

May 25, 2022

Tony Brown  
City of Siloam Springs  
975 Anderson Avenue  
Siloam Springs, AR 72761

RE: Project: 2ND QTR WET  
Pace Project No.: 60399831

Dear Tony Brown:

Enclosed are the analytical results for sample(s) received by the laboratory between May 10, 2022 and May 16, 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 - Kansas City
- Pace Analytical Services - SE Kansas

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

Sincerely,



Nolie Wood  
nolie.wood@pacelabs.com  
1(913)563-1401  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: 2ND QTR WET

Pace Project No.: 60399831

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### **Pace Analytical Services Kansas**

9608 Loiret Boulevard, Lenexa, KS 66219

Missouri Inorganic Drinking Water Certification #: 10090

Arkansas Drinking Water

Arkansas Certification #: 20-020-0

Arkansas Drinking Water

Illinois Certification #: 2000302021-3

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212020-2

Oklahoma Certification #: 9205/9935

Florida: Cert E871149 SEKS WET

Texas Certification #: T104704407-21-15

Utah Certification #: KS000212019-9

Illinois Certification #: 004592

Kansas Field Laboratory Accreditation: # E-92587

Missouri SEKS Micro Certification: 10070

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### **Pace Analytical Services Southeast Kansas**

808 West McKay, Frontenac, KS 66763

Arkansas Certification #: 18-016-0

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10426

Louisiana Certification #: 03055

Oklahoma Certification #: 9935

Texas Certification #: T104704558-21-3

Utah Certification #: KS00021

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 2ND QTR WET

Pace Project No.: 60399831

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| Lab ID      | Sample ID                  | Matrix | Date Collected | Date Received  |
|-------------|----------------------------|--------|----------------|----------------|
| 60399831001 | SSWWTP CONT# 911739        | Water  | 05/09/22 09:23 | 05/10/22 08:00 |
| 60399831002 | SSWWTP METALS CONT#773661  | Water  | 03/04/22 09:00 | 05/10/22 18:20 |
| 60399831003 | SSWWTP METALS CONT# 773664 | Water  | 05/11/22 09:00 | 05/12/22 19:00 |
| 60399831004 | SSWWTP METALS CONT# 773662 | Water  | 05/13/22 09:00 | 05/16/22 18:25 |

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**SAMPLE ANALYTE COUNT**

Project: 2ND QTR WET

Pace Project No.: 60399831

| Lab ID      | Sample ID                  | Method           | Analysts | Analytes Reported | Laboratory |
|-------------|----------------------------|------------------|----------|-------------------|------------|
| 60399831001 | SSWWTP CONT# 911739        | EPA 821/R-02/013 | MEB      | 1                 | PASI-SE    |
| 60399831002 | SSWWTP METALS CONT#773661  | EPA 200.8        | JGP      | 12                | PASI-K     |
| 60399831003 | SSWWTP METALS CONT# 773664 | EPA 200.8        | JGP      | 12                | PASI-K     |
| 60399831004 | SSWWTP METALS CONT# 773662 | EPA 200.8        | MRV      | 12                | PASI-K     |

PASI-K = Pace Analytical Services - Kansas City

PASI-SE = Pace Analytical Services - SE Kansas

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### ANALYTICAL RESULTS

Project: 2ND QTR WET

Pace Project No.: 60399831

| <b>Sample: SSWWTP CONT# 911739</b>   |                 | <b>Lab ID: 60399831001</b> |              | Collected: 05/09/22 09:23 | Received: 05/10/22 08:00 | Matrix: Water  |         |      |
|--------------------------------------|-----------------|----------------------------|--------------|---------------------------|--------------------------|----------------|---------|------|
| Parameters                           | Results         | Units                      | Report Limit | DF                        | Prepared                 | Analyzed       | CAS No. | Qual |
| <b>Chronic Toxicity</b>              |                 |                            |              |                           |                          |                |         |      |
| Analytical Method: EPA 821/R-02/013  |                 |                            |              |                           |                          |                |         |      |
| Pace Analytical Services - SE Kansas |                 |                            |              |                           |                          |                |         |      |
| Toxicity, Chronic                    | <b>Complete</b> |                            | 1.0          | 1                         |                          | 05/10/22 13:00 |         |      |

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## ANALYTICAL RESULTS

Project: 2ND QTR WET

Pace Project No.: 60399831

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**Sample: SSWWTP METALS**      **Lab ID: 60399831002**      Collected: 03/04/22 09:00      Received: 05/10/22 18:20      Matrix: Water  
**CONT#773661**

| Parameters  | Results     | Units | Report Limit | DF | Prepared       | Analyzed       | CAS No.   | Qual |
|---|-------------|-------|--------------|----|----------------|----------------|-----------|------|
| <b>200.8 MET ICPMS</b>  |             |       |              |    |                |                |           |      |
| Analytical Method: EPA 200.8      Preparation Method: EPA 200.8 |             |       |              |    |                |                |           |      |
| Pace Analytical Services - Kansas City                          |             |       |              |    |                |                |           |      |
| Antimony  | ND          | ug/L  | 1.0          | 1  | 05/13/22 14:56 | 05/17/22 13:50 | 7440-36-0 |      |
| Arsenic   | ND          | ug/L  | 1.0          | 1  | 05/13/22 14:56 | 05/17/22 13:50 | 7440-38-2 |      |
| Beryllium   | ND          | ug/L  | 0.50         | 1  | 05/13/22 14:56 | 05/17/22 13:50 | 7440-41-7 |      |
| Cadmium   | ND          | ug/L  | 0.50         | 1  | 05/13/22 14:56 | 05/17/22 13:50 | 7440-43-9 |      |
| Chromium  | ND          | ug/L  | 1.0          | 1  | 05/13/22 14:56 | 05/17/22 13:50 | 7440-47-3 |      |
| Copper  | <b>1.8</b>  | ug/L  | 1.0          | 1  | 05/13/22 14:56 | 05/17/22 13:50 | 7440-50-8 |      |
| Lead  | ND          | ug/L  | 1.0          | 1  | 05/13/22 14:56 | 05/17/22 13:50 | 7439-92-1 |      |
| Nickel  | <b>1.5</b>  | ug/L  | 1.0          | 1  | 05/13/22 14:56 | 05/17/22 13:50 | 7440-02-0 |      |
| Selenium  | ND          | ug/L  | 1.0          | 1  | 05/13/22 14:56 | 05/17/22 13:50 | 7782-49-2 |      |
| Silver  | ND          | ug/L  | 0.50         | 1  | 05/13/22 14:56 | 05/17/22 13:50 | 7440-22-4 |      |
| Thallium  | ND          | ug/L  | 1.0          | 1  | 05/13/22 14:56 | 05/17/22 13:50 | 7440-28-0 |      |
| Zinc  | <b>20.6</b> | ug/L  | 10.0         | 1  | 05/13/22 14:56 | 05/17/22 13:50 | 7440-66-6 |      |

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## ANALYTICAL RESULTS

Project: 2ND QTR WET

Pace Project No.: 60399831

**Sample:** SSWWTP METALS CONT# 773664    **Lab ID:** 60399831003    Collected: 05/11/22 09:00    Received: 05/12/22 19:00    Matrix: Water

| Parameters             | Results | Units  | Report Limit | DF | Prepared       | Analyzed       | CAS No.   | Qual |
|------------------------|---------|--|--------------|----|----------------|----------------|-----------|------|
| <b>200.8 MET ICPMS</b> |         | Analytical Method: EPA 200.8 Preparation Method: EPA 200.8<br>Pace Analytical Services - Kansas City |              |    |                |                |           |      |
| Antimony               | ND      | ug/L   | 1.0          | 1  | 05/13/22 14:56 | 05/17/22 14:21 | 7440-36-0 |      |
| Arsenic                | ND      | ug/L   | 1.0          | 1  | 05/13/22 14:56 | 05/17/22 14:21 | 7440-38-2 |      |
| Beryllium              | ND      | ug/L   | 0.50         | 1  | 05/13/22 14:56 | 05/17/22 14:21 | 7440-41-7 |      |
| Cadmium                | ND      | ug/L   | 0.50         | 1  | 05/13/22 14:56 | 05/17/22 14:21 | 7440-43-9 |      |
| Chromium               | ND      | ug/L   | 1.0          | 1  | 05/13/22 14:56 | 05/17/22 14:21 | 7440-47-3 |      |
| Copper                 | 1.7     | ug/L   | 1.0          | 1  | 05/13/22 14:56 | 05/17/22 14:21 | 7440-50-8 |      |
| Lead                   | ND      | ug/L   | 1.0          | 1  | 05/13/22 14:56 | 05/17/22 14:21 | 7439-92-1 |      |
| Nickel                 | 1.8     | ug/L   | 1.0          | 1  | 05/13/22 14:56 | 05/17/22 14:21 | 7440-02-0 |      |
| Selenium               | ND      | ug/L   | 1.0          | 1  | 05/13/22 14:56 | 05/17/22 14:21 | 7782-49-2 |      |
| Silver                 | ND      | ug/L   | 0.50         | 1  | 05/13/22 14:56 | 05/17/22 14:21 | 7440-22-4 |      |
| Thallium               | ND      | ug/L   | 1.0          | 1  | 05/13/22 14:56 | 05/17/22 14:21 | 7440-28-0 |      |
| Zinc                   | 40.7    | ug/L   | 10.0         | 1  | 05/13/22 14:56 | 05/17/22 14:21 | 7440-66-6 |      |

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## ANALYTICAL RESULTS

Project: 2ND QTR WET

Pace Project No.: 60399831

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**Sample:** SSWWTP METALS CONT# 773662    **Lab ID:** 60399831004    Collected: 05/13/22 09:00    Received: 05/16/22 18:25    Matrix: Water

| Parameters             | Results | Units   | Report Limit | DF | Prepared       | Analyzed       | CAS No.   | Qual |
|------------------------|---------|---|--------------|----|----------------|----------------|-----------|------|
| <b>200.8 MET ICPMS</b> |         | Analytical Method: EPA 200.8    Preparation Method: EPA 200.8<br>Pace Analytical Services - Kansas City |              |    |                |                |           |      |
| Antimony               | ND      | ug/L  | 1.0          | 1  | 05/17/22 16:06 | 05/24/22 13:48 | 7440-36-0 |      |
| Arsenic                | ND      | ug/L  | 1.0          | 1  | 05/17/22 16:06 | 05/24/22 13:48 | 7440-38-2 |      |
| Beryllium              | ND      | ug/L  | 0.50         | 1  | 05/17/22 16:06 | 05/24/22 13:48 | 7440-41-7 |      |
| Cadmium                | ND      | ug/L  | 0.50         | 1  | 05/17/22 16:06 | 05/24/22 13:48 | 7440-43-9 |      |
| Chromium               | ND      | ug/L  | 1.0          | 1  | 05/17/22 16:06 | 05/24/22 13:48 | 7440-47-3 |      |
| Copper                 | 1.4     | ug/L  | 1.0          | 1  | 05/17/22 16:06 | 05/24/22 13:48 | 7440-50-8 |      |
| Lead                   | ND      | ug/L  | 1.0          | 1  | 05/17/22 16:06 | 05/24/22 13:48 | 7439-92-1 |      |
| Nickel                 | 1.8     | ug/L  | 1.0          | 1  | 05/17/22 16:06 | 05/24/22 13:48 | 7440-02-0 |      |
| Selenium               | ND      | ug/L  | 1.0          | 1  | 05/17/22 16:06 | 05/24/22 13:48 | 7782-49-2 |      |
| Silver                 | ND      | ug/L  | 0.50         | 1  | 05/17/22 16:06 | 05/24/22 13:48 | 7440-22-4 |      |
| Thallium               | ND      | ug/L  | 1.0          | 1  | 05/17/22 16:06 | 05/24/22 13:48 | 7440-28-0 |      |
| Zinc                   | 44.2    | ug/L  | 10.0         | 1  | 05/17/22 16:06 | 05/24/22 13:48 | 7440-66-6 |      |

