

September 15, 2020

Glenn Walker PO Box
Brunswick County Water Systems
PO Box 249
Bolivia, NC 28422

RE: Project: Weekly 1,4-Dioxane
Pace Project No.: 35577186

Dear Glenn PO Box:

Enclosed are the analytical results for sample(s) received by the laboratory on September 11, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Ormond Beach

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Lisa Harvey
lisa.harvey@pacelabs.com
(386) 672-5668
Project Manager

Enclosures

cc: Billy Benton, BRUNSWICK COUNTY PUBLIC UTILITIES



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: Weekly 1,4-Dioxane

Pace Project No.: 35577186

Pace Analytical Services Ormond Beach

8 East Tower Circle, Ormond Beach, FL 32174

Alaska DEC- CS/UST/LUST

Alabama Certification #: 41320

Arizona Certification# AZ0819

Colorado Certification: FL NELAC Reciprocity

Connecticut Certification #: PH-0216

Delaware Certification: FL NELAC Reciprocity

Florida Certification #: E83079

Georgia Certification #: 955

Guam Certification: FL NELAC Reciprocity

Hawaii Certification: FL NELAC Reciprocity

Illinois Certification #: 200068

Indiana Certification: FL NELAC Reciprocity

Kansas Certification #: E-10383

Kentucky Certification #: 90050

Louisiana Certification #: FL NELAC Reciprocity

Louisiana Environmental Certificate #: 05007

Maryland Certification: #346

Michigan Certification #: 9911

Mississippi Certification: FL NELAC Reciprocity

Missouri Certification #: 236

Montana Certification #: Cert 0074

Nebraska Certification: NE-OS-28-14

New Hampshire Certification #: 2958

New Jersey Certification #: FL022

New York Certification #: 11608

North Carolina Environmental Certificate #: 667

North Carolina Certification #: 12710

North Dakota Certification #: R-216

Ohio DEP 87780

Oklahoma Certification #: D9947

Pennsylvania Certification #: 68-00547

Puerto Rico Certification #: FL01264

South Carolina Certification: #96042001

Tennessee Certification #: TN02974

Texas Certification: FL NELAC Reciprocity

US Virgin Islands Certification: FL NELAC Reciprocity

Virginia Environmental Certification #: 460165

West Virginia Certification #: 9962C

Wisconsin Certification #: 399079670

Wyoming (EPA Region 8): FL NELAC Reciprocity

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SAMPLE SUMMARY

Project: Weekly 1,4-Dioxane

Pace Project No.: 35577186

Lab ID	Sample ID	Matrix	Date Collected	Date Received
35577186001	091020-S01	Drinking Water	09/10/20 08:05	09/11/20 11:33
35577186002	091020-E01	Drinking Water	09/10/20 08:05	09/11/20 11:33

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SAMPLE ANALYTE COUNT

Project: Weekly 1,4-Dioxane

Pace Project No.: 35577186

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
35577186001	091020-S01	EPA 522	TM2	2	PASI-O
35577186002	091020-E01	EPA 522	TM2	2	PASI-O

PASI-O = Pace Analytical Services - Ormond Beach

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ANALYTICAL RESULTS

Project: Weekly 1,4-Dioxane

Pace Project No.: 35577186

Sample: 091020-S01 **Lab ID: 35577186001** Collected: 09/10/20 08:05 Received: 09/11/20 11:33 Matrix: Drinking Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
522 MSS 1,4 Dioxane									
Analytical Method: EPA 522 Preparation Method: EPA 522 Pace Analytical Services - Ormond Beach									
1,4-Dioxane (p-Dioxane)	0.25	ug/L	0.21	0.12	1	09/14/20 09:11	09/15/20 10:21	123-91-1	
Surrogates									
1,4-Dioxane-d8 (S)	77	%	70-130		1	09/14/20 09:11	09/15/20 10:21		

Sample: 091020-E01 **Lab ID: 35577186002** Collected: 09/10/20 08:05 Received: 09/11/20 11:33 Matrix: Drinking Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
522 MSS 1,4 Dioxane									
Analytical Method: EPA 522 Preparation Method: EPA 522 Pace Analytical Services - Ormond Beach									
1,4-Dioxane (p-Dioxane)	0.27	ug/L	0.21	0.12	1	09/14/20 09:11	09/15/20 10:37	123-91-1	
Surrogates									
1,4-Dioxane-d8 (S)	72	%	70-130		1	09/14/20 09:11	09/15/20 10:37		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Weekly 1,4-Dioxane

Pace Project No.: 35577186

QC Batch: 664992

Analysis Method: EPA 522

QC Batch Method: EPA 522

Analysis Description: 522 MSS 1,4 Dioxane

Laboratory: Pace Analytical Services - Ormond Beach

Associated Lab Samples: 35577186001, 35577186002

METHOD BLANK: 3617286

Matrix: Water

Associated Lab Samples: 35577186001, 35577186002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.12 U	0.20	0.12	09/15/20 09:18	
1,4-Dioxane-d8 (S)	%	86	70-130		09/15/20 09:18	

LABORATORY CONTROL SAMPLE & LCSD: 3617287

3617288

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	20	17.3	17.1	87	86	70-130	1	20	
1,4-Dioxane-d8 (S)	%				89	88	70-130			

