

April 13, 2023

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

RE: Project: 1,4-Dx-522 (Weekly)
Pace Project No.: 35790504

Dear Glenn Walker:

Enclosed are the analytical results for sample(s) received by the laboratory on April 06, 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.: 35790504

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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SAMPLE SUMMARY

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

Pace Project No.: 35790504

Lab ID	Sample ID	Matrix	Date Collected	Date Received
35790504001	040523S01	Water	04/05/23 08:30	04/06/23 10:40
35790504002	040523E01	Water	04/05/23 08:30	04/06/23 10:40

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SAMPLE ANALYTE COUNT

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

Pace Project No.: 35790504

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
35790504001	040523S01	EPA 522	BMH	2	PASI-O
35790504002	040523E01	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.: 35790504

Sample: 040523S01									
Lab ID: 35790504001									
Collected: 04/05/23 08:30 Received: 04/06/23 10:40 Matrix: 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)	0.68	ug/L	0.20	0.12	1	04/11/23 18:30	04/12/23 09:23	123-91-1	
Surrogates									
1,4-Dioxane-d8 (S)	93	%	70-130		1	04/11/23 18:30	04/12/23 09:23		

Sample: 040523E01									
Lab ID: 35790504002									
Collected: 04/05/23 08:30 Received: 04/06/23 10:40 Matrix: 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)	0.64	ug/L	0.20	0.12	1	04/11/23 18:30	04/12/23 09:40	123-91-1	
Surrogates									
1,4-Dioxane-d8 (S)	95	%	70-130		1	04/11/23 18:30	04/12/23 09:40		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

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

Pace Project No.: 35790504

QC Batch: 908335	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: 35790504001, 35790504002

METHOD BLANK: 4992743 Matrix: Water

Associated Lab Samples: 35790504001, 35790504002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.12 U	0.20	0.12	04/12/23 08:28	
1,4-Dioxane-d8 (S)	%	96	70-130		04/12/23 08:28	

LABORATORY CONTROL SAMPLE: 4992744

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	20	17.1	85	70-130	
1,4-Dioxane-d8 (S)	%			87	70-130	

LABORATORY CONTROL SAMPLE: 4992745

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.2	0.26	130	50-150	
1,4-Dioxane-d8 (S)	%			96	70-130	

MATRIX SPIKE SAMPLE: 4992829

Parameter	Units	35791468001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	151	20	182	155	70-130	J(M1)
1,4-Dioxane-d8 (S)	%				85	70-130	

SAMPLE DUPLICATE: 4992828

Parameter	Units	35791466001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	177	170	4	20	
1,4-Dioxane-d8 (S)	%	103	100			

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.: 35790504

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

U Compound was analyzed for but not detected.

J(M1) Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

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

Pace Project No.: 35790504

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
35790504001	040523S01	EPA 522	908335	EPA 522	908462
35790504002	040523E01	EPA 522	908335	EPA 522	908462

REPORT OF LABORATORY ANALYSIS

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WO#: 35790504



35790504

CHAIN-OF-CUSTODY / Analytical Request Document

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

Sev.

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

Report To: Glenn Walker
Copy To:
Company Name: See Section A
Address:
Pace Quote:
Pace Project Manager: Lisa Harvey
Pace Profile #: 9551-1 (SO1) , -2 (EO1)

Invoice Information:
Attention: Accounts Payable
Company Name: See Section A
Address:
Regulatory Agency: NC
State / Location:
NC

Required Project Information:

Report To: Glenn Walker
Copy To:
Company Name: See Section A
Address:
Pace Quote:
Pace Project Manager: Lisa Harvey
Pace Profile #: 9551-1 (SO1) , -2 (EO1)

ITEM #	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		DATE	TIME	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
			START	END								
1	040523S01	WT G	04/05/23 0830	01/12/23 0730	04/05/23	1300	4/6/23	1040	33	Y	Y	Y
2	040523E01	DW G	04/05/23 0830	01/12/23 0730								
3												
4												
5												
6												

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Phil Mcculloch	04/05/2023	1300	Phil Mcculloch	4/6/23	1040	Y Y Y

SAMPLER NAME AND SIGNATURE:
 PRINT Name of SAMPLER: Phillip Mcculloch
 SIGNATURE of SAMPLER: *Phillip Mcculloch*
 DATE Signed: 04/05/2023