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### QUALITY CONTROL DATA

Project: 2ND QTR WET

Pace Project No.: 60399831

QC Batch: 786622

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60399831002, 60399831003

METHOD BLANK: 3135864

Matrix: Water

Associated Lab Samples: 60399831002, 60399831003

| Parameter | Units | Blank Result | Reporting Limit | Analyzed       | Qualifiers |
|-----------|-------|--------------|-----------------|----------------|------------|
| Antimony  | ug/L  | ND           | 1.0             | 05/17/22 12:52 |            |
| Arsenic   | ug/L  | ND           | 1.0             | 05/17/22 12:52 |            |
| Beryllium | ug/L  | ND           | 0.50            | 05/17/22 12:52 |            |
| Cadmium   | ug/L  | ND           | 0.50            | 05/17/22 12:52 |            |
| Chromium  | ug/L  | 2.5          | 1.0             | 05/17/22 12:52 |            |
| Copper    | ug/L  | ND           | 1.0             | 05/17/22 12:52 |            |
| Lead      | ug/L  | ND           | 1.0             | 05/17/22 12:52 |            |
| Nickel    | ug/L  | ND           | 1.0             | 05/17/22 12:52 |            |
| Selenium  | ug/L  | ND           | 1.0             | 05/17/22 12:52 |            |
| Silver    | ug/L  | ND           | 0.50            | 05/17/22 12:52 |            |
| Thallium  | ug/L  | ND           | 1.0             | 05/17/22 12:52 |            |
| Zinc      | ug/L  | ND           | 10.0            | 05/17/22 12:52 |            |

LABORATORY CONTROL SAMPLE: 3135865

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|-----------|-------|-------------|------------|-----------|--------------|------------|
| Antimony  | ug/L  | 40          | 39.1       | 98        | 85-115       |            |
| Arsenic   | ug/L  | 40          | 40.3       | 101       | 85-115       |            |
| Beryllium | ug/L  | 40          | 41.0       | 102       | 85-115       |            |
| Cadmium   | ug/L  | 40          | 40.3       | 101       | 85-115       |            |
| Chromium  | ug/L  | 40          | 40.7       | 102       | 85-115       |            |
| Copper    | ug/L  | 40          | 43.0       | 107       | 85-115       |            |
| Lead      | ug/L  | 40          | 41.3       | 103       | 85-115       |            |
| Nickel    | ug/L  | 40          | 42.1       | 105       | 85-115       |            |
| Selenium  | ug/L  | 40          | 40.9       | 102       | 85-115       |            |
| Silver    | ug/L  | 20          | 20.3       | 102       | 85-115       |            |
| Thallium  | ug/L  | 40          | 39.5       | 99        | 85-115       |            |
| Zinc      | ug/L  | 100         | 104        | 104       | 85-115       |            |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3135866 3135867

| Parameter | Units | 3135866        |                 | 3135867   |            | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|-----------|-------|----------------|-----------------|-----------|------------|----------|-----------|--------------|-----|---------|------|
|           |       | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result |          |           |              |     |         |      |
| Antimony  | ug/L  | ND             | 40              | 36.4      | 36.1       | 90       | 89        | 70-130       | 1   | 20      |      |
| Arsenic   | ug/L  | 8.0            | 40              | 50.0      | 49.0       | 105      | 102       | 70-130       | 2   | 20      |      |
| Beryllium | ug/L  | ND             | 40              | 43.4      | 41.7       | 108      | 104       | 70-130       | 4   | 20      |      |
| Cadmium   | ug/L  | ND             | 40              | 37.0      | 36.6       | 92       | 91        | 70-130       | 1   | 20      |      |

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**QUALITY CONTROL DATA**

Project: 2ND QTR WET

Pace Project No.: 60399831

| MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3135866 |       |                       |                |                |        |        |       |       |        |     |      | 3135867 |  |
|--|-------|-----------------------|----------------|----------------|--------|--------|-------|-------|--------|-----|------|---------|--|
| Parameter                                      | Units | 60399868001<br>Result | MS             | MSD            | MS     | MSD    | MS    | MSD   | % Rec  | Max | Qual |         |  |
|  |       |                       | Spike<br>Conc. | Spike<br>Conc. | Result | Result | % Rec | % Rec | Limits | RPD |      |         |  |
| Chromium                                       | ug/L  | ND                    | 40             | 40             | 41.2   | 40.2   | 101   | 98    | 70-130 | 2   | 20   |         |  |
| Copper   | ug/L  | ND                    | 40             | 40             | 39.6   | 38.8   | 97    | 95    | 70-130 | 2   | 20   |         |  |
| Lead   | ug/L  | ND                    | 40             | 40             | 39.5   | 40.0   | 99    | 100   | 70-130 | 1   | 20   |         |  |
| Nickel   | ug/L  | 2.4                   | 40             | 40             | 41.7   | 40.5   | 98    | 95    | 70-130 | 3   | 20   |         |  |
| Selenium                                       | ug/L  | 27.9                  | 40             | 40             | 67.4   | 66.2   | 99    | 96    | 70-130 | 2   | 20   |         |  |
| Silver   | ug/L  | ND                    | 20             | 20             | 17.7   | 17.5   | 88    | 87    | 70-130 | 1   | 20   |         |  |
| Thallium                                       | ug/L  | ND                    | 40             | 40             | 38.4   | 37.5   | 96    | 94    | 70-130 | 2   | 20   |         |  |
| Zinc   | ug/L  | 12.1                  | 100            | 100            | 107    | 104    | 95    | 92    | 70-130 | 2   | 20   |         |  |

| MATRIX SPIKE SAMPLE: 3135868 |       |                      |       |        |       |        |            |  |  |
|------------------------------|-------|----------------------|-------|--------|-------|--------|------------|--|--|
| Parameter                    | Units | 6040007001<br>Result | Spike | MS     | MS    | % Rec  | Qualifiers |  |  |
|                              |       |                      | Conc. | Result | % Rec | Limits |            |  |  |
| Antimony                     | ug/L  | 0.18J                | 40    | 39.7   | 99    | 70-130 |            |  |  |
| Arsenic                      | ug/L  | <0.14                | 40    | 38.9   | 97    | 70-130 |            |  |  |
| Beryllium                    | ug/L  | <0.11                | 40    | 42.0   | 105   | 70-130 |            |  |  |
| Cadmium                      | ug/L  | <0.053               | 40    | 39.8   | 99    | 70-130 |            |  |  |
| Chromium                     | ug/L  | 0.58J                | 40    | 39.7   | 98    | 70-130 |            |  |  |
| Copper                       | ug/L  | 0.95J                | 40    | 41.2   | 101   | 70-130 |            |  |  |
| Lead                         | ug/L  | 1.0                  | 40    | 41.6   | 102   | 70-130 |            |  |  |
| Nickel                       | ug/L  | 0.33J                | 40    | 40.0   | 99    | 70-130 |            |  |  |
| Selenium                     | ug/L  | <0.18                | 40    | 38.7   | 96    | 70-130 |            |  |  |
| Silver                       | ug/L  | <0.12                | 20    | 19.2   | 96    | 70-130 |            |  |  |
| Thallium                     | ug/L  | <0.15                | 40    | 39.5   | 99    | 70-130 |            |  |  |
| Zinc                         | ug/L  | 9.3J                 | 100   | 102    | 93    | 70-130 |            |  |  |

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### QUALITY CONTROL DATA

Project: 2ND QTR WET

Pace Project No.: 60399831

QC Batch: 787258

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60399831004

METHOD BLANK: 3138305

Matrix: Water

Associated Lab Samples: 60399831004

| Parameter | Units | Blank Result | Reporting Limit | Analyzed       | Qualifiers |
|-----------|-------|--------------|-----------------|----------------|------------|
| Antimony  | ug/L  | ND           | 1.0             | 05/24/22 13:45 |            |
| Arsenic   | ug/L  | ND           | 1.0             | 05/24/22 13:45 |            |
| Beryllium | ug/L  | ND           | 0.50            | 05/24/22 13:45 |            |
| Cadmium   | ug/L  | ND           | 0.50            | 05/24/22 13:45 |            |
| Chromium  | ug/L  | ND           | 1.0             | 05/24/22 13:45 |            |
| Copper    | ug/L  | ND           | 1.0             | 05/24/22 13:45 |            |
| Lead      | ug/L  | ND           | 1.0             | 05/24/22 13:45 |            |
| Nickel    | ug/L  | ND           | 1.0             | 05/24/22 13:45 |            |
| Selenium  | ug/L  | ND           | 1.0             | 05/24/22 13:45 |            |
| Silver    | ug/L  | ND           | 0.50            | 05/24/22 13:45 |            |
| Thallium  | ug/L  | ND           | 1.0             | 05/24/22 13:45 |            |
| Zinc      | ug/L  | ND           | 10.0            | 05/24/22 13:45 |            |

LABORATORY CONTROL SAMPLE: 3138306

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|-----------|-------|-------------|------------|-----------|--------------|------------|
| Antimony  | ug/L  | 40          | 39.1       | 98        | 85-115       |            |
| Arsenic   | ug/L  | 40          | 39.3       | 98        | 85-115       |            |
| Beryllium | ug/L  | 40          | 44.1       | 110       | 85-115       |            |
| Cadmium   | ug/L  | 40          | 40.5       | 101       | 85-115       |            |
| Chromium  | ug/L  | 40          | 42.1       | 105       | 85-115       |            |
| Copper    | ug/L  | 40          | 42.5       | 106       | 85-115       |            |
| Lead      | ug/L  | 40          | 40.4       | 101       | 85-115       |            |
| Nickel    | ug/L  | 40          | 41.7       | 104       | 85-115       |            |
| Selenium  | ug/L  | 40          | 39.1       | 98        | 85-115       |            |
| Silver    | ug/L  | 20          | 20.1       | 101       | 85-115       |            |
| Thallium  | ug/L  | 40          | 38.4       | 96        | 85-115       |            |
| Zinc      | ug/L  | 100         | 106        | 106       | 85-115       |            |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3138307 3138308

| Parameter | Units | MS                 |             | MSD         |           | MS % Rec | MSD % Rec | % Rec Limits | RPD    | Max RPD | Qual |            |
|-----------|-------|--------------------|-------------|-------------|-----------|----------|-----------|--------------|--------|---------|------|------------|
|           |       | 60400442008 Result | Spike Conc. | Spike Conc. | MS Result |          |           |              |        |         |      | MSD Result |
| Antimony  | ug/L  | ND                 | 40          | 40          | 38.0      | 39.0     | 95        | 97           | 70-130 | 3       | 20   |            |
| Arsenic   | ug/L  | 0.36J              | 40          | 40          | 39.0      | 38.6     | 97        | 96           | 70-130 | 1       | 20   |            |
| Beryllium | ug/L  | ND                 | 40          | 40          | 40.3      | 38.4     | 101       | 96           | 70-130 | 5       | 20   |            |
| Cadmium   | ug/L  | 0.68               | 40          | 40          | 37.5      | 38.1     | 92        | 94           | 70-130 | 2       | 20   |            |

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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**QUALITY CONTROL DATA**

Project: 2ND QTR WET

Pace Project No.: 60399831

| MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3138307 3138308 |       |             |       |       |       |        |        |       |        |        |         |      |
|--|-------|-------------|-------|-------|-------|--------|--------|-------|--------|--------|---------|------|
| Parameter  | Units | 60400442008 |       | MS    |       | MSD    |        | MS    |        | MSD    |         |      |
|  |       | Result      | Conc. | Spike | Conc. | Result | Result | % Rec | % Rec  | Limits | RPD     |      |
|  |       |             |       |       |       |        |        |       |        |        | Max RPD | Qual |
| Chromium   | ug/L  | 0.32J       | 40    | 40    | 36.4  | 37.7   | 90     | 94    | 70-130 | 4      | 20      |      |
| Copper   | ug/L  | 1.4         | 40    | 40    | 35.7  | 36.2   | 86     | 87    | 70-130 | 2      | 20      |      |
| Lead   | ug/L  | 0.24J       | 40    | 40    | 41.1  | 42.2   | 102    | 105   | 70-130 | 3      | 20      |      |
| Nickel   | ug/L  | 1.1         | 40    | 40    | 34.9  | 36.5   | 84     | 89    | 70-130 | 5      | 20      |      |
| Selenium   | ug/L  | 0.72J       | 40    | 40    | 40.1  | 40.7   | 98     | 100   | 70-130 | 2      | 20      |      |
| Silver   | ug/L  | ND          | 20    | 20    | 17.6  | 17.6   | 88     | 88    | 70-130 | 0      | 20      |      |
| Thallium   | ug/L  | ND          | 40    | 40    | 40.2  | 41.5   | 100    | 104   | 70-130 | 3      | 20      |      |
| Zinc   | ug/L  | 89.1        | 100   | 100   | 170   | 171    | 81     | 82    | 70-130 | 0      | 20      |      |

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: 2ND QTR WET

Pace Project No.: 60399831

---

### 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

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

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.

## REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project: 2ND QTR WET

Pace Project No.: 60399831

| <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> |
|---------------|----------------------------|------------------------|-----------------|--------------------------|-------------------------|
| 60399831001   | SSWWTP CONT# 911739        | EPA 821/R-02/013       | 787676          |                          |                         |
| 60399831002   | SSWWTP METALS CONT#773661  | EPA 200.8              | 786622          | EPA 200.8                | 786737                  |
| 60399831003   | SSWWTP METALS CONT# 773664 | EPA 200.8              | 786622          | EPA 200.8                | 786737                  |
| 60399831004   | SSWWTP METALS CONT# 773662 | EPA 200.8              | 787258          | EPA 200.8                | 787405                  |

**REPORT OF LABORATORY ANALYSIS**

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WO#: 60399831



|  |  |                            |                   |
|--|--|----------------------------|-------------------|
|  | DC#_Title: ENV-FRM-LENE-0009_Sample Co |                            |                   |
|  | Revision: 2                            | Effective Date: 01/12/2022 | Issued By: Lenexa |

Client Name: Siloam Springs

Courier: FedEx  UPS  VIA  Clay  PEX  ECI  Pace  Xroads  Client  Other

Tracking #: \_\_\_\_\_ Pace Shipping Label Used? Yes  No

Custody Seal on Cooler/Box Present: Yes  No  Seals intact: Yes  No

Packing Material: Bubble Wrap  Bubble Bags  Foam  None  Other

Thermometer Used: T 301 Type of Ice: Wet Blue  None

Cooler Temperature (°C): As-read 3.0 Corr. Factor -1.0 Corrected 2.0

Date and initials of person examining contents:

5/17/22

Temperature should be above freezing to 6°C

|  |  |  |
|--|--|--|
| Chain of Custody present:  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |  |
| Chain of Custody relinquished:   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |  |
| Samples arrived within holding time:   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |  |
| Short Hold Time analyses (<72hr):  | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A |  |
| Rush Turn Around Time requested:   | <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 |  |
| Pace 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 |  |
| Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?   | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |  |
| Filtered volume received for dissolved tests?  | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |  |
| Sample labels match COC: Date / time / ID / analyses   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |  |
| Samples contain multiple phases? Matrix: <u>WT</u>   | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A |  |
| Containers requiring pH preservation in compliance?<br>(HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide)<br>(Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | List sample IDs, volumes, lot #'s of preservative and the date/time added. |
| Cyanide water sample checks:<br>Lead acetate strip turns dark? (Record only)   | <input type="checkbox"/> Yes <input type="checkbox"/> No   |  |
| Potassium iodide test strip turns blue/purple? (Preserve)  | <input type="checkbox"/> Yes <input type="checkbox"/> No   |  |
| Trip Blank present:  | <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 |  |
| Samples from USDA Regulated Area: State:   | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |  |
| Additional labels attached to 5035A / TX1005 vials in the field?   | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |  |

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

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

Comments/ Resolution: \_\_\_\_\_

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



# CHAIN-OF-CUSTODY / Analytical Request Document

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

|   |                          |                                       |                          |   |            |
|---|--------------------------|---------------------------------------|--------------------------|---|------------|
| <b>Section A</b>                          |                          | <b>Section B</b>                      |                          | <b>Section C</b>                        |            |
| Required Client Information:              |                          | Required Project Information:         |                          | Invoice Information:                    |            |
| Company:                                  | City of Siloam Springs   | Report To:                            | Tony Brown               | Attention:                              |            |
| Address:                                  | 975 Anderson Avenue      | Copy To:                              | abrown@siloamsprings.com | Company Name:                           |            |
|   | Siloam Springs, AR       | Purchase Order No.:                   |                          | Address:                                |            |
| Email To:                                 | abrown@siloamsprings.com | Project Name:                         | 2nd QTR WET              | Pace Quote Reference:                   |            |
| Phone:                                    | 479-228-2000             | Requested Due Date/FAT:               |                          | Pace Project Manager:                   | Noile Wood |
|   |                          |                                       |                          | Pace Profile #:                         | 10809      |
| REGULATORY AGENCY                         |                          | REGULATORY AGENCY                     |                          | REGULATORY AGENCY                       |            |
| <input checked="" type="checkbox"/> NPDES |                          | <input type="checkbox"/> GROUND WATER |                          | <input type="checkbox"/> DRINKING WATER |            |
| <input type="checkbox"/> UST              |                          | <input type="checkbox"/> RCRA         |                          | <input type="checkbox"/> OTHER          |            |
| Site Location                             |                          | STATE:                                |                          | AR                                      |            |

| ITEM # | Section D<br>Required Client Information | Valid Matrix Codes<br>MATRIX CODE<br>DW<br>WT<br>WV<br>P<br>SI<br>OL<br>WP<br>AR<br>OT<br>TS | COLLECTED       |                    | SAMPLE TYPE (G=GRAB C=COMP) | MATRIX CODE (see valid codes to left) | # OF CONTAINERS | Requested Analysis Filtered (Y/N) |                                |      |                  |      |      |      |      |      |   |  |          |  |       |   |                 |     |                  |   |           |   |                         |  |                            |  |
|--------|--|--|-----------------|--------------------|-----------------------------|---------------------------------------|-----------------|-----------------------------------|--------------------------------|------|------------------|------|------|------|------|------|---|--|----------|--|-------|---|-----------------|-----|------------------|---|-----------|---|-------------------------|--|----------------------------|--|
|        |  |  | COMPOSITE START | COMPOSITE END/GRAB |                             |                                       |                 | DATE                              | TIME                           | DATE | TIME             | DATE | TIME | DATE | TIME | DATE | TIME  |  |          |  |       |   |                 |     |                  |   |           |   |                         |  |                            |  |
| 1      | SSWWTP Cont# 954885/954663               |  | DATE            | TIME               | DATE                        | TIME                                  | 1               | Unpreserved                       | H <sub>2</sub> SO <sub>4</sub> | X    | HNO <sub>3</sub> | X    | HCl  |      | NaOH |      | Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> |  | Methanol |  | Other | X | Analysis Test ↑ | Y/N | Chronic WET Test | X | Metals-Zn | X | Residual Chlorine (Y/N) |  | Pace Project No./ Lab I.D. |  |
| 2      | SSWWTP Metals Cont# 773662               |  | 5/12/22         | 10:00              | 5/13/22                     | 9:00                                  | 1               |                                   |                                |      |                  |      |      |      |      |      |   |  |          |  |       |   |                 |     |                  |   |           |   |                         |  |                            |  |
| 3      |  |  | 5/12/22         | 10:00              | 5/13/22                     | 9:00                                  | 1               |                                   |                                |      |                  |      |      |      |      |      |   |  |          |  |       |   |                 |     |                  |   |           |   |                         |  |                            |  |
| 4      |  |  |                 |                    |                             |                                       |                 |                                   |                                |      |                  |      |      |      |      |      |   |  |          |  |       |   |                 |     |                  |   |           |   |                         |  |                            |  |
| 5      |  |  |                 |                    |                             |                                       |                 |                                   |                                |      |                  |      |      |      |      |      |   |  |          |  |       |   |                 |     |                  |   |           |   |                         |  |                            |  |
| 6      |  |  |                 |                    |                             |                                       |                 |                                   |                                |      |                  |      |      |      |      |      |   |  |          |  |       |   |                 |     |                  |   |           |   |                         |  |                            |  |
| 7      |  |  |                 |                    |                             |                                       |                 |                                   |                                |      |                  |      |      |      |      |      |   |  |          |  |       |   |                 |     |                  |   |           |   |                         |  |                            |  |
| 8      |  |  |                 |                    |                             |                                       |                 |                                   |                                |      |                  |      |      |      |      |      |   |  |          |  |       |   |                 |     |                  |   |           |   |                         |  |                            |  |
| 9      |  |  |                 |                    |                             |                                       |                 |                                   |                                |      |                  |      |      |      |      |      |   |  |          |  |       |   |                 |     |                  |   |           |   |                         |  |                            |  |
| 10     |  |  |                 |                    |                             |                                       |                 |                                   |                                |      |                  |      |      |      |      |      |   |  |          |  |       |   |                 |     |                  |   |           |   |                         |  |                            |  |
| 11     |  |  |                 |                    |                             |                                       |                 |                                   |                                |      |                  |      |      |      |      |      |   |  |          |  |       |   |                 |     |                  |   |           |   |                         |  |                            |  |
| 12     |  |  |                 |                    |                             |                                       |                 |                                   |                                |      |                  |      |      |      |      |      |   |  |          |  |       |   |                 |     |                  |   |           |   |                         |  |                            |  |

| ADDITIONAL COMMENTS   | RELINQUISHED BY / AFFILIATION | DATE    | TIME | ACCEPTED BY / AFFILIATION | DATE    | TIME | SAMPLE CONDITIONS |
|---|-------------------------------|---------|------|---------------------------|---------|------|-------------------|
| *samples have a 24 hour hold time   | Tony Brown                    | 5/13/22 | 0900 | Tony Brown                | 5/14/22 | 900  | 5.0 Y Y Y Y       |
| *return samples to the Fontenac Lab on ice  | Tony Brown                    | 5/14/22 | 1600 | Tony Brown                | 5/16/22 | 1225 | 2.0 Y Y Y Y       |
| TCR= 0.01   |                               |         |      |                           |         |      |                   |
| <b>SAMPLER NAME AND SIGNATURE</b><br>PRINT Name of SAMPLER: Tony Brown<br>SIGNATURE of SAMPLER: Tony Brown<br>DATE Signed (MM/DD/YYYY): 5/13/22<br>Temp in °C<br>Received on Ice (Y/N)<br>Custody Sealed Cooler (Y/N)<br>Samples Intact (Y/N) |                               |         |      |                           |         |      |                   |

\*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.





