	85	115			
Magnesium	49	1.0	50.00	0	98.0	85	115			

Sample ID: **MB-62544** SampType: **MBLK** TestCode: **EPA Method 200.7: Metals**

Client ID: **PBW** Batch ID: **62544** RunNo: **81263**

Prep Date: **9/13/2021** Analysis Date: **9/14/2021** SeqNo: **2869399** 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: **LLLCS-62544** SampType: **LCSLL** TestCode: **EPA Method 200.7: Metals**

Client ID: **BatchQC** Batch ID: **62544** RunNo: **81263**

Prep Date: **9/13/2021** Analysis Date: **9/14/2021** SeqNo: **2869401** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.48	1.0	0.5000	0	95.7	50	150			J
Magnesium	0.49	1.0	0.5000	0	97.5	50	150			J

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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2109132**

13-Oct-21

Client: AMAFCA

Project: CMC

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A81374**	RunNo: **81374**
Prep Date:	Analysis Date: **9/18/2021**	SeqNo: **2873894** 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								

Sample ID: **LCSLL**	SampType: **LCSLL**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **A81374**	RunNo: **81374**
Prep Date:	Analysis Date: **9/18/2021**	SeqNo: **2873895** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper	0.0010	0.0010	0.001000	0	101	50	150			
Lead	0.00051	0.00050	0.0005001	0	101	50	150			

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A81374**	RunNo: **81374**
Prep Date:	Analysis Date: **9/18/2021**	SeqNo: **2873896** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper	0.024	0.0010	0.02500	0	94.7	85	115			
Lead	0.012	0.00050	0.01250	0	97.7	85	115			

Sample ID: **2109132-003FMSLL**	SampType: **MS**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **RG South-20210902**	Batch ID: **A81374**	RunNo: **81374**
Prep Date:	Analysis Date: **9/18/2021**	SeqNo: **2873927** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper	0.026	0.0010	0.02500	0.001481	96.1	70	130			
Lead	0.013	0.00050	0.01250	0.0003243	98.2	70	130			

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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2109132**

13-Oct-21

Client: AMAFCA

Project: CMC

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R81067**	RunNo: **81067**
Prep Date:	Analysis Date: **9/3/2021**	SeqNo: **2861406** 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								
Nitrate+Nitrite as N	ND	0.20								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R81067**	RunNo: **81067**
Prep Date:	Analysis Date: **9/3/2021**	SeqNo: **2861407** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.97	0.10	1.000	0	96.6	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	102	90	110			
Nitrate+Nitrite as N	3.5	0.20	3.500	0	100	90	110			

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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2109132**

13-Oct-21

Client: AMAFCA

Project: CMC

Sample ID: **MB-62459**	SampType: **MBLK**	TestCode: **EPA Method 8081: PESTICIDES**
Client ID: **PBW**	Batch ID: **62459**	RunNo: **81383**
Prep Date: **9/8/2021**	Analysis Date: **9/17/2021**	SeqNo: **2896453** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dieldrin	ND	0.10								
Surr: Decachlorobiphenyl	0		2.500		0	41.7	129			S
Surr: Tetrachloro-m-xylene	0		2.500		0	31.8	88.5			S

Sample ID: **MB-62459**	SampType: **MBLK**	TestCode: **EPA Method 8081: PESTICIDES**
Client ID: **PBW**	Batch ID: **62459**	RunNo: **81383**
Prep Date: **9/8/2021**	Analysis Date: **9/17/2021**	SeqNo: **2896456** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dieldrin	ND	0.10								
Surr: Decachlorobiphenyl	0		2.500		0	41.7	129			S
Surr: Tetrachloro-m-xylene	0		2.500		0	31.8	88.5			S

Sample ID: **LCS-62459**	SampType: **LCS**	TestCode: **EPA Method 8081: PESTICIDES**
Client ID: **LCSW**	Batch ID: **62459**	RunNo: **81383**
Prep Date: **9/8/2021**	Analysis Date: **9/17/2021**	SeqNo: **2896457** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dieldrin	0.38	0.10	0.5000	0	76.2	17.4	145			
Surr: Decachlorobiphenyl	2.8		2.500		112	41.7	129			
Surr: Tetrachloro-m-xylene	1.5		2.500		61.1	31.8	88.5			

Sample ID: **LCSD-62459**	SampType: **LCSD**	TestCode: **EPA Method 8081: PESTICIDES**
Client ID: **LCSS02**	Batch ID: **62459**	RunNo: **81383**
Prep Date: **9/8/2021**	Analysis Date: **9/17/2021**	SeqNo: **2896458** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dieldrin	0.42	0.10	0.5000	0	84.4	17.4	145	10.2	20	
Surr: Decachlorobiphenyl	2.9		2.500		116	41.7	129	0	20	
Surr: Tetrachloro-m-xylene	1.6		2.500		63.4	31.8	88.5	0	20	

Sample ID: **LCS-62459**	SampType: **LCS**	TestCode: **EPA Method 8081: PESTICIDES**
Client ID: **LCSW**	Batch ID: **62459**	RunNo: **81383**
Prep Date: **9/8/2021**	Analysis Date: **9/17/2021**	SeqNo: **2896467** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dieldrin	0.36	0.10	0.5000	0	72.7	17.4	145			
Surr: Decachlorobiphenyl	2.7		2.500		108	41.7	129			
Surr: Tetrachloro-m-xylene	1.4		2.500		55.5	31.8	88.5			

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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Client: AMAFCA
Project: CMC

Sample ID: **LCSD-62459**	SampType: **LCSD**	TestCode: **EPA Method 8081: PESTICIDES**
Client ID: **LCSS02**	Batch ID: **62459**	RunNo: **81383**
Prep Date: **9/8/2021**	Analysis Date: **9/17/2021**	SeqNo: **2896468** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dieldrin	0.40	0.10	0.5000	0	80.5	17.4	145	10.2	20	
Surr: Decachlorobiphenyl	2.8		2.500		112	41.7	129	0	20	
Surr: Tetrachloro-m-xylene	1.7		2.500		69.2	31.8	88.5	0	20	

