Pace Analytical Services, LLC
8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

October 21, 2024

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

RE: Project: 1,4-Dx-522 (Weekly)
Pace Project No.: 35911644

Dear Glenn Walker:

Enclosed are the analytical results for sample(s) received by the laboratory on October 14, 2024. 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

Sample collection date 10/10/24 confirmed by the client instead of the 9/5/24 noted on the COC.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Todd Baumgartner
todd.baumgartner@pacelabs.com
(386)672-5668
Project Manager

Enclosures

cc: Billy Benton, Brunswick County Public Utilities

Pace Analytical Services, LLC
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CERTIFICATIONS

Project: 1,4-Dx-522 (Weekly)
Pace Project No.: 35911644

Pace Analytical Services Ormond Beach
8 East Tower Circle, Ormond Beach, FL 32174
Alaska DEC- CS/UST/LUST
Alabama Certification #: 41320
California Certification# 3096
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
Nevada Certification: FL NELAC Reciprocity
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
Utah FL NELAC Reciprocity
Utah
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.: 35911644

Lab ID	Sample ID	Matrix	Date Collected	Date Received
35911644001	**101024S01**	Water	10/10/24 08:05	10/14/24 10:20
35911644002	**101024E01**	Drinking Water	10/05/24 08:05	10/14/24 10:20

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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SAMPLE ANALYTE COUNT

Project: 1,4-Dx-522 (Weekly)
Pace Project No.: 35911644

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
35911644001	**101024S01**	EPA 522	TLC	2	PASI-O
35911644002	**101024E01**	EPA 522	TLC	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.: 35911644

Sample: 101024S01 **Lab ID: 35911644001** Collected: 10/10/24 08:05 Received: 10/14/24 10:20 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)	**0.12 U**	ug/L	0.20	0.12	1	10/17/24 00:25	10/18/24 13:46	123-91-1	
Surrogates									
1,4-Dioxane-d8 (S)	89	%	70-130		1	10/17/24 00:25	10/18/24 13:46		

Sample: 101024E01 **Lab ID: 35911644002** Collected: 10/05/24 08:05 Received: 10/14/24 10:20 Matrix: Drinking 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)	**0.12 U**	ug/L	0.20	0.12	1	10/17/24 00:25	10/18/24 14:03	123-91-1	
Surrogates									
1,4-Dioxane-d8 (S)	88	%	70-130		1	10/17/24 00:25	10/18/24 14:03		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1,4-Dx-522 (Weekly)
Pace Project No.: 35911644

QC Batch: 1048444
QC Batch Method: EPA 522
Analysis Method: EPA 522
Analysis Description: 522 MSS 1,4 Dioxane
Laboratory: Pace Analytical Services - Ormond Beach
Associated Lab Samples: 35911644001, 35911644002

METHOD BLANK: 5764058 Matrix: Water
Associated Lab Samples: 35911644001, 35911644002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.12 U	0.20	0.12	10/18/24 12:40	
1,4-Dioxane-d8 (S)	%	94	70-130		10/18/24 12:40	

LABORATORY CONTROL SAMPLE: 5764059

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	2	1.7	85	70-130	
1,4-Dioxane-d8 (S)	%			91	70-130	

LABORATORY CONTROL SAMPLE: 5764060

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.2	0.14 I	71	50-150	
1,4-Dioxane-d8 (S)	%			91	70-130	

MATRIX SPIKE SAMPLE: 5764080

Parameter	Units	35912387001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.17 I	2	1.5	68	70-130	J(IR),J(M1)
1,4-Dioxane-d8 (S)	%				77	70-130	

SAMPLE DUPLICATE: 5764081

Parameter	Units	35912387002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.12 U	0.12 U		20	
1,4-Dioxane-d8 (S)	%	74	76			

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.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1,4-Dx-522 (Weekly)
Pace Project No.: 35911644

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(IR)	Estimated Value. The internal standard recovery associated with this result exceeds the upper control limit. The reported result should be considered an estimated value.
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.: 35911644

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
35911644001	**101024S01**	EPA 522	1048444	EPA 522	1048959
35911644002	**101024E01**	EPA 522	1048444	EPA 522	1048959

WO# : 35911644

35911644

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:		Section B Required Project Information:		Section C 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			Address:	
Email To:	Glenn Walker	Purchase Order #:		Pace Quote:	
Phone:	910-371-3490 Fax:	Project Name:	1,4-Dx-522 (Weekly)	Pace Project Manager:	Lisa Harvey
Requested Due Date:	W007	Project #:		Pace Profile #:	9551-1 (SO1) , -2 (EO1)