DC#\_Title: ENV-FRM-LENE-0009\_Sample Condition Upon Receipt (SCUR)

Revision: 2

Effective Date: 01/12/2022

Issued By: Lenexa

Client Name: Siloam Springs

Courier: FedEx  UPS  VIA  Clay  PEX  ECI  Pace  Xroads  Client  Other

Tracking #: \_\_\_\_\_ Pace Shipping Label Used? Yes  No

Custody Seal on Cooler/Box Present: Yes  No  Seals intact: Yes  No

Leg 3

Packing Material: Bubble Wrap  Bubble Bags  Foam  None  Other

Thermometer Used: T-111 Type of Ice: Wet Blue  None

Cooler Temperature (°C): As-read 5.8 Corr. Factor -0.8 Corrected 5.0

Date and initials of person examining contents:

TS 5/19/22 806

Temperature should be above freezing to 6°C

|  |   |  |
|--|---|--|
| Chain of Custody present:  | X Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>                                   |  |
| Chain of Custody relinquished:   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> |  |
| Samples arrived within holding time:   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> |  |
| Short Hold Time analyses (<72hr):  | X Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>                                   |  |
| Rush Turn Around Time requested:   | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> |  |
| Sufficient volume:   | X Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>                                   |  |
| Correct containers used:   | X Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>                                   |  |
| Pace containers used:  | X Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>                                   |  |
| Containers intact:   | X Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>                                   |  |
| Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?   | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> |  |
| Filtered volume received for dissolved tests?  | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> |  |
| Sample labels match COC: Date / time / ID / analyses   | X Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>                                   |  |
| Samples contain multiple phases? Matrix:   | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> |  |
| Containers requiring pH preservation in compliance?<br>(HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide)<br>(Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) LOT#: | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> | List sample IDs, volumes, lot #'s of preservative and the date/time added. |
| Cyanide water sample checks:   |   |  |
| Lead acetate strip turns dark? (Record only)   | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/>   |  |
| Potassium iodide test strip turns blue/purple? (Preserve)  | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/>   |  |
| Trip Blank present:  | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> |  |
| Headspace in VOA vials (>6mm):   | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> |  |
| Samples from USDA Regulated Area: State:   | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> |  |
| Additional labels attached to 5035A / TX1005 vials in the field?   | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> |  |

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

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

Comments/ Resolution: \_\_\_\_\_

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

REFERENCE #60399831

**CHRONIC TOXICITY TEST FOR  
CITY OF SILOAM SPRINGS**

PERMIT # AR0020273  
AFIN # 04-00106

PERFORMED ON:

Pimephales promelas

and

Ceriodaphnia dubia

PREPARED FOR:

City of Siloam Springs  
Attn: Tony Brown  
975 Anderson Avenue  
Siloam Springs, AR  
1-479-228-2000

PREPARED BY:  
Pace Analytical Services, Inc.  
808 West McKay  
Frontenac, KS 66763  
1-620-235-0003

May 19, 2022

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| <u>SECTION</u>                      | <u>PAGE</u> |
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| APPENDIX A – STATISTICAL ANALYSIS   |             |
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## SUMMARY

A Chronic Whole Effluent Toxicity Test using the 7-day chronic fathead minnows (*Pimephales promelas*), static renewal larval survival and growth test, and three brood 7-day chronic Cladoceran (*Ceriodaphnia dubia*), static renewal survival and reproduction test, was conducted on effluent discharge water collected at the CITY OF SILOAM SPRINGS effluent discharge from May 9, 2022 to May 13, 2022. All the test methods followed are as listed in EPA 821-R-02-013, "Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms."

Statistically significant ( $p < 0.05$ ) mortality is determined by Dunnet's procedure using average percent survival of each test concentration versus the average survival of the controls. If significant mortality occurs, median lethal concentrations are calculated using effluent concentrations and their corresponding percent mortality data. The 95% confidence intervals are calculated where appropriate by the Spearman-Kärber method. Statistical analysis is accomplished by following steps in EPA 821-R-02-013, November 2002 and by use of Toxstat version 3.4.

In minnow section of testing, it was observed that the effluent had no significant effect on the survival of the larvae at the 100% concentration. No significant mortality was observed in the other effluent concentrations after the 7-day exposure period. The No Observed Effect Concentration (NOEC) was determined to be 100% for survival. No significant reduction in growth was observed in the 100% effluent concentration. The Toxic Units is  $< 1$ . The IC25 is  $> 100$ . The NOEC for growth in effluent was determined to be 100%. The PMSD is 15.9.

In Cladoceran section of testing, it was observed that the effluent had no significant effect on the survival of the organisms in the 100% effluent concentration. No significant mortality was observed in the other effluent concentrations after the 7-day exposure period. The No Observed Effect Concentration (NOEC) was determined to be 100% for survival. No significant reduction in reproduction was observed in the 100% effluent concentrations. The Toxic Units is  $< 1$ . The IC25 is  $> 100$ . The NOEC for reproduction in effluent was determined to be 100%. The PMSD is 13.8.

The chronic toxicity exhibited by the fathead minnows and the *Ceriodaphnia* treated by the effluent sampled from May 9 to May 13 from the CITY OF SILOAM SPRINGS. effluent discharge, is acceptable as described in EPA 821-R-02-013.

## INTRODUCTION

Pace Analytical was contracted to perform this chronic toxicity test on effluent from the CITY OF SILOAM SPRINGS effluent discharge. Chronic toxicity was measured using the Pimephales promelas at larval for survival and growth test and the Ceriodaphnia dubia survival and reproduction test described in EPA 821-R-02-013, "Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms." The raw data of the study is stored at Pace Analytical Services, INC. 808 West McKay, Frontenac, KS 66763.

## TEST MATERIAL

CITY OF SILOAM SPRINGS personnel collected sampling of the effluent. A sample of the effluent was delivered to Pace by commercial carrier on 5-10-22. Subsequent samples followed by delivery on 5-12-22, and on 5-14-22. All samples were stored at  $\leq 6^{\circ}$  Celsius. Moderately Hard Synthetic Water was used as a control and also to make the required dilutions in the test as described in EPA 821-R-02-013.

## TEST METHODS

Pace used EPA test method 1000.0 for conducting the Fathead Minnow, Pimephales promelas, Larval Survival and Growth Test. EPA test method 1002.0 was used for conducting the Cladoceran, Ceriodaphnia dubia, Survival and Reproduction Test. The tests were conducted to estimate the NOEC, and LOEC for survival, growth, and reproduction of these test species.

The Pimephales and Ceriodaphnia tests were initiated on 5-10-22 and carried out until 5-17-22. The Pimephales tests were conducted in 500 ml plastic jars with 250 ml of test solution. Ten larvae were placed in each of at least 5 replicates to make a total of 50 larvae per sample concentration. The Ceriodaphnia tests were carried out in 35ml vials containing 25 ml of test solution. One Neonate was placed in each of 10 replicates to make a total of 10 neonates per sample concentration.

## TEST ORGANISMS

Organisms used in these tests were cultured at Pace under controlled temperature and photo period conditions and/or were purchased from an external supplier. Pace maintains records of culture techniques for all organisms, whether produced in house or purchased.

# Results

TABLE 1

Permittee: CITY OF SILOAM SPRINGS. Effluent discharge.

|              |                |      |
|--------------|----------------|------|
| Date Sampled | No. 1: 5-9-22  | 9:00 |
|              | No. 2: 5-11-22 | 9:00 |
|              | No. 3: 5-13-22 | 9:00 |

|                       |               |
|-----------------------|---------------|
| Test Initiated: 13:00 | Date: 5-10-22 |
| Test End: 13:15       | Date: 5-17-22 |

|                     |         |
|---------------------|---------|
| Critical Dilution:  | 100%    |
| Ceriodaphnia dubia  | Results |
| TLP3B               | 0       |
| TGP3B               | 0       |
| TOP3B               | 100     |
| TPP3B               | 100     |
| TQP3B               | 9.58    |
| Pimephales promelas | Results |
| TLP6C               | 0       |
| TGP6C               | 0       |
| TOP6C               | 100     |
| TPP6C               | 100     |
| TQP6C               | 10.15   |

REFERENCE #60399831

Dilution Water used: Moderately Hard Synthetic Water

**FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL**  
**(Pimephales promelas)**

DATA TABLE FOR GROWTH OF FATHEAD MINNOWS

| Effluent Concentration (%) | Average Dry Weight in Milligrams in Replicate Chambers |       |       |       |       | Mean Dry Weight (mg) | CV% * |
|----------------------------|--|-------|-------|-------|-------|----------------------|-------|
|                            | A  | B     | C     | D     | E     |                      |       |
| Control 0%                 | 0.546  | 0.494 | 0.527 | 0.524 | 0.533 | 0.525                | 3.65  |
| Dilution 1 32%             | 0.579  | 0.454 | 0.551 | 0.485 | 0.516 | 0.517                | 9.67  |
| Dilution 2 42%             | 0.442  | 0.609 | 0.502 | 0.511 | 0.584 | 0.530                | 12.68 |
| Dilution 3 56%             | 0.583  | 0.601 | 0.508 | 0.443 | 0.510 | 0.529                | 12.07 |
| Dilution 4 75%             | 0.495  | 0.458 | 0.637 | 0.531 | 0.502 | 0.525                | 13.11 |
| Dilution 5 100%            | 0.541  | 0.462 | 0.505 | 0.418 | 0.523 | 0.490                | 10.15 |

\* Coefficient of Variation = Standard Deviation X 100 / Mean

FATHEAD MINNOW SURVIVAL

| Conc. %         | Percent Survival in Replicate Chambers |     |     |     |     | Mean Percent Survival |      |       | CV %  |
|-----------------|--|-----|-----|-----|-----|-----------------------|------|-------|-------|
|                 | A                                      | B   | C   | D   | E   | 24hr                  | 48hr | 7 day |       |
| Control 0%      | 100                                    | 100 | 100 | 100 | 100 | 100                   | 100  | 100   | 0.00  |
| Dilution 1 32%  | 100                                    | 90  | 100 | 100 | 100 | 100                   | 100  | 98.0  | 5.28  |
| Dilution 2 42%  | 90                                     | 100 | 100 | 100 | 100 | 100                   | 100  | 98.0  | 5.28  |
| Dilution 3 56%  | 100                                    | 100 | 100 | 90  | 100 | 100                   | 100  | 98.0  | 5.28  |
| Dilution 4 75%  | 100                                    | 90  | 100 | 100 | 100 | 100                   | 100  | 98.0  | 5.28  |
| Dilution 5 100% | 100                                    | 90  | 100 | 80  | 100 | 100                   | 100  | 94.0  | 10.44 |

REFERENCE #60399831

Permittee: CITY OF SILOAM SPRINGS. Effluent discharge.

**CERIODAPHNIA SURVIVAL AND REPRODUCTION**

DATA TABLE FOR CERIODAPHNIA YOUNG PRODUCTION

| Replicate | Control<br>0% | Dilution 1<br>32% | Dilution 2<br>42% | Dilution 3<br>56% | Dilution 4<br>75% | Dilution 5<br>100% |
|-----------|---------------|-------------------|-------------------|-------------------|-------------------|--------------------|
| 1         | 23            | 17                | 23                | 18                | 18                | 23                 |
| 2         | 21            | 22                | 24                | 16                | 23                | 19                 |
| 3         | 21            | 23                | 16                | 24                | 16                | 22                 |
| 4         | 16            | 17                | 23                | 22                | 22                | 22                 |
| 5         | 22            | 23                | 27                | 21                | 24                | 23                 |
| 6         | 20            | 22                | 21                | 22                | 17                | 24                 |
| 7         | 20            | 18                | 23                | 24                | 22                | 24                 |
| 8         | 19            | 22                | 24                | 25                | 24                | 21                 |
| 9         | 22            | 21                | 21                | 17                | 23                | 24                 |
| 10        | 21            | 22                | 17                | 18                | 24                | 18                 |
| Mean      | 20.5          | 20.7              | 21.9              | 20.7              | 21.3              | 22.0               |
| SD        | 1.958         | 2.406             | 3.315             | 3.234             | 3.093             | 2.108              |
| CV %      | 9.55          | 11.62             | 15.14             | 15.62             | 14.52             | 9.58               |

**CERIODAPHNIA MEAN PERCENT SURVIVAL**

| Time Elapsed | Percent Effluent (%) |                   |                   |                   |                   |                    |
|--------------|----------------------|-------------------|-------------------|-------------------|-------------------|--------------------|
|              | Control<br>0%        | Dilution 1<br>32% | Dilution 2<br>42% | Dilution 3<br>56% | Dilution 4<br>75% | Dilution 5<br>100% |
| 24 hrs       | 100                  | 100               | 100               | 100               | 100               | 100                |
| 48 hrs       | 100                  | 100               | 100               | 100               | 100               | 100                |
| 7-day        | 100                  | 100               | 100               | 100               | 100               | 100                |
| SD           | 0.0                  | 0.0               | 0.0               | 0.0               | 0.0               | 0.0                |
| CV %         | 0.0                  | 0.0               | 0.0               | 0.0               | 0.0               | 0.0                |