Sample ID: **MB-62710**	SampType: **MBLK**	TestCode: **EPA Method 8081: PESTICIDES**
Client ID: **PBW**	Batch ID: **62710**	RunNo: **81863**
Prep Date: **9/21/2021**	Analysis Date: **9/23/2021**	SeqNo: **2896469** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	2.5		2.500		100	41.7	129			
Surr: Tetrachloro-m-xylene	1.6		2.500		64.6	31.8	88.5			

Sample ID: **MB-62710**	SampType: **MBLK**	TestCode: **EPA Method 8081: PESTICIDES**
Client ID: **PBW**	Batch ID: **62710**	RunNo: **81863**
Prep Date: **9/21/2021**	Analysis Date: **9/23/2021**	SeqNo: **2896470** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	2.5		2.500		98.3	41.7	129			
Surr: Tetrachloro-m-xylene	1.5		2.500		60.0	31.8	88.5			

Sample ID: **LCS-62710**	SampType: **LCS**	TestCode: **EPA Method 8081: PESTICIDES**
Client ID: **LCSW**	Batch ID: **62710**	RunNo: **81863**
Prep Date: **9/21/2021**	Analysis Date: **9/23/2021**	SeqNo: **2896471** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	2.5		2.500		102	41.7	129			
Surr: Tetrachloro-m-xylene	1.4		2.500		56.4	31.8	88.5			

Sample ID: **LCS-62710**	SampType: **LCS**	TestCode: **EPA Method 8081: PESTICIDES**
Client ID: **LCSW**	Batch ID: **62710**	RunNo: **81863**
Prep Date: **9/21/2021**	Analysis Date: **9/23/2021**	SeqNo: **2896472** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	2.5		2.500		99.5	41.7	129			
Surr: Tetrachloro-m-xylene	1.3		2.500		52.5	31.8	88.5			

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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2109132**

13-Oct-21

Client: AMAFCA

Project: CMC

Sample ID: **MB-62380**	SampType: **MBLK**	TestCode: **SM5210B: BOD**
Client ID: **PBW**	Batch ID: **62380**	RunNo: **81139**
Prep Date: **9/3/2021**	Analysis Date: **9/8/2021**	SeqNo: **2864260** 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-62380**	SampType: **LCS**	TestCode: **SM5210B: BOD**
Client ID: **LCSW**	Batch ID: **62380**	RunNo: **81139**
Prep Date: **9/3/2021**	Analysis Date: **9/8/2021**	SeqNo: **2864261** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Biochemical Oxygen Demand	188	2.0	198.0	0	94.9	84.6	115.4			

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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2109132**

13-Oct-21

Client: AMAFCA

Project: CMC

Sample ID: **MB-62378**	SampType: **MBLK**	TestCode: **SM 9223B Fecal Indicator: E. coli MPN**
Client ID: **PBW**	Batch ID: **62378**	RunNo: **81068**
Prep Date: **9/2/2021**	Analysis Date: **9/3/2021**	SeqNo: **2861458** Units: **MPN/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.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2109132**

13-Oct-21

Client: AMAFCA

Project: CMC

Sample ID: **MB**	SampType: **MBLK**	TestCode: **SM 4500 NH3: Ammonia**
Client ID: **PBW**	Batch ID: **R81339**	RunNo: **81339**
Prep Date:	Analysis Date: **9/16/2021**	SeqNo: **2872464** 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: **R81339**	RunNo: **81339**
Prep Date:	Analysis Date: **9/16/2021**	SeqNo: **2872465** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Ammonia	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
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2109132**

13-Oct-21

Client: AMAFCA

Project: CMC

Sample ID: **MB-62548**	SampType: **MBLK**	TestCode: **EPA Method 365.1: Total Phosphorous**
Client ID: **PBW**	Batch ID: **62548**	RunNo: **81302**
Prep Date: **9/13/2021**	Analysis Date: **9/15/2021**	SeqNo: **2871378** 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-62548**	SampType: **LCS**	TestCode: **EPA Method 365.1: Total Phosphorous**
Client ID: **LCSW**	Batch ID: **62548**	RunNo: **81302**
Prep Date: **9/13/2021**	Analysis Date: **9/15/2021**	SeqNo: **2871379** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	0.24	0.010	0.2500	0	97.4	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2109132**

13-Oct-21

Client: AMAFCA

Project: CMC

Sample ID: **MB-62453**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **62453**	RunNo: **81180**
Prep Date: **9/8/2021**	Analysis Date: **9/10/2021**	SeqNo: **2865947** 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-62453**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **62453**	RunNo: **81180**
Prep Date: **9/8/2021**	Analysis Date: **9/10/2021**	SeqNo: **2865948** 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.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2109132**

13-Oct-21

Client: AMAFCA

Project: CMC

Sample ID: **MB-62630**	SampType: **MBLK**	TestCode: **SM 4500 Norg C: TKN**
Client ID: **PBW**	Batch ID: **62630**	RunNo: **81365**
Prep Date: **9/16/2021**	Analysis Date: **9/17/2021**	SeqNo: **2873549** 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-62630**	SampType: **LCS**	TestCode: **SM 4500 Norg C: TKN**
Client ID: **LCSW**	Batch ID: **62630**	RunNo: **81365**
Prep Date: **9/16/2021**	Analysis Date: **9/17/2021**	SeqNo: **2873550** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Kjeldahl, Total	9.9	1.0	10.00	0	99.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2109132**

13-Oct-21

Client: AMAFCA

Project: CMC

Sample ID: **MB-62455**	SampType: **MBLK**	TestCode: **SM 2540D: TSS**
Client ID: **PBW**	Batch ID: **62455**	RunNo: **81152**
Prep Date: **9/8/2021**	Analysis Date: **9/9/2021**	SeqNo: **2864535** 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-62455**	SampType: **LCS**	TestCode: **SM 2540D: TSS**
Client ID: **LCSW**	Batch ID: **62455**	RunNo: **81152**
Prep Date: **9/8/2021**	Analysis Date: **9/9/2021**	SeqNo: **2864536** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	97	4.0	92.10	0	105	83.71	119.44			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: AMAFCA Work Order Number: 2109132 RcptNo: 1

