

December 01, 2020

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

RE: Project: 1,4-Dx-522 (Weekly)  
Pace Project No.: 35593906

Dear Glenn PO Box:

Enclosed are the analytical results for sample(s) received by the laboratory on November 20, 2020. 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,



Lisa Harvey  
lisa.harvey@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.: 35593906

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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

Arizona Certification# AZ0819

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

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.: 35593906

| Lab ID      | Sample ID    | Matrix         | Date Collected | Date Received  |
|-------------|--------------|----------------|----------------|----------------|
| 35593906001 | 11-19-20-S01 | Water          | 11/19/20 07:20 | 11/20/20 10:50 |
| 35593906002 | 11-19-20-E01 | Drinking Water | 11/19/20 07:20 | 11/20/20 10:50 |

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 1,4-Dx-522 (Weekly)  
Pace Project No.: 35593906

| Lab ID      | Sample ID    | Method  | Analysts | Analytes Reported | Laboratory |
|-------------|--------------|---------|----------|-------------------|------------|
| 35593906001 | 11-19-20-S01 | EPA 522 | CTB      | 2                 | PASI-O     |
| 35593906002 | 11-19-20-E01 | EPA 522 | CTB      | 2                 | PASI-O     |

PASI-O = Pace Analytical Services - Ormond Beach

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

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

Pace Project No.: 35593906

| Sample: 11-19-20-S01                                   |             |       |        |      |    |                |                |          |      |
|--|-------------|-------|--------|------|----|----------------|----------------|----------|------|
| Lab ID: 35593906001                                    |             |       |        |      |    |                |                |          |      |
| Collected: 11/19/20 07:20                              |             |       |        |      |    |                |                |          |      |
| Received: 11/20/20 10:50                               |             |       |        |      |    |                |                |          |      |
| 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)                                | <b>0.26</b> | ug/L  | 0.20   | 0.12 | 1  | 11/23/20 09:34 | 11/24/20 15:01 | 123-91-1 |      |
| <b>Surrogates</b>                                      |             |       |        |      |    |                |                |          |      |
| 1,4-Dioxane-d8 (S)                                     | 80          | %     | 70-130 |      | 1  | 11/23/20 09:34 | 11/24/20 15:01 |          |      |

| Sample: 11-19-20-E01                                   |             |       |        |      |    |                |                |          |      |
|--|-------------|-------|--------|------|----|----------------|----------------|----------|------|
| Lab ID: 35593906002                                    |             |       |        |      |    |                |                |          |      |
| Collected: 11/19/20 07:20                              |             |       |        |      |    |                |                |          |      |
| Received: 11/20/20 10:50                               |             |       |        |      |    |                |                |          |      |
| 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)                                | <b>0.23</b> | ug/L  | 0.20   | 0.12 | 1  | 11/23/20 09:34 | 11/24/20 15:18 | 123-91-1 |      |
| <b>Surrogates</b>                                      |             |       |        |      |    |                |                |          |      |
| 1,4-Dioxane-d8 (S)                                     | 76          | %     | 70-130 |      | 1  | 11/23/20 09:34 | 11/24/20 15:18 |          |      |

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 1,4-Dx-522 (Weekly)  
Pace Project No.: 35593906

|                          |   |
|--------------------------|---|
| QC Batch: 684072         | 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: 35593906001, 35593906002

METHOD BLANK: 3724681 Matrix: Water  
Associated Lab Samples: 35593906001, 35593906002

| Parameter               | Units | Blank Result | Reporting Limit | MDL  | Analyzed       | Qualifiers |
|-------------------------|-------|--------------|-----------------|------|----------------|------------|
| 1,4-Dioxane (p-Dioxane) | ug/L  | 0.12 U       | 0.20            | 0.12 | 11/24/20 11:32 |            |
| 1,4-Dioxane-d8 (S)      | %     | 85           | 70-130          |      | 11/24/20 11:32 |            |