**TABLE 2**  
**SUMMARY OF TEST CONDITIONS FOR THE FATHEAD MINNOW**  
**(*Pimephales promelas*) LARVAL SURVIVAL AND GROWTH TEST**

|                                   |  |
|-----------------------------------|--|
| 1. Test type                      | Static renewal   |
| 2. Temperature                    | 25 degrees Celsius   |
| 3. Light quality                  | Ambient laboratory light   |
| 4. Light intensity                | Ambient laboratory levels  |
| 5. Photoperiod                    | 16 hr light, 8 hr dark   |
| 6. Test chamber size              | 500 ml   |
| 7. Test solution volume           | 250 ml   |
| 8. Renewal of test concentrations | Daily  |
| 9. Age of test organism           | < 24 hours   |
| 10. No. larvae/chamber            | 10   |
| 11. No. replicates/concentration  | 5  |
| 12. No. larvae/concentration      | 50   |
| 13. Feeding regime                | Feed 0.15 g newly hatched brine shrimp nauplii two times daily. Larvae are not fed 12 hours prior to termination of test.                      |
| 14. Cleaning                      | Siphon daily, immediately before test solution renewal   |
| 15. Aeration                      | None   |
| 16. Dilution Water                | Moderately Hard Synthetic Water prepared with MILLI-Q deionized water and reagent grade chemicals  |
| 17. Effluent concentrations       | 0%, 32%, 42%, 56%, 75%, 100%   |
| 18. Test duration                 | 7 days   |
| 19. Endpoints                     | Survival and growth  |
| 20. Test acceptability            | 80% or greater survival in the controls, Average dry weight in controls >0.25 mg, Coefficient of variation in the control must not exceed 40%. |

**TABLE 2 (CONT.)  
SUMMARY OF TEST CONDITIONS FOR THE CLADOCERAN  
(Ceriodaphnia dubia) SURVIVAL AND REPRODUCTION TEST**

|                                   |  |
|-----------------------------------|--|
| 1. Test type                      | Static renewal   |
| 2. Temperature                    | 25 degrees Celsius   |
| 3. Light quality                  | Ambient laboratory light   |
| 4. Light intensity                | Ambient laboratory levels  |
| 5. Photoperiod                    | 16 hr light, 8 hr dark   |
| 6. Test chamber size              | 30 ml  |
| 7. Test solution volume           | 25 ml  |
| 8. Renewal of test concentrations | Daily  |
| 9. Age of test organism           | < 24 hours   |
| 10. No. larvae/chamber            | 1  |
| 11. No. replicates/concentration  | 10   |
| 12. No. larvae/concentration      | 10   |
| 13. Feeding regime                | Feed 0.1 ml YCT and 0.1 ml of Algae daily. Larvae are not fed 12 hours prior to termination of test.   |
| 14. Cleaning                      | Siphon daily, immediately before test solution renewal   |
| 15. Aeration                      | None   |
| 16. Dilution Water                | Moderately Hard Synthetic Water prepared with MILLI-Q deionized water and reagent grade chemicals  |
| 17. Effluent concentrations       | 0%, 32%, 42%, 56%, 75%, 100%   |
| 18. Test duration                 | Until 60% or more surviving control females have three broods or a maximum of 8 days.  |
| 19. Endpoints                     | Survival and Reproduction  |
| 20. Test acceptability            | 80% or greater survival in the controls, Average reproduction rate of 15 young / adult. Coefficient of variation in the control must not exceed 40%. |

TABLE 2 (SECTION 2)

BIOMONITORING CHRONIC TOXICITY REPORT  
 FATHEAD MINNOW (Pimephales promelas)  
 CHEMICAL PARAMETERS CHART

Permittee: CITY OF SILOAM SPRINGS Effluent discharge.

ANALYSTS: Pace Analytical Services, Inc.  
 Timothy Harrell  
 Mike Bollin

TABLE 2 (SECTION 2)  
 INITIAL WATER QUALITY  
 EFFLUENT CONCENTRATION

|          | Control | 100% |
|----------|---------|------|
| PH       | 7.6     | 8.3  |
| D.O.     | 8.0     | 7.7  |
| Temp     | 25.0    | 25.0 |
| Alk      | 60      | 126  |
| Hard     | 90      | 146  |
| Cond     | 344     | 523  |
| Chlorine | <0.1    | <0.1 |

- \* D.O. is reported as mg/L
- Alkalinity is reported as mg/L CaCO<sub>3</sub>
- Hardness is reported as mg/L CaCO<sub>3</sub>
- Conductance is reported as umhos
- Chlorine is reported as mg/L

TEST WATER QUALITY

24-Hour Water Quality Measurements

| Effluent Concentration (%) | PH  | D.O. (mg/l) | Temperature (C) |
|----------------------------|-----|-------------|-----------------|
| 0% Control                 | 7.2 | 6.9         | 25.1            |
| 32% Effluent               | 7.3 | 6.9         | 24.9            |
| 42% Effluent               | 7.5 | 7.0         | 24.9            |
| 56% Effluent               | 7.7 | 7.1         | 24.9            |
| 75% Effluent               | 7.7 | 7.1         | 24.9            |
| 100% Effluent              | 7.7 | 7.1         | 24.9            |

48-Hour Water Quality Measurements

| Effluent Concentration (%) | PH  | D.O. (mg/l) | Temperature (C) |
|----------------------------|-----|-------------|-----------------|
| 0% Control                 | 7.4 | 6.9         | 25.0            |
| 32% Effluent               | 7.5 | 6.9         | 24.8            |
| 42% Effluent               | 7.5 | 6.9         | 24.8            |
| 56% Effluent               | 7.6 | 6.9         | 24.8            |
| 75% Effluent               | 7.8 | 6.8         | 24.8            |
| 100% Effluent              | 8.0 | 6.8         | 24.8            |

FINAL WATER QUALITY

EFFLUENT CONCENTRATION

|      | Control | 100% |
|------|---------|------|
| pH   | 7.5     | 7.9  |
| D.O. | 7.1     | 7.1  |
| Temp | 25.0    | 24.8 |
| Alk  | 62      | 150  |
| Hard | 94      | 160  |
| Cond | 384     | 654  |

- \* D.O. is reported as mg/L
- Alkalinity is reported as mg/L CaCO<sub>3</sub>
- Hardness is reported as mg/L CaCO<sub>3</sub>
- Conductance is reported as umhos

TEST VALIDITY

The Pimephales promelas control survival rate was 100. The mean dry weight (growth) of the Pimephales promelas was determined at 0.525 g/organism in the controls. The percent coefficient of variation (%CV) values for the fathead minnow control for survival and growth were 0.00 and 3.65. The Ceriodaphnia dubia survival rates were 100 in the control. The Ceriodaphnia in the control produced an average of 20.5 young over the seven-day exposure period. Percent CV values for Ceriodaphnia dubia control survival and reproduction was 0.00 and 9.55. Control data met or exceeded all criteria set out by EPA 821-R-02-013 for test acceptance.

REFERENCE TOXICANTS

The absence of significant control mortality during this test indicated the health of the organisms and indicated that any significant mortality in the test concentrations was not due to contaminants or variations in testing conditions.

Reference toxicity testing is routinely performed by staff members in our biomonitoring - bioassay laboratory.

Start: 4/5/22 11:30                      End: 4/12/22 11:00

Reference Toxicant (NaCl)                      Pimephales promelas

| Concentration of Toxicant | Avg. # of Live Organisms/replicate |        |        |        |
|---------------------------|------------------------------------|--------|--------|--------|
|                           | 0 hrs                              | 24 hrs | 48 hrs | 7 days |
| 10 g/l                    | 40                                 | 5      | 3      | 0      |
| 8 g/l                     | 40                                 | 31     | 21     | 7      |
| 6 g/l                     | 40                                 | 37     | 29     | 25     |
| 4 g/l                     | 40                                 | 40     | 40     | 40     |
| 2 g/l                     | 40                                 | 40     | 40     | 38     |

IC25 (5.11 g/l Sodium Chloride)

Survival NOEC: 4.0 g/l

Reference Toxicant (NaCl)                      Ceriodaphnia Dubia

| Concentration of Toxicant | Avg. # of Live Organisms/replicate |        |        |        |
|---------------------------|------------------------------------|--------|--------|--------|
|                           | 0 hrs                              | 24 hrs | 48 hrs | 7 days |
| 2.5 g/l                   | 10                                 | 3      | 0      | 0      |
| 2.0 g/l                   | 10                                 | 8      | 7      | 3      |
| 1.5 g/l                   | 10                                 | 10     | 10     | 9      |
| 1.0 g/l                   | 10                                 | 10     | 10     | 9      |
| 0.5 g/l                   | 10                                 | 10     | 10     | 10     |

IC25 (1.15 g/l Sodium Chloride)

Survival NOEC: 1.5 g/l

Submitted By: Tim Harrell  
 Timothy Harrell, Technical Director

60399831 SILOAM SPRINGS FATHEAD SURVIVAL  
File: 6399831A Transform: ARC SINE(SQUARE ROOT(Y))

Chi-square test for normality: actual and expected frequencies

---

| INTERVAL | <-1.5 | -1.5 to <-0.5 | -0.5 to 0.5 | >0.5 to 1.5 | >1.5  |
|----------|-------|---------------|-------------|-------------|-------|
| EXPECTED | 2.010 | 7.260         | 11.460      | 7.260       | 2.010 |
| OBSERVED | 5     | 1             | 21          | 3           | 0     |

---

Calculated Chi-Square goodness of fit test statistic = 22.2969

Table Chi-Square value (alpha = 0.01) = 13.277

Data FAIL normality test. Try another transformation.

Warning - The first three homogeneity tests are sensitive to non-normal data and should not be performed.

60399831 SILOAM SPRINGS FATHEAD SURVIVAL  
File: 6399831A Transform: ARC SINE(SQUARE ROOT(Y))

Shapiro - Wilk's test for normality

---

D = 0.161

W = 0.764

Critical W (P = 0.05) (n = 30) = 0.927

Critical W (P = 0.01) (n = 30) = 0.900

---

Data FAIL normality test. Try another transformation.

Warning - The first three homogeneity tests are sensitive to non-normal data and should not be performed.

60399831 SILOAM SPRINGS FATHEAD SURVIVAL  
 File: 6399831A Transform: ARC SINE(SQUARE ROOT(Y))

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

| GRP | IDENTIFICATION | N | MIN   | MAX   | MEAN  |
|-----|----------------|---|-------|-------|-------|
| 1   | CONTROL        | 5 | 1.412 | 1.412 | 1.412 |
| 2   | 32%            | 5 | 1.249 | 1.412 | 1.379 |
| 3   | 42%            | 5 | 1.249 | 1.412 | 1.379 |
| 4   | 56%            | 5 | 1.249 | 1.412 | 1.379 |
| 5   | 75%            | 5 | 1.249 | 1.412 | 1.379 |
| 6   | 100%           | 5 | 1.107 | 1.412 | 1.318 |

60399831 SILOAM SPRINGS FATHEAD SURVIVAL  
 File: 6399831A Transform: ARC SINE(SQUARE ROOT(Y))

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

| GRP | IDENTIFICATION | VARIANCE | SD    | SEM   | C.V. % |
|-----|----------------|----------|-------|-------|--------|
| 1   | CONTROL        | 0.000    | 0.000 | 0.000 | 0.00   |
| 2   | 32%            | 0.005    | 0.073 | 0.033 | 5.28   |
| 3   | 42%            | 0.005    | 0.073 | 0.033 | 5.28   |
| 4   | 56%            | 0.005    | 0.073 | 0.033 | 5.28   |
| 5   | 75%            | 0.005    | 0.073 | 0.033 | 5.28   |
| 6   | 100%           | 0.019    | 0.138 | 0.062 | 10.44  |

60399831 SILOAM SPRINGS FATHEAD SURVIVAL  
 File: 6399831A Transform: ARC SINE(SQUARE ROOT(Y))

ANOVA TABLE

| SOURCE         | DF | SS    | MS    | F     |
|----------------|----|-------|-------|-------|
| Between        | 5  | 0.023 | 0.005 | 0.694 |
| Within (Error) | 24 | 0.161 | 0.007 |       |
| Total          | 29 | 0.184 |       |       |