Received By: Cheyenne Cason 9/2/2021 12:17:00 PM

Completed By: Sean Livingston 9/2/2021 2:19:27 PM

Reviewed By: JO 9.3.21

UNPRES: SPA 9.2.21 17:01

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☑	No ☐	NA ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. 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)
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted? NO
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: JR 9/3/21

Bod/coliform: JR 9/2/21

Special Handling (if applicable)

15. 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:

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.9	Good				
2	4.9	Good				

Chain-of-Custody Record

Client: AMAFCA

Mailing Address:

Phone #:

email or Fax#: pchavez@amafca.org

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: CMC

Project #:

Project Manager: Patrick Chavez

Sampler: A. Ewing, DBS+A

On Ice: ☑ Yes ☐ No

# of Coolers: 2 2.1 - 0.2 = 1.9

Cooler Temp (Including CF): 5.1 - 0.2 = 4.9 (°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 Name	Container Type and #	Preservative Type	HEAL No. 2109132	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	See attached CMC list	E. coli enumeration
9/1/21	1005	AQ	RGNorth-20210901			001/002											X	
			Trip blank			006								X				
9/2/21	0920	AQ	RGSouth-20210902			003/004 ~~002~~	5x	9/2/21								X	X	X
9/2/21	1030	AQ	RGAlameda-20210902			005 ~~005~~											X	X

Amy Ewing 9/2/21

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
9/2/21	1125	Amy Ewing		Hand Delivered	9/2/21	1127
9/2/21	1137		CMC CDO		9/2/21	1217

Remarks: RGNorth-20210901 E. coli sample was dropped off yesterday.

Collaborative Monitoring Cooperative - Analyses List
Attach to Chain of Custody

Please refer to attached NPDES Permit No. NMR04A00 Appendix F. Methods and minimum quantification levels (MQL's) will be those approved under 40 CFR 136 and specified in the attached permit

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
Polychlorinated biphenyls (PCBs)	1336-36-3	Total	1668	0.014
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	8081	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-enumeration			SM 9223B	
pH			SM 4500	
Phosphorus		Dissolved	365.1	100
Phosphorus		Total	365.1	100
Chromium IV		Total	3500Cr C-2011	100

S:\Projects\DB20.1245_SSCAFCA_On-Call_Engineering\Docs\SAP\2021_Parameter list_CMC.doc
8/4/2021

ATTACHMENT 2

FY 2022 WET SEASON COMPLETED DATA VERIFICATION AND VALIDATION (V&V) FORMS

Attachment 1.1 Water Quality Sample Data Verification and Validation Worksheet

Study Name: Compliance Monitoring Cooperative (CMC)
Year: FY 2022 (August 2021 – Wet Season Sample)
Project Coordinator: For Data Review and Reporting – SJG, BHI
V&V Reviewer: SJG
Data covered by this worksheet: Rio Grande North – 08/16/21 – E. coli Only Sample – Was Not Qualifying Storm Event
Version of Verification/Validation Procedures: QAPP –AMAFCA SOP #5 (7/2022)

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:*** 8/9/22

- -

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:*** 8/9/22

- -

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:*** 8/9/22

- -

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

Total number of occurrences: 0

☒ **Step 4 Completed** ***Initials:*** SJG ***Date:*** 8/9/22

- -

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:*** 8/9/22

- -

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?*
______	______	______	______	______		_________

Total number of occurrences: 0

☒ **Step 6 Completed** ***Initials:*** SJG ***Date:*** 8/9/22

- -

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?*
_____	_____	_____	_____	_____	_____		_____
_____	_____	_____	_____	_____	_____		_____

Total number of occurrences: 0

☒ **Step 7 Completed** ***Initials:*** SJG ***Date:*** 8/9/22

****

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

8/9/22

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 2022 (September 2021 – Wet Season Sample)
Project Coordinator: For Data Review and Reporting – SJG, BHI
V&V Reviewer: SJG
Data covered by this worksheet: Rio Grande North – 9/1/21
Version of Verification/Validation Procedures: QAPP –AMAFCA SOP #5 (7/2022)

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:*** 8/9/22

- -

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" on a filtered sample. Also, reports gross alpha and uranium and not adjusted gross alpha. See Section 4.

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

*Note – HEAL Lab report order number 2109132.

☒ **Step 2 Completed** ***Initials:*** SJG ***Date:*** 8/9/22

- -

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:*** 8/9/22

- -

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	9/1/2021	Lab report lists Dissolved Phosphorous results as "Total Phosphorous" for "filtered sample".	BHI added note to the lab report.
Rio Grande North	9/1/2021	Lab report did not report Adjusted gross alpha. Reported gross alpha and uranium values.	AMAFCA and HEAL were informed of this. BHI Added notes to the lab report & calculated adjusted gross alpha (gross alpha minus uranium).

*Note – HEAL Lab report order number 2109132.

Total number of occurrences: 2

☒ **Step 4 Completed** ***Initials:*** SJG ***Date:*** 8/9/22

- -

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:*** 8/9/22

- -

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.
*Note – Lab reports lists pH with hold time flag. Database uses field data reported pH, so this is hold time is not applicable.
Total number of occurrences: 0

☒ **Step 6 Completed** ***Initials:*** SJG ***Date:*** 8/9/22

- -

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?*

Total number of occurrences: 0

☒ **Step 7 Completed** ***Initials:*** SJG ***Date:*** 8/9/22

****

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

8/9/22

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 2022 (September 2021 – Wet Season Sample)
Project Coordinator: For Data Review and Reporting – SJG, BHI
V&V Reviewer: SJG
Data covered by this worksheet: Alameda – 9/1/21 – E. coli Only Sample
Version of Verification/Validation Procedures: QAPP –AMAFCA SOP #5 (7/2022)

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:*** 8/9/22

- -

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:*** 8/9/22

- -

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:*** 8/9/22

- -

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

Total number of occurrences: 0

☒ **Step 4 Completed** ***Initials:*** SJG ***Date:*** 8/9/22

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:*** 8/9/22

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:*** 8/9/22

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?*

Total number of occurrences: 0

☒ **Step 7 Completed** ***Initials:*** SJG ***Date:*** 8/9/22

****

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

Sarah Comey 8/9/22

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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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 2022 (September 2021 – Wet Season Sample)
Project Coordinator: For Data Review and Reporting – SJG, BHI
V&V Reviewer: SJG
Data covered by this worksheet: Alameda – 9/2/21 – E. coli Only Sample
Version of Verification/Validation Procedures: QAPP –AMAFCA SOP #5 (7/2022)

