

May 23, 2023

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

RE: Project: 1,4-Dx-522 (Weekly)
Pace Project No.: 35799277

Dear Glenn Walker:

Enclosed are the analytical results for sample(s) received by the laboratory on May 12, 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,
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CERTIFICATIONS

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

Pace Project No.: 35799277

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

DoD-ANAB #: ADE-3199

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.: 35799277

Lab ID	Sample ID	Matrix	Date Collected	Date Received
35799277001	051123S01	Water	05/11/23 08:00	05/12/23 10:45
35799277002	051123E01	Drinking Water	05/11/23 08:00	05/12/23 10:45

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SAMPLE ANALYTE COUNT

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

Pace Project No.: 35799277

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
35799277001	051123S01	EPA 522	BMH	2	PASI-O
35799277002	051123E01	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.: 35799277

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Sample: 051123S01 Lab ID: 35799277001 Collected: 05/11/23 08:00 Received: 05/12/23 10:45 Matrix: Water									
522 MSS 1,4 Dioxane									
Analytical Method: EPA 522 Preparation Method: EPA 522 Pace Analytical Services - Ormond Beach									
1,4-Dioxane (p-Dioxane)	0.68	ug/L	0.20	0.12	1	05/19/23 17:00	05/22/23 20:21	123-91-1	
Surrogates									
1,4-Dioxane-d8 (S)	98	%	70-130		1	05/19/23 17:00	05/22/23 20:21		

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Sample: 051123E01 Lab ID: 35799277002 Collected: 05/11/23 08:00 Received: 05/12/23 10:45 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)	0.76	ug/L	0.19	0.12	1	05/19/23 17:00	05/22/23 20:58	123-91-1	
Surrogates									
1,4-Dioxane-d8 (S)	95	%	70-130		1	05/19/23 17:00	05/22/23 20:58		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

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

Pace Project No.: 35799277

QC Batch: 919289	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: 35799277001, 35799277002

METHOD BLANK: 5056079 Matrix: Water

Associated Lab Samples: 35799277001, 35799277002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.12 U	0.20	0.12	05/22/23 16:09	
1,4-Dioxane-d8 (S)	%	94	70-130		05/22/23 16:09	

LABORATORY CONTROL SAMPLE: 5056080

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	2	2.3	115	70-130	
1,4-Dioxane-d8 (S)	%			103	70-130	

LABORATORY CONTROL SAMPLE: 5056081

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)	%			94	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 5056082 5056083

Parameter	Units	5056082		5056083		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
1,4-Dioxane (p-Dioxane)	ug/L	10.1	2	2	12.1	11.7	101	79	70-130	4	20
1,4-Dioxane-d8 (S)	%						104	97	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.: 35799277

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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 1,4-Dx-522 (Weekly)
Pace Project No.: 35799277

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
35799277001	051123S01	EPA 522	919289	EPA 522	919451
35799277002	051123E01	EPA 522	919289	EPA 522	919451

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WO# : 35799277



35799277

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A		Section B		Section C	
Required Client Information:		Required Project Information:		Invoice Information:	
Company:	Brunswick County Water Systems	Report To:	Glenn Walker	Attention:	Accounts Payable
Address:	PO Box 249	Copy To:		Company Name:	See Section A
	Bolivia, NC 28422	Purchase Order #:		Address:	
Email To:	Glenn Walker	Project Name:	1,4-Dx-522 (Weekly)	Pace Project Manager:	Lisa Harvey
Phone:	910-371-3490	Project #:		Pace Profile #:	9551-1 (SO1) -2 (EO1)
Requested Due Date:	W007				

ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G-GRAB C-COMP)	MATRIX CODE (see valid codes to left)	# OF CONTAINERS	PRESERVATIVES	ANALYSES TEST Y/N	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
			START	END											
1	Drinking Water	DW	05/11/23 0800	01/12/23 0730	WT G		Unpreserved		1	05/11/23 0800	01/12/23 0730		05/11/23 1300		line 1
2	Water	WT	05/11/23 0800	01/12/23 0730	DW G		H2SO4		1	05/11/23 0800	01/12/23 0730		05/11/23 1300		line 2
3	Waste Water	WW					HCl								
4	Product	P					NaOH								
5	Soil/Solid	BL					Na2S2O3								
6	Oil	OL					Methanol								
	Wipe	WP					Sodium sulfite and sodium disulfate								
	Air	AR													
	Other	OT													
	Tissue	TS													
Requested Analysis Filtered (Y/N)															
Residual Chlorine (Y/N)															

SAMPLER NAME AND SIGNATURE		Philipp McCulloch
PRINT Name of SAMPLER:	Philipp McCulloch	
SIGNATURE of SAMPLER:	<i>[Signature]</i>	
DATE Signed:	05/11/2023	

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

Pace Container Order #705362

Addresses		
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 12/14/2022	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
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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 1 _____ <input type="checkbox"/> Syringes _____ <input type="checkbox"/> Extra Bubble Wrap <input type="checkbox"/> Short Hold/Rush Stickers <input type="checkbox"/> DI Water <input type="text" value="Liter(s)"/> <input type="checkbox"/> USDA Regulated Soils
---	--

COC Options	
<input type="checkbox"/> Number of Blanks _____	_____
<input checked="" type="checkbox"/> 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

- *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 type="text"/>
Prepared By:	<input type="text"/>
Verified By:	<input type="text"/>

Sample

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

CLIENT USE (Optional):

Date Rec'd:	<input type="text"/>
Received By:	<input type="text"/>
Verified By:	<input type="text"/>



Sample Condition Upon Receipt Form (SCUR)

WO#: 35799277

PM: SS1

Due Date: 05/24/23

CLIENT: BRUNCOWS

Project #
 Project Manager:
 Client:

Date and Initials of person:

Examining contents: AS

Label: _____

Deliver: _____

pH: _____

Thermometer Used: T-409

Date: 8/12/23

Time: 117

Initials: AS

State of Origin: _____ For WV projects, all containers verified to $\leq 6^\circ\text{C}$

Cooler #1 Temp. °C 3.1 (Visual) -0.2 (Correction Factor) 2.9 (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)

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

Samples on ice, cooling process has begun.

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 # 3891 8649 6860

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 checked="" 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 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:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Exceptions: Vials, Microbiology, O&G, PFAS	
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

Preservation Information

Preservative: _____ Date: _____

Lot / Trace: _____ Time: _____

Amount added (mL): _____ Initials: _____

Comments / Resolutions (use back for additional comments):