Critical F value = 2.62 (0.05,5,24)  
 Since  $F < \text{Critical } F$  FAIL TO REJECT  $H_0$ : All equal

60399831 SILOAM SPRINGS FATHEAD SURVIVAL  
 File: 6399831A Transform: ARC SINE(SQUARE ROOT(Y))



DUNNETT'S TEST - TABLE 1 OF 2

Ho:Control<Treatment

| GROUP | IDENTIFICATION | TRANSFORMED MEAN | MEAN CALCULATED IN ORIGINAL UNITS | T STAT | SIG |
|-------|----------------|------------------|-----------------------------------|--------|-----|
| 1     | CONTROL        | 1.412            | 1.000                             |        |     |
| 2     | 32%            | 1.379            | 0.980                             | 0.630  |     |
| 3     | 42%            | 1.379            | 0.980                             | 0.630  |     |
| 4     | 56%            | 1.379            | 0.980                             | 0.630  |     |
| 5     | 75%            | 1.379            | 0.980                             | 0.630  |     |
| 6     | 100%           | 1.318            | 0.940                             | 1.808  |     |

Dunnett table value = 2.36 (1 Tailed Value, P=0.05, df=24,5)

60399831 SILOAM SPRINGS FATHEAD SURVIVAL

File: 6399831A Transform: ARC SINE(SQUARE ROOT(Y))

DUNNETT'S TEST - TABLE 2 OF 2

Ho:Control<Treatment

| GROUP | IDENTIFICATION | NUM OF REPS | Minimum Sig Diff (IN ORIG. UNITS) | % of CONTROL | DIFFERENCE FROM CONTROL |
|-------|----------------|-------------|-----------------------------------|--------------|-------------------------|
| 1     | CONTROL        | 5           |                                   |              |                         |
| 2     | 32%            | 5           | 0.052                             | 5.2          | 0.020                   |
| 3     | 42%            | 5           | 0.052                             | 5.2          | 0.020                   |
| 4     | 56%            | 5           | 0.052                             | 5.2          | 0.020                   |
| 5     | 75%            | 5           | 0.052                             | 5.2          | 0.020                   |
| 6     | 100%           | 5           | 0.052                             | 5.2          | 0.060                   |

60399831 SILOAM SPRINGS FATHEAD GROWTH  
File: 6399831B Transform: NO TRANSFORMATION

Shapiro - Wilk's test for normality

---

D = 0.075

W = 0.973

Critical W (P = 0.05) (n = 30) = 0.927

Critical W (P = 0.01) (n = 30) = 0.900

---

Data PASS normality test at P=0.01 level. Continue analysis.

60399831 SILOAM SPRINGS FATHEAD GROWTH  
File: 6399831B Transform: NO TRANSFORMATION

---

Bartlett's test for homogeneity of variance

Calculated B1 statistic = 5.55

---

Table Chi-square value = 15.09 (alpha = 0.01, df = 5)

Table Chi-square value = 11.07 (alpha = 0.05, df = 5)

---

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

60399831 SILOAM SPRINGS FATHEAD GROWTH  
 File: 6399831B Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

| GRP | IDENTIFICATION | N | MIN   | MAX   | MEAN  |
|-----|----------------|---|-------|-------|-------|
| 1   | CONTROL        | 5 | 0.494 | 0.546 | 0.525 |
| 2   | 32%            | 5 | 0.454 | 0.579 | 0.517 |
| 3   | 42%            | 5 | 0.442 | 0.609 | 0.530 |
| 4   | 56%            | 5 | 0.443 | 0.601 | 0.529 |
| 5   | 75%            | 5 | 0.458 | 0.639 | 0.525 |
| 6   | 100%           | 5 | 0.418 | 0.541 | 0.490 |

60399831 SILOAM SPRINGS FATHEAD GROWTH  
 File: 6399831B Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

| GRP | IDENTIFICATION | VARIANCE | SD    | SEM   | C.V. % |
|-----|----------------|----------|-------|-------|--------|
| 1   | CONTROL        | 0.000    | 0.019 | 0.009 | 3.65   |
| 2   | 32%            | 0.002    | 0.050 | 0.022 | 9.67   |
| 3   | 42%            | 0.005    | 0.067 | 0.030 | 12.68  |
| 4   | 56%            | 0.004    | 0.064 | 0.029 | 12.07  |
| 5   | 75%            | 0.005    | 0.069 | 0.031 | 13.11  |
| 6   | 100%           | 0.002    | 0.050 | 0.022 | 10.15  |

60399831 SILOAM SPRINGS FATHEAD GROWTH  
 File: 6399831B Transform: NO TRANSFORMATION

ANOVA TABLE

| SOURCE         | DF | SS    | MS    | F     |
|----------------|----|-------|-------|-------|
| Between        | 5  | 0.006 | 0.001 | 0.366 |
| Within (Error) | 24 | 0.075 | 0.003 |       |
| Total          | 29 | 0.080 |       |       |

Critical F value = 2.62 (0.05,5,24)  
 Since  $F < \text{Critical } F$  FAIL TO REJECT  $H_0$ : All equal

60399831 SILOAM SPRINGS FATHEAD GROWTH  
 File: 6399831B Transform: NO TRANSFORMATION

## DUNNETT'S TEST

TABLE 1 OF 2

Ho:Control&lt;Treatment

| GROUP | IDENTIFICATION | TRANSFORMED<br>MEAN | MEAN CALCULATED IN<br>ORIGINAL UNITS | T STAT | SIG |
|-------|----------------|---------------------|--------------------------------------|--------|-----|
| 1     | CONTROL        | 0.525               | 0.525                                |        |     |
| 2     | 32%            | 0.517               | 0.517                                | 0.221  |     |
| 3     | 42%            | 0.530               | 0.530                                | -0.136 |     |
| 4     | 56%            | 0.529               | 0.529                                | -0.119 |     |
| 5     | 75%            | 0.525               | 0.525                                | -0.006 |     |
| 6     | 100%           | 0.490               | 0.490                                | 0.992  |     |

Dunnett table value = 2.36 (1 Tailed Value, P=0.05, df=24,5)

60399831 SILOAM SPRINGS FATHEAD GROWTH

File: 6399831B

Transform: NO TRANSFORMATION

## DUNNETT'S TEST

TABLE 2 OF 2

Ho:Control&lt;Treatment

| GROUP | IDENTIFICATION | NUM OF<br>REPS | Minimum Sig Diff<br>(IN ORIG. UNITS) | % of<br>CONTROL | DIFFERENCE<br>FROM CONTROL |
|-------|----------------|----------------|--------------------------------------|-----------------|----------------------------|
| 1     | CONTROL        | 5              |                                      |                 |                            |
| 2     | 32%            | 5              | 0.083                                | 15.9            | 0.008                      |
| 3     | 42%            | 5              | 0.083                                | 15.9            | -0.005                     |
| 4     | 56%            | 5              | 0.083                                | 15.9            | -0.004                     |
| 5     | 75%            | 5              | 0.083                                | 15.9            | -0.000                     |
| 6     | 100%           | 5              | 0.083                                | 15.9            | 0.035                      |

FISHER'S EXACT TEST

| IDENTIFICATION | NUMBER OF |      |               |
|----------------|-----------|------|---------------|
|                | ALIVE     | DEAD | TOTAL ANIMALS |
| CONTROL        | 10        | 0    | 10            |
| 32%            | 10        | 0    | 10            |
| TOTAL          | 20        | 0    | 20            |

CRITICAL FISHER'S VALUE (10,10,10) (p=0.05) IS 6. b VALUE IS 10.  
 Since b is greater than 6 there is no significant difference between CONTROL and TREATMENT at the 0.05 level.

FISHER'S EXACT TEST

| IDENTIFICATION | NUMBER OF |      |               |
|----------------|-----------|------|---------------|
|                | ALIVE     | DEAD | TOTAL ANIMALS |
| CONTROL        | 10        | 0    | 10            |
| 42%            | 10        | 0    | 10            |
| TOTAL          | 20        | 0    | 20            |

CRITICAL FISHER'S VALUE (10,10,10) (p=0.05) IS 6. b VALUE IS 10.  
 Since b is greater than 6 there is no significant difference between CONTROL and TREATMENT at the 0.05 level.

FISHER'S EXACT TEST

| IDENTIFICATION | NUMBER OF |      |               |
|----------------|-----------|------|---------------|
|                | ALIVE     | DEAD | TOTAL ANIMALS |
| CONTROL        | 10        | 0    | 10            |
| 56%            | 10        | 0    | 10            |

TOTAL 20 0 20

CRITICAL FISHER'S VALUE (10,10,10) (p=0.05) IS 6. b VALUE IS 10.  
 Since b is greater than 6 there is no significant difference  
 between CONTROL and TREATMENT at the 0.05 level.

FISHER'S EXACT TEST

| IDENTIFICATION | NUMBER OF |      |               |
|----------------|-----------|------|---------------|
|                | ALIVE     | DEAD | TOTAL ANIMALS |
| CONTROL        | 10        | 0    | 10            |
| 75%            | 10        | 0    | 10            |
| TOTAL          | 20        | 0    | 20            |

CRITICAL FISHER'S VALUE (10,10,10) (p=0.05) IS 6. b VALUE IS 10.  
 Since b is greater than 6 there is no significant difference  
 between CONTROL and TREATMENT at the 0.05 level.

FISHER'S EXACT TEST

| IDENTIFICATION | NUMBER OF |      |               |
|----------------|-----------|------|---------------|
|                | ALIVE     | DEAD | TOTAL ANIMALS |
| CONTROL        | 10        | 0    | 10            |
| 100%           | 10        | 0    | 10            |
| TOTAL          | 20        | 0    | 20            |

CRITICAL FISHER'S VALUE (10,10,10) (p=0.05) IS 6. b VALUE IS 10.  
 Since b is greater than 6 there is no significant difference  
 between CONTROL and TREATMENT at the 0.05 level.

SUMMARY OF FISHER'S EXACT TESTS

NUMBER NUMBER SIG

| GROUP | IDENTIFICATION | EXPOSED | DEAD | (P= .05) |
|-------|----------------|---------|------|----------|
|       | CONTROL        | 10      | 0    |          |
| 1     | 32%            | 10      | 0    |          |
| 2     | 42%            | 10      | 0    |          |
| 3     | 56%            | 10      | 0    |          |
| 4     | 75%            | 10      | 0    |          |
| 5     | 100%           | 10      | 0    |          |

60399831 SILOAM SPRINGS CERIODAPHNIA DUBIA SUR  
File: 6399831D Transform: NO TRANSFORM

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

---

| GRP | IDENTIFICATION | N  | MIN   | MAX   | MEAN  |
|-----|----------------|----|-------|-------|-------|
| 1   | CONTROL        | 10 | 1.000 | 1.000 | 1.000 |
| 2   | 32%            | 10 | 1.000 | 1.000 | 1.000 |
| 3   | 42%            | 10 | 1.000 | 1.000 | 1.000 |
| 4   | 56%            | 10 | 1.000 | 1.000 | 1.000 |
| 5   | 75%            | 10 | 1.000 | 1.000 | 1.000 |
| 6   | 100%           | 10 | 1.000 | 1.000 | 1.000 |

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60399831 SILOAM SPRINGS CERIODAPHNIA DUBIA SUR  
File: 6399831D Transform: NO TRANSFORM

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

---

| GRP | IDENTIFICATION | VARIANCE | SD    | SEM   | C.V. % |
|-----|----------------|----------|-------|-------|--------|
| 1   | CONTROL        | 0.000    | 0.000 | 0.000 | 0.00   |
| 2   | 32%            | 0.000    | 0.000 | 0.000 | 0.00   |
| 3   | 42%            | 0.000    | 0.000 | 0.000 | 0.00   |
| 4   | 56%            | 0.000    | 0.000 | 0.000 | 0.00   |
| 5   | 75%            | 0.000    | 0.000 | 0.000 | 0.00   |
| 6   | 100%           | 0.000    | 0.000 | 0.000 | 0.00   |

---



60399831 SILOAM SPRINGS CERIODAPHNIA DUBIA REP  
File: 6399831E Transform: NO TRANSFORMATION

Chi-square test for normality: actual and expected frequencies

---

| INTERVAL | <-1.5 | -1.5 to <-0.5 | -0.5 to 0.5 | >0.5 to 1.5 | >1.5  |
|----------|-------|---------------|-------------|-------------|-------|
| EXPECTED | 4.020 | 14.520        | 22.920      | 14.520      | 4.020 |
| OBSERVED | 6     | 10            | 21          | 22          | 1     |

---

Calculated Chi-Square goodness of fit test statistic = 8.6652

Table Chi-Square value (alpha = 0.01) = 13.277

Data PASS normality test. Continue analysis.

