

March 14, 2023

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

RE: Project: 1,4-Dx-522(Weekly)  
Pace Project No.: 35783304

Dear Glenn Walker:

Enclosed are the analytical results for sample(s) received by the laboratory on March 03, 2023. 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,



Shelby Sharpe  
shelby.sharpe@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(Weekly)

Pace Project No.: 35783304

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### **Pace Analytical Services Ormond Beach**

8 East Tower Circle, Ormond Beach, FL 32174

Alaska DEC- CS/UST/LUST

Alabama Certification #: 41320

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

Maine Certification #: FL01264

Maryland Certification: #346

Massachusetts Certification #: M-FL1264

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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## REPORT OF LABORATORY ANALYSIS

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### SAMPLE SUMMARY

Project: 1,4-Dx-522(Weekly)  
Pace Project No.: 35783304

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Lab ID	Sample ID	Matrix	Date Collected	Date Received
35783304001	030223-SO1	Water	03/02/23 09:40	03/03/23 10:35
35783304002	030223-EO1	Drinking Water	03/02/23 09:40	03/03/23 10:35

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### SAMPLE ANALYTE COUNT

Project: 1,4-Dx-522(Weekly)

Pace Project No.: 35783304

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
35783304001	030223-SO1	EPA 522	BMH	2	PASI-O
35783304002	030223-EO1	EPA 522	BMH	2	PASI-O

PASI-O = Pace Analytical Services - Ormond Beach

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### ANALYTICAL RESULTS

Project: 1,4-Dx-522(Weekly)

Pace Project No.: 35783304

<b>Sample: 030223-SO1</b>									
<b>Lab ID: 35783304001</b>									
Collected: 03/02/23 09:40 Received: 03/03/23 10:35 Matrix: Water									
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>522 MSS 1,4 Dioxane</b>									
Analytical Method: EPA 522 Preparation Method: EPA 522									
Pace Analytical Services - Ormond Beach									
1,4-Dioxane (p-Dioxane)	1.2	ug/L	0.20	0.12	1	03/09/23 17:00	03/10/23 10:28	123-91-1	J(L2)
<b>Surrogates</b>									
1,4-Dioxane-d8 (S)	73	%	70-130		1	03/09/23 17:00	03/10/23 10:28		

<b>Sample: 030223-EO1</b>									
<b>Lab ID: 35783304002</b>									
Collected: 03/02/23 09:40 Received: 03/03/23 10:35 Matrix: Drinking Water									
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>522 MSS 1,4 Dioxane</b>									
Analytical Method: EPA 522 Preparation Method: EPA 522									
Pace Analytical Services - Ormond Beach									
1,4-Dioxane (p-Dioxane)	1.1	ug/L	0.20	0.12	1	03/09/23 17:00	03/10/23 10:46	123-91-1	J(L2)
<b>Surrogates</b>									
1,4-Dioxane-d8 (S)	75	%	70-130		1	03/09/23 17:00	03/10/23 10:46		

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### QUALITY CONTROL DATA

Project: 1,4-Dx-522(Weekly)

Pace Project No.: 35783304

QC Batch: 900517	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: 35783304001, 35783304002

METHOD BLANK: 4950581 Matrix: Water

Associated Lab Samples: 35783304001, 35783304002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.12 U	0.20	0.12	03/10/23 08:58	
1,4-Dioxane-d8 (S)	%	74	70-130		03/10/23 08:58	

LABORATORY CONTROL SAMPLE: 4950582

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	2	1.4	69	70-130	J(L2)
1,4-Dioxane-d8 (S)	%			74	70-130	

LABORATORY CONTROL SAMPLE: 4950583

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.2	0.19 I	97	50-150	
1,4-Dioxane-d8 (S)	%			74	70-130	

MATRIX SPIKE SAMPLE: 4950584

Parameter	Units	60422908006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	ND	2	1.4	73	70-130	
1,4-Dioxane-d8 (S)	%				74	70-130	

SAMPLE DUPLICATE: 4950740

Parameter	Units	92654842001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	ND	0.12 U		20	
1,4-Dioxane-d8 (S)	%		74			

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(Weekly)

Pace Project No.: 35783304

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### 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.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

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

TNI - The NELAC Institute.

### 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.

J(L2) Estimated Value. Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.

## REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project: 1,4-Dx-522(Weekly)  
Pace Project No.: 35783304

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
35783304001	030223-SO1	EPA 522	900517	EPA 522	900658
35783304002	030223-EO1	EPA 522	900517	EPA 522	900658

**REPORT OF LABORATORY ANALYSIS**

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WO#: 35783304



**CHAIN-OF-CUSTODY / Analytical Request Document**  
 The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

**Section A** 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

**Section B** Required Project Information: Report To: Glenn Walker Copy To:  
 Purchase Order #: Project Name: 1,4-Dx-522 (Weekly) Project #:

**Section C** Invoice Information: Attention: Accounts Payable Company Name: See Section A Address:  
 Pace Quote: Lisa Harvey Pace Project Manager: 9551-1 (SO1), -2 (EO1) Pace Profile #:  
 Regulatory Agency: NC State / Location: NC

Page: 1 Of 1

ITEM #	MATRIX CODE Drinking Water DWT Waste Water WW Product P Soil/Solid SL Oil OL Wipe WP Air AR Other OT Tissue TS	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		DATE	TIME	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
			START	END								
1	030223-SO1	WT G	3/2/2023	0940AM	3/2/2023	0940AM	1	522 - 1,4 - Dioxane	3/2/2023	1035	29	line 1
2	030223-EO1	DW G	3/2/2023	0940AM	3/2/2023	0940AM	1	522 - 1,4 - Dioxane	3/2/2023	1035	29	line 2
3												
4												
5												
6												

**ADDITIONAL COMMENTS**

BILLY BENTON

3/2/2023

Esper

3/2/2023 1035 29

4 4 4

TEMP in C

BILLY BENTON 3/2/2023

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER:

SO1 is Raw Water (WT)  
 EO1 is Potable DWTR (DW)

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## Pace Container Order #705363

**Addresses**

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></u>
Email <u>glenn.walker@brunswickcountync.gov</u>	Email <u>glenn.walker@brunswickcountync.gov</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 <u></u>	Address 2 <u></u>	Address 2 <u></u>
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 (Weekly)</u>	Due Date <u>12/21/2022</u>	Profile <u>9551-1</u>	Quote <u></u>
Project Manager <u></u>	Return Date <u></u>	Carrier <u>FedEx Ground</u>	Location <u>NC</u>

**Trip Blanks**

Include Trip Blanks

**Bottle Labels**

Blank

Pre-Printed No Sample IDs

Pre-Printed With Sample IDs

**Bottles**

Boxed Cases

Individually Wrapped

Grouped By Sample ID/Matrix

**Return Shipping Labels**

No Shipper

With Shipper

**Misc**

Sampling Instructions

Custody Seal

Temp. Blanks

Coolers 1

Syringes

Extra Bubble Wrap

Short Hold/Rush Stickers

DI Water Liter(s)

USDA Regulated Soils

**COC Options**

Number of Blanks

Pre-Printed special

# 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 storage/disposal.
- \*Payment term are net 30 days.
- \*Please include the proposal number on the chain of custody to insure proper billing.

Ship Date :

Prepared By:

Verified By:

**Sample**

weekly sampling; 2-locations per week; ; Special COC attached; ;

**CLIENT USE (Optional):**

Date Rec'd:

Received By:

Verified By:

*Pace*

Sample Condition Upon Receipt Form (CUR)

**WO#: 35783304**

Project #  
 Project Manager:  
 Client:

PM: SS1 Due Date: 03/15/23  
 CLIENT: BRUNCOWS

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

Thermometer Used: T-409 Date: 3/13/23 Time: 1050 Initials: DAT

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

Cooler #1 Temp. °C 2.9 (Visual) +0.0 (Correction Factor) 2.9 (Actual)  Samples on ice, cooling process has begun  
 Cooler #2 Temp. °C \_\_\_\_\_ (Visual) \_\_\_\_\_ (Correction Factor) \_\_\_\_\_ (Actual)  Samples on ice, cooling process has begun  
 Cooler #3 Temp. °C \_\_\_\_\_ (Visual) \_\_\_\_\_ (Correction Factor) \_\_\_\_\_ (Actual)  Samples on ice, cooling process has begun  
 Cooler #4 Temp. °C \_\_\_\_\_ (Visual) \_\_\_\_\_ (Correction Factor) \_\_\_\_\_ (Actual)  Samples on ice, cooling process has begun  
 Cooler #5 Temp. °C \_\_\_\_\_ (Visual) \_\_\_\_\_ (Correction Factor) \_\_\_\_\_ (Actual)  Samples on ice, cooling process has begun  
 Cooler #6 Temp. °C \_\_\_\_\_ (Visual) \_\_\_\_\_ (Correction Factor) \_\_\_\_\_ (Actual)  Samples on ice, cooling process has begun  
 Recheck for OOT °C \_\_\_\_\_ (Visual) \_\_\_\_\_ (Correction Factor) \_\_\_\_\_ (Actual) Time: \_\_\_\_\_ Initials: \_\_\_\_\_

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace  Other \_\_\_\_\_  
 Shipping Method:  First Overnight  Priority Overnight  Standard Overnight  Ground  International Priority  
 Other \_\_\_\_\_

Billing:  Recipient  Sender  Third Party  Credit Card  Unknown

Tracking # 3952 7017 9967

Custody Seal on Cooler/Box Present:  Yes  No Seals intact:  Yes  No Ice: Wet Blue Melted 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 type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Comments:
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 type="checkbox"/> No <input checked="" 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	
All Containers needing preservation are found to be in compliance with EPA recommendation: Exceptions: Vials, Microbiology, O&G, PFAS	<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	

Comments/ Resolution (use back for additional comments):  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_