LABORATORY CONTROL SAMPLE: 3724682

| Parameter               | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|-------------------------|-------|-------------|------------|-----------|--------------|------------|
| 1,4-Dioxane (p-Dioxane) | ug/L  | 1.9         | 1.5        | 78        | 70-130       |            |
| 1,4-Dioxane-d8 (S)      | %     |             |            | 85        | 70-130       |            |

LABORATORY CONTROL SAMPLE: 3724683

| Parameter               | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|-------------------------|-------|-------------|------------|-----------|--------------|------------|
| 1,4-Dioxane (p-Dioxane) | ug/L  | 0.2         | 0.15 I     | 77        | 50-150       |            |
| 1,4-Dioxane-d8 (S)      | %     |             |            | 86        | 70-130       |            |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3724684 3724685

| Parameter               | Units | 60354973009 |                | MSD             |           | MS         |          | MSD       |        | % Rec Limits | RPD | Max RPD | Qual |
|-------------------------|-------|-------------|----------------|-----------------|-----------|------------|----------|-----------|--------|--------------|-----|---------|------|
|                         |       | Result      | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec |        |              |     |         |      |
| 1,4-Dioxane (p-Dioxane) | ug/L  | 201         | 2              | 2               | 189       | 199        | -605     | -97       | 70-130 | 5            | 20  | M6      |      |
| 1,4-Dioxane-d8 (S)      | %     |             |                |                 |           |            | 88       | 87        | 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.: 35593906

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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.

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.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

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

Pace Project No.: 35593906

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| <b>Lab ID</b> | <b>Sample ID</b> | <b>QC Batch Method</b> | <b>QC Batch</b> | <b>Analytical Method</b> | <b>Analytical Batch</b> |
|---------------|------------------|------------------------|-----------------|--------------------------|-------------------------|
| 35593906001   | 11-19-20-S01     | EPA 522                | 684072          | EPA 522                  | 684514                  |
| 35593906002   | 11-19-20-E01     | EPA 522                | 684072          | EPA 522                  | 684514                  |

### REPORT OF LABORATORY ANALYSIS

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**WO# : 35593906**



**35593906**

**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

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

**Section C**  
**Invoice Information:**  
 Attention: Accounts Payable  
 Company Name: See Section A  
 Address:  
 Face Cluette:  
 Face Project Manager: Lisa Harvey  
 Face Profile #: 9551-1 (S01) , -2 (E01)