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:*** 8/9/22

- -

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:*** 8/9/22

- -

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:*** 8/9/22

- -

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

Total number of occurrences: 0

☒ **Step 4 Completed** ***Initials:*** SJG ***Date:*** 8/9/22

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:*** 8/9/22

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:*** 8/9/22

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?*

Total number of occurrences: 0

☒ **Step 7 Completed** ***Initials:*** SJG ***Date:*** 8/9/22

****

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

Sarah Conner 8/9/22

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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Validation Code	Definition	WQX Equivalent
A1	Sample not collected according to SOP	
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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 2022 (September 2021 – Wet Season Sample)
Project Coordinator: For Data Review and Reporting – SJG, BHI
V&V Reviewer: SJG
Data covered by this worksheet: Rio Grande South – 9/2/21
Version of Verification/Validation Procedures: QAPP –AMAFCA SOP #5 (7/2022)

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: **<u>0</u>**

☒ **Step 1 Completed** ***Initials:*** SJG ***Date:*** 8/9/22

- -

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: **<u>0</u>**

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" on a filtered sample. Also, reports gross alpha and uranium and not adjusted gross alpha. See Section 4.

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

*Note – HEAL Lab report order number 2109132.

☒ **Step 2 Completed** ***Initials:*** SJG ***Date:*** 8/9/22

- -

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:*** 8/9/22

- -

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 South	9/2/2021	Lab report lists Dissolved Phosphorous results as "Total Phosphorous" for "filtered sample".	BHI added note to the lab report.
Rio Grande South	9/2/2021	Lab report did not report Adjusted gross alpha. Reported gross alpha and uranium values.	AMAFCA and HEAL were informed of this. BHI Added notes to the lab report & calculated adjusted gross alpha (gross alpha minus uranium).

*Note – HEAL Lab report order number 2109132.

Total number of occurrences: 2

☒ **Step 4 Completed** ***Initials:*** SJG ***Date:*** 8/9/22

- -

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:*** 8/9/22

- -

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.
*Note – Lab reports lists pH with hold time flag. Database uses field data reported pH, so this is hold time is not applicable.
Total number of occurrences: 0

☒ **Step 6 Completed** ***Initials:*** SJG ***Date:*** 8/9/22

- -

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?*
______	______	______	______	______	______		_________
______	______	______	______	______	______		_________

Total number of occurrences: 0

☒ **Step 7 Completed** ***Initials:*** SJG ***Date:*** 8/9/22

****

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

8/9/22

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	

Appendix 2 - Dry Weather Stormwater Monitoring

On the remaining pages, shared data from the TAG (Technical Advisory Group) are displayed to fulfill the cooperative compliance monitoring requirement, as outlined in the permit.

Bohannan Huston

Engineering
Spatial Data
Advanced Technologies

Courtyard I
7500 Jefferson St. NE
Albuquerque, NM
87109-4335
www.bhinc.com
voice: 505.823.1000
facsimile: 505.798.7988
toll free: 800.877.5332

M E M O R A N D U M

DATE: August 10, 2022

TO: Patrick Chavez, PE, AMAFCA

FROM: Sarah Ganley, PE, ENV-SP
Savannah Maynard
Emma Adams, EI

SUBJECT: **CMC Dry Season, Wet Weather Stormwater Monitoring**
Data Verification, Analysis Results Database, and Reporting
FY 2022 Dry Season (November 1, 2021 to June 30, 2022)

Notification of In-Stream Water Quality Exceedances

For downstream notification purposes, the following parameters for in-stream samples taken in the Rio Grande for the FY 2022 dry season had results that exceeded applicable E. coli water quality standards (WQSs) for samples obtained on June 22, 2022. Based on the Compliance Monitoring Cooperative (CMC) review of the storm, it was determined that this was not a qualifying storm event, hence further sampling and testing were not conducted. Table 1 summarizes the samples with E. coli exceedances.

Table 1: E. coli Detected Above Applicable Water Quality Standards
CMC FY 2022 Dry Season Monitoring

Sampling Date Location	Parameters, Applicable Water Quality Standard (WQS), and Results Exceeding Applicable WQS
	E. coli
	WQS: 88 MPN (CFU/100 mL) Pueblo of Isleta Primary Contact Ceremonial & Recreational
6/22/2022 Rio Grande North Angostura Diversion Dam	686.7 MPN (CFU/100ml)
6/22/2022 Rio Grande at Alameda Bridge E. coli Only	>2,419.6 MPN (CFU/100ml)