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

Pace Container Order #705366

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

Info			
Project Name 1,4-Dx-522 (Weekly)	Due Date 12/28/2022	Profile 9551-1	Quote _____
Project Manager _____	Return Date _____	Carrier FedEx Ground	Location NC

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 checked="" type="checkbox"/> Individually Wrapped <input type="checkbox"/> Grouped By Sample ID/Matrix
--	---	--

Return Shipping Labels <input 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 <input style="width: 100px;" type="text" value="1"/> <input type="checkbox"/> Syringes <input style="width: 100px;" type="text"/>
---	---

COC Options <input type="checkbox"/> Number of Blanks <input style="width: 100px;" type="text"/> <input checked="" type="checkbox"/> Pre-Printed <input style="width: 100px;" type="text" value="special"/>	<input type="checkbox"/> Extra Bubble Wrap <input type="checkbox"/> Short Hold/Rush Stickers <input type="checkbox"/> DI Water <input style="width: 100px;" type="text" value="Liter(s)"/> <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

- *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.

LAB USE:

Ship Date :	<input style="width: 100%;" type="text"/>
Prepared By:	<input style="width: 100%;" type="text"/>
Verified By:	<input style="width: 100%;" type="text"/>

Sample

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

CLIENT USE (Optional):

Date Rec'd:	<input style="width: 100%;" type="text"/>
Received By:	<input style="width: 100%;" type="text"/>
Verified By:	<input style="width: 100%;" type="text"/>



Sample Condition Upon Receipt Form (SCUR)

Project #
 Project Manager:
 Client:

WO#: 35790504

PM: SS1 Due Date: 04/18/23
 CLIENT: BRUNCOWS

Date and Initials of person:
 Examining contents: DAT
 Label: DAT
 Deliver:
 pH:
 Initials: KWT

Thermometer Used: T-408 Date: 4/6/23 Time: 1124

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

Cooler #1 Temp. °C <u>3.3</u> (Visual) <u>0</u> (Correction Factor) <u>3.3</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.

Recheck for OOT °C _____ (Visual) _____ (Correction Factor) _____ (Actual) Time: _____ Initials: _____

Courier: Fed Ex UPS USPS Client Commercial Pace Other: _____

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

Billing: Recipient Sender Third Party Credit Card Unknown

Tracking # 3966 6891 0600

Custody Seal Present: Yes No Seal properly placed and intact: Yes No Ice: Wet Blue Dry None Melted

Packing Material: Bubble Wrap Bubble Bags None Other: _____

Samples shorted to lab: Yes No (If yes, complete the following)
 Shorted Date: _____ Shorted Time: _____
 Bottle Quantity / Type: _____

Chain of Custody:	Present: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Filled Out: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Relinquished From Pace: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Sampler Name: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A								
	Relinquished To Pace: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Sampling Date(s): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Sampling Time(s): <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 Comments: _____								
Rush Turnaround Requested on COC.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A Comments: _____								
Sufficient Volume.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Comments: _____								
Correct Containers Used.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Comments: _____								
Containers Intact.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Comments: _____								
Sample Labels Match COC (Sample ID, Date/Time of Collection).	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Comments: _____								
All containers needing acid / base preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A								
All containers needing preservation are found to be in compliance with EPA recommendation. <small>Exceptions: Vials, Microbiology, O&G, PFAS</small>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A								
Headspace in Volatile 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								
<table border="1"> <tr> <td colspan="2">Preservation Information</td> </tr> <tr> <td>Preservative: _____</td> <td>Date: _____</td> </tr> <tr> <td>Lot / Trace: _____</td> <td>Time: _____</td> </tr> <tr> <td>Amount added (mL): _____</td> <td>Initials: _____</td> </tr> </table>		Preservation Information		Preservative: _____	Date: _____	Lot / Trace: _____	Time: _____	Amount added (mL): _____	Initials: _____
Preservation Information									
Preservative: _____	Date: _____								
Lot / Trace: _____	Time: _____								
Amount added (mL): _____	Initials: _____								

Comments / Resolutions (use back for additional comments): Ignore (1/12/23) date/home Time (Date 4/5/23) match on COC and containers.