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

| ITEM #  | MATRIX CODE (see valid codes to left) | SAMPLE TYPE (G=GRAB C=COMP) | COLLECTED  |     | DATE       | TIME | DATE | TIME | RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME | TEMP in C | Received on | Ice (Y/N) | Custody Sealed (Y/N) | Cooler (Y/N) | Samples In/tact (Y/N) |  |
|---|---------------------------------------|-----------------------------|------------|-----|------------|------|------|------|-------------------------------|------|------|---------------------------|------|------|-----------|-------------|-----------|----------------------|--------------|-----------------------|--|
|   |                                       |                             | START      | END |            |      |      |      |                               |      |      |                           |      |      |           |             |           |                      |              |                       |  |
| 1   | WT G                                  | WT G                        | 11/19/2020 | 720 | 11/19/2020 | 720  |      |      |                               |      |      |                           |      |      |           |             |           |                      |              |                       |  |
| 2   | DW G                                  | DW G                        | 11/19/2020 | 720 | 11/19/2020 | 720  |      |      |                               |      |      |                           |      |      |           |             |           |                      |              |                       |  |
| 3   |                                       |                             |            |     |            |      |      |      |                               |      |      |                           |      |      |           |             |           |                      |              |                       |  |
| 4   |                                       |                             |            |     |            |      |      |      |                               |      |      |                           |      |      |           |             |           |                      |              |                       |  |
| 5   |                                       |                             |            |     |            |      |      |      |                               |      |      |                           |      |      |           |             |           |                      |              |                       |  |
| 6   |                                       |                             |            |     |            |      |      |      |                               |      |      |                           |      |      |           |             |           |                      |              |                       |  |
| <p><b>ADDITIONAL COMMENTS</b></p>   |                                       |                             |            |     |            |      |      |      |                               |      |      |                           |      |      |           |             |           |                      |              |                       |  |
| <p><b>Requested Analysis Filtered (Y/N)</b></p>   |                                       |                             |            |     |            |      |      |      |                               |      |      |                           |      |      |           |             |           |                      |              |                       |  |
| <p><b>Preservatives</b></p> <p>Unpreserved</p> <p>H2SO4</p> <p>HNO3</p> <p>HCl</p> <p>NaOH</p> <p>Na2SO3</p> <p>Methanol</p> <p>Sodium sulfite and sodium bisulfite</p> |                                       |                             |            |     |            |      |      |      |                               |      |      |                           |      |      |           |             |           |                      |              |                       |  |
| <p><b>Analyses Test</b></p> <p>522 - 1,4 - Dioxane</p> <p>1</p> <p>522 - 1,4 - Dioxane</p> <p>1</p>   |                                       |                             |            |     |            |      |      |      |                               |      |      |                           |      |      |           |             |           |                      |              |                       |  |
| <p><b># OF CONTAINERS</b></p> <p>1</p> <p>1</p>   |                                       |                             |            |     |            |      |      |      |                               |      |      |                           |      |      |           |             |           |                      |              |                       |  |
| <p><b>SAMPLE TEMP AT COLLECTION</b></p>   |                                       |                             |            |     |            |      |      |      |                               |      |      |                           |      |      |           |             |           |                      |              |                       |  |
| <p><b>Residual Chlorine (Y/N)</b></p> <p>line 1</p> <p>line 2</p>   |                                       |                             |            |     |            |      |      |      |                               |      |      |                           |      |      |           |             |           |                      |              |                       |  |

**SAMPLER NAME AND SIGNATURE**  
 PRINT Name of SAMPLER: Phillip McCallloch  
 SIGNATURE of SAMPLER: *Phillip McCallloch*  
 DATE Signed: 11/19/2020

S01 is Raw Water (WT)  
 E01 is Potable DWTR (DW)



Document Name:  
Sample Condition Upon Receipt Form  
Document No.:  
F-FL-C-007 rev. 13

Document Revised:  
May 30, 2018  
Issuing Authority:  
Pace Florida Quality Office

**Sample Condition Upon Receipt Form (SCUR)**

**Project #**  
**Project Manager:**  
**Client:**

**WO# : 35593906**

**PM: LMH**      **Due Date: 12/04/20**  
**CLIENT: BRUNCOWS**

**Date and Initials of person:**  
**Examining contents:**  
**Label:** \_\_\_\_\_  
**Deliver:** \_\_\_\_\_  
**pH:** \_\_\_\_\_

Thermometer Used: T-344      Date: 11/20/20      Time: 1107      Initials: DWS

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

- |   |  |
|---|--|
| Cooler #1 Temp. °C <u>0.8</u> (Visual) <u>0.3</u> (Correction Factor) <u>1.2</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 |

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 # 3991    4209    9649

Custody Seal on Cooler/Box Present:  Yes     No      Seals intact:  Yes     No      Ice: Wet Blue Dry 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 | <p align="center">Preservation Information:</p> Preservative: _____<br>Lot #/Trace #: _____<br>Date: _____      Time: _____<br>Initials: _____ |
| 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 checked="" type="checkbox"/> No <input 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: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |  |
| Exceptions: VOA, Coliform, TOC, O&G, Carbamates  |  |  |
| 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 checked="" type="checkbox"/> No <input type="checkbox"/> N/A |  |

**Client Notification/ Resolution:**

Person Contacted: \_\_\_\_\_      Date/Time: \_\_\_\_\_

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

Project Manager Review: \_\_\_\_\_      Date: \_\_\_\_\_