Overview of Stormwater Monitoring Activity

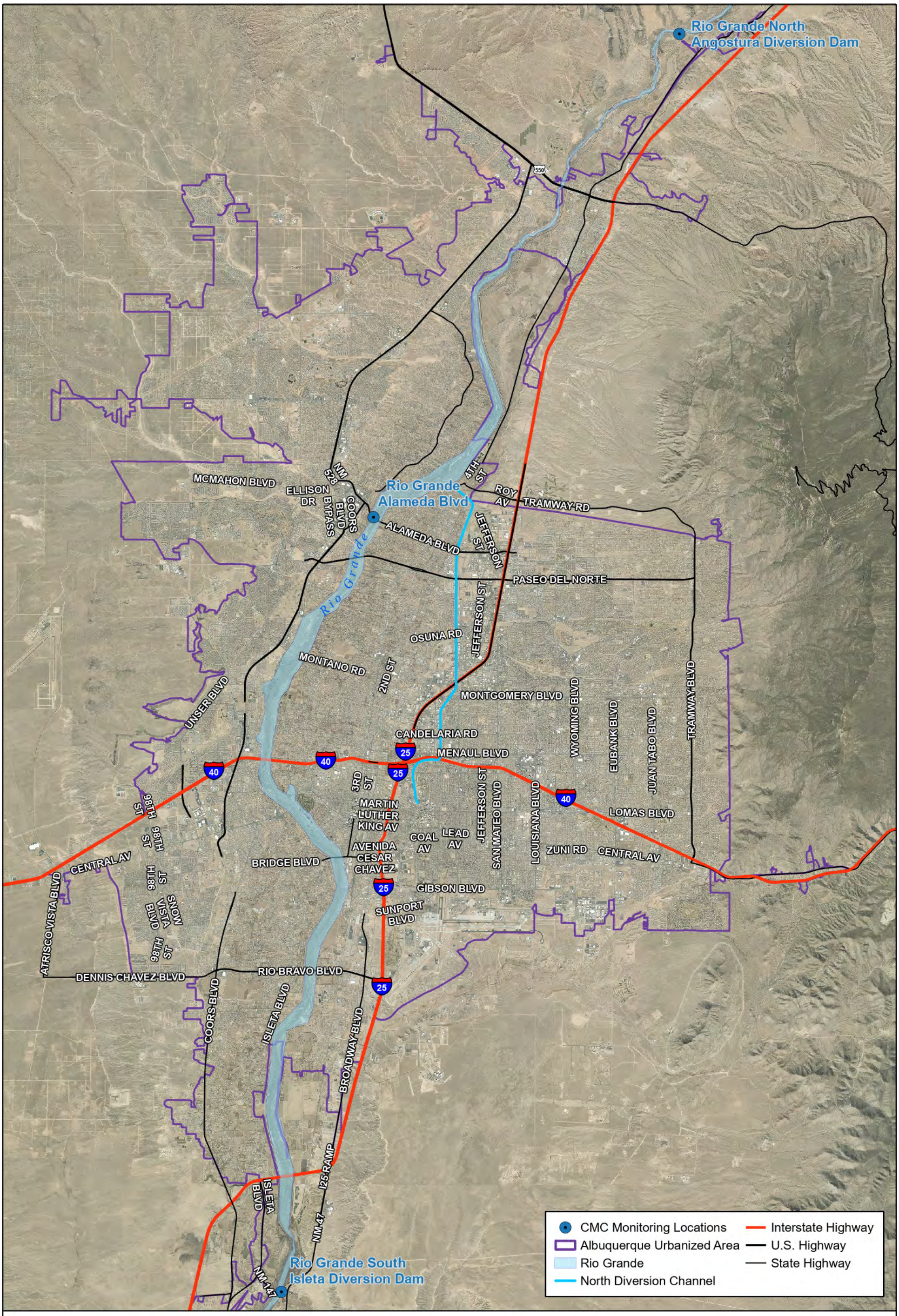
Bohannan Huston, Inc. (BHI) has been tasked to perform water quality services for the CMC Stormwater Data Verification, Database, and Reporting for the Wet Weather Stormwater Quality Monitoring Program for Fiscal Year (FY) 2022 (July 1, 2021 to June 30, 2022). The scope of work for this task includes data verification of the stormwater laboratory analysis results, compiling the analysis results into a database, and calculating the E. coli 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 (MRG) Watershed Based Municipal Separate Storm Sewer System (MS4) Permit, NPDES Permit No. NMR04A000 ("WSB MS4 Permit").

The WSB MS4 Permit entered Administrative Continuance in December 2019 when U.S. Environmental Protection Agency (EPA) Region 6 did not issue a new MS4 Permit before the current MS4 Permit's expiration date. The MRG Technical Advisory Group (TAG) sent EPA a letter dated October 15, 2019, acknowledging Administrative Continuance after the expiration date of the 5-year Permit term. Until a new MS4 Permit is issued, there are no compliance monitoring requirements for the CMC in the Rio Grande. As identified in the CMC Monitoring Plan, the WSB MS4 Permit required 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 3). All Permit required samples have been obtained by the CMC, as well as two (2) samples obtained in FY 2021 and the one (1) sample obtained in FY 2022 wet season during Administrative Continuance; all CMC samples are summarized in Table 2 below.

Table 2: CMC Sample Summary
Compared to WSB MS4 Permit Requirements

No. of Storm Events Required to Sample	CMC-WSB MS4 Permit Required Samples per Season	FY (Date) Samples Obtained for CMC
1	#1 Wet Season	FY 2017 (8/10/2016)
2	#2 Wet Season	FY 2017 (9/12/2016)
3	#3 Wet Season	FY 2017 (9/21/2016)
4	#1 Dry Season	FY 2017 (11/21/2016)
5	#2 Dry Season	FY 2019 (3/13/2019)
6	Any Season	FY 2018 (Wet Season - 7/27/2017)
7	Any Season	FY 2018 (Wet Season - 9/27/2017)
Not Required	Wet Season	FY 2021 (10/28/2020)
Not Required	Dry Season	FY 2021 (4/28/2021)
Not Required	Wet Season	FY 2022 (9/1/2021)

During the WSB MS4 Permit Administrative Continuance, the CMC members chose to continue sampling within the Rio Grande to support their MS4 program needs and gather additional data in support of the future MS4 Permit compliance. This memo reports on the wet weather stormwater monitoring activity for the FY 2022 dry season (November 1, 2022 to June 30, 2022).



P:\20230125\WR\Reports\Preliminary & Draft\Figures\APRXs\Figure1.aprx
Author: mcrooks

August 2022

Monitoring Activity Summary

The list below provides a summary of the CMC comprehensive monitoring program activities completed for the FY 2022 dry season from November 2021 through June 2022. One (1) non-qualifying storm event was sampled and analyzed during the FY 2022 dry season.

- **June 22, 2022 – Only E. Coli for Rio Grande North and at Alameda Bridge.** A sample was collected at the Rio Grande North location at 2:00 p.m. and at Alameda Bridge at 3:30 p.m. on June 22, 2022, and samples were taken to the laboratory for E. coli only tests. Based on the CMC review of the storm, it was determined this was not a qualifying storm event, hence further sampling or testing was conducted.

Stormwater Quality Database for CMC

As stated previously, there were no qualifying storm events sampled for the CMC during the FY 2022 dry season, wet weather monitoring. However, the June 22, 2022, E. coli samples were added to the CMC Excel database. The Hall Environmental Analysis Laboratory (HEAL) analysis reports for this monitoring season have been received, added to the database, and are provided with this memo (Attachment 1). The lab data entered is marked in the spreadsheet as “V” (verified), and data V&V has been completed (refer to Attachment 2). The updated database is also included with this memo.