LABORATORY CONTROL SAMPLE: 3617289

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.2	0.16 I	79	50-150	
1,4-Dioxane-d8 (S)	%			88	70-130	

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

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QUALIFIERS

Project: Weekly 1,4-Dioxane

Pace Project No.: 35577186

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

BATCH QUALIFIERS

Batch: 665410

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

U Compound was analyzed for but not detected.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Weekly 1,4-Dioxane

Pace Project No.: 35577186

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
35577186001	091020-S01	EPA 522	664992	EPA 522	665410
35577186002	091020-E01	EPA 522	664992	EPA 522	665410

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WO#: 35577186



35577186

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section C

Required Client Information:
 Company: Brunswick County Water Systems
 Address: PO Box 249
 Bolivia, NC 28422
 Email To: Glenn Walker
 Phone: 910-371-3490 Fax
 Requested Due Date: W007

Required Project Information:
 Report To: Glenn Walker
 Copy To:
 Purchase Order #: Weekly 1,4 Dioxane
 Project Name: Lisa Harvey
 Project #: 9551-1

Invoice Information:
 Attention: Accounts Payable
 Company Name: See Section A
 Address:
 Pace Quote:
 Pace Project Manager: Lisa Harvey
 Pace Profile #: 9551-1

Regulatory Agency: NC
 State / Location: NC

ITEM #	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		DATE	TIME	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	TEMP in C	Received on	Sealed	Custody	Cooler	Samples	Intact	(Y/N)	
			START	END																
1	091020 -S01	WT G	9-10-20 0805	9-10-20 0805	9-10-20	0805	9-10-20	0805	1	9-10-20	1000									
2	091020 -E01	WT G	9-10-20 0805	9-10-20 0805	9-10-20	0805	9-10-20	0805	1	9-10-20	1000									
3																				
4																				
5																				
6																				

ANALYSES TEST	Y/N	Requested Analysis	Filtered (Y/N)
Unpreserved			
H2SO4			
HNO3			
HCl			
NaOH			
Na2S2O3			
Methanol			
Sodium sulfite and sodium bisulfate			
522-1,4-Dioxane	1		
	1		

ADDITIONAL COMMENTS

RELINQUISHED BY / AFFILIATION: *Bill Benton* HWS 8-24-20
 DATE: 9-10-20
 TIME: 1000

SAMPLER NAME AND SIGNATURE
 PRINT Name of SAMPLER: *Bill Benton*
 SIGNATURE of SAMPLER: *Bill Benton*
 DATE Signed: 9-10-20

WO#: 35577186

PM: LMH Due Date: 09/23/20

CLIENT: BRUNCOWS

Project #
Project Manager:
Client:

Date and Initials of person:
Examining contents: _____
Label: _____
Deliver: _____
pH: _____

Thermometer Used: T349 Date: 9/11/20 Time: 1157 Initials: CJA

State of Origin: _____ For WV projects, all containers verified to ≤ 6 °C

Cooler #1 Temp. °C <u>4.5</u> (Visual) <u>-0.1</u> (Correction Factor) <u>4.4</u> (Actual)	<input type="checkbox"/> Samples on ice, cooling process has begun
Cooler #2 Temp. °C _____ (Visual) _____ (Correction Factor) _____ (Actual)	<input type="checkbox"/> Samples on ice, cooling process has begun
Cooler #3 Temp. °C _____ (Visual) _____ (Correction Factor) _____ (Actual)	<input type="checkbox"/> Samples on ice, cooling process has begun
Cooler #4 Temp. °C _____ (Visual) _____ (Correction Factor) _____ (Actual)	<input type="checkbox"/> Samples on ice, cooling process has begun
Cooler #5 Temp. °C _____ (Visual) _____ (Correction Factor) _____ (Actual)	<input type="checkbox"/> Samples on ice, cooling process has begun
Cooler #6 Temp. °C _____ (Visual) _____ (Correction Factor) _____ (Actual)	<input type="checkbox"/> Samples on ice, cooling process has begun

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Shipping Method: First Overnight Priority Overnight Standard Overnight Ground International Priority

Billing: Recipient Sender Third Party Credit Card Unknown

Tracking # 3966 9417 5977

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No Ice: Wet Blue Dry None

Packing Material: Bubble Wrap Bubble Bags None Other _____

Samples shorted to lab (If Yes, complete) Shorted Date: _____ Shorted Time: _____ Qty: _____

		Comments:
Chain of Custody Present	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody Filled Out	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Relinquished Signature & Sampler Name COC	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples Arrived within Hold Time	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Rush TAT requested on COC	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient Volume	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct Containers Used	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Sample Labels match COC (sample IDs & date/time of collection)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing acid/base preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Preservation Information: Preservative: _____ Lot #/Trace #: _____ Date: _____ Time: _____ Initials: _____
All Containers needing preservation are found to be in compliance with EPA recommendation: Exceptions: VOA, Coliform, TOC, O&G, Carbamates	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Headspace in VOA Vials? (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

Client Notification/ Resolution:
Person Contacted: _____ Date/Time: _____

Comments/ Resolution (use back for additional comments):

Project Manager Review: _____ Date: _____