Regulatory Agency
NC
State / Location
NC

SAMPLE ID
One Character per box.
(A-Z, 0-9 / , -)
Sample Ids must be unique

MATRIX	CODE
Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Other	OT
Tissue	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Sodium sulfite and sodium bisulfate	Requested Analysis Filtered (Y/N) Y/N	Analyses Test: 522 - 1,4 - Dioxane	522 - 1,4 - Dioxane	Residual Chlorine (Y/N)	
1	101024S01	WT	G	10/10/24	0800	09/05/24	0805		1								1		1			line 1
2	101024E01	DW	G	10/10/24	0800	09/05/24	0805		1								1			1		line 2
3																						
4																						
5																						
6																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Phil Mcculloch	10/10/2024	1400	JRS/Pace	10/4/24	1020	2211	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Phillip Mcculloch

SIGNATURE of SAMPLER: Phillip Mcculloch DATE Signed: 10/10/2024

TEMP in C	Rooolvod on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SO1 is Raw Water (WT)

EO1 is Potable DWTR (DW)

Pace Analytical
www.pacelabs.com

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:		Section B Required Project Information:		Section C 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			Address:	
Email To:	Glenn Walker	Purchase Order #:		Pace Quote:	
Phone:	910-371-3490 Fax:	Project Name:	1,4-Dx-522 (Weekly)	Pace Project Manager:	Lisa Harvey
Requested Due Date:	W007	Project #:		Pace Profile #:	9551-1 (SO1) , -2 (EO1)

Regulatory Agency
NC
State / Location
NC

SAMPLE ID
One Character per box.
(A-Z, 0-9 / , -)
Sample Ids must be unique

MATRIX	CODE
Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Other	OT
Tissue	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Sodium sulfite and sodium bisulfate	Analyses Test Y/N	522 - 1,4 - Dioxane	522 - 1,4 - Dioxane	Residual Chlorine (Y/N)	
1	-SO1	WT	G						1								1		1			line 1
2	-EO1	DW	G						1								1			1		line 2
3																						
4																						
5																						
6																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
				AS/PACE			

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed:

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SO1 is Raw Water (WT)

EO1 is Potable DWTR (DW)

WO#: 35911644

PM: TAB **Due Date: 10/24/24**

CLIENT: BRUNCOWS

Project #

Project Manager:

Client:

Date and initials of person Examining contents: SBH

Verifying pH:

Thermometer Used T-409 Date 10/14/24 Time 1138 Initials AES

State of Origin

☐ For WV projects all containers verified to ≤6 °C

Cooler #1 Temp.°C	22.1 (Visual)	0 (Correction Factor)	22.1 (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	22.3 (Visual)	0 (Correction Factor)	22.3 (Actual)	☐Samples on ice cooling process has begun

Time: 1139 Initials: JDS

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 # 2805 0416 7200

Custody Seal Present: ☐Yes ☑No Seal properly placed and intact: ☐Yes ☐No

Packing Material: ☐Bubble Wrap ☐Bubble Bags ☐None ☐Other

Ice: ☐Wet ☐Blue ☐Dry ☐None ☑Melted

Samples shorted to lab: ☐Yes ☐No (if yes complete the following)

Shorted Date:

Bottle Quantity / Type:

Shorted Time:

Chain of Custody:	Present: ☑Yes ☐No Filled Out: ☑Yes ☐No ☐N/A Sampler Name: ☑Yes ☐No ☐N/A			
	Relinquished To Pace: ☑Yes ☐No ☐N/A Sampling Date(s): ☑Yes ☐No ☐N/A Sampling Time(s): ☑Yes ☐No ☐N/A			
Samples Arrived within Hold Time	☑Yes	☐No	☐N/A	Comments
Rush Turnaround Requested on COC	☐Yes	☑No	☐N/A	Comments
Sufficient Volume	☑Yes	☐No	☐N/A	Comments
Correct Containers Used	☑Yes	☐No	☐N/A	Comments
Containers Intact	☑Yes	☐No	☐N/A	Comments
Sample Labels Match COC (Sample ID Date/Time of Collection)	☑Yes	☐No	☐N/A	Comments
All containers needing acid / base preservation have been checked	☑Yes	☐No	☐N/A	Comments
All containers needing preservation are found to be in compliance with EPA recommendation (Exceptions: Vials Microbiology O&G PFAS)	☑Yes	☐No	☐N/A	Preservation Information: Preservative: Lot / Trace: Amount added (mL): Date: Time: Initials:
Headspace in Volatile Vials? (>6mm)	☐Yes	☐No	☑N/A	
Trip Blank Present	☐Yes	☐No	☑N/A	

Comments / Resolutions (use back for additional comments): OOT

Labeled by: SBH Reviewed by: EAS Delivered by: SBH