Conclusions and Planning

During the FY 2022 dry season (November 1, 2021 to June 30, 2022), one (1) non-qualifying storm event was sampled by the CMC. E. coli samples were collected at the Rio Grande North monitoring location and at Alameda Bridge. The lab reports for these samples have been received, and this data has been entered into the CMC Excel database.

To summarize:

- The WSB MS4 Permit entered Administrative Continuance in December 2019 when U.S. Environmental Protection Agency (EPA) Region 6 did not issue a new MS4 Permit before the current MS4 Permit’s expiration date. Until a new MS4 Permit is issued, there are no compliance monitoring requirements for the CMC in the Rio Grande. All MS4 Permit required samples have been obtained by the CMC, as well several samples collected during Administrative Continuance.
- There was not a qualifying storm event sampled by the CMC during the FY 2022 dry season (November 1, 2021 to June 30, 2022).

SG/ab

Attachments:

Attachment 1 – DBS&A Field Data & Hall Environmental Analysis Laboratory Reports with BHI Notes for FY 2022 Dry Season

Attachment 2 – FY 2022 Dry Season Completed Data Verification and Validation (V&V) Forms

Spreadsheet Included Separately:

Excel CMC Spreadsheet updated with water quality criterion details

ATTACHMENT 1

DBS&A FIELD DATA & HALL ENVIRONMENTAL ANALYSIS LABORATORY REPORTS WITH BHI NOTES FOR FY 2022 DRY SEASON

CMC Water Quality Results Database
FY 2017 -FY 2021
Date: August 10, 2022
Summary of Lab Results for CMC samples

		Rio Grande - North - At Angostura Dam												Rio Grande - Alameda Bridge (E. coli Only Samples)											
Parameter	**Permit Required Units**	**Provisional or Verified**	**2022 CMC SAMPLE - EXTRA NORTH Collection Date 8/16/2021** Wet Season Sample Non-Qualifying Storm Event	**Qualifier**	**Check compared to Water Quality Criterion**	**Provisional or Verified**	**2022 CMC SAMPLE - EXTRA NORTH Collection Date 9/01/2021** Wet Season Sample	**Qualifier**	**Check compared to Water Quality Criterion**	**Provisional or Verified**	**2022 CMC SAMPLE - EXTRA NORTH Collection Date 6/22/2022** Dry Season Sample Non-Qualifying Storm Event	**Qualifier**	**Check compared to Water Quality Criterion**	**Provisional or Verified**	**2022 CMC SAMPLE - EXTRA SOUTH Collection Date 9/02/2021** Wet Season Sample	**Qualifier**	**Check compared to Water Quality Criterion**	**Provisional or Verified**	**2022 CMC SAMPLE - EXTRA ALAMEDA Collection Date 9/1/2021** Wet Season Pre-Storm Sample	**Qualifier**	**Check compared to Water Quality Criterion**	**Provisional or Verified**	**2022 CMC SAMPLE - EXTRA ALAMEDA Collection Date 9/2/2021** Wet Season	**Qualifier**	**Check compared to Water Quality Criterion**	**Provisional or Verified**	**2022 CMC SAMPLE - EXTRA ALAMEDA Collection Date 6/22/2022** Dry Season Sample Non-Qualifying Storm Event	**Qualifier**	**Check compared to Water Quality Criterion**
Total Suspended Solids (TSS)	mg/L					V	130		--					V	790	D	--											
Total Dissolved Solids (TDS)	mg/L					V	230	D	OK					V	330	D	OK											
Chemical Oxygen Demand (COD)	mg/L					V	22.2		--					V	54.2		--											
Biochemical Oxygen Demand (BOD_5)	mg/L					V	2.7	RE	--					V	4.9		--											
Dissolved Oxygen (DO)	mg/L	V	6.13		OK	V	6.98		OK	V	7.66		OK	V	6.92		OK	V	7.06		OK	V	6.92		OK	V	7.02		OK
Oil and Grease (N-Hexane Extractable Material)	mg/L					V	ND		OK					V	ND		OK											
E. coli	MPN (CFU/100 mL)	V	6,867		>WQ Standard	V	183		>WQ Standard	V	686.7		>WQ Standard	V	4,884		>WQ Standard	V	20.0		OK	V	554.0		>WQ Standard	V	>2,419.6		>WQ Standard
pH	S.U.	V	7.92		OK	V	8.63		OK	V	8.27		OK	V	8.11		OK	V	8.37		OK	V	7.72		OK	V	7.67		OK
Total Kjedahl Nitrogen (TKN)	mg/L					V	4.1		--					V	2	JD	--											
Nitrate plus Nitrite	mg/L					V	ND		OK					V	1.8		OK											
Dissolved Phosphorous	mg/L					V	0.15	D	--					V	1.4	D	--											
Ammonia (mg/L as N)	mg/L					V	0.42	J	OK					V	ND		OK											
Total Nitrogen	mg/L					V	4.52	J	OK					V	3.80		OK											
Total Phosphorous	mg/L					V	0.29	D	--					V	1.3	D	--											
PCBS - 0.000064 (Method 1668A - sum of all congeners)	µg/L					V	0.00027	J	>WQ Standard					V	0.00172	J	>WQ Standard											
Gross Alpha, Adjusted	pCi/L					v	4.94	Note - Gross Alpha was reported, not adjusted gross alpha. Calculation completed to determine adjusted gross alpha.	OK					V	31.56	Note - Gross Alpha was reported, not adjusted gross alpha. Calculation completed to determine adjusted gross alpha.	>WQ Standard											
Tetrahydrofuran	µg/L					V	ND		--					V	ND		--											
Benzo(a)pyrene	µg/L					V	ND		OK					V	ND		OK											
Benzo(b)fluoranthene (other name: 3,4-Benzofluoranthene)	µg/L					V	ND		OK					V	ND		OK											
Benzo(k)fluoranthene	µg/L					V	ND		OK					V	ND		OK											
Chrysene	µg/L					V	ND		OK					V	ND		OK											
Indeno(1,2,3-cd)Pyrene	µg/L					V	ND		OK					V	ND		OK											
Dieldrin	µg/L					V	ND		OK					V	ND		OK											
Pentachlorophenol	µg/L					V	ND		OK					V	ND		OK											
Benzidine	µg/L					V	ND		OK					V	ND		OK											
Benzo(a)anthracene	µg/L					V	ND		OK					V	ND		OK											
Dibenzofuran	µg/L					V	ND		--					V	ND		--											
Dibenzo(a,h)anthracene	µg/L					V	ND		OK					V	ND		OK											
Chromium VI (Hexavalent)	µg/L					V	ND		OK					V	ND		OK											
Dissolved Copper	µg/L					V	0.84	J	OK					V	1.5		OK											
Dissolved Lead	µg/L					V	0.065	J	OK					V	0.32	J	OK											
Bis (2-ethyhexyl) Phthalate (other names: DI(2-ethylhexyl)phthalate, DEHP) - 2.2	µg/L					V	ND		OK					V	ND		OK											
Conductivity	umhos/cm	V	591		--	V	315		--	V	293		--	V	484		--	V	375		--	V	383		--	V	287		--
Temperature	°C	V	21.24		OK	V	21.71		OK	V	18.8		OK	V	21.21		OK	V	23.19		OK	V	22.14		OK	V	22.1		OK
Hardness (as $CaCO_3$)	mg/L					V	160		--					V	290		--											
Mercury	µg/l																											

