

April 03, 2020

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

RE: Project: 1.4-Dx-522
Pace Project No.: 35540473

Dear Glenn PO Box:

Enclosed are the analytical results for sample(s) received by the laboratory on March 31, 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: 1.4-Dx-522

Pace Project No.: 35540473

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

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: 1.4-Dx-522
Pace Project No.: 35540473

Lab ID	Sample ID	Matrix	Date Collected	Date Received
35540473001	33020 S01	Drinking Water	03/30/20 07:15	03/31/20 10:20
35540473002	33020 E01	Drinking Water	03/30/20 07:15	03/31/20 10:20

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SAMPLE ANALYTE COUNT

Project: 1.4-Dx-522

Pace Project No.: 35540473

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
35540473001	33020 S01	EPA 522	CTB	2	PASI-O
35540473002	33020 E01	EPA 522	CTB	2	PASI-O

PASI-O = Pace Analytical Services - Ormond Beach

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ANALYTICAL RESULTS

Project: 1.4-Dx-522

Pace Project No.: 35540473

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Sample: 33020 S01 Lab ID: 35540473001 Collected: 03/30/20 07:15 Received: 03/31/20 10:20 Matrix: Drinking Water									
522 MSS 1,4 Dioxane Analytical Method: EPA 522 Preparation Method: EPA 522 Pace Analytical Services - Ormond Beach									
1,4-Dioxane (p-Dioxane)	0.84	ug/L	0.20	0.12	1	04/02/20 08:30	04/02/20 14:52	123-91-1	
Surrogates									
1,4-Dioxane-d8 (S)	94	%	70-130		1	04/02/20 08:30	04/02/20 14:52		

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Sample: 33020 E01 Lab ID: 35540473002 Collected: 03/30/20 07:15 Received: 03/31/20 10:20 Matrix: Drinking Water									
522 MSS 1,4 Dioxane Analytical Method: EPA 522 Preparation Method: EPA 522 Pace Analytical Services - Ormond Beach									
1,4-Dioxane (p-Dioxane)	0.56	ug/L	0.19	0.12	1	04/02/20 08:30	04/02/20 15:08	123-91-1	
Surrogates									
1,4-Dioxane-d8 (S)	96	%	70-130		1	04/02/20 08:30	04/02/20 15:08		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1.4-Dx-522

Pace Project No.: 35540473

QC Batch: 622625

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: 35540473001, 35540473002

METHOD BLANK: 3382887

Matrix: Water

Associated Lab Samples: 35540473001, 35540473002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.12 U	0.20	0.12	04/02/20 13:17	
1,4-Dioxane-d8 (S)	%	100	70-130		04/02/20 13:17	

LABORATORY CONTROL SAMPLE & LCSD: 3382888

3382889

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	17.2	17.5	86	87	70-130	2	20	
1,4-Dioxane-d8 (S)	%				102	101	70-130			

LABORATORY CONTROL SAMPLE: 3382890

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.2	0.17 I	85	50-150	
1,4-Dioxane-d8 (S)	%			100	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: 1.4-Dx-522

Pace Project No.: 35540473

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: 622781

[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.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 1.4-Dx-522
Pace Project No.: 35540473

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
35540473001	33020 S01	EPA 522	622625	EPA 522	622781
35540473002	33020 E01	EPA 522	622625	EPA 522	622781

REPORT OF LABORATORY ANALYSIS

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WO#: 35540473



35540473

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 System
 Address: 3954 Clearwell Dr. NE
 Leland, NC 28451
 Email: glenn.walker@brunswickcountync.gov
 Phone: 910-377-3450 Fax: _____
 Requested Due Date: _____

Required Project Information:
 Report To: Glenn - Bottles
 Copy To: _____
 Purchase Order #: _____
 Project Name: 1-4-DX-522
 Project #: _____

Invoice Information:
 Attention: _____
 Company Name: _____
 Address: _____
 Pace Quote: _____
 Pace Project Manager: isa.haley@pacestate.com
 Pace Profile #: 9557-1

Regulatory Agency: _____
State / Location: NC

ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G-GRAB C-COMP)	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	PRESERVATIVES						ANALYSES TEST	Requested Analysis Filtered (Y/N)	
			START	END				H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol			Other
1	Drinking Water	DW	3/30/20 0715	3/30/20 0715	5G	1	Unpreserved							1,4-dioxane, method 522	Y	
2	Waste Water	WW	3/30/20 0715	3/30/20 0715	2G	1										
3	Precipit	P														
4	Co-Jet/old	SL														
5	Oil	OL														
6	Wine	WP														
7	Air	AR														
8	Other	OT														
9	Tissue	TS														
10																
11																
12																