60399831 SILOAM SPRINGS CERIODAPHNIA DUBIA REP  
File: 6399831E Transform: NO TRANSFORMATION

Bartlett's test for homogeneity of variance

Calculated B1 statistic = 4.37

---

Table Chi-square value = 15.09 (alpha = 0.01, df = 5)

Table Chi-square value = 11.07 (alpha = 0.05, df = 5)

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

60399831 SILOAM SPRINGS CERIODAPHNIA DUBIA REP  
 File: 6399831E Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

| GRP | IDENTIFICATION | N  | MIN    | MAX    | MEAN   |
|-----|----------------|----|--------|--------|--------|
| 1   | CONTROL        | 10 | 16.000 | 23.000 | 20.500 |
| 2   | 32%            | 10 | 17.000 | 23.000 | 20.700 |
| 3   | 42%            | 10 | 16.000 | 27.000 | 21.900 |
| 4   | 56%            | 10 | 16.000 | 25.000 | 20.700 |
| 5   | 75%            | 10 | 16.000 | 24.000 | 21.300 |
| 6   | 100%           | 10 | 18.000 | 24.000 | 22.000 |

60399831 SILOAM SPRINGS CERIODAPHNIA DUBIA REP  
 File: 6399831E Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

| GRP | IDENTIFICATION | VARIANCE | SD    | SEM   | C.V. % |
|-----|----------------|----------|-------|-------|--------|
| 1   | CONTROL        | 3.833    | 1.958 | 0.619 | 9.55   |
| 2   | 32%            | 5.789    | 2.406 | 0.761 | 11.62  |
| 3   | 42%            | 10.989   | 3.315 | 1.048 | 15.14  |
| 4   | 56%            | 10.456   | 3.234 | 1.023 | 15.62  |
| 5   | 75%            | 9.567    | 3.093 | 0.978 | 14.52  |
| 6   | 100%           | 4.444    | 2.108 | 0.667 | 9.58   |

60399831 SILOAM SPRINGS CERIODAPHNIA DUBIA REP  
 File: 6399831E Transform: NO TRANSFORMATION

ANOVA TABLE

| SOURCE         | DF | SS      | MS    | F     |
|----------------|----|---------|-------|-------|
| Between        | 5  | 21.283  | 4.257 | 0.567 |
| Within (Error) | 54 | 405.700 | 7.513 |       |
| Total          | 59 | 426.983 |       |       |

Critical F value = 2.45 (0.05,5,40)  
 Since  $F < \text{Critical } F$  FAIL TO REJECT  $H_0$ : All equal

60399831 SILOAM SPRINGS CERIODAPHNIA DUBIA REP  
 File: 6399831E Transform: NO TRANSFORMATION

DUNNETT'S TEST

TABLE 1 OF 2

Ho:Control&lt;Treatment

| GROUP | IDENTIFICATION | TRANSFORMED<br>MEAN | MEAN CALCULATED IN<br>ORIGINAL UNITS | T STAT | SIG |
|-------|----------------|---------------------|--------------------------------------|--------|-----|
| 1     | CONTROL        | 20.500              | 20.500                               |        |     |
| 2     | 32%            | 20.700              | 20.700                               | -0.163 |     |
| 3     | 42%            | 21.900              | 21.900                               | -1.142 |     |
| 4     | 56%            | 20.700              | 20.700                               | -0.163 |     |
| 5     | 75%            | 21.300              | 21.300                               | -0.653 |     |
| 6     | 100%           | 22.000              | 22.000                               | -1.224 |     |

Dunnett table value = 2.31 (1 Tailed Value, P=0.05, df=40,5)

60399831 SILOAM SPRINGS CERIODAPHNIA DUBIA REP

File: 6399831E

Transform: NO TRANSFORMATION

DUNNETT'S TEST

TABLE 2 OF 2

Ho:Control&lt;Treatment

| GROUP | IDENTIFICATION | NUM OF<br>REPS | Minimum Sig Diff<br>(IN ORIG. UNITS) | % of<br>CONTROL | DIFFERENCE<br>FROM CONTROL |
|-------|----------------|----------------|--------------------------------------|-----------------|----------------------------|
| 1     | CONTROL        | 10             |                                      |                 |                            |
| 2     | 32%            | 10             | 2.832                                | 13.8            | -0.200                     |
| 3     | 42%            | 10             | 2.832                                | 13.8            | -1.400                     |
| 4     | 56%            | 10             | 2.832                                | 13.8            | -0.200                     |
| 5     | 75%            | 10             | 2.832                                | 13.8            | -0.800                     |
| 6     | 100%           | 10             | 2.832                                | 13.8            | -1.500                     |

| Conc. ID     | 1    | 2    | 3    | 4    | 5    | 6    |
|--------------|------|------|------|------|------|------|
| Conc. Tested | 0    | 32   | 42   | 56   | 75   | 100  |
| Response 1   | .546 | .579 | .442 | .583 | .495 | .541 |
| Response 2   | .494 | .454 | .609 | .601 | .458 | .462 |
| Response 3   | .527 | .551 | .502 | .508 | .637 | .505 |
| Response 4   | .524 | .485 | .511 | .443 | .531 | .418 |
| Response 5   | .533 | .516 | .584 | .510 | .502 | .523 |

\*\*\* Inhibition Concentration Percentage Estimate \*\*\*

Toxicant/Effluent: SILOAM SPRINGS

Test Start Date: 05/10/22 Test Ending Date: 05/17/22

Test Species: FATHEAD

Test Duration: 7 DAYS

DATA FILE:

| Conc. ID | Number Replicates | Concentration | Response Means | Std. Dev. | Pooled Response Means |
|----------|-------------------|---------------|----------------|-----------|-----------------------|
| 1        | 5                 | 0.000         | 0.525          | 0.019     | 0.525                 |
| 2        | 5                 | 32.000        | 0.517          | 0.050     | 0.525                 |
| 3        | 5                 | 42.000        | 0.530          | 0.067     | 0.525                 |
| 4        | 5                 | 56.000        | 0.529          | 0.064     | 0.525                 |
| 5        | 5                 | 75.000        | 0.525          | 0.068     | 0.525                 |
| 6        | 5                 | 100.000       | 0.490          | 0.050     | 0.490                 |

\*\*\* No Linear Interpolation Estimate can be calculated from the input data since none of the (possibly pooled) group response means were less than 75% of the control response mean.

| Conc. ID     | 1  | 2  | 3  | 4  | 5  | 6   |
|--------------|----|----|----|----|----|-----|
| Conc. Tested | 0  | 32 | 42 | 56 | 75 | 100 |
| Response 1   | 23 | 17 | 23 | 18 | 18 | 23  |
| Response 2   | 21 | 22 | 24 | 16 | 23 | 19  |
| Response 3   | 21 | 23 | 16 | 24 | 16 | 22  |
| Response 4   | 16 | 17 | 23 | 22 | 22 | 22  |
| Response 5   | 22 | 23 | 27 | 21 | 24 | 23  |
| Response 6   | 20 | 22 | 21 | 22 | 17 | 24  |
| Response 7   | 20 | 18 | 23 | 24 | 22 | 24  |
| Response 8   | 19 | 22 | 24 | 25 | 24 | 21  |
| Response 9   | 22 | 21 | 21 | 17 | 23 | 24  |
| Response 10  | 21 | 22 | 17 | 18 | 24 | 18  |

\*\*\* Inhibition Concentration Percentage Estimate \*\*\*

Toxicant/Effluent: SILOAM SPRINGS

Test Start Date: 05/10/22 Test Ending Date: 05/17/22

Test Species: C. DUBIA

Test Duration: 7 DAYS

DATA FILE:

| Conc. ID | Number Replicates | Concentration | Response Means | Std. Dev. | Pooled Response Means |
|----------|-------------------|---------------|----------------|-----------|-----------------------|
| 1        | 10                | 0.000         | 20.500         | 1.958     | 21.183                |
| 2        | 10                | 32.000        | 20.700         | 2.406     | 21.183                |
| 3        | 10                | 42.000        | 21.900         | 3.315     | 21.183                |
| 4        | 10                | 56.000        | 20.700         | 3.234     | 21.183                |
| 5        | 10                | 75.000        | 21.300         | 3.093     | 21.183                |
| 6        | 10                | 100.000       | 22.000         | 2.108     | 21.183                |

\*\*\* No Linear Interpolation Estimate can be calculated from the input data since none of the (possibly pooled) group response means were less than 75% of the control response mean.

**CHAIN-OF-CUSTODY / Analytical Request Document**  
The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Company: **Siloam Springs, AR** City of Siloam Springs  
 Address: **975 Anderson Avenue**  
 Email To: **abrown@siloamsprings.com** Copy To: **abrown@siloamsprings.com**  
 Phone: **779-228-2000** Fax: **779-228-2000** Project Name: **2nd QTR WET**  
 Requested Due Date/TAT: **Project Number:**  
 Attention: **Nolie Wood** Company Name: **Nolie Wood**  
 Price Quote Reference: **Price Project Manager: Pace Profile #: 10809**  
 REGULATORY AGENCY:  NPDES  GROUND WATER  DRINKING WATER  
 UST  RCRA  OTHER  
 Site Location: **AR** STATE: **AR**

| ITEM # | Section D Required Client Information | Valid Matrix Codes MATRIX CODE  | MATRIX CODE (see valid codes to left) | SAMPLE TYPE (G=GRAB C=COMP) | COLLECTED       |                    | DATE   | TIME  | SAMPLE TEMP AT COLLECTION | # OF CONTAINERS | Unpreserved | Preservatives                  |                  |     |      |   |          | Analysis Test | Chronic WET Test | Metals-Zn | Requested Analysis Filtered (Y/N) | Residual Chlorine (Y/N) | Page Project No./ Lab ID. |       |
|--------|---------------------------------------|---|---------------------------------------|-----------------------------|-----------------|--------------------|--------|-------|---------------------------|-----------------|-------------|--------------------------------|------------------|-----|------|---|----------|---------------|------------------|-----------|-----------------------------------|-------------------------|---------------------------|-------|
|        |                                       |   |                                       |                             | COMPOSITE START | COMPOSITE END(SMA) |        |       |                           |                 |             | H <sub>2</sub> SO <sub>4</sub> | HNO <sub>3</sub> | HCl | NaOH | Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> | Methanol |               |                  |           |                                   |                         |                           | Other |
| 1      | SSWWTP Cont# 911739                   | DRINKING WATER<br>WATER<br>WASTE WATER<br>PRODUCT<br>SOIL/SOLID<br>OIL<br>WIP<br>AIR<br>OTHER<br>TISSUE | WW                                    | C                           |                 |                    | 3/3/22 | 10:00 | 030422                    | 9:00            | 1           |                                |                  |     |      |   |          |               |                  |           |                                   |                         |                           |       |
| 2      | SSWWTP Metals Cont# 773661            |   | WW                                    | C                           |                 |                    | 3/3/22 | 10:00 | 030422                    | 9:00            | 1           | X                              |                  |     |      |   |          |               |                  |           |                                   |                         |                           |       |
| 3      |                                       |   |                                       |                             |                 |                    |        |       |                           |                 |             |                                |                  |     |      |   |          |               |                  |           |                                   |                         |                           |       |
| 4      |                                       |   |                                       |                             |                 |                    |        |       |                           |                 |             |                                |                  |     |      |   |          |               |                  |           |                                   |                         |                           |       |
| 5      |                                       |   |                                       |                             |                 |                    |        |       |                           |                 |             |                                |                  |     |      |   |          |               |                  |           |                                   |                         |                           |       |
| 6      |                                       |   |                                       |                             |                 |                    |        |       |                           |                 |             |                                |                  |     |      |   |          |               |                  |           |                                   |                         |                           |       |
| 7      |                                       |   |                                       |                             |                 |                    |        |       |                           |                 |             |                                |                  |     |      |   |          |               |                  |           |                                   |                         |                           |       |
| 8      |                                       |   |                                       |                             |                 |                    |        |       |                           |                 |             |                                |                  |     |      |   |          |               |                  |           |                                   |                         |                           |       |
| 9      |                                       |   |                                       |                             |                 |                    |        |       |                           |                 |             |                                |                  |     |      |   |          |               |                  |           |                                   |                         |                           |       |
| 10     |                                       |   |                                       |                             |                 |                    |        |       |                           |                 |             |                                |                  |     |      |   |          |               |                  |           |                                   |                         |                           |       |
| 11     |                                       |   |                                       |                             |                 |                    |        |       |                           |                 |             |                                |                  |     |      |   |          |               |                  |           |                                   |                         |                           |       |
| 12     |                                       |   |                                       |                             |                 |                    |        |       |                           |                 |             |                                |                  |     |      |   |          |               |                  |           |                                   |                         |                           |       |

