

March 18, 2022

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

RE: Project: 1,4-DX-522 (Weekly)  
Pace Project No.: 35703039

Dear Glenn Walker:

Enclosed are the analytical results for sample(s) received by the laboratory on March 11, 2022. 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,



Bill White  
bill.white@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,  
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## CERTIFICATIONS

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

Pace Project No.: 35703039

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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

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.: 35703039

Lab ID	Sample ID	Matrix	Date Collected	Date Received
35703039001	031022-SO1	Water	03/10/22 08:55	03/11/22 10:50
35703039002	031022-EO1	Drinking Water	03/10/22 08:55	03/11/22 10:50

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### SAMPLE ANALYTE COUNT

Project: 1,4-DX-522 (Weekly)  
Pace Project No.: 35703039

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
35703039001	031022-SO1	EPA 522	CTB	2	PASI-O
35703039002	031022-EO1	EPA 522	CTB	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.: 35703039

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>Sample: 031022-SO1</b> <b>Lab ID: 35703039001</b> Collected: 03/10/22 08:55      Received: 03/11/22 10:50      Matrix: Water									
<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)	1.6	ug/L	0.20	0.12	1	03/16/22 19:43	03/17/22 21:02	123-91-1	
<b>Surrogates</b>									
1,4-Dioxane-d8 (S)	85	%	70-130		1	03/16/22 19:43	03/17/22 21:02		

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>Sample: 031022-EO1</b> <b>Lab ID: 35703039002</b> Collected: 03/10/22 08:55      Received: 03/11/22 10:50      Matrix: Drinking Water									
<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)	1.8	ug/L	0.20	0.12	1	03/16/22 19:43	03/17/22 21:20	123-91-1	
<b>Surrogates</b>									
1,4-Dioxane-d8 (S)	95	%	70-130		1	03/16/22 19:43	03/17/22 21:20		

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### QUALITY CONTROL DATA

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

Pace Project No.: 35703039

QC Batch: 808425	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: 35703039001, 35703039002

METHOD BLANK: 4439030 Matrix: Water

Associated Lab Samples: 35703039001, 35703039002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.12 U	0.20	0.12	03/17/22 18:42	
1,4-Dioxane-d8 (S)	%	88	70-130		03/17/22 18:42	

LABORATORY CONTROL SAMPLE: 4439031

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	2	1.7	87	70-130	
1,4-Dioxane-d8 (S)	%			92	70-130	

LABORATORY CONTROL SAMPLE: 4439032

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.2	0.15 I	74	50-150	
1,4-Dioxane-d8 (S)	%			89	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 4439255 4439256

Parameter	Units	35703703001		4439255		4439256		% Rec Limits	Max RPD	Qual	
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.	MS Result	MSD Result				
1,4-Dioxane (p-Dioxane)	ug/L	ND	2	2	1.8	1.7	91	86	70-130	5	20
1,4-Dioxane-d8 (S)	%						92	90	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 (Weekly)

Pace Project No.: 35703039

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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.

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**QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project: 1,4-DX-522 (Weekly)  
Pace Project No.: 35703039

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
35703039001	031022-SO1	EPA 522	808425	EPA 522	808650
35703039002	031022-EO1	EPA 522	808425	EPA 522	808650

**REPORT OF LABORATORY ANALYSIS**

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WO#: 35703039



**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  
 Report To: Glenn Walker  
 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:  
 Pace Project Manager: Lisa Harvey  
 Pace Profile #: 9551-1 (SO1), -2 (EO1)

**Regulatory Agency**  
 NC  
**State / Location**  
 NC

ITEM #	MATRIX CODE (see valid codes to left)	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	DATE	TIME	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
		START	END												
1	WT G	0855AM	3/10/2022	0855AM	3/10/2022	0855AM	1	1	522 - 1,4 - Dioxane	3/10/2022	0855AM	1	522 - 1,4 - Dioxane	3/10/2022	line 1
2	DW G	0855AM	3/10/2022	0855AM	3/10/2022	0855AM	1	1	522 - 1,4 - Dioxane	3/10/2022	0855AM	1	522 - 1,4 - Dioxane	3/10/2022	line 2
3															
4															
5															
6															

**ADDITIONAL COMMENTS**  
 Relinquished by: [Signature]  
 Date: 3/10/2022

**SAMPLER NAME AND SIGNATURE**  
 PRINT Name of SAMPLER: BILLY BENTON  
 SIGNATURE of SAMPLER: [Signature] 3/10/2022

Received on: [ ]  
 Custody Sealed: [ ]  
 Cooler: [ ]  
 Samples Intact (Y/N): [ ]

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



Sample Condition Upon Receipt Form (SCUR)

Project **WO# : 35703039**  
 Project Manage **PM: WBW** Due Date: **03/23/22**  
 Client **CLIENT: BRUNCOWS**

Date and Initials of person:

Examining contents: \_\_\_\_\_  
 Label: CCJ  
 Deliver: \_\_\_\_\_  
 pH: \_\_\_\_\_

Thermometer Used: T-392 Date: 3/11/22 Time: 11:01 Initials: CCJ

State of Origin: \_\_\_\_\_

For WW projects, all containers verified to  $\leq 6$  °C

Cooler #1 Temp. °C 1.3 (Visual) +0.2 (Correction Factor) 1.5 (Actual)  
 Cooler #2 Temp. °C \_\_\_\_\_ (Visual) \_\_\_\_\_ (Correction Factor) \_\_\_\_\_ (Actual)  
 Cooler #3 Temp. °C \_\_\_\_\_ (Visual) \_\_\_\_\_ (Correction Factor) \_\_\_\_\_ (Actual)  
 Cooler #4 Temp. °C \_\_\_\_\_ (Visual) \_\_\_\_\_ (Correction Factor) \_\_\_\_\_ (Actual)  
 Cooler #5 Temp. °C \_\_\_\_\_ (Visual) \_\_\_\_\_ (Correction Factor) \_\_\_\_\_ (Actual)  
 Cooler #6 Temp. °C \_\_\_\_\_ (Visual) \_\_\_\_\_ (Correction Factor) \_\_\_\_\_ (Actual)

Samples on ice, cooling process has begun  
 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 # \_\_\_\_\_

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 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 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 type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" 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: Vials, Microbiology, O&G, PFAS	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" 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):  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_