ADDITIONAL COMMENTS:
 Empty Bottles

RELINQUISHED BY / AFFILIATION:
 Pace
 Phillip McCallach

DATE: 11/19/19 1514

TIME: 1514

ACCEPTED BY / AFFILIATION:
 Pace

DATE: 3-30-20

TIME: 7:44

SAMPLE CONDITIONS:
 Received on: _____
 Temp in C: _____
 Sealed (Y/N): _____
 Cooled (Y/N): _____
 Custody (Y/N): _____
 Inlet Samples (Y/N): _____

SAMPLER NAME AND SIGNATURE:
 PRINT Name of SAMPLER: Phillip McCallach
 SIGNATURE of SAMPLER: *Phillip McCallach*

DATE Signed: 3-30-20

Sample Condition Upon Receipt Form (SCUR)

Project # WO# : 35540473
Project Manager: PM: LMH Due Date: 04/10/20
Client: CLIENT: BRUNCOWS

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

Thermometer Used: 7-353 Date: 5/5/20 Time: 1023 Initials: SRW

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

- | | |
|---|--|
| Cooler #1 Temp. °C <u>8.3</u> (Visual) <u>2.1</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 # 3914 7378 2877

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: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Exceptions: VOA, Coliform, TOC, O&G, Carbamates	
Headspace in VOA Vials? (>6mm): <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Trip Blank Present: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	

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

Comments/ Resolution (use back for additional comments): _____

Pace Container Order #559630

**Please Return
This Copy
With COC**

Order By :	Ship To :	Return To:
Company <u>Brunswick County Water System</u>	Company <u>Brunswick County Water System</u>	Company <u>Pace Analytical Ormond Beach</u>
Contact <u>- Bottles, Glenn</u>	Contact <u>- Bottles, Glenn</u>	Contact <u>Harvey, Lisa</u>
Email <u>glenn.walker@brunswickcountync.</u>	Email <u>glenn.walker@brunswickcountync.</u>	Email <u>lisa.harvey@pacelabs.com</u>
Address <u>3954 Clearwell Dr. NE</u>	Address <u>3954 Clearwell Dr. NE</u>	Address <u>8 East Tower Circle</u>
Address 2 _____	Address 2 _____	Address 2 _____
City <u>Leland</u>	City <u>Leland</u>	City <u>Ormond Beach</u>
State <u>NC</u> Zip <u>28451</u>	State <u>NC</u> Zip <u>28451</u>	State <u>FL</u> Zip <u>32174</u>
Phone <u>910-371-3490</u>	Phone <u>910-371-3490</u>	Phone <u>(386) 672-5668</u>

Info			
Project Name <u>1,4-Dx 522</u>	Due Date <u>11/07/2019</u>	Profile <u>9551-1</u>	Quote _____
Project <u>Harvey, Lisa</u>	Return _____	Carrier <u>FedEx Ground</u>	Locatio <u>NC</u>

Trip Blanks <input type="checkbox"/> Include Trip Blanks	Bottle Labels <input type="checkbox"/> Blank <input checked="" type="checkbox"/> Pre-Printed No Sample IDs <input type="checkbox"/> Pre-Printed With Sample IDs	Bottles <input type="checkbox"/> Boxed Cases <input type="checkbox"/> Individually Wrapped <input type="checkbox"/> Grouped By Sample
Return Shipping Labels <input checked="" type="checkbox"/> No Shipper <input type="checkbox"/> With Shipper	Misc <input type="checkbox"/> Sampling Instructions <input checked="" type="checkbox"/> Custody Seal <input checked="" type="checkbox"/> Temp. Blanks <input checked="" type="checkbox"/> Coolers <u>1</u> <input type="checkbox"/> Syringes _____	
COC Options <input type="checkbox"/> Number of Blanks _____ <input checked="" type="checkbox"/> Pre-Printed _____	<input type="checkbox"/> Extra Bubble Wrap <input type="checkbox"/> Short Hold/Rush <input type="checkbox"/> DI <u>Liter(s)</u> <input type="checkbox"/> USDA Regulated Soils	

# of Samples	Matrix	Test	Container	Total	# of	Lot #	Notes
2	WT	1,4 dioxane, method 522	1-1L Amber Glass, Sodium sulfite & Na bisulfate	2	0		

Hazard Shipping Placard In Place : NO

LAB USE:

*Sample receiving hours are Mon-Fri 8:00am-6:00pm and Sat 10:00am-6:00pm unless special arrangements are made with your project manager.

*Pace Analytical reserves the right to return hazardous, toxic, or radioactive samples to you.

*Pace Analytical reserves the right to charge for unused bottles, as well as cost associated with sample

*Payment term are net 30 days.

*Please include the proposal number on the chain of custody to insure proper billing.

Ship Date :	<u>11/10/19</u>
Prepared By:	<u>RP</u>
Verified By:	
Tracking Num:	

Sample	CLIENT USE (Optional):
weekly sampling	Date Rec'd: _____
	Received By: _____
	Verified By: _____

Internal	