ADDITIONAL COMMENTS: **Return samples to the Frontenac Lab on ice!**  
**TCR = 0.01 mg/L**  
 RELINQUISHED BY / AFFILIATION: **Tony Brown** DATE: **5/9/22** TIME: **0935**  
 ACCEPTED BY / AFFILIATION: **Tiffany Brown** DATE: **5/10/22** TIME: **800**  
 SAMPLE CONDITIONS: **Temp in °C: 4.0** Received on Ice (Y/N): **Y** Custody Sealed Cooler (Y/N): **Y** Samples Intact (Y/N): **Y**

SAMPLER NAME AND SIGNATURE: **PRINT Name of SAMPLER: Tony Brown** SIGNATURE OF SAMPLER: **Tony Brown** DATE Signed (MM/DD/YY): **5/9/22**

\*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.  
 F-ALL-Q-020rev 08, 12-Oct-2007



# 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: **City of Siloam Springs** Report To: **Tony Brown** Attention: \_\_\_\_\_  
 Address: **975 Anderson Avenue** Copy To: **abrown@siloomsprings.com** Company Name: \_\_\_\_\_  
 Email To: **abrown@siloomsprings.com** Purchase Order No.: \_\_\_\_\_ Address: \_\_\_\_\_  
 Phone: **479-228-2000** Fax: \_\_\_\_\_ Project Name: **2nd QTR WET** Pace Quote Reference: \_\_\_\_\_  
 Requested Due Date/TAT: \_\_\_\_\_ Project Number: \_\_\_\_\_ Pace Project Manager: **Nolie Wood**  
 Pace Profile #: **10809**

**REGULATORY AGENCY**  
 NPDES  GROUND WATER  DRINKING WATER  
 UST  RCRA  OTHER \_\_\_\_\_  
 Site Location: **AR**  
 STATE: \_\_\_\_\_

| ITEM # | Section D<br>Required Client Information | Valid Matrix Codes<br>MATRIX CODE<br><small>           FRESHWATER WATER<br/>           WASTE WATER<br/>           WASTE WATER PRODUCT<br/>           SOIL/SOLID<br/>           OIL<br/>           WASTE<br/>           AIR<br/>           OTHER<br/>           TISSUE         </small> | MATRIX CODE (see valid codes to left) | SAMPLE TYPE (G=GRAB C=COMP) | COLLECTED |       |          | SAMPLE TEMP AT COLLECTION | # OF CONTAINERS | Preservatives |                                |                  |     |      |   |          | Analysis Test ↓ | Requested Analysis Filtered (Y/N) | Residual Chlorine (Y/N) | Pace Project No./ Lab I.D. |       |
|--------|--|--|---------------------------------------|-----------------------------|-----------|-------|----------|---------------------------|-----------------|---------------|--------------------------------|------------------|-----|------|---|----------|-----------------|-----------------------------------|-------------------------|----------------------------|-------|
|        |  |  |                                       |                             | DATE      | TIME  | DATE     |                           |                 | TIME          | H <sub>2</sub> SO <sub>4</sub> | HNO <sub>3</sub> | HCl | NaOH | Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> | Methanol |                 |                                   |                         |                            | Other |
| 1      | SSWWTP Cont# 911740                      |  | WW                                    | C                           | 5/10/22   | 10:00 | 05/11/22 | 9:00                      | 1               |               |                                |                  |     |      |   |          |                 |                                   |                         |                            |       |
| 2      | SSWWTP Metals Cont# 773664               |  | WW                                    | C                           | 5/10/22   | 10:00 | 05/11/22 | 9:00                      | 1               | X             |                                |                  |     |      |   |          |                 |                                   |                         |                            |       |
| 3      |  |  |                                       |                             |           |       |          |                           |                 |               |                                |                  |     |      |   |          |                 |                                   |                         |                            |       |
| 4      |  |  |                                       |                             |           |       |          |                           |                 |               |                                |                  |     |      |   |          |                 |                                   |                         |                            |       |
| 5      |  |  |                                       |                             |           |       |          |                           |                 |               |                                |                  |     |      |   |          |                 |                                   |                         |                            |       |
| 6      |  |  |                                       |                             |           |       |          |                           |                 |               |                                |                  |     |      |   |          |                 |                                   |                         |                            |       |
| 7      |  |  |                                       |                             |           |       |          |                           |                 |               |                                |                  |     |      |   |          |                 |                                   |                         |                            |       |
| 8      |  |  |                                       |                             |           |       |          |                           |                 |               |                                |                  |     |      |   |          |                 |                                   |                         |                            |       |
| 9      |  |  |                                       |                             |           |       |          |                           |                 |               |                                |                  |     |      |   |          |                 |                                   |                         |                            |       |
| 10     |  |  |                                       |                             |           |       |          |                           |                 |               |                                |                  |     |      |   |          |                 |                                   |                         |                            |       |
| 11     |  |  |                                       |                             |           |       |          |                           |                 |               |                                |                  |     |      |   |          |                 |                                   |                         |                            |       |
| 12     |  |  |                                       |                             |           |       |          |                           |                 |               |                                |                  |     |      |   |          |                 |                                   |                         |                            |       |


**ADDITIONAL COMMENTS**  
 \*samples have a 24 hour hold time!  
 \*return samples to the Frontenac Lab on ice!

RELINQUISHED BY / AFFILIATION: **Tony Brown** DATE: **5/11/22** TIME: **0915**  
 ACCEPTED BY / AFFILIATION: **Gene Hudgins pace** DATE: **5/11/22** TIME: **8:00**  
 TCR: **0.08 mg/L**

**SAMPLER NAME AND SIGNATURE**

PRINT Name of SAMPLER: **Tony Brown** DATE Signed (MM/DD/YY): **5/11/22**  
 SIGNATURE of SAMPLER: *Tony Brown*

Temp in °C \_\_\_\_\_ Received on Ice (Y/N) \_\_\_\_\_ Custody Sealed Cooler (Y/N) \_\_\_\_\_ Samples Intact (Y/N) \_\_\_\_\_

|   |   |                            |                   |
|---|---|----------------------------|-------------------|
|  | DC#_Title: ENV-FRM-LENE-0009_Sample Condition Upon Receipt (SCUR) |                            |                   |
|   | Revision: 2   | Effective Date: 01/12/2022 | Issued By: Lenexa |

Client Name: Siloam Springs

Courier: FedEx  UPS  VIA  Clay  PEX  ECI  Pace  Xroads  Client  Other

Tracking #: \_\_\_\_\_ Pace Shipping Label Used? Yes  No

Custody Seal on Cooler/Box Present: Yes  No  Seals intact: Yes  No

Packing Material: Bubble Wrap  Bubble Bags  Foam  None  Other

Thermometer Used: T-111 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 2.0 Corr. Factor -0.8 Corrected 1.2

Date and initials of person examining contents: 5/12/22 8<sup>00</sup>

Temperature should be above freezing to 6°C

|  |  |  |
|--|--|--|
| Chain of Custody present:  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |  |
| Chain of Custody relinquished:   | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A            |  |
| Samples arrived within holding time:   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |  |
| Short Hold Time analyses (<72hr):  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |  |
| Rush Turn Around Time requested:   | <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 |  |
| Pace 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 |  |
| Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?   | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |  |
| Filtered volume received for dissolved tests?  | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |  |
| Sample labels match COC: Date / time / ID / analyses   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |  |
| Samples contain multiple phases? Matrix:   | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A |  |
| Containers requiring pH preservation in compliance?<br>(HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide)<br>(Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) LOT#: | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | List sample IDs, volumes, lot #'s of preservative and the date/time added. |
| Cyanide water sample checks:   |  |  |
| Lead acetate strip turns dark? (Record only)   | <input type="checkbox"/> Yes <input type="checkbox"/> No   |  |
| Potassium iodide test strip turns blue/purple? (Preserve)  | <input type="checkbox"/> Yes <input type="checkbox"/> No   |  |
| Trip Blank present:  | <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 |  |
| Samples from USDA Regulated Area: State:   | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |  |
| Additional labels attached to 5035A / TX1005 vials in the field?   | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |  |

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N


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

Comments/ Resolution: \_\_\_\_\_

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





|   |   |                            |
|---|---|----------------------------|
|  | DC#_Title: ENV-FRM-LENE-0009_Sample Condition Upon Receipt (SCUR) |                            |
|   | Revision: 2   | Effective Date: 01/12/2022 |

Client Name: Siloam Springs

Courier: FedEx  UPS  VIA  Clay  PEX  ECI  Pace  Xroads  Client  Other

Tracking #: \_\_\_\_\_ Pace Shipping Label Used? Yes  No

Custody Seal on Cooler/Box Present: Yes  No  Seals intact: Yes  No  Leg 3

Packing Material: Bubble Wrap  Bubble Bags  Foam  None  Other

Thermometer Used: T-111 Type of Ice: Wet Blue  None

Cooler Temperature (°C): As-read 5.8 Corr. Factor -0.8 Corrected 5.0

Date and initials of person examining contents:  
TS 5/14/22 GOC

Temperature should be above freezing to 6°C

|  |  |  |
|--|--|--|
| Chain of Custody present:  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |  |
| Chain of Custody relinquished:   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |  |
| Samples arrived within holding time:   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |  |
| Short Hold Time analyses (<72hr):  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |  |
| Rush Turn Around Time requested:   | <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 |  |
| Pace 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 |  |
| Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?   | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |  |
| Filtered volume received for dissolved tests?  | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |  |
| Sample labels match COC: Date / time / ID / analyses   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |  |
| Samples contain multiple phases? Matrix:   | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A |  |
| Containers requiring pH preservation in compliance?<br>(HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide)<br>(Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) LOT#: | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | List sample IDs, volumes, lot #'s of preservative and the date/time added. |
| Cyanide water sample checks:   |  |  |
| Lead acetate strip turns dark? (Record only)   | <input type="checkbox"/> Yes <input type="checkbox"/> No   |  |
| Potassium iodide test strip turns blue/purple? (Preserve)  | <input type="checkbox"/> Yes <input type="checkbox"/> No   |  |
| Trip Blank present:  | <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 |  |
| Samples from USDA Regulated Area: State:   | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |  |
| Additional labels attached to 5035A / TX1005 vials in the field?   | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |  |

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

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

Comments/ Resolution: \_\_\_\_\_

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