Data Verification/Validation and Qualifier Notes:
(R) The sample results are unusable because certain criteria were not met. The analyte may or may not be present in the sample.
(H) Sample holding time exceeded.
(J) The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
(D) Sample was diluted by Lab due to matrix
(U) Analyte was analyzed for, but not detected above the specified detection limit.

Notes:
1. Wet Season monitoring period - July 1 to October 31 and Dry Season monitoring period - November 1 to June 30 according to the Watershed Based MS4 Permit NMR04A000.
2. Water Quality Criterion from 20.6.4 NMAC; Rio Grande Basin - section
20.6.4.105; For a mean monthly flow of 100 cfs, monthly average
3. Aquatic life criteria for metals are expressed as a function of total
4. According to NMAC 20.6.4, E. coli bacteria for Primary Contact - monthly
5. Water quality criterion for metals is based on dissolved metals, NMAC
20.6.4.900.J and individual sample results compared to acute toxicity
6. HEAL lab method: SM 9223B Fecal Indicator. Note - lab method for
units of MPN/100 ml, lab report uses units CFU/100 ml, for this analysis

ND - analyte not detected above the laboratory method detection limit
NA - not analyzed
Hatching also indicates that parameter was not analyzed

National recommended WQ criteria Human Health
https://www.epa.gov/wqc/national-recommended-water-quality-criteria-human-health-criteria-table

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

June 28, 2022

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

RE: CMC OrderNo.: 2206C11

Dear Patrick Chavez:

Hall Environmental Analysis Laboratory received 2 sample(s) on 6/22/2022 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 qualifiers 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 #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Field Parameters
Rio Grande North-
Temp = 18.80 °C
pH = 8.27
Conductivity (uS/cm=umho/cm) = 293
Dissolved Oxygen (mg/L) = 7.66
Rio Grande Alameda-
Temp = 22.10 °C
pH = 7.67
Conductivity (uS/cm=umho/cm) = 287
Dissolved Oxygen (mg/L) = 7.02

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **2206C11**
Date Reported: **6/28/2022**

CLIENT: AMAFCA
Client Sample ID: RG - North - 20220622
Project: CMC
Collection Date: 6/22/2022 2:00:00 PM
Lab ID: 2206C11-001
Matrix: AQUEOUS
Received Date: 6/22/2022 4:05:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dms**
E. Coli	686.7	1.000		MPN/100	1	6/23/2022 5:28:00 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: AMAFCA
Client Sample ID: RG - Alameda - 20220622
Project: CMC
Collection Date: 6/22/2022 3:30:00 PM
Lab ID: 2206C11-002
Matrix: AQUEOUS
Received Date: 6/22/2022 4:05:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SM 9223B FECAL INDICATOR: E. COLI MPN						Analyst: **dms**
E. Coli	>2419.6	1.000		MPN/100	1	6/23/2022 5:28:00 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

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: 2206C11 RcptNo: 1

Received By: **Andy Freeman** 6/22/2022 4:05:00 PM

Completed By: **Isaiah Ortiz** 6/22/2022 4:20:02 PM

Reviewed By: 6-22-22 @ 16:39

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☐ No ☐ NA ☑
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. 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: KPG 6.22.22

Special Handling (if applicable)

15. 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: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	16.8	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: ☐ Az Compliance
☐ NELAC ☐ Other
☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: CMC

Project #:

Project Manager: Patrick Chavez

Sampler:

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 16.7+0.1 = 16.8 (°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 Name	Container Type and #	Preservative Type	HEAL No. 2206C11	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	Ecoli enumerated
6-22-22	1400	AQ	RG-North-20220622			001											X
6-22-22	1530	AQ	RG-Alameda-20220622			002											X

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
6-22-22	1605				6/22/22	1605
Date:	Time:	Relinquished by:	Received by:	Via:	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.

Samplers CMJ, JK

CMC Sampling Data Sheet

Site Identification: RG-North

Notes: onsite ~ 12:50

Full Suite Sample Date and Time:	6/22/22 1400
Full Sample Identification:	RG-North-20220622
QC Samples: Duplicate / None	QC Sample ID:
QC samples require a DIFFERENT sample time than the environmental sample. QC Sample time:	

Full Suite Collection Point : MRGCD Dam structure

Full Suite Sample Volume: 6 gal Collection Time Start: 1315 End: 1408

Field Parameters for each 2-gallon grab

Grab	Time	Temp (°C)	pH	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)
1	1315	19.27	8.30	295	7.54	81.6
2	1330	19.04	8.20	292	7.97	85.8
3	1345	18.97	8.27	290	8.27	84.8
4	1400	18.91	8.26	288	7.90	83.9
Composite	1402	18.80	8.27	293	7.66	82.1

☒ *Turbid Water* ☒ *Color* Brown ☒ *Solids* ☐ *Oil/Sheen* ☐ *Foam* ☐ *Odor*_____

Analytical - see 2021 COC table

☒ Site Photo ☒ Sample Photo

Chain-of-Custody Record

Client: AMAFCA

Mailing Address:

Phone #:

email or Fax#: pchavez@amafca.org

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: CMC

Project #:

Project Manager: Patrick Chavez

Sampler:

On Ice: ☐ Yes ☐ No

# of Coolers:

Cooler Temp(including CF): (°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 Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	Analysis Request: E.coli enumerated
6-22-22	1400	AQ	RG-North-20220622														X
6-22-22	1530	AQ	RG-Alameda-20220622														X

Date:	Time:	Relinquished by:	Received by:	Via:	Date Time
6-22-22	1605				6/22/22 1605
Date:	Time:	Relinquished by:	Received by:	Via:	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.

Samplers IS JK

CMC Sampling Data Sheet

Site Identification: RG - Alameda

Notes:

Full Suite Sample Date and Time:	~~RG-Alameda~~ 6/22/22 1530
Full Sample Identification:	RG - Alameda - 20220622
QC Samples: Duplicate / None	QC Sample ID:
QC samples require a DIFFERENT sample time than the environmental sample. QC Sample time:	

Full Suite Collection Point : Bridge

Full Suite Sample Volume: 2 Gallons Collection Time Start: End:

Field Parameters for each 2-gallon grab

Grab	Time	Temp (°C)	pH	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)
1						
2						
3						
4						
Composite	1530	22.10	7.67	287	7.02	79.6

☒ *Turbid Water* ☒ *Color* Brown ☒ *Solids* ☐ *Oil/Sheen* ☐ *Foam* ☐ *Odor*_____

Analytical - see 2021 COC table

☒ Site Photo ☒ Sample Photo

YSI SONDE CALIBRATION WORKSHEET

Last Revision 01/05/2007

Sonde ID: 06K1697 Date/Time: 6/22/22 1300 Technician: CMJ

Reason for Calibration: CMC Samplings

Battery Voltage: — (6920 & 600 XLM only)

Specific Conductance:
Standard Used (mS) 1413

Calibration Values		
Initial	Post Cal.	Cell Constant:*
1351	1413	

(Range: 5 +/-0.5)

pH

		Calibration Values			
		Initial	Post Cal.	mV	
7 Buffer:	(first)	7.04	7.00	-1.0	(Range: 0 mV +/- 50)
4 Buffer:	(second)	4.03	4.00	165.6	(Range: +177 from pH 7)
10 Buffer:	(third)	10.14	10.00	-173.6	(Range: -177 from pH 7)

Note: Span between pH 7 and pH 4, and pH 7 and pH 10 should be aproximately 165 to 180 mV.

DO % Sat. Membrane Changed? Y/N _____ If yes, run probe at least 15 mins before calibration. Optimally, wait 6 to 8 hrs before calibration / use.

DO Charge _____ (Range: 50 +/- 25)

mm Hg
639.3

Calibration Values %		
Initial	Post Cal.	DO Gain*
76.1	84.1	

(Range: 1 (0.7 to 1.5))

Turbidity Wiper Changed? Y/N _____ Wiper parks ~180 degrees from optic port? Y/N _____

Standards Values (NTUs)	Calibration Values	
	Initial	Post Cal.
Zero (Always First)		

Note: Use longer probe guard with black turb probe; shorter guard with grey probe.

Post Calibration DO Sensor Output Test

Turn off handset (650MDS). Wait 1 minute, turn handset on and enter "Run". DO % Sat. **must** start reading with a high value and descend to the calibration value in 1 to 2 minutes. **If it does not, reject.**
Note: Disregard the first two readings as they may be affected by the warm-up process.

Accept? _____ Reject? _____ See note in comments

Calibration Comments

* Found in: Main Menu --> Sonde Menu --> Advanced --> Calibration Constants

ATTACHMENT 2

FY 2022 DRY SEASON COMPLETED DATA VERIFICATION AND VALIDATION (V&V) FORMS

Attachment 1.1 Water Quality Sample Data Verification and Validation Worksheet

Study Name: Compliance Monitoring Cooperative (CMC)
Year: FY 2022 (June 2022 – Dry Season Sample)
Project Coordinator: For Data Review and Reporting – SJG, BHI
V&V Reviewer: SJG
Data covered by this worksheet: Rio Grande North – 6/22/22 – E. coli Only Sample – Was Not Qualifying Storm Event
Version of Verification/Validation Procedures: QAPP –AMAFCA SOP #5 (7/2022)

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:*** 8/9/22

- -

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:*** 8/9/22

- -

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:*** 8/9/22

- -

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

Total number of occurrences: 0

☒ **Step 4 Completed** ***Initials:*** SJG ***Date:*** 8/9/22

- -

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:*** 8/9/22

- -

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?*
______	______	______	______	______		_________

Total number of occurrences: **0**

☒ **Step 6 Completed** ***Initials:*** SJG ***Date:*** 8/9/22

- -

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?*
_____	_____	_____	_____	_____	_____		_____
_____	_____	_____	_____	_____	_____		_____

Total number of occurrences: 0

☒ **Step 7 Completed** ***Initials:*** SJG ***Date:*** 8/9/22

****

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

8/9/22

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 2022 (June 2022 – Dry Season Sample)
Project Coordinator: For Data Review and Reporting – SJG, BHI
V&V Reviewer: SJG
Data covered by this worksheet: Alameda – 6/22/22 – E. coli Only Sample – Was Not Qualifying Storm Event

Version of Verification/Validation Procedures: QAPP –AMAFCA SOP #5 (7/2022)

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:*** 8/9/22

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:*** 8/9/22

- -

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:*** 8/9/22

- -

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

Total number of occurrences: 0

☒ **Step 4 Completed** ***Initials:*** SJG ***Date:*** 8/9/22

- -

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:*** 8/9/22

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?*

Total number of occurrences: 0

☒ **Step 6 Completed** ***Initials:*** SJG ***Date:*** 8/9/22

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?*

Total number of occurrences: 0

☒ **Step 7 Completed** ***Initials:*** SJG ***Date:*** 8/9/22

****

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

Sarah Carney 8/9/22

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	